

Peer-review publications citing - The behaviour change wheel: A new method for characterising and designing behaviour change interventions. Michie, S; van Stralen, MM; West, R. *Imp Sci*, 2011, 6: 42, DOI: 10.1186/1748-5908-6-42.

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(2014). "LifeLogging: Personal Big Data Introduction." *Foundations and Trends in Information Retrieval* 8(1): 2-+.

Abdou, J. K., et al. (2016). "Adherence to long-term anticoagulation treatment, what is known and what the future might hold." *British Journal of Haematology* 174(1): 30-42.

Adherence to medication, commonly reported as being 50% in chronic diseases, is of great concern in healthcare. Medication non-adherence is particularly apparent in chronic diseases, where treatment is often preventative and may provide little or no symptomatic relief or feedback for the patient. A lot of research has been undertaken to describe the extent of non-adherence to long-term anticoagulation therapy, particularly with vitamin K antagonists and more recently with direct oral anticoagulants. However, the literature is scarce with respect to describing adherence to anticoagulation in terms of the behavioural aspects that influence medicine use. Utilizing the COM-B (capability, opportunity, motivation and behaviour) psychological model of non-adherence, we present the available evidence, not only in terms of describing the extent of the non-adherence problem, but also describing why patients do not adhere, offering theory-driven and evidence-based solutions to improve long-term adherence to chronic anticoagulation therapy. Lessons learned are not only applicable within the field of anticoagulation but throughout haematology.

Abdulghani, N., et al. (2020). "Health care providers' perception of facilitators and barriers for the practice of skin-to-skin contact in Saudi Arabia: A qualitative study." *Midwifery* 81.

Objectives: To identify Health Care Providers' (HCPs') perceived facilitators, barriers and requirements for implementing the practice of Skin-to-Skin Contact (SSC) immediately after vaginal birth. Design: A descriptive qualitative study with semi-structured interviews. Two theoretical frameworks were used to guide the data analysis: Theoretical Domains and the Grol and Wensing's barriers to and facilitators of change in health care practice. Settings: Two public hospitals in Jeddah, Saudi Arabia with 7000 and 6000 births per year, respectively. Participants: A purposeful sample of 20 obstetricians, midwives, and nurses. Findings: The HCPs' perceived facilitators included buy-in of the practice of SSC. Existing or potential barriers included the absence of a detailed policy and guidelines to support the practice of SSC, lack of capabilities and motivations to implement the practice of SSC, mothers not interested in SSC, lack of professional collaboration, staffing and time constraints, and a medicalised birth environment that prioritised interventions over SSC. Conclusion and implication to practice: The insights gained from identification of facilitators and barriers for SSC practice in this study can assist the development of a tailored multi-level implementation strategy at the individual, social and organisational levels to provide continuous uninterrupted SSC immediately after birth. The practice of SSC could likely be successfully implemented if there is multidisciplinary collaboration that prioritises the practice of SSC. (c) 2019 Published by Elsevier Ltd.

Abidi, L., et al. (2016). "A theory-based implementation program for alcohol screening and brief intervention (ASBI) in general practices: Planned development and study protocol of a cluster randomised controlled trial." *Contemporary Clinical Trials* 51: 78-87.

Background: Previous studies have shown that alcohol screening and brief intervention (ASBI) in general practices can lead to significant reductions in alcohol consumption among patients, yet ASBI is rarely implemented into routine clinical practice. The aim of this paper is to describe the development and evaluation of an ASBI implementation program aimed at increasing ASBI delivery rates of general practitioners (GPs) and decreasing patients' alcohol consumption. Methods/design: This study protocol describes the step-wise development and evaluation of an ASBI implementation program. A four-step method is used to identify relevant determinants of change and intervention components based on the Behaviour Change Wheel and the Theoretical Domains Framework. The program will be evaluated in general practices in The Netherlands in a two-arm cluster randomised controlled trial which investigates the effect of the program on GPs' ASBI delivery behaviour as well as on patients' alcohol consumption. Discussion: Effective theory-and practice-based strategies to implement ASBI in general practices are highly needed. Using a stepwise method we described the development of a program consisting of an e-learning module, a tailored feedback module and environmental support and materials. We hypothesize that this program will result in an increase of GPs' ASBI delivery behaviour. Secondly, we expect an overall decrease in percentage of patients with excessive or problematic alcohol use and a higher proportion of patients from GPs receiving the ASBI implementation program decreasing their alcohol consumption, compared to patients from GPs in the control group. (C) 2016 Elsevier Inc. All rights reserved.

Abidi, L., et al. (2016). "Strategies to Overcome Barriers to Implementation of Alcohol Screening and Brief Intervention in General Practice: a Delphi Study Among Healthcare Professionals and Addiction Prevention Experts." *Prevention Science* 17(6): 689-699.

Despite the evidence base, alcohol screening and brief intervention (ASBI) have rarely been integrated into routine clinical practice. The aim of this study is to identify strategies that could tackle barriers to ASBI implementation in general practice by involving primary healthcare professionals and addiction prevention experts. A three-round online Delphi study was carried out in the Netherlands. The first-round questionnaire consisted of open-ended questions to generate ideas about strategies to overcome barriers. In the second round, participants were asked to indicate how applicable they found each strategy. Items without consensus were systematically fed back with group median ratings and interquartile range (IQR) scores in the third-round questionnaire. In total, 39 out of 69 (57 %) invited participants enrolled in the first round, 214 participants completed the second round, and 144 of these (67 %) completed the third-round questionnaire. Results show that participants reached consensus on 59 of 81 strategies, such as the following: (1) use of E-learning technology, (2) symptom-specific screening by general practitioners (GPs) and/or universal screening by practice nurses, (3) reimbursement incentives, (4) supportive materials, (5) clear guidelines, (6) service provision of addiction care centers, and (7) more publicity in the media. This exploratory study identified a broad set of strategies that could potentially be used for overcoming barriers to ASBI implementation in general practice and paves the way for future research to experimentally test the identified implementation strategies using multifaceted approaches.

Abraham, C., et al. (2015). "Reliability of Identification of Behavior Change Techniques in Intervention Descriptions." *Annals of Behavioral Medicine* 49(6): 885-900.

The aim of this paper is to assess the frequency of identification as well as the inter-coder and test-retest reliability of identification of behavior change techniques (BCTs) in written intervention descriptions. Forty trained coders applied the "Behavior Change Technique Taxonomy version 1" (BCTTv1) to 40 intervention descriptions published in protocols and repeated this 1 month later. Eighty of 93 defined BCTs were identified by at least one trained coder, and 22 BCTs were identified in 16 (40 %) or more of 40 descriptions. Good inter-coder reliability was observed across 80 BCTs identified in the protocols: 66 (80 %) achieved mean prevalence and bias-adjusted kappa (PABAK) scores of 0.70 or greater, and 59 (74 %) achieved mean scores of 0.80 or greater. There was good within-coder agreement between baseline and 1 month, demonstrating good test-retest reliability. BCTTv1 can be used by trained coders to identify BCTs in intervention descriptions reliably. However, some frequently occurring BCT definitions require further clarification.

Abreu, A. (2019). "In-hospital psychological intervention in cardiac rehabilitation following acute coronary syndrome: Brief is better than nothing." *Revista Portuguesa De Cardiologia* 38(5): 369-372.

Acerini, C. L., et al. (2017). "Optimizing Patient Management and Adherence for children receiving Growth Hormone." *Frontiers in Endocrinology* 8.

Poor adherence with growth hormone (GH) therapy has been associated with worse clinical outcomes, which in children relates specifically to their linear growth and loss of quality of life. The "360 degrees GH in Europe" meeting, held in Lisbon, Portugal, in June 2016 and funded by Merck KGaA (Germany), examined many aspects of GH diseases. The three sessions, entitled "Short Stature Diagnosis and Referral," "Optimizing Patient Management," and "Managing Transition," each benefited from three guest speaker presentations, followed by an open discussion and are reported as a manuscript, authored by the speakers. Reported here is a summary of the proceedings of the second session, which reviewed the determinants of GH therapy response, factors affecting GH therapy adherence and the development of innovative technologies to improve GH treatment in children. Response to GH therapy varies widely, particularly in regard to the underlying diagnosis, although there is little consensus on the definition of a poor response. If the growth response is seen to be less than expected, the possible reasons should be discussed with patients and their parents, including compliance with the therapy regimen. Understanding and addressing the multiple factors that influence adherence, in order to optimize GH therapy, requires a multi-disciplinary approach. Because therapy continues over many years, various healthcare professionals will be involved at different periods of the patient's journey. The role of the injection device for GH therapy, frequent monitoring of response, and patient support are all important for maintaining adherence. New injection devices are incorporating electronic technologies for automated monitoring and recording of clinically relevant information on injections. Study results are indicating that such devices can at least maintain GH adherence; however, acceptance of novel devices needs to be assessed and there remains an on-going need for innovations.

Addo, I. B., et al. (2018). "Barriers and Drivers of Household Water-Conservation Behavior: A Profiling Approach." *Water* 10(12).

Factors that influence behavioral response (barriers and drivers) are important for household water-conservation practices. These factors either support or inhibit sustainable behavior. In this research, a latent profile analysis (LPA) was used within the capability-, opportunity-, and motivation-behavior (COM-B) framework to identify key barriers and drivers of household water-conservation behaviors. Participants (N = 510, mean age = 56.08 years, SD = 14.71) completed measures of psycho-social constructs related to barriers and drivers of water-conservation behavior. An LPA yielded a 3-profile statistical solution: capability (35.8%), opportunity (23.2%), and motivation (41.0%) conceptualizing levels of barriers and drivers of water-conservation behavior. Major identified barriers and drivers associated with these profile groupings were time constraints, acuity of water-efficient devices, lack of skills to adopt conservation practices, and availability of incentives/disincentives for water-saving devices. Validation analyses showed that the three COM-B groups diverged considerably based on socio-demographic status and actual water-conservation behavior. Results are pertinent to water authorities in identifying interventions to reduce barriers and promote drivers of positive household water-conservation behaviors by altering and directing appropriate COM-B dimensions to individual water consumers.

Addo, I. B., et al. (2018). "Household Water Use and Conservation Behavior: A Meta-Analysis." *Water Resources Research* 54(10): 8381-8400.

Understanding the psychological-social drivers of water-use behavior in households is essential for enhancing the effectiveness of water-conservation strategies and subsequent environmental benefits. This study used the Behaviour Change Wheel framework to review associations between capability, opportunity, and motivation (COM) dimensions and household water-use behaviors. A meta-analysis of 88 correlation coefficients from a combined sample of 15,656 participants showed positive relationships between water-use behavior and COM dimensions. These three dimensions were statistically significant in predicting household water-use behavior, with opportunity being the most moderate predictor of water-conservation behavior ($r = 0.25$, $p < 0.001$), followed by motivation ($r = 0.24$, $p < 0.001$) and then capability ($r = 0.18$, $p < 0.001$). Collectively, these dimensions explained 37% of the variance in household water-conservation behavior. Correlation coefficients also diverged as a function of COM dimension subtypes (psychological, physical, social, reflective, and automatic) and study location, study design, and the gender of participants. Overall, the results are consistent with the Behaviour Change Wheel assertion that the integrative components of behavior are important sources of psychological-social drivers of water-use behavior. COM dimensions are useful for the identification of behaviors that influence water-use and how these may diverge depending on the water-use character of the region and environment.

Addo, I. B., et al. (2019). "The influence of water-conservation messages on reducing household water use." *Applied Water Science* 9(5).

As water crises become severe, the desire to explore alternative strategies that focus on the demand-side of water-conservation increase. Changing behaviour through persuasion (message framing) can be an integral part of providing water demand solutions. In this study, we examined the effectiveness of messages related to household water use on water scarcity and intentions to act. We tested whether relationships between communication and water conservation were mediated via increasing capability, opportunity, and motivation behaviour (COM-B dimensions). We applied two message types related to concern about severe water scarcity and conservation strategies to the behaviour change conditions in two combinations: (1) severe water scarcity and water-saving tips/strategies, and (2) severe water scarcity and no water-saving tips/strategies. There was broad support for the hypothesis that COM-B dimensions would mediate the effect of message type on water scarcity concern and intentions to act in conservation activities. Households that received the message framed in terms of water-saving tips/strategies expressed greater water scarcity concern and higher intention to act than those that received the no water-saving tips/strategies message. Mediation analyses showed that the message framed in terms of specific water-saving tips/strategies was mediated by increasing households' capacity (self-efficacy), opportunity and/or motivation in water-conservation actions. Thus, specific water-conservation strategies made available to households have a stronger impact on water-conservation behaviour because these messages appeal to behavioural change conditions.

Al Khamis, S., et al. (2017). "The effect of dental health education on pregnant women's adherence with toothbrushing and flossing - A randomized control trial." *Community Dentistry and Oral Epidemiology* 45(5): 469-477.

Objectives: In a three-arm randomized control trial, this study compared the efficacy of dental health education (DHE) with or without a planning intervention on adherence to oral health-related behaviours. Methods: Women (N=154) in their second trimester of pregnancy attending three maternal healthcare clinics in Kuwait completed an assessment of social cognitions and oral health behaviours before a debris and gingival assessment (Plaque Index [PI], Gingival Index [GI]) was undertaken; this was repeated at 1 month. In addition to treatment as usual (TAU), which was a demonstration of OH practices, intervention participants received one of two interventions: (i) DHE, which targeted social cognitions; or

(ii) DHE and planning (DHE&P), which targeted social cognitions and intentions to undertake oral health behaviours. The TAU group was given a standard oral hygiene leaflet. Results: At Time one (T1) 154 women were eligible and randomly allocated to the three groups, respectively: treatment as usual (TAU)=53; DHE=53; DHE and planning=48. At Time two (T2), the number of women in each group completing the intervention (N=90) was, respectively, as follows TAU=28; DHE=30; DHE&P=32. There were no demographic differences between the groups at baseline. The mean age of women was 27.80 +/- SD 5.40; 43% (n=38) had a high school level education. A mixed factor ANOVA analysis demonstrated that all women improved their PI (F=94.343 df=1 P=.001) and GI (F=73.138 df=1 P=.001) scores. There were no differences in self-reported oral hygiene and PI and GI by intervention group. The social cognition models (SCM) constructs changed over time in all women (N=90) except barriers to attendance (F=1.067 df=1 P=.305). There were no statistically significant differences in SCM constructs by intervention group at T2. All women reported increasing the frequency of toothbrushing and flossing. Conclusions: The provision of information using a simple leaflet improved the adherence of Kuwaiti pregnant with toothbrushing and flossing advice, while the addition of DHE targeting social cognitions and planning conferred no additional benefits.

Albarracin, D. and L. R. Glasman (2016). "Multidimensional targeting for tailoring: a comment on Ogden (2016)." *Health Psychology Review* 10(3): 251-255.

Albrecht, M., et al. (2016). "Oral health educational interventions for nursing home staff and residents." *Cochrane Database of Systematic Reviews*(9).

Background Associations between nursing home residents' oral health status and quality of life, respiratory tract infections, and nutritional status have been reported. Educational interventions for nurses or residents, or both, focusing on knowledge and skills related to oral health management may have the potential to improve residents' oral health. Objectives To assess the effects of oral health educational interventions for nursing home staff or residents, or both, to maintain or improve the oral health of nursing home residents. Search methods We searched the Cochrane Oral Health Trials Register (to 18 January 2016), the Cochrane Central Register of Controlled Trials (CENTRAL) (the Cochrane Library, 2015, Issue 12), MEDLINE Ovid (1946 to 18 January 2016), Embase Ovid (1980 to 18 January 2016), CINAHL EBSCO (1937 to 18 January 2016), and Web of Science Conference Proceedings (1990 to 18 January 2016). We searched ClinicalTrials.gov and the World Health Organization International Clinical Trials Registry Platform for ongoing trials to 18 January 2016. In addition, we searched reference lists of identified articles and contacted experts in the field. We placed no restrictions on language or date of publication when searching the electronic databases. Selection criteria Randomised controlled trials (RCTs) and cluster-RCTs comparing oral health educational programmes for nursing staff or residents, or both with usual care or any other oral healthcare intervention. Data collection and analysis Two review authors independently screened articles retrieved from the searches for relevance, extracted data from included studies, assessed risk of bias for each included study, and evaluated the overall quality of the evidence. We retrieved data about the development and evaluation processes of complex interventions on the basis of the Criteria for Reporting the Development and Evaluation of Complex Interventions in healthcare: revised guideline (CReDECI 2). We contacted authors of relevant studies for additional information. Main results We included nine RCTs involving 3253 nursing home residents in this review; seven of these trials used cluster randomisation. The mean resident age ranged from 78 to 86 years across studies, and most participants were women (more than 66% in all studies). The proportion of residents with dental prostheses ranged from 62% to 87%, and the proportion of edentulous residents ranged from 32% to 90% across studies. Eight studies compared educational interventions with information and practical components versus (optimised) usual care, while the ninth study compared educational interventions with information only versus usual care. All interventions included educational sessions on oral health for nursing staff (five trials) or for both staff and residents (four trials), and used more than one active component. Follow-up of included studies ranged from three months to five years. No study showed overall low risk of bias. Four studies had a high risk of bias, and the other five studies were at unclear risk of bias. None of the trials assessed our predefined primary outcomes 'oral health' and 'oral health-related quality of life'. All trials assessed our third primary outcome, 'dental or denture plaque'. Meta-analyses showed no evidence of a difference between interventions and usual care for dental plaque (mean difference -0.04, 95% confidence interval (CI) -0.26 to 0.17; six trials; 437 participants; low quality evidence) or denture plaque (standardised mean difference -0.60, 95% CI -1.25 to 0.05; five trials; 816 participants; low quality evidence). None of the studies assessed adverse events of the intervention. Authors' conclusions We found insufficient evidence to draw robust conclusions about the effects of oral health educational interventions for nursing home staff and residents. We did not find evidence of meaningful effects of educational interventions on any measure of residents' oral health; however, the quality of the available evidence is low. More adequately powered and high-quality studies using relevant outcome measures are needed.

Alenchery, A. J., et al. (2018). "Barriers and enablers to skin-to-skin contact at birth in healthy neonates - a qualitative study." *Bmc Pediatrics* 18.

Background: Skin to skin contact (SSC) at birth is the standard of care for newborns without risk factors. However, implementation of SSC at birth has been far from optimal. A qualitative study was undertaken to determine the barriers, enablers and potential solutions to implementation of SSC at birth in healthy newborn infants in a level III neonatal-care facility in Bangalore, India. Methods: Consultants and residents/postgraduates (PG) from the departments of Obstetrics (n = 19) and Pediatrics (n = 14) and nurses (n = 8) in the labor room (LR) participated in the study. In depth interviews (IDI) and focus group discussions (FGD) were carried out with an interview guide and a moderators' guide containing inbuilt probes. Subjects of FGD were homogenous. All IDI and FGD were audio-taped, transcribed and analyzed using N VIVO version 9 (using free and tree nodes). Two authors separately coded the transcripts. Major and minor themes were identified. Rigor was ensured by triangulation and theoretical saturation. Informed consent and ethical approval was obtained. Results: All subjects were aware of SSC at birth, some of its benefits and had practiced SSC. The major barriers identified were lack of personnel (nurses), time constraint, difficulty in deciding on eligibility for SSC, safety concerns, interference with clinical routines, and interdepartmental issues. Recall of an adverse event during SSC was also a major barrier. Furthermore, we found that most participants considered 1 h as impractical; and promoted 5-15 min SSC. Minor themes were gender bias of the newborn and cultural practices. The participants offered solutions such as assigning a helper exclusively for SSC, allowing a family member into the LR, continuing SSC after initial routines, antenatal counselling, constant reminders in the form of periodic sessions with audiovisual aids or posters in the obstetrics ward, training of new nurses and PG, and inclusion of SSC in medical and nursing curriculum. Conclusions: The major barriers to SSC at birth are lack of personnel, time constraint and safety concerns. Training, designated health personnel for SSC and teamwork are the key interventions likely to improve SSC at birth.

Alexander, K. E., et al. (2015). "The challenges of trying to increase preventive healthcare for children in general practice: results of a feasibility study." *Bmc Family Practice* 16.

Background: In Australia, general practice, the linchpin for delivery of preventive health care to large segments of the population, provides child-immunisation and preventive health alongside government services. Despite this, less than half of eligible children complete a Healthy Kids Check (HKC), a preschool preventative health assessment available since 2008. Using a rigorous theoretical process, the barriers that affected delivery and reduced general practitioner and practice nurse motivation to provide HKCs, were addressed. The resulting multifaceted intervention, aimed at increasing the proportion of children receiving evidence informed HKCs from general practice, was piloted to inform a future randomised controlled trial. Methods: The intervention was piloted in a before and after study at three sites located southeast of Melbourne, between February and October 2014. The HKC-intervention involved: 1) Delivery of training modules that motivated reception and clinical staff by delivering key messages about local prevalence rates and the "Core Story of Child Development" 2) Practical advice to prepare clinics for specific HKC-examinations 3) Workflow advice regarding systems that included all staff in the HKC process, and 4) Provision of a "Community Resources Folder" that enabled decision making and referrals. A major component of the intervention incorporated the promotion of structured developmental screening by the practice team using Parents' Evaluation of Developmental Status. Results: Twenty of 22 practitioners and practice managers agreed to join the study. Post-training questionnaires showed participants had developed their skills working with young children as a result of the training and all respondents believed they had successfully implemented standardised HKC services. Post intervention proportions of children completing HKCs significantly increased in two of the practices and quality improvements in HKC-processes were recorded across all three sites. Conclusion: This pilot study confirmed the feasibility of delivering a multi-faceted intervention to increase HKCs from general practice and demonstrated that significant quality improvements could be made. Future studies need to extend the intervention to other states and research the health outcomes of HKCs.

Aljabaa, A., et al. (2015). "A systematic review of randomized controlled trials of interventions to improve adherence among orthodontic patients aged 12 to 18." *Angle Orthodontist* 85(2): 305-313.

Objective: To investigate the effectiveness of interventions to enhance adherence among orthodontic patients aged 12 to 18 years. Specific adherence outcomes included were recall of information given by the orthodontic team, attendance at orthodontic appointments, self-reported oral hygiene behavior, and clinical indexes of oral hygiene. Materials and Methods: Electronic searches of Medline via OVID (January 1, 1966 through March 1, 2012), EMBASE, and the Cochrane central register of control trials from its inception through March 2012, as well as a hand search, were undertaken to identify relevant studies. Results: Through the electronic searches, 381 article were identified. Initial screening of the abstracts and titles by all review authors identified 21 articles that met the inclusion criteria for this review. The full articles were then retrieved. Four randomized controlled trials were found, all of which used different methods of intervention: a system of rewards or awards, the Hawthorne effect, written information, and demonstration of the microbiology of plaque. All the interventions, except the use of award/reward, were associated with improvements

in adherence. Conclusion: The literature advocates the use of several methods to improve compliance/adherence among orthodontic patients. Although there is insufficient evidence to allow clinicians to choose a single method, the results demonstrate the value of spending time with patients to illustrate the importance of adherence. Future studies should develop multiple methods of assessing patient adherence, including self-report, behavioral observation and recording, and change in clinical indexes. Such studies should test different types of interventions for effectiveness.

Aljaroodi, H. M., et al. (2017). Empathic Avatars in Stroke Rehabilitation: A Co-designed mHealth Artifact for Stroke Survivors. *Designing the Digital Transformation*, Desrist 2017. A. Maedche, J. VomBrocke and A. Hevner. 10243: 73-89.

Stroke is the second highest cause of death and disability worldwide. While rehabilitation programs are intended to support stroke survivors, and promote recovery after they leave the hospital, current rehabilitation programs typically provide only static written instructions and lack the ability to keep them engaged with the program. In this design science research paper, we present an mHealth artifact that builds on behavior change theory to increase stroke survivors' engagement in rehabilitation programs. We employed a co-design methodology to identify design requirements for the stroke rehabilitation mHealth artifact, addressing stroke survivors' needs and incorporating expertise of healthcare providers. Guided by these requirements, we developed design principles for the artifact pertaining to visual assets that are essential in immersing users in the design. We carried out a two-stage development process by having workshops and interviews with experts. Following this, a prototype was developed and evaluated in a series of workshops with multiple stakeholders.

Allan, V., et al. (2018). "The use of behaviour change theories and techniques in research-informed coach development programmes: a systematic review." *International Review of Sport and Exercise Psychology* 11(1): 47-69.

Coaches are often targeted in interventions to enhance athlete outcomes. While coach development programmes (CDPs) may change coach behaviour, little is known about theories and techniques used to design and implement effective programmes. Examining the use of behaviour change theories and techniques (BCTs) can aid in understanding and improving CDPs. Adhering to PRISMA guidelines, the purpose of this research was to conduct a systematic review examining the use of behaviour change theories and BCTs in CDPs. In total, 29 CDPs met the inclusion criteria. Data were extracted using the Theory Coding Scheme and Behaviour Change Technique Taxonomy (v1). Only six CDPs were explicitly based on behaviour change theory, and no single theory or combination of theories was used more than once. The number of BCTs used per CDP ranged between one and nine. There was no significant difference between theory-based and non-theory-based CDPs concerning the number of BCTs used per CDP. Theoretical frameworks and techniques that have the potential to effectively change coach behaviours are not being used frequently or consistently in the design and implementation of CDPs. To design CDPs that change coach behaviours and facilitate positive outcomes, further research examining theoretical influences on coach behaviours is needed.

Allen, H., et al. (2019). "Anti-doping Policy, Therapeutic Use Exemption and Medication Use in Athletes with Asthma: A Narrative Review and Critical Appraisal of Current Regulations." *Sports Medicine* 49(5): 659-668.

Asthma is prevalent in athletes and when untreated can impact both respiratory health and sports performance. Pharmacological inhaler therapy currently forms the mainstay of treatment; however, for elite athletes competing under the constraints of the World Anti-Doping Code (Code), a number of established therapies are prohibited both in and/or out of competition and/or have a maximum permitted dose. The recent release of medical information detailing inhaler therapy in high-profile athletes has brought the legitimacy and utilisation of asthma medication in this setting into sharp focus. This narrative review critically appraises recent changes to anti-doping policy and the Code in the context of asthma management, evaluates the impact of asthma medication use on sports performance and employs a theory of behaviour to examine perceived determinants and barriers to athletes adhering to the anti-doping rules of sport when applied to asthma.

Allen, K. D., et al. (2016). "Osteoarthritis: Models for appropriate care across the disease continuum." *Best Practice & Research in Clinical Rheumatology* 30(3): 503-535.

Osteoarthritis (OA) is a leading cause of pain and disability worldwide. Despite the existence of evidence-based treatments and guidelines, substantial gaps remain in the quality of OA management. There is underutilization of behavioral and rehabilitative strategies to prevent and treat OA as well as a lack of processes to tailor treatment selection according to patient characteristics and preferences. There are emerging efforts in multiple countries to implement models of OA care, particularly focused on improving nonsurgical management. Although these programs vary in content and setting, key lessons learned include the importance of support from all stakeholders, consistent program delivery and tools, a coherent team to run the program, and a defined plan for outcome assessment. Efforts are still needed to develop, deliver, and evaluate models of care across the spectrum of OA, from prevention through end-stage disease, in order to improve care for this highly prevalent global condition. Published by Elsevier Ltd.

Alley, S. J., et al. (2019). "Should I sit or stand: likelihood of adherence to messages about reducing sitting time." *Bmc Public Health* 19.

Background: High population levels of sitting is contributing to high rates of chronic health problems. Therefore, the aim of this study was to identify the sitting time messages with the greatest potential to reduce sitting behaviour, as well as identify how this may differ according to demographic, behavioural and psychosocial characteristics. Methods: Australian adults (N = 1460) were asked to report the likelihood that they would adhere to seven messages promoting reduced sitting time and two messages promoting increased physical activity (from 'not at all likely' to 'very likely'). Ordinal regression models were used to compare messages on the likelihood of adherence and whether likelihood of adherence differed as a function of demographic, psychosocial and behavioural characteristics. Results: Likelihood of adherence was highest for the messages, 'Stand and take a break from sitting as frequently as you can' (83% respectively) and 'Avoid sitting for more than 10 hours during the entire day' (82%) and was significantly lower for the message, 'Sit as little as possible on all days of the week' (46%) compared to all other messages. Conclusions: To increase likelihood of adherence messages should be specific, achievable and promote healthy alternatives to sitting (e.g. standing). Messages promoting standing as a healthy alternative to sitting may be more likely to engage people with high sitting behaviour and messages promoting physical activity may be more likely to engage males and retired adults.

Allison, D. G., et al. (2017). "Antibiotic resistance awareness: a public engagement approach for all pharmacists." *International Journal of Pharmacy Practice* 25(1): 93-96.

ObjectivesThe main objective of this study was to promote knowledge about antibiotic resistance development and good stewardship principles amongst the general population through pharmacy student-led public engagement workshops in high schools. MethodsStructured questionnaires, based on the Key Stage 4 curriculum were initially used to assess awareness and knowledge of antibiotic resistance issues amongst year 10 and 11 (GCSE stage) high school pupils. A Prezi-style presentation () was subsequently developed to deliver a positive message that the young learners could share with friends and family. Key FindingsMisconceptions still exist regarding the correct and appropriate use of antibiotics. The person-person approach adopted by this study was well received, key antibiotic stewardship messages being delivered to the general population through either educational surveys or hands-on workshops. ConclusionsIt is widely acknowledged that antibiotic resistance is one of the biggest threats facing society today. As healthcare professionals, pharmacists in all sectors have a crucial role to play in educating the public about antibiotics and how to use them effectively. This article describes the different ways by which all pharmacists can help educate the public on key issues, with particular emphasis on the next generation.

Allison, K., et al. (2019). "In Theory, Yes; in Practice, Uncertain: A Qualitative Study Exploring Physical Therapists' Attitudes Toward Their Roles in Weight Management for People With Knee Osteoarthritis." *Physical Therapy* 99(5): 601-611.

Background Physical therapists are at the frontline of treatment for knee osteoarthritis (OA). International guidelines recommend weight loss for individuals with knee OA who are overweight, and research indicates that patients believe it is appropriate for physical therapists to address weight. Objectives The objective was to explore physical therapists' attitudes about their role in weight management for people with OA. Design This was a qualitative semistructured telephone interview study. Methods Participants included 13 purposively sampled physical therapists who had treated at least 1 patient with knee OA within the past 12 months. Each participated in a telephone interview exploring their perceptions and attitudes toward the role of physical therapists in providing weight management support for people with knee OA. Data were analyzed using a thematic approach. Results Three main themes were identified, which highlighted that physical therapists: (1) believe they have a role in facilitating weight loss for people with knee OA; (2) are uncertain how to integrate weight loss into their management; and (3) are conscious of the psychosocial complexities and the need to tread cautiously around weight management. Conclusions Physical therapists are aware of the importance of weight loss in the management of knee OA, and believe weight management falls within their role and responsibilities; however, they do not feel equipped to fulfill this role. They also acknowledge the weight management conversation as potentially sensitive. This study highlights the need for training opportunities to develop physical therapists' skills and confidence in weight management for people with knee OA who are overweight, including consideration of the potential harms and benefits of this aspect of care.

Alqubaisi, M., et al. (2016). "Exploring behavioural determinants relating to health professional reporting of medication errors: a qualitative study using the Theoretical Domains Framework." *European Journal of Clinical Pharmacology* 72(7): 887-895.

Effective and efficient medication reporting processes are essential in promoting patient safety. Few qualitative studies have explored reporting of medication errors by health professionals, and none have made reference to behavioural theories. The objective was to describe and understand the behavioural determinants of health professional

reporting of medication errors in the United Arab Emirates (UAE). This was a qualitative study comprising face-to-face, semi-structured interviews within three major medical/surgical hospitals of Abu Dhabi, the UAE. Health professionals were sampled purposively in strata of profession and years of experience. The semi-structured interview schedule focused on behavioural determinants around medication error reporting, facilitators, barriers and experiences. The Theoretical Domains Framework (TDF; a framework of theories of behaviour change) was used as a coding framework. Ethical approval was obtained from a UK university and all participating hospital ethics committees. Data saturation was achieved after interviewing ten nurses, ten pharmacists and nine physicians. Whilst it appeared that patient safety and organisational improvement goals and intentions were behavioural determinants which facilitated reporting, there were key determinants which deterred reporting. These included the beliefs of the consequences of reporting (lack of any feedback following reporting and impacting professional reputation, relationships and career progression), emotions (fear and worry) and issues related to the environmental context (time taken to report). These key behavioural determinants which negatively impact error reporting can facilitate the development of an intervention, centring on organisational safety and reporting culture, to enhance reporting effectiveness and efficiency.

Alqubaisi, M., et al. (2016). "Quantifying behavioural determinants relating to health professional reporting of medication errors: a cross-sectional survey using the Theoretical Domains Framework." *European Journal of Clinical Pharmacology* 72(11): 1401-1411.

The aims of this study were to quantify the behavioural determinants of health professional reporting of medication errors in the United Arab Emirates (UAE) and to explore any differences between respondents. A cross-sectional survey of patient-facing doctors, nurses and pharmacists within three major hospitals of Abu Dhabi, the UAE. An online questionnaire was developed based on the Theoretical Domains Framework (TDF, a framework of behaviour change theories). Principal component analysis (PCA) was used to identify components and internal reliability determined. Ethical approval was obtained from a UK university and all hospital ethics committees. Two hundred and ninety-four responses were received. Questionnaire items clustered into six components of knowledge and skills, feedback and support, action and impact, motivation, effort and emotions. Respondents generally gave positive responses for knowledge and skills, feedback and support and action and impact components. Responses were more neutral for the motivation and effort components. In terms of emotions, the component with the most negative scores, there were significant differences in terms of years registered as health professional (those registered longest most positive, $p = 0.002$) and age (older most positive, $p < 0.001$) with no differences for gender and health profession. Emotional-related issues are the dominant barrier to reporting and are common to all professions. There is a need to develop, test and implement an intervention to impact health professionals' emotions. Such an intervention should focus on evidence-based behaviour change techniques of reducing negative emotions, focusing on emotional consequences and providing social support. *aEuro cent* This research used the Theoretical Domains Framework to quantify the behavioural determinants of health professional reporting of medication errors. *aEuro cent* Questionnaire items relating to emotions surrounding reporting generated the most negative responses with significant differences in terms of years registered as health professional (those registered longest most positive) and age (older most positive) with no differences for gender and health profession. *aEuro cent* Interventions based on behaviour change techniques mapped to emotions should be prioritised for development.

Ancusa, V. M. and C. M. Dragoie (2017). "Cursor Movement - a Valuable Indicator in Intelligent System Design." *Brain-Broad Research in Artificial Intelligence and Neuroscience* 8(2): 45-55.

Systems that react to emotional information allow for better satisfaction of the user's needs, stated or otherwise. Special support should be built-in, in order to read and measure the time-variable user's affective state. This paper presents how cursor movement can accurately measure two basic emotional states and introduces a way to measure the emotional flow graph of an application, which allows for better user design.

Andersen, C. A., et al. (2019). "Danish general practitioners have found their own way of using point-of-care ultrasonography in primary care: a qualitative study." *Bmc Family Practice* 20.

BackgroundGeneral practitioners increasingly use point-of-care ultrasonography despite a lack of evidence-based guidelines for their appropriate use in primary care. Little is known about the integration of ultrasonography in general practice consultations and the impact of its use on patient care. The purpose of this study was to explore general practitioners' experiences of using ultrasonography in the primary care setting.MethodsAdopting an explorative phenomenological approach, we performed semi-structured interviews with general practitioners who used ultrasonography in their daily work. Thirteen general practitioners were recruited stepwise, aiming for maximum variation in background characteristics. Interviews were conducted at the general practitioner's own clinic. Transcription and systematic text condensation analysis began immediately after conducting each interview.ResultsThe general practitioners described using ultrasonography for both selected focused examinations and for explorative examinations.

The two types of examinations were described differently for each of the following emerging themes: motivation for using ultrasonography, ultrasonography as part of the consultation, selection of an ultrasound catalogue, and consequences of the general practitioner's ultrasound examination. The general practitioners had chosen and integrated their own individual ultrasound catalogue of focused examinations as a natural part of their consultations. The focused examinations were used to answer simple clinical questions and they had a significant impact on the patients' diagnoses, clinical pathways and treatments. The general practitioners considered their own catalogue of focused examinations as their comfort zone. However, they also performed explorative ultrasound examinations outside their catalogue. These scans were performed to train, gain or maintain ultrasound competences or as explorative examinations driven by curiosity. The explorative ultrasound examinations rarely had an impact on patient care. **Conclusions** This study describes how general practitioners found their own way of using ultrasonography in general practice and selected a personal catalogue of ultrasound examinations that was applicable, relevant and meaningful for their daily clinical routines. This study may serve to inform implementation strategies in general practice by offering insights into central aspects that drive general practitioners' behaviours.

Andersen, P., et al. (2019). "Patients' experiences of physical activity on prescription with access to counsellors in routine care: a qualitative study in Sweden." *Bmc Public Health* 19.

Background Physical activity on prescription (PAP) has been implemented in several countries, including Sweden, to support patients who might benefit from increased physical activity. This study explores the experiences of recipients of PAP in routine health care in Sweden that offers the recipients support from physical activity counsellors. The aim was to explore influences on engagement in physical activity by PAP recipients' from a long-term perspective. **Methods** We conducted individual semi-structured interviews using a topic guide with a purposively selected sample of 13 adult PAP recipients 1.5 to 2.5 years after PAP. Interviews were recorded, transcribed verbatim and analysed through inductive and deductive content analysis. The questions were informed by Capability-Opportunity-Motivation-Behaviour (COM-B), which was also used as a framework to analyse the data by means of categorizing the factors (influences on the behaviour). **Results** Ten factors (i.e. sub-categories) that influenced the participants' engagement in physical activity were identified. PAP recipients' capability to engage in physical activity was associated with adapting the PAP to the individual's physical capacity and taking into account the individual's previous experiences of physical activity. PAP recipients' opportunity to engage in physical activity was related to receiving a prescription, receiving professional counselling and follow-up from a physical activity counsellor, collaboration between prescriber and counsellor, having access to appropriate activities, having a balanced life situation and having support from someone who encouraged continued physical activity. PAP recipients' motivation to engage in physical activity was associated with the desire to improve his or her health condition and finding activities that encouraged continuation. **Conclusions** PAP recipients' engagement in physical activity was influenced by their capability, opportunity and motivation to undertake this behaviour. Numerous extraneous factors influence capability and motivation. Physical activity counsellors were found to be important for sustained activity because they use an individual approach to counselling and flexible follow-up adapted to each individual's need of support.

Anderson, A. S., et al. (2015). "Awareness of Lifestyle and Colorectal Cancer Risk: Findings from the BeWEL Study." *Biomed Research International*.

It is estimated that 47% of colorectal cancers (CRC) could be prevented by appropriate lifestyles. This study aimed to identify awareness of the causes of CRC in patients who had been diagnosed with a colorectal adenoma through the Scottish Bowel Screening Programme and subsequently enrolled in an intervention trial (using diet and physical activity education and behavioural change techniques) (BeWEL). At baseline and 12-month follow-up, participants answered an open-ended question on factors influencing CRC development. Of the 329 participants at baseline, 40 (12%) reported that they did not know any risk factors and 36 (11%) failed to identify specific factors related to diet and activity. From a potential knowledge score of 1 to 6, the mean score was 1.5 (SD 1.1, range 0 to 5) with no difference between intervention and control groups. At follow-up, the intervention group had a significantly greater knowledge score and better weight loss, diet, and physical activity measures than the control group. Awareness of relevant lifestyle factors for CRC remains low in people at increased risk of the disease. Opportunities within routine NHS screening to aid the capability (including knowledge of risk factors) of individuals to make behavioural changes to reduce CRC risk deserve exploration.

Anderson, A. S. and A. M. Craigie (2013). *Understanding Eating Behaviour and Lifestyle Issues in Women - Implications for Obesity Development and Prevention*.

Anderson, A. S., et al. (2018). "Randomised controlled trial to assess the impact of a lifestyle intervention (ActWELL) in women invited to NHS breast screening." *Bmj Open* 8(11).

Introduction In Scotland, the incidence of breast cancer is predicted to rise significantly in the next few decades and while there are measures to support reductions in morbidity and mortality, the breast cancer community is currently exploring preventative opportunities including supporting weight management programmes in postmenopausal women. This study aims to assess the effectiveness and cost-effectiveness of a theory-based, community delivered, minimal contact, weight management (diet, physical activity and behaviour change techniques) programme (ActWELL) in women with a body mass index (BMI) >25kg/m² attending routine breast cancer screening appointments. Methods and analysis The study will be a four-centre, 1:1 parallel group randomised controlled trial of a 12-month weight management intervention initiated in breast cancer screening centres, delivered by trained Breast Cancer Now lifestyle coaches in community settings. The intervention programme involves two intervention meetings with coaches plus (up to) nine telephone contacts over 12 months. The programme will focus on personalised diet (including alcoholic and sugary drinks) and physical activity habits. Behaviour change techniques include self-monitoring, goal setting, implementation intentions, action and coping plans. The study has a sample size of 414 women with a BMI >25kg/m² attending routine National Health Service breast cancer screening appointments. Measures will be taken at baseline, 12 weeks and at 12-month follow-up, complemented by qualitative interviews exploring perceived acceptability and impact on habitual behaviours. The two co-primary outcomes are mean change in measured body weight and change in physical activity between groups to 12 months. Secondary outcomes are changes in eating habits, alcohol intake, sedentary time, quality of life, waist circumference, lipid, haemoglobin A1c and insulin profiles, blood pressure and cost-effectiveness of the intervention. Ethics and dissemination The protocol has been approved by East of Scotland Research Ethics Committee (17/ES/0073). All participants provide written informed consent. Dissemination will be through peer-reviewed publication and conference presentations. Trial registration number ISRCTN11057518; Pre-results.

Anderson, J. E. (2015). "Complex interventions and their implications for systematic reviews: Commentary on Petticrew et al. (2015)." *International Journal of Nursing Studies* 52(7): 1209-1210.

Andrew, N. E., et al. (2019). "Hospital organizational context and delivery of evidence-based stroke care: a cross-sectional study." *Implementation Science* 14.

Background Organizational context is one factor influencing the translation of evidence into practice, but data pertaining to patients with acute stroke are limited. We aimed to determine the associations of organizational context in relation to four important evidence-based stroke care processes. Methods This was a mixed methods cross-sectional study. Among 19 hospitals in Queensland, Australia, a survey was conducted of the perceptions of stroke clinicians about their work using the Alberta Context Tool (ACT), a validated measure covering 10 concepts of organizational context, and with additional stroke-specific contextual questions. These data were linked to the Australian Stroke Clinical Registry (AuSCR) to determine the relationship with receipt of evidence-based acute stroke care (acute stroke unit admission, use of thrombolysis for those with acute ischemic stroke, receipt of a written care plan on discharge, and prescription of antihypertensive medications on discharge) using quantile regression. Exploratory cluster analysis was used to categorize hospitals into high and low context groups based on all of the 10 ACT concepts. Differences in adherence to care processes between the two groups were examined. Results A total of 215 clinicians completed the survey (50% nurses, 37% allied health staff, 10% medical practitioners), with 81% being in their current role for at least 1 year. There was good reliability (0.83) within the cohort to allow pooling of professional groups. Greater ACT scores, especially for social capital (9.00, 95% confidence interval [CI] 4.86 to 13.14) and culture (7.33, 95% CI 2.05 to 12.62), were associated with more patients receiving stroke unit care. There was no correlation between ACT concepts and other care processes. Working within higher compared to lower context environments was associated with greater proportions of patients receiving stroke unit care (88.5% vs. 69.0%) and being prescribed antihypertensive medication at discharge (62.5% vs. 52.0%). Staff from higher context hospitals were more likely to value medical and/or nursing leadership and stroke care protocols. Conclusions Overall organizational context, and in particular aspects of culture and social capital, are associated with the delivery of some components of evidence-based stroke care, offering insights into potential pathways for improving the implementation of proven therapies.

Anstey, K. J., et al. (2013). "A 12-week multidomain intervention versus active control to reduce risk of Alzheimer's disease: study protocol for a randomized controlled trial." *Trials* 14.

Background: Disappointing results from clinical trials of disease-modifying interventions for Alzheimer's dementia (AD), along with reliable identification of modifiable risk factors in mid life from epidemiological studies, have contributed to calls to invest in risk-reduction interventions. It is also well known that AD-related pathological processes begin more than a decade before the development of clinical signs. These observations suggest that lifestyle interventions might be most effective when targeting non-symptomatic adults at risk of AD. To date, however, the few dementia risk-reduction programs available have targeted individual risk factors and/or were restricted to clinical settings. The current study describes the development of an evidence-based, theoretically-driven multidomain

intervention to reduce AD risk in adults at risk. Method: The design of Body Brain Life (BBL) is a randomized controlled trial (RCT) to evaluate a 12-week online AD risk-reduction intervention. Eligible participants with several modifiable risk factors on the Australian National University (ANU) AD Risk Index (ANU-ADRI) are randomly allocated to an online only group, an online and face-to-face group, or an active control group. We aim to recruit 180 participants, to undergo a comprehensive cognitive and physical assessment at baseline, post-intervention, and 6-month follow-up assessment. The intervention comprises seven online modules (dementia literacy, risk factor education, engagement in physical, social, and cognitive lifestyles, nutrition, and health monitoring) designed using contemporary models of health behavior change. Discussion: The BBL program is a novel online intervention to reduce the risk of AD in middle-aged adults at risk. The trial is currently under way. It is hypothesized that participants in the intervention arms will make lifestyle changes in several domains, and that this will lead to a reduction in their AD risk profile. We also expect to show that health behavior change is underpinned by changes in psychological determinants of behavior. If successful, the findings will contribute to the development of further dementia risk reduction interventions, and thus contribute to the urgent need to lower dementia risk factors in the population to alter future projections of disease prevalence. Longer follow-up of BBL participants and replications using large samples are required to examine whether reduction in AD risk factors will be associated with reduced prevalence.

Appleby, B. E. (2019). "Implementing guideline-checklists: Evaluating health care providers intentional behaviour using an extended model of the theory of planned behaviour." *Journal of Evaluation in Clinical Practice* 25(4): 664-675.

Objectives Internationally, clinical guidelines as checklists are increasingly used in acute ward practice to standardize the delivery and raise the quality of care on acute hospital wards. However, when guideline-checklists are implemented repeatedly, health providers' intentions to carry out this type of behaviour are not well understood. Therefore, the objective of this study was to evaluate nurses' and health care assistants' (HCAs) intentions to implement a "care round checklist"; a guideline-intervention repeated hourly on hospital wards. Furthermore, an extended Theory of Planned Behaviour (TPB) model's usefulness in explaining this type of behaviour was also evaluated. Methods A theory-informed questionnaire, guided by the TPB, habit, and clinical context variables, was developed to measure the guideline-checklist behaviour. Quantitative questionnaire data were analysed using descriptive and inferential tests to establish differences in nurses' and HCAs' intentions and the predictive value of the model. Results A sample of 270 nurses and HCAs returned questionnaires from 24 wards in a major hospital in England. The extended TPB model explained 20% of nurses and 24% of HCAs reported intentions to implement a care round checklist, a modest proportion of intent. Attitude and perceived control best predicted nurses' intentions, and attitude and practice habit HCAs' intentions. TPB belief variables helped explain why nurses and HCAs intentions were different. Conclusions Statistically, the extended TPB model highlighted that nurses and HCAs intentions to implement this type of guideline are predicted by different variables. This implied professional "role" as an important variable in explaining differences in intentions, which should be evaluated and integrated into the future design of this type of checklist. Further variables could be added to explain and learn more about intentional thinking for this type of behaviour and should help to develop a theoretical understanding of intentions underpinning this type of behaviour and ultimately improve patient care.

Aranda, S. and C. L. Paul (2016). "Rethinking system change in cancer." *Asia-Pacific Journal of Clinical Oncology* 12(1): 10-12.

Araujo-Soares, V., et al. (2019). "Developing Behavior Change Interventions for Self-Management in Chronic Illness An Integrative Overview." *European Psychologist* 24(1): 7-25.

More people than ever are Living Longer with chronic conditions such as obesity, type 2 diabetes, and heart disease. Behavior change for effective self-management can improve health outcomes and quality of life in people living with such chronic illnesses. The science of developing behavior change interventions with impact for patients aims to optimize the reach, effectiveness, adoption, implementation, and maintenance of interventions and rigorous evaluation of outcomes and processes of behavior change. The development of new services and technologies offers opportunities to enhance the scope of delivery of interventions to support behavior change and self-management at scale. Herein, we review key contemporary approaches to intervention development, provide a critical overview, and integrate these approaches into a pragmatic, user-friendly framework to rigorously guide decision-making in behavior change intervention development. Moreover, we highlight novel emerging methods for rapid and agile intervention development. On-going progress in the science of intervention development is needed to remain in step with such new developments and to continue to leverage behavioral science's capacity to contribute to optimizing interventions, modify behavior, and facilitate self-management in individuals living with chronic illness.

Arden, M. A., et al. (2019). "Adherence to medication in adults with Cystic Fibrosis: An investigation using objective adherence data and the Theoretical Domains Framework." *British Journal of Health Psychology* 24(2): 357-380.

Objectives Adherence to nebulizer treatment in adults with Cystic Fibrosis (CF) is poor, and interventions are needed. This research aimed to identify the factors affecting nebulizer adherence using the Theoretical Domains Framework (TDF) and to compare these for participants with different levels of adherence. **Design** Data-prompted interviews using the TDF. **Methods** Eighteen semi-structured interviews were conducted with adults with CF during which objectively measured adherence data were discussed. Framework analysis was used to code the data into TDF domains, and inductive qualitative content analysis was used to code different beliefs and experiences. Aspects of the TDF that differed between participants with different adherence levels were explored. **Results** Factors influencing adherence to treatment included all 14 domains of the TDF, 10 of which appeared to vary by adherence level: Skills; Memory and decision-making; and Behavioural regulation; Environmental context and resources; Social influences; Beliefs about consequences; Beliefs about capability; Reinforcement; Social role and identify; Intentions; Optimism; and Emotions. **Conclusions** This study is the first to use objectively measured adherence data in a data-prompted interview using the TDF framework to systematically assess the full range of factors potentially influencing adherence. The results highlighted that interventions need to consider issues of capability, opportunity, and motivation. Interventions that challenge dysfunctional beliefs about adherence and which support the development of routines or habits and problem-solving may be particularly useful for adults with CF.

Armstrong-Hough, M., et al. (2018). "Give Me Some Time": Facilitators of and Barriers to Uptake of Home-Based HIV Testing During Household Contact Investigation for Tuberculosis in Kampala, Uganda." *J AIDS-Journal of Acquired Immune Deficiency Syndromes* 77(4): 400-404.

Background: Integrating home-based HIV counseling and testing (HCT) with tuberculosis (TB) evaluation could improve the uptake of HIV testing among household contacts of patients with active TB. We sought to identify the facilitators of and barriers to HCT during household contact investigation for TB in Kampala, Uganda. **Methods:** We nested semi-structured interviews with 28 household contacts who were offered home-based HCT in a household-randomized trial of home-based strategies for TB contact investigation. Respondents reflected on their experiences of the home visit, the social context of the household, and their decision to accept or decline HIV testing. We used content analysis to identify and evaluate facilitators of and barriers to testing, then categorized the emergent themes using the Capability, Opportunity, Motivation, and Behavior (COM-B) model. **Results:** Facilitators included a preexisting desire to confirm HIV status or to show support for the index TB patient; a perception that home-based services are convenient; and positive perceptions of lay health workers. Key barriers included fear of results and feeling psychologically unprepared to receive results. The social influence of other household members operated as both a facilitator and a barrier. **Conclusions:** Preexisting motivation, psychological readiness to test, and the social context of the household are major contributors to the decision to test for HIV at home. Uptake might be improved by providing normalizing information about HCT before the visit, by offering a second HCT opportunity, by offering self-tests with follow-up counseling, or by introducing HCT using "opt-out" language.

Arnautovska, U., et al. (2017). "A longitudinal investigation of older adults' physical activity: Testing an integrated dual-process model." *Psychology & Health* 32(2): 166-185.

Objective: To assess the effects of conscious and non-conscious processes for prediction of older adults' physical activity (PA), we tested a dual-process model that integrated motivational (behavioural intention) and volitional (action planning and coping planning) processes with non-conscious, automatic processes (habit). **Method:** Participants (N=215) comprised community-dwelling older adults (M=73.8years). A longitudinal design was adopted to investigate direct and indirect effects of intentions, habit strength (Time 1), and action planning and coping planning (Time 2) on PA behaviour (Time 3). Structural equation modelling was used to evaluate the model. **Results:** The model provided a good fit to the data, accounting for 44% of the variance in PA behaviour at Time 3. PA was predicted by intentions, action planning, and habit strength, with action planning mediating the intention-behaviour relationship. An effect of sex was also found where males used fewer planning strategies and engaged in more PA than females. **Conclusions:** By investigating an integration of conscious and non-conscious processes, this study provides a novel understanding of older adults' PA. Interventions aiming to promote PA behaviour of older adults should target the combination of psychological processes.

Arnott, B., et al. (2014). "Efficacy of behavioural interventions for transport behaviour change: systematic review, meta-analysis and intervention coding." *International Journal of Behavioral Nutrition and Physical Activity* 11.

Background: Reducing reliance on motorised transport and increasing use of more physically active modes of travel may offer an opportunity to address physical inactivity. This review evaluates the evidence for the effects of behavioural interventions to reduce car use for journeys made by adults and codes intervention development and content. **Methods:** The review follows the procedure stated in the registration protocol published in the PROSPERO database (registration number CRD42011001797). Controlled studies evaluating behavioural interventions to reduce car use compared with no interventions or alternative interventions on outcome measures of transport behaviours taken in

adult participants are included in this review. Searches were conducted on all records in Applied Social Sciences Index and Abstracts (ASSIA), Ovid Embase, Ovid Medline, Ovid PsycInfo, Scopus, Sociological Abstracts, Transportation Research Information Service (TRIS), Transportation Research International Documentation (TRID), and Web of Science databases. Peer reviewed publications in English language meeting the inclusion criteria are eligible. Methodological quality is assessed using the Cochrane Risk of Bias Tool. Interventions are categorised in terms of behavioural frameworks, theories and techniques. Results: 15 full text articles are included, representing 13 unique studies, with 4895 participants and 27 intervention arms. Risk of bias across the review is appraised as considerable due to the unclear methodological quality of individual studies. Heterogeneity of included studies is considerable. Meta-analyses reveal no significant effect on reduction of frequency of car use or on increasing the proportion of journeys by alternative, more active modes of transport. There is insufficient data relating to alternative outcomes such as distance and duration which may have important health implications. Interventions were top-down but could not be described as theory-based. Intervention efficacy was associated with the use of a combination of information provision and behavioural regulation techniques. There was a lack of consideration of opportunity for change and behaviour in context. Conclusions: There is no evidence for the efficacy of existing behavioural interventions to reduce car trips included in this review. The evidence for efficacy of behavioural interventions to decrease distance and duration of car journeys is limited and inconclusive. Overall the evidence is highly heterogeneous and is at considerable risk of bias. Future research should investigate alternative behavioural interventions in high quality, controlled studies informed by existing evidence, theory, and views of potential users. Future intervention studies should increase scientific rigour, include objective outcome measures, and incorporate thorough evaluations as standard.

Aseyo, R. E., et al. (2018). "Realities and experiences of community health volunteers as agents for behaviour change: evidence from an informal urban settlement in Kisumu, Kenya." *Human Resources for Health* 16.

Background: Community health workers play an important role in health service delivery and are increasingly involved in behaviour change interventions, including for hygiene-related behaviour change. However, their role and capacity to deliver behaviour change interventions, particularly in high-density urban settlements, remain under-researched. This study examines the behaviour change-related activities of community health volunteers (CHVs)-community health workers affiliated with the Kenyan Ministry of Health-in a peri-urban settlement in Kenya, in order to assess their capabilities, opportunities to work effectively, and sources of motivation. Methods: This mixed-methods study included a census of 16 CHVs who work in the study area. All CHVs participated in structured observations of their daily duties, structured questionnaires, in-depth interviews, and two focus group discussions. Structured data were analysed descriptively. Thematic content analysis was followed for qualitative data. Results were synthesized and interpreted using the capability, opportunity, motivation for behaviour change framework, COM-B. Results: In addition to their responsibilities with the Ministry of Health, CHVs partnered with a range of non-governmental organizations engaged in health and development programming, often receiving small stipends from these organizations. CHVs reported employing a limited number of behaviour change techniques when interacting with community members at the household level. Capability: While supervision and support from the MOH was robust, CHV training was inconsistent and inadequate with regard to behaviour change and CHVs often lacked material resources necessary for their work. Opportunity: CHVs spent very little time with the households in their allocated catchment area. The number of households contacted per day was insufficient to reach all assigned households within a given month as required and the brief time spent with households limited the quality of engagement. Motivation: Lack of compensation was noted as a demotivating factor for CHVs. This was compounded by the challenging social environment and CHVs' low motivation to encourage behaviour change in local communities. Conclusions: In a complex urban environment, CHVs faced challenges that limited their capacity to be involved in behaviour change interventions. More resources, better coordination, and additional training in modern behaviour change approaches are needed to ensure their optimal performance in implementing health programmes.

Ashiru-Oredope, D. and S. Hopkins (2015). "Antimicrobial resistance: moving from professional engagement to public action." *Journal of Antimicrobial Chemotherapy* 70(11): 2927-2930.

Antimicrobial-resistant infections claim ≥ 700000 lives each year globally. It is therefore important that both healthcare professionals and the public know the threat antimicrobial resistance poses and the individual actions they can take to combat antimicrobial resistance. Antibiotic awareness campaigns in England using posters or leaflets have had little or no impact on knowledge, behaviour or prescription rates. Centrally coordinated, multimodal campaigns in two European countries (ongoing for several years and including print and mass media, web site and guidelines, as well as academic detailing and individual feedback to prescribers) have led to reductions in antibiotic use. To change behaviour and reduce antibiotic use in England, a coordinated and comprehensive interdisciplinary and multifaceted (multimodal) approach using behavioural science and targeted at specific groups (both professional and public) is

required. Such campaigns should have an integrated evaluation plan using a combination of formative, process and summative measures from the outset to completion of a campaign.

Asimakopoulou, K. and J. T. Newton (2015). "The contributions of behaviour change science towards dental public health practice: a new paradigm." *Community Dentistry and Oral Epidemiology* 43(1): 2-8.

Conventional behavioural models, such as social cognition models, to improve oral health have been proposed for a long time but have failed to consistently explain reliable amounts of variability in human behaviours relevant to oral health. This paper introduces current work from the behavioural sciences aiming to better understand the process through which behaviour change may take place. Given the shortcomings seen so far in attempts to explain behaviour through traditional models it is proposed that a new approach is adopted. This commentary outlines this new approach, grounded in current work by mainstream behaviour change experts. We propose that attempts to use unreliable theoretical models to explain and predict oral health behaviour should now be replaced by work following this new paradigm.

Atkins, L., et al. (2016). "Factors influencing variation in physician adenoma detection rates: a theory-based approach for performance improvement." *Gastrointestinal Endoscopy* 83(3): 617-U406.

Background and Aims: Interventions to improve physician adenoma detection rates for colonoscopy have generally not been successful, and there are little data on the factors contributing to variation that may be appropriate targets for intervention. We sought to identify factors that may influence variation in detection rates by using theory-based tools for understanding behavior. Methods: We separately studied gastroenterologists and endoscopy nurses at 3 Kaiser Permanente Northern California medical centers to identify potentially modifiable factors relevant to physician adenoma detection rate variability by using structured group interviews (focus groups) and theory-based tools for understanding behavior and eliciting behavior change: the Capability, Opportunity, and Motivation behavior model; the Theoretical Domains Framework; and the Behavior Change Wheel. Results: Nine factors potentially associated with adenoma detection rate variability were identified, including 6 related to capability (uncertainty about which types of polyps to remove, style of endoscopy team leadership, compromised ability to focus during an examination due to distractions, examination technique during withdrawal, difficulty detecting certain types of adenomas, and examiner fatigue and pain), 2 related to opportunity (perceived pressure due to the number of examinations expected per shift and social pressure to finish examinations before scheduled breaks or the end of a shift), and 1 related to motivation (valuing a meticulous examination as the top priority). Examples of potential intervention strategies are provided. Conclusions: By using theory-based tools, this study identified several novel and potentially modifiable factors relating to capability, opportunity, and motivation that may contribute to adenoma detection rate variability and be appropriate targets for future intervention trials.

Atkins, L. and S. Michie (2015). "Designing interventions to change eating behaviours." *Proceedings of the Nutrition Society* 74(2): 164-170.

Understanding and changing eating behaviours are central to the work of Nutrition Society members working in both research and applied settings. The present paper describes a recently published resource to guide the design of interventions to change behaviour, *The Behaviour Change Wheel: A Guide to Designing Interventions* (BCW Guide). This is a practical guide to intervention design that brings together recently-developed theory-based tools in behavioural science into a coherent step-by-step design process. It is based on the BCW, a synthesis of nineteen frameworks of behaviour change found in the research literature. The BCW has at its core a model of behaviour known as 'capability', 'opportunity', 'motivation' and 'behaviour'. The model recognises that behaviour is part of an interacting system involving all these components. The BCW identifies different intervention options that can be applied to changing each of the components and policies that can be adopted to deliver those intervention options. The book shows how the BCW links to theory-based frameworks to understand behaviour such as the Theoretical Domains Framework and the recently developed Behaviour Change Technique Taxonomy v1 for specifying intervention content. In essence, it shows how to link what is understood about a given behaviour to types of intervention likely to be effective and then translate this into a locally relevant intervention. In addition, the present paper sets out some principles of intervention design.

Atkinson, J. A., et al. (2018). "Harnessing advances in computer simulation to inform policy and planning to reduce alcohol-related harms." *International Journal of Public Health* 63(4): 537-546.

Alcohol misuse is a complex systemic problem. The aim of this study was to explore the feasibility of using a transparent and participatory agent-based modelling approach to develop a robust decision support tool to test alcohol policy scenarios before they are implemented in the real world. A consortium of Australia's leading alcohol experts was engaged to collaboratively develop an agent-based model of alcohol consumption behaviour and related harms. As a case study, four policy scenarios were examined. A 19.5 +/- 2.5% reduction in acute alcohol-related harms was estimated

with the implementation of a 3 a.m. licensed venue closing time plus 1 a.m. lockout; and a 9 +/- 2.6% reduction in incidence was estimated with expansion of treatment services to reach 20% of heavy drinkers. Combining the two scenarios produced a 33.3 +/- 2.7% reduction in the incidence of acute alcohol-related harms, suggesting a synergistic effect. This study demonstrates the feasibility of participatory development of a contextually relevant computer simulation model of alcohol-related harms and highlights the value of the approach in identifying potential policy responses that best leverage limited resources.

Aumann, I., et al. (2016). "Experiences of COPD patients with existing smoking cessation programs and their preferences for improvement - a qualitative analysis." *Tobacco Induced Diseases* 14.

Background: Smoking is a major risk factor for chronic obstructive pulmonary disease (COPD). For current smokers who are diagnosed with COPD, their first treatment option is to stop smoking. Motivation is necessary for long-term smoking cessation; therefore, when designing smoking cessation programs, the patients' needs and preferences should be considered. We focused on COPD patients' experiences with existing smoking cessation programs and evaluated their preferences for the improvement of these programs. Methods: We conducted 18 guideline-based interviews with COPD patients between April and June 2014 in Germany. Each patient with COPD, who was a current or past smoker and had made at least one attempt to quit smoking in the past 5 years, was included in the study. We audiotaped, verbatim transcribed, and evaluated the interviews, using content analysis. Results: The patients had broad and different experiences with pharmaceutical, behavioral, and alternative approaches that supported or negatively influenced the smoking cessation process. Pharmaceuticals were viewed as an expensive alternative with many side effects although they helped to stop cravings for a few moments. Furthermore, the bad structure and impersonal content of the seminars for smoking cessation negatively influenced group cohesion, and therefore degrading the patients' motivation to stop smoking. Alternative methods, such as acupuncture and hypnosis were mostly ineffective in smoking cessation, but in some cases, served as motivational strategies. Conclusion: Negative experiences with smoking cessation were explained by the patients' lack of motivation or resolution. Other negative experiences, such as the structure of seminars for smoking cessation and the high price of pharmaceuticals should be addressed through policy changes to increase the patients' motivation to quit smoking.

Aunger, R. and V. Curtis (2016). "Behaviour Centred Design: towards an applied science of behaviour change." *Health Psychology Review* 10(4): 425-446.

Behaviour change has become a hot topic. We describe a new approach, Behaviour Centred Design (BCD), which encompasses a theory of change, a suite of behavioural determinants and a programme design process. The theory of change is generic, assuming that successful interventions must create a cascade of effects via environments, through brains, to behaviour and hence to the desired impact, such as improved health. Changes in behaviour are viewed as the consequence of a reinforcement learning process involving the targeting of evolved motives and changes to behaviour settings, and are produced by three types of behavioural control mechanism (automatic, motivated and executive). The implications are that interventions must create surprise, revalue behaviour and disrupt performance in target behaviour settings. We then describe a sequence of five steps required to design an intervention to change specific behaviours: Assess, Build, Create, Deliver and Evaluate. The BCD approach has been shown to change hygiene, nutrition and exercise-related behaviours and has the advantages of being applicable to product, service or institutional design, as well as being able to incorporate future developments in behaviour science. We therefore argue that BCD can become the foundation for an applied science of behaviour change.

Austin, J. (2015). "The Effect of Genetic Test-Based Risk Information on Behavioral Outcomes: A Critical Examination of Failed Trials and a Call to Action." *American Journal of Medical Genetics Part A* 167(12): 2913-2915.

Encouraging individuals at risk for common complex disease like heart disease, cancer, and diabetes to adopt lifestyle changes (e.g., smoking cessation, exercise, proper nutrition, increased screening) could be powerful public health tools to decrease the enormous personal and economic burden of these conditions. Theoretically, genetic risk information appears to be a compelling tool that could be used to provoke at-risk individuals to adopt these lifestyle changes. Unfortunately, however, numerous studies now have shown that providing individuals with genetic test-based risk information has little to no impact on their behavior. In this article (a commentary not a systematic review), the failed trials in which genetic information has been used as a tool to induce behavior change will be critically examined in order to identify new and potentially more effective ways forward. (C) 2015 Wiley Periodicals, Inc.

Avery, K. N. L., et al. (2013). "Behavior theory for dietary interventions for cancer prevention: a systematic review of utilization and effectiveness in creating behavior change." *Cancer Causes & Control* 24(3): 409-420.

Theory-based approaches are now recommended to design and enact dietary interventions, but their use in cancer trials is unknown. This systematic review examined application of behavior theory to dietary interventions aimed

at preventing cancer to improve the design and interpretation of trials. Electronic databases were searched (inception-July 2011). Data were synthesized and a theory coding scheme (TCS) used to describe and assess how behavior theory informed interventions. Studies not reporting a dietary behavior intervention informed by a specified behavior change model(s) were excluded. Of 237 potentially eligible studies, only 40 (16.9 %) were relevant, mostly RCTs (34, 85.0 %). Twenty-one interventions targeted diet alone (52.5 %) or integrated diet into a lifestyle intervention (19, 47.5 %). Most (24, 60.0 %) invoked several behavior change models, but only 10 (25.0 %) interventions were reported as explicitly theory-informed and none comprehensively targeted or measured theoretical constructs or tested theoretical assumptions. The 10 theory-informed interventions were more effective at improving diet. Dietary interventions for cancer prevention improved diet more effectively if they were informed by behavior theory. While behavior theory was often applied to these dietary interventions, they were rarely implemented or described thoroughly. Accurate intervention reporting is essential to assess theoretical quality and facilitate implementation effective behavior change techniques. Guidelines regarding the application and reporting of behavior theory for complex interventions, for example, proposed by the National Institutes of Health and Medical Research Council, should be revised accordingly. Failure to adequately ground dietary interventions in behavior theory may hinder establishing their effectiveness and relationships between diet and cancer.

Axon, S., et al. (2018). "The human factor: Classification of European community-based behaviour change initiatives." *Journal of Cleaner Production* 182: 567-586.

Behaviour, practices and culture constitute a powerful human factor in the energy system; in particular the interactions between technologies, practices and norms lock individuals in to certain patterns of (often inefficient) energy use. Consequently, behaviour change has gained traction amongst policy makers as a key area of intervention given the impact energy-related behaviours have on climate change. Given the increasing emphasis within policy perspectives in the European Union, it is surprising that a gap in understanding of the success factors of behaviour change initiatives remains. This paper addresses this gap by identifying and characterising behaviour change initiatives across five European countries (the UK, Ireland, France, Italy, and Spain). The paper provides insights into the success factors and commonly encountered barriers to behaviour change initiatives. Initiatives are classified into 6 broad categories (community-based interventions; information and awareness based interventions; eco-districts; show-case events; energy switching; and smart-technology focused interventions). The results suggest that there are significant knowledge gaps between what is known to work to engage individuals in behavioural change and what is currently being applied in practice. An over-reliance on education and awareness-raising projects is evident, illustrating that such projects do not sufficiently aim for sustained behavioural changes. A dearth of projects incorporating fiscal measures, regulations or legislation to drive behaviour change reflects reluctance on behalf of decision-makers to engage widely with diverse approaches to foster lifestyle change. This paper contributes understandings of the different models and delivery tools employed to change energy-related behaviours; insights into the critical success factors that underpin best practice and the barriers to action; and a 'what works in practice' overview of the meaningful approaches to change behaviour. (C) 2018 Elsevier Ltd. All rights reserved.

Ayakaka, I., et al. (2017). "Identifying barriers to and facilitators of tuberculosis contact investigation in Kampala, Uganda: a behavioral approach." *Implementation Science* 12.

Background: The World Health Organization recommends routine household tuberculosis contact investigation in high-burden countries but adoption has been limited. We sought to identify barriers to and facilitators of TB contact investigation during its introduction in Kampala, Uganda. Methods: We collected cross-sectional qualitative data through focus group discussions and interviews with stakeholders, addressing three core activities of contact investigation: arranging household screening visits through index TB patients, visiting households to screen contacts and refer them to clinics, and evaluating at-risk contacts coming to clinics. We analyzed the data using a validated theory of behavior change, the Capability, Opportunity, and Motivation determine Behavior (COM-B) model, and sought to identify targeted interventions using the related Behavior Change Wheel implementation framework. Results: We led seven focus-group discussions with 61 health-care workers, two with 21 lay health workers (LHWs), and one with four household contacts of newly diagnosed TB patients. We, in addition, performed 32 interviews with household contacts from 14 households of newly diagnosed TB patients. Commonly noted barriers included stigma, limited knowledge about TB among contacts, insufficient time and space in clinics for counselling, mistrust of health-center staff among index patients and contacts, and high travel costs for LHWs and contacts. The most important facilitators identified were the personalized and enabling services provided by LHWs. We identified education, persuasion, enablement, modeling of health-positive behaviors, incentivization, and restructuring of the service environment as relevant intervention functions with potential to alleviate barriers to and enhance facilitators of TB contact investigation. Conclusions: The use of a behavioral theory and a validated implementation framework provided a comprehensive approach for systematically identifying barriers

to and facilitators of TB contact investigation. The behavioral determinants identified here may be useful in tailoring interventions to improve implementation of contact investigation in Kampala and other similar urban settings.

Ayton, D. R., et al. (2017). "Barriers and enablers to the implementation of the 6-PACK falls prevention program: A pre-implementation study in hospitals participating in a cluster randomised controlled trial." *Plos One* 12(2).

Evidence for effective falls prevention interventions in acute wards is limited. One reason for this may be suboptimal program implementation. This study aimed to identify perceived barriers and enablers of the implementation of the 6-PACK falls prevention program to inform the implementation in a randomised controlled trial. Strategies to optimise successful implementation of 6-PACK were also sought. A mixed-methods approach was applied in 24 acute wards from 6 Australian hospitals. Participants were nurses working on participating wards and senior hospital staff including Nurse Unit Managers; senior physicians; Directors of Nursing; and senior personnel involved in quality and safety or falls prevention. Information on barriers and enablers of 6-PACK implementation was obtained through surveys, focus groups and interviews. Questions reflected the COM-B framework that includes three behaviour change constructs of: capability, opportunity and motivation. Focus group and interview data were analysed thematically, and survey data descriptively. The survey response rate was 60% (420/702), and 12 focus groups (n = 96 nurses) and 24 interviews with senior staff were conducted. Capability barriers included beliefs that falls could not be prevented; and limited knowledge on falls prevention in patients with complex care needs (e.g. cognitive impairment). Capability enablers included education and training, particularly face to face case study based approaches. Lack of resources was identified as an opportunity barrier. Leadership, champions and using data to drive practice change were recognised as opportunity enablers. Motivation barriers included complacency and lack of ownership in falls prevention efforts. Motivation enablers included senior staff articulating clear goals and a commitment to falls prevention; and use of reminders, audits and feedback. The information gained from this study suggests that regular practical face-to-face education and training for nurses; provision of equipment; audit, reminders and feedback; leadership and champions; and the provision of falls data is key to successful falls prevention program implementation in acute hospitals.

Back, A., et al. (2016). "Walking the tightrope-perspectives on local politicians' role in implementing a national social care policy on evidence-based practice." *International Journal of Mental Health Systems* 10.

Background: Despite national policy recommending evidence-based practice (EBP), its application in social care has been limited. While local politicians can affect the process, little is known about their knowledge, attitudes and roles regarding EBP. The aim here is twofold: to explore the role of local politicians in the implementation of EBP in social care from both their own and a management perspective; and to examine factors politicians perceive as affecting their decisions and actions concerning the implementation of EBP policy. Methods: Local politicians (N = 13) and managers (N = 22) in social care were interviewed. Qualitative thematic analysis with both inductive and deductive codes was used. Results: Politicians were rather uninformed regarding EBP and national policy. The factors limiting their actions were, beside the lack of awareness, lack of ability to question existing working methods, and a need for support in the steering of EBP. Thus, personal interest played a significant part in what role the politicians assumed. This resulted in some politicians taking a more active role in steering EBP while others were not involved. From the managers' perspective, a more active steering by politicians was desired. Setting budget and objectives, as well as active follow-up of work processes and outcomes, were identified as means to affect the implementation of EBP. However, the politicians seemed unaware of the facilitating effects of these actions. Conclusions: Local politicians had a possibility to facilitate the implementation of EBP, but their role was unclear. Personal interest played a big part in determining what role was taken. The results imply that social care politicians might need support in the development of their steering of EBP. Moving the responsibility for EBP facilitation upwards in the political structure could be an important step in developing EBP in social care.

Bacon, S. L., et al. (2015). "An International Perspective on Improving the Quality and Potential of Behavioral Clinical Trials." *Current Cardiovascular Risk Reports* 9(1).

Healthy behaviors (e.g., eating a healthy diet, engaging in regular physical activity, smoking cessation) are associated with a reduction in the incidence and mortality of chronic non-communicable diseases (NCDs), including cardiovascular disease. There have been many examples of health behavior interventions leading to improvements in NCDs and their risk factors, such as hypertension. However, despite their potential benefits, the uptake of existing behavioral interventions has been limited. Among many barriers to implementation of behavioral treatments are concerns about methodological inadequacies. The current manuscript discusses recent advances in frameworks for the development of interventions, the reporting of trials and their protocols, and areas which need further work. The goal of this article is to increase awareness and encourage further debate about how best to promote high-quality behavioral intervention research.

Badea, C., et al. (2017). "Self-affirmation, political value congruence, and support for refugees." *Journal of Applied Social Psychology* 47(7): 355-365.

This research tested the potential for self-affirmation on left- and right-wing political values to increase behavioral intentions to provide help and assistance to refugees. We present a pilot study defining left- and right-wing values, and a main study in which participants completed either a self-affirmation task, a group-affirmation task, or participated in a control condition on values that were either congruent or incongruent with their own political views. Results show that left-wing oriented participants showed more supportive intentions in the self-affirmation condition compared to the group-affirmation and control conditions, independent of values congruency. In contrast, right-wing participants showed more supportive intentions in the self-affirmation condition, but only when they affirmed on values that were congruent with their own political views.

Bagot, K. L., et al. (2017). "Transitioning from a single-site pilot project to a state-wide regional telehealth service: The experience from the Victorian Stroke Telemedicine programme." *Journal of Telemedicine and Telecare* 23(10): 850-855.

Scaling of projects from inception to establishment within the healthcare system is rarely formally reported. The Victorian Stroke Telemedicine (VST) programme provided a very useful opportunity to describe how rural hospitals in Victoria were able to access a network of Melbourne-based neurologists via telemedicine. The VST programme was initially piloted at one site in 2010 and has gradually expanded as a state-wide regional service operating with 16 hospitals in 2017. The aim of this paper is to summarise the factors that facilitated the state-wide transition of the VST programme. A naturalistic case-study was used and data were obtained from programme documents, e.g. minutes of governance committees, including the steering committee, the management committee and six working groups; operational and evaluation documentation, interviews and research field-notes taken by project staff. Thematic analysis was undertaken, with results presented in narrative form to provide a summary of the lived experience of developing and scaling the VST programme. The main success factors were attaining funding from various sources, identifying a clinical need and evidence-based solution, engaging stakeholders and facilitating co-design, including embedding the programme within policy, iterative evaluation including performing financial sustainability modelling, and conducting dissemination activities of the interim results, including promotion of early successes.

Bailey, J. V., et al. (2016). "The Men's Safer Sex Trial: A feasibility randomised controlled trial of an interactive digital intervention to increase condom use in men." *Digital Health* 2.

Objectives: We aimed to determine the feasibility of an online randomised controlled trial (RCT) of the Men's Safer Sex website, measuring condom use and sexually transmitted infection (STI). Methods: For this study 159 men aged ≥ 16 with female sexual partners and recent condomless sex or suspected STI were recruited from three UK sexual health clinics. Participants were randomised to the intervention website plus usual clinic care ($n = 84$), or usual clinic care only ($n = 75$). Online outcome data were solicited at 3, 6, and 12 months. Results: Men were enrolled via tablet computers in clinic waiting rooms. Software errors and clinic Wi-Fi access presented significant challenges, and online questionnaire response rates were poor (36% at 3 months with a 10 pound voucher; 50% at 12 months with 30) pound. Clinical records (for STI diagnoses) were located for 94% of participants. Some 37% of the intervention group did not see the intervention website ($n = 31/84$), and (as expected) there was no detectable difference in condomless sex with female partners (IRR = 1.01, 95% CI 0.52 to 1.96). New acute STI diagnoses were recorded for 8.8% (7/80) of the intervention group, and 13.0% (9/69) of the control group over 12 months (IRR = 0.75, 95% CI 0.29 to 1.90). Conclusion: It is likely to be feasible to conduct a future large-scale RCT to assess the impact of an online intervention using clinic STI diagnoses as a primary outcome. However, practical and technical challenges need to be addressed before the potential of digital media interventions can be realised in sexual health settings.

Bailey, J. V., et al. (2015). "The Men's Safer Sex (MenSS) trial: protocol for a pilot randomised controlled trial of an interactive digital intervention to increase condom use in men." *Bmj Open* 5(2).

Introduction: Sexually transmitted infections (STI) are a major public health problem. Condoms provide effective protection but there are many barriers to use. Face-to-face health promotion interventions are resource-intensive and show mixed results. Interactive digital interventions may provide a suitable alternative, allowing private access to personally tailored behaviour change support. We have developed an interactive digital intervention (the Men's Safer Sex (MenSS) website) which aims to increase condom use in men. We describe the protocol for a pilot trial to assess the feasibility of a full-scale randomised controlled trial of the MenSS website in addition to usual sexual health clinical care. Methods and analysis: Participants: Men aged 16 or over who report female sexual partners and recent unprotected sex or suspected acute STI. Participants ($N=166$) will be enrolled using a tablet computer in clinic waiting rooms. All trial procedures will be online, that is, eligibility checks; study consent; trial registration; automated random allocation; and data submission. At baseline and at 3, 6 and 12 months, an online questionnaire will assess condom use, self-reported STI diagnoses, and mediators of condom use (eg, knowledge, intention). Reminders will be by email and mobile phone.

The primary outcome is condom use, measured at 3 months. STI rates will be recorded from sexual health clinic medical records at 12 months. The feasibility of a cost-effectiveness analysis will be assessed, to calculate incremental cost per STI prevented (Chlamydia or Gonorrhoea), from the NHS perspective. Ethics and dissemination: Ethical approval: City and East NHS Research Ethics Committee (reference number 13 LO 1801). Findings will be made available through publication in peer-reviewed journals, and to participants and members of the public via Twitter and from the University College London eHealth Unit website. Raw data will be made available on request.

Bailey, J. V., et al. (2016). "The Men's Safer Sex project: intervention development and feasibility randomised controlled trial of an interactive digital intervention to increase condom use in men." *Health Technology Assessment* 20(91): 1-+.

Background: This report details the development of the Men's Safer Sex website and the results of a feasibility randomised controlled trial (RCT), health economic assessment and qualitative evaluation. Objectives: (1) Develop the Men's Safer Sex website to address barriers to condom use; (2) determine the best design for an online RCT; (3) inform the methods for collecting and analysing health economic data; (4) assess the Sexual Quality of Life (SQoL) questionnaire and European Quality of Life-5 Dimensions, threelevel version (EQ-5D-3L) to calculate quality-adjusted life-years (QALYs); and (5) explore clinic staff and men's views of online research methodology. Methods: (1) Website development: we combined evidence from research literature and the views of experts (n = 18) and male clinic users (n = 43); (2) feasibility RCT: 159 heterosexually active men were recruited from three sexual health clinics and were randomised by computer to the Men's Safer Sex website plus usual care (n = 84) or usual clinic care only (n = 75). Men were invited to complete online questionnaires at 3, 6, 9 and 12 months, and sexually transmitted infection (STI) diagnoses were recorded from clinic notes at 12 months; (3) health economic evaluation: we investigated the impact of using different questionnaires to calculate utilities and QALYs (the EQ-5D-3L and SQoL questionnaire), and compared different methods to collect resource use; and (4) qualitative evaluation: thematic analysis of interviews with 11 male trial participants and nine clinic staff, as well as free-text comments from online outcome questionnaires. Results: (1) Software errors and clinic Wi-Fi access presented significant challenges. Response rates for online questionnaires were poor but improved with larger vouchers (from 36% with (sic) 10 to 50% with (sic)30). Clinical records were located for 94% of participants for STI diagnoses. There were no group differences in condomless sex with female partners [incidence rate ratio (IRR) 1.01, 95% confidence interval (CI) 0.52 to 1.96]. New STI diagnoses were recorded for 8.8% (7/80) of the intervention group and 13.0% (9/69) of the control group (IRR 0.75, 95% CI 0.29 to 1.89). (2) Health-care resource data were more complete using patient files than questionnaires. The probability that the intervention is cost-effective is sensitive to the source of data used and whether or not data on intended pregnancies are included. (3) The pilot RCT fitted well around clinical activities but 37% of the intervention group did not see the Men's Safer Sex website and technical problems were frustrating. Men's views of the Men's Safer Sex website and research procedures were largely positive. Conclusions: It would be feasible to conduct a large-scale RCT using clinic STI diagnoses as a primary outcome; however, technical errors and a poor response rate limited the collection of online self-reported outcomes. The next steps are (1) to optimise software for online trials, (2) to find the best ways to integrate digital health promotion with clinical services, (3) to develop more precise methods for collecting resource use data and (4) to work out how to overcome barriers to digital intervention testing and implementation in the NHS.

Baker-Henningham, H. (2018). "The Irie Classroom Toolbox: developing a violence prevention, preschool teacher training program using evidence, theory, and practice." *Annals of the New York Academy of Sciences* 1419(1): 179-200.

In this paper, I describe the development of the Irie Classroom Toolbox, a school-based violence prevention, teacher training program for use with children aged 3-6 years. In-depth interviews were conducted with Jamaican preschool teachers, who had participated in a trial of a classroom behavior management program, at posttest (n = 35) and 5 years later (n = 20). An on-going process evaluation was also conducted. Teachers' preferred behavior management strategies and training methods were documented, and enablers and barriers to implementation were identified. Teachers were most likely to adopt strategies that they liked, found easy to use, and were effective. These included paying attention to positive behavior and explicitly teaching children the expected behavior. Teachers preferred active, hands-on training strategies based on social-cognitive theories. Enablers to intervention implementation included positive teacher-facilitator relationships, choice, collaborative problem solving, teachers recognizing benefits of the intervention, group support, and provision of materials. Barriers to intervention implementation were also identified. These data were integrated with behavior change theory (i.e., the behavior change wheel and theoretical domains framework) to develop an intervention grounded in common core elements of evidence-based programs while also utilizing teachers' perspectives. The resulting program is a low cost, adaptable intervention that should be suitable for training preschool teachers in other low-resource settings.

Balaam, M. C. and G. Thomson (2018). "Building capacity and wellbeing in vulnerable/marginalised mothers: A qualitative study." *Women and Birth* 31(5): E341-E347.

Problem: The persistence of health inequalities in pregnancy and infancy amongst vulnerable/marginalised groups in the UK. **Background:** During pregnancy and early motherhood some women experience severe and multiple psychosocial and economic disadvantages that negatively affect their wellbeing and make them at increased risk of poor maternal and infant health outcomes. **Aim:** To explore vulnerable/marginalised women's views and experiences of receiving targeted support from a specialist midwifery service and/or a charity. **Methods:** A mixed-methods study was undertaken that involved analysis of routinely collected birth-related/outcome data and interviews with a sample of vulnerable/marginalised women who had/had not received targeted support from a specialist midwifery service and/or a charity. In this paper we present in-depth insights from the 11 women who had received targeted support. **Findings:** Four key themes were identified; 'enabling needs-led care and support', 'empowering through knowledge, trust and acceptance', 'the value of a supportive presence' and 'developing capabilities, motivation and confidence'. **Discussion:** Support provided by a specialist midwifery service and/or charity improved the maternity and parenting experiences of vulnerable/marginalised women. This was primarily achieved by developing a provider-woman relationship built on mutual trust and understanding and through which needs-led care and support was provided - leading to improved confidence, skills and capacities for positive parenting and health. **Conclusion:** The collaborative, multiagency, targeted intervention provides a useful model for further research and development. It offers a creative, salutogenic and health promoting approach to provide support for the most vulnerable/marginalised women as they make the journey into parenthood. (c) 2017 Australian College of Midwives. Published by Elsevier Ltd. All rights reserved.

Baldwin, D. R. (2015). "Development of Guidelines for the Management of Pulmonary Nodules Toward Better Implementation." *Chest* 148(6): 1365-1367.

Ballard, D. W., et al. (2016). "Optimizing Clinical Decision Support in the Electronic Health Record Clinical Characteristics Associated with the Use of a Decision Tool for Disposition of ED Patients with Pulmonary Embolism." *Applied Clinical Informatics* 7(3): 883-898.

Objective: Adoption of clinical decision support (CDS) tools by clinicians is often limited by work-flow barriers. We sought to assess characteristics associated with clinician use of an electronic health record-embedded clinical decision support system (CDSS). **Methods:** In a prospective study on emergency department (ED) activation of a CDSS tool across 14 hospitals between 9/1/14 to 4/30/15, the CDSS was deployed at 10 active sites with an on-site champion, education sessions, iterative feedback, and up to 3 gift cards/clinician as an incentive. The tool was also deployed at 4 passive sites that received only an introductory educational session. Activation of the CDSS - which calculated the Pulmonary Embolism Severity Index (PESI) score and provided guidance - and associated clinical data were collected prospectively. We used multivariable logistic regression with random effects at provider/facility levels to assess the association between activation of the CDSS tool and characteristics at: 1) patient level (PESI score), 2) provider level (demographics and clinical load at time of activation opportunity), and 3) facility level (active vs. passive site, facility ED volume, and ED acuity at time of activation opportunity). **Results:** Out of 662 eligible patient encounters, the CDSS was activated in 55%: active sites: 68% (346/512); passive sites 13% (20/150). In bivariate analysis, active sites had an increase in activation rates based on the number of prior gift cards the physician had received (96% if 3 prior cards versus 60% if 0, $p < 0.0001$). At passive sites, physicians < age 40 had higher rates of activation ($p = 0.03$). In multivariable analysis, active site status, low ED volume at the time of diagnosis and PESI scores I or II (compared to III or higher) were associated with higher likelihood of CDSS activation. **Conclusions:** Performing on-site tool promotion significantly increased odds of CDSS activation. Optimizing CDSS adoption requires active education.

Band, R., et al. (2017). "Intervention planning for a digital intervention for self-management of hypertension: a theory-, evidence- and person- based approach." *Implementation Science* 12.

Background: This paper describes the intervention planning process for the Home and Online Management and Evaluation of Blood Pressure (HOME BP), a digital intervention to promote hypertension self-management. It illustrates how a Person-Based Approach can be integrated with theory- and evidence-based approaches. The Person-Based Approach to intervention development emphasises the use of qualitative research to ensure that the intervention is acceptable, persuasive, engaging and easy to implement. **Methods:** Our intervention planning process comprised two parallel, integrated work streams, which combined theory-, evidence- and person-based elements. The first work stream involved collating evidence from a mixed methods feasibility study, a systematic review and a synthesis of qualitative research. This evidence was analysed to identify likely barriers and facilitators to uptake and implementation as well as design features that should be incorporated in the HOME BP intervention. The second work stream used three complementary approaches to theoretical modelling: developing brief guiding principles for intervention design, causal modelling to map behaviour change techniques in the intervention onto the Behaviour Change Wheel and Normalisation Process Theory frameworks, and developing a logic model. **Results:** The different elements of our integrated approach to intervention planning yielded important, complementary insights into how to design the intervention to maximise

acceptability and ease of implementation by both patients and health professionals. From the primary and secondary evidence, we identified key barriers to overcome (such as patient and health professional concerns about side effects of escalating medication) and effective intervention ingredients (such as providing in-person support for making healthy behaviour changes). Our guiding principles highlighted unique design features that could address these issues (such as online reassurance and procedures for managing concerns). Causal modelling ensured that all relevant behavioural determinants had been addressed, and provided a complete description of the intervention. Our logic model linked the hypothesised mechanisms of action of our intervention to existing psychological theory. Conclusion: Our integrated approach to intervention development, combining theory-, evidence- and person-based approaches, increased the clarity, comprehensiveness and confidence of our theoretical modelling and enabled us to ground our intervention in an in-depth understanding of the barriers and facilitators most relevant to this specific intervention and user population.

Band, R., et al. (2019). "Development of a measure of collective efficacy within personal networks: A complement to self-efficacy in self-management support?" *Patient Education and Counseling* 102(7): 1389-1396.

Objective: To develop and evaluate the Collective Efficacy of Networks (CENS) questionnaire to measure perceived collective efficacy within personal social networks. Methods: A mixed methods approach was used, guided by theory and with extensive input from adults with long-term conditions who completed the initial questionnaire (n = 78) with test-retest assessed at 2 weeks (n = 68). A second sample (n = 85) completed a postal questionnaire including CENS, theoretically linked constructs (self-efficacy, social support) and health outcomes (loneliness, mental and physical health). Results: Principal components analysis demonstrated a two-factor structure with 12-items selected to represent Network responsiveness (8 items, Cronbach's alpha = 0.896) and Access to collective efficacy (4 items, Cronbach's alpha = .773). Good test-retest reliability was established for both subscales (r(icc) = .793-853). Network responsiveness was associated with self-efficacy (r = .342, p = . < 001) and social support (r = .407, p < .001) and predicted reduced loneliness. Access to collective efficacy significantly predicted better mental health; the predictive validity of the subscales improved when combined with self-efficacy. Conclusion: The CENS is an acceptable and psychometrically robust measure of collective efficacy in personal social networks. Practice implications: Measuring collective efficacy with self-efficacy will provide useful information for researchers and policymakers interested in capacity for self-management and social determinants of behaviour change. (C) 2019 The Authors. Published by Elsevier B.V.

Bannan, D. F., et al. (2019). "Understanding the causes of prescribing errors from a behavioural perspective." *Research in Social & Administrative Pharmacy* 15(5): 546-557.

Introduction: While many attempts have been made to reduce prescribing errors (PEs), they persist. PE is not in itself a behaviour, but a consequence of a prescribing behaviour. Interventions aimed at prescribers should focus on understanding prescribers' behaviours. Objectives: The aim of this study was to use the capability, opportunity, motivation - behaviour (COM-B) model to explore the behaviours that could have caused PEs made by senior doctors in a speciality paediatric inpatient ward. Methods: A qualitative approach was used to investigate prescribers' behaviours in a 26-bed paediatric oncology ward. Error data were collected over a two-month period and were presented during focus groups with prescribers, which were audio-recorded and transcribed verbatim. Thematic analysis was used to identify contributory factors to errors, which was used to identify sources of behaviours using the COM-B model. Results: Behaviours related to prescribers' capabilities were: prescribers' improper use of the software because of insufficient skills, and prescribers' inability to prescribe correctly because of lack of knowledge. Behaviours related to opportunities in the environment were: prescribers' inability to make an informed decision because of poor access to patient information, inability to properly complete a task because of heavy workload and interruption, and having to re-check doses frequently because of frequent change in patients' weight and surface area. Those related to motivation were: prescribers unquestioningly following recommendations and not communicating with other specialists because they over-trusted them or feared a negative reaction, and prescribers inability to complete a task because of other competing and preferable tasks at the same time. Conclusion: Employing COM-B helped in identifying causes of PEs from a new perspective. Future work could focus on mapping identified sources of behaviour and errors against appropriate intervention functions and policies in order to design more successful interventions.

Bannan, D. F. and M. P. Tully (2016). "Bundle interventions used to reduce prescribing and administration errors in hospitalized children: a systematic review." *Journal of Clinical Pharmacy and Therapeutics* 41(3): 246-255.

What is known and objective: Bundle interventions are becoming increasingly used as patient safety interventions. The objective of this study was to describe and categorize which bundle interventions are used to reduce prescribing errors (PEs) and administration errors (AEs) in hospitalized children and to assess the quality of the published literature. Methods: Articles published in English and Arabic between 1985 and September 2015 were sought in MEDLINE, EMBAS and CINHALL. Bibliographies of included articles were screened for additional studies. We included any study with a comparator group reporting rates of PEs and AEs. Two authors independently extracted data, classified

interventions in each bundle and assessed the studies for potential risk of bias. Constituent interventions of the bundles were categorized using both the Cochrane Effective Practice and Organization of Care Group (EPOC) taxonomy of intervention and the Behavioural Change Wheel (BCW). Results and discussion: Seventeen studies met the inclusion criteria. All bundles contained interventions that were either professional, organizational or a mixture of both. According to the BCW, studies used interventions with functions delivering environmental restructuring (17/17), education (16/17), persuasion (4/17), training (3/17), restriction (3/17), incentivization (1/17), coercion (1/17), modelling (1/17) and enablement (1/17). Nine studies had bundles with two intervention functions, and eight studies had three or more intervention functions. All studies were low quality before/after studies. Selection bias varied between studies. Performance bias was either low or unclear. Attrition bias was unclear, and detection bias was rated high in most studies. Ten studies described the interventions fairly well, and seven studies did not adequately explain the interventions used. What is new and conclusion: This novel analysis in a systematic review showed that bundle interventions delivering two or more intervention functions have been investigated but that the study quality was too poor to assess impact.

Bar-Zeev, Y., et al. (2017). "The Indigenous Counselling and Nicotine (ICAN) QUIT in Pregnancy Pilot Study protocol: a feasibility step-wedge cluster randomised trial to improve health providers' management of smoking during pregnancy." *Bmj Open* 7(8).

Introduction Indigenous women have the highest smoking prevalence during pregnancy (47%) in Australia. Health professionals report lack of knowledge, skills and confidence to effectively manage smoking among pregnant women in general. We developed a behaviour change intervention aimed to improve health professionals' management of smoking in Indigenous pregnant women-the Indigenous Counselling And Nicotine (ICAN) QUIT in Pregnancy. This intervention includes webinar training for health professionals, an educational resources package for health professionals and pregnant women, free oral nicotine replacement therapy (NRT) for pregnant women, and audit and feedback on health professionals' performance. The aim of this study is to test the feasibility and acceptability of the ICAN QUIT in Pregnancy intervention to improve health professionals' provision of evidence-based culturally responsive smoking cessation care to Australian Indigenous pregnant smokers. Methods and analysis This protocol describes the design of a step-wedge cluster randomised pilot study. Six Aboriginal Medical Services (AMSs) are randomised into three clusters. Clusters receive the intervention staggered by 1 month. Health professionals report on their knowledge and skills pretraining and post-training and at the end of the study. Pregnant women are recruited and followed up for 3 months. The primary outcome is the recruitment rate of pregnant women. Secondary outcomes include feasibility of recruitment and follow-up of participating women, and webinar training of health professionals, measured using a designated log; and measures of effectiveness outcomes, including quit rates and NRT prescription rates. Ethics and dissemination In accordance with the Aboriginal Health and Medical Research Council guidelines, this study has been developed in collaboration with a Stakeholder and Consumer Aboriginal Advisory Panel (SCAAP). The SCAAP provides cultural consultation, advice and direction to ensure that implementation is acceptable and respectful to the Aboriginal communities involved. Results will be disseminated to AMSs, Aboriginal communities and national Aboriginal bodies.

Barboza, C. F., et al. (2013). "Physical activity, nutrition and behavior change in Latin America: a systematic review." *Global Health Promotion* 20: 65-81.

Physical activity (PA) and nutrition are key health behaviors underlying the design and implementation of prevention strategies for non-communicable diseases (NCDs) in Latin America. Nevertheless, research still reports low prevalence of PA and fruit and vegetable consumption throughout the region. This paper aims at reviewing the ways in which models of behavior change theory have been applied in study development and implementation regarding nutrition and PA in Latin America. In August 2011 we conducted a systematic literature review of the behavior change studies that targeted such NCDs risk factors published until then. Out of 4279 surveyed abstracts, only 29 corresponded to articles that met our inclusion criteria. Twenty-six articles reported the application of behavior change theory, with the trans-theoretical model (n = 12) being the most frequently used. Other theories and models included the socio-ecological model (n = 4), cognitive theory (n = 3), social cognitive theory (n = 2) and theories related to health education and counseling (n = 5). Based on this review, we recommend that the application of behavior change theory be explicitly reported in Latin American peer-reviewed articles, and that outcome evaluations include behavior change constructs so as to better assess their contribution to the effectiveness of nutrition and PA interventions in the region. Furthermore, we state the need for a better understanding of the behavior change mechanisms that may be specific to the Latin American context.

Barker, F., et al. (2016). "Applying the COM-B behaviour model and behaviour change wheel to develop an intervention to improve hearing-aid use in adult auditory rehabilitation." *International Journal of Audiology* 55: S90-S98.

Objectives: To introduce a psychological model of behaviour; the COM-B model and describe how this has been used in combination with the behaviour change wheel (BCW) in developing an intervention which aims to promote

regular, long-term use of hearing aids by adults with acquired hearing loss. Design: Qualitative structured interview study using the COM-B model to identify the determinants of behavioural planning on the part of audiologists; a potentially important factor in encouraging long-term hearing-aid use. Study sample: Ten audiologists drawn from a random sample of five English audiology departments. Results: The analysis suggests that behavioural planning might be more likely to occur if audiologists' psychological capability, physical and social opportunity, and reflective and automatic motivation were addressed. This analysis forms the basis of an intervention design, using the BCW, to encourage behavioural planning by audiologists and subsequent hearing-aid use by people with hearing loss. Conclusions: The COM-B model and BCW can be applied successfully in the context of audiology to analyse the behaviour of both people with hearing loss and professionals working with them, supplying information that is being used in intervention design. The effectiveness of the intervention will be tested in a clinical trial.

Barker, F., et al. (2018). "Improving Collaborative Behaviour Planning in Adult Auditory Rehabilitation: Development of the I-PLAN Intervention Using the Behaviour Change Wheel." *Annals of Behavioral Medicine* 52(6): 489-500.

Background The consequences of poorly managed hearing loss can be ameliorated with hearing aid use but rates of use are sub-optimal. The impact of audiologist behaviour on subsequent use, particularly over the long term, is unknown. **Purpose** This study aimed to describe the role of the behaviour change wheel in developing an intervention to introduce and embed particular clinical behaviours into adult hearing aid fitting consultations, within the framework of the Medical Research Council guidance on complex interventions. **Methods** Following the steps of the behaviour change wheel, audiologist behaviours that might influence hearing aid use were identified based on a systematic review and qualitative work with audiologists. An analysis, using the COM-B model, identified potential drivers of the target behaviours. This was used to select intervention functions and behaviour change techniques likely to influence behaviour in this context. **Results** The target behaviours were as follows: giving information about the benefits of hearing aid use and the negative consequences of non-use, providing prompts for use and engaging in collaborative behavioural planning for use. The behavioural analysis suggested that psychological capability, opportunity and motivation were potential drivers of these behaviours. The intervention functions of education, coercion, training, environmental restructuring, modelling and enablement were selected and combined to develop a single complex intervention that seeks to address the target behaviours. **Conclusions** This is the first study to use the behaviour change wheel to develop a complex intervention in the context of audiology. The theory-based development of the intervention will facilitate evaluation of its feasibility and effectiveness.

Barker, M. (2015). "Developmental origins, behaviour change and the new public health." *Journal of Developmental Origins of Health and Disease* 6(5): 428-433.

A developmental approach to public health focuses attention on better nourishing girls and young women, especially those of low socio-economic status, to improve mothers' nutrition and thereby the health of future generations. There have been significant advances in the behavioural sciences that may allow us to understand and support dietary change in young women and their children in ways that have not previously been possible. This paper describes some of these advances and aims to show how they inform this new approach to public health. The first of these has been to work out what is effective in supporting behaviour change, which has been achieved by careful and detailed analysis of behaviour change techniques used by practitioners in intervention, and of the effectiveness of these in supporting change. There is also a new understanding of the role that social and physical environments play in shaping our behaviours, and that behaviour is influenced by automatic processes and 'habits' as much as by reflective processes and rational decisions. To be maximally effective, interventions therefore have to address both influences on behaviour. An approach developed in Southampton aims to motivate, support and empower young women to make better food choices, but also to change the culture in which those choices are being made. Empowerment is the basis of the new public health. An empowered public demand for better access to better food can go a long way towards improving maternal, infant and family nutrition, and therefore the health of generations to come.

Barker, M., et al. (2016). "Preconception and pregnancy: opportunities to intervene to improve women's diets and lifestyles." *Journal of Developmental Origins of Health and Disease* 7(3): 330-333.

Recently, large-scale trials of behavioural interventions have failed to show improvements in pregnancy outcomes. They have, however, shown that lifestyle support improves maternal diet and physical activity during pregnancy, and can reduce weight gain. This suggests that pregnancy, and possibly the whole periconceptional period, represents a 'teachable moment' for changes in diet and lifestyle, an idea that was made much of in the recent report of the Chief Medical Officer for England. The greatest challenge with all trials of diet and lifestyle interventions is to engage people and to sustain this engagement. With this in mind, we propose a design of intervention that aims simultaneously to engage women through motivational conversations and to offer access to a digital platform that provides structured

support for diet and lifestyle change. This intervention design therefore makes best use of learning from the trials described above and from recent advances in digital intervention design.

Barnes, S. and L. Nickels (2018). "Interaction-focussed therapy for aphasia: Effects on communication and quality of life." *International Journal of Speech-Language Pathology* 20(5): 528-540.

Purpose: This study examined the effects of an interaction-focussed therapy for aphasia, which involved both people with aphasia and their familiar conversation partners. It was hypothesised the interaction-focussed therapy would lead to positive changes in targeted conversation behaviours, and improved quality of life for participants with aphasia. Method: Three people with chronic aphasia and three of their familiar conversation partners completed an 8-week interaction-focussed therapy programme. A series of single case multiple-baseline ABA experiments were conducted. Outcome measures focussed on changes in targeted behaviours between pre- and post-therapy conversation samples, and changes in quality of life. Result: All participant dyads improved their conversations. Familiar conversation partners demonstrated significant changes in targeted behaviours, while only one participant with aphasia achieved significant improvements. There was little evidence of a positive impact on quality of life for participants with aphasia. Conclusion: Interaction-focussed therapy enhances everyday communication for people with aphasia and their conversation partners. However, the complex nature of learning in this intervention means that further, likely interdisciplinary work is required to better understand what mediates skill acquisition and therapeutic change and its psychosocial impact. This information is particularly important for optimising interaction-focussed therapy for people with aphasia.

Barnett, G. D. and F. F. Howard (2018). "What Doesn't Work to Reduce Reoffending? A Review of Reviews of Ineffective Interventions for Adults Convicted of Crimes." *European Psychologist* 23(2): 111-129.

This paper describes a review of meta-analyses and systematic reviews to explore what appears to be ineffective in reducing reoffending among people convicted of crime. The focus of this review is on secondary or tertiary crime prevention initiatives, concentrating on interventions aiming to reduce offending among adults serving sentences in custody or the community. Twenty-one reviews met the inclusion criteria, covering interventions aiming to reduce violence, domestic violence, sexual offending, drug misuse, driving under the influence, and general reoffending. Fourteen of these reviews identified interventions that have no impact on criminal recidivism, and three identified interventions that in at least one study were actively harmful by increasing the risk of recidivism of participants. Findings suggest that ineffective interventions may comprise drug testing as a stand-alone strategy, insight-oriented and behavioral interventions for sexual offending, brief interventions for alcohol misuse, and in prison in the longer-term, agonist pharmacological treatment alone for drug misuse. Those interventions that had demonstrated, in at least one of the evaluations reviewed, that they were associated with negative behaviors were court-mandated treatment for domestic violence, boot camps, incarceration-based agonist drug treatment and custodial (when compared to noncustodial) sanctions. Taken together with the findings of previous reviews in this area, the authors identify features of interventions which are likely to be ineffective in reducing reoffending. Explanations for these interventions' likely failure to reduce reoffending draw on criminological and social psychological research and behavioral science. The authors also note that this review may not include all relevant evidence and findings should therefore be considered indicative.

Barratt, R., et al. (2019). "Clinician perceptions of respiratory infection risk; a rationale for research into mask use in routine practice." *Infection Disease & Health* 24(3): 169-176.

Outbreaks of emerging and re-emerging infectious diseases are global threats to society. Planning for, and responses to, such events must include healthcare and other measures based on current evidence. An important area of infection prevention and control (IPC) is the optimal use of personal protective equipment (PPE) by healthcare workers (HCWs), including masks for protection against respiratory pathogens. Appropriate mask use during routine care is a forerunner to best practice in the event of an outbreak. However, little is known about the influences on decisions and behaviours of HCWs with respect to protective mask use when providing routine care. In this paper we argue that there is a need for more research to provide a better understanding of the decision-making and risk-taking behaviours of HCWs in respect of their use of masks for infectious disease prevention. Our argument is based on the ongoing threat of emerging infectious diseases; a need to strengthen workforce capability, capacity and education; the financial costs of healthcare and outbreaks; and the importance of social responsibility and supportive legislation in planning for global security. Future research should examine HCWs' practices and constructs of risk to provide new information to inform policy and pandemic planning. (C) 2019 Australasian College for Infection Prevention and Control. Published by Elsevier B.V. All rights reserved.

Bartelink, N. H. M., et al. (2018). "The Healthy Primary School of the Future: A Contextual Action-Oriented Research Approach." *International Journal of Environmental Research and Public Health* 15(10).

Background: Schools can play an important role in promoting children's health behaviours. A Dutch initiative, 'The Healthy Primary School of the Future', aims to integrate health and well-being into the school system. We use a contextual action-oriented research approach (CARA) to study the implementation process. Properties of CARA are its focus on contextual differences and the use of monitoring and feedback to support and evaluate the process of change. The aim of this article is to describe the use of the approach. Methods: Four schools (each with 200-300 children, aged 4-12 years) were included; all located in low socio-economic status areas in the south of the Netherlands. Data collection methods include interviews, observations, questionnaires, and health and behavioural measurements. Research contributions include giving feedback and providing schools with a range of possibilities for additional changes. The contextual data we examine include schools' health promoting elements, practices of teachers and parents, dominating organisational issues, and characteristics of the student population; process data include the presence of potential barriers to changes. Discussion: CARA is an adaptive research approach that generates knowledge and experiences on how to deal with health promotion in complex systems. We think this approach can set an example for research efforts in comparable initiatives.

Bartoli-Abdou, J. K., et al. (2018). "Exploration of adherence and patient experiences with DOACs one year after switching from vitamin-K antagonists-insights from the switching study." *Thrombosis Research* 162: 62-68.

Background: Current UK and European guidelines recommend anticoagulated patients prescribed warfarin with time in therapeutic range (TTR) < 65% be considered for DOAC therapy. There has been considerable concern that adherence with DOACs may be poor compared with warfarin. Little is known about the patient experience of switching from warfarin to DOAC and how patients manage their DOAC long term. Our aim was to conduct focus groups exploring patient's previous experiences with warfarin, their current experience with DOACs, their adherence to DOACs and the long-term service provision they envisage. Methods: Patients enrolled on the Switching Study who had been switched from warfarin to a DOAC > 1 year previously were invited to participate in focus groups. Two focus groups for atrial fibrillation (AF) and two for secondary prevention of venous thromboembolism (VTE) patients were held at anticoagulation clinics in South London, UK. Data was analysed using framework analysis to extract dominant themes. Results: Five VTE patients and 15 AF patients attended the focus groups. Dominant themes that emerged were: indication specific anticoagulation prioritisation, warfarin as a necessary inconvenience, DOACs as the anticoagulant of choice, concerns regarding DOAC monitoring, high adherence to DOACs and desire for long-term access to specialist anticoagulation services. Discussion: VTE patients prioritised anticoagulation over other therapies whereas AF patients did not. All participants reported high levels of adherence to DOACs. Patients derived confidence from long-term management in specialist anticoagulation clinics stating a preference to be managed in such a service.

Bartoli-Abdou, J. K., et al. (2018). "Associations between illness beliefs, medication beliefs, anticoagulation-related quality of life, and INR control: Insights from the Switching Study." *Research and Practice in Thrombosis and Haemostasis* 2(3): 497-507.

Background: Anticoagulation control with vitamin--K antagonists (VKAs) in patients with atrial fibrillation (AF) or venous thromboembolism (VTE) can be measured using time in therapeutic range (TTR), where TTR >65% is considered good and low TTR may be associated with low adherence. Methods: This cross--sectional observational study compared illness beliefs, treatment beliefs, and treatment satisfaction of patients with TTR >75% and TTR <50% using validated tools to determine their association with TTR. Adults requiring chronic VKA therapy were recruited from 2 hospital anticoagulation clinics in London, UK. Results: 311 patients with TTR >75% and 214 with TTR <50% were recruited. TTR >75% patients had been taking warfarin on average over 2 years longer than TTR <50% patients (P<.001). Statistically significant differences in beliefs were found in all subscales other than in treatment control, general harm, and general overuse. Cluster analysis determined there were 4 distinct clusters of beliefs among patients. Multivariate binary logistic regression found VTE patients were least likely to have poor TTR (OR = 0.49; 95% CI 0.29, 0.77). Patients in the "cautious of therapy and fearful of illness" cluster were most likely to have low TTR (OR = 4.75; 95% CI 2.75, 8.77). Conclusion: Illness perceptions, medication beliefs and treatment satisfaction were associated with INR control. VTE patients and those who were accepting of both illness and treatment were most likely to have optimal INR control.

Bauer, J. (2019). "Evidence-based practice in nutrition and dietetics: Translating evidence into practice." *Nutrition & Dietetics* 76(2): 123-125.

Bauld, L., et al. (2017). "Barriers to and facilitators of smoking cessation in pregnancy and following childbirth: literature review and qualitative study." *Health Technology Assessment* 21(36): 1-+.

This monograph reports the findings of the 'Barriers to and facilitators of smoking cessation in pregnancy and following childbirth' study. The study was funded to conduct evidence syntheses and primary qualitative research to enhance understanding of how these barriers and facilitators are perceived and experienced from the perspectives of

women, their partners, family and friends, and health-care professionals (HPs). Through this enhanced understanding, the study provides a platform to inform recommendations for current practice and provide pointers for the design of future interventions with promise for improving smoking cessation in pregnancy and in the postpartum period.

Bayley, J. E., et al. (2017). "Developing the evidence base for gender- and age-relevant school sex education: questionnaire findings from an adolescent sample using an augmented theory of planned behaviour." *Sexual Health* 14(6): 548-557.

Background: Positive adolescent sexual health is supported by effective school-based sex education. Methods to promote positive sexual health need to reflect determinants of contraception intention, which must include understanding gender and age (year group) differences. To date, there has been limited theory-based exploration of these determinants in school age participants, placing limitations on sexual health educators to tailor learning most effectively. Methods: Cross-sectional survey data were collected from UK school pupils (n = 1378) aged 12-16 years. Measures included theory of planned behaviour, prototype willingness, anticipated regret and knowledge items. Linear regression determined significant predictors of intention to use condoms, the oral contraceptive pill and emergency contraception (EC). The significance of differences by gender and school year was evaluated using t-tests and analysis of variance (ANOVA). Results: Three distinct predictive models emerged for condom, pill and EC use, predicting 36%, 18% and 23% of variance respectively. Attitude, gender and anticipated regret for unprotected sex significantly predicted intention for all types of contraception ($P < 0.001$). The effects of other explanatory variables differed by contraceptive. Girls scored higher on all variables except condom intention, and intention scores peaked in Year 10. Conclusion: Intention to use condoms, the pill and EC have different predictive profiles, with girls more strongly motivated and Year 10 a crucial stage for intention. Social comparisons and control beliefs exert different effects across contraceptive types, whereas attitudes and anticipated regret are consistently strong influences. The findings suggest clear scope for supporting sexual health and well being through modified school sex education.

Beard, E., et al. (2019). "What do cost-effective health behaviour-change interventions contain? A comparison of six domains." *Plos One* 14(4).

Objectives To help implement behaviour change interventions (BCIs) in practice it is important to be able to characterize their key components. This study compared broad features of cost-effective BCIs that addressed smoking, diet, physical activity, alcohol and sexual health. It also assessed the association of these with the magnitude of the cost-effectiveness estimates. Methods A content analysis of 79 interventions based on 338 intervention descriptions was conducted, using the Behaviour Change Wheel (BCW) to classify intervention content in terms of intervention functions, and the BCT taxonomy to identify and categorise component Behaviour Change Techniques (BCT). Regression analysis identified the association of these with upper (pessimistic) and lower (optimistic) cost-effectiveness estimates. Results The most and least common functions and BCT clusters were education (82.3%) and shaping knowledge (79.7%), and coercion (3.8%) and covert learning (2.5%). Smoking interventions contained the largest ((M) over bar = 12) number of BCTs and were most cost-effective. Several other factors were associated with worse (coercion(function) beta(upper) = 36551.24; shaping knowledge(BCT) beta(lower) = 2427.78; comparison of outcomes(BCT) beta(upper) = 9067.32; repetition and substitution(BCT) beta(upper) = 7172.47) and better (modelling(function) beta(lower) = -2905.3; environmental restructuring(function) beta(upper) = -8646.28; reward and threat(BCT) beta(upper) = -5577.59) cost-effectiveness ($p < 0.05$). Discussion Cost-effective BCIs rely heavily on education with smoking interventions exhibiting the most comprehensive range of BCTs. Providing an example to aspire to, restructuring the environment and rewarding positive behaviour may be associated with greater cost-effectiveness.

Beck, A. L., et al. (2019). "Barriers and facilitators to healthy eating among low-income Latino adolescents." *Appetite* 138: 215-222.

Objective: The objective of this study was to explore barriers and facilitators to healthy eating among low-income Latino adolescents using an intervention development framework. Methods: Semi-structured interviews (n = 30) were conducted with Latino youth ages 13-17 who had overweight or obesity at a safety-net clinic in San Francisco, CA. Adolescent beliefs and attitudes regarding healthy eating and individual, family, and community level barriers and facilitators were elicited. Interviews were analyzed using an inductive approach and the Capability-Opportunity-Motivation (COM-B) model. Results: Participants had capability gaps; while they demonstrated basic nutrition knowledge, they also held significant misconceptions about healthy eating, equating "organic" with healthy and failing to recognize sugar in a number of beverages and foods. Families were a source of support through role modeling and purchasing fresh produce, yet in many cases also undermined adolescents' healthy eating goals through purchases of high calorie low nutrient food, an opportunity facilitator and challenge. By contrast, peers were mostly a negative influence due to frequent consumption of high calorie low nutrient food. The school environment posed opportunity challenges as participants found school lunch unpalatable and had ready access to unhealthy options nearby. Participants

were motivated to improve their eating habits but often not resilient in the face of obstacles. Conclusions: Interventions to promote healthy eating among low-income Latino adolescents should address common nutritional misconceptions, target families as well as teens, consider peer influences, and advocate for policy approaches that improve the school food environment.

Beck, F. E., et al. (2016). "The systematic identification of content and delivery style of an exercise intervention." *Psychology & Health* 31(5): 605-621.

Objective: This study explored the utility of using behaviour change taxonomies and checklists to systematically assess the content and delivery of behavioural support for physical activity delivered through an established exercise-referral scheme. Design: An observation study was conducted whereby 22% of initial consultations were observed and audio-recorded, using quota sampling stratified by exercise-referral advisor. Main outcome measures: Content was independently coded by two researchers, to assess; (i) completeness in delivering the programme protocol, (ii) behaviour change techniques delivered (defined using the CALO-RE taxonomy) and (iii) delivery style according to the Behaviour Change Counselling Index (BECCI). Results: Protocol completeness was 63.6% (range 35.6-74.6%). The behaviour change techniques delivered most consistently were 'providing information about where and when to perform the behavior' (86%) and 'setting outcome goals' (82%). Other evidence-based techniques such as self-monitoring were infrequently observed. Variation in BECCI scores indicated that advisors could, but did not consistently, provide a client-centred service. Conclusion: This study highlights how theoretically informed taxonomies can be useful in evaluating service delivery within applied practice, providing a meaningful way of assessing the completeness of protocol delivery relative to evidence. The provision of feedback to practitioners based on such objective criteria also facilitated positive academic-practitioner communication.

Beckley, F., et al. (2017). "Delivering communication strategy training for people with aphasia: what is current clinical practice?" *International Journal of Language & Communication Disorders* 52(2): 197-213.

Background: Communication strategy training (CST) is a recognized part of UK speech and language therapists' (SLTs) role when working with a person with aphasia. Multiple CST interventions have been published but, to date, there are no published studies exploring clinical practice in this area. Aims: To investigate UK SLTs' current CST practices. Methods & Procedures: Thirty-seven UK SLTs completed an online questionnaire, eight of whom attended a follow-up focus group. A clinical consistency scale was applied to the questionnaire data and tasks that were most consistently used were explored in the focus group and analyzed using a primarily deductive thematic data analysis approach. Outcomes & Results: Three key CST findings arose: (1) the rarity with which SLTs focus equally and explicitly on both communication partners' strategies; (2) SLTs' differing understandings of CST terminologies and concepts and underuse of formal assessment; and (3) the absence of video feedback. Conclusion & Implications: This study's survey findings suggest that conversation partners not only receive half the amount of CST given to people with aphasia but also play a more passive learning role when they are present. This is an interesting point to consider when the current evidence base contains stronger evidence for the effectiveness of conversation partner CST over other CST approaches, it being described as an effective method that may be maintained over time.

Beeke, S., et al. (2014). "Enabling Better Conversations Between a Man With Aphasia and His Conversation Partner: Incorporating Writing Into Turn Taking." *Research on Language and Social Interaction* 47(3): 292-305.

This article reports an intervention in the conversations between a man with chronic aphasia, Barry, and his wife, Louise (both names are pseudonyms). Preintervention analysis revealed the potential of writing as a resource for turn construction. Intervention consisted of enabling Barry to use writing to produce more complete turns at talk, thereby increasing the likelihood of mutual understanding, and encouraging Louise to modify her responses to Barry's turns and thus enhance his interactional potential. Quantitative analysis revealed that Barry significantly increased his use of writing after intervention, but there was no change in other trained strategies. Louise eradicated correct production sequences (designed to elicit the correct production of a word despite her knowing the target) but did not implement trained strategies. In conclusion, individually tailored input underpinned by Conversation Analysis principles can alter the conversational behavior of a person with aphasia. It appears easier for a conversation partner to reduce unhelpful behaviors than to adopt facilitatory strategies. Data are in British English.

Beeken, R. J., et al. (2017). "A brief intervention for weight control based on habit-formation theory delivered through primary care: results from a randomised controlled trial." *International Journal of Obesity* 41(2): 246-254.

BACKGROUND: Primary care is the 'first port of call' for weight control advice, creating a need for simple, effective interventions that can be delivered without specialist skills. Ten Top Tips (10TT) is a leaflet based on habit-formation theory that could fill this gap. The aim of the current study was to test the hypothesis that 10TT can achieve significantly greater weight loss over 3 months than 'usual care'. METHODS: A two-arm, individually randomised,

controlled trial in primary care. Adults with obesity were identified from 14 primary care providers across England. Patients were randomised to either 10TT or 'usual care' and followed up at 3, 6, 12, 18 and 24 months. The primary outcome was weight loss at 3 months, assessed by a health professional blinded to group allocation. Difference between arms was assessed using a mixed-effect linear model taking into account the health professionals delivering 10TT, and adjusted for baseline weight. Secondary outcomes included body mass index, waist circumference, the number achieving a 5% weight reduction, clinical markers for potential comorbidities, weight loss over 24 months and basic costs. RESULTS: Five-hundred and thirty-seven participants were randomised to 10TT (n = 267) or to 'usual care' (n = 270). Data were available for 389 (72%) participants at 3 months and for 312 (58%) at 24 months. Participants receiving 10TT lost significantly more weight over 3 months than those receiving usual care (mean difference = -0.87kg; 95% confidence interval: -1.47 to -0.27; P = 0.004). At 24 months, the 10TT group had maintained their weight loss, but the 'usual care' group had lost a similar amount. The basic cost of 10TT was low, that is, around sic23 (\$32) per participant. CONCLUSIONS: The 10TT leaflet delivered through primary care is effective in the short-term and a low-cost option over the longer term. It is the first habit-based intervention to be used in a health service setting and offers a low-intensity alternative to 'usual care'.

Beet, C., et al. (2019). "Intensive care medicine in 2050: preventing harm." *Intensive Care Medicine* 45(4): 505-507.

Bell, L. K., et al. (2018). "Exploring Grandparents' Roles in Young Children's Lifestyle Behaviors and the Prevention of Childhood Obesity: An Australian Perspective." *Journal of Nutrition Education and Behavior* 50(5): 516-521.

Childhood obesity remains a significant public health issue. Because lifestyle behaviors and weight are established early and track through life stages, prevention strategies must commence in the first years of life. Traditionally, such strategies target parents or formal child care providers. Yet grandparents are increasingly providing care to grandchildren and therefore have an important role in their eating and activity behaviors, which creates a major research gap. This commentary piece, focusing on the Australian context, argues that it is imperative and timely for obesity prevention research to include investigations regarding the role of grandparents in the prevention of obesity-related behaviors in young children.

Bellet, C., et al. (2015). "Preventative services offered by veterinarians on sheep farms in England and Wales: Opinions and drivers for proactive flock health planning." *Preventive Veterinary Medicine* 122(4): 381-388.

Recent independent UK government reports and studies have highlighted the importance, but lack, of flock health services provided by veterinarians. Qualitative interviews were analysed by thematic analysis to construct belief statements to understand veterinarians' opinions on preventative advice and drivers for current services to sheep farmers. A postal questionnaire was sent to 515 sheep practices registered with the Royal College of Veterinary Surgeon (RCVS) in England and Wales in 2012 to gather quantitative data on these belief statements and to gather demographic information and current services provided by the veterinarian. Exploratory factor analysis with heuristic approaches was conducted on the respondents' belief statements to identify common factors of veterinarian beliefs. Three main factors were identified: motivation for proactiveness, perceived capability to offer preventative services and perceived opportunity to deliver these services. A beta regression model was built to identify the factors significantly associated with the time veterinarians spent in an advisory role. The relative proportion of time increased by 10% (1.01-1.19), 16% (1.03-1.30) and 29% (CI: 1.09-1.53) for each unit increase in score for factor 1 motivation, factor 2 capability and factor 3 opportunity respectively, indicating that these latent factors explained time veterinarians spent in an advisory role with sheep clients. There was a significant correlation between these factors suggesting influence of the associated beliefs between factors. This study provides insight into the nature and drivers of veterinarians' current behaviour and beliefs. These results could be further tested in behaviour intervention studies and help in designing efficient strategies aiming at promoting proactive health services offered by veterinarians on sheep farms in England and Wales. (C) 2015 Elsevier B.V. All rights reserved.

Belojevic, G. (2013). *Internet Based Health Communication: Analysis of Messages on the Websites of Serbian Public Health Institutes.*

The Chapter examines latest messages on 2011 influenza epidemics in Serbia that were found on 10 February 2011 on the websites of 24 Serbian Public Health Institutes. It adopts four of the STARCC criteria of the Center for Disease Control and Prevention: simplicity, timeliness, relevance and consistency. The variables used for the comparison of messages on influenza epidemics are: word count, the percentage of less known foreign words, last update and the percentage of words on preventive measures. Near half of the analyzed websites (11) had no information on influenza in previous 12 months. High variation coefficients of the investigated variables indicate a low consistency in internet based health communication within the network of Serbian public health institutions. Centralization and coordination in internet public health informing in Serbia is needed, as an effective preparatory measure for pandemics.

Berlan, E. D., et al. (2017). "Pediatricians' Attitudes and Beliefs about Long-Acting Reversible Contraceptives Influence Counseling." *Journal of Pediatric and Adolescent Gynecology* 30(1): 47-52.

Study Objective: Adolescents are at high risk for unintended pregnancy. Because of pediatricians' potential role in contraceptive counseling, understanding their attitudes and beliefs and counseling practices about use of long-acting reversible contraceptives (LARC; ie, etonogestrel implant and intrauterine devices [IUDs]) is vital. **Design, Setting, Participants, Interventions, and Main Outcome Measures:** We interviewed primary care pediatricians (N = 23) in a Midwestern city in June-August 2014. We transcribed the interviews, developed a coding schema, and analyzed these qualitative data using a priori and open coding of transcripts. **Results:** Few pediatricians had favorable views on adolescent IUD use and most did not include IUDs in routine contraception counseling. Pediatricians perceived IUDs to impose significant risks for adverse reproductive outcomes and to be poorly tolerated by adolescents. Poor and/or outdated knowledge influenced inaccurate beliefs and unsupportive attitudes. Whereas some pediatricians were advocates for adolescent use of IUDs, many others had concerns that IUDs were not appropriate and not favored by adolescents. In contrast, participants viewed the etonogestrel implant more favorably and often included it in routine counseling. Some pediatricians focused on the familiar and readily available methods (injectable and oral contraceptives) or assumed patients had predetermined expectations for those methods. Time spent counseling on LARC was also perceived as a barrier. Pediatricians described how education and increased familiarity with LARC changed viewpoints. **Conclusion:** A variety of beliefs and attitudes, as well as factors such as time and personal habits, influence pediatricians' contraceptive counseling practices. Until knowledge deficits are addressed, uninformed viewpoints and unfavorable attitudes will limit adolescents' access to LARC, especially IUDs.

Berube, M., et al. (2015). "Development of theory-based knowledge translation interventions to facilitate the implementation of evidence-based guidelines on the early management of adults with traumatic spinal cord injury." *Journal of Evaluation in Clinical Practice* 21(6): 1157-1168.

Rationale Optimal, early management following a spinal cord injury (SCI) can limit individuals' disabilities and costs related to their care. Several knowledge syntheses were recently published to guide health care professionals with regard to early interventions in SCI patients. However, no knowledge translation (KT) intervention, selected according to a behaviour change theory, has been proposed to facilitate the use of SCI guidelines in an acute care setting. **Objectives** To develop theory-informed KT interventions to promote the application of evidence-based recommendations on the acute care management of SCI patients. **Methods** The first four phases of the knowledge-to-action model were used to establish the study design. Knowledge selection was based on the Grading of Recommendations Assessment, Development and Evaluation system. Knowledge adaptation to the local context was sourced from the ADAPTE process. The theoretical domains framework oriented the selection and development of the interventions based on an assessment of barriers and enablers to knowledge application. **Results** Twenty-nine recommendations were chosen and operationalized in measurable clinical indicators. Barriers related to knowledge, skills, perceived capacities, beliefs about consequences, social influences, and the environmental context and resources theoretical domains were identified. The mapping of behaviour change techniques associated with those barriers led to the development of an online educational curriculum, interdisciplinary clinical pathways as well as policies and procedures. **Conclusions** This research project allowed us developing KT interventions according to a thorough behavioural change methodology. Exposure to the generated interventions will support health care professionals in providing the best care to SCI patients.

Best, P., et al. (2017). "Network methods to support user involvement in qualitative data analyses: an introduction to Participatory Theme Elicitation." *Trials* 18.

Background: While Patient and Public Involvement (PPI) is encouraged throughout the research process, engagement is typically limited to intervention design and post-analysis stages. There are few approaches to participatory data analyses within complex health interventions. **Methods:** Using qualitative data from a feasibility randomised controlled trial (RCT), this proof-of-concept study tests the value of a new approach to participatory data analysis called Participatory Theme Elicitation (PTE). Forty excerpts were given to eight members of a youth advisory PPI panel to sort into piles based on their perception of related thematic content. Using algorithms to detect communities in networks, excerpts were then assigned to a thematic cluster that combined the panel members' perspectives. Network analysis techniques were also used to identify key excerpts in each grouping that were then further explored qualitatively. **Results:** While PTE analysis was, for the most part, consistent with the researcher-led analysis, young people also identified new emerging thematic content. **Conclusions:** PTE appears promising for encouraging user led identification of themes arising from qualitative data collected during complex interventions. Further work is required to validate and extend this method.

Bestek, M., et al. (2015). Design and Deployment of eHealth Interventions using Behavior Change Techniques, BPMN2 and OpenEHR. 2015 IEEE 11th International Conference on Wireless and Mobile Computing, Networking and Communications: 349-356.

Healthcare Systems are transforming from focusing on acute care to focusing on managing chronic conditions. In this process they are becoming highly distributed and specialized. Innovative approaches are needed to fully support the design and deployment of new eHealth interventions. Design should be based on theory and evidence, and deployment should be supported by a sustainable ICT platform, that enables interoperability and reusability by focusing on open standards, open data, open source technology and knowledge modeling. We tested one such method that focuses on using behavior change techniques for the design phase, and tested OpenEHR and BPMN2 as the basis for the ICT platform to support the deployment phase.

Betsch, C., et al. (2018). "Beyond confidence: Development of a measure assessing the 5C psychological antecedents of vaccination." *Plos One* 13(12).

Background Monitoring the reasons why a considerable number of people do not receive recommended vaccinations allows identification of important trends over time, and designing and evaluating strategies to address vaccine hesitancy and increase vaccine uptake. Existing validated measures assessing vaccine hesitancy focus primarily on confidence in vaccines and the system that delivers them. However, empirical and theoretical work has stated that complacency (not perceiving diseases as high risk), constraints (structural and psychological barriers), calculation (engagement in extensive information searching), and aspects pertaining to collective responsibility (willingness to protect others) also play a role in explaining vaccination behavior. The objective was therefore to develop a validated measure of these 5C psychological antecedents of vaccination. Methods and findings Three cross-sectional studies were conducted. Study 1 uses factor analysis to develop an initial scale and assesses the sub-scales' convergent, discriminant, and concurrent validity (N = 1,445, two German convenience-samples). In Study 2, a sample representative regarding age and gender for the German population (N = 1,003) completed the measure for vaccination in general and for specific vaccinations to assess the potential need for a vaccine-specific wording of items. Study 3 compared the novel scale's performance with six existing measures of vaccine hesitancy (N= 350, US convenience-sample). As an outcome, a long (15-item) and short (5-item) 5C scale were developed as reliable and valid indicators of confidence, complacency, constraints, calculation, and collective responsibility. The 5C subscales correlated with relevant psychological concepts, such as attitude (confidence), perceived personal health status and invulnerability (complacency), self-control (constraints), preference for deliberation (calculation), and communal orientation (collective responsibility), among others. The new scale provided similar results when formulated in a general vs. vaccine-specific way (study 2). In a comparison of seven measures the 5C scale was constantly among the scales that explained the highest amounts of variance in analyses predicting single vaccinations (between 20% and 40%; study 2). The present studies are limited to the concurrent validity of the scales. Conclusions The 5C scale provides a novel tool to monitor psychological antecedents of vaccination and facilitates diagnosis, intervention design and evaluation. Its short version is suitable for field settings and regular global monitoring of relevant antecedents of vaccination.

Beyene, K., et al. (2019). "Modifiable risk factors for prescription medicine sharing behaviours." *Research in Social & Administrative Pharmacy* 15(2): 154-163.

Background: Prescription medicine sharing has been defined as giving one's own medicine to someone else (lending) or taking someone else's medicine (borrowing). Medicines can be shared for non-medical purposes (recreational sharing or drug abuse) or for their intended therapeutic benefits (non-recreational sharing, e.g. sharing antibiotics to self-treat); the latter is the focus of this research. Limited research evidence is available about modifiable risk factors for non-recreational medicine sharing and addressing this issue was the main aim of this research. Methods: An online, cross-sectional survey design was used. The study population comprised a convenience sample of 233 adults, who were primarily recruited through patient support groups across New Zealand. Principal component analysis was used to develop scales assessing attitudes toward medicine lending and borrowing. Logistic regression was used to examine the relationship between explanatory (demographics, medical conditions, and attitudes towards medicine sharing) and outcome (medicine sharing behaviours) variables. Results: Half of the study participants reported ever borrowing/lending medicines, and approximately a third of participants reported borrowing/lending in the past year. Modifiable risk factors associated with an increased risk of medicine borrowing behaviour were having more difficulty with accessing medicine ('access-related issue'), stronger 'emotional beliefs about borrowing', and greater 'concern about missing doses.' Greater 'concern for the wellbeing of others' and stronger 'beliefs about the benefits and safety of lending' were associated with an increased risk of medicine lending behaviour. Those with a higher 'perceived risk of harm' were less likely to borrow or lend medicines. Conclusions: This research expands the current knowledge of medicine sharing by examining underlying behavioural factors which predict sharing behaviours and that can be modified by interventions.

This research suggests using multifaceted interventions which consider health status, behavioural, and psychosocial factors, as these appear to contribute most to medicine sharing.

Beyene, K., et al. (2019). "Using the Behaviour Change Wheel to explore potential strategies for minimising harms from non-recreational prescription medicine sharing." *Research in Social & Administrative Pharmacy* 15(2): 130-144.

Introduction: Non-recreational sharing of prescribed medicines can have positive outcomes under some circumstances, but can also result in negative health outcomes. This paper describes a theoretically underpinned and systematic approach to exploring potential interventions to reduce harm. Methods: Individual, semi-structured, face-to-face interviews were conducted with purposively sampled pharmacists (n=8), doctors (n=4), nurses (n=6) and patients (n=17) from Auckland, New Zealand. Thematic analysis of suggested interventions was undertaken, and these were linked to relevant intervention functions of the Behaviour Change Wheel (BCW). Analysis of previously defined factors influencing sharing were mapped onto the "Capability, Opportunity, Motivation - Behaviour" (COM-B) model of the BCW. Results: COM-B analysis of the factors influencing sharing behaviour revealed: (i) 'Capability'-related factors, such as patient misconceptions about the safety of certain medicines, forgetting to refill or to carry around own medicines, and lack of knowledge about safe disposal of leftover/unused medicines; (ii) 'Opportunity'-related factors included lack of access to health facilities, lack of time to see a doctor, linguistic and cultural barriers, lack of information from healthcare providers about risks of sharing, and having leftover/unused medicines, and (iii) 'Motivation'-related factors included altruism, illness denial, embarrassment about seeing a doctor, not carrying around own medicines, habit, and fear of negative health consequences from missing a few doses of medicines. Five intervention functions of the BCW appear to be the most likely candidates for targeting the factors which relate to medicine sharing. These are education, persuasion, enablement, environmental restructuring and restriction. Conclusions: A variety of personal and external factors which influence sharing behaviours were identified, and the BCW provided a means by which theoretically underpinned interventions to reduce potential harms from this behaviour could be proposed. The findings can help with the design of approaches to reduce harm associated with non-recreational medicine sharing.

Bhattacharya, A., et al. (2017). "A process evaluation of the UK-wide Antibiotic Guardian campaign: developing engagement on antimicrobial resistance." *Journal of Public Health* 39(2): E40-E47.

Public Health England developed and led a new UK-wide pledge campaign aiming to improve behaviours around the prudent use and prescription of antibiotics. This paper presents a process evaluation for the first season of the campaign to determine the impact of the campaign and inform future campaigns. Data were collected from AntibioticGuardian.com and Google analytics between August 2014 and January 2015. The primary outcome was the decision to pledge and was assessed according to target audience, location, source and route of referral to the website. There were 47 158 unique visits to the website and 12 509 visitors made a pledge (26.5%) to become Antibiotic Guardians (AGs); 69% were healthcare professionals. Social media directed the most traffic to the website (24% of the public that signed up cited social media as how they discovered the campaign), other acquisition routes such as self-directed, email or website referral, were more effective at encouraging visitors to pledge. The campaign completed its goal of 10 000 AGs in the first year. Further work is required to improve engagement with target audiences and determine whether this campaign has an impact on antibiotic consumption and prescribing behaviour among the public and healthcare professionals.

Bhattacharya, A., et al. (2017). *Lessons from Practice: Designing Tools to Facilitate Individualized Support for Quitting Smoking*.

Many health care providers, with a variety of trainings, counsel clients on quitting smoking on a day-to-day basis. In their clinical practice, they draw from and adapt guidelines and research-based strategies to fit individual client situations and challenges. Designers of technologies to support quitting smoking can learn from these real world practices to create tools that better adapt to individual differences. We present findings from interviews with 28 providers with diverse experiences in smoking cessation counselling. Through analysis of their individualization strategies, challenges, and perceptions of technology, we find that providers: (1) individualize context appropriate coping strategies by involving clients in brainstorming, (2) emphasize the need to support nicotine withdrawal in clients, (3) mitigate social triggers and mediate social support for clients, and (4) need to navigate dependencies with other providers for managing medications and comorbid health conditions of clients. With this empirical understanding, we extend the discussion on the design of technology to support quitting smoking, highlight current barriers to individualization, and suggest future opportunities to address these barriers.

Bianchi, F., et al. (2019). "Replacing meat with alternative plant-based products (RE-MAPs): protocol for a randomised controlled trial of a behavioural intervention to reduce meat consumption." *Bmj Open* 9(5).

Introduction Reducing meat consumption could contribute towards preventing some chronic conditions and protecting the natural environment. This study will examine the effectiveness of a behavioural intervention to reduce meat consumption. Methods and analyses Replacing meat with alternative plant-based product is a randomised controlled trial comparing a behavioural intervention to reduce meat consumption with a no intervention control condition. Eligible volunteers will be recruited from the general public through advertisement and randomised in a 1: 1 ratio to receive no intervention or a 4-week intervention comprising the provision of free plant-based meat alternatives, written information on the health and environmental benefits of eating less meat, success stories of people who reduced their meat consumption and recipes. The primary outcome is the change in meat consumption at 4 weeks (T1) from baseline. Secondary and exploratory outcomes include changes in meat consumption at 8 weeks (T2) from baseline and changes from the baseline to both follow-up in other aspects of participants diet, putative psychosocial determinants of eating a low meat diet and of using meat substitutes and biomarkers of health risk, including blood lipid profiles, blood pressure, weight and body composition. Linear models will be employed to explore whether the changes in each of the aforementioned outcomes differ significantly between the control and intervention group. Qualitative interviews on a subsample of participants receiving the intervention will evaluate their experiences of the intervention and help to identify the mechanisms through which the intervention reduced meat consumption or the barriers preventing the intervention to aid this dietary transition. Ethics and dissemination The trial has been granted ethical approval by the Medical Sciences Interdivisional Research Ethics Committee (IDREC) of the University of Oxford (Ref: R54329/RE001). All results originating from this study will be submitted for publication in scientific journals and presented at meetings and through the media.

Biddle, S. J. H. (2018). Sedentary Behaviour at the Individual Level: Correlates, Theories, and Interventions. *Sedentary Behaviour Epidemiology*. M. F. Leitzmann, C. Jochem and D. Schmid: 405-429.

Sedentary behaviour is highly frequent in individuals, and this chapter focusses on sedentary behaviour at the individual level of analysis. Using the behavioural epidemiology framework, the chapter summarizes issues concerning individual-level knowledge and approaches. It focusses mainly on correlates and behaviour change. Correlates discussed include whether sedentary behaviour and physical activity are associated and the coexistence of other health behaviours. Barriers to sedentary behaviour change are considered. A number of psychological theories are covered that have been popular in physical activity research, and their application to sedentary behaviour is commented upon. Moreover, alternative perspectives are covered, including notions of behavioural economics, habit, and nudging. Coverage is given to sedentary behaviour interventions, including those involving education, prompting, and wearable technology. Behaviour change techniques that seem to be useful for successful behaviour change are covered.

Biddle, S. J. H. and A. M. Batterham (2015). "High-intensity interval exercise training for public health: a big HIT or shall we HIT it on the head?" *International Journal of Behavioral Nutrition and Physical Activity* 12.

Background: The efficacy of high-intensity interval training for a broad spectrum of cardio-metabolic health outcomes is not in question. Rather, the effectiveness of this form of exercise is at stake. In this paper we debate the issues concerning the likely success or failure of high-intensity interval training interventions for population-level health promotion. Discussion: Biddle maintains that high-intensity interval training cannot be a viable public health strategy as it will not be adopted or maintained by many people. This conclusion is based on an analysis of perceptions of competence, the psychologically aversive nature of high-intensity exercise, the affective component of attitudes, the less conscious elements of motivated behaviour that reflect our likes and dislikes, and analysis using the RE-AIM framework. Batterham argues that this appraisal is based on a constrained and outmoded definition of high-intensity interval training and that truly practical and scalable protocols have been - and continue to be - developed. He contends that the purported displeasure associated with this type of exercise has been overstated. Biddle suggests that the way forward is to help the least active become more active rather than the already active to do more. Batterham claims that traditional physical activity promotion has been a spectacular failure. He proposes that, within an evolutionary health promotion framework, high-intensity interval training could be a successful population strategy for producing rapid physiological adaptations benefiting public health, independent of changes in total physical activity energy expenditure. Summary: Biddle recommends that we focus our attention elsewhere if we want population-level gains in physical activity impacting public health. His conclusion is based on his belief that high-intensity interval training interventions will have limited reach, effectiveness, and adoption, and poor implementation and maintenance. In contrast, Batterham maintains that there is genuine potential for scalable, enjoyable high-intensity interval exercise interventions to contribute substantially to addressing areas of public health priority, including prevention and treatment of Type 2 diabetes and cardiovascular disease.

Biddle, S. J. H., et al. (2015). "A Randomised Controlled Trial to Reduce Sedentary Time in Young Adults at Risk of Type 2 Diabetes Mellitus: Project STAND (Sedentary Time AND Diabetes)." *Plos One* 10(12).

Aims Type 2 diabetes mellitus (T2DM), a serious and prevalent chronic disease, is traditionally associated with older age. However, due to the rising rates of obesity and sedentary life-styles, it is increasingly being diagnosed in the younger population. Sedentary (sitting) behaviour has been shown to be associated with greater risk of cardio-metabolic health outcomes, including T2DM. Little is known about effective interventions to reduce sedentary behaviour in younger adults at risk of T2DM. We aimed to investigate, through a randomised controlled trial (RCT) design, whether a group-based structured education workshop focused on sitting reduction, with self-monitoring, reduced sitting time. Methods Adults aged 18-40 years who were either overweight (with an additional risk factor for T2DM) or obese were recruited for the Sedentary Time ANd Diabetes (STAND) RCT. The intervention programme comprised of a 3-hour group-based structured education workshop, use of a self-monitoring tool, and follow-up motivational phone call. Data were collected at three time points: baseline, 3 and 12 months after baseline. The primary outcome measure was accelerometer-assessed sedentary behaviour after 12 months. Secondary outcomes included other objective (activPAL) and self-reported measures of sedentary behaviour and physical activity, and biochemical, anthropometric, and psycho-social variables. Results 187 individuals (69% female; mean age 33 years; mean BMI 35 kg/m²) were randomised to intervention and control groups. 12 month data, when analysed using intention-to-treat analysis (ITT) and per-protocol analyses, showed no significant difference in the primary outcome variable, nor in the majority of the secondary outcome measures. Conclusions A structured education intervention designed to reduce sitting in young adults at risk of T2DM was not successful in changing behaviour at 12 months. Lack of change may be due to the brief nature of such an intervention and lack of focus on environmental change. Moreover, some participants reported a focus on physical activity rather than reductions in sitting per se. The habitual nature of sedentary behaviour means that behaviour change is challenging.

Biezen, R., et al. (2017). "Management of respiratory tract infections in young children-A qualitative study of primary care providers' perspectives." *Npj Primary Care Respiratory Medicine* 27.

Respiratory tract infections in young children are the most common cause of general practice visits in Australia. Despite the availability of clinical practice guidelines, the treatment and management of respiratory tract infections in young children is inconsistent. The aim of the study was to explore the management of respiratory tract infections in young children from a multidisciplinary perspective using across-sectional qualitative research design based on the theoretical domains framework and the Capability, Opportunity and Motivation-B model. In-depth interviews were conducted with 30 primary care providers to explore their knowledge, views and management of respiratory tract infections in young children. Interviews focused on symptomatic management, over-the-counter medications and antibiotic use, and data were thematically analysed. Our findings showed that factors such as primary care providers' time constraints, parental anxiety, general practitioners' perception of what parents want, perceived parental pressure, and fear of losing patients were some of the reasons why primary care providers did not always adhere to guideline recommendations. Primary care providers also provided conflicting advice to parents concerning over-the-counter medications and when children should resume normal activities. Overall, this study showed that complex interactions involving emotional and psychological factors influenced the decision making process of primary care providers' management of respiratory tract infections in young children. A team care approach with consistent advice, and improved communication between primary care providers and parents is vital to overcome some of these barriers and improve guideline adherence. The findings of this research will inform the development of interventions to better manage respiratory tract infections in young children.

Biezen, R., et al. (2018). "Why do we not want to recommend influenza vaccination to young children? A qualitative study of Australian parents and primary care providers." *Vaccine* 36(6): 859-865.

Introduction: Influenza vaccination has been shown to be safe and effective against influenza and in the prevention of complicating secondary respiratory illnesses. However, its uptake in young children remains low. This study explored the views, attitudes and practices of parents and primary care providers (PCPs) on their knowledge and acceptance of influenza vaccination in children under 5. Methods: Using a cross-sectional qualitative research design, we conducted 30 in-depth interviews with PCPs (i.e., general practitioners, practice nurses, maternal and child health nurses, and pharmacists) and five focus groups with parents (n = 50) between June 2014 and July 2015 in Melbourne, Australia. Data were thematically analysed. Results: Parents thought the vaccine could cause influenza, and influenza vaccination was not necessary for their children as they needed to build their own 'immunity'. Parents said that they would consider vaccinating their children if recommended by their GP and if the influenza vaccine was part of the immunisation schedule. PCPs also expressed concerns regarding the efficacy of the vaccine as well as out-of-pocket costs incurred by families, and uncertainty regarding the mortality and morbidity of influenza in otherwise healthy children. However, they said they would recommend the vaccine to high-risk groups (e.g. children with chronic disease(s), and asthma). Conclusion: Despite the established safety of influenza vaccines, barriers to uptake include concerns regarding the iatrogenic effects of vaccination, its administration schedule, and knowledge of influenza severity. Updated information on influenza and

the efficacy of the vaccine, and incorporating influenza vaccination into the immunisation schedule may overcome some of these barriers to increase influenza vaccination in this vulnerable cohort. (C) 2018 Elsevier Ltd. All rights reserved.

Billah, S. M., et al. (2018). "Feasibility of engaging "Village Doctors" in the Community-based Integrated Management of Childhood illness (C-IMCI): experience from rural Bangladesh." *Journal of Global Health* 8(2).

Background Informal health care providers particularly "village doctors" are the first point of care for under-five childhood illnesses in rural Bangladesh. We engaged village doctors as part of the Multi-Country Evaluation (MCE) of Integrated Management of Childhood Illness (IMCI) and assessed their management of sick under-five children before and after a modified IMCI training, supplemented with ongoing monitoring and supportive supervision. Methods In 2003-2004, 144 village doctors across 131 IMCI intervention villages in Matlab Bangladesh participated in a two-day IMCI training; 135 of which completed pre- and post-training evaluation tests. In 2007, 38 IMCI-trained village doctors completed an end-of-project. knowledge retention test. Village doctor prescription practices for sick under-five children were examined through household surveys, and routine monitoring visits. In-depth interviews were done with mothers seeking care from village doctors. Results Village doctors' knowledge on the assessment and management. of childhood illnesses improved significantly after training; knowledge of danger signs of pneumonia and severe pneumonia increased from 39% to 78% ($P<0.0001$) and from 17% to 47% ($P<0.0001$) respectively. Knowledge on the correct management of severe pneumonia increased from 62% to 84% ($P<0.0001$), and diarrhoea management improved from 65% to 82% ($P=0.0005$). Village doctors retained this knowledge over three years except for home management of pneumonia. No significant differences were observed in prescribing practices for diarrhoea and pneumonia management between trained and untrained village doctors. Village doctors were accessible to communities; 76% had cell phones; almost all attended home calls, and did not charge consultation fees. Nearly all (91%) received incentives from pharmaceutical representatives. Conclusions Village doctors have the capacity to learn and retain knowledge on the appropriate management of under-five illnesses. Training alone did not improve inappropriate antibiotic prescription practices. Intensive monitoring and efforts to target key actors including pharmaceutical companies, which influence village doctors dispensing practices, and implementation of mechanisms to track and regulate these providers are necessary for future engagement in management of under-five childhood illnesses.

Bindoff, I., et al. (2016). "Quittr: The Design of a Video Game to Support Smoking Cessation." *Jmir Serious Games* 4(2).

Background: Smoking is recognized as the largest, single, preventable cause of death and disease in the developed world. While the majority of smokers report wanting to quit, and many try each year, smokers find it difficult to maintain long-term abstinence. Behavioral support, such as education, advice, goal-setting, and encouragement, is known to be beneficial in improving the likelihood of succeeding in a quit attempt, but it remains difficult to effectively deliver this behavioral support and keep the patient engaged with the process for a sufficient duration. In an attempt to solve this, there have been numerous mobile apps developed, yet engagement and retention have remained key challenges that limit the potential effectiveness of these interventions. Video games have been clearly linked with the effective delivery of health interventions, due to their capacity to increase motivation and engagement of players. Objective: The objective of this study is to describe the design and development of a smartphone app that is theory-driven, and which incorporates gaming characteristics in order to promote engagement with content, and thereby help smokers to quit. Methods: Game design and development was informed by a taxonomy of motivational affordances for meaningful gamified and persuasive technologies. This taxonomy describes a set of design components that is grounded in well-established psychological theories on motivation. Results: This paper reports on the design and development process of Quittr, a mobile app, describing how game design principles, game mechanics, and game elements can be used to embed education and support content, such that the app actually requires the user to access and engage with relevant educational content. The next stage of this research is to conduct a randomized controlled trial to determine whether the additional incentivization game features offer any value in terms of the key metrics of engagement-how much content users are consuming, how many days users are persisting with using the app, and what proportion of users successfully abstain from smoking for 28 days, based on user-reported data and verified against a biochemical baseline using cotinine tests. Conclusions: We describe a novel, and theoretically-informed mobile app design approach that has a broad range of potential applications. By using the virtual currency approach, we remove the need for the game to comprehensively integrate the healthy activity as part of its actual play mechanics. This opens up the potential for a wide variety of health problems to be tackled through games where no obvious play mechanic presents itself. The implications of this app are that similar approaches may be of benefit in areas such as managing chronic conditions (diabetes, heart disease, etc), treating substance abuse (alcohol, illicit drugs, etc), diet and exercise, eating disorders (anorexia, bulimia, and binge eating), and various phobias.

Bindraban, R. S., et al. (2018). "Evidence-Based Guidelines to Eliminate Repetitive Laboratory Testing?" *Jama Internal Medicine* 178(3): 431-431.

Biondo, P. D., et al. (2019). "How to increase public participation in advance care planning: findings from a World Cafe to elicit community group perspectives." *Bmc Public Health* 19.

BackgroundIn 2014, Alberta, Canada broke new ground in having the first provincial healthcare policy and procedure for advance care planning (ACP), the process of communicating and documenting a person's future healthcare preferences. However, to date public participation and awareness of ACP remains limited. The aim of this initiative was to elicit community group perspectives on how to help people learn about and participate in ACP.**Methods**Targeted invitations were sent to over 300 community groups in Alberta (e.g. health/disease, seniors/retirement, social/service, legal, faith-based, funeral planning, financial, and others). Sixty-seven participants from 47 community groups attended a World Cafe. Participants moved between tables at fixed time intervals, and in small groups discussed three separate ACP-related questions. Written comments were captured by participants and facilitators. Each comment was coded according to Michie et al.'s Theoretical Domains Framework, and mapped to the Capability, Opportunity and Motivation behavior change system (COM-B) in order to identify candidate intervention strategies.**Results**Of 800 written comments, 76% mapped to the Opportunity: Physical COM-B component of behavior, reflecting a need for access to ACP resources. The most common intervention functions identified pertained to Education, Environmental Restructuring, Training, and Enablement. We synthesized the intervention functions and qualitative comments into eight recommendations for engaging people in ACP. These pertain to access to informational resources, group education and facilitation, health system processes, use of stories, marketing, integration into life events, inclusion of business partners, and harmonization of terminology.**Conclusions**There was broad support for the role of community groups in promoting ACP. Eight recommendations for engaging the public in ACP were generated and have been shared with stakeholders.

Birken, S. A., et al. (2014). "Potential determinants of health-care professionals' use of survivorship care plans: a qualitative study using the theoretical domains framework." *Implementation Science* 9.

Background: Survivorship care plans are intended to improve coordination of care for the nearly 14 million cancer survivors in the United States. Evidence suggests that survivorship care plans (SCPs) have positive outcomes for survivors, health-care professionals, and cancer programs, and several high-profile organizations now recommend SCP use. Nevertheless, SCP use remains limited among health-care professionals in United States cancer programs. Knowledge of barriers to SCP use is limited in part because extant studies have used anecdotal evidence to identify determinants. This study uses the theoretical domains framework to identify relevant constructs that are potential determinants of SCP use among United States health-care professionals. **Methods:** We conducted semi-structured interviews to assess the relevance of 12 theoretical domains in predicting SCP use among 13 health-care professionals in 7 cancer programs throughout the United States with diverse characteristics. Relevant theoretical domains were identified through thematic coding of interview transcripts, identification of specific beliefs within coded text units, and mapping of specific beliefs onto theoretical constructs. **Results:** We found the following theoretical domains (based on specific beliefs) to be potential determinants of SCP use: health-care professionals' beliefs about the consequences of SCP use (benefit to survivors, health-care professionals, and the system as a whole); motivation and goals regarding SCP use (advocating SCP use; extent to which using SCPs competed for health-care professionals' time); environmental context and resources (whether SCPs were delivered at a dedicated visit and whether a system, information technology, and funding facilitated SCP use); and social influences (whether using SCPs is an organizational priority, influential people support SCP use, and people who could assist with SCP use buy into using SCPs). Specific beliefs mapped onto the following psychological constructs: outcome expectancies, intrinsic motivation, goal priority, resources, leadership, and team working. **Conclusions:** Previous studies have explored a limited range of determinants of SCP use. Our findings suggest a more comprehensive list of potential determinants that could be leveraged to promote SCP use. These results are particularly timely as cancer programs face impending SCP use requirements. Future work should develop instruments to measure the potential determinants and assess their relative influence on SCP use.

Blackburn, M., et al. (2015). "Raising the topic of weight in general practice: perspectives of GPs and primary care nurses." *Bmj Open* 5(8).

Objective: To explore general practitioners' (GPs) and primary care nurses' perceived barriers to raising the topic of weight in general practice. **Design:** A qualitative study using the Theoretical Domains Framework (TDF). 34 semistructured interviews were conducted to explore views, opinions and experiences of initiating a discussion about weight. Content and thematic analyses were used to analyse the interview transcripts. **Setting:** General practices located in one primary care trust in the South West of England. **Participants:** 17 GPs and 17 nurses aged between 32 and 66 years. The modal age range for GPs was 30-39 years and for nurses, 40-49 years. **Results:** Barriers were synthesised into three main themes: (1) limited understanding about obesity care, (2) concern about negative consequences, and (3) having time and resources to raise a sensitive topic. Most barriers were related to raising the topic in more routine settings, rather than when dealing with an associated medical condition. GPs were particularly worried about damaging their

relationship with patients and emphasised the need to follow their patient's agenda. Conclusions: Uncertainty about obesity, concerns about alienating patients and feeling unable to raise the topic within the constraints of a 10 min consultation, is adding to the reluctance of GPs and nurses to broach the topic of weight. Addressing these concerns through training or by providing evidence of effective interventions that are feasible to deliver within consultations may lead to greater practitioner engagement and willingness to raise the topic.

Blacklock, C., et al. (2016). "Impact of Contextual Factors on the Effect of Interventions to Improve Health Worker Performance in Sub-Saharan Africa: Review of Randomised Clinical Trials." *Plos One* 11(1).

Background Africa bears 24% of the global burden of disease but has only 3% of the world's health workers. Substantial variation in health worker performance adds to the negative impact of this significant shortfall. We therefore sought to identify interventions implemented in sub-Saharan Africa aiming to improve health worker performance and the contextual factors likely to influence local effectiveness. Methods and Findings A systematic search for randomised controlled trials of interventions to improve health worker performance undertaken in sub-Saharan Africa identified 41 eligible trials. Data were extracted to define the interventions' components, calculate the absolute improvement in performance achieved, and document the likelihood of bias. Within-study variability in effect was extracted where reported. Statements about contextual factors likely to have modified effect were subjected to thematic analysis. Interventions to improve health worker performance can be very effective. Two of the three trials assessing mortality impact showed significant reductions in death rates (age<5 case fatality 5% versus 10%, $p<0.01$; maternal in-hospital mortality 6.8/1000 versus 10.3/1000; $p<0.05$). Eight of twelve trials focusing on prescribing had a statistically significant positive effect, achieving an absolute improvement varying from 9% to 48%. However, reported range of improvement between centres within trials varied substantially, in many cases exceeding the mean effect. Nine contextual themes were identified as modifiers of intervention effect across studies; most frequently cited were supply-line failures, inadequate supervision or management, and failure to follow-up training interventions with ongoing support, in addition to staff turnover. Conclusions Interventions to improve performance of existing staff and service quality have the potential to improve patient care in underserved settings. But in order to implement interventions effectively, policy makers need to understand and address the contextual factors which can contribute to differences in local effect. Researchers therefore must recognise the importance of reporting how context may modify effect size.

Blacklock, C., et al. (2016). "Paying for Performance to Improve the Delivery and Uptake of Family Planning in Low and Middle Income Countries: A Systematic Review." *Studies in Family Planning* 47(4): 309-324.

Paying for performance is a strategy to meet the unmet need for family planning in low and middle income countries; however, rigorous evidence on effectiveness is lacking. Scientific databases and grey literature were searched from 1994 to May 2016. Thirteen studies were included. Payments were linked to units of targeted services, usually modified by quality indicators. Ancillary components and payment indicators differed between studies. Results were mixed for family planning outcome measures. Paying for performance was associated with improved modern family planning use in one study, and increased user and coverage rates in two more. Paying for performance with conditional cash transfers increased family planning use in another. One study found increased use in the upper wealth group only. However, eight studies reported no impact on modern family planning use or prevalence. Secondary outcomes of equity, financial risk protection, satisfaction, quality, and service organization were mixed. Available evidence is inconclusive and limited by the scarcity of studies and by variation in intervention, study design, and outcome measures. Further studies are warranted.

Blane, D. N., et al. (2015). "Interventions targeted at primary care practitioners to improve the identification and referral of patients with co-morbid obesity: a realist review protocol." *Systematic Reviews* 4.

Background: Obesity is one of the most significant public health challenges in the developed world. Recent policy has suggested that more can be done in primary care to support adults with obesity. In particular, general practitioners (GPs) and practice nurses (PNs) could improve the identification and referral of adults with obesity to appropriate weight management services. Previous interventions targeted at primary care practitioners in this area have had mixed results, suggesting a more complex interplay between patients, practitioners, and systems. The objectives of this review are (i) to identify the underlying 'programme theory' of interventions targeted at primary care practitioners to improve the identification and referral of adults with obesity and (ii) to explore how and why GPs and PNs identify and refer individuals with obesity, particularly in the context of weight-related co-morbidity. This protocol will explain the rationale for using a realist review approach and outline the key steps in this process. Methods: Realist review is a theory-led approach to knowledge synthesis that provides an explanatory analysis aimed at discerning what works, for whom, in what circumstances, how, and why. In this review, scoping interviews with key stakeholders involved in the planning and delivery of adult weight management services in Scotland helped to inform the identification of formal theories - from psychology, sociology, and implementation science - that will be tested as the review progresses. A comprehensive search

strategy is described, including scope for iterative searching. Data analysis is outlined in three stages (describing context-mechanism-outcome configurations, exploring patterns in these configurations, and developing and testing middle-range theories, informed by the formal theories previously identified), culminating in the production of explanatory programme theory that considers individual, interpersonal, and institutional/systems-level components. Discussion: This is the first realist review that we are aware of looking at interventions targeted at primary care practitioners to improve the weight management of adults with obesity. Engagement with stakeholders at an early stage is a unique feature of realist review. This shapes the scope of the review, identification of candidate theories and dissemination strategies. The findings of this review will inform policy and future interventions.

Bobak, A. and T. Raupach (2018). "Effect of a Short Smoking Cessation Training Session on Smoking Cessation Behavior and Its Determinants Among General Practitioner Trainees in England." *Nicotine & Tobacco Research* 20(12): 1525-1528.

Introduction: Inadequate smoking cessation interventions by physicians have been attributed to lack of training, and it is generally thought that additional education will improve patient care. However, interventions aimed at increasing knowledge and practical skills only address one determinant of behavior (capability). This prospective study assessed how much a teaching session for general practitioner (GP) trainees enrolled in Vocational Training Schemes in England also affected two other determinants (motivation and opportunity) specified by the COM-B theory of behavior. Methods: Between October and December 2015, GP trainees were given a 3.5-h training session in the theory and practice of smoking cessation. Questionnaires addressed motivation, capability, and opportunities to provide evidence-based brief advice to smokers at the beginning and end of the session, and 3 months later. They also looked at the recollection of previous teaching as well as knowledge, skills, intervention frequency, and perceived barriers against providing interventions. Results: Participants (n = 123) remembered little previous training on the subject and self-reported pre-session knowledge was minimal. Motivation was high throughout while capability and opportunity increased considerably during the session. No further change in these parameters was noted at 3 months. The proportion of participants stating they provided evidence-based brief advice to >50% of smokers increased from 25.2% before the session to 57.7% at follow-up. Lack of time remained a commonly cited barrier. Conclusions: Training elicited an immediate and sustained effect on capability, perceived opportunity, and behavior itself. While perceived barriers referring to capability were greatly reduced, barriers referring to opportunity (eg, lack of time) persisted.

Boeckmann, M., et al. (2018). "Protocol for the mixed-methods process and context evaluation of the TB & Tobacco randomised controlled trial in Bangladesh and Pakistan: a hybrid effectiveness-implementation study." *Bmj Open* 8(3).

Introduction Tuberculosis (TB) remains a significant public health problem in South Asia. Tobacco use increases the risks of TB infection and TB progression. The TB&Tobacco placebo-controlled randomised trial aims to (1) assess the effectiveness of the tobacco cessation medication cytisine versus placebo when combined with behavioural support and (2) implement tobacco cessation medication and behavioural support as part of general TB care in Bangladeshi and Pakistan. This paper summarises the process and context evaluation protocol embedded in the effectiveness implementation hybrid design. Methods and analysis We are conducting a mixed methods process and context evaluation informed by an intervention logic model that draws on the UK Medical Research Council's Process Evaluation Guidance. Our approach includes quantitative and qualitative data collection on context, recruitment, reach, dose delivered, dose received and fidelity. Quantitative data include patient characteristics, reach of recruitment among eligible patients, routine trial data on dose delivered and dose received, and a COM-B ('capability', 'opportunity', 'motivation' and 'behaviour') questionnaire filled in by participating health workers. Qualitative data include semistructured interviews with TB health workers and patients, and with policy-makers at district and central levels in each country. Interviews will be analysed using the framework approach. The behavioural intervention delivery is audio recorded and assessed using a predefined fidelity coding index based on behavioural change technique taxonomy. Ethics and dissemination The study complies with the guidelines of the Declaration of Helsinki. Ethics approval for the study and process evaluation was granted by the University of Leeds (qualitative components), University of York (trial data and fidelity assessment), Bangladesh Medical Research Council and Bangladesh Drug Administration (trial data and qualitative components) and Pakistan Medical Research Council (trial data and qualitative components). Results of this research will be disseminated through reports to stakeholders and peer reviewed publications and conference presentations.

Boland, L., et al. (2019). "Post-training Shared Decision Making Barriers and Facilitators for Pediatric Healthcare Providers: updates A Mixed-Methods Study." *Academic Pediatrics* 19(1): 118-129.

OBJECTIVE: To assess barriers to and facilitators of shared decision making (SDM) for pediatric healthcare providers (HCPs) after they have been trained in SDM. METHODS: A mixed methods study using triangulation of data sources. Pediatric HCPs with SDM training who worked at a Canadian tertiary care pediatric hospital were eligible. Participants completed a validated SDM barriers survey (n = 60) and a semi-structured interview (n = 11). We calculated

descriptive statistics, Univariate and multivariable ordinary least squares linear regression models determined predictors of HCPs' intention to use SDM. Interviews were audiotaped and transcribed verbatim. We analyzed qualitative data using deductive and inductive content analyses and organized categories according to the Ottawa Model of Research Use. RESULTS: Intention to use SDM was high (mean score = 5.6/7, SD = 0.78) and positively correlated with SDM use (RR = 1.46, 95% CI 1.18-1.81). However, 52% of survey respondents reported not using SDM after training. HCPs identified factors influencing SDM at the levels of innovation, adopter, environment, and training. Insufficient time (barrier) and buy-in and agreement with SDM (facilitators) were most commonly cited. To improve SDM use, HCPs want a more team-based approach to SDM training, continuing education, and implementation. CONCLUSIONS: Despite training and positive intentions, many HCPs report not subsequently using SDM and identified numerous post-training barriers to its use. To overcome SDM barriers and improve uptake, HCPs recommend creating a socially supportive environment through a team-based approach to SDM training and implementation. These findings can inform SDM training and implementation interventions at pediatric health care centers.

Bonnell, E. K., et al. (2017). "Influences on Dietary Choices during Day versus Night Shift in Shift Workers: A Mixed Methods Study." *Nutrients* 9(3).

Shift work is associated with diet-related chronic conditions such as obesity and cardiovascular disease. This study aimed to explore factors influencing food choice and dietary intake in shift workers. A fixed mixed method study design was undertaken on a convenience sample of firefighters who continually work a rotating roster. Six focus groups (n = 41) were conducted to establish factors affecting dietary intake whilst at work. Dietary intake was assessed using repeated 24 h dietary recalls (n = 19). Interviews were audio recorded, transcribed verbatim, and interpreted using thematic analysis. Dietary data were entered into Food Works and analysed using Wilcoxon signed-rank test; p < 0.05 was considered significant. Thematic analysis highlighted four key themes influencing dietary intake: shift schedule; attitudes and decisions of co-workers; time and accessibility; and knowledge of the relationship between food and health. Participants reported consuming more discretionary foods and limited availability of healthy food choices on night shift. Energy intakes (kJ/day) did not differ between days that included a day or night shift but greater energy density (EDenergy, kJ/g/day) of the diet was observed on night shift compared with day shift. This study has identified a number of dietary-specific shift-related factors that may contribute to an increase in unhealthy behaviours in a shift-working population. Given the increased risk of developing chronic diseases, organisational change to support workers in this environment is warranted.

Bonner, C., et al. (2013). "General practitioners' use of different cardiovascular risk assessment strategies: a qualitative study." *Medical Journal of Australia* 199(7): 485-489.

Objectives: To identify factors that influence the extent to which general practitioners use absolute risk (AR) assessment in cardiovascular disease (CVD) risk assessment. Design, setting and participants: Semi-structured interviews with 25 currently practising GPs from eight Divisions of General Practice in New South Wales, Australia, between October 2011 and May 2012. Data were analysed using framework analysis. Results: The study identified five strategies that GPs use with patients in different situations, defined in terms of the extent to which AR was used and the reasons given for this: the AR-focused strategy, used when AR assessment was considered useful for the patient; the AR-adjusted strategy, used to account for additional risk factors such as family history; the clinical judgement strategy, used when GPs considered that their judgement took multiple risk factors into account as effectively as AR; the passive disregard strategy, used when GPs lacked sufficient time, access or experience to use AR; and the active disregard strategy, used when AR was considered to be inappropriate for the patient. The strategies were linked with different opportunity, capability and motivation barriers to the use of AR. Conclusions: This study provides an in-depth insight into the factors that influence GPs' use of AR in CVD risk assessment. The results suggest that GPs use a range of strategies in different situations, so different approaches may be required to improve the use of AR guidelines in practice.

Boongird, C. and R. Ross (2017). "Views and Expectations of Community-Dwelling Thai Elderly in Reporting Falls to Their Primary Care Physicians: A Mixed-Methods Study." *Journal of Applied Gerontology* 36(4): 480-498.

Fall among older adults is a concern in Thailand. The challenge for primary care physicians is to deliver effective interventions potentially adhered to by older people. This research employed a mixed-methods design to understand factors leading to fall reporting by community-dwelling Thai elders and their expectations regarding fall prevention education. Participants (N = 305) who had fallen in the last year completed a questionnaire in the quantitative phase, and 50 of these were interviewed in-depth in the qualitative phase. Results revealed that only 39% reported their fall. Participants with comorbidities were 1.6 times more likely to report falling than those without (odds ratio = 1.61, confidence interval = [1.01, 2.58]). Post-fall pain (84%) was the strongest reason for reporting. Some participants believed that falling is an inevitable life event. It is crucial to encourage older adults to report falling, to provide targeted education, and to focus on improving the overall health status of older adults.

Borodulin, K., et al. (2016). "Socio-demographic and behavioral variation in barriers to leisure-time physical activity." *Scandinavian Journal of Public Health* 44(1): 62-69.

Introduction: We examined the socio-demographic and behavioral determinants of perceived barriers to leisure-time physical activity (LTPA) in a population-based sample of working-aged adults. **Methods:** Data comprised the National FINRISK 2002 Study, a population-based health examination study. Analyses were restricted to those aged 25-64 years and who perceived that their amount of LTPA did not reach sufficient levels. They reported barriers to LTPA, defined as a lack of time, motivation and lack of companionship to be active with, as well as high expenses. Age, education, household income, employment status, family type, physical activity, smoking and body mass index (BMI) were included as explanatory variables. **Results:** Lack of time was the most frequent barrier. Each barrier was explained by a different set of factors that also varied between genders. The strongest and most systematic associations with the barriers were found for age, employment status and family type. Lack of time was less often reported as a barrier among the unemployed, singles without children and older people. Lacking motivation as a barrier was most common among singles without children. High expenses as a barrier was more often reported by the unemployed, and less often reported in the highest income group. **Conclusions:** When considering actions to promote LTPA, there is not one single solution, because the perceived barriers vary by population subgroups.

Bos-Touwen, I. D., et al. (2017). "Patient factors that influence clinicians' decision making in self-management support: A clinical vignette study." *Plos One* 12(2).

Background and aim Self-management support is an integral part of current chronic care guidelines. The success of self-management interventions varies between individual patients, suggesting a need for tailored self-management support. Understanding the role of patient factors in the current decision making of health professionals can support future tailoring of self-management interventions. The aim of this study is to identify the relative importance of patient factors in health professionals' decision making regarding self-management support. **Method** A factorial survey was presented to primary care physicians and nurses. The survey consisted of clinical vignettes (case descriptions), in which 11 patient factors were systematically varied. Each care provider received a set of 12 vignettes. For each vignette, they decided whether they would give this patient self-management support and whether they expected this support to be successful. The associations between respondent decisions and patient factors were explored using ordered logit regression. **Results** The survey was completed by 60 general practitioners and 80 nurses. Self-management support was unlikely to be provided in a third of the vignettes. The most important patient factor in the decision to provide self-management support as well as in the expectation that self-management support would be successful was motivation, followed by patient-provider relationship and illness perception. Other factors, such as depression or anxiety, education level, self-efficacy and social support, had a small impact on decisions. Disease, disease severity, knowledge of disease, and age were relatively unimportant factors. **Conclusion** This is the first study to explore the relative importance of patient factors in decision making and the expectations regarding the provision of self-management support to chronic disease patients. By far, the most important factor considered was patient's motivation; unmotivated patients were less likely to receive self-management support. Future tailored interventions should incorporate strategies to enhance motivation in unmotivated patients. Furthermore, care providers should be better equipped to promote motivational change in their patients.

Bossink, L. W. M., et al. (2019). "Factors associated with direct support professionals' behaviour in the physical activity support provided to people with intellectual disabilities." *Journal of Intellectual Disability Research* 63(8): 981-991.

Background Direct support professionals play an important role in facilitating physical activity support for people with intellectual disabilities (ID). This study examined how the characteristics of people with ID and the characteristics of direct support professionals are related to the professionals' behaviour when supporting people with ID in physical activity. **Methods** A cross-sectional approach was used. Direct support professionals (n = 217) who support people with ID completed a self-report questionnaire, which aimed to measure the components that produced behaviour when providing physical activity support for people with ID. Associations with the characteristics of people with ID and the characteristics of the professionals were analysed using multivariate linear regression models. **Results** The results demonstrate that the professionals' characteristics - such as age, workplace and training - were related to the variance in the components that theoretically produced the direct support professionals' behaviour. The characteristics of the people with ID did not contribute to the variance in the direct support professionals' behaviour. **Conclusions** The findings suggest that professional characteristics are the dominant reasons for the differences observed in the capability, opportunity and motivation of direct support professionals to provide physical activity support. This study also underscores the need for integrated training programmes to help direct support professionals promote physical activity in people with ID.

Bossink, L. W. M., et al. "Physical-activity support for people with intellectual disabilities: a theory-informed qualitative study exploring the direct support professionals' perspective." *Disability and Rehabilitation*.

Purpose: The study aims to explore factors that influence (facilitate or impede) direct support professionals supporting people with intellectual disabilities in engaging in physical activity. Influencing factors will be synthesized into a conceptual model to set the stage for developing future interventions and policies to change direct support professional behavior. Method: Based on the Theoretical Domains Framework, semi-structured interviews were conducted with 25 direct support professionals of people with mild to profound intellectual disabilities. Influencing factors were analyzed using both inductive and deductive coding strategies. The theoretical sources of behavior (i.e., capability, opportunity, and motivation) were leading components in the development of a conceptual model. Results: Five influential factors facilitating or impeding physical-activity support were isolated that related to direct support professionals' capability, eight to the opportunities afforded them, and 11 to their motivation. Another six inductively emerged, which related to the characteristics of people with intellectual disabilities and which then influenced the capability, opportunity, or motivation to engage in physical-activity support by direct support professionals. Conclusions: Although experiences differed, the conceptual model developed here provides theoretically based targets for a comprehensive approach to changing direct support professional behavior and thus promoting the support of physical activity in people with intellectual disabilities.

Boydell, N., et al. (2017). "How Mothers in Poverty Explain Their Use of Corporal Punishment: A Qualitative Study in Kampala, Uganda." *European Journal of Development Research* 29(5): 999-1016.

Corporal punishment in the early years is associated with antisocial behaviour and violence, but little is known about its social and cultural context in low-income countries. This paper analyses how 12 deprived women in Kampala, Uganda, perceived corporal punishment, drawing on repeated semi-structured interviews. All thought it was sometimes necessary, for three main reasons. First, it was an important strategy to ensure good behaviour and maintain their and their child's, respectability, crucial to self-respect given severe poverty. Second, it was a means of establishing household routines and managing scarce resources. Third, it was a way to protect children from health risks. However, all mothers thought corporal punishment could be excessive, and most said it can be counter-productive, making children 'stubborn'. There appeared to be considerable variation in their degree of harsh parenting and emotional support. These findings could inform culturally appropriate interventions to reduce violence against children.

Brace-Govan, J. (2015). *Faces of Power, Ethical Decision Making and Moral Intensity. Reflections on the Need for Critical Social Marketing. Innovations in Social Marketing and Public Health Communication: Improving the Quality of Life for Individuals and Communities.* W. Wymer: 107-132.

Bradbury, G. and K. Morton (2017). "Using behavioural science to improve pain management." *In Practice* 39(7): 339-341.

Pain management can be challenging to achieve in practice due to the participation of many different stakeholders and the complex behaviours involved in decision-making. Here, Guen Bradbury and Katie Morton suggest that a better understanding of behavioural science can lead to improved pain management in animals.

Bragge, P., et al. (2017). "AIMD - a validated, simplified framework of interventions to promote and integrate evidence into health practices, systems, and policies." *Bmc Medical Research Methodology* 17.

Background: Proliferation of terms describing the science of effectively promoting and supporting the use of research evidence in healthcare policy and practice has hampered understanding and development of the field. To address this, an international Terminology Working Group developed and published a simplified framework of interventions to promote and integrate evidence into health practices, systems, and policies. This paper presents results of validation work and a second international workgroup meeting, culminating in the updated AIMD framework [Aims, Ingredients, Mechanism, Delivery]. Methods: Framework validity was evaluated against terminology schemas (n = 51); primary studies (n = 37); and reporting guidelines (n = 10). Framework components were independently categorized as fully represented, partly represented, or absent by two researchers. Opportunities to refine the framework were systematically recorded. A meeting of the expanded international Terminology Working Group updated the framework by reviewing and deliberating upon validation findings and refinement proposals. Results: There was variation in representativeness of the components across the three types of literature, in particular for the component 'causal mechanisms'. Analysis of primary studies revealed that representativeness of this concept lowered from 92 to 68% if only explicit, rather than explicit and non-explicit references to causal mechanisms were included. All components were very well represented in reporting guidelines, however the level of description of these was lower than in other types of literature. Twelve opportunities were identified to improve the framework, 9 of which were operationalized at the meeting. The updated AIMD framework comprises four components: (1) Aims: what do you want your intervention to

achieve and for whom? (2) Ingredients: what comprises the intervention? (3) Mechanisms: how do you propose the intervention will work? and (4) Delivery: how will you deliver the intervention? Conclusions: The draft simplified framework was validated with reference to a wide range of relevant literature and improvements have enhanced useability. The AIMD framework could aid in the promotion of evidence into practice, remove barriers to understanding how interventions work, enhance communication of interventions and support knowledge synthesis. Future work needs to focus on developing and testing resources and educational initiatives to optimize use of the AIMD framework in collaboration with relevant end-user groups.

Brain, K., et al. (2019). "The Effect of a Pilot Dietary Intervention on Pain Outcomes in Patients Attending a Tertiary Pain Service." *Nutrients* 11(1).

The aim of this study was to examine the effect of a six-week 2 x 2 design on pain scores, quality of life, and dietary intake in patients attending an Australian tertiary pain clinic. The two intervention components were (1) personalized dietary consultations or waitlist control, and (2) active or placebo dietary supplement (fruit juice). Sixty participants were randomized into one of four groups at baseline (68% female, mean age 49 +/- 15 years) with 42 completing the study (70% retention). All groups had statistically significant improvements in three of five pain outcomes. The personalized dietary consultation groups had clinically important improvements in three of five pain outcomes compared to the waitlist control groups. All groups had a statistically significant improvement in six of eight quality-of-life categories post intervention. All groups increased percentage energy from nutrient-dense foods (+5.2 +/- 1.4%, $p < 0.001$) with a significant group-by-time effect for percentage energy from total fat ($p = 0.024$), with the personalized dietary consultations plus placebo fruit juice reporting the largest reduction (-5.7 +/- 2.3%). This study indicates that dietitian-delivered dietary intervention can improve pain scores, quality of life, and dietary intake of people experiencing chronic pain. Future research should evaluate efficacy in a full-powered randomized control trial.

Brake, H. T. and M. Duckers (2013). "Early psychosocial interventions after disasters, terrorism and other shocking events: is there a gap between norms and practice in Europe?" *European Journal of Psychotraumatology* 4.

Background: Internationally, several initiatives exist to describe standards for post-disaster psychosocial care. Objective: This study explored the level of consensus of experts within Europe on a set of recommendations on early psychosocial intervention after shocking events (Dutch guidelines), and to what degree these standards are implemented into mental health care practice. Methods: Two hundred and six (mental) health care professionals filled out a questionnaire to assess the extent to which they consider the guidelines' scope and recommendations relevant and part of the regular practice in their own country. Forty-five European experts from 24 EU countries discussed the guidelines at an international seminar. Results: The data suggest overall agreement on the standards although many of the recommendations appear not (yet) to be embedded in everyday practice. Conclusions: Although large consensus exists on standards for early psychosocial care, a chasm between norms and practice appears to exist throughout the EU, stressing the general need for investments in guideline development and implementation.

Branch, A., et al. (2018). "Increasing support staff fluency with the content of behaviour support plans: An application of precision teaching." *Journal of Intellectual & Developmental Disability* 43(2): 213-222.

Background Behaviour support plans (BSPs) are at the core of positive behavioural support for challenging behaviour, but nonadherence to BSPs is common. Generally, nonfluent component knowledge prevents learners achieving fluent application and retention of information, and we hypothesised that this may apply to staff learning BSPs. Method We compared the effectiveness of fluency training (FT) and precision teaching on staff learning of BSPs with staff receiving consultation as usual, comprising standard support for learning BSPs. All staff completed pre- and postintervention tests measuring frequency of component skill recall and application of component knowledge (composite skills). Results The FT group made and maintained greater gains in component skill recall and achieved higher composite test scores, suggesting greater application of component skills. These effects were associated with moderate effect sizes. Conclusions This study offers initial support for the application of FT and precision teaching for staff learning BSP content.

Brannan, M. G. T., et al. (2019). "Active 10-A new approach to increase physical activity people in England." *Progress in Cardiovascular Diseases* 62(2): 135-139.

Public health physical activity (PA) guidelines are failing to increase levels of population PA, requiring a new approach. A national integrated marketing campaign was developed based on published literature and ethnographic research to get inactive lower socioeconomic 40-60 year olds to walk briskly for bouts of 10 or more minutes per day and move towards recommended levels of PA. National and local communications campaigns and partnerships promoted key messages and directed people to a free mobile phone app that provided the user with time, intensity and periodicity of walking, and included goal setting and encouragement to support behaviour change. Campaigns in the summers of

2017 and 2018 achieved around 500,000 downloads of the mobile phone app, with evaluation suggesting increases in brand and app awareness, and those taking action. Active 10 is a promising example of a physical activity promotion campaign based on evidence-based messages tailored for a target audience to change social norms rather than guidelines, an approach recognised as an effective population intervention for increasing walking. Crown Copyright (C) 2019 Published by Elsevier Inc. All rights reserved.

Brehaut, J. C., et al. (2016). "Practice Feedback Interventions: 15 Suggestions for Optimizing Effectiveness." *Annals of Internal Medicine* 164(6): 435-+.

Electronic practice data are increasingly being used to provide feedback to encourage practice improvement. However, evidence suggests that despite decades of experience, the effects of such interventions vary greatly and are not improving over time. Guidance on providing more effective feedback does exist, but it is distributed across a wide range of disciplines and theoretical perspectives. Through expert interviews; systematic reviews; and experience with providing, evaluating, and receiving practice feedback, 15 suggestions that are believed to be associated with effective feedback interventions have been identified. These suggestions are intended to provide practical guidance to quality improvement professionals, information technology developers, educators, administrators, and practitioners who receive such interventions. Designing interventions with these suggestions in mind should improve their effect, and studying the mechanisms underlying these suggestions will advance a stagnant literature.

Brehaut, J. C. and K. W. Eva (2012). "Building theories of knowledge translation interventions: Use the entire menu of constructs." *Implementation Science* 7.

Background: In the ongoing effort to develop and advance the science of knowledge translation (KT), an important question has emerged around how theory should inform the development of KT interventions. Discussion: Efforts to employ theory to better understand and improve KT interventions have until recently mostly involved examining whether existing theories can be usefully applied to the KT context in question. In contrast to this general theory application approach, we propose a 'menu of constructs' approach, where individual constructs from any number of theories may be used to construct a new theory. By considering the entire menu of available constructs, rather than limiting choice to the broader level of theories, we can leverage knowledge from theories that would never on their own provide a complete picture of a KT intervention, but that nevertheless describe components or mechanisms relevant to it. We can also avoid being forced to adopt every construct from a particular theory in a one-size-fits-all manner, and instead tailor theory application efforts to the specifics of the situation. Using audit and feedback as an example KT intervention strategy, we describe a variety of constructs (two modes of reasoning, cognitive dissonance, feed forward, desirable difficulties and cognitive load, communities of practice, and adaptive expertise) from cognitive and educational psychology that make concrete suggestions about ways to improve this class of intervention. Summary: The 'menu of constructs' notion suggests an approach whereby a wider range of theoretical constructs, including constructs from cognitive theories with scope that makes the immediate application to the new context challenging, may be employed to facilitate development of more effective KT interventions.

Brennan, L., et al. (2014). *Social Marketing and Behaviour Change: Models, Theory and Applications*.

Brennan, N. and K. Mattick (2013). "A systematic review of educational interventions to change behaviour of prescribers in hospital settings, with a particular emphasis on new prescribers." *British Journal of Clinical Pharmacology* 75(2): 359-372.

Aims Prescribing is a complex task and a high risk area of clinical practice. Poor prescribing occurs across staff grades and settings but new prescribers are attributed much of the blame. New prescribers may not be confident or even competent to prescribe and probably have different support and development needs than their more experienced colleagues. Unfortunately, little is known about what interventions are effective in this group. Previous systematic reviews have not distinguished between different grades of staff, have been narrow in scope and are now out of date. Therefore, to inform the design of educational interventions to change prescribing behaviour, particularly that of new prescribers, we conducted a systematic review of existing hospital-based interventions. Methods Embase, Medline, SIGLE, Cinahl and PsychINFO were searched for relevant studies published 1994-2010. Studies describing interventions to change the behaviour of prescribers in hospital settings were included, with an emphasis on new prescribers. The bibliographies of included papers were also searched for relevant studies. Interventions and effectiveness were classified using existing frameworks and the quality of studies was assessed using a validated instrument. Results Sixty-four studies were included in the review. Only 13% of interventions specifically targeted new prescribers. Most interventions (72%) were deemed effective in changing behaviour but no particular type stood out as most effective. Conclusion Very few studies have tailored educational interventions to meet needs of new prescribers, or distinguished between new and experienced

prescribers. Educational development and research will be required to improve this important aspect of early clinical practice.

Briggs, A. M., et al. (2016). "Models of Care for musculoskeletal health: Moving towards meaningful implementation and evaluation across conditions and care settings." *Best Practice & Research in Clinical Rheumatology* 30(3): 359-374.

Models of Care (MoCs) are increasingly recognised as a system level enabler to translate evidence for 'what works' into policy and, ultimately, clinical practice. MoCs provide a platform for a reform agenda in health systems by describing not only what care to deliver but also how to deliver it. Given the enormous burden of disease associated with musculoskeletal (MSK) conditions, system-level (macro) reform is needed to drive downstream improvements in MSK healthcare at the health service (meso) level and at the clinical interface (micro) level. A key challenge in achieving improvements in MSK healthcare is sustainable implementation of reform initiatives, whether they be macro, meso or micro level in scope. In this chapter, we introduce the special issue of the Journal dedicated to implementation of MSK MoCs. We provide a contextual background on MoCs, a synthesis of implementation approaches across care settings covered across the chapters in this themed issued, and perspectives on the evaluation of MoCs. (C) 2016 Elsevier Ltd. All rights reserved.

Briggs, A. M., et al. (2016). "Musculoskeletal Health Conditions Represent a Global Threat to Healthy Aging: A Report for the 2015 World Health Organization World Report on Ageing and Health." *Gerontologist* 56: S243-S255.

Persistent pain, impaired mobility and function, and reduced quality of life and mental well-being are the most common experiences associated with musculoskeletal conditions, of which there are more than 150 types. The prevalence and impact of musculoskeletal conditions increase with aging. A profound burden of musculoskeletal disease exists in developed and developing nations. Notably, this burden far exceeds service capacity. Population growth, aging, and sedentary lifestyles, particularly in developing countries, will create a crisis for population health that requires a multisystem response with musculoskeletal health services as a critical component. Globally, there is an emphasis on maintaining an active lifestyle to reduce the impacts of obesity, cardiovascular conditions, cancer, osteoporosis, and diabetes in older people. Painful musculoskeletal conditions, however, profoundly limit the ability of people to make these lifestyle changes. A strong relationship exists between painful musculoskeletal conditions and a reduced capacity to engage in physical activity resulting in functional decline, frailty, reduced well-being, and loss of independence. Multilevel strategies and approaches to care that adopt a whole person approach are needed to address the impact of impaired musculoskeletal health and its sequelae. Effective strategies are available to address the impact of musculoskeletal conditions; some are of low cost (e.g., primary care-based interventions) but others are expensive and, as such, are usually only feasible for developed nations. In developing nations, it is crucial that any reform or development initiatives, including research, must adhere to the principles of development effectiveness to avoid doing harm to the health systems in these settings.

Briggs, A. M., et al. (2019). "Health professionals and students encounter multi-level barriers to implementing high-value osteoarthritis care: a multi-national study." *Osteoarthritis and Cartilage* 27(5): 788-804.

Objective: Consistent evidence-practice gaps in osteoarthritis (OA) care are observed in primary care settings globally. Building workforce capacity to deliver high-value care requires a contemporary understanding of barriers to care delivery. We aimed to explore barriers to OA care delivery among clinicians and students. Design: A cross-sectional, multinational study sampling clinicians (physiotherapists, primary care nurses, general practitioners (GPs), GP registrars; total possible denominator: n = 119,735) and final-year physiotherapy and medical students (denominator: n = 2,215) across Australia, New Zealand and Canada. Respondents answered a survey, aligned to contemporary implementation science domains, which measured barriers to OA care using categorical and free-text responses. Results: 1886 clinicians and 1611 students responded. Items within the domains 'health system' and 'patient-related factors' represented the most applicable barriers experienced by clinicians (25-42% and 20-36%, respectively), whereas for students, 'knowledge and skills' and 'patient-related factors' (16-24% and 19-28%, respectively) were the most applicable domains. Meta-synthesis of qualitative data highlighted skills gaps in specific components of OA care (tailoring exercise, nutritional/overweight management and supporting positive behaviour change); assessment, measurement and monitoring; tailoring care; managing case complexity; and translating knowledge to practice (especially among students). Other barriers included general infrastructure limitations (particularly related to community facilities); patient-related factors (e.g., beliefs and compliance); workforce-related factors such as inconsistent care and a general knowledge gap in high-value care; and system and service-level factors relating to financing and time pressures, respectively. Conclusions: Clinicians and students encounter barriers to delivery of high-value OA care in clinical practice/training (micro-level); within service environments (meso-level); and within the health system (macro-level). (C) 2019 Osteoarthritis Research Society International. Published by Elsevier Ltd. All rights reserved.

Briggs, A. M., et al. (2017). "Supporting the Evaluation and Implementation of Musculoskeletal Models of Care: A Globally Informed Framework for Judging Readiness and Success." *Arthritis Care & Research* 69(4): 567-577.

Objective. To develop a globally informed framework to evaluate readiness for implementation and success after implementation of musculoskeletal models of care (MOCs). **Methods.** Three phases were undertaken: 1) a qualitative study with 27 Australian subject matter experts (SMEs) to develop a draft framework; 2) an eDelphi study with an international panel of 93 SMEs across 30 nations to evaluate face validity, and refine and establish consensus on the framework components; and 3) translation of the framework into a user-focused resource and evaluation of its acceptability with the eDelphi panel. **Results.** A comprehensive evaluation framework was developed for judging the readiness and success of musculoskeletal MOCs. The framework consists of 9 domains, with each domain containing a number of themes underpinned by detailed elements. In the first Delphi round, scores of "partly agree" or "completely agree" with the draft framework ranged 96.7%-100%. In the second round, "essential" scores ranged 58.6%-98.9%, resulting in 14 of 34 themes being classified as essential. SMEs strongly agreed or agreed that the final framework was useful (98.8%), usable (95.1%), credible (100%) and appealing (93.9%). Overall, 96.3% strongly supported or supported the final structure of the framework as it was presented, while 100%, 96.3%, and 100% strongly supported or supported the content within the readiness, initiating implementation, and success streams, respectively. **Conclusion.** An empirically derived framework to evaluate the readiness and success of musculoskeletal MOCs was strongly supported by an international panel of SMEs. The framework provides an important internationally applicable benchmark for the development, implementation, and evaluation of musculoskeletal MOCs.

Brimblecombe, J., et al. (2019). "Reducing Retail Merchandising of Discretionary Food and Beverages in Remote Indigenous Community Stores: Protocol for a Randomized Controlled Trial." *Jmir Research Protocols* 8(3).

Background: Discretionary food and beverages (products high in saturated fat, added sugars, and salt) are detrimental to a healthy diet. Nevertheless, they provide 42% of total energy and account for 53% of food and beverage expenditure for remote living Aboriginal and Torres Strait Islander Australians, contributing to the excessive burden of chronic diseases experienced by this population group. **Objective:** The aim of this study is to test an intervention to reduce sales of discretionary products, in collaboration with the Arnhem Land Progress Aboriginal Corporation (ALPA), which operates 25 stores in very remote Australia, by reducing their merchandising and substituting with core products in remote Australian communities. **Methods:** We will use a community-level randomized controlled pragmatic trial design. Stores randomized to the intervention group will be supported by ALPA to reduce merchandising of 4 food categories (sugar, sugar-sweetened beverages, sweet biscuits, and confectionery) that together provide 64% of energy from discretionary foods and 87% of total free sugars in very remote community stores. The remaining stores (50% of total) will serve as controls and conduct business as usual. Electronic store sales data will be collected at baseline, 12-weeks intervention, and 24-weeks postintervention to objectively assess the primary outcome of percent change in purchases of free sugars (g/megajoule) and secondary business- and diet-related outcomes. Critical to ensuring translation to improved store policies and healthier diets in remote Indigenous Australia, we will conduct (1) an in-depth implementation evaluation to assess fidelity, (2) a customer intercept survey to investigate the relationship between customer characteristics and discretionary food purchasing, and (3) a qualitative study to identify policy supports for scale-up of health-enabling policy action in stores. **Results:** As of August 2018, 20 stores consented to participate and were randomized to receive the intervention or continue usual business. The 12-week strategy ended in December 2018. The 24-week postintervention follow-up will occur in May 2019. Trial results are expected for 2019. **Conclusions:** Novel pragmatic research approaches are needed to inform policy for healthy retail food environments. This research will greatly advance our understanding of how the retail food environment can be used to improve population-level diet in the remote Australian Aboriginal and Torres Strait Islander context and retail settings globally.

Brocklehurst, P. R., et al. (2017). "Implementation and trial evidence: a plea for fore-thought." *British Dental Journal* 222(5): 331-335.

Brooksbank, K., et al. (2019). "Discussing Weight Management With Type 2 Diabetes Patients in Primary Care Using the Small Talk Big Difference Intervention: Protocol for a Randomized Controlled Trial." *Jmir Research Protocols* 8(2): 14-26.

Background: Guidelines for the management of type 2 diabetes universally recommend that adults with type 2 diabetes and obesity be offered individualized interventions to encourage weight loss. Yet despite the existing recommendations, provision of weight management services is currently patchy around the United Kingdom and where services are available, high attrition rates are often reported. In addition, individuals often fail to take up services, that is, after discussion with a general practitioner or practice nurse, individuals are referred to the service but do not attend for an appointment. Qualitative research has identified that the initial discussion raising the issue of weight, motivating the patient, and referring to services is crucial to a successful outcome from weight management. **Objective:** Our aim was to evaluate the effectiveness of an Internet-based training program and practice implementation toolkit with or without

face-to-face training for primary care staff. The primary outcome is the change in referral rate of patients with type 2 diabetes to National Health Service adult weight management programs, 3 months pre-and postintervention. Methods: We used the Behavior Change Wheel to develop an intervention for staff in primary care consisting of a 1-hour Internet-based eLearning package covering the links between obesity, type 2 diabetes, and the benefits of weight management, the treatment of diabetes in patients with obesity, specific training in raising the issue of weight, local services and referral pathways, overview of weight management components/evidence base, and the role of the referrer. The package also includes a patient pamphlet, a discussion tool, a practice implementation checklist, and an optional 2.5-hour face-to-face training session. We have randomly assigned 100 practices in a 1:1 ratio to either have immediate access to all the resources or have access delayed for 4 months. An intention-to-treat statistical analysis will be performed. Results: Recruitment to the study is now complete. We will finalize follow-up in 2018 and publish in early 2019. Conclusions: This protocol describes the development and randomized evaluation of the effectiveness of an intervention to improve referral and uptake rates of weight management programs for adults with type 2 diabetes. At a time when many new dietary and pharmacological weight management interventions are showing large clinical benefits for people with type 2 diabetes, it is vital that primary care practitioners are willing, skilled, and able to discuss weight and make appropriate referrals to services.

Brose, L. S., et al. (2015). "Treatment manuals, training and successful provision of stop smoking behavioural support." *Behaviour Research and Therapy* 71: 34-39.

Objective: Translating evidence-based behaviour change interventions into practice is aided by use of treatment manuals specifying the recommended content and format of interventions, and evidence-based training. This study examined whether outcomes of stop smoking behavioural support differed with practitioner's use and evaluation of treatment manuals, or practitioner's training. Methods: English stop smoking practitioners were invited to complete an online survey including questions on: practitioners' training, availability, use and perceived utility of manuals, and annual biochemically-validated success rates of quit attempts supported (practitioner-reported). Mean success rates were compared between practitioners with/without access to manuals, those using/not using manuals, perceived utility ratings of manuals, and consecutive levels of training completed. Results: Success rates were higher if practitioners had a manual (Mean (SD) = 54.0 (24.0) versus 48.0 (25.3), $t(838) = 2.48$, $p = 0.013$; $n = 840$), used a manual ($F(2,8237) = 4.78$, $p = 0.009$, $n = 840$), perceived manuals as more useful ($F(3,834) = 2.90$, $p = 0.034$, $n = 840$), and had completed training ($F(3,709) = 4.81$, $p = 0.002$, $n = 713$). Differences were diminished when adjusting for professional and demographic characteristics and no longer reached statistical significance using a conventional alpha for perceived utility of manuals and training status (both $p = 0.1$). Conclusions: Practitioners' performance in supporting smokers to quit varied with availability and use of treatment manuals. Evidence was weaker for perceived utility of manuals and practitioners' evidence-based training. Ensuring practitioners have access to treatment manuals within their service, promoting manual use, and training practitioners to competently apply manuals is likely to contribute to higher success rates in clinical practice. (C) 2015 Elsevier Ltd. All rights reserved.

Brown, B., et al. (2014). "Clinician-led improvement in cancer care (CLICC) - testing a multifaceted implementation strategy to increase evidence-based prostate cancer care: phased randomised controlled trial - study protocol." *Implementation Science* 9.

Background: Clinical practice guidelines have been widely developed and disseminated with the aim of improving healthcare processes and patient outcomes but the uptake of evidence-based practice remains haphazard. There is a need to develop effective implementation methods to achieve large-scale adoption of proven innovations and recommended care. Clinical networks are increasingly being viewed as a vehicle through which evidence-based care can be embedded into healthcare systems using a collegial approach to agree on and implement a range of strategies within hospitals. In Australia, the provision of evidence-based care for men with prostate cancer has been identified as a high priority. Clinical audits have shown that fewer than 10% of patients in New South Wales (NSW) Australia at high risk of recurrence after radical prostatectomy receive guideline recommended radiation treatment following surgery. This trial will test a clinical network-based intervention to improve uptake of guideline recommended care for men with high-risk prostate cancer. Methods/Design: In Phase I, a phased randomised cluster trial will test a multifaceted intervention that harnesses the NSW Agency for Clinical Innovation (ACI) Urology Clinical Network to increase evidence-based care for men with high-risk prostate cancer following surgery. The intervention will be introduced in nine NSW hospitals over 10 months using a stepped wedge design. Outcome data (referral to radiation oncology for discussion of adjuvant radiotherapy in line with guideline recommended care or referral to a clinical trial of adjuvant versus salvage radiotherapy) will be collected through review of patient medical records. In Phase II, mixed methods will be used to identify mechanisms of provider and organisational change. Clinicians' knowledge and attitudes will be assessed through surveys. Process outcome measures will be assessed through document review. Semi-structured interviews will be conducted to elucidate mechanisms of change. Discussion: The study will be one of the first randomised controlled trials

to test the effectiveness of clinical networks to lead changes in clinical practice in hospitals treating patients with high-risk cancer. It will additionally provide direction regarding implementation strategies that can be effectively employed to encourage widespread adoption of clinical practice guidelines.

Brown, J., et al. (2014). "How effective and cost-effective was the national mass media smoking cessation campaign 'Stoptober'?" *Drug and Alcohol Dependence* 135: 52-58.

Background: A national smoking cessation campaign based on behaviour change theory and operating through both traditional and new media was launched across England during late 2012 ('Stoptober'). In addition to attempting to start a movement in which smokers would quit at the same time in response to a positive mass quitting trigger, the campaign set smokers the goal of being smoke-free for October and embodied other psychological principles in a range of tools and communications. Methods: Data on quit attempts were obtained from 31,566 past-year smokers during nationally representative household surveys conducted monthly between 2007 and 2012. The effectiveness of the campaign was assessed by the increase in national quit attempt rate in October relative to other months in 2012 vs. 2007-2011. Results: Relative to other months in the year, more people tried to quit in October in 2012 compared with 2007-2011 (OR= 1.79, 95%CI= 1.20-2.68). In 2012 there was an approximately 50% increase in quitting during October compared with other months of the same year (9.6% vs. 6.6%; OR 1.50, 95%CI = 1.05-2.15), whereas in 2007-2011 the rate in October was non-significantly less than in other months of the same period (6.4% vs. 7.5%; OR= 0.84, 95%CI = 0.70-1.00). Stoptober is estimated to have generated an additional 350,000 quit attempts and saved 10,400 discounted life years (DLY) at less than 415 per DLY in the modal age group. Conclusions: Designing a national public health campaign with a clear behavioural target (making a serious quit attempt) using key psychological principles can yield substantial behaviour change and public health impact. (C) 2013 The Authors. Published by Elsevier Ireland Ltd. All rights reserved.

Brown, K. E., et al. (2013). *Serious Game for Relationships and Sex Education: Application of an Intervention Mapping Approach to Development*.

This chapter illustrates the application of an Intervention Mapping approach to the development and design of a Serious Game addressing relationships and sex education (RSE) needs in British adolescents. Needs assessment identified experience of pressure/coercion in sexual relationships as the topic for a Serious Game-based RSE session. The process of applying intervention mapping including evidence review, identification of a programme goal, performance objectives and associated determinants, and change objectives are explicated. The way that these were translated into a concept and content for a Serious Game is explained. Evaluation plans grounded in the planning process, and commentary on challenges experienced, are also provided. The chapter provides an important contribution to approaches that can ensure efficacy of Serious Games applied to healthcare issues.

Brown, L. J., et al. (2018). "Using behavioural insights to increase HIV self-sampling kit returns: a randomized controlled text message trial to improve England's HIV self-sampling service." *Hiv Medicine* 19(9): 585-596.

Objectives The aim of the study was to determine whether behaviourally informed short message service (SMS) primer and reminder messages could increase the return rate of HIV self-sampling kits ordered online. Methods The study was a 2 x 2 factorial design randomized control trial. A total of 9585 individuals who ordered a self-sampling kit from different SMS combinations: 1) standard reminders sent days 3 and 7 after dispatch (control); 2) primer sent 1 day after dispatch plus standard reminders; 3) behavioural insights (BI) reminders (no primer); or 4) primer plus BI reminders. The analysis was restricted to individuals who received all messages (n = 8999). We used logistic regression to investigate independent effects of the primer and BI reminders and their interaction. We explored the impact of sociodemographic characteristics on kit return as a secondary analysis. Results Those who received the primer and BI reminders had a return rate 4% higher than that of those who received the standard messages. We found strong evidence of a positive effect of the BI reminders (odds ratio 1.13; 95% confidence interval 1.04-1.23; P = 0.003) but no evidence for an effect of the primer, or for an interaction between the two interventions. Odds of kit return increased with age, with those aged 65 years being almost 2.5 times more likely to return the kit than those aged 25-34 years. Men who have sex with men were 1.5-4.5 times more likely to return the kit compared with other sexual behaviour and gender identity groups. Non-African black clients were 25% less likely to return the kit compared with other ethnicities. Conclusions Adding BI to reminder messages was successful in improving return rates at no additional cost.

Brown, T. J., et al. (2016). "Community pharmacy-delivered interventions for public health priorities: a systematic review of interventions for alcohol reduction, smoking cessation and weight management, including meta-analysis for smoking cessation." *Bmj Open* 6(2).

Objectives: To systematically review the effectiveness of community pharmacy-delivered interventions for alcohol reduction, smoking cessation and weight management. Design: Systematic review and meta-analyses. 10 electronic databases were searched from inception to May 2014. Eligibility criteria for selecting studies: Study design:

randomised and non-randomised controlled trials; controlled before/after studies, interrupted times series. Intervention: any relevant intervention set in a community pharmacy, delivered by the pharmacy team. No restrictions on duration, country, age, or language. Results: 19 studies were included: 2 alcohol reduction, 12 smoking cessation and 5 weight management. Study quality rating: 6 'strong', 4 'moderate' and 9 'weak'. 8 studies were conducted in the UK, 4 in the USA, 2 in Australia, 1 each in 5 other countries. Evidence from 2 alcohol-reduction interventions was limited. Behavioural support and/or nicotine replacement therapy are effective and cost-effective for smoking cessation: pooled OR was 2.56 (95% CI 1.45 to 4.53) for active intervention vs usual care. Pharmacy-based interventions produced similar weight loss compared with active interventions in other primary care settings; however, weight loss was not sustained longer term in a range of primary care and commercial settings compared with control. Pharmacy-based weight management interventions have similar provider costs to those delivered in other primary care settings, which are greater than those delivered by commercial organisations. Very few studies explored if and how sociodemographic or socioeconomic variables moderated intervention effects. Insufficient information was available to examine relationships between effectiveness and behaviour change strategies, implementation factors, or organisation and delivery of interventions. Conclusions: Community pharmacy-delivered interventions are effective for smoking cessation, and demonstrate that the pharmacy is a feasible option for weight management interventions. Given the potential reach, effectiveness and associated costs of these interventions, commissioners should consider using community pharmacies to help deliver public health services.

Brown, V. T., et al. (2016). "Professional interventions for general practitioners on the management of musculoskeletal conditions." *Cochrane Database of Systematic Reviews*(5).

Background Musculoskeletal conditions require particular management skills. Identification of interventions which are effective in equipping general practitioners (GPs) with such necessary skills could translate to improved health outcomes for patients and reduced healthcare and societal costs. Objectives To determine the effectiveness of professional interventions for GPs that aim to improve the management of musculoskeletal conditions in primary care. Search methods We searched the Cochrane Central Register of Controlled Trials (CENTRAL), 2010, Issue 2; MEDLINE, Ovid (1950 - October 2013); EMBASE, Ovid (1980 - October 2013); CINAHL, EbscoHost (1980 - November 2013), and the EPOC Specialised Register. We conducted cited reference searches using ISI Web of Knowledge and Google Scholar; and handsearched selected issues of *Arthritis and Rheumatism* and *Primary Care-Clinics in Office Practice*. The latest search was conducted in November 2013. Selection criteria We included randomised controlled trials (RCTs), non-randomised controlled trials (NRCTs), controlled before-and-after studies (CBAs) and interrupted time series (ITS) studies of professional interventions for GPs, taking place in a community setting, aiming to improve the management (including diagnosis and treatment) of musculoskeletal conditions and reporting any objective measure of GP behaviour, patient or economic outcomes. We considered professional interventions of any length, duration, intensity and complexity compared with active or inactive controls. Data collection and analysis Two review authors independently abstracted all data. We calculated the risk difference (RD) and risk ratio (RR) of compliance with desired practice for dichotomous outcomes, and the mean difference (MD) and standardised mean difference (SMD) for continuous outcomes. We investigated whether the direction of the targeted behavioural change affects the effectiveness of interventions. Main results Thirty studies met our inclusion criteria. From 11 studies on osteoporosis, meta-analysis of five studies (high-certainty evidence) showed that a combination of a GP alerting system on a patient's increased risk of osteoporosis and a patient-directed intervention (including patient education and a reminder to see their GP) improves GP behaviour with regard to diagnostic bone mineral density (BMD) testing and osteoporosis medication prescribing (RR 4.44; 95% confidence interval (CI) 3.54 to 5.55; 3 studies; 3,386 participants) for BMD and RR 1.71 (95% CI 1.50 to 1.94; 5 studies; 4,223 participants) for osteoporosis medication. Meta-analysis of two studies showed that GP alerting on its own also probably improves osteoporosis guideline-consistent GP behaviour (RR 4.75 (95% CI 3.62 to 6.24; 3,047 participants) for BMD and RR 1.52 (95% CI 1.26 to 1.84; 3,047 participants) for osteoporosis medication) and that adding the patient-directed component probably does not lead to a greater effect (RR 0.94 (95% CI 0.81 to 1.09; 2,995 participants) for BMD and RR 0.93 (95% CI 0.79 to 1.10; 2,995 participants) for osteoporosis medication). Of the 10 studies on low back pain, seven showed that guideline dissemination and educational opportunities for GPs may lead to little or no improvement with regard to guideline-consistent GP behaviour. Two studies showed that the combination of guidelines and GP feedback on the total number of investigations requested may have an effect on GP behaviour and result in a slight reduction in the number of tests, while one of these studies showed that the combination of guidelines and GP reminders attached to radiology reports may result in a small but sustained reduction in the number of investigation requests. Of the four studies on osteoarthritis, one study showed that using educationally influential physicians may result in improvement in guideline-consistent GP behaviour. Another study showed slight improvements in patient outcomes (pain control) after training GPs on pain management. Of three studies on shoulder pain, one study reported that there may be little or no improvement in patient outcomes (functional capacity) after GP education on shoulder pain and injection training. Of two studies on other musculoskeletal conditions, one study on pain management showed that

there may be worse patient outcomes (pain control) after GP training on the use of validated assessment scales. The 12 remaining studies across all musculoskeletal conditions showed little or no improvement in GP behaviour and patient outcomes. The direction of the targeted behaviour (i.e. increasing or decreasing a behaviour) does not seem to affect the effectiveness of an intervention. The majority of the studies did not investigate the potential adverse effects of the interventions and only three studies included a cost-effectiveness analysis. Overall, there were important methodological limitations in the body of evidence, with just a third of the studies reporting adequate allocation concealment and blinded outcome assessments. While our confidence in the pooled effect estimate of interventions for improving diagnostic testing and medication prescribing in osteoporosis is high, our confidence in the reported effect estimates in the remaining studies is low. Authors' conclusions There is good-quality evidence that a GP alerting system with or without patient-directed education on osteoporosis improves guideline-consistent GP behaviour, resulting in better diagnosis and treatment rates. Interventions such as GP reminder messages and GP feedback on performance combined with guideline dissemination may lead to small improvements in guideline-consistent GP behaviour with regard to low back pain, while GP education on osteoarthritis pain and the use of educationally influential physicians may lead to slight improvement in patient outcomes and guideline-consistent behaviour respectively. However, further studies are needed to ascertain the effectiveness of such interventions in improving GP behaviour and patient outcomes.

Bryant, M., et al. (2017). "Effectiveness of an implementation optimisation intervention aimed at increasing parent engagement in HENRY, a childhood obesity prevention programme the Optimising Family Engagement in HENRY (OFTEN) trial: study protocol for a randomised controlled trial." *Trials* 18.

Background: Family-based interventions to prevent childhood obesity depend upon parents' taking action to improve diet and other lifestyle behaviours in their families. Programmes that attract and retain high numbers of parents provide an enhanced opportunity to improve public health and are also likely to be more cost-effective than those that do not. We have developed a theory-informed optimisation intervention to promote parent engagement within an existing childhood obesity prevention group programme, HENRY (Health Exercise Nutrition for the Really Young). Here, we describe a proposal to evaluate the effectiveness of this optimisation intervention in regard to the engagement of parents and cost-effectiveness. Methods/design: The Optimising Family Engagement in HENRY (OFTEN) trial is a cluster randomised controlled trial being conducted across 24 local authorities (approximately 144 children's centres) which currently deliver HENRY programmes. The primary outcome will be parental enrolment and attendance at the HENRY programme, assessed using routinely collected process data. Cost-effectiveness will be presented in terms of primary outcomes using acceptability curves and through eliciting the willingness to pay for the optimisation from HENRY commissioners. Secondary outcomes include the longitudinal impact of the optimisation, parent-reported infant intake of fruits and vegetables (as a proxy to compliance) and other parent-reported family habits and lifestyle. Discussion: This innovative trial will provide evidence on the implementation of a theory-informed optimisation intervention to promote parent engagement in HENRY, a community-based childhood obesity prevention programme. The findings will be generalisable to other interventions delivered to parents in other community-based environments. This research meets the expressed needs of commissioners, children's centres and parents to optimise the potential impact that HENRY has on obesity prevention. A subsequent cluster randomised controlled pilot trial is planned to determine the practicality of undertaking a definitive trial to robustly evaluate the effectiveness and cost-effectiveness of the optimised intervention on childhood obesity prevention.

Buckton, C. H., et al. (2015). "'Language is the source of misunderstandings'-impact of terminology on public perceptions of health promotion messages." *Bmc Public Health* 15.

Background: The high level of premature death due to non-communicable diseases has been associated with unhealthful lifestyles, including poor diet. The effectiveness of public health strategies designed to promote health via messages focusing on food and diets depends largely on the perception of the messages by the public. The aim of this study was to explore public perceptions of language commonly used to communicate concepts linking health, food and the diet. Methods: This study is a qualitative and semi-quantitative cross-sectional survey exploring public perceptions of terms used to improve eating habits within public health strategies. We recruited adults with no background in nutrition or health-care, from May to July 2013, from urban areas of varying deprivation (n = 12) in Glasgow and Edinburgh, UK. Four key prompt-terms used to convey the idea of improving health through diet were selected for testing: Healthy Eating, Eating for Health, Balanced Diet and Nutritional Balance. Consumer understanding of these terms was explored using mixed-methods, including qualitative focus groups (n = 17) and an interviewer-led word-association exercise (n = 270). Results: The word-association exercise produced 1,386 individual responses from the four prompt-terms, with 130 unique responses associated with a single term. Cluster analysis revealed 16 key themes, with responses affected by prompt-term used, age, gender and socio-economic status. Healthy Eating was associated with foods considered 'healthy' (p < 0.05); Eating for Health and Balanced Diet with negative connotations of foods to avoid (both p < 0.001) and Nutritional Balance with the benefits of eating healthily (p < 0.01). Focus groups revealed clear differences

in perceptions: Eating for Health = positive action one takes to manage existing medical conditions, Healthy Eating = passive aspirational term associated with weight management, Balanced Diet = old fashioned, also dieting for weight loss, Nutritional Balance = maximising physical performance. Food suppliers use Healthy Eating terminology to promote weight management products. Focus group participants welcomed product reformulation to enhance food health properties as a strategy to overcome desensitisation to health-messages. Conclusions: Public perceptions of messages communicating concepts linking health, food and the diet are influenced by terminology, resulting in confusion. To increase individual commitment to change eating habits in the long term, public health campaigns need strengthening, potentially by investing in tailored approaches to meet the needs of defined groups of consumers.

Budworth, L., et al. (2019). "Preoperative Interventions for Alcohol and Other Recreational Substance Use: A Systematic Review and Meta-Analysis." *Frontiers in Psychology* 10.

Background: Preoperative alcohol and other recreational substance use (ORSU) may catalyze perioperative complications. Accordingly, interventions aiming to reduce preoperative substance use are warranted. Methods: Studies investigating interventions to reduce alcohol and/or ORSU in elective surgery patients were identified from: Cochrane Library; MEDLINE; PSYCINFO; EMBASE; and CINAHL. In both narrative summaries of results and random effects meta-analyses, effects of interventions on perioperative alcohol/ORSU, complications, mortality and length of stay were assessed. Primary Results: Nine studies (n = 903) were included. Seven used behavioral interventions only, two provided disulfiram in addition. Pooled analyses found small effects on alcohol use (d: 0.34; 0.05-0.64), though two trials using disulfiram (0.71; 0.36-1.07) were superior to two using behavioral interventions (0.45; -0.49-1.39). No significant pooled effects were found for perioperative complications, length of hospital stay or mortality in studies solely targeting alcohol/ORSU. Too few interventions targeting ORSU (n = 1) were located to form conclusions regarding their efficacy. Studies were generally at high risk-of-bias and heterogeneous. Conclusions: Preoperative interventions were beneficial in reducing substance use in some instances, but more high-quality studies targeting alcohol/ORSU specifically are needed. The literature to date does not suggest that such interventions can reduce postoperative morbidity, length of hospital stay or mortality. Limitations in the literature are outlined and recommendations for future studies are suggested.

Bull, E. R., et al. (2019). "An organisational participatory research study of the feasibility of the behaviour change wheel to support clinical teams implementing new models of care." *Bmc Health Services Research* 19.

Background Health and social care organisations globally are moving towards prevention-focussed community-based, integrated care. The success of this depends on professionals changing practice behaviours. This study explored the feasibility of applying a behavioural science approach to help staff teams from health organisations overcome psychological barriers to change and implement new models of care. Methods An Organisational Participatory Research study was conducted with health organisations from North West England, health psychologists and health workforce education commissioners. The Behaviour Change Wheel (BCW) was applied with teams of professionals seeking help to overcome barriers to practice change. A mixed-methods data collection strategy was planned, including qualitative stakeholder interview and focus groups to explore feasibility factors and quantitative pre-post questionnaires and audits measuring team practice and psychological change barriers. Qualitative data were analysed with thematic analysis; pre-post quantitative data were limited and thus analysed descriptively. Results Four clinical teams from paediatrics, midwifery, heart failure and older adult mental health specialties in four organisations enrolled, seeking help to move care to the community, deliver preventative healthcare tasks, or become more integrated. Eighty-one managers, medical doctors, nurses, physiotherapists, midwives and other professionals contributed data. Three teams successfully designed a BCW intervention; two implemented and evaluated this. Five feasibility themes emerged from the thematic analysis of qualitative data. Optimising the BCW in an organisational change context meant 1) qualitative over quantitative data collection, 2) making behavioural science attractive, 3) co-development and a behavioural focus, 4) effective ongoing communication and 5) support from engaged leaders. Pre-post quantitative data collected suggested some positive changes in staff practice behaviours and psychological determinants following the intervention. Conclusions Behavioural science approaches such as the BCW can be optimised to support teams within health and social care organisations implementing complex new models of care. The efficacy of this approach should now be trialled.

Bull, E. R., et al. (2017). "Developing nurse medication safety training in a health partnership in Mozambique using behavioural science." *Globalization and Health* 13.

Background: Globally, safe and effective medication administration relies on nurses being able to apply strong drug calculation skills in their real-life practice, in the face of stressors and distractions. These may be especially prevalent for nurses in low-income countries such as Mozambique and Continuing Professional Development post-registration may be important. This study aimed to 1) explore the initial impact of an international health partnership's work to develop a drug calculation workshop for nurses in Beira, Mozambique and 2) reflect upon the role of health psychologists in helping

educators apply behavioural science to the training content and evaluation. **Methods:** In phase one, partners developed a training package, which was delivered to 87 Portuguese-speaking nurses. The partnership's health psychologists coded the training's behaviour change content and recommended enhancements to content and delivery. In phase two, the refined training, including an educational game, was delivered to 36 nurses in Mozambique and recoded by the health psychologists. Measures of participant confidence and intentions to make changes to healthcare practice were collected, as well as qualitative data through post-training questions and 12 short follow-up participant interviews. **Results:** In phase one six BCTs were used during the didactic presentation. Most techniques targeted participants' capability to calculate drug doses accurately; recommendations aimed to increase participants' motivation and perceived opportunity, two other drivers of practice change. Phase two training included an extra seven BCTs, such as action planning and further skills practice. Participants reported high confidence before and after the training ($p = 0.25$); intentions to use calculators to check drug calculations significantly increased ($p = 0.031$). Qualitative data suggested the training was acceptable, enjoyable and led to practice changes, through improved capability, opportunity and motivation. Opportunity barriers to medication safety were highlighted. **Conclusions:** Reporting and measuring medication errors and related outcomes is a complex challenge affecting global efforts to improve medication safety. Through strong partnership working, a multi-disciplinary team of health professionals including health psychologists developed, refined and begin to evaluate a locally-led drug calculation CPD workshop for nurses in a low-resource setting. Applying behavioural science helped to collect feasible evaluation data and hopefully improved impact and sustainability.

Burkhart, G. (2014). "Is Environment Really A Function?" *Prevention Science* 15(6): 825-828.

Burrell, A. M. G., et al. (2018). "What do self-efficacy items measure? Examining the discriminant content validity of self-efficacy items." *British Journal of Health Psychology* 23(3): 597-611.

ObjectivesSelf-efficacy - an individual's judgement of their ability to successfully perform a behaviour - is commonly used to explain and predict behaviour. It is measured through self-report questionnaires. These scales require good content validity, that is must measure the full scope and content of the construct without contamination from similar constructs. This study uses a systematic, transparent quantitative method (discriminant content validation, DCV) to assess the content validity of a variety of self-efficacy items and qualitatively explores participant interpretations of these items. **Design**A quantitative DCV and qualitative think-aloud study of self-efficacy item interpretation. **Methods**Participants ($n=21$) were presented with items designed to measure self-efficacy and related constructs following standard DCV methodology. Items were rated against construct definitions to determine whether they measured a particular construct (yes/no). Judges' confidence in each assessment was also assessed (%) and used to establish quantitative estimates of content validity for each item. A qualitative think-aloud study explored the judgements made in a subset of participants. **Results**8/8 self-efficacy items were found to measure self-efficacy; however, 2/8 of these also measured motivation. 6/8 items displayed discriminant content validity and thus can be considered 'pure' measures of self-efficacy. The think-aloud study indicated that item wording is a likely cause of item misinterpretation. **Conclusions**Self-efficacy items vary in terms of their content validity with only some of the items assessed providing 'pure' measures of the self-efficacy construct. Item wording should be considered during study design to avoid misinterpretation.

Burton, A., et al. (2017). "How Effective are Mindfulness-Based Interventions for Reducing Stress Among Healthcare Professionals? A Systematic Review and Meta-Analysis." *Stress and Health* 33(1): 3-13.

Workplace stress is high among healthcare professionals (HCPs) and is associated with reduced psychological health, quality of care and patient satisfaction. This systematic review and meta-analysis reviews evidence on the effectiveness of mindfulness-based interventions (MBIs) for reducing stress in HCPs. A systematic literature search was conducted. Papers were screened for suitability using inclusion criteria and nine papers were subjected to review and quality assessment. Seven papers, for which full statistical findings could be obtained, were also subjected to meta-analysis. Results of the meta-analysis suggest that MBIs have the potential to significantly improve stress among HCPs; however, there was evidence of a file drawer problem. The quality of the studies was high in relation to the clarity of aims, data collection and analysis, but weaker in terms of sample size and the use of theoretical frameworks. MBIs have the potential to reduce stress among HCPs; however, more high-quality research is needed before this finding can be confirmed. Future studies would benefit from long-term follow-up measures to determine any continuing effects of mindfulness training on stress outcomes. Copyright (C) 2016 John Wiley & Sons, Ltd.

Burton, C. R., et al. (2014). "Investigating the organisational impacts of quality improvement: a protocol for a realist evaluation of improvement approaches drawing on the Resource Based View of the Firm." *Bmj Open* 4(7).

Introduction: Little is understood about the role of quality improvement in enabling health organisations to survive and thrive in the contemporary context of financial and economic challenges. We will draw on the theoretical

foundations of the 'Resource Based View of the Firm' (RBV) to develop insights into why health organisations engage in improvement work, how impacts are conceptualised, and 'what works' in delivering these impacts. Specifically, RBV theorises that the mix and use of resources across different organisations may explain differences in performance. Whether improvement work influences these resources is unclear. Methods and analysis: Case study research will be conducted across health organisations participating in four approaches to improvement, including: a national improvement programme; a multiorganisational partnership around implementation; an organisational strategy for quality improvement; and a coproduction project designed to enhance the experience of a clinical service from the perspective of patients. Data will comprise in-depth interviews with key informants, observation of key events and documents; analysed within and then across cases. Adopting a realist perspective, the core tenets of RBV will be evaluated as a programme theory, focusing on the interplay between organisational conditions and behavioural or resource responses that are reported through engagement in improvement. Ethics and dissemination: The study has been approved by Bangor University Ethics Committee. The investigation will not judge the relative merits of different approaches to healthcare quality improvement. Rather, we will develop unique insights into the organisational consequences, and dependencies of quality improvement, providing an opportunity to add to the explanatory potential of RBV in this and other contexts. In addition to scientific and lay reports of the study findings, research outputs will include a framework for constructing the economic impacts of quality improvement and practical guidance for health service managers that maximises the impacts of investment in quality improvement.

Busse, M., et al. (2014). "Supporting physical activity engagement in people with Huntington's disease (ENGAGE-HD): study protocol for a randomized controlled feasibility trial." *Trials* 15.

Background: Huntington's disease (HD) is a complex, single-gene inherited neurodegenerative condition resulting in symptoms that occur across a wide range of neurological domains, including cognitive, behavioral and motor. The benefits of regular physical activity for people with HD are widely recognized. However, a number of factors can prohibit sustained exercise and activity. The purpose of this trial is to explore the feasibility, acceptability and effectiveness of a physical activity intervention program targeted for people with early-to mid-stage HD. Methods/Design: The proposed trial is a single blind, multisite, exploratory, randomized controlled feasibility trial of a physical activity intervention. A total of 62 participants with genetically confirmed HD will be recruited. Each participant will be involved in the trial for 26 weeks. Participants will be randomized immediately following the baseline assessment into either a physical activity intervention or a social contact control intervention. The physical activity intervention is framed around self-determination theory placed within a broader behaviour change wheel framework. An HD-specific workbook and individual goal setting will be utilized over six 1:1 sessions, with interim telephone calls. All participants will be reassessed at 16 weeks following the baseline assessment, and then again at a final follow-up assessment 26 weeks later. At the end of the study, all participants will be offered a brief version of the alternative intervention, with one home visit and one follow-up telephone call. Discussion: Engaging and supporting people with HD in a regular physical activity program raises a number of challenges. The physical activity intervention and the comparator social interaction intervention have been developed following consultation with people with HD and their families. Each are individually tailored and determined on individual needs and goals. The results from this trial will provide guidance for the development of definitive trials.

Button, K., et al. (2018). "Integrating self-management support for knee injuries into routine clinical practice: TRAK intervention design and delivery." *Musculoskeletal Science and Practice* 33: 53-60.

Background: TRAK is a web-based intervention that provides knee patients with health information, personalised exercise plans and remote clinical support. The aim of this study was to fully define TRAK intervention content, setting and context and develop the training through an implementation study in a physiotherapy out-patient service. Methods: A mixed methods study. Phase 1 was a qualitative interview study, whereby fifteen physiotherapists used TRAK for 1 month with a patient of their choice. Interviews explored patient and physiotherapist views of TRAK intervention and training requirements. In Phase 2 seventy-four patients were recruited, all received conventional physiotherapy, a subset of 48 patients used TRAK in addition to conventional Physiotherapy. Aspects of feasibility measured included: uptake and usage of TRAK. Results: Patients and physiotherapists reported that TRAK was easy to use and highlighted the therapeutic benefit of the exercise videos and personalised exercise plans to remind them of their exercises and the correct technique. Patients reported needing to use TRAK with the guidance of their treating physiotherapist initially. Physiotherapists highlighted appointment time constraints and lack of familiarity with TRAK as factors limiting engagement. In Phase 2, 67% patients accessed TRAK outside of the clinical environment. A total of 91% of patients were given a personalised exercise plan, but these were only updated in 34% of cases. Conclusion: A comprehensive training package for patients and clinicians has been defined. The refined TRAK intervention is reported using the 'Template for Intervention Description and Replication in preparation for a definitive randomised control trial.

Buttriss, J. L. (2013). "Food reformulation: the challenges to the food industry." *Proceedings of the Nutrition Society* 72(1): 61-69.

The role of the food industry (retailers, manufacturers and food service) in helping consumers eat healthily and sustainably has been receiving considerable attention in recent years. This paper focuses on the challenges facing the food industry and the role of food reformulation in meeting these challenges, through the lens of a public health nutritionist. Attention has been heightened by the Government's Responsibility Deal, launched in early 2011 by the Department of Health (England), by the UK's engagement with the global food security and food supply sustainability agendas and by the Government Office of Science's Foresight report. The Responsibility Deal's food network has to date focused on reduction of trans fatty acids, salt and calories and out-of-home calorie labelling (in food service settings). New pledges are expected soon on increasing fruit and vegetable intakes. Reformulation is a major feature of the Responsibility Deal's approach, and along with other approaches such as portion control, choice editing and information provision, there is potential to increase the breadth of healthier choices available to the public. With the exception of fruit and vegetables, the emphasis has been almost exclusively on aspects of the diet that are in excess for many of the population (e. g. energy and salt). Evidence of low consumption of some key micronutrients by some groups of the population, particularly adolescents and young adults, often alongside excess energy intake compared with expenditure, is all too often overlooked. This paper summarises the progress made to date, the challenges faced and the opportunities that exist, with particular focus on reformulation. One of the biggest challenges is the relatively poor understanding of how to effect positive and long-term dietary behaviour change. The paper concludes that, in isolation, reformulation is unlikely to provide a complete solution to the challenge of improving eating patterns and nutrient provision, although it is a contributor.

Buykx, P., et al. (2016). "Public awareness of the link between alcohol and cancer in England in 2015: a population-based survey." *Bmc Public Health* 16.

Background: Public knowledge of the association between alcohol and cancer is reported to be low. We aimed to provide up-to-date evidence for England regarding awareness of the link between alcohol and different cancers and to determine whether awareness differs by demographic characteristics, alcohol use, and geographic region. Methods: A representative sample of 2100 adults completed an online survey in July 2015. Respondents were asked to identify which health outcomes, including specific cancers, may be caused by alcohol consumption. Logistic regressions explored whether demographic, alcohol use, and geographic characteristics predicted correctly identifying alcohol-related cancer risk. Results: Unprompted, 12.9% of respondents identified cancer as a potential health outcome of alcohol consumption. This rose to 47% when prompted (compared to 95% for liver disease and 73% for heart disease). Knowledge of the link between alcohol and specific cancers varied between 18% (breast) and 80% (liver). Respondents identified the following cancers as alcohol-related where no such evidence exists: bladder (54%), brain (32%), ovarian (17%). Significant predictors of awareness of the link between alcohol and cancer were being female, more highly educated, and living in North-East England. Conclusion: There is generally low awareness of the relationship between alcohol consumption and cancer, particularly breast cancer. Greater awareness of the relationship between alcohol and breast cancer in North-East England, where a mass media campaign highlighted this relationship, suggests that population awareness can be influenced by social marketing.

Byrne-Davis, L. M. T., et al. (2017). "How behavioural science can contribute to health partnerships: the case of The Change Exchange." *Globalization and Health* 33.

Background: Health partnerships often use health professional training to change practice with the aim of improving quality of care. Interventions to change practice can learn from behavioural science and focus not only on improving the competence and capability of health professionals but also their opportunity and motivation to make changes in practice. We describe a project that used behavioural scientist volunteers to enable health partnerships to understand and use the theories, techniques and assessments of behavioural science. Case studies: This paper outlines how The Change Exchange, a collective of volunteer behavioural scientists, worked with health partnerships to strengthen their projects by translating behavioural science in situ. We describe three case studies in which behavioural scientists, embedded in health partnerships in Uganda, Sierra Leone and Mozambique, explored the behaviour change techniques used by educators, supported knowledge and skill development in behaviour change, monitored the impact of projects on psychological determinants of behaviour and made recommendations for future project developments. Discussion: Challenges in the work included having time and space for behavioural science in already very busy health partnership schedules and the difficulties in using certain methods in other cultures. Future work could explore other modes of translation and further develop methods to make them more culturally applicable. Conclusion: Behavioural scientists could translate behavioural science which was understood and used by the health partnerships to strengthen their project work.

Byrne-Davis, L. M. T., et al. (2018). "A pre-post study of behavioural determinants and practice change in Ugandan clinical officers." *African Journal of Health Professions Education* 10(4): 220-227.

Background. Understanding the drivers of 'provider behaviour' has been highlighted as one of the six domains of behaviour change in strengthening healthcare systems. **Objectives.** To assess changes in healthcare provider behaviour, i.e. use of the Airway, Breathing, Circulation, Disability, Exposure (ABCDE) approach in acute illness management, after participating in a 1-day course on the assessment and management of acutely ill patients. We aimed to assess whether changes in psychological determinants of the ABCDE approach were associated with changes in the use of the approach. **Methods.** We used a pre-post design to study self-reported change in behaviour after a 1-day training course from pre-course to follow-up 1 month later. We also measured psychological determinants of behaviour immediately before and after and at 1-month follow-up. We explored if changes in psychological determinants were associated with change in practice 1 month later. **Results.** We found the following: firstly, use of the ABCDE approach increased at 1 month post-course from a median use of 50 - 90%. Secondly, the increase in the ABCDE approach was associated with a positive change in only one of the determinants of practice from pre- to post-course: perception of environmental determinants ($r=0.323$; $p<0.05$). Finally, there were no other significant associations with practice change or practice at follow-up. **Conclusions.** Change in perceptions of availability of resources was associated with increased use of an ABCDE approach, but evidence was limited owing to the pre-post design.

Cadilhac, D. A., et al. (2018). "How to do health services research in stroke: A focus on performance measurement and quality improvement." *International Journal of Stroke* 13(2): 166-174.

The objective of this How to research series article is to provide guidance on getting started in Health Services Research. The purpose of health services research is to contribute knowledge that can be used to help improve health systems and clinical services through influencing policy and practice. The methods used are broad, have varying levels of rigor, and may require different specialist skills. This paper sets out practical steps for undertaking health services research. Importantly, use of the highlighted techniques can identify solutions to address inadequate knowledge translation or promote greater access to evidence-based stroke care to optimize patient outcomes.

Cadogan, C. A., et al. (2016). "Making the case for change: What researchers need to consider when designing behavior change interventions aimed at improving medication dispensing." *Research in Social & Administrative Pharmacy* 12(1): 149-153.

There is a growing emphasis on behavior change in intervention development programmes aimed at improving public health and healthcare professionals' practice. A number of frameworks and methodological tools have been established to assist researchers in developing interventions seeking to change healthcare professionals' behaviors. The key features of behavior change intervention design involve specifying the target group (i.e. healthcare professional or patient cohort), the target behavior and identifying mediators (i.e. barriers and facilitators) of behavior change. Once the target behavior is clearly specified and understood, specific behavior change techniques can then be used as the basis of the intervention to target identified mediators of behavior change. This commentary outlines the challenges for pharmacy practice-based researchers in targeting dispensing as a behavior when developing behavior change interventions aimed at pharmacists and proposes a definition of dispensing to consider in future research. (C) 2016 Elsevier Inc. All rights reserved.

Cadogan, S. L., et al. (2015). "The effectiveness of interventions to improve laboratory requesting patterns among primary care physicians: a systematic review." *Implementation Science* 10.

Background: Laboratory testing is an integral part of day-to-day primary care practice, with approximately 30 % of patient encounters resulting in a request. However, research suggests that a large proportion of requests does not benefit patient care and is avoidable. The aim of this systematic review was to comprehensively search the literature for studies evaluating the effectiveness of interventions to improve primary care physician use of laboratory tests. **Methods:** A search of PubMed, Cochrane Library, Embase and Scopus (from inception to 09/02/14) was conducted. The following study designs were considered: systematic reviews, randomised controlled trials (RCTs), controlled clinical trials (CCTs), controlled before and after studies (CBAs) and interrupted time series analysis (ITSs). Studies were quality appraised using a modified version of the Effective Practice and Organisation of Care (EPOC) checklist. The population of interest was primary care physicians. Interventions were considered if they aimed to improve laboratory testing in primary care. The outcome of interest was a volume of laboratory tests. **Results:** In total, 6,166 titles and abstracts were reviewed, followed by 87 full texts. Of these, 11 papers were eligible for inclusion in the systematic review. This included four RCTs, six CBAs and one ITS study. The types of interventions examined included education, feedback, guidelines, education with feedback, feedback with guidelines and changing order forms. The quality of included studies varied with seven studies deemed to have a low risk of bias, three with unclear risk of bias and one with high risk of bias. All but one study found significant reductions in the volume of tests following the intervention, with effect sizes ranging from 1.2 to 60 %.

Due to heterogeneity, meta-analysis was not performed. Conclusions: Interventions such as educational strategies, feedback and changing test order forms may improve the efficient use of laboratory tests in primary care; however, the level of evidence is quite low and the quality is poor. The reproducibility of findings from different laboratories is also difficult to ascertain from the literature. Some standardisation of both interventions and outcome measures is required to enable formal meta-analysis.

Cadogan, S. L., et al. (2016). "General practitioner views on the determinants of test ordering: a theory-based qualitative approach to the development of an intervention to improve immunoglobulin requests in primary care." *Implementation Science* 11.

Background: Research suggests that variation in laboratory requesting patterns may indicate unnecessary test use. Requesting patterns for serum immunoglobulins vary significantly between general practitioners (GPs). This study aims to explore GP's views on testing to identify the determinants of behaviour and recommend feasible intervention strategies for improving immunoglobulin test use in primary care. Methods: Qualitative semi-structured interviews were conducted with GPs requesting laboratory tests at Cork University Hospital or University Hospital Kerry in the South of Ireland. GPs were identified using a Health Service Executive laboratory list of GPs in the Cork-Kerry region. A random sample of GPs (stratified by GP requesting patterns) was generated from this list. GPs were purposively sampled based on the criteria of location (urban/rural); length of time qualified; and practice size (single-handed/group). Interviews were carried out between December 2014 and February 2015. Interviews were transcribed verbatim using NVivo 10 software and analysed using the framework analysis method. Emerging themes were mapped to the theoretical domains framework (TDF), which outlines 12 domains that can enable or inhibit behaviour change. The behaviour change wheel and behaviour change technique (BCT) taxonomy were then used to identify potential intervention strategies. Results: Sixteen GPs were interviewed (ten males and six females). Findings suggest that intervention strategies should specifically target the key barriers to effective test ordering, while considering the context of primary care practice. Seven domains from the TDF were perceived to influence immunoglobulin test ordering behaviours and were identified as 'mechanisms for change' (knowledge, environmental context and resources, social/professional role and identity, beliefs about capabilities, beliefs about consequences, memory, attention and decision-making processes and behavioural regulation). Using these TDF domains, seven BCTs emerged as feasible 'intervention content' for targeting GPs' ordering behaviour. These included instructions on how to effectively request the test (how to perform behaviour), information on GPs' use of the test (feedback on behaviour), information about patient consequences resulting from not doing the test (information about health consequences), laboratory/consultant-based advice/education (credible source), altering the test ordering form (restructuring the physical environment), providing guidelines (prompts/cues) and adding interpretive comments to the results (adding objects to the environment). These BCTs aligned to four intervention functions: education, persuasion, environmental restructuring and enablement. Conclusions: This study has effectively applied behaviour change theory to identify feasible strategies for improving immunoglobulin test use in primary care using the TDF, 'behaviour change wheel' and BCT taxonomy. The identified BCTs will form the basis of a theory-based intervention to improve the use of immunoglobulin tests among GPs. Future research will involve the development and evaluation of this intervention.

Cai, R. A., et al. (2017). "Developing and Evaluating JIApp: Acceptability and Usability of a Smartphone App System to Improve Self-Management in Young People With Juvenile Idiopathic Arthritis." *Jmir Mhealth and Uhealth* 5(8).

Background: Flare-ups in juvenile idiopathic arthritis (JIA) are characterized by joint pain and swelling and often accompanied with fatigue, negative emotions, and reduced participation in activities. To minimize the impact of JIA on the physical and psychosocial development and well-being of young people (YP), it is essential to regularly monitor disease activity and side effects, as well as to support self-management such as adherence to treatment plans and engagement in general health-promoting behaviors. Smartphone technology has the potential to engage YP with their health care through convenient self-monitoring and easy access to information. In addition, having a more accurate summary of self-reported fluctuations in symptoms, behaviors, and psychosocial problems can help both YP and health care professionals (HCPs) better understand the patient's condition, identify barriers to self-management, and assess treatment effectiveness and additional health care needs. No comprehensive smartphone app has yet been developed in collaboration with YP with JIA, their parents, and HCPs involved in their care. Objectives: The objective of this study was to design, develop, and evaluate the acceptability and usability of JIApp, a self-management smartphone app system for YP with JIA and HCPs. Methods: We used a qualitative, user-centered design approach involving YP, parents, and HCPs from the rheumatology team. The study was conducted in three phases: (1) phase I focused on developing consensus on the features, content, and design of the app; (2) phase II was used for further refining and evaluating the app prototype; and (3) phase III focused on usability testing of the app. The interview transcripts were analyzed using qualitative content analysis. Results: A total of 29 YP (aged 10-23, median age 17) with JIA, 7 parents, and 21 HCPs were interviewed. Major themes identified as the ones that helped inform app development in phase I were: (1) remote monitoring of symptoms,

well-being, and activities; (2) treatment adherence; and (3) education and support. During phase II, three more themes emerged that informed further refinement of the app prototype. These included (4) adapting a reward system to motivate end users for using the app; (5) design of the app interface; and (6) clinical practice integration. The usability testing during phase III demonstrated high rates of overall satisfaction and further affirmed the content validity of the app. Conclusions: We present the development and evaluation of a smartphone app to encourage self-management and engagement with health care for YP with JIA. The app was found to have high levels of acceptability and usability among YP and HCPs and has the potential to improve health care and outcomes for this age group. Future feasibility testing in a prospective study will firmly establish the reliability, efficacy, and cost-effectiveness of such an app intervention for patients with arthritis.

Cambron, L., et al. (2017). "Evaluation of a knowledge transfer scheme to improve policy making and practices in health promotion and disease prevention setting in French regions: a realist study protocol." *Implementation Science* 12.

Background: Evidence-based decision-making and practice are pivotal in public health. However, barriers do persist and they relate to evidence properties, organisations and contexts. To address these major knowledge transfer (KT) issues, we need to rethink how knowledge is produced and used, to enhance our understanding of decision-making processes, logics and mechanisms and to examine the ability of public health services to integrate research findings into their decisions and operations. This article presents a realist evaluation protocol to assess a KT scheme in prevention policy and practice at local level in France. Methods/design: This study is a comparative multiple case study, using a realist approach, to assess a KT scheme in regional health agencies (ARS) and regional non-profit organisations for health education and promotion (IREPS), by analysing the configurations contexts/mechanisms/outcomes of it. The KT scheme assessed is designed for the use of six reviews of systematic reviews concerning the following themes: nutrition, alcohol, tobacco smoking, physical activity, emotional and sexual life and psychosocial skills. It combines the following activities: supporting the access to and the adaptation of scientific and usable evidences; strengthening professionals' skills to analyse, adopt and use the evidences in the course of their practices and their decision-making process; facilitating the use of evidence in the organisations and processes. RAMESE II reporting standards for realist evaluations was used. Discussion: The aims of this study are to experiment and characterise the factors related to the scheme's ability to enable public health stakeholders to address the challenges of KT and to integrate scientific knowledge into policy and practice. We will use the realist approach in order to document the parameters of successful KT strategies in the specific contexts of preventive health services in France, while seeking to determine the transferability of such strategies.

Campbell, M. D., et al. (2017). "Exercise and physical activity in patients with type 1 diabetes." *Lancet Diabetes & Endocrinology* 5(7): 493-493.

Campbell, S., et al. (2017). "Paths to improving care of Australian Aboriginal and Torres Strait Islander women following gestational diabetes." *Primary Health Care Research and Development* 18(6): 549-562.

Aim: To understand enablers and barriers influencing postpartum screening for type 2 diabetes following gestational diabetes in Australian Indigenous women and how screening might be improved. Background: Australian Indigenous women with gestational diabetes mellitus (GDM) are less likely than other Australian women to receive postpartum diabetes screening. This is despite a fourfold higher risk of developing type 2 diabetes within eight years postpartum. Methods: We conducted interviews with seven Indigenous women with previous GDM, focus groups with 20 Indigenous health workers and workshops with 24 other health professionals. Data collection included brainstorming, visualisation, sorting and prioritising activities. Data were analysed thematically using the Theoretical Domains Framework. Barriers are presented under the headings of 'capability', 'motivation' and 'opportunity'. Enabling strategies are presented under 'intervention' and 'policy' headings. Findings: Participants generated 28 enabling environmental, educational and incentive interventions, and service provision, communication, guideline, persuasive and fiscal policies to address barriers to screening and improve postpartum support for women. The highest priorities included providing holistic social support, culturally appropriate resources, improving Indigenous workforce involvement and establishing structured follow-up systems. Understanding Indigenous women's perspectives, developing strategies with health workers and action planning with other health professionals can generate context-relevant feasible strategies to improve postpartum care after GDM. Importantly, we need evidence which can demonstrate whether the strategies are effective.

Cane, J., et al. (2012). "Validation of the theoretical domains framework for use in behaviour change and implementation research." *Implementation Science* 7.

Background: An integrative theoretical framework, developed for cross-disciplinary implementation and other behaviour change research, has been applied across a wide range of clinical situations. This study tests the validity of this framework. Methods: Validity was investigated by behavioural experts sorting 112 unique theoretical constructs using closed and open sort tasks. The extent of replication was tested by Discriminant Content Validation and Fuzzy Cluster

Analysis. Results: There was good support for a refinement of the framework comprising 14 domains of theoretical constructs (average silhouette value 0.29): 'Knowledge', 'Skills', 'Social/Professional Role and Identity', 'Beliefs about Capabilities', 'Optimism', 'Beliefs about Consequences', 'Reinforcement', 'Intentions', 'Goals', 'Memory, Attention and Decision Processes', 'Environmental Context and Resources', 'Social Influences', 'Emotions', and 'Behavioural Regulation'. Conclusions: The refined Theoretical Domains Framework has a strengthened empirical base and provides a method for theoretically assessing implementation problems, as well as professional and other health-related behaviours as a basis for intervention development.

Caneo, C. (2018). "Managing cardiovascular disease risk in patients with severe mental illness." *Lancet Psychiatry* 5(2): 97-98.

Caperon, L., et al. (2019). "Developing a socio-ecological model of dietary behaviour for people living with diabetes or high blood glucose levels in urban Nepal: A qualitative investigation." *Plos One* 14(3).

Instances of non-communicable diseases such as diabetes are on the rise globally leading to greater morbidity and mortality, with the greatest burden in low and middle income countries [LMIC]. A major contributing factor to diabetes is unhealthy dietary behaviour. We conducted 38 semi structured interviews with patients, health professionals, policy-makers and researchers in Kathmandu, Nepal, to better understand the determinants of dietary behaviour amongst patients with diabetes and high blood glucose levels. We created a social ecological model which is specific to socio-cultural context with our findings with the aim of informing culturally appropriate dietary behaviour interventions for improving dietary behaviour. Our findings show that the most influential determinants of dietary behaviour include cultural practices (gender roles relating to cooking), social support (from family and friends), the political and physical environment (political will, healthy food availability) and individuals motivations and capabilities. Using these most influential determinants, we suggest potentially effective dietary interventions that could be implemented by policy makers. Our findings emphasise the importance of considering socio-cultural context in developing interventions and challenges one-size-fits-all approaches which are often encouraged by global guidelines. We demonstrate how multifaceted and multi layered models of behavioural influence can be used to develop policy and practice with the aim of reducing mortality and morbidity from diabetes.

Carmichael, P. and C. Morisset (2018). Learning Decision Trees from Synthetic Data Models for Human Security Behaviour. *Software Engineering and Formal Methods, Sefm 2017*. A. Cerone and M. Roveri. 10729: 56-71.

In general, in order to predict the impact of human behaviour on the security of an organisation, one can either build a classifier from actual traces observed within the organisation, or build a formal model, integrating known existing behavioural elements. Whereas the former approach can be costly and time-consuming, and it can be complicated to select the best classifier, it can be equally complicated to select the right parameters for a concrete setting in the latter approach. In this paper, we propose a methodical assessment of decision trees to predict the impact of human behaviour on the security of an organisation, by learning them from different sets of traces generated by a formal probabilistic model we designed. We believe this approach can help a security practitioner understand which features to consider before observing real traces from an organisation, and understand the relationship between the complexity of the behaviour model and the accuracy of the decision tree. In particular, we highlight the impact of the norm and messenger effects, which are well-known influencers, and therefore the crucial importance to capture observations made by the agents. We demonstrate this approach with a case study around tailgating. A key result from this work shows that probabilistic behaviour and influences reduce the effectiveness of decision trees and, importantly, they impact a model differently with regards to error rate, precision and recall.

Carmichael, P., et al. (2016). Influence Tokens: Analysing Adversarial Behaviour Change in Coloured Petri Nets.

Social Engineers can use influential techniques to exploit human behaviour. For a security officer, simulating and analysing such attacks would provide useful insights towards possible countermeasures. We propose the notion of influence tokens, which a social engineer can exploit to change human behaviour. We model the relationship between agents and a social engineer using Coloured Petri Nets, which govern the behaviour of influence tokens. We then illustrate our results showing how influence tokens propagate, impact and alters a Social Engineers success rate in a tailgating scenario. In particular, we show that a specific combination of tokens will increase the adversaries success rate, whereas, investing in a different set of tokens yields no further rewards for the adversary.

Carney, R., et al. (2016). "Physical health promotion for young people at ultra-high risk for psychosis: An application of the COM-B model and behaviour-change wheel." *International Journal of Mental Health Nursing* 25(6): 536-545.

People with psychotic illnesses, such as schizophrenia, have high rates of unhealthy lifestyle factors, such as smoking and physical inactivity. Young people who seek help for mental health care, particularly those at high risk for

psychosis, often also display high rates of these unhealthy behaviours. Although healthy living interventions have been applied to people with established psychosis, no attempt has been made to offer them to young people at risk for developing psychosis, despite potential benefits to mental and physical health. We propose that the COM-B model (consisting of capability, opportunity and motivation) and behaviour-change wheel might be an appropriate framework that mental health nurses and other health professionals could apply. Using a systematic and theoretically-based approach to intervention development could result in effective methods of health promotion in this group. Further training and development for mental health nurses could encourage a greater integration of mental and physical health care.

Carpenter, C. R. and H. Pinnock (2017). "Starry Aims to Overcome Knowledge Translation Inertia: The Standards for Reporting Implementation Studies (StaRI) Guidelines." *Academic Emergency Medicine* 24(8): 1027-1029.

Casey, B., et al. (2018). "Changing Physical Activity Behavior in People With Multiple Sclerosis: A Systematic Review and Meta-Analysis." *Archives of Physical Medicine and Rehabilitation* 99(10): 2059-2075.

Objectives: To (1) systematically review the literature on behavioral interventions for people with multiple sclerosis (MS) that aim to change physical activity (PA) behavior; and (2) explore whether these interventions are clinically effective in improving PA, are theory based, and use established behavior change techniques (BCTs). Data Sources: A systematic electronic search was conducted on databases EBSCO (including AMED, Biomedical Reference Collection: Expanded, CINAHL, MEDLINE, PsycArticles, PsycInfo), PubMed, EMBASE, and Web of Science from April 2017 to May 2017. Study Selection: Studies were included if (1) the interventions aimed to change PA behavior among people with MS; (2) PA was recognized as a primary outcome measure; and (3) they had a randomized controlled trial (RCT) design. Data Extraction: The resulting behavioral interventions were coded using the Theory Coding Scheme and the CALO-RE taxonomy to assess theory base and BCTs. A meta-analysis was conducted to assess effectiveness. Data Synthesis: Fourteen RCTs were included. Combined, there was a significant ($P = .0003$; $d = 1.00$; 95% confidence interval, .46-1.53) short-term change in self-report PA behavior for studies with nonactive control groups. There was no change in objective or long-term PA. Studies failed to discuss results in relation to theory and did not attempt to refine theory. Fifty percent of BCTs within the CALO-RE were used, with BCTs of "goal-setting" and "action-planning" being the most frequently used. Conclusions: Current evidence supports the efficacy of PA intervention on subjective but not objective outcomes. However, conclusions from this review should be interpreted with caution because of the small number of studies included and small sample size. Further, while using theory in intervention design, interventions in this review have not reported the refining of theory. Exploration of the use of additional BCTs to change PA behavior is also required within future interventions. (C) 2018 by the American Congress of Rehabilitation Medicine

Casey, B., et al. (2017). "Modifiable Psychosocial Constructs Associated With Physical Activity Participation in People With Multiple Sclerosis: A Systematic Review and Meta-Analysis." *Archives of Physical Medicine and Rehabilitation* 98(7): 1453-1475.

Objective: To synthesize current knowledge of the modifiable psychosocial constructs associated with physical activity (PA) participation in people with multiple sclerosis. Data Sources: A search was conducted through October 2015 in 8 electronic databases: CINAHL, PubMed, SPORTDiscus, Web of Knowledge, MEDLINE, EMBASE, Cochrane Database of Systematic Reviews, and PsycINFO. Study Selection: Cohort and intervention studies were included if they (1) included an objective or subjective measure of PA; (2) measured at least 1 modifiable psychosocial construct; and (3) reported bivariate correlations (or these could be extracted) between the PA and psychosocial construct measures. A total of 13,867 articles were screened for inclusion, and 26 were included in the final analysis. Data Extraction: Meta-analyses of correlations were conducted using the Hedges-Olkin method. Where a meta-analysis was not possible, results were reported descriptively. Data Synthesis: Meta-analyses indicated a pooled correlation coefficient between (1) objective PA and self-efficacy ($n=7$) of $r=.30$ ($P<.0001$), indicating a moderate, positive association; (2) subjective PA and self-efficacy ($n=7$) of $r=.34$ ($P<.0001$), indicating a moderate, positive association; (3) subjective PA and goal-setting ($n=5$) of $r=.44$ ($P<.0001$), indicating a moderate-to-large positive association; and (4) subjective PA and outcome expectancies ($n=4$) (physical: $r=.13$, $P=.11$; social: $r=.19$, $P<.0001$; self-evaluative: $r=.27$, $P<.0001$), indicating small-moderate positive associations. Other constructs such as measures of health beliefs, enjoyment, social support, and perceived benefits and barriers were reported to be significantly correlated with PA in individual studies, but the number of studies was not sufficient for a meta-analysis. Conclusions: Future PA interventions should continue to focus on the psychosocial constructs of self-efficacy and goal-setting. However, there is a need to explore the associations between other constructs outside those reported in this review. (C) 2016 by the American Congress of Rehabilitation Medicine

Cassidy, C., et al. (2017). "Development of a Behavior Change Intervention to Improve Sexual Health Service Use Among University Undergraduate Students: Mixed Methods Study Protocol." *Jmir Research Protocols* 6(11).

Background: University students are at risk for acquiring sexually transmitted infections and suffering other negative health outcomes. Sexual health services offer preventive and treatment interventions that aim to reduce these infections and associated health consequences. However, university students often delay or avoid seeking sexual health services. An in-depth understanding of the factors that influence student use of sexual health services is needed to underpin effective sexual health interventions. **Objective:** In this study, we aim to design a behavior change intervention to address university undergraduate students' use of sexual health services at two universities in Nova Scotia, Canada. **Methods:** This mixed methods study consists of three phases that follow a systematic approach to intervention design outlined in the Behaviour Change Wheel. In Phase 1, we examine patterns of sexual health service use among university students in Nova Scotia, Canada, using an existing dataset. In Phase 2, we identify the perceived barriers and enablers to students' use of sexual health services. This will include focus groups with university undergraduate students, health care providers, and university administrators using a semistructured guide, informed by the Capability, Opportunity, Motivation-Behaviour Model and Theoretical Domains Framework. In Phase 3, we identify behavior change techniques and intervention components to develop a theory-based intervention to improve students' use of sexual health services. **Results:** This study will be completed in March 2018. Results from each phase and the finalized intervention design will be reported in 2018. **Conclusions:** Previous intervention research to improve university students' use of sexual health services lacks a theoretical assessment of barriers. This study will employ a mixed methods research design to examine university students' use of sexual health service and apply behavior change theory to design a theory- and evidence-based sexual health service intervention. Our approach will provide a comprehensive foundation to co-design a theory-based intervention with service users, health care providers, and administrators to improve sexual health service use among university students and ultimately improve their overall health and well-being.

Castillo-Carniglia, A. (2015). "LARGE INCREASE IN ADOLESCENT MARIJUANA USE IN CHILE." *Addiction* 110(1): 185-186.

Castro-Sanchez, E., et al. (2016). "Serious electronic games as behavioural change interventions in healthcare-associated infections and infection prevention and control: a scoping review of the literature and future directions." *Antimicrobial Resistance and Infection Control* 5.

Background: The uptake of improvement initiatives in infection prevention and control (IPC) has often proven challenging. Innovative interventions such as 'serious games' have been proposed in other areas to educate and help clinicians adopt optimal behaviours. There is limited evidence about the application and evaluation of serious games in IPC. The purposes of the study were: a) to synthesise research evidence on the use of serious games in IPC to support healthcare workers' behaviour change and best practice learning; and b) to identify gaps across the formulation and evaluation of serious games in IPC. **Methods:** A scoping study was conducted using the methodological framework developed by Arksey and O'Malley. We interrogated electronic databases (Ovid MEDLINE, Embase Classic + Embase, PsycINFO, Scopus, Cochrane, Google Scholar) in December 2015. Evidence from these studies was assessed against an analytic framework of intervention formulation and evaluation. **Results:** Nine hundred sixty five unique papers were initially identified, 23 included for full-text review, and four finally selected. Studies focused on intervention inception and development rather than implementation. Expert involvement in game design was reported in 2/4 studies. Potential game users were not included in needs assessment and game development. Outcome variables such as fidelity or sustainability were scarcely reported. **Conclusions:** The growing interest in serious games for health has not been coupled with adequate evaluation of processes, outcomes and contexts involved. Explanations about the mechanisms by which game components may facilitate behaviour change are lacking, further hindering adoption.

Catapano, A. L., et al. (2016). "2016 ESC/EAS Guidelines for the Management of Dyslipidaemias." *European Heart Journal* 37(39): 2999-+.

Catapano, A. L., et al. (2016). "2016 ESC/EAS Guidelines for the Management of Dyslipidaemias The Task Force for the Management of Dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS) Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR)." *Atherosclerosis* 253: 281-344.

Cate, H., et al. (2014). "Improving adherence to glaucoma medication: a randomised controlled trial of a patient-centred intervention (The Norwich Adherence Glaucoma Study)." *Bmc Ophthalmology* 14.

Background: Improving adherence to ocular hypertension (OH)/glaucoma therapy is highly likely to prevent or reduce progression of optic nerve damage. The present study used a behaviour change counselling intervention to determine whether education and support was beneficial and cost-effective in improving adherence with glaucoma therapy. **Methods:** A randomised controlled trial with a 13-month recruitment and 8-month follow-up period was conducted. Patients with OH/glaucoma attending a glaucoma clinic and starting treatment with travoprost were

approached. Participants were randomised into two groups and adherence was measured over 8 months, using an electronic monitoring device (Travalert (R) dosing aid, TDA). The control group received standard clinical care, and the intervention group received a novel glaucoma education and motivational support package using behaviour change counselling. Cost-effectiveness framework analysis was used to estimate any potential cost benefit of improving adherence. Results: Two hundred and eight patients were recruited (102 intervention, 106 control). No significant difference in mean adherence over the monitoring period was identified with 77.2% (CI, 73.0, 81.4) for the control group and 74.8% (CI, 69.7, 79.9) for the intervention group ($p = 0.47$). Similarly, there was no significant difference in percentage intraocular pressure reduction; 27.6% (CI, 23.5, 31.7) for the control group and 25.3% (CI, 21.06, 29.54) for the intervention group ($p = 0.45$). Participants in the intervention group were more satisfied with information about glaucoma medication with a mean score of 14.47/17 (CI, 13.85, 15.0) compared with control group which was 8.51 (CI, 7.72, 9.30). The mean intervention cost per patient was GB 10.35 pound (<US\$16) and not cost-effective. Conclusions: Adherence with travoprost was high and not further increased by the intervention. Nevertheless, the study demonstrated that provision of information, tailored to the individual, was inexpensive and able to achieve high patient satisfaction with respect to information about glaucoma medication. Measurement of adherence remains problematic since awareness of study participation may cause a change in participant behaviour.

Cattaruzza, M. S. and R. West (2013). "Why do doctors and medical students smoke when they must know how harmful it is?" *European Journal of Public Health* 23(2): 188-189.

Cavalheri, V., et al. (2016). "Changing physical activity and sedentary behaviour in people with COPD." *Respirology* 21(3): 419-426.

People with chronic obstructive pulmonary disease (COPD) engage in low levels of physical activity (PA). Given the evidence for the health benefits associated with participating in 150min of moderate-to-vigorous intensity PA each week, there is considerable interest in methods to increase PA in people with COPD. Studies to date have focused largely on exercise training and behavioural approaches, and many have demonstrated minimal, if any effect. An intermediate goal that focuses on reducing time spent in sedentary behaviour (SB) and increasing participation in light intensity PA is a more realistic goal in this population and offers a gateway to higher intensity PA. Although strategies that are capable of reducing time spent in SB in COPD are unknown, studies that have shown some increase in PA in this population often provide individualized goal setting, motivational interviewing and frequent contact with health-care professionals to provide advice regarding strategies to overcome barriers. Therefore, these approaches should be considered in interventions to reduce time in SB. There are a range of devices available to monitor time in SB for use in both clinical and research settings. To move this area forward, a theoretically informed and systematic approach to behaviour change is needed. The theoretical model, the behaviour change wheel', is described and an example is provided of how it can be applied to a person with COPD.

Chaboyer, W. and B. M. Gillespie (2014). "Understanding nurses' views on a pressure ulcer prevention care bundle: a first step towards successful implementation." *Journal of Clinical Nursing* 23(23-24): 3415-3423.

Aims and Objectives. To explore nurses' views of the barriers and facilitators to the use of a newly devised patient-centred pressure ulcer prevention care bundle. **Background.** Given pressure ulcer prevention strategies are not implemented consistently, the use of a pressure ulcer care bundle may improve implementation given bundles generally assist in standardising care. **Design.** A quality improvement project was undertaken after a pressure ulcer prevention care bundle was developed and pilot-tested. **Methods.** Short, conversational interviews with nurse explored their views of a patient-centred pressure ulcer care bundle. Interviews were audio-taped and transcribed. Inductive content analysis was used to analyse the transcripts. **Results.** A total of 20 nurses were interviewed. Five categories with corresponding subcategories emerged from the analysis. They were increasing awareness of pressure ulcer prevention, prompting pressure ulcer prevention activities, promoting active patient participation, barriers to using a pressure ulcer prevention care bundle and enabling integration of the pressure ulcer prevention care bundle into routine practice. **Conclusions.** Benefits of using a patient-centred pressure ulcer prevention care bundle may include prompting patients and staff to implement prevention strategies and promote active patient participation in care. The success of the care bundle relied on both patients' willingness to participate and nurses' willingness to incorporate it into their routine work. **Relevance to Clinical Practice.** A patient-centred pressure ulcer prevention care bundle may facilitate more consistent implementation of pressure ulcer prevention strategies and active patient participation in care.

Chadwick, P. M. (2018). *Safety and Behaviour Change. Beyond Safety Training: Embedding Safety in Professional Skills.* C. Bieder, C. Gilbert, B. Journe and H. Laroche: 127-137.

Promoting industrial safety is a complex field requiring collaboration between academia and industry across a range of professional and academic disciplines. Whilst human factors are recognized as being key modifiable

determinants of risk across all professional groups and disciplines the variety and type of theories, methodologies and practices can make it difficult to identify commonalities and integrate findings into a conceptually coherent framework for research and intervention. The science of behaviour change offers possibilities for integrating cross-disciplinary understandings of the contributions of human behaviour to industrial safety through the use of models and frameworks like the Behaviour Change Wheel (BCW). This chapter describes the principles and processes involved in designing behaviour change interventions using the BCW illustrating this with examples drawn specifically from the industrial safety sector. The potential applications of the approach in the areas of workforce development and research are highlighted.

Chamberlain, C., et al. (2017). "Psychosocial interventions for supporting women to stop smoking in pregnancy." Cochrane Database of Systematic Reviews(2).

Background Tobacco smoking remains one of the few preventable factors associated with complications in pregnancy, and has serious long-term implications for women and babies. Smoking in pregnancy is decreasing in high-income countries, but is strongly associated with poverty and is increasing in low-to middle-income countries. Objectives To assess the effects of smoking cessation interventions during pregnancy on smoking behaviour and perinatal health outcomes. Search methods In this sixth update, we searched the Cochrane Pregnancy and Childbirth Group's Trials Register (13 November 2015), checked reference lists of retrieved studies and contacted trial authors. Selection criteria Randomised controlled trials, cluster-randomised trials, and quasi-randomised controlled trials of psychosocial smoking cessation interventions during pregnancy. Data collection and analysis Two review authors independently assessed trials for inclusion and trial quality, and extracted data. Direct comparisons were conducted in RevMan, with meta-regression conducted in STATA 14. Main results The overall quality of evidence was moderate to high, with reductions in confidence due to imprecision and heterogeneity for some outcomes. One hundred and two trials with 120 intervention arms (studies) were included, with 88 trials (involving over 28,000 women) providing data on smoking abstinence in late pregnancy. Interventions were categorised as counselling, health education, feedback, incentives, social support, exercise and dissemination. In separate comparisons, there is high-quality evidence that counselling increased smoking cessation in late pregnancy compared with usual care (30 studies; average risk ratio (RR) 1.44, 95% confidence interval (CI) 1.19 to 1.73) and less intensive interventions (18 studies; average RR 1.25, 95% CI 1.07 to 1.47). There was uncertainty whether counselling increased the chance of smoking cessation when provided as one component of a broader maternal health intervention or comparing one type of counselling with another. In studies comparing counselling and usual care (largest comparison), it was unclear whether interventions prevented smoking relapse among women who had stopped smoking spontaneously in early pregnancy. However, a clear effect was seen in smoking abstinence at zero to five months postpartum (11 studies; average RR 1.59, 95% CI 1.26 to 2.01) and 12 to 17 months (two studies, average RR 2.20, 95% CI 1.23 to 3.96), with a borderline effect at six to 11 months (six studies; average RR 1.33, 95% CI 1.00 to 1.77). In other comparisons, the effect was unclear for most secondary outcomes, but sample sizes were small. Evidence suggests a borderline effect of health education compared with usual care (five studies; average RR 1.59, 95% CI 0.99 to 2.55), but the quality was downgraded to moderate as the effect was unclear when compared with less intensive interventions (four studies; average RR 1.20, 95% CI 0.85 to 1.70), alternative interventions (one study; RR 1.88, 95% CI 0.19 to 18.60), or when smoking cessation health education was provided as one component of a broader maternal health intervention. There was evidence feedback increased smoking cessation when compared with usual care and provided in conjunction with other strategies, such as counselling (average RR 4.39, 95% CI 1.89 to 10.21), but the confidence in the quality of evidence was downgraded to moderate as this was based on only two studies and the effect was uncertain when feedback was compared to less intensive interventions (three studies; average RR 1.29, 95% CI 0.75 to 2.20). High-quality evidence suggests incentive-based interventions are effective when compared with an alternative (non-contingent incentive) intervention (four studies; RR 2.36, 95% CI 1.36 to 4.09). However pooled effects were not calculable for comparisons with usual care or less intensive interventions (substantial heterogeneity, $I^2 = 93\%$). High-quality evidence suggests the effect is unclear in social support interventions provided by peers (six studies; average RR 1.42, 95% CI 0.98 to 2.07), in a single trial of support provided by partners, or when social support for smoking cessation was provided as part of a broader intervention to improve maternal health. The effect was unclear in single interventions of exercise compared to usual care (RR 1.20, 95% CI 0.72 to 2.01) and dissemination of counselling (RR 1.63, 95% CI 0.62 to 4.32). Importantly, high-quality evidence from pooled results demonstrated that women who received psychosocial interventions had a 17% reduction in infants born with low birthweight, a significantly higher mean birthweight (mean difference (MD) 55.60 g, 95% CI 29.82 to 81.38 g higher) and a 22% reduction in neonatal intensive care admissions. However the difference in preterm births and stillbirths was unclear. There did not appear to be adverse psychological effects from the interventions. The intensity of support women received in both the intervention and comparison groups has increased over time, with higher intensity interventions more likely to have higher-intensity comparisons, potentially explaining why no clear differences were seen with increasing intervention intensity in meta-regression analyses. Among meta-regression analyses: studies classified as having 'unclear' implementation and unequal baseline characteristics were less effective than other studies. There was no clear difference between trials implemented by researchers (efficacy

studies), and those implemented by routine pregnancy staff (effectiveness studies), however there was uncertainty in the effectiveness of counselling in four dissemination trials where the focus on the intervention was at an organisational level. The pooled effects were similar in interventions provided for women classified as having predominantly low socioeconomic status, compared to other women. The effect was significant in interventions among women from ethnic minority groups; however not among indigenous women. There were similar effect sizes in trials with biochemically validated smoking abstinence and those with self-reported abstinence. It was unclear whether incorporating use of self-help manuals or telephone support increased the effectiveness of interventions. Authors' conclusions Psychosocial interventions to support women to stop smoking in pregnancy can increase the proportion of women who stop smoking in late pregnancy and the proportion of infants born low birthweight. Counselling, feedback and incentives appear to be effective, however the characteristics and context of the interventions should be carefully considered. The effect of health education and social support is less clear. New trials have been published during the preparation of this review and will be included in the next update.

Chan, C. K. Y., et al. (2015). "Advancing the Science of Dissemination and Implementation in Behavioral Medicine: Evidence and Progress." *International Journal of Behavioral Medicine* 22(3): 277-282.

The enormous time lag between the discovery of new knowledge and its implementation poses a significant challenge to improving public health because of the very slow uptake into policy and practice. The field of dissemination and implementation research in behavioral medicine is receiving increased attention because of the keen interest in accelerating knowledge transfer from relevant research to improve the health and wellbeing of populations in many different settings, contexts, and countries around the world. This is particularly important in high-risk populations, resource-poor and developing regions of the world where the difference in health systems, languages, and cultures very significantly influences the translation of evidence into policy and practice. Moreover, demonstrating the broader societal and economic value of behavioral interventions in settings where they are implemented can further support the sustainability, uptake, and implementation of these findings in other settings and contexts. This special issue presents a series of empirical studies, reviews, and case studies that address dissemination, implementation, and translation issues in both developed and developing countries. Specifically, the learnings from the application of many and varied theories and research methodologies are very relevant for bridging the current division between research findings and their translation and uptake into policy and practice.

Chansrichavala, P., et al. (2015). "Public Awareness of Melioidosis in Thailand and Potential Use of Video Clips as Educational Tools." *Plos One* 10(3).

Background Melioidosis causes more than 1,000 deaths in Thailand each year. Infection occurs via inoculation, ingestion or inhalation of the causative organism (*Burkholderia pseudomallei*) present in soil and water. Here, we evaluated public awareness of melioidosis using a combination of population-based questionnaire, a public engagement campaign to obtain video clips made by the public, and viewpoints on these video clips as potential educational tools about the disease and its prevention. Methods A questionnaire was developed to evaluate public awareness of melioidosis, and knowledge about its prevention. From 1 March to 31 April 2012, the questionnaire was delivered to five randomly selected adults in each of 928 districts in Thailand. A video clip contest entitled "Melioidosis, an infectious disease that Thais must know" was run between May and October 2012. The best 12 video clips judged by a contest committee were shown to 71 people at risk from melioidosis (diabetics). Focus group interviews were used to evaluate their perceptions of the video clips. Results Of 4,203 Thais who completed our study questionnaire, 74% had never heard of melioidosis, and 19% had heard of the disease but had no further knowledge. Most participants in all focus group sessions felt that video clips were beneficial and could positively influence them to increase adherence to recommended preventive behaviours, including drinking boiled water and wearing protective gear if in contact with soil or environmental water. Participants suggested that video clips should be presented in the local dialect with simple words rather than medical terms, in a serious manner, with a doctor as the one presenting the facts, and having detailed pictures of each recommended prevention method. Conclusions In summary, public awareness of melioidosis in Thailand is very low, and video clips could serve as a useful medium to educate people and promote disease prevention.

Chapman, J. J., et al. (2018). "Protocol for a randomised controlled trial of interventions to promote adoption and maintenance of physical activity in adults with mental illness." *Bmj Open* 8(9).

Introduction Physical activity (PA) has diverse benefits for physical and mental health and can reduce symptoms of mental illness. Adults with mental illness face practical, psychosocial and socioeconomic barriers to adopting and maintaining PA, and it is unclear how to effectively promote PA in this group. Supervised exercise interventions provide high support but may not promote autonomous motivation, which is important for PA maintenance. The aim of this study is to compare the effectiveness of two interventions to promote PA in adults with mental illness. Methods and analysis This is a randomised controlled trial of two interventions to promote PA: (1) supervised exercise and gym membership

and (2) motivational discussions and self-monitoring of PA using fitness trackers. The intervention duration is 16 weeks, including 8 weeks of weekly supervised group sessions, and 8 weeks of access to the gym or fitness tracker unsupervised. Participants are community-dwelling adults recruited from outpatient clinics of public mental health services. The primary outcome is PA adoption assessed using GENEActiv accelerometers worn continuously over 8 weeks. Secondary outcomes measured at baseline, postintervention (8 weeks) and follow-up (16 weeks), include exercise motivation, psychological distress and self-reported PA assessed using self-administered questionnaires and indicators of physical health measured by a researcher blinded to allocation (blood pressure, weight, waist circumference, 6min walk test). Participant experiences will be assessed using qualitative focus groups with analysis informed by a theoretical model of behaviour (COM-B). Ethics and dissemination Ethics approval has been obtained from the Royal Brisbane and Women's Hospital (HREC/17/QRBW/302). We plan to submit a manuscript on protocol development from pilot work, and a manuscript of the results to a peer-reviewed journal. Results will be presented at conferences, community and consumer forums and hospital grand rounds. Trial registration number ACTRN12617001017314; Pre-results.

Chatterton, T. and C. Wilson (2014). "The 'Four Dimensions of Behaviour' framework: a tool for characterising behaviours to help design better interventions." *Transportation Planning and Technology* 37(1): 38-61.

This paper sets out the rationale and structure of a tool for assisting policy-makers and practitioners to understand behavioural challenges and open up thinking on the design of effective behaviour change interventions. The Four Dimensions of Behaviour' (4DB) framework is based on the theoretical and empirical research in a range of policy domains including transport and pro-environmental behaviour more generally. The 4DB framework characterises multifaceted behaviours along dimensions of actor, domain, durability and scope. Its application in workshop or structured settings opens up diverse and non-exclusive discussion on designing interventions to match salient behavioural characteristics. The use of the 4DB framework in the transport domain is demonstrated for travel behaviours of interest to policy-makers using examples of buying plug-in vehicles (PIVs), commuting by bicycle, eco-driving and making business trips by train.

Chauhan, B. F., et al. (2017). "Behavior change interventions and policies influencing primary healthcare professionals' practice-an overview of reviews." *Implementation Science* 12.

Background: There is a plethora of interventions and policies aimed at changing practice habits of primary healthcare professionals, but it is unclear which are the most appropriate, sustainable, and effective. We aimed to evaluate the evidence on behavior change interventions and policies directed at healthcare professionals working in primary healthcare centers. Methods: Study design: overview of reviews. Data source: MEDLINE (Ovid), Embase (Ovid), The Cochrane Library (Wiley), CINAHL (EbscoHost), and grey literature (January 2005 to July 2015). Study selection: two reviewers independently, and in duplicate, identified systematic reviews, overviews of reviews, scoping reviews, rapid reviews, and relevant health technology reports published in full-text in the English language. Data extraction and synthesis: two reviewers extracted data pertaining to the types of reviews, study designs, number of studies, demographics of the professionals enrolled, interventions, outcomes, and authors' conclusions for the included studies. We evaluated the methodological quality of the included studies using the AMSTAR scale. For the comparative evaluation, we classified interventions according to the behavior change wheel (Michie et al.). Results: Of 2771 citations retrieved, we included 138 reviews representing 3502 individual studies. The majority of systematic reviews (91%) investigated behavior and practice changes among family physicians. Interactive and multifaceted continuous medical education programs, training with audit and feedback, and clinical decision support systems were found to be beneficial in improving knowledge, optimizing screening rate and prescriptions, enhancing patient outcomes, and reducing adverse events. Collaborative team-based policies involving primarily family physicians, nurses, and pharmacists were found to be most effective. Available evidence on environmental restructuring and modeling was found to be effective in improving collaboration and adherence to treatment guidelines. Limited evidence on nurse-led care approaches were found to be as effective as general practitioners in patient satisfaction in settings like asthma, cardiovascular, and diabetes clinics, although this needs further evaluation. Evidence does not support the use of financial incentives to family physicians, especially for long-term behavior change. Conclusions: Behavior change interventions including education, training, and enablement in the context of collaborative team-based approaches are effective to change practice of primary healthcare professionals. Environmental restructuring approaches including nurse-led care and modeling need further evaluation. Financial incentives to family physicians do not influence long-term practice change.

Chen, J. and M. Allman-Farinelli (2019). "Impact of Training and Integration of Apps Into Dietetic Practice on Dietitians' Self-Efficacy With Using Mobile Health Apps and Patient Satisfaction." *Jmir Mhealth and Uhealth* 7(3).

Background: The use of mobile health (mHealth) apps in dietetic practice could support the delivery of nutrition care in medical nutrition therapy. However, apps are underutilized by dietitians in patient care. Objective: This study aimed to determine the feasibility of an intervention consisting of education, training, and integration of apps in

improving dietitians' perceived self-efficacy with using mHealth apps. Methods: Private practice Accredited Practising Dietitians who were not regular users or recommenders of mHealth apps were recruited into the intervention. The intervention consisted of 2 phases: (1) a workshop that incorporated an educational lecture and skill-building activities to target self-efficacy, capability, opportunity, and motivation factors and (2) a 12-week intervention phase allowing for the integration of an app into dietetic practice via an app platform. During the 12-week intervention phase, dietitians prescribed an Australian commercial nutrition app to new (intervention) patients receiving nutrition care. Existing (control) patients were also recruited to provide a measure of patient satisfaction before the apps were introduced. New patients completed their patient satisfaction surveys at the end of the 12 weeks. Usability feedback about the app and app platform was gathered from intervention patients and dietitians. Results: A total of 5 dietitians participated in the study. On the basis of an analysis of variance with the Tukey post hoc tests, the educational and skills training workshop component of the intervention produced immediate improvements in mean ratings for dietitians' self-efficacy with using mHealth apps compared with baseline ($P=.02$), particularly with regard to familiarity with apps factor ($P<.001$). The self-efficacy factor integration into dietetic work systems achieved significant improvements from baseline to 12 weeks ($P=.03$). Patient satisfaction with dietetic services did not differ significantly between intervention ($n=17$) and control patients ($n=13$). Overall, dietitians and their patients indicated that they would continue using the app platform and app, respectively, and would recommend it to others. To improve usability, enhancing patient-dietitian communication mediums in the app platform and reducing the burden of entering in meals cooked at home should be considered. Conclusions: Administering an educational and skills training workshop in conjunction with integrating an app platform into dietetic practice was a feasible method for improving the self-efficacy of dietitians toward using mHealth apps. Further translational research will be required to determine how the broader dietetic profession responds to this intervention.

Chen, J., et al. (2017). "The use of smartphone health apps and other mobile health (mHealth) technologies in dietetic practice: a three country study." *Journal of Human Nutrition and Dietetics* 30(4): 439-452.

Background: Smartphone health applications (apps) and other mobile health (mHealth) technologies may assist dietitians in improving the efficiency of patient care. The present study investigated the use of health apps and text messaging in dietetic practice and formulated intervention recommendations for supporting app uptake by dietitians based on the behavioural COM-B' system, where interactions between capability, opportunity and motivation influence behaviour. Methods: A 52-item online survey tool, taking 20min to complete, was developed and piloted, with questions exploring the use of health apps and text messaging in dietetic practice, types of apps dietitians recommended and that patients used, and barriers and enablers to app use in dietetic practice. The Australian, New Zealand and British dietetic associations distributed the survey to their members. Results: A 5% response rate was achieved internationally, with 570 completed responses included for further analysis. Health apps, namely nutrition apps, were used by 62% of dietitians in their practice, primarily as an information resource (74%) and for patient self-monitoring (60%). The top two nutrition apps recommended were MyFitnessPal((R)) (62%) and the Monash University Low FODMAP Diet((R)) (44%). Text messaging was used by 51% of respondents, mainly for appointment-related purposes (84%). Conclusions: Although the reported use of smartphone health apps in dietetic practice is high, health apps and other mHealth technologies are not currently being used for behaviour change, nor are they an integral part of the nutrition care process. Dietetic associations should provide training, education and advocacy to enable the profession to more effectively engage with and implement apps into their practice.

Chisholm, A., et al. (2019). "Public health practitioners' views of the 'Making Every Contact Count' initiative and standards for its evaluation." *Journal of Public Health* 41(1): E70-E77.

Background National Health Service England encourages staff to use everyday interactions with patients to discuss healthy lifestyle changes as part of the 'Making Every Contact Count' (MECC) approach. Although healthcare, government and public health organisations are now expected to adopt this approach, evidence is lacking about how MECC is currently implemented in practice. This study explored the views and experiences of those involved in designing, delivering and evaluating MECC. Methods We conducted a qualitative study using semi-structured interviews with 13 public health practitioners with a range of roles in implementing MECC across England. Interviews were conducted via telephone, transcribed verbatim and analysed using an inductive thematic approach. Results Four key themes emerged identifying factors accounting for variations in MECC implementation: (i) 'design, quality and breadth of training', (ii) 'outcomes attended to and measured', (iii) 'engagement levels of trainees and trainers' and (iv) 'system-level influences'. Conclusions MECC is considered a valuable public health approach but because organisations interpret MECC differently, staff training varies in nature. Practitioners believe that implementation can be improved, and an evidence-base underpinning MECC developed, by sharing experiences more widely, introducing standardization to staff training and finding better methods for assessing meaningful outcomes.

Cibrian, F. L., et al. (2016). "Hunting Relics: A Persuasive Exergame to Promote Collective Exercise in Young Children." *International Journal of Human-Computer Interaction* 32(3): 277-294.

Child obesity and being overweight is a health problem of increasing occurrence. Sedentary lifestyles and lack of exercise affect young children's motor skills development, hence their quality of life. This study presents the design and evaluation of Hunting Relics, a collaborative exergame to promote collective exertion in young children. The system runs on an interactive floor and was designed using an iterative user-centered methodology in combination with the Capability, Opportunity, and Motivation to generate Behavior (COM-B) model. To evaluate the impact of our design choices, two deployment studies were conducted. Results show that Hunting Relics augments existing exercise routines, keeps young children engaged for the long term, and persuades them to discover new collaborative practices to support exercising. A discussion follows about how the COM-B model is a useful framework to design exergames for young children and the impact of Hunting Relics from an educational, technical, and clinical perspective.

Ciprut, S., et al. (2018). "Designing a theory-based intervention to improve the guideline-concordant use of imaging to stage incident prostate cancer." *Urologic Oncology-Seminars and Original Investigations* 36(5): 246-251.

Among US men, most new prostate cancer cases are clinically localized and do not require imaging as part of staging workup according to guidelines. Two leading specialty societies promote stewardship of health resources by encouraging guideline-concordant care, thereby limiting inappropriate and obsolete imaging. However, imaging to stage low-risk prostate cancer remains high, as almost half of men with localized prostate cancer undergo wasteful imaging following diagnosis. We employed a theory-based approach, based on current evidence and data on existing practice patterns revealing that providers are the drivers to imaging decisions, to design an intervention to improve guideline-concordant prostate cancer staging imaging across populations. We conceptualized preliminary results using the theoretical domains framework and the behavior change wheel, frameworks used concurrently to investigate physicians' behaviors and intervention design in various clinical settings. Through these 2 frameworks, we designed a theory-based, physician-focused intervention to efficiently encourage guideline-concordant prostate cancer imaging, prostate cancer imaging stewardship (PCIS). Prostate cancer imaging stewardship consists of interventions (clinical order check, academic detailing, and audit and feedback) implemented at the individual, facility, and system level to enact provider behavior change by enabling facilitators and appealing to physician motivation. Published by Elsevier Inc.

Ciro, C. A. and P. Smith (2015). "Improving Personal Characterization of Meaningful Activity in Adults with Chronic Conditions Living in a Low-Income Housing Community." *International Journal of Environmental Research and Public Health* 12(9): 11379-11395.

Purpose: To understand how adults living in a low-income, public housing community characterize meaningful activity (activity that gives life purpose) and if through short-term intervention, could overcome identified individual and environmental barriers to activity engagement. Methods: We used a mixed methods design where Phase 1 (qualitative) informed the development of Phase 2 (quantitative). Focus groups were conducted with residents of two low-income, public housing communities to understand their characterization of meaningful activity and health. From these results, we developed a theory-based group intervention for overcoming barriers to engagement in meaningful activity. Finally, we examined change in self-report scores from the Meaningful Activity Participation Assessment (MAPA) and the Engagement in Meaningful Activity Survey (EMAS). Results: Health literacy appeared to impact understanding of the questions in Phase 1. Activity availability, transportation, income and functional limitations were reported as barriers to meaningful activity. Phase 2 within group analysis revealed a significant difference in MAPA pre-post scores ($p=0.007$), but not EMAS ($p=0.33$). Discussion: Health literacy should be assessed and addressed in this population prior to intervention. After a group intervention, participants had a change in characterization of what is considered healthy, meaningful activity but reported fewer changes to how their activities aligned with their values.

Claes, J., et al. (2017). "PATHway I: design and rationale for the investigation of the feasibility, clinical effectiveness and cost-effectiveness of a technology-enabled cardiac rehabilitation platform." *Bmj Open* 7(6).

Introduction Exercise-based cardiac rehabilitation (CR) independently alters the clinical course of cardiovascular diseases resulting in a significant reduction in all-cause and cardiac mortality. However, only 15%-30% of all eligible patients participate in a phase 2 ambulatory programme. The uptake rate of community-based programmes following phase 2 CR and adherence to long-term exercise is extremely poor. Newer care models, involving telerehabilitation programmes that are delivered remotely, show considerable promise for increasing adherence. In this view, the PATHway (Physical Activity Towards Health) platform was developed and now needs to be evaluated in terms of its feasibility and clinical efficacy. Methods and analysis In a multicentre randomised controlled pilot trial, 120 participants (m/f, age 40-80 years) completing a phase 2 ambulatory CR programme will be randomised on a 1:1 basis to PATHway or usual care. PATHway involves a comprehensive, internet-enabled, sensor-based home CR platform and provides individualised heart

rate monitored exercise programmes (exerclasses and exergames) as the basis on which to provide a personalised lifestyle intervention programme. The control group will receive usual care. Study outcomes will be assessed at baseline, 3 months and 6 months after completion of phase 2 of the CR programme. The primary outcome is the change in active energy expenditure. Secondary outcomes include cardiopulmonary endurance capacity, muscle strength, body composition, cardiovascular risk factors, peripheral endothelial vascular function, patient satisfaction, health-related quality of life (HRQoL), well-being, mediators of behaviour change and safety. HRQoL and healthcare costs will be taken into account in cost-effectiveness evaluation. Ethics and dissemination The study will be conducted in accordance with the Declaration of Helsinki. This protocol has been approved by the director and clinical director of the PATHway study and by the ethical committee of each participating site. Results will be disseminated via peer-reviewed scientific journals and presentations at congresses and events.

Clare, L., et al. (2015). "The Agewell trial: a pilot randomised controlled trial of a behaviour change intervention to promote healthy ageing and reduce risk of dementia in later life." *Bmc Psychiatry* 15.

Background: Lifestyle factors represent prime targets for behaviour change interventions to promote healthy ageing and reduce dementia risk. We evaluated a goal-setting intervention aimed at promoting increased cognitive and physical activity and improving mental and physical fitness, diet and health. Methods: This was a pilot randomised controlled trial designed to guide planning for a larger-scale investigation, provide preliminary evidence regarding efficacy, and explore feasibility and acceptability. Primary outcomes were engagement in physical and cognitive activity. Participants aged over 50 living independently in the community were recruited through a community Agewell Centre. Following baseline assessment participants were randomly allocated to one of three conditions: control (IC) had an interview in which information about activities and health was discussed; goal-setting (GS n = 24) had an interview in which they set behaviour change goals relating to physical, cognitive and social activity, health and nutrition; and goal-setting with mentoring (GM, n = 24) had the goal-setting interview followed by bi-monthly telephone mentoring. Participants and researchers were blinded to group assignment. Participants were reassessed after 12 months. Results: Seventy-five participants were randomised (IC n = 27, GS n = 24, GM n = 24). At 12-month follow-up, the two goal-setting groups, taken together (GS n = 21, GM n = 22), increased their level of physical (effect size 0.37) and cognitive (effect size 0.15) activity relative to controls (IC n = 27). In secondary outcomes, the two goal-setting groups taken together achieved additional benefits compared to control (effect sizes ≥ 0.2) in memory, executive function, cholesterol level, aerobic capacity, flexibility, balance, grip strength, and agility. Adding follow-up mentoring produced further benefits compared to goal-setting alone (effect sizes ≥ 0.2) in physical activity, body composition, global cognition and memory, but not in other domains. Implementation of the recruitment procedure, assessment and intervention was found to be feasible and the approach taken was acceptable to participants, with no adverse effects. Conclusions: A brief, low-cost goal-setting intervention is feasible and acceptable, and has the potential to achieve increased activity engagement.

Clark, K., et al. (2015). "The effect of a care bundle on nursing staff when caring for the dying." *International Journal of Palliative Nursing* 21(8): 392-398.

Background: Most Australians die in acute hospital settings. Despite this, hospitals remain ill-equipped to care for dying patients with hospital deaths not uncommonly perceived as distressing by both patients and their families. As a quality improvement project, a care bundle for the dying was developed and piloted on two medical wards. The aim of this study was to examine whether or not the quality initiative had any effect on the ward nurse's attitudes and self-assessed competency to care for dying patients. Methods: A pre-and post-survey using self-administered questionnaires were given to nursing staff who voluntarily completed these before and after implementation of the caring for the dying bundle. Results: Over the 6 months the bundle was piloted, 74.5% of people who died did so with the bundle in place. While this was seen as clinically useful by nearly half the nurses who responded, there was not a significant change in the staff's attitudes or self-assessed competency to care for dying patients. There was a minor change in the Thanatophobia Scale (pre 18.2: SD +/- 9.0 versus post 16.8: SD 7.8; P=0.53), the Self-efficacy in Palliative Care Scale for communication (pre 47.4: SD +/- 17.4 versus post 54.7: SD +/- 17.9; P=0.11) and patient management respectively (pre 54.3: SD +/- 12.9 versus 59.1: SD +/- 12.6; P=0.15). Discussion: This work highlighted that at least in the short term, that a quality initiative had only a modest impact on nursing attitudes to caring for dying patients. However, as a collection of clinical tools grouped as a care bundle, a proportion of nursing staff acknowledged this initiative as useful. Conclusion: Further research is required to understand if such an initiative approach may, in the long term, positively impacts attitude. This is highly relevant given the increasing numbers of people likely to die in acute care.

Clark, R. E., et al. (2017). "'I do not have time. Is there a handout I can use?': combining physicians' needs and behavior change theory to put physical activity evidence into practice." *Osteoporosis International* 28(6): 1953-1963.

Guidelines for physical activity exist and following them would improve health. Physicians can advise patients on physical activity. We found barriers related to physicians' knowledge, a lack of tools and of physician incentives, and

competing demands for limited time with a patient. We discuss interventions that could reduce these barriers. Uptake of physical activity (PA) guidelines would improve health and reduce mortality in older adults. However, physicians face barriers in guideline implementation, particularly when faced with needing to tailor recommendations in the presence of chronic disease. We performed a behavioral analysis of physician barriers to PA guideline implementation and to identify interventions. The Too Fit To Fracture physical activity recommendations were used as an example of disease-specific PA guidelines. Focus groups and semi-structured interviews were conducted with physicians and nurse practitioners in Ontario, stratified by type of physician, geographic area, and urban/rural, and transcribed verbatim. Two researchers coded data and identified emerging themes. Using the behavior change wheel framework, themes were categorized into capability, opportunity and motivation, and interventions were identified. Fifty-nine family physicians, specialists, and nurse practitioners participated. Barriers were as follows: Capability-lack of exercise knowledge or where to refer; Opportunity-pragmatic tools, fit within existing workflow, available programs that meet patients' needs, physical activity literacy and cultural practices; Motivation-lack of incentives, not in their scope of practice or professional identity, competing priorities, outcome expectancies. Interventions selected: education, environmental restructuring, enablement, persuasion. Policy categories: communications/marketing, service provision, guidelines. Key barriers to PA guideline implementation among physicians include knowledge on where to refer or what to say, access to pragmatic programs or resources, and things that influence motivation, such as competing priorities or lack of incentives. Future work will report on the development and evaluation of knowledge translation interventions informed by the barriers.

Clarke, J. L., et al. (2015). "Parent and child perceptions of school-based obesity prevention in England: a qualitative study." *Bmc Public Health* 15.

Background: Schools are key settings for childhood obesity prevention, and the location for many intervention studies. This qualitative study aims to explore parent and child experiences of the WAVES study obesity prevention intervention, in order to gain understanding of the mechanisms by which the intervention results in behaviour change, and provide context to support interpretation of the main trial results. Methods: Focus groups were held with 30 parents and 62 children (aged 6-7 years) from primary schools in the West Midlands, UK. Data analysis (conducted using NVivo 10) was guided by the Framework Approach. Results: Three over-arching themes were identified: 'Impact', 'Sustainability' and 'Responsibilities', under which sub-themes were determined. Participants were supportive of the school-based intervention. Parental involvement and the influential role of the teacher were seen as key ingredients for success in promoting consistent messages and empowering some parents to make positive behavioural changes at home. Parents recognised that whilst they held the primary responsibility for obesity prevention in their children, they faced a number of barriers to healthier lifestyles, and agreed that schools have an important role to play. Conclusions: This study enabled us to better understand aspects of the WAVES study intervention programme that have the potential to initiate positive behaviour changes in families, and indicated that a combination of pathways influenced such changes. Pathways included: increasing capability through improving knowledge and skills of children and parents; increasing motivation through parental empowerment and role modelling; and the direct provision of opportunities to lead healthier lifestyles. Strategies to sustain behaviour changes, and the school role in supporting these, are important considerations.

Cleland, C. L., et al. (2014). "Identifying solutions to increase participation in physical activity interventions within a socio-economically disadvantaged community: a qualitative study." *International Journal of Behavioral Nutrition and Physical Activity* 11.

Background: There is an urgent need to increase population levels of physical activity, particularly amongst those who are socio-economically disadvantaged. Multiple factors influence physical activity behaviour but the generalisability of current evidence to such 'hard-to-reach' population subgroups is limited by difficulties in recruiting them into studies. Also, rigorous qualitative studies of lay perceptions and perceptions of community leaders about public health efforts to increase physical activity are sparse. We sought to explore, within a socio-economically disadvantaged community, residents' and community leaders' perceptions of physical activity (PA) interventions and issues regarding their implementation, in order to improve understanding of needs, expectations, and social/environmental factors relevant to future interventions. Methods: Within an ongoing regeneration project (Connswater Community Greenway), in a socio-economically disadvantaged community in Belfast, we collaborated with a Community Development Agency to purposively sample leaders from public- and voluntary-sector community groups and residents. Individual semi-structured interviews were conducted with 12 leaders. Residents (n = 113), of both genders and a range of ages (14 to 86 years) participated in focus groups (n = 14) in local facilities. Interviews and focus groups were recorded, transcribed verbatim and analysed using a thematic framework. Results: Three main themes were identified: awareness of PA interventions; factors contributing to intervention effectiveness; and barriers to participation in PA interventions. Participants reported awareness only of interventions in which they were involved directly, highlighting a need for better communications, both inter-and intra-sectoral, and with residents. Meaningful engagement of residents in planning/organisation, tailoring to local context, supporting volunteers, providing relevant resources and an 'exit

strategy' were perceived as important factors related to intervention effectiveness. Negative attitudes such as apathy, disappointing experiences, information with no perceived personal relevance and limited access to facilities were barriers to people participating in interventions. Conclusions: These findings illustrate the complexity of influences on a community's participation in PA interventions and support a social-ecological approach to promoting PA. They highlight the need for cross-sector working, effective information exchange, involving residents in bottom-up planning and providing adequate financial and social support. An in-depth understanding of a target population's perspectives is of key importance in translating PA behaviour change theories into practice.

Cleland, J., et al. (2019). "Enabling New Articulatory Gestures in Children With Persistent Speech Sound Disorders Using Ultrasound Visual Biofeedback." *Journal of Speech Language and Hearing Research* 62(2): 229-246.

Purpose: This study evaluated ultrasound visual biofeedback treatment for teaching new articulations to children with a wide variety of speech sound disorders. It was hypothesized that motor-based intervention incorporating ultrasound would lead to rapid acquisition of a range of target lingual gestures with generalization to untreated words. Method: Twenty children aged 6-15 years with a range of mild to severe speech disorders affecting a variety of lingual targets enrolled in a case series with replication. Of these, 15 children completed the intervention. All of the children presented with a variety of errors. We therefore employed a target selection strategy to treat the most frequent lingual error. These individual speech targets were treated using ultrasound visual biofeedback as part of ten to twelve 1-hr intervention sessions. The primary outcome measure was percentage of target segments correct in untreated wordlists. Results: Six children were treated for velar fronting; 3 children, for postalveolar fronting; 2 children, for backing alveolars to pharyngeal or glottal place; 1 child, for debuccalization (production of all onsets as [h]); 1 child, for vowel merger; and 2 children, for lateralized sibilants. Ten achieved the new articulation in the 1st or 2nd session of intervention, despite no children being readily stimulable for their target articulation before intervention. In terms of generalization, effect sizes for percentage of target segments correct ranged from no effect (5 children), small effect (1 child), medium effect (4 children), and large effect (5 children). Conclusions: Ultrasound visual biofeedback can be used to treat a wide range of lingual errors in children with various speech sound disorders, from mild to severe. Visual feedback may be useful for establishing new articulations; however, generalization is more variable.

Clemson, L., et al. (2018). "Implementation of an evidence-based intervention to improve the wellbeing of people with dementia and their carers: study protocol for 'Care of People with dementia in their Environments (COPE)' in the Australian context." *Bmc Geriatrics* 18.

Background: There are effective non-pharmacological treatment programs that reduce functional disability and changed behaviours in people with dementia. However, these programs (such as the Care of People with dementia in their Environments (COPE) program) are not widely available. The primary aim of this study is to determine the strategies and processes that enable the COPE program to be implemented into existing dementia care services in Australia. Methods: This study uses a mixed methods approach to test an implementation strategy. The COPE intervention (up to ten consultations with an occupational therapist and up to two consultations with a nurse) will be implemented using a number of strategies including planning (such as developing and building relationships with dementia care community service providers), educating (training nurses and occupational therapists in how to apply the intervention), restructuring (organisations establishing referral systems; therapist commitment to provide COPE to five clients following training) and quality management (coaching, support, reminders and fidelity checks). Qualitative and quantitative data will contribute to understanding how COPE is adopted and implemented. Feasibility, fidelity, acceptability, uptake and service delivery contexts will be explored and a cost/benefit evaluation conducted. Client outcomes of activity engagement and caregiver wellbeing will be assessed in a pragmatic pre-post evaluation. Discussion: While interventions that promote independence and wellbeing are effective and highly valued by people with dementia and their carers, access to such programs is limited. Barriers to translation that have been previously identified are addressed in this study, including limited training opportunities and a lack of confidence in clinicians working with complex symptoms of dementia. A strength of the study is that it involves implementation within different types of existing services, such as government and private providers, so the study will provide useful guidance for further future rollout.

Clemson, L., et al. (2017). "Integrated solutions for sustainable fall prevention in primary care, the iSOLVE project: a type 2 hybrid effectivenessimplementation design." *Implementation Science* 12.

Background: Despite strong evidence giving guidance for effective fall prevention interventions in communityresiding older people, there is currently no clear model for engaging general medical practitioners in fall prevention and routine use of allied health professionals in fall prevention has been slow, limiting widespread dissemination. This protocol paper outlines an implementation-effectiveness study of the Integrated Solutions for Sustainable Fall Prevention (iSOLVE) intervention which has developed integrated processes and pathways to identify older people at risk of falls and engage a whole of primary care approach to fall prevention. Methods/design: This

protocol paper presents the iSOLVE implementation processes and change strategies and outlines the study design of a blended type 2 hybrid design. The study consists of a two-arm cluster randomized controlled trial in 28 general practices and recruiting 560 patients in Sydney, Australia, to evaluate effectiveness of the iSOLVE intervention in changing general practitioner fall management practices and reducing patient falls and the cost effectiveness from a healthcare funder perspective. Secondary outcomes include change in medications known to increase fall risk. We will simultaneously conduct a multi-methodology evaluation to investigate the workability and utility of the implementation intervention. The implementation evaluation includes in-depth interviews and surveys with general practitioners and allied health professionals to explore acceptability and uptake of the intervention, the coherence of the proposed changes for those in the work setting, and how to facilitate the collective action needed to implement changes in practice; social network mapping will explore professional relationships and influences on referral patterns; and, a survey of GPs in the geographical intervention zone will test diffusion of evidence-based fall prevention practices. The project works in partnership with a primary care health network, state fall prevention leaders, and a community of practice of fall prevention advocates. Discussion: The design is aimed at providing clear direction for sustainability and informing decisions about generalization of the iSOLVE intervention processes and change strategies. While challenges exist in hybrid designs, there is a potential for significant outcomes as the iSOLVE pathways project brings together practice and research to collectively solve a major national problem with implications for policy service delivery. Trial registration: Australian New Zealand Clinical Trials Registry ACTRN12615000401550

Clifford-Rashotte, M., et al. (2018). "Surveying Ontario nurses using the COM-B framework shows a high level of readiness for nurse-led PEP and PrEP." *Journal of the International Aids Society* 21.

Cohen, D., et al. (2019). "Validation of behavioral simulations: a case study on enhancing collaboration between partnership organizations." *Journal of Public Health-Heidelberg* 27(3): 367-378.

AimThe current article provides a detailed account of a behavioral simulation called Lateral Play. Lateral Play aimed to enhance collaborations and optimize shared decision-making across organizations within a newly formed partnership. The current article aims to enhance appreciation of the behavioral simulation methodology and encourage its use.**Subjects and Methods**Health service leaders from different organizations within a newly formed partnership gathered in the simulated community and took up roles similar to their real-life positions. The simulation presented participants with problems and opportunities similar to those that they would experience in real life, such as the need to consolidate services and create new care pathways. To evaluate Lateral Play's effectiveness, self-reported and observational data were collected. These data include information about participants' reactions, learning and behavior, and the newly formed partnership's organizational results.**Results**Lateral Play allowed health leaders to better understand how they could enhance collaborations and optimize shared decision-making across their newly formed partnership. The data suggest that simulations can promote effective collaborations.**Conclusions**Use of behavioral simulations should be encouraged to promote policy awareness and understanding, refine implementation strategies and improve outcomes in newly formed partnerships.

Colbourn, T. and A. Prost (2018). "Making waves: can radio reduce child mortality?" *Lancet Global Health* 6(3): E238-E239.

Coldwell, M. and B. Maxwell (2018). "Using evidence-informed logic models to bridge methods in educational evaluation." *Review of Education* 6(3): 267-300.

Designs combining different types of data are increasingly used in educational evaluation, to provide both evidence of impact and an explanation of the processes by which impacts are created. Logic models are visual representations of how an intervention leads via a set of steps from resources and inputs to outputs and then sets of outcomes. Their use has become widespread to underpin evaluations; and they have become of more interest in education as they have been promoted by policy makers and funders including the Education Endowment Foundation (EEF) in England. This paper addresses the question: how can logic models be used to frame and implement educational evaluations using combinations of methods? To do so, the paper draws on theory-based evaluation literature to identify a set of issues to be considered: the role of implementation logic; causal mechanisms; the context of interventions; and the importance of considering and addressing issues around complexity. Using detailed examples from two study designs for EEF evaluations, the paper presents an evidence-informed logic model approach to deal with these issues. The paper concludes by reflecting on the practical and theoretical implications of this approach, laying out a set of key issues to address in future evaluations for which a design framed by an evidence-informed logic model may be appropriate.

Cole, J., et al. (2018). "Opportunistic pulse checks in primary care to improve recognition of atrial fibrillation: a retrospective analysis of electronic patient records." *British Journal of General Practice* 68(671): E388-E393.

Background Atrial fibrillation (AF) is an important and modifiable risk factor for stroke. Earlier identification may reduce stroke-related morbidity and mortality. Trial evidence shows that opportunistic pulse regularity checks in individuals aged ≥ 65 years increases detection of AF. However, this is not currently recommended by the National Screening Programme or implemented by most clinical commissioning groups (CCGs). Aim To evaluate the impact of a systematic programme to promote pulse regularity checks, the programme's uptake in general practice, and the prevalence of AF. Design and setting Retrospective analysis of electronic primary care patient records in three east London CCGs (City and Hackney, Newham, and Tower Hamlets) over 10 years. Method Rates of pulse regularity checks and prevalence of AF in individuals aged ≥ 65 years were compared from the pre-intervention period, 2007-2011, to the post-intervention period, 2012-2017. Results Across the three CCGs, rates of pulse regularity checks increased from a mean of 7.3% pre-intervention to 66.4% post-intervention, achieving 93.1% ($n = 58\ 722$) in the final year. Age-standardised prevalence of AF in individuals aged ≥ 65 years increased significantly from a pre-intervention mean of 61.4/1000 to a post-intervention mean of 64.5/1000. There was a significant increase in a post-intervention trend to a final-year mean of 67.3/1000: an improvement of 9.6% (5.9/1000) with 790 additional new cases identified. Conclusion Organisational alignment, standardised data entry, peer-performance dashboards, and financial incentives rapidly and generally increased opportunistic screening with pulse regularity checks. This was associated with a significant increase in detection and prevalence of AF and is of public health importance.

Cole, J. A., et al. (2013). "Do practitioners and friends support patients with coronary heart disease in lifestyle change? a qualitative study." *Bmc Family Practice* 14.

Background: Healthy lifestyles help to prevent coronary heart disease (CHD) but outcomes from secondary prevention interventions which support lifestyle change have been disappointing. This study is a novel, in-depth exploration of patient factors affecting lifestyle behaviour change within an intervention designed to improve secondary prevention for patients with CHD in primary care using personalised tailored support. We aimed to explore patients' perceptions of factors affecting lifestyle change within a trial of this intervention (the SPHERE Study), using semi-structured, one-to-one interviews, with patients in general practice. Methods: Interviews (45) were conducted in purposively selected general practices (15) which had participated in the SPHERE Study. Individuals, with CHD, were selected to include those who succeeded in improving physical activity levels and dietary fibre intake and those who did not. We explored motivations, barriers to lifestyle change and information utilised by patients. Data collection and analysis, using a thematic framework and the constant comparative method, were iterative, continuing until data saturation was achieved. Results: We identified novel barriers to lifestyle change: such disincentives included strong negative influences of social networks, linked to cultural norms which encouraged consumption of 'delicious' but unhealthy food and discouraged engagement in physical activity. Findings illustrated how personalised support within an ongoing trusted patient-professional relationship was valued. Previously known barriers and facilitators relating to support, beliefs and information were confirmed. Conclusions: Intervention development in supporting lifestyle change in secondary prevention needs to more effectively address patients' difficulties in overcoming negative social influences and maintaining interest in living healthily.

Coll-Planas, L., et al. (2017). "Promoting social capital to alleviate loneliness and improve health among older people in Spain." *Health & Social Care in the Community* 25(1): 145-157.

Loneliness is especially frequent among older people in Southern Europe. Furthermore, promoting social capital to tackle loneliness and its health effects is an understudied intervention strategy. Therefore, a complex intervention was piloted in Spain in a pre-post study with a 2-year follow-up. Its aims were to explore the feasibility of the intervention and its short-and long-term effects. It was conducted in one mixed ruralurban and two urban areas of diverse socioeconomic levels from 2011 to 2012. The intervention framework was based on social capital theory applying a behaviour change model and care co-ordination. The intervention comprised: (i) a co-ordinated action aimed at building a network between primary healthcare centres and community assets in the neighbourhood and (ii) a group-based programme, which promoted social capital among lonely older people, especially social support and participation. Older people active in senior centres volunteered as gatekeepers. The main outcome domain was loneliness. Secondary outcome domains were participation, social support, self-perceived health, quality of life, depressive symptoms and use of health resources. Pre-post changes were assessed with t-test, Wilcoxon signed-rank test and McNemar's test. Differences between the three time points were assessed with a one-way ANOVA with repeated measures. Social workers and nurses were successfully involved as group leaders, 10 volunteers took part and 38 participants were included. After the intervention, loneliness decreased while social participation and support significantly increased. Furthermore, the number of visits to nurses increased. Exactly 65.8% of the participants built social contacts within the group and 47.4% became engaged in new activities. Two years later, social effects were maintained and depressive symptoms had decreased. Exactly 44.7% of the participants continued to be in contact with at least one person from the group and

39.5% continued participating. The intervention contributes a novel and feasible social capital-based approach for alleviating loneliness among older adults while prompting meaningful changes in their lives.

Collins, J., et al. (2017). "Factors influencing hospital foodservice staff's capacity to deliver a nutrition intervention." *Nutrition & Dietetics* 74(2): 129-137.

AimImplementation of an intervention can result in a discrepancy between what was planned and what is delivered, affecting outcomes for recipients. The aim was to explore, from the perspective of hospital foodservice staff, their experiences delivering a nutrition intervention and the barriers and enablers to its implementation. **Methods**A process evaluation of a pilot study was undertaken using qualitative description. A purposive sample (n = 15) of hospital foodservice supervisors and foodservice assistants responsible for delivering a higher energy menu to hospital patients participated in focus groups and semistructured interviews. Theoretical frameworks of behaviour underpinned the method. Content analysis elicited factors (sub-themes) influencing foodservice staff's capability, opportunity and motivation to provide the nutrition intervention. Thematic analysis (by two independent researchers) further explored factors (themes) related to the process of the intervention's implementation. **Results**Five key themes (and 15 sub-themes) explained factors effecting implementation of the nutrition intervention. Aspects of the foodservice environment and patients' resistance were barriers to implementation and perceived sustainability. Teamwork, problem solving, leadership and job satisfaction were enablers. There was an opportunity to optimise training and feedback. Characteristics of foodservice staff, including their: knowledge, beliefs and perceptions of diet, health and their job role, had the potential to influence their behaviours and decision making. **Conclusions**A number of interacting factors influenced foodservice staff's delivery of a higher energy menu as planned. Addressing the challenges of time, foodservice structure, patients' resistance, gaps in knowledge and misconceptions among foodservice staff may enhance similar nutrition interventions in the future.

Colquhoun, H., et al. (2014). "Towards a common terminology: a simplified framework of interventions to promote and integrate evidence into health practices, systems, and policies." *Implementation Science* 9.

Background: A wide range of diverse and inconsistent terminology exists in the field of knowledge translation. This limits the conduct of evidence syntheses, impedes communication and collaboration, and undermines knowledge translation of research findings in diverse settings. Improving uniformity of terminology could help address these challenges. In 2012, we convened an international working group to explore the idea of developing a common terminology and an overarching framework for knowledge translation interventions. **Findings:** Methods included identifying and summarizing existing frameworks, mapping together a subset of those frameworks, and convening a multi-disciplinary group to begin working toward consensus. The group considered four potential approaches to creating a simplified framework: melding existing taxonomies, creating a framework of intervention mechanisms rather than intervention strategies, using a consensus process to expand one of the existing models/frameworks used by the group, or developing a new consensus framework. **Conclusions:** The work group elected to draft a new, simplified consensus framework of interventions to promote and integrate evidence into health practices, systems and policies. The framework will include four key components: strategies and techniques (active ingredients), how they function (causal mechanisms), how they are delivered (mode of delivery), and what they aim to change (intended targets). The draft framework needs to be further developed by feedback and consultation with the research community and tested for usefulness through application and evaluation.

Colquhoun, H. L., et al. (2016). "Development of training for medicines-oriented policymakers to apply evidence." *Health Research Policy and Systems* 14.

Background: Health systems globally promote appropriate prescribing by healthcare providers and safe and effective medicine use by consumers. Rx for Change, a publicly available database, provides access to systematic reviews regarding best practices for prescribing and using medicines. Despite the value of the database for improving prescribing and medicine use, its use remains suboptimal. This study aimed to develop a training program for five medicine-focused organisations in Canada and Australia to facilitate the use and understanding of the Rx for Change database. **Methods:** Four steps were undertaken: 1) key informant interviews were completed across all organisations to understand the knowledge user perspective; 2) a directed content analysis was completed of the interview transcripts and proposed training was developed; 3) a second round of feedback on the proposed training by knowledge users was gathered; and 4) feedback was integrated to develop the final training. **Results:** Sixteen key informant interviews with knowledge users were conducted. Themes for training content included the scope of, navigation and strategies for using Rx for Change (generic content) and practical examples on incorporating evidence within their workplace context (tailored content). The final training consisted of an informational video, a 60-minute face-to-face workshop and two post-training reminders. **Conclusions:** A method of engaging knowledge users in the development of a training program to improve

the use of an on-line database of systematic reviews was established and used to design training. Next steps include the delivery and evaluation of the training.

Combes, S., et al. (2019). "Implementing advance care planning with community-dwelling frail elders requires a system-wide approach: An integrative review applying a behaviour change model." *Palliative Medicine* 33(7): 743-756.

Background: Facilitating advance care planning with community-dwelling frail elders can be challenging. Notably, frail elders' vulnerability to sudden deterioration leads to uncertainty in recognising the timing and focus of advance care planning conversations. Aim: To understand how advance care planning can be better implemented for community-dwelling frail elders and to develop a conceptual model to underpin intervention development. Design: A structured integrative review of relevant literature. Data sources: CINAHL, Embase, Ovid Medline, PsycINFO, Cochrane Library, and University of York Centre for Reviews and Dissemination. Further strategies included searching for policy and clinical documents, grey literature, and hand-searching reference lists. Literature was searched from 1990 until October 2018. Results: From 3043 potential papers, 42 were included. Twenty-nine were empirical, six expert commentaries, four service improvements, two guidelines and one theoretical. Analysis revealed nine themes: education and training, personal ability, models, recognising triggers, resources, conversations on death and dying, living day to day, personal beliefs and experience, and relationality. Conclusion: Implementing advance care planning for frail elders requires a system-wide approach, including providing relevant resources and clarifying responsibilities. Early engagement is key for frail elders, as is a shift from the current advance care planning model focussed on future ceilings of care to one that promotes living well now alongside planning for the future. The proposed conceptual model can be used as a starting point for professionals, organisations and policymakers looking to improve advance care planning for frail elders.

Condon, L. A. and N. S. Coulson (2017). *Designing and Delivering Interventions for Health Behavior Change in Adolescents Using Multitechnology Systems: From Identification of Target Behaviors to Implementation.*

Conklin, J., et al. (2019). "Implementing deprescribing guidelines into frontline practice: Barriers and facilitators." *Research in Social & Administrative Pharmacy* 15(6): 796-800.

A Bruyere Evidence-Based Deprescribing Guideline Symposium was held in March 2018; one component focused on implementing deprescribing guidelines into practice. An interactive discussion activity allowed the 107 participants to share experiences and ideas concerning the barriers and facilitators that arise when moving deprescribing guidelines into frontline practice. Participants identified 8 broad challenges and problem areas. These included challenges and barriers that arise in the daily practices of pharmacists and prescribers and in other health care settings, and those related to existing policies, processes, and financial structures. They also identified 10 factors that facilitated implementation efforts, including: educating patients, caregivers, health care providers (HCPs) and staff; improving collaboration across practice disciplines; expanding the evidence for deprescribing; and fostering organizational cultures of deprescribing. The results indicate that participants are committed to deprescribing and are moving forward with efforts to bring about change. Participants recognize that the implementation of deprescribing is best conceived of as a comprehensive systems change, and that patients and the public need to be involved in deprescribing processes and activities.

Connell, L. A., et al. (2015). "Development of a behaviour change intervention to increase upper limb exercise in stroke rehabilitation." *Implementation Science* 10.

Background: Two thirds of survivors will achieve independent ambulation after a stroke, but less than half will recover upper limb function. There is strong evidence to support intensive repetitive task-oriented training for recovery after stroke. The number of repetitions needed is suggested to be in the order of hundreds, but this is not currently being achieved in clinical practice. In an effort to bridge this evidence-practice gap, we have developed a behaviour change intervention that aims to increase provision of upper limb repetitive task-oriented training in stroke rehabilitation. This paper aims to describe the systematic processes that took place in collaboratively developing the behaviour change intervention. Methods: The methods used in this study were not defined a priori but were guided by the Behaviour Change Wheel. The process was collaborative and iterative with four stages of development emerging (i) establishing an intervention development group; (ii) structured discussions to understand the problem, prioritise target behaviours and analyse target behaviours; (iii) collaborative design of theoretically underpinned intervention components and (iv) piloting and refining of intervention components. Results: The intervention development group consisted of the research team and stroke therapy team at a local stroke rehabilitation unit. The group prioritised four target behaviours at the therapist level: (i) identifying suitable patients for exercises, (ii) provision of exercises, (iii) communicating exercises to family/visitors and (iv) monitoring and reviewing exercises. It also provides a method for self-monitoring performance in order to measure fidelity. The developed intervention, PRACTISE (Promoting Recovery of the Arm: Clinical Tools for Intensive Stroke Exercise), consists of team meetings and the PRACTISE Toolkit (screening tool and upper limb exercise plan, PRACTISE exercise pack and an audit tool). Conclusions: This paper provides an example of how the Behaviour

Change Wheel may be applied in the collaborative development of a behaviour change intervention for health professionals. The process involved was resource-intensive, and the iterative process was difficult to capture. The use of a published behaviour change framework and taxonomy will assist replication in future research and clinical use. The feasibility and acceptability of PRACTISE is currently being explored in two other stroke rehabilitation units.

Connell, L. A., et al. (2016). "Case Series of a Knowledge Translation Intervention to Increase Upper Limb Exercise in Stroke Rehabilitation." *Physical Therapy* 96(12): 1930-1937.

Background and Purpose. Current approaches to upper limb rehabilitation are not sufficient to drive neural reorganization and maximize recovery after stroke. To address this evidence-practice gap, a knowledge translation intervention using the Behaviour Change Wheel was developed. The intervention involves collaboratively working with stroke therapy teams to change their practice and increase therapy intensity by therapists prescribing supplementary self-directed arm exercise. The purposes of this case series are: (1) to provide an illustrative example of how a research-informed process changed clinical practice and (2) to report on staff members' and patients' perceptions of the utility of the developed intervention. **Case Descriptions.** A participatory action research approach was used in 3 stroke rehabilitation units in the United Kingdom. The intervention aimed to change 4 therapist-level behaviors: (1) screening patients for suitability for supplementary self-directed arm exercise, (2) provision of exercises, (3) involving family and caregivers in assisting with exercises, and (4) monitoring and progressing exercises. Data on changes in practice were collected by therapy teams using a bespoke audit tool. Utility of the intervention was explored in qualitative interviews with patients and staff. **Outcomes.** Components of the intervention were successfully embedded in 2 of the 3 stroke units. At these sites, almost all admitted patients were screened for suitability for supplementary self-directed exercise. Exercises were provided to 77%, 70%, and 88% of suitable patients across the 3 sites. Involving family and caregivers and monitoring and progressing exercises were not performed consistently. **Conclusions.** This case series is an example of how a rigorous research-informed knowledge translation process resulted in practice change. Research is needed to demonstrate that these changes can translate into increased intensity of upper limb exercise and affect patient outcomes.

Connell, L. A., et al. (2016). "Mechanisms of action of an implementation intervention in stroke rehabilitation: a qualitative interview study." *Bmc Health Services Research* 16.

Background: Despite best evidence demonstrating the effectiveness of increased intensity of exercise after stroke, current levels of therapy continue to be below those required to optimise motor recovery. We developed and tested an implementation intervention that aims to increase arm exercise in stroke rehabilitation. The aim of this study was to illustrate the use of a behaviour change framework, the Behaviour Change Wheel, to identify the mechanisms of action that explain how the intervention produced change. **Methods:** We implemented the intervention at three stroke rehabilitation units in the United Kingdom. A purposive sample of therapy team members were recruited to participate in semi-structured interviews to explore their perceptions of how the intervention produced change at their work place. Audio recordings were transcribed and imported into NVivo 10 for content analysis. Two coders separately analysed the transcripts and coded emergent mechanisms. Mechanisms were categorised using the Theoretical Domains Framework (TDF) (an extension of the Capability, Opportunity, Motivation and Behaviour model (COM-B) at the hub of the Behaviour Change Wheel). **Results:** We identified five main mechanisms of action: 'social/professional role and identity', 'intentions', 'reinforcement', 'behavioural regulation' and 'beliefs about consequences'. At the outset, participants viewed the research team as an external influence for whom they endeavoured to complete the study activities. The study design, with a focus on implementation in real world settings, influenced participants' intentions to implement the intervention components. Monthly meetings between the research and therapy teams were central to the intervention and acted as prompt or reminder to sustain implementation. The phased approach to introducing and implementing intervention components influenced participants' beliefs about the feasibility of implementation. **Conclusions:** The Behaviour Change Wheel, and in particular the Theoretical Domains Framework, were used to investigate mechanisms of action of an implementation intervention. This approach allowed for consideration of a range of possible mechanisms, and allowed us to categorise these mechanisms using an established behaviour change framework. Identification of the mechanisms of action, following testing of the intervention in a number of settings, has resulted in a refined and more robust intervention programme theory for future testing.

Connolly, B., et al. (2018). "Characterising the research profile of the critical care physiotherapy workforce and engagement with critical care research: a UK national survey." *Bmj Open* 8(6).

Objective To characterise the research profile of UK critical care physiotherapists including experience, training needs, and barriers and enablers to engagement in critical care research. 'Research' was defined broadly to encompass activities related to quantitative and qualitative studies, service evaluations, clinical audit and quality improvements. **Design** Closed-question online survey, with optional free-text responses. **Setting** UK critical care community. **Participants**

UK critical care physiotherapists, regardless of clinical grade or existing research experience. Results 268 eligible survey responses were received during the 12-week study period (21 incomplete, 7.8%). Respondents were based in university-affiliated (n=133, 49.6%) and district general (n=111, 41.4%) hospitals, and generally of senior clinical grade. Nearly two-thirds had postgraduate qualifications at master's level or above (n=163, 60.8%). Seven had a doctoral-level qualification. Respondents reported a range of research experience, predominantly data acquisition (n=144, 53.7%) and protocol development (n=119, 44.4%). Perceived research training needs were prevalent, including topics of research methods, critical literature appraisal, protocol development and statistical analysis (each reported by $\geq 50\%$ respondents). Multiple formats for delivery of future research training were identified. Major barriers to research engagement included lack of protected time (n=220, 82.1%), funding (n=177, 66.0%) and perceived experience (n=151, 56.3%). Barriers were conceptually categorised into capability, opportunity and motivation themes. Key enabling strategies centred on greater information provision about clinical research opportunities, access to research training, secondment roles and professional networks. Conclusions UK critical care physiotherapists are skilled, experienced and motivated to participate in research, including pursuing defined academic research pathways. Nonetheless wide-ranging training needs and notable barriers preclude further involvement. Strategies to harness the unique skills of this profession to enhance the quality, quantity and scope of critical care research, benefiting from a multiprofessional National Clinical Research Network, are required.

Constantinescu, A., et al. (2018). "Exploring Rural Family Physicians' Challenges in Providing Dementia Care: A Qualitative Study." *Canadian Journal on Aging-Revue Canadienne Du Vieillissement* 37(4): 390-399.

RESUME Cinq cent soixante-quatre mille Canadiens sont actuellement atteints de démence. Ce nombre continuera de s'accroître avec le vieillissement de la population. Les médecins de famille jouent un rôle important dans le diagnostic et la gestion des patients avec démence. Bien que des recherches aient montré les perspectives des médecins de famille dans les soins liés à la démence en milieu urbain, les connaissances associées aux défis dans les régions rurales sont encore très limitées. Cette étude visait à explorer les expériences des médecins de famille qui dispensent des soins à des patients avec démence dans des régions rurales en Alberta (Canada). Trois groupes de discussion semi-structurés comprenant 16 médecins de famille ont été organisés afin d'évaluer les barrières et les facilitateurs dans la prestation de soins à des personnes avec démence de trois communautés rurales. Les questions des groupes de discussion ont été élaborées selon le modèle du Theoretical Domains Framework (TDF) et ont été analysées selon cette approche-cadre. Les compétences des médecins, leurs opportunités et leur motivation semblent jouer des rôles majeurs dans les soins destinés à ces patients. Ces résultats de recherche pourraient être utilisés pour améliorer la qualité des soins en milieu rural pour les patients atteints de démence. ABSTRACT Currently, 564,000 Canadians are living with dementia. This number will continue to rise as the population ages. Family physicians play an integral role in the diagnosis and management of dementia patients. Although studies have looked at family physician perspectives on dementia care in the urban setting, much less is known about challenges in rural areas. This study aimed to explore rural family physicians' experiences in caring for patients with dementia in rural Alberta, Canada. We conducted three semi-structured focus groups with 16 family physicians to evaluate barriers and facilitators to providing care to persons with dementia in three rural communities. We developed focus group questions based on the theoretical domains framework (TDF) and analysed them using a framework approach. Physician capabilities, opportunities, and motivations appear to play important roles in caring for these patients. These research findings can be used to advance quality of care for rural dementia patients.

Coomber, K., et al. (2017). "A Qualitative Investigation of Australian Young Adult Responses to Pictorial and Graphic Alcohol Product Warnings." *Journal of Drug Issues* 47(4): 622-637.

This qualitative study aimed to understand whether pictorial and graphic alcohol warnings would be an effective intervention to reduce alcohol-related harms among young adult drinkers. Four focus groups (n = 26) were conducted examining impressions, reactions, and thoughts about five pictorial warnings and five graphic warnings. Students (58% female) from Melbourne, Australia, aged 18 to 25 years who consumed alcohol participated. The warnings used in this study elicited strong negative emotional reactions, including avoidance. While the use of images increased the salience of the warnings, participants discussed the likelihood of habituation, indicating warning rotation is needed. Targeted messages and statistics appealed to the participants. However, they were unlikely to change their drinking behavior due to the warnings. Consistent with tobacco warning literature, and in line with behavior change and message persuasion theory, warning labels with photographic images and targeted statistics were found to have the most persuasive impact against risky drinking within this sample.

Coomber, K., et al. (2018). "Unconvincing and ineffective: Young adult responses to current Australian alcohol product warnings." *Australian Journal of Psychology* 70(2): 131-138.

Objective Public health literature suggests that alcohol warnings on products could be utilised to effectively communicate the risks of alcohol consumption. However, there is a lack of research regarding how consumers perceive such warnings. This qualitative study aimed to understand young adult drinkers' perceptions of current voluntary Australian alcohol product warnings. Method Six focus groups (n=40) were conducted to examine impressions, reactions, and thoughts about current alcohol warnings on Australian products. Participants were alcohol-consuming male and female (55%) university students from Victoria, Australia, aged 18-25 years (M=20.54, SD=2.17). Focus groups were video recorded, transcribed verbatim, and analysed thematically. Results Three broad themes emerged from the data: (1) participants' lack of understanding of DrinkWise as an industry-funded body; (2) a belief the warnings were too small, hard to find, vague, and conveyed weak messages; and (3) the current Australian warnings would not encourage them to change their drinking behaviour or to seek further information about the harms of alcohol. Conclusions Our sample of current Australian young adults perceived the alcohol warning messages to be unconvincing and did not deter them from drinking to excess. These findings suggest that alcohol warnings need to be prominent on alcohol product labels, include images, and contain targeted messages.

Cope, A. L., et al. (2016). "Antibiotic prescribing in UK general dental practice: a cross-sectional study." *Community Dentistry and Oral Epidemiology* 44(2): 145-153.

Objectives To assess the extent to which antibiotic prescribing in general dental practice conforms to clinical guidelines and to describe factors associated with antibiotic prescription in the absence of spreading infection or systemic involvement. Methods A cross-sectional study of the management of adult patients with acute dental conditions by General Dental Practitioners (GDPs) in Wales, UK. Clinical information on the management of patients was compared to clinical and prescribing guidelines published by the Scottish Dental Clinical Effectiveness Programme and the Faculty of General Dental Practice (UK). Multilevel logistic regression was used to identify patient, practitioner and consultation characteristics predictive of antibiotic prescribing in the absence of infection. Results Antibiotics were prescribed to 57.4% of 568 patients. Over half of antibiotics (65.6%) were prescribed in situations where there was no evidence of spreading infection, and 70.6% were used without the provision of an operative intervention. Only 19.0% of antibiotics were prescribed in situations where their use was indicated by clinical guidelines. Factors associated (P < 0.05) with antibiotic prescription in the absence of infection were failure of previous operative treatment (Odds Ratio (OR) 13.57), shortage of clinical time to undertake treatment (OR 10.21), patients who were unable or unwilling to accept operative treatment (OR 4.89), patient requests for antibiotics (OR 3.69) and acute periodontal conditions (OR 3.37). Conclusions A high level of inappropriate antibiotic prescribing was observed amongst the GDPs studied. Features of the healthcare environment, such as clinical time pressures, and patient-related characteristics, such as expectations for antibiotics and refusal of operative treatment, are associated with antibiotic prescribing in the absence of infection. Individuals responsible for the commissioning and delivery of dental services should seek to develop targeted interventions addressing these issues in order to ensure optimal antimicrobial stewardship within dentistry.

Costello, N., et al. (2018). "Using Contemporary Behavior Change Science to Design and Implement an Effective Nutritional Intervention Within Professional Rugby League." *International Journal of Sport Nutrition and Exercise Metabolism* 28(5): 553-557.

Designing and implementing successful dietary intervention is integral to the role of sport nutrition professionals as they attempt to positively change the dietary behavior of athletes. High-performance sport is a time-pressured environment where immediate results can often supersede pursuit of the most effective evidence-based practice. However, efficacious dietary intervention necessitates comprehensive, systematic, and theoretical behavioral design and implementation, if the habitual dietary behaviors of athletes are to be positively changed. Therefore, this case study demonstrates how the Behaviour Change Wheel was used to design and implement an effective nutritional intervention within a professional rugby league. The eight-step intervention targeted athlete consumption of a high-quality dietary intake of 25.1 MJ each day to achieve an overall body mass increase of 5 kg across a 12-week intervention period. The capability, opportunity, motivation, and behavior model and affordability, practicability, effectiveness/cost-effectiveness, acceptability, safety, and equity criteria were used to identify population-specific intervention functions, policy categories, behavior change techniques, and modes of intervention delivery. The resulting intervention was successful, increasing the average daily energy intake of the athlete to 24.5 MJ, which corresponded in a 6.2 kg body mass gain. Despite consuming 0.6 MJ less per day than targeted, secondary outcome measures of diet quality, strength, body composition, and immune function all substantially improved, supporting sufficient energy intake and the overall efficacy of a behavioral approach. Ultimately, the Behaviour Change Wheel provides sport nutrition professionals with an effective and practical stepwise method to design and implement effective nutritional interventions for use within high-performance sport.

Cote, J., et al. (2017). "Improving Health and Reducing Comorbidity Associated with HIV: The Development of TAVIE en sante, a Web-Based Tailored Intervention to Support the Adoption of Health Promoting Behaviors among People Living with HIV." Biomed Research International.

Background. In the domain of health behavior change, the deployment and utilization of information and communications technologies as a way to deliver interventions appear to be promising. This article describes the development of a web-based tailored intervention, TAVIE en sante, to support people living with HIV in the adoption of healthy behaviors. Methods. This intervention was developed through an Intervention Mapping (IM) framework and is based on the theory of planned behavior. Results. Crucial steps of IM are the selection of key determinants of behavior and the selection of useful theory-based intervention methods to change the targeted determinants (active ingredients). The content and the sequence of the intervention are then created based on these parameters. TAVIE en sante is composed of 7 interactive web sessions hosted by a virtual nurse. It aims to develop and strengthen skills required for behavior change. Based on an algorithm using individual cognitive data (attitude, perceived behavioral control, and intention), the number of sessions, theory-based intervention methods, and messages contents are tailored to each user. Conclusion. TAVIE en sante is currently being evaluated. The use of IM allows developing intervention with a systematic approach based on theory, empirical evidence, and clinical and experiential knowledge.

Cotter, E. W., et al. (2018). "Examining the Feasibility and Effectiveness of a Community-Based Obesity Prevention Program." American Journal of Health Education 49(2): 94-104.

Background: Latinos in the United States are at heightened risk for obesity and health disparities, yet community-based interventions to promote health are limited. Purpose: This research examined the feasibility and efficacy of a culturally relevant obesity prevention program (Vivir Sano), which included stress reduction and behavioral lifestyle intervention components. Methods: In phase 1, focus groups were completed with 21 residents of an affordable housing community to assess program needs and interests. In phase 2, 41 primarily Latino adults living in several neighboring affordable housing communities enrolled in the intervention. Twenty-three (56%) completed both pre- and postassessments (per protocol group). We examined pre-post differences in health-related behaviors, knowledge, and attitudes. Results: Over 96% of participants who completed a posttest satisfaction questionnaire reported that they were likely or very likely to use the skills learned in the program. Approximately 85% reported that the program moderately or significantly improved their health. An analysis of variance (ANOVA) indicated that the per protocol group increased weekly vegetable consumption by 4.2 servings (Cohen's $d = 0.48$). Translation to Health Education Practice: We discuss barriers and lessons learned related to implementing obesity prevention programming in affordable housing communities, where residents are more likely to experience chronic stress and food insecurity.

Courtenay, M., et al. (2019). "Tackling antimicrobial resistance 2019-2024-The UK's five-year national action plan." Journal of Hospital Infection 101(4): 426-427.

Cowley, B. and C. Bateman (2017). "Green My Place: Evaluation of a Serious Social Online Game Designed to Promote Energy Efficient Behaviour Change." International Journal of Serious Games 4(4): 71-90.

Serious games are interventions with potential for tackling pressing issues by raising awareness and inciting behaviour change. However, it is unclear which design choices maximise efficient production or intervention efficacy. For example, health games and games tackling social crises may have radically different audiences. Furthermore, players of serious games don't self-select like audiences for entertainment games, suggesting a need to examine and discuss the outcomes of any and all serious games built upon clear design principles for clearly-defined scenarios. This paper presents a case study of Green My Place, a serious game promoting energy-efficiency. GMP deployed unique site-specific metrics distinguishing it from similar projects 'disembodied' from the environments they are intended to affect. The game's design methodology-an MMOG framework with atomic mini-games linked to specific learning materials-offers a scaleable generic solution applicable to any domain entailing awareness/education. Field study evaluations show (weak) positive evidence of a positive impact, but lack of traction hindered success. We examine these outcomes and their possible causes, concluding that although the game itself was a noble failure, the evidence suggests that successful behavioural influence may be independent of degree of engagement-a finding with potential significance for any game with learning objectives.

Cox, M., et al. (2018). "The feasibility of early pulmonary rehabilitation and activity after COPD exacerbations: external pilot randomised controlled trial, qualitative case study and exploratory economic evaluation." Health Technology Assessment 22(11): 1-+.

Background: Chronic obstructive pulmonary disease (COPD) affects > 3 million people in the UK. Acute exacerbations of COPD (AECOPD) are the second most common reason for emergency hospital admission in the UK. Pulmonary rehabilitation is usual care for stable COPD but there is little evidence for early pulmonary rehabilitation (EPR)

following AECOPD, either in hospital or immediately post discharge. Objective: To assess the feasibility of recruiting patients, collecting data and delivering EPR to patients with AECOPD to evaluate EPR compared with usual care. Design: Parallel-group, pilot 2 x 2 factorial randomised trial with nested qualitative research and an economic analysis. Setting: Two acute hospital NHS trusts. Recruitment was carried out from September 2015 to April 2016 and follow-up was completed in July 2016. Participants: Eligible patients were those aged ≥ 35 years who were admitted with AECOPD, who were non-acidotic and who maintained their blood oxygen saturation level (SpO₂) within a prescribed range. Exclusions included the presence of comorbidities that affected the ability to undertake the interventions. Interventions: (1) Hospital EPR: muscle training delivered at the patient's hospital bed using a cycle ergometer and (2) home EPR: a pulmonary rehabilitation programme delivered in the patient's home. Both interventions were delivered by trained physiotherapists. Participants were allocated on a 1:1:1:1 ratio to (1) hospital EPR (n = 14), (2) home EPR (n = 15), (3) hospital EPR and home EPR (n = 14) and (4) control (n = 15). Outcome assessors were blind to treatment allocation; it was not possible to blind patients. Main outcome measures: Feasibility of recruiting 76 participants in 7 months at two centres; intervention delivery; views on intervention/research acceptability; clinical outcomes including the 6-minute walk distance (6MWD); and costs. Semistructured interviews with participants (n = 27) and research health professionals (n = 11), optimisation assessments and an economic analysis were also undertaken. Results: Over 7 months 449 patients were screened, of whom most were not eligible for the trial or felt too ill/declined entry. In total, 58 participants (76%) of the target 76 participants were recruited to the trial. The primary clinical outcome (6MWD) was difficult to collect (hospital EPR, n = 5; home EPR, n = 6; hospital EPR and home EPR, n = 5; control, n = 5). Hospital EPR was difficult to deliver over 5 days because of patient discharge/staff availability, with 34.1% of the scheduled sessions delivered compared with 78.3% of the home EPR sessions. Serious adverse events were experienced by 26 participants (45%), none of which was related to the interventions. Interviewed participants generally found both interventions to be acceptable. Home EPR had a higher rate of acceptability, mainly because patients felt too unwell when in hospital to undergo hospital EPR. Physiotherapists generally found the interventions to be acceptable and valued them but found delivery difficult because of staffing issues. The health economic analysis results suggest that there would be value in conducting a larger trial to assess the cost-effectiveness of the hospital EPR and hospital EPR plus home EPR trial arms and collect more information to inform the hospital cost and quality-adjusted life-year parameters, which were shown to be key drivers of the model. Conclusions: A full-scale randomised controlled trial using this protocol would not be feasible. Recruitment and delivery of the hospital EPR intervention was difficult. The data obtained can be used to design a full-scale trial of home EPR. Because of the small sample and large confidence intervals, this study should not be used to inform clinical practice.

Coxon, K., et al. (2017). "What influences birth place preferences, choices and decision-making amongst healthy women with straightforward pregnancies in the UK? A qualitative evidence synthesis using a 'best fit' framework approach." *Bmc Pregnancy and Childbirth* 17.

Background: English maternity care policy has supported offering women choice of birth setting for over twenty years, but only 13% of women in England currently give birth in settings other than obstetric units (OUs). It is unclear why uptake of non-OU settings for birth remains relatively low. This paper presents a synthesis of qualitative evidence which explores influences on women's experiences of birth place choice, preference and decision-making from the perspectives of women using maternity services. Methods: Qualitative evidence synthesis of UK research published January 1992-March 2015, using a 'best-fit' framework approach. Searches were run in seven electronic data bases applying a comprehensive search strategy. Thematic framework analysis was used to synthesise extracted data from included studies. Results: Twenty-four papers drawing on twenty studies met the inclusion criteria. The synthesis identified support for the key framework themes. Women's experiences of choosing or deciding where to give birth were influenced by whether they received information about available options and about the right to choose, women's preferences for different services and their attributes, previous birth experiences, views of family, friends and health care professionals and women's beliefs about risk and safety. The synthesis additionally identified that women's access to choice of place of birth during the antenatal period varied. Planning to give birth in OU was straightforward, but although women considering birth in a setting other than hospital OU were sometimes well-supported, they also encountered obstacles and described needing to 'counter the negativity' surrounding home birth or birth in midwife-led settings. Conclusions: Over the period covered by the review, it was straightforward for low risk women to opt for hospital birth in the UK. Accessing home birth was more complex and contested. The evidence on freestanding midwifery units (FMUs) is more limited, but suggests that women wanting to opt for an FMU birth experienced similar barriers. The extent to which women experienced similar problems accessing alongside midwifery units (AMUs) is unclear. Women's preferences for different birth options, particularly for 'hospital' vs non-hospital settings, are shaped by their pre-existing values, beliefs and experience, and not all women are open to all birth settings.

Crowe, S., et al. (2018). "The LiveWell Dorset behaviour change system." *Perspectives in Public Health* 138(2): 83-84.

Crowley, J. J., et al. (2018). "Perspectives from the third international summit on Medical Nutrition education and research." *Frontiers in Public Health* 6.

Nutrition is an important component of public health and health care, including in education and research, and in the areas of policy and practice. This statement was the overarching message during the third annual International Summit on Medical Nutrition Education and Research, held at Wolfson College, University of Cambridge, United Kingdom, in August 2017. This summit encouraged attendees to think more broadly about the impact of nutrition policy on health and communities, including the need to visualize the complete food system from "pre-farm to post-fork." Evidence of health issues related to food and nutrition were presented, including the need for translation of knowledge into policy and practice. Methods for this translation included the use of implementation and behavior change techniques, recognizing the needs of health-care professionals, policy makers, and the public. In all areas of nutrition and health, clear and effective messages, supported by open data, information, and actionable knowledge, are also needed along with strong measures of impact centered on an ultimate goal: to improve nutritional health and wellbeing for patients and the public.

Crowley, S. L., et al. (2017). "Invasive species management will benefit from social impact assessment." *Journal of Applied Ecology* 54(2): 351-357.

1. Invasive species management aims to prevent or mitigate the impacts of introduced species but management interventions can themselves generate social impacts that must be understood and addressed. 2. Established approaches for addressing the social implications of invasive species management can be limited in effectiveness and democratic legitimacy. More deliberative, participatory approaches are emerging that allow integration of a broader range of socio-political considerations. Nevertheless, there is a need to ensure that these are rigorous applications of social science. 3. Social impact assessment offers a structured process of identifying, evaluating and addressing social costs and benefits. We highlight its potential value for enabling meaningful public participation in planning and as a key component of integrated assessments of management options. 4. Policy implications. As invasive species management grows in scope and scale, social impact assessment provides a rigorous process for recognising and responding to social concerns. It could therefore produce more democratic, less conflict-prone and more effective interventions.

Crowther, C. A., et al. (2013). "Working to improve survival and health for babies born very preterm: the WISH project protocol." *Bmc Pregnancy and Childbirth* 13.

Background: Babies born very preterm (before 30 weeks gestation) are at high risk of dying in their first weeks of life, and those who survive are at risk of developing cerebral palsy in childhood. Recent high-quality evidence has shown that giving women magnesium sulphate immediately prior to very early birth can significantly increase the chances of their babies surviving free of cerebral palsy. In 2010 Australian and New Zealand clinical practice guidelines recommended this therapy. The WISH (Working to Improve Survival and Health for babies born very preterm) Project aims to bi-nationally improve and monitor the use of this therapy to reduce the risk of very preterm babies dying or having cerebral palsy. Methods/Design: The WISH Project is a prospective cohort study. The 25 Australian and New Zealand tertiary level maternity hospitals will be provided with a package of active implementation strategies to guide the introduction and local adaptation of guideline recommendations. Surveys will be conducted at individual hospitals to evaluate outcomes related to local implementation progress and the use and value of the WISH implementation strategies. For the hospitals participating in the 'WISH audit of uptake and health outcomes data collection', the primary health outcomes (assessed through case note review, and 24 month corrected age questionnaires) will be: the proportion of eligible women receiving antenatal magnesium sulphate; and rates of death prior to primary hospital discharge and cerebral palsy at two years corrected age in infants born to eligible mothers. For hospitals wishing to assess factors influencing translation locally, barriers and facilitators will be measured through interviews with health care professionals, to further guide implementation strategies. Study outcomes for the early phase of the project (Year 1) will be compared with the later intervention phase (Years 2 and 3). Discussion: The WISH Project will offer insight into the effectiveness of a multifaceted implementation strategy to improve the uptake of a novel neuroprotective therapy in obstetric clinical practice. The successful implementation of antenatal magnesium sulphate for fetal neuroprotection in Australia and New Zealand could lead to over 90 fewer very preterm babies dying or suffering the long-term consequences of cerebral palsy each year.

Cruz-Oliver, D. M., et al. (2017). "Evaluation of a Video-Based Seminar to Raise Health Care Professionals' Awareness of Culturally Sensitive End-of-Life Care." *Journal of Pain and Symptom Management* 54(4): 546-554.

Context. Health care workers serve diverse communities and face challenges in delivering culturally responsive EOL care, especially when caring for Latino elders. Objective. The objective of this study was to investigate the effect of a newly developed telenovela, or video soap opera, on health care professionals (HCPs)' awareness of caregivers' stress

and patients' cultural approaches to end-of-life (EOL) care decisions. **Methods.** A multicenter cross-sectional study among three communities in New York, Miami, and Missouri. Participants from a convenience sample of multidisciplinary HCPs were randomly assigned to view power point presentation with either a control video or an intervention-telenovela about caregiving as part of a one-hour audiovisual seminar and completed a pre-and post-test questionnaire to evaluate reaction and learning. **Results.** Participants (N = 142) were mostly female (80%) nurses (54%) with a mean age of 44.5 +/- 12.4 years and from non-Hispanic white (41%) or Hispanics (37%) ethnicity. In both control and intervention groups, post-test responses demonstrated a high level (87%) of satisfaction with seminar and an increase in openness to discuss EOL issues with culturally diverse patients (P < 0.001). Although both groups reported post-test improvement in awareness of health literacy, cultural competency skills, cultural differences about EOL attitudes, family caregiver stress, and possible interventions, this improvement was significantly higher in the intervention group (P < 0.05) compared with the control group. **Conclusion.** The telenovela was effective in increasing health care workers' awareness of caregivers stress and cultural approach to EOL decisions. There is need for ongoing efforts to educate HCPs on cultural sensitivity to help ethnically diverse caregivers and their patients benefit from EOL care. (C) 2017 Published by Elsevier Inc. on behalf of American Academy of Hospice and Palliative Medicine.

Cuffee, Y. L., et al. (2013). "Reported Racial Discrimination, Trust in Physicians, and Medication Adherence Among Inner-City African Americans With Hypertension." *American Journal of Public Health* 103(11): E55-E62.

Objectives. We sought to determine if reported racial discrimination was associated with medication nonadherence among African Americans with hypertension and if distrust of physicians was a contributing factor. **Methods.** Data were obtained from the TRUST project conducted in Birmingham, Alabama, 2006 to 2008. All participants were African Americans diagnosed with hypertension and receiving care at an inner city, safety net setting. Three categories of increasing adherence were defined based on the Morisky Medication Adherence Scale. Trust in physicians was measured with the Hall General Trust Scale, and discrimination was measured with the Experiences of Discrimination Scale. Associations were quantified by ordinal logistic regression, adjusting for gender, age, education, and income. **Results.** The analytic sample consisted of 227 African American men and 553 African American women, with a mean age of 53.7 +/- 9.9 years. Mean discrimination scores decreased monotonically across increasing category of medication adherence (4.1, 3.6, 2.9; P = .025), though the opposite was found for trust scores (36.5, 38.5, 40.8; P < .001). Trust mediated 39% (95% confidence interval = 17%, 100%) of the association between discrimination and medication adherence. **Conclusions.** Within our sample of inner city African Americans with hypertension, racial discrimination was associated with lower medication adherence, and this association was partially mediated by trust in physicians. Patient, physician and system approaches to increase "earned" trust may enhance existing interventions for promoting medication adherence.

Cullinan, S., et al. (2013). "Why? A qualitative study of potentially inappropriate prescribing in older patients." *International Journal of Clinical Pharmacy* 35(6): 1254-1254.

Cullinan, S., et al. (2015). "Doctors' perspectives on the barriers to appropriate prescribing in older hospitalized patients: a qualitative study." *British Journal of Clinical Pharmacology* 79(5): 860-869.

Aims Older patients commonly suffer from multimorbidities and take multiple medications. As a result, these patients are more vulnerable to potentially inappropriate prescribing (PIP). PIP in older patients may result in adverse drug events (ADEs) and hospitalizations. However, little has been done to identify why PIP occurs. The objectives of this study were (i) to identify hospital doctors' perceptions as to why PIP occurs, (ii) to identify the barriers to addressing the issues identified and (iii) to determine which intervention types would be best suited to improving prescribing. **Methods** Semi-structured interviews based on the Theoretical Domains Framework (TDF), a tool used to apply behaviour change theories, were conducted with 22 hospital doctors. Content analysis was conducted to identify domains of the TDF that could be targeted to improve prescribing for older people. These domains were then mapped to the behaviour change wheel to identify possible intervention types. **Results** Content analysis identified five of the 12 domains in the TDF as relevant: (i) environmental context and resources, (ii) knowledge, (iii) skills, (iv) social influences and (v) memory/attention and decision processes. Using the behaviour change wheel, the types of interventions deemed suitable were those based on training and environmental restructuring. **Conclusion** This study shows that doctors feel there is insufficient emphasis on geriatric pharmacotherapy in their undergraduate/postgraduate training. An intervention providing supplementary training, with particular emphasis on decision processes and dealing with social influences would be justified. This study has, however, uncovered many areas for potential intervention in the future.

Cummings, M. J., et al. (2017). "A complex intervention to improve implementation of World Health Organization guidelines for diagnosis of severe illness in low-income settings: a quasi-experimental study from Uganda." *Implementation Science* 12.

Background: To improve management of severely ill hospitalized patients in low-income settings, the World Health Organization (WHO) established a triage tool called "Quick Check" to provide clinicians with a rapid, standardized approach to identify patients with severe illness based on recognition of abnormal vital signs. Despite the availability of these guidelines, recognition of severe illness remains challenged in low-income settings, largely as a result of infrequent vital sign monitoring. Methods: We conducted a staggered, pre-post quasi-experimental study at four inpatient health facilities in western Uganda to assess the impact of a multi-modal intervention for improving quality of care following formal training on WHO "Quick Check" guidelines for diagnosis of severe illness in low-income settings. Intervention components were developed using the COM-B ("capability," "opportunity," and "motivation" determine "behavior") model and included clinical mentoring by an expert in severe illness care, collaborative improvement meetings with external support supervision, and continuous audits of clinical performance with structured feedback. Results: There were 5759 patients hospitalized from August 2014 to May 2015: 1633 were admitted before and 4126 during the intervention period. Designed to occur twice monthly, collaborative improvement meetings occurred every 2-4 weeks at each site. Clinical mentoring sessions, designed to occur monthly, occurred every 4-6 months at each site. Audit and feedback reports were implemented weekly as designed. During the intervention period, there were significant increases in the site-adjusted likelihood of initial assessment of temperature, heart rate, blood pressure, respiratory rate, mental status, and pulse oximetry. Patients admitted during the intervention period were significantly more likely to be diagnosed with sepsis (4.3 vs. 0.4%, risk ratio 10.1, 95% CI 3.0-31.0, $p < 0.001$) and severe respiratory distress (3.9 vs. 0.9%, risk ratio 4.5, 95% CI 1.8-10.9, $p = 0.001$). Conclusions: Theory-informed quality improvement programs can improve vital sign collection and diagnosis of severe illness in low-income settings. Further implementation, evaluation, and scale-up of such interventions are needed to enhance hospital-based triage and severe illness management in these settings.

Cummings, M. J., et al. (2017). "The sixth vital sign: HIV status assessment and severe illness triage in Uganda." *Public Health Action* 7(4): 245-250.

Setting: Four in-patient health facilities in western Uganda. Objective: To determine the impact of an innovative multi-modal quality improvement program on human immunodeficiency virus (HIV) status assessment and the impact of HIV status on severe illness conditions and mortality. Design: This was a staggered, pre-post quasi-experimental study designed to assess a multi-modal intervention (collaborative improvement meetings, audit and feedback, clinical mentoring) for improving quality of care following formal training in the management of severe illness in low-income settings. Results: From August 2014 to May 2015, 5759 patients were hospitalized, of whom 2451 (42.6%) had their HIV status assessed; 395 (16.1%) were HIV-infected. HIV-infected patients were significantly more likely to meet criteria for shock (27.5% vs. 15.1%, risk ratio [RR] 1.8, 95% confidence interval [CI] 1.7-1.9, $P < 0.001$) and severe respiratory distress (6.7% vs. 4.3%, RR 1.5, 95% CI 1.2-2.0, $P < 0.001$), and were significantly more likely to die in hospital (12.0% vs. 2.9%, RR 4.1, 95% CI 3.2-5.4, $P < 0.001$). There was no evidence of improved HIV status assessment during the intervention period (36.5% vs. 44.8%, +8.3%, 95% CI -8.3 to 24.8, $P = 0.33$). Conclusions: Hospitalized HIV-infected patients in western Uganda are at high risk for severe illness and death. Novel quality improvement strategies are needed to enhance hospital-based HIV testing in high-burden settings.

Cunha-Cruz, J., et al. (2015). ""Everybody Brush!": Protocol for a Parallel-Group Randomized Controlled Trial of a Family-Focused Primary Prevention Program With Distribution of Oral Hygiene Products and Education to Increase Frequency of Toothbrushing." *Jmir Research Protocols* 4(2).

Background: Twice daily toothbrushing with fluoridated toothpaste is the most widely advocated preventive strategy for dental caries (tooth decay) and is recommended by professional dental associations. Not all parents, children, or adolescents follow this recommendation. This protocol describes the methods for the implementation and evaluation of a quality improvement health promotion program. Objective: The objective of the study is to show a theory-informed, evidence-based program to improve twice daily toothbrushing and oral health-related quality of life that may reduce dental caries, dental treatment need, and costs. Methods: The design is a parallel-group, pragmatic randomized controlled trial. Families of Medicaid-insured children and adolescents within a large dental care organization in central Oregon will participate in the trial ($n=21,743$). Families will be assigned to one of three groups: a test intervention, an active control, or a passive control condition. The intervention aims to address barriers and support for twice-daily toothbrushing. Families in the test condition will receive toothpaste and toothbrushes by mail for all family members every three months. In addition, they will receive education and social support to encourage toothbrushing via postcards, recorded telephone messages, and an optional participant-initiated telephone helpline. Families in the active control condition will receive the kit of supplies by mail, but no additional instructional information or telephone support. Families assigned to the passive control will be on a waiting list. The primary outcomes are restorative dental care received and, only for children younger than 36 months old at baseline, the frequency of twice-daily toothbrushing. Data will be collected through dental claims records and, for children younger than 36 months old at baseline, parent

interviews and clinical exams. Results: Enrollment of participants and baseline interviews have been completed. Final results are expected in early summer, 2017. Conclusions: If proven effective, this simple intervention can be sustained by the dental care organization and replicated by other organizations and government.

Cunningham, J. A. (2016). "Addiction and eHealth." *Addiction* 111(3): 389-390.

Currie, S., et al. (2019). "Do healthcare professionals and young adults know about the National Chlamydia Screening Programme? Findings from two cross-sectional surveys." *International Journal of Std & Aids* 30(1): 72-78.

The extent to which healthcare professionals (HCPs) and young people (YP) are aware of, and adhere to, National Chlamydia Screening Programme (NCSP) recommendations on testing frequency is unclear. To address this two cross-sectional surveys in 2015-2016: one among genitourinary medicine (GUM) and non-GUM HCPs (n = 109) and the other among YP attending a GUM clinic in England (n = 195). For both, questions were designed to measure awareness of NCSP guidance and whether respondents acted on that knowledge. This included questions about YP's most recent test(s) (if ever) and the time since first and last sex with their most recent partners. Knowledge of NCSP testing guidelines varied among both GUM and non-GUM HCP respondents. However, lack of knowledge of the guidelines did not preclude HCPs from recommending testing in line with NCSP recommendations in practice. While most YP were not aware of NCSP recommendations, around two-thirds had tested for Chlamydia at least once in the last year. However, testing seldom appeared to coincide with partnership change. There is a knowledge gap and a discord between testing recommendations and practice. Interventions are needed to encourage appropriate testing patterns to maximise the individual and public health benefits of testing.

Curtis, J., et al. (2017). "Understanding the potential of facilities managers to be advocates for energy efficiency retrofits in mid-tier commercial office buildings." *Energy Policy* 103: 98-104.

Realising energy efficiency opportunities in new commercial office buildings is an easier task than retrofitting older, mid-tier building stock. As a result, a number of government programs aim to support retrofits by offering grants, upgrades, and energy audits to facilitate energy efficiency opportunities. This study reports on a state government program in Victoria, Australia, where the uptake of such offerings was lower than expected, prompting the program team to consider whether targeting facilities managers (FMs), rather than building owners, might be a better way of delivering the program. The influences and practices of FMs that impact on their ability to be advocates for energy efficiency were explored. The results revealed that complex building ownership arrangements, poor communication skills, isolation from key decision making processes, a lack of credible business cases and information, split incentives, and the prospect of business disruptions can all impact on FMs' ability to drive organizational change. Future program efforts should continue to interrogate the social context of retrofits in mid-tier buildings, including other influences and influencers beyond FMs, and adapt accordingly.

Curtis, K., et al. (2017). "Big hearts, small hands: a focus group study exploring parental food portion behaviours." *Bmc Public Health* 17.

Background: The development of healthy food portion sizes among families is deemed critical to childhood weight management; yet little is known about the interacting factors influencing parents' portion control behaviours. This study aimed to use two synergistic theoretical models of behaviour: the COM-B model (Capability, Opportunity, Motivation Behaviour) and Theoretical Domains Framework (TDF) to identify a broad spectrum of theoretically derived influences on parents' portion control behaviours including examination of affective and habitual influences often excluded from prevailing theories of behaviour change. Methods: Six focus groups exploring family weight management comprised of one with caseworkers (n = 4), four with parents of overweight children (n = 14) and one with parents of healthy weight children (n = 8). A thematic analysis was performed across the dataset where the TDF/COM-B were used as coding frameworks. Results: To achieve the target behaviour, the behavioural analysis revealed the need for eliciting change in all three COM-B domains and nine associated TDF domains. Findings suggest parents' internal processes such as their emotional responses, habits and beliefs, along with social influences from partners and grandparents, and environmental influences relating to items such as household objects, interact to influence portion size behaviours within the home environment. Conclusion: This is the first study underpinned by COM-B/TDF frameworks applied to childhood weight management and provides new targets for intervention development and the opportunity for future research to explore the mediating and moderating effects of these variables on one another.

Curtis, K., et al. (2017). "Translating research findings to clinical nursing practice." *Journal of Clinical Nursing* 26(5-6): 862-872.

Aims and objectives To describe the importance of, and methods for, successfully conducting and translating research into clinical practice. Background There is universal acknowledgement that the clinical care provided to

individuals should be informed on the best available evidence. Knowledge and evidence derived from robust scholarly methods should drive our clinical practice, decisions and change to improve the way we deliver care. Translating research evidence to clinical practice is essential to safe, transparent, effective and efficient healthcare provision and meeting the expectations of patients, families and society. Despite its importance, translating research into clinical practice is challenging. There are more nurses in the frontline of health care than any other healthcare profession. As such, nurse-led research is increasingly recognised as a critical pathway to practical and effective ways of improving patient outcomes. However, there are well-established barriers to the conduct and translation of research evidence into practice. Design This clinical practice discussion paper interprets the knowledge translation literature for clinicians interested in translating research into practice. Methods This paper is informed by the scientific literature around knowledge translation, implementation science and clinician behaviour change, and presented from the nurse clinician perspective. We provide practical, evidence-informed suggestions to overcome the barriers and facilitate enablers of knowledge translation. Examples of nurse-led research incorporating the principles of knowledge translation in their study design that have resulted in improvements in patient outcomes are presented in conjunction with supporting evidence. Conclusions Translation should be considered in research design, including the end users and an evaluation of the research implementation. The success of research implementation in health care is dependent on clinician/consumer behaviour change and it is critical that implementation strategy includes this. Relevance to practice Translating best research evidence can make for a more transparent and sustainable healthcare service, to which nurses are central.

Curtis, K., et al. (2019). "A Medication Adherence App for Children With Sickle Cell Disease: Qualitative Study." *Jmir Mhealth and Uhealth* 7(6).

Background: Young people with sickle cell disease (SCD) often demonstrate low medication adherence and low motivation for effectively self-managing their condition. The growing sophistication of mobile phones and their popularity among young people render them a promising platform for increasing medication adherence. However, so far, few apps targeting SCD have been developed from research with the target population and underpinned with theory and evidence. Objective: The aim of this study was to develop a theory-and-evidence-based medication adherence app to support children and adolescents with SCD. Methods: The Behavior Change Wheel (BCW), a theoretically based intervention development framework, along with a review of the literature, 10 interviews with children and adolescents with SCD aged between 12 and 18 years, and consultation with experts informed app development. Thematic analysis of interviews provided relevant theoretical and evidence-based components to underpin the design and development of the app. Results: Findings suggested that some patients had lapses in memory for taking their medication (capability); variation in beliefs toward the effectiveness of medication and confidence in self-managing their condition (motivation); a limited time to take medication; and barriers and enablers within the changing context of social support during the transition into adulthood (opportunity). Steps were taken to select the appropriate behavioral change components (involving behavior change techniques [BCTs] such as information on antecedents, prompts/cues; self-monitoring of the behavior; and social support) and translate them into app features designed to overcome these barriers to medication adherence. Conclusions: Patients with SCD have complex barriers to medication adherence necessitating the need for comprehensive models of behavior change to analyze the problem. Children and adolescents require an app that goes beyond simple medication reminders and takes into account the patient's beliefs, emotions, and environmental barriers to medication adherence.

Curtis, K. E., et al. (2015). "Targeting Parents for Childhood Weight Management: Development of a Theory-Driven and User-Centered Healthy Eating App." *Jmir Mhealth and Uhealth* 3(2).

Background: The proliferation of health promotion apps along with mobile phones' array of features supporting health behavior change offers a new and innovative approach to childhood weight management. However, despite the critical role parents play in children's weight related behaviors, few industry-led apps aimed at childhood weight management target parents. Furthermore, industry-led apps have been shown to lack a basis in behavior change theory and evidence. Equally important remains the issue of how to maximize users' engagement with mobile health (mHealth) interventions where there is growing consensus that inputs from the commercial app industry and the target population should be an integral part of the development process. Objective: The aim of this study is to systematically design and develop a theory and evidence-driven, user-centered healthy eating app targeting parents for childhood weight management, and clearly document this for the research and app development community. Methods: The Behavior Change Wheel (BCW) framework, a theoretically-based approach for intervention development, along with a user-centered design (UCD) philosophy and collaboration with the commercial app industry, guided the development process. Current evidence, along with a series of 9 focus groups (total of 46 participants) comprised of family weight management case workers, parents with overweight and healthy weight children aged 5-11 years, and consultation with experts, provided data to inform the app development. Thematic analysis of focus groups helped to extract information related to relevant theoretical, user-centered, and technological components to underpin the design and development of the

app. Results: Inputs from parents and experts working in the area of childhood weight management helped to identify the main target behavior: to help parents provide appropriate food portion sizes for their children. To achieve this target behavior, the behavioral diagnosis revealed the need for eliciting change in parents' capability, motivation, and opportunity in 10-associated Theoretical Domains Framework (TDF) domains. Of the 9 possible intervention functions, 6 were selected to bring about this change which guided the selection of 21 behavior change techniques. Parents' preferences for healthy eating app features revolved around four main themes (app features, time saving and convenience, aesthetics, and gamification) whereupon a criterion was applied to guide the selection on which preferences should be integrated into the design of the app. Collaboration with the app company helped to build on users' preferences for elements of gamification such as points, quizzes, and levels to optimize user engagement. Feedback from parents on interactive mock-ups helped to inform the final development of the prototype app. Conclusions: Here, we fully explicate a systematic approach applied in the development of a family-oriented, healthy eating health promotion app grounded in theory and evidence, and balanced with users' preferences to help maximize its engagement with the target population.

Cushing, C. C., et al. (2018). "Parents' Perspectives on the Theoretical Domains Framework Elements Needed in a Pediatric Health Behavior App: A Crowdsourced Social Validity Study." *Jmir Mhealth and Uhealth* 6(12).

Background: Most pediatric studies do not include parent stakeholders in the design of the intervention itself and many pediatric mobile health (mHealth) interventions are not meaningfully disseminated after the trial period ends. Consequently, the consumer desire for mobile apps targeting pediatric health behavior is likely to be met by commercial products that are not based in theory or evidence and may not take stakeholder preferences into account. Objective: The aim was to assess parent preference for mobile app features that map onto specific Theoretical Domains Framework (TDF) elements. Methods: This study was a crowdsourced social validity study of 183 parents who were asked to rate their preferences for mobile app features that correspond to elements of the TDF. The TDF organizes a large number of theoretical models and constructs into three components: (1) capability, (2) motivation, and (3) opportunity. Parents of children were recruited through Amazon Mechanical Turk. Results: The majority of participants were Caucasian and mean age was 36.9 (SD 8.0) years. Results revealed broad acceptability of communication, motivation, and opportunity domains. However, the degree to which each domain was valued varied within behavioral category. Parents demonstrated a preference for increasing procedural knowledge for physical activity and diet behaviors over sleep ($F=2, F=545=5.18, P=.006$). Similarly, parents valued self-monitoring as more important for physical activity than sleep ($F=2, F=546=4.04, P=.02$). When asked about the value of features to help children develop skills, parents preferred those features for dietary behavior over sleep ($F=2, F=546=3.57, P=.03$). Parents perceived that goal-setting features would be most useful for physical activity over sleep and diet ($F=2, F=545=5.30, P=.005$). Incentive features within the app were seen as most useful for physical activity over sleep ($F=2, F=546=4.34, P=.01$). Conclusions: This study presents a low-cost strategy for involving a large number of stakeholders in the discussion of how health behavior theory should be applied in a mHealth intervention. Our approach is innovative in that it took a scientific framework (ie, TDF) and made it digestible to parents so that they could then provide their opinions about features that might appear in a future app. Our survey items discriminated between various health behaviors allowing stakeholders to communicate the different health behaviors that they would like a TDF feature to change. Moreover, we were able to develop a set of consumer opinions about features that were directly linked to elements of the TDF.

Czajkowski, S. M., et al. (2015). "From Ideas to Efficacy: The ORBIT Model for Developing Behavioral Treatments for Chronic Diseases." *Health Psychology* 34(10): 971-982.

Objective: Given the critical role of behavior in preventing and treating chronic diseases, it is important to accelerate the development of behavioral treatments that can improve chronic disease prevention and outcomes. Findings from basic behavioral and social sciences research hold great promise for addressing behaviorally based clinical health problems, yet there is currently no established pathway for translating fundamental behavioral science discoveries into health-related treatments ready for Phase III efficacy testing. This article provides a systematic framework for developing behavioral treatments for preventing and treating chronic diseases. Method: The Obesity-Related Behavioral Intervention Trials (ORBIT) model for behavioral treatment development features a flexible and progressive process, prespecified clinically significant milestones for forward movement, and return to earlier stages for refinement and optimization. Results: This article presents the background and rationale for the ORBIT model, a summary of key questions for each phase, a selection of study designs and methodologies well-suited to answering these questions, and prespecified milestones for forward or backward movement across phases. Conclusions: The ORBIT model provides a progressive, clinically relevant approach to increasing the number of evidence-based behavioral treatments available to prevent and treat chronic diseases.

D'Antoni, D., et al. (2019). "The effect of evidence and theory-based health advice accompanying smartphone air quality alerts on adherence to preventative recommendations during poor air quality days: A randomised controlled trial." *Environment International* 124: 216-235.

Although poor air quality can have a negative impact on human health, studies have shown suboptimal levels of adherence to health advice associated with air quality alerts. The present study compared the behavioural impact of the UK Air Quality Index (DAQI) with an alternative message format, using a 2 (general population vs. at-risk individuals) X 2 (usual DAQI messages vs. behaviourally enhanced messages) factorial design. Messages were sent via a smartphone application. Eighty-two participants were randomly allocated to the experimental groups. It was found that the enhanced messages (targeting message specificity and psychosocial predictors of behaviour change) increased intentions to make permanent behavioural changes to reduce exposure, compared to the control group ($V = 0.23$). This effect was mediated by a reduced perception of not having enough time to follow the health advice received ($b = -0.769$, BCa CI [-2.588, 0.533]). It was also found that higher worry about air pollution, perceived severity, perceived efficacy of the recommended behaviour and self-efficacy were predictive of self-reported behaviour change at four weeks. In response to a real moderate air quality alert, among those with a pre-existing lung condition, more respondents in the intervention group reported to have used their preventer inhaler compared to the control group ($V = 0.49$). On the other hand, the two message formats performed similarly when intentions were collected in relation to a hypothetical high air pollution scenario, with all groups showing relatively high intentions to change behaviours. This study expands the currently limited understanding of how to improve the behavioural impact of existing air quality alerts.

D'Antoni, D., et al. (2019). "The Effect of Framed Health Messages on Intention to Take Antivirals for Pandemic Influenza: A Vignette-Based Randomised Controlled Trial." *Journal of Health Communication* 24(4): 442-455.

During the last influenza pandemic, adherence to antivirals was suboptimal. This study investigated the effect of manipulating the wording of written health messages on intentions to use antivirals as prophylaxis for pandemic influenza. After reading a hypothetical pandemic flu scenario, adult UK residents ($N = 216$) were randomly allocated to one of the four conditions, defined by a 2 x 2 (agency assignment x attribute framing) factorial design. Each condition presented messages describing the pandemic flu using linguistic expressions that assigned agency to either humans (HA: human agency) or the virus itself (VA: virus agency), whilst describing the antivirals side effects in terms of the chances of either experiencing (NF: negative framing) or not experiencing side effects (PF: positive framing). Intentions to use the antivirals and potential mediating factors were measured. Mean adherence intentions were high in all conditions with no significant differences between them. Higher perceived susceptibility, anticipated regret, self-efficacy, trust, and low response costs were found to predict adherence intentions. The VA messages increased perceived severity, the PF messages increased self-efficacy, whilst VA*PF affected response efficacy. The evidence did not support the hypothesis that the VA and PF framings can increase adherence intentions compared to the HA and NF messages, respectively.

Daivadanam, M., et al. (2014). "Conceptual model for dietary behaviour change at household level: a 'best-fit' qualitative study using primary data." *Bmc Public Health* 14.

Background: Interventions having a strong theoretical basis are more efficacious, providing a strong argument for incorporating theory into intervention planning. The objective of this study was to develop a conceptual model to facilitate the planning of dietary intervention strategies at the household level in rural Kerala. Methods: Three focus group discussions and 17 individual interviews were conducted among men and women, aged between 23 and 75 years. An interview guide facilitated the process to understand: 1) feasibility and acceptability of a proposed dietary behaviour change intervention; 2) beliefs about foods, particularly fruits and vegetables; 3) decision-making in households with reference to food choices and access; and 4) to gain insights into the kind of intervention strategies that may be practical at community and household level. The data were analysed using a modified form of qualitative framework analysis, which combined both deductive and inductive reasoning. A priori themes were identified from relevant behaviour change theories using construct definitions, and used to index the meaning units identified from the primary qualitative data. In addition, new themes emerging from the data were included. The associations between the themes were mapped into four main factors and its components, which contributed to construction of the conceptual model. Results: Thirteen of the a priori themes from three behaviour change theories (Trans-theoretical model, Health Belief model and Theory of Planned Behaviour) were confirmed or slightly modified, while four new themes emerged from the data. The conceptual model had four main factors and its components: impact factors (decisional balance, risk perception, attitude); change processes (action-oriented, cognitive); background factors (personal modifiers, societal norms); and overarching factors (accessibility, perceived needs and preferences), built around a three-stage change spiral (pre-contemplation, intention, action). Decisional balance was the strongest in terms of impacting the process of behaviour change, while household efficacy and perceived household cooperation were identified as 'markers' for stages-of-change at the household level. Conclusions: This type of framework analysis made it possible to develop a conceptual model that could facilitate the design of intervention strategies to aid a household-level dietary behaviour change process.

Dale, L. P., et al. (2016). "Canadian physical activity guidelines for adults: are Canadians aware?" *Applied Physiology Nutrition and Metabolism* 41(9): 1008-1011.

The present study evaluated awareness of the Canadian Society for Exercise Physiology's 2011 Canadian Physical Activity Guidelines for Adults and assessed correlates. Reported awareness of the physical activity (PA) guidelines was 12.9% (204/1586) of the total sample surveyed. More than half (55%) self-reported meeting PA guidelines of ≥ 150 min of moderate to vigorous PA per week. Awareness of PA guidelines was significantly related to participants' level of PA ($\chi^2(1) = 30.63, p < 0.001, \phi = -0.14$), but not to any demographic variables.

Danaher, J., et al. (2018). "The Quantified Relationship." *American Journal of Bioethics* 18(2): 3-19.

The growth of self-tracking and personal surveillance has given rise to the Quantified Self movement. Members of this movement seek to enhance their personal well-being, productivity, and self-actualization through the tracking and gamification of personal data. The technologies that make this possible can also track and gamify aspects of our interpersonal, romantic relationships. Several authors have begun to challenge the ethical and normative implications of this development. In this article, we build upon this work to provide a detailed ethical analysis of the Quantified Relationship (QR). We identify eight core objections to the QR and subject them to critical scrutiny. We argue that although critics raise legitimate concerns, there are ways in which tracking technologies can be used to support and facilitate good relationships. We thus adopt a stance of cautious openness toward this technology and advocate the development of a research agenda for the positive use of QR technologies.

Danis, C., et al. (2015). Patient engagement at the point of care: technology as an enabler.

There is a long-standing interest among clinicians and researchers in the healthcare community in the role that patients' involvement in their healthcare management might play in improving health outcomes and healthcare quality, as well as in controlling the costs of healthcare provision. Recent advances in mobile computing technology make it feasible to scale successful patient engagement programs first delivered in limited face-to-face trials to larger patient populations. However, comparatively little is known about how technology-enabled patient engagement systems might fare in deployments in clinical contexts involved in the treatment of patients with chronic diseases. We initiated a six-month trial with 25 patients to explore patient and provider interactions with one commercially available patient engagement system. We deployed the system comprised of a kiosk, mobile phone and web user interfaces to patients with a primary diagnosis of Diabetes Mellitus, type 2 or Hypertension who were receiving care at a large urban medical practice that emphasizes patient engagement. We used a mixed-methods methodology to collect qualitative and quantitative feedback on the use of the technology. We found a large range among patients in their ability to engage through the technology. Physicians were generally interested and positive about the use of the technology. We are currently exploring ways to help both stakeholders improve in incorporating the newly available data into their work practices.

Davey, P. (2015). "The 2015 Garrod Lecture: Why is improvement difficult?" *Journal of Antimicrobial Chemotherapy* 70(11): 2931-2944.

The pressing need to measure and improve antibiotic use was recognized >40 years ago, so why have we failed to achieve sustained improvement at scale? In his 2014 Reith Lectures about the future of medicine, the US surgeon Atul Gawande said that failure in medicine is largely due to ineptitude (failure to use existing knowledge) rather than ignorance (lack of knowledge). Consequently, it is notable that most interventions to improve antimicrobial prescribing are either designed to educate individual practitioners or patients about policies or to restrict prescribing to make practitioners follow policies. Interventions that enable practitioners to apply existing knowledge through decision support, feedback and action planning are relatively uncommon. There is an urgent need to improve the design and reporting of interventions to change behaviour. However, achieving sustained improvement at scale will also require a more profound understanding of the role of context. What makes contexts receptive to change and which elements of context, under what circumstances, are important for human performance? Answering these questions will require interdisciplinary work with social scientists to integrate complementary approaches from human factors and ergonomics, improvement science and educational research. We need to rethink professional education to embrace complexity and enable teams to learn in practice. Workplace-based learning of improvement science will enable students and early-career professionals to become change agents and transform training from a burden on clinical teams into a driver for improvement. This will make better use of existing resources, which is the key to sustainability at scale.

Davey, P., et al. (2017). "Interventions to improve antibiotic prescribing practices for hospital inpatients." *Cochrane Database of Systematic Reviews*(2).

Background Antibiotic resistance is a major public health problem. Infections caused by multidrug-resistant bacteria are associated with prolonged hospital stay and death compared with infections caused by susceptible bacteria. Appropriate antibiotic use in hospitals should ensure effective treatment of patients with infection and reduce unnecessary prescriptions. We updated this systematic review to evaluate the impact of interventions to improve antibiotic prescribing to hospital inpatients. Objectives To estimate the effectiveness and safety of interventions to improve antibiotic prescribing to hospital inpatients and to investigate the effect of two intervention functions: restriction and enablement. Search methods We searched the Cochrane Central Register of Controlled Trials (CENTRAL) (the Cochrane Library), MEDLINE, and Embase. We searched for additional studies using the bibliographies of included articles and personal files. The last search from which records were evaluated and any studies identified incorporated into the review was January 2015. Selection criteria We included randomised controlled trials (RCTs) and non-randomised studies (NRS). We included three non-randomised study designs to measure behavioural and clinical outcomes and analyse variation in the effects: non-randomised trials (NRT), controlled beforeafter (CBA) studies and interrupted time series (ITS) studies. For this update we also included three additional NRS designs (case control, cohort, and qualitative studies) to identify unintended consequences. Interventions included any professional or structural interventions as defined by the Cochrane Effective Practice and Organisation of Care Group. We defined restriction as 'using rules to reduce the opportunity to engage in the target behaviour (or increase the target behaviour by reducing the opportunity to engage in competing behaviours)'. We defined enablement as 'increasing means/reducing barriers to increase capability or opportunity'. The main comparison was between intervention and no intervention. Data collection and analysis Two review authors extracted data and assessed study risk of bias. We performed meta-analysis and meta-regression of RCTs and metaregression of ITS studies. We classified behaviour change functions for all interventions in the review, including those studies in the previously published versions. We analysed dichotomous data with a risk difference (RD). We assessed certainty of evidence with GRADE criteria. Main results This review includes 221 studies (58 RCTs, and 163 NRS). Most studies were from North America (96) or Europe (87). The remaining studies were from Asia (19), South America (8), Australia (8), and the East Asia (3). Although 62% of RCTs were at a high risk of bias, the results for the main review outcomes were similar when we restricted the analysis to studies at low risk of bias. More hospital inpatients were treated according to antibiotic prescribing policy with the intervention compared with no intervention based on 29 RCTs of predominantly enablement interventions (RD 15%, 95% confidence interval (CI) 14% to 16%; 23,394 participants; high-certainty evidence). This represents an increase from 43% to 58%. There were high levels of heterogeneity of effect size but the direction consistently favoured intervention. The duration of antibiotic treatment decreased by 1.95 days (95% CI 2.22 to 1.67; 14 RCTs; 3318 participants; high-certainty evidence) from 11.0 days. Information from non-randomised studies showed interventions to be associated with improvement in prescribing according to antibiotic policy in routine clinical practice, with 70% of interventions being hospital-wide compared with 31% for RCTs. The risk of death was similar between intervention and control groups (11% in both arms), indicating that antibiotic use can likely be reduced without adversely affecting mortality (RD 0%, 95% CI -1% to 0%; 28 RCTs; 15,827 participants; moderate-certainty evidence). Antibiotic stewardship interventions probably reduce length of stay by 1.12 days (95% CI 0.7 to 1.54 days; 15 RCTs; 3834 participants; moderate-certainty evidence). One RCT and six NRS raised concerns that restrictive interventions may lead to delay in treatment and negative professional culture because of breakdown in communication and trust between infection specialists and clinical teams (low-certainty evidence). Both enablement and restriction were independently associated with increased compliance with antibiotic policies, and enablement enhanced the effect of restrictive interventions (high-certainty evidence). Enabling interventions that included feedback were probably more effective than those that did not (moderate-certainty evidence). There was very low-certainty evidence about the effect of the interventions on reducing *Clostridium difficile* infections (median 48.6%, interquartile range -80.7% to -19.2%; 7 studies). This was also the case for resistant gram-negative bacteria (median -12.9%, interquartile range -35.3% to 25.2%; 11 studies) and resistant gram-positive bacteria (median -19.3%, interquartile range -50.1% to +23.1%; 9 studies). There was too much variance in microbial outcomes to reliably assess the effect of change in antibiotic use. Heterogeneity of intervention effect on prescribing outcomes We analysed effect modifiers in 29 RCTs and 91 ITS studies. Enablement and restriction were independently associated with a larger effect size (high-certainty evidence). Feedback was included in 4 (17%) of 23 RCTs and 20 (47%) of 43 ITS studies of enabling interventions and was associated with greater intervention effect. Enablement was included in 13 (45%) of 29 ITS studies with restrictive interventions and enhanced intervention effect. Authors' conclusions We found high-certainty evidence that interventions are effective in increasing compliance with antibiotic policy and reducing duration of antibiotic treatment. Lower use of antibiotics probably does not increase mortality and likely reduces length of stay. Additional trials comparing antibiotic stewardship with no intervention are unlikely to change our conclusions. Enablement consistently increased the effect of interventions, including those with a restrictive component. Although feedback further increased intervention effect, it was used in only a minority of enabling interventions. Interventions were successful in safely reducing unnecessary antibiotic use in hospitals, despite the fact that the majority did not use the most effective behaviour change techniques. Consequently, effective dissemination of our findings could have considerable health service and policy impact. Future research should instead focus on targeting

treatment and assessing other measures of patient safety, assess different stewardship interventions, and explore the barriers and facilitators to implementation. More research is required on unintended consequences of restrictive interventions.

de Boer, J. and H. Aiking (2019). "Strategies towards healthy and sustainable protein consumption: A transition framework at the levels of diets, dishes, and dish ingredients." *Food Quality and Preference* 73: 171-181.

This paper proposes a transition framework for restoring a healthy and sustainable balance in protein consumption in high-meat eating countries. The transition aims to reduce total protein intake as well as the dietary ratio of animal over plant protein (from 60:40 via 50:50 to 40:60), which will require changes in consumer food choice processes at the levels of diets, dishes and dish ingredients. The paper describes the background and the potential use in strategy development of the proposed DDDI (diets, dishes, dish ingredients) framework, building on existing literature. The material is integrated in a novel manner, with a key role for two dish-oriented strategies as links between national dietary guidelines, on the one hand, and product-oriented marketing approaches, on the other hand. The first strategy is promoting a varied dish pattern that includes at least some dishes with alternative protein ingredients, chosen for reasons of either meatiness, authenticity or convenience. The second strategy involves promoting a shift to mixed dishes in which part of the protein is of animal origin and the rest of plant origin. Additional complimentary strategies will be necessary to address high incomes (for sustainability) and low incomes (for health).

de Carolis, B. and I. Mazzotta (2017). "A user-adaptive persuasive system based on 'a-rational' theory." *International Journal of Human-Computer Studies* 108: 70-88.

Persuasion is a form of social influence and is a ubiquitous part of contemporary life. Even if sometimes it is marked as negative, there is a growing interest from the research community in designing and developing intelligent systems that use persuasive technologies for promoting behavior change in several domains. In this paper we present a computational model of persuasion, which combines the emotional and rational modes. In the proposed approach we simulate the process used by human to persuade someone to perform a given action by combining rational strategies with emotional ones and to adapt them to some user's characteristics. In particular, the system reasons on the strength of alternative (rational and emotional) strategies of persuasion in order to select the most appropriate one. The persuasion model has been used to produce personalized persuasion dialogs in the well-being and healthy eating domains by reasoning on the user's personality traits and living habits. (C) 2017 Elsevier Ltd. All rights reserved.

de Jong, L. D., et al. (2018). "Exploring falls prevention capabilities, barriers and training needs among patient sitters in a hospital setting: A pilot survey." *Geriatric Nursing* 39(3): 263-270.

Older patients in hospitals are at high risk of falls. Patient sitters are sometimes employed to directly observe patients to reduce their risk of falling although there is scant evidence that this reduces falls. The primary aim of this pilot survey (n = 31) was to explore the patient sitters' falls prevention capability, self-efficacy and the barriers and enablers they perceived influenced their ability to care for patients during their shifts. Feedback was also sought regarding training needs. Most (90%) participants felt confident in their role. The most frequent reasons for falls identified were patient-related (n = 91, 64%), but the most frequent responses identifying preventive strategies were environment-related (n = 54, 64%), suggesting that the sitters' capability was limited. The main barriers identified to keeping patients safe from falling were patient-related (n = 36, 62%) such as cognitive impairment. However, opportunities that would enable sitters to do their work properly were most frequently categorized as being staff related (n = 20, 83%), suggesting that the sitters have limited ability to address these barriers encountered. While 74% of sitters reported they had received previous training, 84% of participants would like further training. Patient sitters need more training, and work practice needs to be standardized prior to future research into sitter use for falls prevention. (C) 2017 Elsevier Inc. All rights reserved.

de Koning, J., et al. (2016). "GetGreen Vietnam: towards more sustainable behaviour among the urban middle class." *Journal of Cleaner Production* 134: 178-190.

In Vietnam, the middle class is expected to grow from 12 million to 33 million people between 2012 and 2020. The growth causes an increase as well as a shift in consumption. Products that were not accessible or affordable before will become increasingly so, such as cars, dishwashers, meat products and air-conditioning. In urban areas the changes are most prominent and so are the side effects: increased amounts of waste, smog, pollution and use of fossil energy or pesticides. The main objective of this study was to identify sustainable behaviour that followed or did not follow from the intervention project GetGreen Vietnam. 604 urban middle class consumers participated in a series of sustainable consumption trainings. Before, during and after the trainings, quantitative and qualitative data was collected on 90 sustainable actions. 64% of the participants self-reported to be engaged in a sustainable action before the intervention and this percentage increased to 80% after. The group environment and activity-based meetings of GetGreen Vietnam project (GGVN) were critical for the success of the intervention. Participants reported that before GGVN certain actions

were already habitual as a money saving strategy (e.g. sparse electricity use or food leftovers re-use) or due to past scarcity (e.g. sparse water use). Many participants reported the intention to buy sustainable products but fewer participants took action to do so. A powerful strategy toward more sustainable consumption in Vietnam can be to create more group based activities around the themes of energy and shopping for food. A twofold approach is needed that both installs new sustainable consumption patterns and keeps old habits rooted in daily rituals. Role models should set an example for the young population and consumers and (Vietnamese) producers should be better connected to increase mutual trust and transparency. (C) 2016 Elsevier Ltd. All rights reserved.

De Leeuw, E. and D. Peters (2015). "Nine questions to guide development and implementation of Health in All Policies." *Health Promotion International* 30(4): 987-997.

Based on the policy science literature, we formulate nine core questions that can guide the formulation, negotiation, development and implementation of Health in All Policies (HiAP). Each question is grounded in the political and policy science literature and culminates in checklist items that HiAP developers must consider.

De Los Reyes, A., et al. (2019). "Informant discrepancies in assessments of psychosocial functioning in school-based services and research: Review and directions for future research." *Journal of School Psychology* 74: 74-89.

Psychosocial functioning plays a key role in students' wellbeing and performance inside and outside of school. As such, techniques designed to measure and improve psychosocial functioning factor prominently in school-based service delivery and research. Given that the different contexts (e.g., school, home, community) in which students exist vary in the degree to which they influence psychosocial functioning, educators and researchers often rely on multiple informants to characterize intervention targets, monitor intervention progress, and inform the selection of evidence-based services. These informants include teachers, students, and parents. Across research teams, domains, and measurement methodologies, researchers commonly observe discrepancies among informants' reports. We review theory and research occurring largely outside of school-based service delivery and research that demonstrates how patterns of informant discrepancies represent meaningful differences that can inform our understanding of psychosocial functioning. In turn, we advance a research agenda to improve use and interpretation of informant discrepancies in school-based services and research.

De Luca, V., et al. (2018). TURNING FUN INTO LEARNING: HOW SERIOUS GAMES INSPIRE NEW EDUCATIONAL FRAMEWORKS. 12th International Technology, Education and Development Conference. L. G. Chova, A. L. Martinez and I. C. Torres: 2897-2904.

Active play seems to help build understanding across concrete reality and abstract things. It taps into the world of "fun", affects emotions and have the ability to involve users more deeply. At the same time, it has the potential to motivate behaviours and rises the awareness on how real systems works. This process moves several questions about: the role of technologies in enhancing education, what is the change they can favour at societal level in using game-like applications in educational environments. The present paper discusses these empirical and pedagogical drivers contributing to the implementation of gamification design in the learning processes. Furthermore, it presents a practical case, the InLife's approach, an Horizon 2020 project for designing different reality-based serious games scenarios. Through InLife educators, parents and therapists can stimulate pupils' learning process by maximizing enjoyment, engagement and motivation. The InLife project is used to discuss the benefits and limitations of gamification design in two peculiar learning environments respectively addressed to pro-environmental awareness and social inclusion.

de Matos, M. G. and C. Simoes (2016). "From Positive Youth Development to Youth's Engagement: the Dream Teens." *International Journal of Emotional Education* 8(1): 4-17.

In addition to the empirical validation of 'health and happiness' determinants, theoretical models suggesting where to ground actions are necessary. In the beginning of the twentieth century, intervention models focused on evaluation and empirical validation were only concerned about overt behaviours (verbal and non-verbal) and covert behaviours (cognitions and emotions). Later on in the middle of the century, there was a shift from treating the problems to a positive approach, focused on promoting assets and individual strengths. Thus, the role of social competences, self-regulation and resilience became salient. Researchers also highlighted the importance of social cohesion and social support, as active health and wellbeing facilitators. More recently, in the twentyfirst century, the population's engagement (positive engagement) has become crucial. This paper presents the evolution of this theoretical and scientific path, using Portugal as a case study, where early interventions focused on the positive aspects of both covert and overt behaviours, while more recent interventions included explicitly the perspective of youth engagement and participation, as is the case of the Dream Teens Project. It is expected that the political and professional understanding of this trajectory will allow professionals to provide better health and educational services, improving young people's engagement, quality of life, health and wellbeing.

De Vasconcelos, S., et al. (2018). "Behaviour change techniques in brief interventions to prevent HIV, STI and unintended pregnancies: A systematic review." *Plos One* 13(9).

Background Behaviour-change interventions have been consistently considered an essential part of comprehensive HIV, STI and unintended pregnancy prevention. In 2015, the World Health Organization reviewed and assessed existing evidence on brief behavioural interventions, leading to the publication of Brief sexuality-related communication: recommendations for a public health approach. This guideline recommends the use of brief behaviour intervention and communication programmes to promote sexual health and to prevent HIV, STIs, and unintended pregnancies in primary health services, particularly sexual and reproductive health services. **Objective** With the purpose of informing the development of a brief behaviour intervention in sexual and reproductive health, we conducted a systematic review of brief intervention to prevent HIV, STI and unintended pregnancies, to identify behaviour change techniques (BCTs) used in health care settings. **Methods** Participants from all ages and genders were included. Brief interventions delivered in ≤ 60 minutes were included. Data was extracted, and interventions were coded following the Behaviour Change Techniques Taxonomy (BCTTv1) guidelines. **Results** Of the 6.687 articles identified, 355 were reviewed and 37 studies were included. In effective interventions, we identified 48 behaviour change techniques (BCTs). A core set of 8 frequently used behaviour change techniques was identified: "Problem solving", "Feedback on behaviour", "Social support (unspecified)", "Instructions on how to perform the behaviour", "Information about health consequences", "Information about social and environmental consequences", "Demonstration of the behaviour" and "Credible source". **Conclusions** The technical content of brief behaviour interventions was identified in a reliable and standardized way providing preliminary indications on potentially effective techniques to achieve behaviour change.

Deek, H., et al. (2016). "Protocol for a block randomised controlled trial of an intervention to improve heart failure care." *Nurse Researcher* 23(4): 24-29.

Aim To describe the design of a randomised controlled trial conducted to evaluate a culturally tailored, nurseled educational intervention. **Background** Self-care strategies are critical to improving health outcomes in heart failure. The family unit is crucial in collectivist cultures, but little is known about involving the family in the self-care of patients with heart failure. **Discussion** Involving the family in the self-care of heart failure is a novel approach. To the authors' knowledge, no one has evaluated it using a randomised controlled trial. **Conclusion** A valid comparison of outcomes between the control group and the intervention group involved in the study was provided in this trial. The chosen design, randomised controlled trial, enabled the assessment of the intervention. **Implications for practice** The application of a family self-care intervention in a collectivist culture was shown to improve clinical and quality outcomes of patients with heart failure. Considering the individual and the community needs is vital in improving these outcomes.

Deek, H., et al. (2016). "A family-focused intervention for heart failure self-care: conceptual underpinnings of a culturally appropriate intervention." *Journal of Advanced Nursing* 72(2): 434-450.

Aim. A discussion of the conceptual elements of an intervention tailored to the needs of Lebanese families. **Background.** The role of informal caregiving is strongly recommended for individuals with chronic conditions including heart failure. Although this importance is recognized, conceptual and theoretical underpinnings are not well elucidated nor are methods of intervention implementation. **Design.** Discussion paper on the conceptual underpinning of the FAMILY model. **Methods and data sources.** This intervention was undertaken using linked methods: (1) Appraisal of theoretical model; (2) review of systematic reviews on educational interventions promoting self-management in chronic conditions in four databases with no year limit; (3) socio-cultural context identification from selected papers; (4) expert consultation using consensus methods; and (5) model development. **Results.** Theories on self-care and behavioural change, eighteen systematic reviews on educational interventions and selected papers identifying sociocultural elements along with expert opinion were used to guide the development of The FAMILY Intervention Heart Failure Model. Theory and practice driven concepts identified include: behavioural change, linkage, partnership and self-regulation. **Implications for nursing.** Heart failure is a common condition often requiring in-hospital and home-based care. Educational interventions targeting the sociocultural influences of the patients and their family caregivers through a structured and well-designed program can improve outcomes. **Conclusion.** As the burden of chronic diseases increases globally, particularly in emerging economies, developing models of intervention that are appropriate to both the individual and the socio-cultural context are necessary.

Deijle, I. A., et al. (2017). "Lifestyle Interventions to Prevent Cardiovascular Events After Stroke and Transient Ischemic Attack Systematic Review and Meta-Analysis." *Stroke* 48(1): 174-+.

Background and Purpose-Patients with a transient ischemic attack or ischemic stroke have an increased risk of subsequent cardiovascular events. The purpose of this systematic review and meta-analysis was to determine whether lifestyle interventions focusing on behaviorally modifiable risk factors with or without an exercise program are effective

in terms of (1) preventing recurrent cardiovascular events, (2) reducing mortality, and (3) improving modifiable risk factors associated with cardiovascular disease in patients after a transient ischemic attack or ischemic stroke. Methods-For this systematic review and meta-analysis, we systematically searched PubMed, Embase, PsycInfo, and the Cochrane Library from the start of the database to May 7, 2015. Subgroup analyses were conducted to explore the influence of therapy-related factors. Results-Twenty-two randomized controlled trials were identified with a total of 2574 patients. Pooling showed a significant reduction in systolic blood pressure by the lifestyle interventions applied, compared with usual care (mean difference, -3.6 mm Hg; 95% confidence interval, -5.6 to -1.6, I² = 33%). No significant effect was found on cardiovascular events, mortality, diastolic blood pressure, or cholesterol. In the subgroup analyses, the trials with cardiovascular fitness interventions, trials with an intervention that lasted longer than 4 months, and interventions that used >3 behavior change techniques were more effective in reducing systolic blood pressure. Conclusions-We found that lifestyle interventions are effective in lowering systolic blood pressure. About other end points, this systematic review found no effect of lifestyle interventions on cardiovascular event rate mortality, diastolic blood pressure, or total cholesterol.

Delaney, M. M., et al. (2017). "Improving Adherence to Essential Birth Practices Using the WHO Safe Childbirth Checklist With Peer Coaching: Experience From 60 Public Health Facilities in Uttar Pradesh, India." *Global Health-Science and Practice* 5(2): 217-231.

Background: Adherence to evidence-based essential birth practices is critical for improving health outcomes for mothers and newborns. The WHO Safe Childbirth Checklist (SCC) incorporates these practices, which occur during 4 critical pause points: on admission, before pushing (or cesarean delivery), soon after birth, and before discharge. A peer-coaching strategy to support consistent use of the SCC may be an effective approach to increase birth attendants' adherence to these practices. Methods: We assessed data from 60 public health facilities in Uttar Pradesh, India, that received an 8-month staggered coaching intervention from December 2014 to September 2016 as part of the BetterBirth Trial, which is studying effectiveness of an SCC-centered intervention on maternal and neonatal harm. Nurse coaches recorded birth attendants' adherence to 39 essential birth practices. Practice adherence was calculated for each intervention month. After 2 months of coaching, a subsample of 15 facilities was selected for independent observation when the coach was not present. We compared adherence to the 18 practices recorded by both coaches and independent observers. Results: Coaches observed birth attendants' behavior during 5,971 deliveries. By the final month of the intervention, 35 of 39 essential birth practices had achieved >90% adherence in the presence of a coach, compared with only 7 of 39 practices during the first month. Key behaviors with the greatest improvement included explanation of danger signs, temperature measurement, assessment of fetal heart sounds, initiation of skin-to-skin contact, and breastfeeding. Without a coach present, birth attendants' average adherence to practices and checklist use was 24 percentage points lower than when a coach was present (range: -1% to 62%). Conclusion: Implementation of the WHO Safe Childbirth Checklist with coaching improved uptake of and adherence to essential birth practices. Coordination and communication among facility staff, as well as behaviors with an immediate, tangible benefit, showed the greatest improvement. Difficult-to-perform behaviors and those with delayed or theoretical benefits were less likely to be sustained without a coach present. Coaching may be an important component in implementing the Safe Childbirth Checklist at scale. Note: At the time of publication of this article, the results of evaluation of the impact of the BetterBirth intervention were pending publication in another journal. After the impact findings have been published, we will update this article on the effect of the intervention on birth practices with a reference to the impact findings.

Delanoë, A., et al. (2016). "Role of Psychosocial Factors and Health Literacy in Pregnant Women's Intention to Use a Decision Aid for Down Syndrome Screening: A Theory-Based Web Survey." *Journal of Medical Internet Research* 18(10).

Background: Deciding about undergoing prenatal screening is difficult, as it entails risks, potential loss and regrets, and challenges to personal values. Shared decision making and decision aids (DAs) can help pregnant women give informed and values-based consent or refusal to prenatal screening, but little is known about factors influencing the use of DAs. Objective: The objective of this study was to identify the influence of psychosocial factors on pregnant women's intention to use a DA for prenatal screening for Down syndrome (DS). We also added health literacy variables to explore their influence on pregnant women's intention. Methods: We conducted a survey of pregnant women in the province of Quebec (Canada) using a Web panel. Eligibility criteria included age > 18 years, > 16 weeks pregnant, low-risk pregnancy, and having decided about prenatal screening for the current pregnancy. We collected data based on an extended version of the Theory of Planned Behavior assessing 7 psychosocial constructs (intention, attitude, anticipated regret, subjective norm, descriptive norm, moral norm, and perceived control), 3 related sets of beliefs (behavioral, normative, and control beliefs), 4 health literacy variables, and sociodemographics. Eligible women watched a video depicting the behavior of interest before completing a Web-based questionnaire. We performed descriptive, bivariate, and ordinal logistic regression analyses. Results: Of the 383 eligible pregnant women who agreed to participate, 350 pregnant women completed the Web-based questionnaire and 346 were retained for analysis (completion rate 350/383,

91.4%; mean age 30.1, SD 4.3, years). In order of importance, factors influencing intention to use a DA for prenatal screening for DS were attitude (odds ratio, OR, 9.16, 95% CI 4.02-20.85), moral norm (OR 7.97, 95% CI 4.49-14.14), descriptive norm (OR 2.83, 95% CI 1.63-4.92), and anticipated regret (OR 2.43, 95% CI 1.71-3.46). Specific attitudinal beliefs significantly related to intention were that using a DA would reassure them (OR 2.55, 95% CI 1.73-4.01), facilitate their reflections with their spouse (OR 1.55, 95% CI 1.05-2.29), and let them know about the advantages of doing or not doing the test (OR 1.53, 95% CI 1.05-2.24). Health literacy did not add to the predictive power of our model (P values range.43-.92). Conclusions: Implementation interventions targeting the use of a DA for prenatal screening for DS by pregnant women should address a number of modifiable factors, especially by introducing the advantages of using the DA (attitude), informing pregnant women that they might regret not using it (anticipated regret), and presenting the use of DAs as a common practice (descriptive norm). However, interventions on moral norms related to the use of DA should be treated with caution. Further studies that include populations with low health literacy are needed before decisive claims can be made.

Delea, M. G., et al. (2019). "Design of a parallel cluster-randomized trial assessing the impact of a demand-side sanitation and hygiene intervention on sustained behavior change and mental well-being in rural and peri-urban Amhara, Ethiopia: Andilaye study protocol." *Bmc Public Health* 19.

Background Unimproved water, sanitation, and hygiene (WASH) behaviors are key drivers of infectious disease transmission and influencers of mental well-being. While WASH is seen as a critical enabler of health, important knowledge gaps related to the content and delivery of effective, holistic WASH programming exist. Corresponding impacts of WASH on mental well-being are also underexplored. There is a need for more robust implementation research that yields information regarding whether and how community-based, demand-side interventions facilitate progressive and sustained adoption of improved sanitation and hygiene behaviors and downstream health impacts. The purpose of this protocol is to detail the rationale and design of a cluster-randomized trial evaluating the impact of a demand-side sanitation and hygiene intervention on sustained behavior change and mental well-being in rural and peri-urban Amhara, Ethiopia. Methods Together with partners, we developed a theoretically-informed, evidence-based behavioral intervention called Andilaye. We randomly selected and assigned 50 sub-districts (kebeles) from three purposively selected districts (woredas); half to receive the Andilaye intervention, and half the standard of care sanitation and hygiene programming (i.e., community-led total sanitation and hygiene [CLTSH]). During baseline, midline, and endline, we will collect data on an array of behavioral factors, potential moderators (e.g., water and sanitation insecurity, collective efficacy), and our primary study outcomes: sanitation and hygiene behaviors and mental well-being. We will perform a process evaluation to assess intervention fidelity and related attributes. Discussion While CLTSH has fostered sanitation and hygiene improvements in Ethiopia, evidence of behavioral slippage, or regression to unimproved practices in communities previously declared open defecation free exists. Other limitations of CLTSH, such as its focus on disgust, poor triggering, and over-saturation of Health Extension Workers have been documented. We employed rigorous formative research and practically applied social and behavioral theory to develop Andilaye, a scalable intervention designed to address these issues and complement existing service delivery within Ethiopia's Health Extension Program. Evidence from this trial may help address knowledge gaps related to scalable alternatives to CLTSH and inform sanitation and hygiene programming and policy in Ethiopia and beyond. Trial registration This trial was registered with clinicaltrials.gov (NCT03075436) on March 9, 2017.

Denham, A. M. J., et al. (2018). "Prevent 2nd Stroke: a pilot study of an online secondary prevention program for stroke survivors." *Australian and New Zealand Journal of Public Health* 42(5): 484-490.

Objective: The prevalence of modifiable health risk factors and psychological distress following a stroke is high and markedly increase the chance of a second stroke. This study aimed to examine the usability and acceptability of an online secondary prevention program addressing modifiable psycho-behavioural risk factors for stroke survivors. Methods: A pre-post pilot study was conducted in Australia between 2016 and 2017. Participants were recruited through the Australian Stroke Clinical Registry and completed measures of health-related quality of life, physical activity, smoking status, depression and anxiety, alcohol status, nutrition and internet use. Participants also used an online secondary prevention program (Prevent 2(nd) Stroke) over a two-week period. At follow-up, acceptability and usability of the program were assessed. Results: A total of 18 out of 19 participants reported engaging in multiple health risk behaviours. Participants reported that they were interested in receiving an online program that provided health information (73.7%). Participants indicated Prevent 2(nd) Stroke was easy to use (63.1%) and that they would recommend the program to other stroke survivors (63.1%). Conclusions: The results indicated that online programs are an acceptable way to address these health outcomes. Implications to public health: Further research is needed to assess the effectiveness of these interventions using powered trials.

Dennehy, R., et al. (2019). "Involving young people in cyberbullying research: The implementation and evaluation of a rights-based approach." *Health Expectations* 22(1): 54-64.

Background Cyberbullying is an international Public Health concern. Efforts to understand and address it can be enhanced by involving young people. This paper describes a rights-based collaboration with young people in a qualitative exploration of cyberbullying. It describes the establishment, implementation and evaluation of a Young Person's Advisory Group as well as identifying the impact on the research process and the young people involved. Methods Sixteen postprimary school students met with researchers on five occasions in a youth centre. Sessions focused on building the young people's capacity to engage with the research, designing the qualitative study, interpreting study findings and evaluating the collaboration process. Results The Advisory Group highlighted a lack of understanding and appropriate action with regard to cyberbullying but believed that their involvement would ultimately help adults to understand their perspective. Evaluation findings indicate that members were supported to form as well as express their views on the design, conduct and interpretation of the research and that these views were acted upon by adult researchers. Their involvement helped to ensure that the research was relevant and reflective of the experiences, interests, values and norms of young people. Conclusion Young people can contribute a unique perspective to the research process that is otherwise not accessible to adult researchers. The approach described in this study is a feasible and effective way of operationalizing young people's involvement in health research and could be adapted to explore other topics of relevance to young people.

Denney-Wilson, E., et al. (2015). "Preventing obesity in infants: the Growing healthy feasibility trial protocol." *Bmj Open* 5(11).

Introduction: Early childhood is an important period for establishing behaviours that will affect weight gain and health across the life course. Early feeding choices, including breast and/or formula, timing of introduction of solids, physical activity and electronic media use among infants and young children are considered likely determinants of childhood obesity. Parents play a primary role in shaping these behaviours through parental modelling, feeding styles, and the food and physical activity environments provided. Children from low socioeconomic backgrounds have higher rates of obesity, making early intervention particularly important. However, such families are often more difficult to reach and may be less likely to participate in traditional programs that support healthy behaviours. Parents across all socio-demographic groups frequently access primary health care (PHC) services, including nurses in community health services and general medical practices, providing unparalleled opportunity for engagement to influence family behaviours. One emerging and promising area that might maximise engagement at a low cost is the provision of support for healthy parenting through electronic media such as the Internet or smart phones. The Growing healthy study explores the feasibility of delivering such support via primary health care services. Methods: This paper describes the Growing healthy study, a non-randomised quasi experimental study examining the feasibility of an intervention delivered via a smartphone app (or website) for parents living in socioeconomically disadvantaged areas, for promoting infant feeding and parenting behaviours that promote healthy rather than excessive weight gain. Participants will be recruited via their primary health care practitioner and followed until their infant is 9 months old. Data will be collected via web-based questionnaires and the data collected inherently by the app itself. Ethics and dissemination: This study received approval from the University of Technology Sydney Ethics committee and will be disseminated via peer-reviewed publications and conference presentations.

Dennison, R. A., et al. "Women's views on screening for Type 2 diabetes after gestational diabetes: a systematic review, qualitative synthesis and recommendations for increasing uptake." *Diabetic Medicine*.

Aim Many women do not attend recommended glucose testing following a pregnancy affected by gestational diabetes (GDM). We aimed to synthesize the literature regarding the views and experiences of women with a history of GDM on postpartum glucose testing, focusing on barriers and facilitators to attendance. Methods We systematically identified qualitative studies that examine women's experiences following GDM relating to glucose testing (diabetes screening) or experience of interventions to promote uptake of testing. We conducted a thematic synthesis to develop descriptive and then analytical themes, then developed recommendations to increase uptake based on the findings. We evaluated the quality of each study and the confidence that we had in the recommendations using published checklists. Results We included 16 articles after screening 23 160 citations and 129 full texts. We identified four themes of influences relating to the healthcare system and personal factors that affected both ability and motivation to attend: relationship with health care, logistics of appointments and tests, family-related practicalities and concern about diabetes. We developed 10 recommendations addressing diabetes risk information and education, and changes to healthcare systems to promote increased attendance at screening in this population, most with high or moderate confidence. Conclusions We have identified a need to improve women's understanding about Type 2 diabetes and GDM, and to adjust healthcare provision during and after pregnancy to decrease barriers and increase motivation for testing. Encouraging higher uptake

by incorporating these recommendations into practice will enable earlier management of diabetes and improve long-term outcomes.

DeSmet, A., et al. (2014). "A meta-analysis of serious digital games for healthy lifestyle promotion." *Preventive Medicine* 69: 95-107.

Several systematic reviews have described health-promoting effects of serious games but so far no meta-analysis has been reported. This paper presents a meta-analysis of 54 serious digital game studies for healthy lifestyle promotion, in which we investigated the overall effectiveness of serious digital games on healthy lifestyle promotion outcomes and the role of theoretically and clinically important moderators. Findings showed that serious games have small positive effects on healthy lifestyles ($g = 0.260, 95\% \text{ CI } 0.148; 0.373$) and their determinants ($g = 0.334, 95\% \text{ CI } 0.260; 0.407$), especially for knowledge. Effects on clinical outcomes were significant, but much smaller ($g = 0.079, 95\% \text{ CI } 0.038; 0.120$). Long-term effects were maintained for all outcomes except for behavior. Serious games are best individually tailored to both socio-demographic and change need information, and benefit from a strong focus on game theories or a dual theoretical foundation in both behavioral prediction and game theories. They can be effective either as a stand-alone or multi-component programs, and appeal to populations regardless of age and gender. Given that effects of games remain heterogeneous, further explorations of which game features create larger effects are needed. (C) 2014 Elsevier Inc. All rights reserved.

Desroches, S., et al. (2013). "Interventions to enhance adherence to dietary advice for preventing and managing chronic diseases in adults." *Cochrane Database of Systematic Reviews*(2).

Background It has been recognized that poor adherence can be a serious risk to the health and wellbeing of patients, and greater adherence to dietary advice is a critical component in preventing and managing chronic diseases. Objectives To assess the effects of interventions for enhancing adherence to dietary advice for preventing and managing chronic diseases in adults. Search methods We searched the following electronic databases up to 29 September 2010: The Cochrane Library (issue 9 2010), PubMed, EMBASE (Embase.com), CINAHL (Ebsco) and PsycINFO (PsycNET) with no language restrictions. We also reviewed: a) recent years of relevant conferences, symposium and colloquium proceedings and abstracts; b) web-based registries of clinical trials; and c) the bibliographies of included studies. Selection criteria We included randomized controlled trials that evaluated interventions enhancing adherence to dietary advice for preventing and managing chronic diseases in adults. Studies were eligible if the primary outcome was the client's adherence to dietary advice. We defined 'client' as an adult participating in a chronic disease prevention or chronic disease management study involving dietary advice. Data collection and analysis Two review authors independently assessed the eligibility of the studies. They also assessed the risk of bias and extracted data using a modified version of the Cochrane Consumers and Communication Review Group data extraction template. Any discrepancies in judgement were resolved by discussion and consensus, or with a third review author. Because the studies differed widely with respect to interventions, measures of diet adherence, dietary advice, nature of the chronic diseases and duration of interventions and follow-up, we conducted a qualitative analysis. We classified included studies according to the function of the intervention and present results in a narrative table using vote counting for each category of intervention. Main results We included 38 studies involving 9445 participants. Among studies that measured diet adherence outcomes between an intervention group and a control/usual care group, 32 out of 123 diet adherence outcomes favoured the intervention group, 4 favoured the control group whereas 62 had no significant difference between groups (assessment was impossible for 25 diet adherence outcomes since data and/or statistical analyses needed for comparison between groups were not provided). Interventions shown to improve at least one diet adherence outcome are: telephone follow-up, video, contract, feedback, nutritional tools and more complex interventions including multiple interventions. However, these interventions also shown no difference in some diet adherence outcomes compared to a control/usual care group making inconclusive results about the most effective intervention to enhance dietary advice. The majority of studies reporting a diet adherence outcome favouring the intervention group compared to the control/usual care group in the short-term also reported no significant effect at later time points. Studies investigating interventions such as a group session, individual session, reminders, restriction and behaviour change techniques reported no diet adherence outcome showing a statistically significant difference favouring the intervention group. Finally, studies were generally of short duration and low quality, and adherence measures varied widely. Authors' conclusions There is a need for further, long-term, good-quality studies using more standardized and validated measures of adherence to identify the interventions that should be used in practice to enhance adherence to dietary advice in the context of a variety of chronic diseases.

Desveaux, L., et al. (2016). "Appropriate prescribing in nursing homes demonstration project (APDP) study protocol: pragmatic, cluster-randomized trial and mixed methods process evaluation of an Ontario policy-maker initiative to improve appropriate prescribing of antipsychotics." *Implementation Science* 11.

Background: Antipsychotic medications are routinely prescribed in nursing homes to address the behavioral and psychological symptoms of dementia. Unfortunately, inappropriate prescribing of antipsychotic medications is common and associated with increased morbidity, adverse drug events, and hospitalizations. Multifaceted interventions can achieve a 12-20 % reduction in antipsychotic prescribing levels in nursing homes. Effective interventions have featured educational outreach and ongoing performance feedback. Methods/Design: This pragmatic, cluster-randomized control trial and embedded process evaluation seeks to determine the effect of adding academic detailing to audit and feedback on prescribing of antipsychotic medications in nursing homes, compared with audit and feedback alone. Nursing homes within pre-determined regions of Ontario, Canada, are eligible if they express an interest in the intervention. The academic detailing intervention will be delivered by registered health professionals following an intensive training program including relevant clinical issues and techniques to support health professional behavior change. Physicians in both groups will have the opportunity to access confidential reports summarizing their prescribing patterns for antipsychotics in comparison to the local and provincial average. Participating homes will be allocated to one of the two arms of the study (active/full intervention versus standard audit and feedback) in two waves, with a 2:1 allocation ratio. Homes will be randomized after stratifying for geography, baseline antipsychotic prescription rates, and size, to ensure a balance of characteristics. The primary outcome is antipsychotic dispensing in nursing homes, measured 6 months after allocation; secondary outcomes include clinical outcomes and healthcare utilization. Discussion: Policy-makers and the public have taken note that antipsychotics are used in nursing homes in Ontario far more than other jurisdictions. Academic detailing can be an effective technique to address challenges in appropriate prescribing in nursing homes, but effect sizes vary widely. This opportunistic, policy-driven evaluation, embedded within a government-initiated demonstration project, was designed to ensure policy-makers receive the best evidence possible regarding whether and how to scale up the intervention.

Desveaux, L., et al. (2019). "Mapping variation in intervention design: a systematic review to develop a program theory for patient navigator programs." *Systematic Reviews* 8.

Background: There is a great deal of variation in the design and delivery of patient navigator (PN) programs, making it difficult to design or adopt these interventions in new contexts. We (1) systematically reviewed the literature to generate a preliminary program theory to describe how patient navigator interventions are designed and delivered; and (2) describe how the resulting program theory was applied in context to inform a prototype for a patient navigator program. Methods: The current study includes a secondary review of a larger systematic review. We reviewed studies included in the primary review to identify those that designed and evaluated programs to assist patients in accessing and/or adhering to care. We conducted a content analysis of included publications to describe the barriers targeted by PN interventions and the navigator activities addressing those barriers. A program theory was constructed by mapping patient navigator activities to corresponding constructs within the capability-opportunity-motivation model of behavior change (COM-B) model of behavior change. The program theory was then presented to individuals with chronic disease, healthcare providers, and system stakeholders, and refined iteratively based on feedback. Results: Twenty one publications describing 19 patient navigator interventions were included. A total of 17 unique patient navigator activities were reported. The most common included providing education, facilitating referrals, providing social and emotional support, and supporting self-management. The majority of navigator activities targeted barriers to physical opportunity, including facilitating insurance claims, assistance with scheduling, and providing transportation. Across all interventions, navigator activities were designed to target a total of 20 patient barriers. Among interventions reporting positive effects, over two thirds targeted knowledge barriers, problems with scheduling, proactive re-scheduling following a missed appointment, and insurance. The final program design included a total of 13 navigator activities¹⁰ informed by the original program theory and 3 unique activities informed by stakeholders. Conclusions: There is considerable heterogeneity in intervention content across patient navigator interventions. Our results provide a schema from which to develop PN interventions and illustrate how an evidence-based model was used to develop a real-world PN intervention. Our findings also highlight a critical need to improve the reporting of intervention components to facilitate translation.

Dewitt, S., et al. (2019). "Office workers' experiences of attempts to reduce sitting-time: an exploratory, mixed-methods uncontrolled intervention pilot study." *Bmc Public Health* 19.

Background Office workers typically sit for most of the workday, which has been linked to physical and mental ill-health and premature death. This mixed-methods study sought to identify barriers and facilitators to reducing sitting and increasing standing among office workers who received an intervention prototype (the ReSIT [Reducing Sitting Time] Study¹). The intervention comprised a sit-stand workstation and tailored advice to enhance motivation, capability and opportunity to displace sitting with standing. Methods Twenty-nine UK university office workers (aged 18y, working 3days per week, most time spent at a seated desk) participated in a 13-week uncontrolled study. They were initially monitored for one-week. In a subsequent face-to-face consultation, participants received sitting time feedback from a prior one-

week monitoring period, and selected from a set of tailored sitting-reduction techniques. Quantitative data comprising sitting, standing and stepping time, which were objectively monitored for 7 consecutive days across three post-intervention timepoints, were descriptively analysed. Qualitative data, from semi-structured interviews conducted at 1, 6 and 12-weeks post-intervention, were thematically analysed. Results Compared to baseline, mean sitting time decreased at weeks 1, 6 and 12 by 49.7mins, 118.2mins, and 109.7mins respectively. Despite prior concerns about colleagues' reactions to standing, many reported encouragement from others, and standing could be equally conducive to social interaction or creating private, personal space. Some perceived less cognitively-demanding tasks to be more conducive to standing, though some found standing offered a valued break from challenging tasks. Participants prioritised workload over sitting reduction and were more likely to stand after rather than during work task completion. Temporary context changes, such as holidays, threatened to derail newfound routines. Conclusions Our findings emphasise the importance of understanding workers' mental representations of their work, and the social functions of sitting and standing in the workplace. Workplace intervention developers should incorporate a pre-intervention sitting time monitoring period, encourage workers to identify personally meaningful tasks and cues for standing, and build organisational support for sitting-reduction. We will use these insights to refine our intervention for self-administered delivery. Trial registration ISRCTN29395780 (registered 21 November 2016).

DiLiberto, D. D., et al. (2015). "Behind the scenes of the PRIME intervention: designing a complex intervention to improve malaria care at public health centres in Uganda." *Global Health Action* 8.

Background: In Uganda, health system challenges limit access to good quality healthcare and contribute to slow progress on malaria control. We developed a complex intervention (PRIME), which was designed to improve quality of care for malaria at public health centres. Objective: Responding to calls for increased transparency, we describe the PRIME intervention's design process, rationale, and final content and reflect on the choices and challenges encountered during the design of this complex intervention. Design: To develop the intervention, we followed a multistep approach, including the following: 1) formative research to identify intervention target areas and objectives; 2) prioritization of intervention components; 3) review of relevant evidence; 4) development of intervention components; 5) piloting and refinement of workshop modules; and 6) consolidation of the PRIME intervention theories of change to articulate why and how the intervention was hypothesized to produce desired outcomes. We aimed to develop an intervention that was evidence-based, grounded in theory, and appropriate for the study context; could be evaluated within a randomized controlled trial; and had the potential to be scaled up sustainably. Results: The process of developing the PRIME intervention package was lengthy and dynamic. The final intervention package consisted of four components: 1) training in fever case management and use of rapid diagnostic tests for malaria (mRDTs); 2) workshops in health centre management; 3) workshops in patient-centred services; and 4) provision of mRDTs and antimalarials when stocks ran low. Conclusions: The slow and iterative process of intervention design contrasted with the continually shifting study context. We highlight the considerations and choices made at each design stage, discussing elements we included and why, as well as those that were ultimately excluded. Reflection on and reporting of 'behind the scenes' accounts of intervention design may improve the design, assessment, and generalizability of complex interventions and their evaluations.

Dinsdale, S., et al. (2016). ""As soon as you've had the baby that's it ..." a qualitative study of 24 postnatal women on their experience of maternal obesity care pathways." *Bmc Public Health* 16.

Background: Maternal obesity is associated with risks to mother and infant, and has implications for healthcare costs. United Kingdom (UK) levels of maternal obesity are rising, with higher prevalence in North East (NE) England, where this study was set. Pregnancy is often seen as an opportune time for intervention - a 'teachable moment' - which is ripe for promoting behaviour change. In response to rising obesity levels, a National Health Service (NHS) Foundation Trust in NE England implemented three maternal obesity care pathways contingent on Body Mass Index (BMI) at time of booking: pathway 1 for those with BMI ≥ 30 kg/m²; pathway 2 for BMI ≥ 35 kg/m²; and pathway 3 for BMI ≥ 40 kg/m². These incorporated relevant antenatal, intrapartum and postnatal clinical requirements, and included a focus on weight management intervention. This evaluation explored the accounts of postnatal women who had been through one of these pathways in pregnancy. Methods: The study used a generic qualitative approach. Semi-structured interviews were carried out to explore the views and experiences of 24 recent mothers (aged 20-42), living in NE England, who had commenced on one of the pathways during pregnancy. Interviews explored experiences of weight management support during and after pregnancy, and perceived gaps in this support. Data were analysed using thematic content analysis. Results: Three main themes emerged reflecting women's views and experiences of the pathways: communication about the pathways; treating obese pregnant women with sensitivity and respect; and appropriate and accessible lifestyle services and information for women during and after pregnancy. An overarching theme: differences in care, support and advice, was evident when comparing the experiences of women on pathways 1 or 2 with those on pathway 3. Conclusions: This study indicated that women were not averse to risk management and weight management intervention

during and after pregnancy. However, in order to improve reach and effectiveness, such interventions need to be well communicated and offer constructive, individualised advice and support. The postnatal phase may also offer an opportune moment for intervention, suggesting that the simple notion of seeing pregnancy alone as a window of opportunity or a 'teachable moment' should be reconsidered.

Direito, A., et al. (2017). Application of the Behaviour Change Wheel Framework to the development of interventions within the City4Age project. 2017 25th International Conference on Software, Telecommunications and Computer Networks. D. Begusic, N. Rozic, J. Radic and M. Saric: 494-499.

The probability of an intervention being effective is likely increased if it is designed following a behavioural analysis and with the aid of evidence-based intervention frameworks. For example, the Behaviour Change Wheel (BCW) framework and its associated COM-B model of behaviour have been used successfully as a starting point for designing behaviour change interventions. However, the BCW framework can also be applied at a later stage in the design process, such as when an intervention has been designed but before it is deployed. Here we describe the application of the BCW framework and COM-B model to evaluate and refine already designed interventions. We use a multidisciplinary multi-site project ('City4Age') as a case study. The project aims to promote independent living of older adults through the deployment of interventions using wearable and environment-based technology. We conducted face-to-face interviews with site representatives to identify the target behaviours, perceived barriers and facilitators, intervention functions, and modes of delivery for each planned intervention. Additionally, literature reviews were conducted to identify evidence-based facilitators and barriers for each targeted behaviour. Subsequently, we 1) compared the intervention functions proposed by the project-sites with those most likely to be effective according to the BCW; and 2) assessed the congruency of the barriers and facilitators identified by the pilot-sites with those identified in the literature. For five planned interventions across two project-sites (Birmingham and Singapore), two had intervention functions unlikely to be effective according to the BCW. The two planned interventions to promote social engagement did not address barriers or facilitators evident in the literature, indicating they required refinement. Applying the BCW framework allowed to identify which interventions needed refining. It also helped in providing specific guidance in our recommendations for improvements prior to deployment.

Djellouli, N., et al. (2017). "Improving postpartum care delivery and uptake by implementing context-specific interventions in four countries in Africa: a realist evaluation of the Missed Opportunities in Maternal and Infant Health (MOMI) project." *Bmj Global Health* 2(4).

Postpartum care (PPC) has remained relatively neglected in many interventions designed to improve maternal and neonatal health in sub-Saharan Africa. The Missed Opportunities in Maternal and Infant Health project developed and implemented a context-specific package of health system strengthening and demand generation in four African countries, aiming to improve access and quality of PPC. A realist evaluation was conducted to enable nuanced understanding of the influence of different contextual factors on both the implementation and impacts of the interventions. Mixed methods were used to collect data and test hypothesised context-mechanism-outcome configurations: 16 case studies (including interviews, observations, monitoring data on key healthcare processes and outcomes), monitoring data for all study health facilities and communities, document analysis and participatory evaluation workshops. After evaluation in individual countries, a cross-country analysis was conducted that led to the development of four middle-range theories. Community health workers (CHWs) were key assets in shifting demand for PPC by 'bridging' communities and facilities. Because they were chosen from the community they served, they gained trust from the community and an intrinsic sense of responsibility. Furthermore, if a critical mass of women seek postpartum healthcare as a result of the CHWs bridging function, a 'buzz' for change is created, leading eventually to the acceptability and perceived value of attending for PPC that outweighs the costs of attending the health facility. On the supply side, rigid vertical hierarchies and defined roles for health facility workers (HFWs) impede integration of maternal and infant health services. Additionally, HFWs fear being judged negatively which overrides the self-efficacy that could potentially be gained from PPC training. Instead the main driver of HFWs' motivation to provide comprehensive PPC is dependent on accountability systems for delivering PPC created by other programmes. The realist evaluation offers insights into some of the contextual factors that can be pivotal in enabling the community-level and service-level interventions to be effective.

Dodd, R. H., et al. (2017). "Discussing HPV with oropharyngeal cancer patients: A cross-sectional survey of attitudes in health professionals." *Oral Oncology* 68: 67-73.

Background: Human papillomavirus (HPV) is now known to cause a significant proportion of head and neck cancers (HNC). Qualitative research has shown that some health professionals find it difficult to discuss HPV with patients due to its sexually transmitted nature, and have concerns about their own knowledge of the virus. We used a survey to quantify attitudes towards discussing HPV among HNC health professionals. Methods: We carried out a cross-sectional

survey of HNC health professionals (n = 260) in the UK and Ireland, assessing participants' knowledge of HPV, their experiences of and attitudes towards discussing HPV with patients, and their willingness to discuss HPV with their patients in the future. Results: Overall, health professionals had good knowledge of HPV (mean score: 9.97 out of 12). Oncologists had significantly greater knowledge than specialist nurses, speech and language therapists and 'other' health professionals. Most were willing to discuss HPV with patients (mean = 4.3 out of 5). Willingness to discuss HPV in the future was associated with higher HPV knowledge ($r = 0.35$, $p < 0.001$), fewer negative and more positive attitudes towards discussing HPV ($r = -0.23$ and $r = 0.20$ respectively, both $p < 0.001$), fewer personal barriers ($r = -0.49$, $p < 0.001$) and greater confidence ($r = 0.58$, $p < 0.001$). Conclusion: Knowledge, experiences and attitudes to discussing HPV varied across HNC health professionals. Addressing gaps in health professionals' HPV knowledge and improving their confidence in discussing HPV with patients may increase their willingness to have such conversations. This may help minimise the negative psychosocial consequences of an HPV diagnosis in this patient group. (C) 2017 The Author(s). Published by Elsevier Ltd.

Dodds, C., et al. (2018). "Acceptability of HIV self-sampling kits (TINY vial) among people of black African ethnicity in the UK: a qualitative study." *Bmc Public Health* 18.

Background: Increasing routine HIV testing among key populations is a public health imperative, so improving access to acceptable testing options for those in need is a priority. Despite increasing targeted distribution and uptake of HIV self-sampling kits (SSKs) among men who have sex with men in the UK, little is known about why targeted SSK interventions for black African users are not as wide-spread or well-used. This paper addresses this key gap, offering insight into why some groups may be less likely than others to adopt certain types of SSK interventions in particular contexts. These data were collected during the development phase of a larger study to explore the feasibility and acceptability of targeted distribution of SSKs to black African people. Methods: We undertook 6 focus groups with members of the public who self-identified as black African (n = 48), 6 groups with specialists providing HIV and social services to black African people (n = 53), and interviews with HIV specialist consultants and policy-makers (n = 9). Framework analysis was undertaken, using inductive and deductive analysis to develop and check themes. Results: We found three valuable components of targeted SSK interventions for this population: the use of settings and technologies that increase choice and autonomy; targeted offers of HIV testing that preserve privacy and do not exacerbate HIV stigma; and ensuring that the specific kit being used (in this case, the TINY vial) is perceived as simple and reliable. Conclusions: This unique and rigorous research offers insights into participants' views on SSK interventions, offering key considerations when targeting this population.. Given the plethora of HIV testing options, our work demonstrates that those commissioning and delivering SSK interventions will need to clarify (for users and providers) how each kit type and intervention design adds value. Most significantly, these findings demonstrate that without a strong locus of control over their own circumstances and personal information, black African people are less likely to feel that they can pursue an HIV test that is safe and secure. Thus, where profound social inequalities persist, so will inequalities in HIV testing uptake - by any means.

Dodson, S., et al. (2018). "Behavioural change interventions for sustained trachoma elimination." *Bulletin of the World Health Organization* 96(10): 723-725.

Dombrowsky, A., et al. (2018). "Why Is Hyperparathyroidism Underdiagnosed and Undertreated in Older Adults?" *Clinical Medicine Insights-Endocrinology and Diabetes* 11.

INTRODUCTION: Hyperparathyroidism significantly decreases quality of life. yet elderly patients are underdiagnosed and undertreated even though parathyroidectomy offers definitive cure with minimal morbidity. The purpose of this study is to determine why older patients with hyperparathyroidism are not appropriately diagnosed and referred for parathyroidectomy. METHODS: We reviewed charts for a random sample of 25 patients aged 75 and older who had hyperparathyroidism and were referred for surgical evaluation, and 25 who were not referred. Two reviewers independently evaluated medical records to identify reasons for delayed diagnosis of hyperparathyroidism and reasons for nonreferral for parathyroidectomy. RESULTS: The median age of our cohort was 84 (80-96) years, 90% were women, 60% were white, and median follow-up was 5.5 (1-17) years. In 58% of all patients, an elevated serum calcium was not acknowledged. Even when calcium and parathyroid hormone levels were both elevated, the diagnosis was missed in 28% of patients, and 16% with clear symptoms of hyperparathyroidism remained undiagnosed. For 42% of patients, a nonsurgeon informed them that surgery offered no benefit. Surgery was also rejected as a treatment for 36% of patients despite the development of new symptoms or rising calcium. CONCLUSIONS: Substantial gaps exist in processes for diagnosis and referral of patients with hyperparathyroidism that lead to underdiagnosis and undertreatment. To improve rates of diagnosis and treatment. strategies are needed to educate nonsurgeons and patients about the benefits of surgery and to modify care processes to more efficiently diagnose and refer patients.

Dorn, M. and S. Stockli (2018). "Social influence fosters the use of a reusable takeaway box." *Waste Management* 79: 296-301.

The severe ecological and economic consequences of disposable takeaway containers call for the implementation of effective interventions: namely, the use of reusable takeaway boxes. The present field study examined how social influence determined whether customers chose a reusable or a disposable takeaway box at a takeaway restaurant. We unobtrusively recorded the takeaway packaging choices (reusable vs. disposable) of customers over lunchtimes during a period of four weeks. We operationalized social influence in two ways. First, we manipulated social norms. For half of the field days, we added a normative message to the existing informational material on the counter of the takeaway outlet. Second, we observed social modeling by recording whether the takeaway packaging choice took place in the presence of other customers using a reusable takeaway box. The results were mixed: On one hand, we found no effect from the manipulated social norm, which we discuss in the light of past interventions using social norm messages. On the other hand, we found an effect of the observed social modeling: witnessing others using a reusable takeaway box increased the odds of choosing one oneself. This finding demonstrates the importance of getting customers to perform the desired behavior, to serve as social role models for others. (C) 2018 Elsevier Ltd. All rights reserved.

Draper-Rodi, J., et al. (2018). "Design and development of an e-learning programme: An illustrative commentary." *International Journal of Osteopathic Medicine* 29: 36-40.

DuBois, C., et al. (2018). "Examining Canadian Equine Industry Participants' Perceptions of Horses and Their Welfare." *Animals* 8(11).

Simple Summary The Canadian equine industry is a diverse and fragmented industry containing a multitude of individuals whose different backgrounds and involvements shape their perceptions of the horses they use and work with. An online survey distributed to adult members of the Canadian equine industry (n = 901) was used to provide insight into participants' perceptions of horse sentience and the welfare status of animals in the industry. Participants strongly believed that horses can experience emotions such as pain and fear, but these opinions were rarely reflected in their answers regarding welfare issues. Participants involved in disciplines having a history of using horses for work were more inclined to consider horses livestock, and this belief impacted their responses to welfare concerns, for example being less concerned about horses at auctions. While there was strong agreement regarding the welfare threats to horses in the industry, participants were more divided regarding the optimal ways to address these issues and which horses were most affected by them. Understanding these perceptions may be useful in the future to help direct educational programs and industry-wide initiatives, particularly in the area of equine welfare, in an effort to better the lives of horses through targeted knowledge transfer. **Abstract** The diversity of the Canadian equine industry makes determining baseline attitudes and beliefs a challenge. Adult members of the Canadian equine industry (n = 901) participated in an online survey to report demographic information and views on the role of horses and their ability to experience affective states. Questions regarding the welfare state of all horses in the industry, potential ways to address welfare issues, and eight short scenarios were presented. Qualitative analysis, descriptive statistics, and a Chi-squared test for independence examined survey results and potential relationships. Participants strongly believed horses were capable of feeling positive and negative emotions, particularly pain and fear, but rarely were these beliefs reflected in their answers regarding aspects of equine welfare, which may be due to the large bias in these beliefs. Lack of knowledge and financial difficulties were noted as the biggest threats to equine welfare. Overall, there was widespread agreement regarding the presence of welfare issues within the equine industry, but opinions were more divided regarding how to best address them and which horses were most at risk. Understanding these perceptions may be useful to direct educational programs and industry-wide initiatives to address equine welfare through human behaviour change.

DuBois, C., et al. (2018). "An exploration of industry expert perception of Canadian equine welfare using a modified Delphi technique." *Plos One* 13(7).

The diversity of sectors that comprise the equine industry makes reaching a consensus regarding welfare issues a challenge. To allow for productive discussion, equine professionals (n = 34) chosen to represent the diverse specializations from across Canada were surveyed using the Delphi technique D a survey technique employing multiple, iterative "rounds" to consolidate viewpoints D to gather and consolidate information regarding areas of welfare concern in the Canadian equine industry. Only participants who completed the prior round could participate in subsequent rounds. In the first round, respondents were asked to identify examples of welfare issues. Qualitative analysis was used to sort and group answers based on their similarities. Participants identified 12 welfare issues best addressed at the individual horse level, and an additional 12 welfare issues best addressed at the industry level. In the second (n = 24) and third (n = 14) rounds, welfare issues, solutions, and potential motives were consolidated based on order ranking. Themes of "ignorance" and "lack of knowledge" identified throughout all three rounds were cited as both potential risks to welfare as well as motives leading to poor welfare situations. Responses in this study suggest that in order to improve

the welfare of equids in the Canadian industry, equine professionals propose that a greater effort is required to help educate industry members and stakeholders such that, through daily routine care and management, higher standards of welfare can be attained.

Duckers, M. L. A., et al. (2014). "Quality improvement collaboratives and the wisdom of crowds: spread explained by perceived success at group level." *Implementation Science* 9.

Background: Many studies have been conducted to evaluate the impact of quality improvement collaboratives (QICs) on the quality of healthcare. This article addresses an underexplored topic, namely the use of QICs as 'intentional spread strategy.' Its objective is to predict the dissemination of projects within hospitals participating a change programme based on several QICs. We tested whether the average project success at QIC level (based on opinions of individual project team leaders) explains the dissemination of projects one year later. Findings: After one year, 148 project team leaders of 16 hospitals participating in the two-year programme were asked to rate the success of their improvement project on a scale from 1 to 10. At the end of the second year, the programme coordinator of each hospital provided information on the second-year dissemination. Average success scores and dissemination statistics were calculated for each QIC (N = 12). The non-parametric correlation between team leader judgment and dissemination rate at QIC level is 0.73 (P < 0.01). Conclusions: Previous work, focusing on the team and hospital level, showed which factors contributed to local success stories. It also illustrated how successes play a role in dissemination processes within programme The current study suggests that we cannot ignore the extent to which the dissemination potential of individual projects is defined by their QIC. Aggregated team leader judgments at the QIC level might predict the future dissemination in participating organizations. The findings, however, need to be replicated in larger, independent samples.

Due, T. D., et al. (2018). "Influences of peer facilitation in general practice - a qualitative study." *Bmc Family Practice* 19.

Background: Practice facilitation is increasingly used to support guideline implementation and practice development in primary care and there is a need to explore how this implementation approach works in real-life settings. We focus on a facilitation intervention from the perspective of the visited practices to gain a more detailed understanding of how peer facilitation influenced practices and how they valued the facilitation. Methods: The facilitation intervention was conducted in general practice in the Capital Region of Denmark with the purpose of supporting the implementation of chronic disease management programmes. We carried out a qualitative study, where we observed 30 facilitation visits in 13 practice settings and interviewed the visited practices after their first and last visits. We then performed a thematic analysis. Results: Most of the respondents reported that facilitation visits had increased their knowledge and skills as well as their motivation and confidence to change. These positive influences were ascribed to a) the facilitation approach b) the credibility and know-how associated with the facilitators' being peers c) the recurring visits providing protected time and invoking a sense of commitment. Despite these positive influences, both the facilitation and the change process were impeded by several challenges, e.g. competing priorities, heavy workload, problems with information technology and in some cases inadequate facilitation. Conclusion: Practice facilitation is a multifaceted, interactive approach that may affect participants in several ways. It is important to attune the expectations of all the involved actors through elaborate discussions of needs, capabilities, wishes, and approaches, and to adapt facilitation interventions according to an analysis of influential contextual conditions and change opportunities.

Dumoulin, C., et al. (2015). "2014 consensus statement on improving pelvic floor muscle training adherence: International Continence Society 2011 State-of-the-Science Seminar." *Neurourology and Urodynamics* 34(7): 600-605.

Aims To summarize the findings and expert-panel consensus of the State-of-the-Science Seminar on pelvic floor muscle training (PFMT) adherence held prior to the 41st International Continence Society scientific meeting, Glasgow, 2011. Methods Summaries of research and theory about PFMT adherence (based on a comprehensive literature search) were presented by subject experts at the 2011 Seminar to generate discussion and guidance for clinical practice and future research. Supplemental research, post-seminar, resulted in, three review papers summarizing: (1) relevant behavioral theories, (2) adherence measurement, determinants and effectiveness of PFMT adherence interventions, and (3) patients' PFMT experiences. A fourth, reported findings from an online survey of health professionals and the public. Results Few high-quality studies were found. Paper I summarizes 12 behavioral frameworks relevant to theoretical development of PFMT adherence interventions and strategies. Findings in Paper II suggest both PFMT self-efficacy and intention-to-adhere predict PFMT adherence. Paper III identified six potential adherence modifiers worthy of further investigation. Paper IV found patient-related factors were the biggest adherence barrier to PFMT adherence. Conclusion Given the lack of high-quality studies, the conclusions were informed by expert opinion. Adherence is central to short- and longer-term PFMT effect. More attention and explicit reporting is needed regarding: (1) applying health behavior theory in PFMT program planning; (2) identifying adherence determinants; (3) developing and implementing interventions targeting known adherence determinants; (4) using patient-centred approaches to evaluating adherence barriers and facilitators; (5) measuring adherence, including refining and testing instruments; and (6) testing the

association between adherence and PFMT outcome. *Neuro-urol. Urodynam.* 34:??-??, 2015. (c) 2015 Wiley Periodicals, Inc.

Duncan, E. M., et al. (2018). "Areas for improvement in community optometry: flashes and floaters take priority." *Ophthalmic and Physiological Optics* 38(4): 411-421.

PurposeA common response to rising demand for healthcare is to extend the role of health professionals and the range of their service provision. Community optometry in Scotland is a recent example of this. Within this context of innovation and change there are challenges to ensuring quality in optometry practice. The purpose of this research is to establish what the priorities are for practice improvement within community optometry and to start a programme to inform strategies to improve practice. **Methods**A four stage study was conducted: (1) a service-driven topic prioritisation exercise to identify priorities for optometry practice improvement; (2) a review of national and international guidance and UK protocols relating to the identified priority topic; (3) a national theory-based survey identifying current practice and the barriers and facilitators to the target behaviour; and (4) the identification of theory-based intervention options to improve practice. The Behaviour Change Wheel approach to behaviour change intervention development and Theoretical Domains Framework (TDF) provided the underlying theoretical framework. **Results**Stakeholders identified patients presenting with flashes and floaters' as an important priority for practice improvement. The decision about whether or not to refer patients on to secondary care for further examination is the target behaviour. Guidance for optometrists on this topic is lacking. Six TDF domains were related to the decision about whether or not to refer patients with flashes and floaters to secondary care - social influences', emotion', beliefs about capabilities', beliefs about consequences', behavioural regulation' and reinforcement'. **Conclusions**This study has examined current practice in relation to the management of patients with flashes and floaters, identified the most salient targets for future strategies to improve optometry practice and highlighted what form these strategies may take. It demonstrates the use of a flexible, theory-informed approach, which can be used to engage with stakeholders and professionals to inform the design and development of efforts to improve practice in a variety of healthcare settings.

Dunn, J., et al. (2015). "Psycho-oncology and primary prevention in cancer control plans: an absent voice?" *Psycho-Oncology* 24(10): 1338-1345.

BackgroundOne third of cancer deaths are attributable to modifiable lifestyle, behaviour and psychosocial risk factors. Psycho-oncology can contribute significantly to prevention initiatives such as those described in national cancer control plans (NCCPs), to reduce or eliminate these risk factors. However, the extent to which psycho-oncology expertise has informed prevention objectives in plans is unclear. **Methods**Accordingly, 35 English language NCCPs were located via existing databases and were searched using Adobe text searches (psycho', social', behav' and intervention') to identify (a) representations of psycho-oncology, its dimensions (psychological, social and behavioural) and roles (e.g. psychologist); and (b) behaviour/lifestyle change interventions. **Results**A third of NCCPs included the term psycho- or psychosocial-oncology; approximately half referred to a psycho-oncology dimension regarding prevention and early detection and half included actions/objectives relating to health professionals and provision of psychosocial care. The majority of cancer plans included prevention outcomes and focussed primarily on smoking cessation and alcohol reduction. Interventions commonly proposed were education, regulation and service provision; however, many were aspirational statements of intent rather than specific interventions. Psycho-oncology was represented in NCCPs but was limited in reference to prevention with few behavioural interventions utilised. **Conclusions**Psycho-oncology input is needed to prescribe evidence-based interventions in cancer plans that not only educate, regulate and provide resources but also motivate, empower and create a supportive normative environment for behaviour change. In this manuscript, and throughout this Special Issue on Cancer Prevention, important principles, ideas and evidence within psycho-oncology are outlined which, if properly implemented, can help reduce the global cancer burden. Copyright (c) 2015 John Wiley & Sons, Ltd.

Dunphy, E., et al. (2017). "Acceptability of a digital health intervention alongside physiotherapy to support patients following anterior cruciate ligament reconstruction." *Bmc Musculoskeletal Disorders* 18.

Background: Physiotherapy rehabilitation following surgical reconstruction to the Anterior Cruciate Ligament (ACL) can take up to 12 months to complete. Given the lengthy rehabilitation process, a blended intervention can be used to compliment face-to-face physiotherapy with a digital exercise intervention. In this study, we used TRAK, a web-based tool that has been developed to support knee rehabilitation, which provides individually tailored exercise programs with videos, instructions and progress logs for each exercise, relevant health information and a contact option that allows a patient to email a physiotherapist for additional support. The aim of this study was to evaluate the acceptability of TRAK-based blended intervention in post ACL reconstruction rehabilitation. **Methods:** A qualitative research design using semi-structured interviews was used on a convenience sample of participants following an ACL reconstruction, and their treating physiotherapists, in a London NHS hospital. Participants were asked to use TRAK alongside face-to-face

physiotherapy for 16 weeks. Interviews were carried out, audio recorded, transcribed verbatim and coded by two researchers independently. Data were analyzed using thematic analysis. Results: Of the 25 individuals that were approached to be part of the study, 24 consented, comprising 8 females and 16 males, mean age 30 years. 17 individuals used TRAK for 16 weeks and were available for interview. Four physiotherapists were also interviewed. The six main themes identified from patients were: the experience of TRAK rehabilitation, personal characteristics for engagement, strengths and weaknesses of the intervention, TRAK in the future and attitudes to digital healthcare. The main themes from the physiotherapist interviews were: potential benefits, availability of resources and service organization to support use of TRAK. Conclusions: TRAK was found to be an acceptable method of delivering ACL rehabilitation alongside face-to-face physiotherapy. Patients reported that TRAK, specifically the videos, increased their confidence and motivation with their rehabilitation. They identified ways in which TRAK could be developed in the future to meet technological expectations and further support rehabilitation. For Physiotherapists time and availability of computers affected acceptability. Organization of care to support integration of digital exercise interventions such as TRAK into a blended approach to rehabilitation is required.

Durks, D., et al. (2017). "Use of Intervention Mapping to Enhance Health Care Professional Practice: A Systematic Review." *Health Education & Behavior* 44(4): 524-535.

Background. Intervention Mapping is a planning protocol for developing behavior change interventions, the first three steps of which are intended to establish the foundations and rationales of such interventions. **Aim.** This systematic review aimed to identify programs that used Intervention Mapping to plan changes in health care professional practice. Specifically, it provides an analysis of the information provided by the programs in the first three steps of the protocol to determine their foundations and rationales of change. **Method.** A literature search was undertaken in PubMed, Scopus, SciELO, and DOAJ using Intervention Mapping as keyword. Key information was gathered, including theories used, determinants of practice, research methodologies, theory-based methods, and practical applications. **Results.** Seventeen programs aimed at changing a range of health care practices were included. The social cognitive theory and the theory of planned behavior were the most frequently used frameworks in driving change within health care practices. Programs used a large variety of research methodologies to identify determinants of practice. Specific theory-based methods (e.g., modelling and active learning) and practical applications (e.g., health care professional training and facilitation) were reported to inform the development of practice change interventions and programs. **Discussion.** In practice, Intervention Mapping delineates a three-step systematic, theory- and evidence-driven process for establishing the theoretical foundations and rationales underpinning change in health care professional practice. **Conclusion.** The use of Intervention Mapping can provide health care planners with useful guidelines for the theoretical development of practice change interventions and programs.

Dusseldorp, E., et al. (2014). "Combinations of Techniques That Effectively Change Health Behavior: Evidence From Meta-CART Analysis." *Health Psychology* 33(12): 1530-1540.

Objective: Many health-promoting interventions combine multiple behavior change techniques (BCTs) to maximize effectiveness. Although, in theory, BCTs can amplify each other, the available meta-analyses have not been able to identify specific combinations of techniques that provide synergistic effects. This study overcomes some of the shortcomings in the current methodology by applying classification and regression trees (CART) to meta-analytic data in a special way, referred to as Meta-CART. The aim was to identify particular combinations of BCTs that explain intervention success. **Method:** A reanalysis of data from Michie, Abraham, Whittington, McAteer, and Gupta (2009) was performed. These data included effect sizes from 122 interventions targeted at physical activity and healthy eating, and the coding of the interventions into 26 BCTs. A CART analysis was performed using the BCTs as predictors and treatment success (i.e., effect size) as outcome. A subgroup meta-analysis using a mixed effects model was performed to compare the treatment effect in the subgroups found by CART. **Results:** Meta-CART identified the following most effective combinations: Provide information about behavior-health link with Prompt intention formation (mean effect size (g) over bar = 0.46), and Provide information about behavior-health link with Provide information on consequences and Use of follow-up prompts ((g) over bar = 0.44). Least effective interventions were those using Provide feedback on performance without using Provide instruction ((g) over bar = 0.05). **Conclusions:** Specific combinations of BCTs increase the likelihood of achieving change in health behavior, whereas other combinations decrease this likelihood. Meta-CART successfully identified these combinations and thus provides a viable methodology in the context of meta-analysis.

Dziedzic, K. S., et al. (2014). "Implementing the NICE osteoarthritis guidelines: a mixed methods study and cluster randomised trial of a model osteoarthritis consultation in primary care - the Management of OsteoArthritis In Consultations (MOSAICS) study protocol." *Implementation Science* 9.

Background: There is as yet no evidence on the feasibility of implementing recommendations from the National Institute of Health and Care Excellence (NICE) osteoarthritis (OA) guidelines in primary care, or of the effect these

recommendations have on the condition. The primary aim of this study is to determine the clinical and cost effectiveness of a model OA consultation (MOAC), implementing the core recommendations from the NICE OA guidelines in primary care. Secondary aims are to investigate the impact, feasibility and acceptability of the MOAC intervention; to develop and evaluate a training package for management of OA by general practitioners (GPs) and practice nurses; test the feasibility of deriving 'quality markers' of OA management using a new consultation template and medical record review; and describe the uptake of core NICE OA recommendations in participants aged 45 years and over with joint pain. Design: A mixed methods study with a nested cluster randomised controlled trial. Method: This study was developed according to a defined theoretical framework (the Whole System Informing Self-management Engagement). An overarching model (the Normalisation Process Theory) will be employed to undertake a comprehensive 'whole-system' evaluation of the processes and outcomes of implementing the MOAC intervention. The primary outcome is general physical health (Short Form-12 Physical component score [PCS]) (Ware 1996). The impact, acceptability and feasibility of the MOAC intervention at practice level will be assessed by comparing intervention and control practices using a Quality Indicators template and medical record review. Impact and acceptability of the intervention for patients will be assessed via self-completed outcome measures and semi-structured interviews. The impact, acceptability and feasibility of the MOAC intervention and training for GPs and practice nurses will be evaluated using a variety of methods including questionnaires, semi-structured interviews, and observations. Discussion: The main output from the study will be to determine whether the MOAC intervention is clinically and cost effective. Additional outputs will be the development of the MOAC for patients consulting with joint pain in primary care, training and educational materials, and resources for patients and professionals regarding supported self-management and uptake of NICE guidance.

Earp, M. A., et al. (2018). "Opportunity is the greatest barrier to providing palliative care to advanced colorectal cancer patients: a survey of oncology clinicians." *Current Oncology* 25(5): E480-E485.

Palliative care (PC) is part of the recommended standard of care for patients with advanced cancer. Nevertheless, delivery of PC is inconsistent. Patients who could benefit from PC services are often referred late-or not at all. In planning for improvements to oncology PC practice in our health care system, we sought to identify barriers to the provision of earlier PC, as perceived by health care providers managing patients with metastatic colorectal cancer (mCRc). We used the Michie Theoretical Domains Framework (TDF) and Behaviour Change Wheel (BCW), together with knowledge of previously identified barriers, to develop a 31-question survey. The survey was distributed by e-mail to MCRC health care providers, including physicians, nurses, and allied staff. Responses were obtained from 57 providers (40% response rate). The most frequently cited barriers were opportunity-related-specifically, lack of time, of clinic space for consultations, and of access to specialist PC staff or services. Qualitative responses revealed that resource limitations varied by cancer centre location. In urban centres, time and space were key barriers. In rural areas, access to specialist PC was the main limiter. Self-perceived capability to manage PC needs was a barrier for 40% of physicians and 30% of nurses. Motivation was the greatest facilitator, with 89% of clinicians perceiving that patients benefit from PC. Based on the Michie TDF and BCW model, interventions that best address the identified barriers are enablement and environmental restructuring. Those findings are informing the development of an intervention plan to improve oncology PC practices in a publicly funded health care system.

Easterling, D. and A. Metz (2016). "Getting Real With Strategy: Insights From Implementation Science." *Foundation Review* 8(2): 97-+.

Foundations are increasingly coming to appreciate that they need to have a coherent and well-grounded strategy if they have any hope of creating a discernible impact in the world. To implement strategy effectively, foundations need to operationalize it in the form of specific functions that staff will carry out and to create an organizational infrastructure that supports the strategy. The field of implementation science offers a set of tools for helping foundations address these tasks. This article describes in depth the concepts of practice profiles, which translate programs or strategies into specific activities to be carried out by implementation staff, and implementation drivers, which point to organizational factors that determine whether a program or strategy is implemented well enough to achieve its intended outcomes.

Easthall, C. and N. Barnett (2017). "Using Theory to Explore the Determinants of Medication Adherence; Moving Away from a One-Size-Fits-All Approach." *Pharmacy* 5(3).

Non-adherence to prescribed medicines has been described as a worldwide problem of striking magnitude, diminishing treatment effects and wasting resources. Evidence syntheses report current adherence interventions achieve modest improvements at best, and highlight the poor progress toward the longstanding aim of a gold-standard intervention, tailored to meet individual need. Techniques such as motivational interviewing and health coaching, which aim to facilitate patient-centred care and improve patient resourcefulness, have shown promise in supporting adherence, especially in patients with psychological barriers to medicine-taking, such as illness perceptions and health beliefs.

Despite a plethora of research, there is little recognition that the nature and complexity of non-adherence is such that a one-size-fits-all approach to interventions is never likely to suffice. This commentary re-visits the call for adherence interventions to be tailored to meet individual need, by considering what this means for day-to-day practice and how this can be achieved. It provides an update on advances in psychological theory to identify the root cause of an individual's non-adherence to encourage matching of provided adherence support. It also provides a practical perspective by considering exemplars of innovative practice and evaluating the day-to-day practicalities of taking a novel approach.

Edelman, N. (2018). "Towards a critical epidemiology approach for applied sexual health research." *Journal of Health Psychology* 23(2): 161-174.

Critical approaches may benefit epidemiological studies of sexual health. This article proposes a critical approach, reconcilable with social epidemiological enquiry. Key aims of critical epidemiology for sexual health are identified, from which three criticisms of practice emerge: (1) lack of attention to socio-cultural contexts, (2) construction of risk' as residing in the individual and (3) enactment of public health agendas which privilege and pathologise certain behaviours. These reflect and construct an apolitical understanding of population health. This article proposes features of a critical epidemiology that represent a morally driven re-envisioning of the focus, analysis and interpretation of epidemiological studies of sexual health.

Edwardson, C. L., et al. (2018). "A three arm cluster randomised controlled trial to test the effectiveness and cost-effectiveness of the SMART Work & Life intervention for reducing daily sitting time in office workers: study protocol." *Bmc Public Health* 18.

Background: Office-based workers typically spend 70-85% of working hours, and a large proportion of leisure time, sitting. High levels of sitting have been linked to poor health. There is a need for fully powered randomised controlled trials (RCTs) with long-term follow-up to test the effectiveness of interventions to reduce sitting. This paper describes the methodology of a three-arm cluster RCT designed to determine the effectiveness and cost-effectiveness of the SMART Work & Life intervention, delivered with and without a height-adjustable desk, for reducing daily sitting. Methods/design: A three-arm cluster RCT of 33 clusters (660 council workers) will be conducted in three areas in England (Leicester; Manchester; Liverpool). Office groups (clusters) will be randomised to the SMART Work & Life intervention delivered with (group 1) or without (group 2) a height-adjustable desk or a control group (group 3). SMART Work & Life includes organisational (e.g., management buy-in, provision/support for standing meetings), environmental (e.g., relocating waste bins, printers), and group/individual (education, action planning, goal setting, addressing barriers, coaching, self-monitoring, social support) level behaviour change strategies, with strategies driven by workplace champions. Baseline, 3, 12 and 24 month measures will be taken. Primary outcome: Objectively measured daily sitting time (activPAL3). Secondary outcomes: objectively measured sitting, standing, stepping, prolonged sitting and moderate-to-vigorous physical activity time and number of steps at work and daily; objectively measured sleep (wrist accelerometry). Adiposity, blood pressure, fasting glucose, glycated haemoglobin, cholesterol (total, HDL, LDL) and triglycerides will be assessed from capillary blood samples. Questionnaires will examine dietary intake, fatigue, musculoskeletal issues, job performance and satisfaction, work engagement, occupational and general fatigue, stress, presenteeism, anxiety and depression and sickness absence (organisational records). Quality of life and resources used (e.g. GP visits, outpatient attendances) will also be assessed. We will conduct a full process evaluation and cost-effectiveness analysis. Discussion: The results of this RCT will 1) help to understand how effective an important simple, yet relatively expensive environmental change is for reducing sitting, 2) provide evidence on changing behaviour across all waking hours, and 3) provide evidence for policy guidelines around population and workplace health and well-being.

Edwardson, C. L., et al. (2018). "Effectiveness of the Stand More AT (SMaRT) Work intervention: cluster randomised controlled trial." *Bmj-British Medical Journal* 363.

OBJECTIVES To evaluate the impact of a multicomponent intervention (Stand More AT (SMaRT) Work) designed to reduce sitting time on short (three months), medium (six months), and longer term (12 months) changes in occupational, daily, and prolonged sitting, standing, and physical activity, and physical, psychological, and work related health. **DESIGN** Cluster two arm randomised controlled trial. **SETTING** National Health Service trust, England. **PARTICIPANTS** 37 office clusters (146 participants) of desk based workers: 19 clusters (77 participants) were randomised to the intervention and 18 (69 participants) to control. **INTERVENTIONS** The intervention group received a height adjustable workstation, a brief seminar with supporting leaflet, workstation instructions with sitting and standing targets, feedback on sitting and physical activity at three time points, posters, action planning and goal setting booklet, self monitoring and prompt tool, and coaching sessions (month 1 and every three months thereafter). The control group continued with usual practice. **MAIN OUTCOME MEASURES** The primary outcome was occupational sitting time (thigh worn accelerometer). Secondary outcomes were objectively measured daily sitting, prolonged sitting (≥ 30 minutes), and standing time, physical activity, musculoskeletal problems, self reported work related health (job performance, job

satisfaction, work engagement, occupational fatigue, sickness presenteeism, and sickness absenteeism), cognitive function, and self reported psychological measures (mood and affective states, quality of life) assessed at 3, 6, and 12 months. Data were analysed using generalised estimating equation models, accounting for clustering. RESULTS A significant difference between groups (in favour of the intervention group) was found in occupational sitting time at 12 months (-83.28 min/workday, 95% confidence interval -116.57 to -49.98, $P=0.001$). Differences between groups (in favour of the intervention group compared with control) were observed for occupational sitting time at three months (-50.62 min/workday, -78.71 to -22.54, $P<0.001$) and six months (-64.40 min/workday, -97.31 to -31.50, $P<0.001$) and daily sitting time at six months (-59.32 min/day, -88.40 to -30.25, $P<0.001$) and 12 months (-82.39 min/day, -114.54 to -50.26, $P=0.001$). Group differences (in favour of the intervention group compared with control) were found for prolonged sitting time, standing time, job performance, work engagement, occupational fatigue, sickness presenteeism, daily anxiety, and quality of life. No differences were seen for sickness absenteeism. CONCLUSIONS SMARt Work successfully reduced sitting time over the short, medium, and longer term, and positive changes were observed in work related and psychological health.

Eldh, A. C., et al. (2017). "Clinical interventions, implementation interventions, and the potential greyness in between - a discussion paper." *Bmc Health Services Research* 17.

Background: There is increasing awareness that regardless of the proven value of clinical interventions, the use of effective strategies to implement such interventions into clinical practice is necessary to ensure that patients receive the benefits. However, there is often confusion between what is the clinical intervention and what is the implementation intervention. This may be caused by a lack of conceptual clarity between 'intervention' and 'implementation', yet at other times by ambiguity in application. We suggest that both the scientific and the clinical communities would benefit from greater clarity; therefore, in this paper, we address the concepts of intervention and implementation, primarily as in clinical interventions and implementation interventions, and explore the grey area in between. Discussion: To begin, we consider the similarities, differences and potential greyness between clinical interventions and implementation interventions through an overview of concepts. This is illustrated with reference to two examples of clinical interventions and implementation intervention studies, including the potential ambiguity in between. We then discuss strategies to explore the hybridity of clinical-implementation intervention studies, including the role of theories, frameworks, models, and reporting guidelines that can be applied to help clarify the clinical and implementation intervention, respectively. Conclusion: Semantics provide opportunities for improved precision in depicting what is 'intervention' and what is 'implementation' in health care research. Further, attention to study design, the use of theory, and adoption of reporting guidelines can assist in distinguishing between the clinical intervention and the implementation intervention. However, certain aspects may remain unclear in analyses of hybrid studies of clinical and implementation interventions. Recognizing this potential greyness can inform further discourse.

Eley, C. V., et al. (2018). "Qualitative study to explore the views of general practice staff on the use of point-of-care C reactive protein testing for the management of lower respiratory tract infections in routine general practice in England." *Bmj Open* 8(10).

Objectives To explore the knowledge, skills, attitudes and beliefs of general practice staff about C reactive protein (CRP) point-of-care tests (POCTs) in routine general practice and associated barriers and facilitators to implementing it to improve the management of acute cough. Design A qualitative methodology including interviews and focus groups using the Com-B framework to understand individuals' behaviour to implement CRP POCT in routine general practice. Data were analysed inductively and then aligned to the Com-B framework. Setting A service evaluation of CRP POCT over a 6-month period was previously conducted in randomly selected GP practices from a high prescribing National Health Service Clinical Commissioning Groups in England. All 11 intervention practices (eight accepting CRPs; three declining CRPs) and the eight control practices, which were not offered CRP POCT, were also invited to interview. A further randomly selected practice not allocated to intervention or control was also invited to participate. Participants Seven of eight accepting CRP, one of three declining CRP and four of nine control practices consented to participate. 12 practices and 26 general practice staff participated; 11 interviews, 3 focus groups and 1 handwritten response. Results Participants reported that CRP POCT can increase diagnostic certainty for acute cough, inform appropriate management, manage patient expectations for antibiotics, support patient education and improve appropriate antibiotic prescribing. Reported barriers to implementing CRP POCT included: CRP cost, time, easy access to the POCT machine and effects on clinical workflow. Participants with greater CRP use usually had a dedicated staff member with the machine located in their consultation room. Conclusions CRP POCT can help general practice staff improve patient care and education if incorporated into routine care, but this will need enthusiasts with dedicated POCT instruments or smaller, cheaper, more portable machines. In addition, funding will be needed to support test costs and staff time.

ElMokhallalati, Y., et al. (2019). "Interventions to support Self-management in Cancer Pain." *Schmerz* 33(3): 255-260.

Elrouby, S. and M. P. Tully (2017). "Using the Behaviour Change Wheel to identify interventions to facilitate the transfer of information on medication changes on electronic discharge summaries." *Research in Social & Administrative Pharmacy* 13(3): 456-475.

Background: There is evidence that the transfer of information on medication changes on patient discharge summaries is poor. By considering the completion of an electronic discharge summary as a behavior, the various components of the behavior can be targeted to improve their completion so that they consistently include information on medication changes. Objectives: Study objectives were to identify the barriers and facilitators to junior doctors completing information on medication changes on electronic discharge summaries, including why these occurred. Methods: In this qualitative study, 12 semi-structured interviews were conducted with junior doctors. An interview topic guide based around the COM-B model (Capability, Opportunity, Motivation, Behavior) within the Behavior Change Wheel (BCW) was used. Transcripts of the interviews were analyzed using framework analysis to identify key categories emerging from the data. Barriers and facilitators to completing information on medication changes on discharge summaries were identified. These were then mapped to behavioral components within the COM-B model to help design tailored interventions to affect change. Results: Nine categories were identified that encompassed the identified barriers and facilitators. The identified barriers and facilitators influenced all aspects of the COM-B model. Conclusions: Use of the BCW as a theoretical lens for this study enabled interventions to be identified that targeted specific components of behavior. It is the implementation of all these interventions that may be required to influence behavior change and ensure all electronic discharge summaries contain information on medication changes. All intervention functions were relevant but key functions were education, enablement and persuasion. Other institutions can use the BCW and the COM-B model to develop their own tailored interventions to achieve these functions. (C) 2016 Elsevier Inc. All rights reserved.

Elven, M., et al. (2015). "A clinical reasoning model focused on clients' behaviour change with reference to physiotherapists: its multiphase development and validation." *Physiotherapy Theory and Practice* 31(4): 231-243.

Background and purpose: A biopsychosocial approach and behaviour change strategies have long been proposed to serve as a basis for addressing current multifaceted health problems. This emphasis has implications for clinical reasoning of health professionals. This study's aim was to develop and validate a conceptual model to guide physiotherapists' clinical reasoning focused on clients' behaviour change. Methods: Phase 1 consisted of the exploration of existing research and the research team's experiences and knowledge. Phases 2a and 2b consisted of validation and refinement of the model based on input from physiotherapy students in two focus groups (n = 5 per group) and from experts in behavioural medicine (n = 9). Results: Phase 1 generated theoretical and evidence bases for the first version of a model. Phases 2a and 2b established the validity and value of the model. The final model described clinical reasoning focused on clients' behaviour change as a cognitive, reflective, collaborative and iterative process with multiple interrelated levels that included input from the client and physiotherapist, a functional behavioural analysis of the activity-related target behaviour and the selection of strategies for behaviour change. Conclusions: This unique model, theory-and evidence-informed, has been developed to help physiotherapists to apply clinical reasoning systematically in the process of behaviour change with their clients.

Emslie, M. and R. Watts (2017). "On Technology and the Prospects for Good Practice in the Human Services: Donald Schon, Martin Heidegger, and the Case for Phronesis and Praxis." *Social Service Review* 91(2): 319-356.

Technology is fundamental to and embedded in the way practice is conceptualized and institutionalized in social service work. Many scholars assume and expect that good practices of care are achieved with the correct application of theory produced by rigorous scientific research. However, there are significant critiques of this viewpoint. We examine the work of Donald Schon and Martin Heidegger and agree with these authors' suggestions that technical rationality and modern technology are not the way to achieve good practice in the human services. At the same time, we are not convinced that the alternatives offered by Schon (artistry) and Heidegger (techne) provide what good practice requires. We draw on Aristotle's account of the intellectual virtues and make the case for phronesis and praxis as other possibilities for inspiring new kinds of social welfare practice in the twenty-first century.

Endrejat, P. C. and S. Kauffeld (2018). "Can't get no satisfaction? Motivating organisational energy efficiency efforts in Germany." *Energy Research & Social Science* 44: 146-151.

It is increasingly recognized that participatory interventions (PIs) are an effective means to enhance organisational members' energy-saving behaviours. However, the mechanisms behind why PIs successfully raise motivation towards energy-conservation have yet to be examined. To fill this gap, we argue that satisfaction with a PI triggers a positive affect towards energy-savings, and thereby, helps participants to internalize energy-saving motivation. Accordingly, it is proposed that those participants who had low autonomous energy-saving motivations prior to the PI

benefit more from a satisfactory intervention than those participants who already felt self determined to engage in energy-conservation. These hypotheses were tested and supported within the higher educational context. Compared to the control group (N = 77) that received a lecture-based intervention, subjects in the PI condition (N = 142) reported more autonomous motivation to engage in energy-savings after the session. Furthermore, satisfaction with the PI resulted in more autonomous energy-saving motivation and this effect was moderated by the energy-saving motivation prior to the PI. This study underlines the importance that PIs should be led by facilitators who are a) capable of providing satisfactory PIs, and b) address specifically those participants who are not yet autonomously motivated to save energy in non-residential buildings.

English, M. (2013). "Designing a theory-informed, contextually appropriate intervention strategy to improve delivery of paediatric services in Kenyan hospitals." *Implementation Science* 8.

Background: District hospital services in Kenya and many low-income countries should deliver proven, effective interventions that could substantially reduce child and newborn mortality. However such services are often of poor quality. Researchers have therefore been challenged to identify intervention strategies that go beyond addressing knowledge, skill, or resource inadequacies to support health systems to deliver better services at scale. An effort to develop a system-oriented intervention tailored to local needs and context and drawing on theory is described. Methods: An intervention was designed to improve district hospital services for children based on four main strategies: a reflective process to distill root causes for the observed problems with service delivery; developing a set of possible intervention approaches to address these problems; a search of literature for theory that provided the most appropriate basis for intervention design; and repeatedly moving backwards and forwards between identified causes, proposed interventions, identified theory, and knowledge of the existing context to develop an overarching intervention that seemed feasible and likely to be acceptable and potentially sustainable. Results and discussion: In addition to human and resource constraints key problems included failures of relevant professionals to take responsibility for or ownership of the challenge of pediatric service delivery; inadequately prepared, poorly supported leaders of service units (mid-level managers) who are often professionally and geographically isolated and an almost complete lack of useful information for routinely monitoring or understanding service delivery practice or outcomes. A system-oriented intervention recognizing the pivotal role of leaders of service units but addressing the outer and inner setting of hospitals was designed to help shape and support an appropriate role for these professionals. It aims to foster a sense of ownership while providing the necessary understanding, knowledge, and skills for mid-level managers to work effectively with senior managers and frontline staff to improve services. The intervention will include development of an information system, feedback mechanisms, and discussion fora that promote positive change. The vehicle for such an intervention is a collaborative network partnering government and national professional associations. This case is presented to promote discussion on approaches to developing context appropriate interventions particularly in international health.

English, M., et al. (2017). "What do we think we are doing? How might a clinical information network be promoting implementation of recommended paediatric care practices in Kenyan hospitals?" *Health Research Policy and Systems* 15.

Background: The creation of a clinical network was proposed as a means to promote implementation of a set of recommended clinical practices targeting inpatient paediatric care in Kenya. The rationale for selecting a network as a strategy has been previously described. Here, we aim to describe network activities actually conducted over its first 2.5 years, deconstruct its implementation into specific components and provide our 'insider' interpretation of how the network is functioning as an intervention. Methods: We articulate key activities that together have constituted network processes over 2.5 years and then utilise a recently published typology of implementation components to give greater granularity to this description from the perspective of those delivering the intervention. Using the Behaviour Change Wheel we then suggest how the network may operate to achieve change and offer examples of change before making an effort to synthesise our understanding in the form of a realist context-mechanism-outcome configuration. Results: We suggest our network is likely to comprise 22 from a total of 73 identifiable intervention components, of which 12 and 10 we consider major and minor components, respectively. At the policy level, we employed clinical guidelines, marketing and communication strategies with intervention characteristics operating through incentivisation, persuasion, education, enablement, modelling and environmental restructuring. These might influence behaviours by enhancing psychological capability, creating social opportunity and increasing motivation largely through a reflective pathway. Conclusions: We previously proposed a clinical network as a solution to challenges implementing recommended practices in Kenyan hospitals based on our understanding of theory and context. Here, we report how we have enacted what was proposed and use a recent typology to deconstruct the intervention into its elements and articulate how we think the network may produce change. We offer a more generalised statement of our theory of change in a context-mechanism-outcome configuration. We hope this will complement a planned independent evaluation of 'how things work', will help others interpret results of change reported more formally in the future and encourage others to consider further examination of networks as means to scale up improvement practices in health in lower income countries.

English, M., et al. (2014). "Adoption of recommended practices and basic technologies in a low-income setting." *Archives of Disease in Childhood* 99(5): 452-456.

Objective In global health considerable attention is focused on the search for innovations; however, reports tracking their adoption in routine hospital settings from low-income countries are absent. **Design and setting** We used data collected on a consistent panel of indicators during four separate cross-sectional, hospital surveys in Kenya to track changes over a period of 11 years (2002-2012). **Main outcome measures** Basic resource availability, use of diagnostics and uptake of recommended practices. **Results** There appeared little change in availability of a panel of 28 basic resources (median 71% in 2002 to 82% in 2012) although availability of specific feeds for severe malnutrition and vitamin K improved. Use of blood glucose and HIV testing increased but remained inappropriately low throughout. Commonly (malaria) and uncommonly (lumbar puncture) performed diagnostic tests frequently failed to inform practice while pulse oximetry, a simple and cheap technology, was rarely available even in 2012. However, increasing adherence to prescribing guidance occurred during a period from 2006 to 2012 in which efforts were made to disseminate guidelines. **Conclusions** Findings suggest changes in clinical practices possibly linked to dissemination of guidelines at reasonable scale. However, full availability of basic resources was not attained and major gaps likely exist between the potential and actual impacts of simple diagnostics and technologies representing problems with availability, adoption and successful utilisation. These findings are relevant to debates on scaling up in low-income settings and to those developing novel therapeutic or diagnostic interventions.

Eriksson, C., et al. "Occupational therapists' perceptions of implementing a client-centered intervention in close collaboration with researchers: A mixed methods study." *Scandinavian Journal of Occupational Therapy*.

Background: Integration of research-based knowledge in health care is challenging. Occupational therapists (OTs) need to implement new research-based interventions in clinical practice. Therefore it is crucial to recognize and understand the factors of specific barriers and facilitators affecting the implementation process. **Aim:** To identify the key factors important for OTs during the implementation process of a complex intervention. **Materials and methods:** A cross-sectional study with a combination of qualitative and quantitative data in a mixed method design. Forty-one OTs and 23 managers from three county councils in Sweden, responded to a questionnaire one year after the OTs participation in a workshop to prepare for implementation of a client-centered activity of daily living intervention for persons with stroke. **Results:** Over 70% of the OTs benefitted from reading and discussing articles in the workshop; 60% had faith in the intervention; 69% reported usability of the intervention. High level of support from managers was reported, but less from team members. The therapists' interaction, perceptions of own efforts and contextual influence affected the implementation process. **Conclusion:** The workshop context with facilitation and access to evidence, supportive organizations and teams, sufficient interaction with researchers and satisfying self-image were successful key factors when involved in research.

Escalon, H., et al. (2016). "Development of an evidence-based media campaign to promote walking among physically inactive women and increased physical activity among adults." *Sante Publique* 28(1): S53-S63.

Introduction: The description of the contents and underlying theoretical principles of a behaviour change intervention is a fundamental step to allow the reproduction of success factors of effective interventions. The objective of this article is to describe the scientifically-based construction of a multimodal media campaign implemented by the National institute for prevention and health education to promote physical activity and more particularly walking among physically inactive women. **Methods:** The first five stages of this intervention are described. They include definition of the objectives, identification of target populations, the behaviour change theories used, identification of the effective behaviour change techniques and the modes of delivery of the campaign. **Results:** The main objective of the media campaign is to encourage inactive women to walk by means of a mass media campaign and a mobile application. It also targets the general population by the development of a specific section about physical activity on the mangerbougerfr website. It is based on the COM-B system- a framework for understanding behaviour, on the theory of planned behaviour and on effective behaviour change techniques. **Conclusion:** This paper demonstrates the feasibility of developing a multimodal media campaign-based intervention to promote physical activity using theory, evidence and media campaign construction expertise. An evaluation of this media campaign and its various components is the next stage of this work.

Eshun-Wilson, I., et al. (2019). "Being HIV positive and staying on antiretroviral therapy in Africa: A qualitative systematic review and theoretical model." *Plos One* 14(1).

Background Adherence to antiretroviral therapy (ART) and long-term uninterrupted engagement in HIV care is difficult for HIV-positive people, and randomized trials of specific techniques to promote adherence often show small or negligible effects. Understanding what influences decision-making in HIV-positive people in Africa may help researchers and policy makers in the development of broader, more effective interventions and policies. **Methods** We used thematic

synthesis and a grounded theory approach to generate a detailed narrative and theoretical model reflecting life with HIV in Africa, and how this influences ART adherence and engagement decisions. We included qualitative primary studies that explored perspectives, perceptions and experiences of HIV-positive people, caregivers and healthcare service providers. We searched databases from 1 January 2013 to 9 December 2016, screened all studies, and selected those for inclusion using purposeful sampling methods. Included studies were coded with Atlas.ti, and we assessed methodological quality across five domains. Results We included 59 studies from Africa in the synthesis. Nine themes emerged which we grouped under three main headings. First, people who are HIV-positive live in a complicated world where they must navigate the challenges presented by poverty, competing priorities, unpredictable life events, social identity, gender norms, stigma, and medical pluralism-these influences can make initiating and maintaining ART difficult. Second, the health system is generally seen as punishing and uninviting and this can drive HIV-positive people out of care. Third, long-term engagement and adherence requires adaptation and incorporation of ART into daily life, a process which is facilitated by: inherent self-efficacy, social responsibilities, previous HIV-related illnesses and emotional, practical or financial support. These factors together can lead to a "tipping point", a point in time when patients choose to either engage or disengage from care. HIV-positive people may cycle in and out of these care states in response to fluctuations in influences over time. Conclusion This analysis provides a practical theory, arising from thematic synthesis of research, to help understand the dynamics of adherence to ART and engagement in HIV care. This can contribute to the design of service delivery approaches, and informed thinking and action on the part of policy makers, providers, and society: to understand what it is to be HIV-positive in Africa and how attitudes and the health service need to shift to help those with HIV lead 'normal' lives.

Essack, S., et al. (2018). "Community pharmacists Leaders for antibiotic stewardship in respiratory tract infection." *Journal of Clinical Pharmacy and Therapeutics* 43(2): 302-307.

What is known and objective Hospital-based pharmacists are established antibiotic stewards, but the potential for community pharmacists is largely untapped. This commentary explores the potential leadership role of the community pharmacist in antibiotic stewardship using upper respiratory tract infection (URTI) as an example. Comment Community pharmacists are well placed for antibiotic stewardship, possessing the capability (knowledge of medicines), opportunity (contact with prescribers and patients) and inherent commitment. Providing further motivation with information on patient education has great potential to change patient behaviour with respect to consulting a healthcare professional for an antibiotic prescription. A Global Respiratory Infection Partnership pharmacy-led educational initiative was shown to have a positive impact and can promote appropriate self-management of URTI and reduce levels of inappropriate antibiotic use. What is new and conclusion Community pharmacists are ideally placed as antibiotic stewards to lead the quest to contain the threat of antibiotic resistance.

Essack, S., et al. (2013). "A framework for the non-antibiotic management of upper respiratory tract infections: towards a global change in antibiotic resistance." *International Journal of Clinical Practice* 67: 4-9.

Antibiotic resistance has become a critical health issue on a global scale, with much of the problem resulting from inappropriate use of antibiotics in primary care. To change this practice, the global respiratory infection partnership has formulated a pentagonal (five P) framework for the non-antibiotic management of upper respiratory tract infections (URTIs) - one of the most common conditions in primary care for which antibiotics are prescribed. The framework presents the rationale for focusing on URTIs to promote antibiotic stewardship in primary care and elaborates on five key areas to focus on to bring about change: policy, prevention, prescribers, pharmacy and patients. The ultimate aim is to adopt a patient-centred symptomatic management strategy using a flexible framework that can be adapted across countries to create a consistent global approach to change behaviour.

Evans, C., et al. (2016). "Developing a mHealth intervention to promote uptake of HIV testing among African communities in the conditions: a qualitative study." *Bmc Public Health* 16.

Background: HIV-related mHealth interventions have demonstrable efficacy in supporting treatment adherence, although the evidence base for promoting HIV testing is inconclusive. Progress is constrained by a limited understanding of processes used to develop interventions and weak theoretical underpinnings. This paper describes a research project that informed the development of a theory-based mHealth intervention to promote HIV testing amongst city-dwelling African communities in the conditions. Methods: A community-based participatory social marketing design was adopted. Six focus groups (48 participants in total) were undertaken and analysed using a thematic framework approach, guided by constructs from the Health Belief Model. Key themes were incorporated into a set of text messages, which were pre-tested and refined. Results: The focus groups identified a relatively low perception of HIV risk, especially amongst men, and a range of social and structural barriers to HIV testing. In terms of self-efficacy around HIV testing, respondents highlighted a need for communities and professionals to work together to build a context of trust through co-location in, and co-involvement of, local communities which would in turn enhance confidence in, and support for, HIV testing

activities of health professionals. Findings suggested that messages should: avoid an exclusive focus on HIV, be tailored and personalised, come from a trusted source, allay fears and focus on support and health benefits. Conclusions: HIV remains a stigmatized and de-prioritized issue within African migrant communities in the UK, posing barriers to HIV testing initiatives. A community-based participatory social marketing design can be successfully used to develop a culturally appropriate text messaging HIV intervention. Key challenges involved turning community research recommendations into brief text messages of only 160 characters. The intervention needs to be evaluated in a randomized control trial. Future research should explore the application of the processes and methodologies described in this paper within other communities.

Faggiano, F., et al. (2014). "Europe Needs a Central, Transparent, and Evidence-Based Approval Process for Behavioural Prevention Interventions." *Plos Medicine* 11(10).

Fahim, C., et al. (2019). "Development of the IRIS-AR strategy: an intervention to improve rates of accrual and retention for the VTE-PRO randomized controlled trial." *Trials* 20.

Background: The Venous Thromboembolism Prophylaxis (VTE-PRO) randomized trial is a pilot study evaluating the impact of extended-duration prophylaxis on venous thromboembolic events in patients undergoing lung cancer resection. Enrolled VTE-PRO participants self-inject either low-molecular weight heparin or a saline placebo for 30 days postoperatively. Study outcomes include feasibility, incidence of venous thromboembolism, and venous thromboembolism-related morbidity and mortality. Initial analyses demonstrated low rates of accrual and retention for the VTE-PRO pilot. Therefore, the purpose of the current study was to develop a knowledge translation intervention to improve VTE-PRO pilot trial accrual and retention. Methods: Eligible participants were surveyed to identify the barriers to VTE-PRO participation. The Theoretical Domains Framework was used to categorize these barriers. Barriers were mapped to the capabilities, opportunities, and behavior (COM-B) behavioral change wheel to identify potential interventions to support trial accrual and retention. The resulting knowledge translation intervention was titled Inform, Remind, Involve and Support to improve Accrual and Retention (IRIS-AR). Key informant interviews with patients were held to refine and confirm the validity of identified barriers and perceived acceptability of the proposed IRIS-AR intervention. Institutional Review Board approval was granted for this study. Results: The resulting intervention included: information booklets and counseling sessions to identify unique participant challenges to trial participation (Inform); daily reminders to administer injections (Remind); involvement of family/caregivers in study processes (Involve); and leverage of an existing home-care nursing program to provide injection support when needed (Support). Twenty-six key informant participants were interviewed. The most common barriers to trial participation included lack of social support and fear of needle injection. Participants generally supported use of information booklets, involvement of family/caregivers, and support by a home-care nursing program; however, not all supported the use of daily reminders. Conclusion: Developed using theory and integrated knowledge translation, the IRIS-AR presents a patient-centered intervention that leverages existing programs to promote trial engagement. The proposed strategy can likely be adapted to improve compliance with other patient-directed interventions.

Farmer, A., et al. (2019). "Mobile Messaging Support Versus Usual Care for People With Type 2 Diabetes on Glycemic Control: Protocol for a Multicenter Randomized Controlled Trial." *Jmir Research Protocols* 8(6).

Background: Health outcomes for people treated for type 2 diabetes could be substantially improved in sub-Saharan Africa. Failure to take medicine regularly to treat diabetes has been identified as a major problem. Resources to identify and support patients who are not making the best use of medicine in low-and middle-income settings are scarce. Mobile phones are widely available in these settings, including among people with diabetes; linked technologies, such as short message service (SMS) text messaging, have shown promise in delivering low-cost interventions efficiently. However, evidence showing that these interventions will work when carried out at a larger scale and measuring the extent to which they will improve health outcomes when added to usual care is limited. Objective: The objective of this trial is to test the effectiveness of sending brief, automated SMS text messages for improving health outcomes and medication adherence in patients with type 2 diabetes compared to an active control. Methods: We will carry out a randomized trial recruiting from clinics in two contrasting settings in sub-Saharan Africa: Cape Town, South Africa, and Lilongwe, Malawi. Intervention messages will advise people about the benefits of their diabetes treatment and offer motivation and encouragement around lifestyle and use of medication. We allocated patients, using randomization with a minimization algorithm, to receive either three to four intervention messages per week or non-health-related messages every 6 weeks. We will follow up with participants for 12 months, measuring important risk factors for poor health outcomes and complications in diabetes. This will enable us to estimate potential health benefits, including the primary outcome of hemoglobin A1c (HbA1c) levels as a marker for long-term blood glucose control and a secondary outcome of blood pressure control. We will record the costs of performing these activities and estimate cost-effectiveness. We will also use process evaluation to capture the collection of medication and assess the reception of the intervention by

participants and health care workers. Results: Recruitment to the trial began in September 2016 and follow-up of participants was completed in October 2018. Data collection from electronic health records and other routinely collected sources is continuing. The database lock is anticipated in June 2019, followed by analysis and disclosing of group allocation. Conclusions: The knowledge gained from this study will have wide applications and advance the evidence base for effectiveness of mobile phone-based, brief text messaging on clinical outcomes and in large-scale, operational settings. It will provide evidence for cost-effectiveness and acceptability that will further inform policy development and decision making. We will work with a wide network that includes patients, clinicians, academics, industry, and policy makers to help us identify opportunities for informing people about the work and raise awareness of what is being developed and studied.

Farmer, A. J., et al. (2016). "Effects of interventions promoting monitoring of medication use and brief messaging on medication adherence for people with Type 2 diabetes: a systematic review of randomized trials." *Diabetic Medicine* 33(5): 565-579.

AimsTo assess the impact of interventions promoting the monitoring of medication use and brief messaging to support medication adherence in patients with Type 2 diabetes mellitus, and to investigate the extent of theory use to guide intervention development. **Methods**We systematically searched for controlled trials, published from 1990 onwards in Medline, Embase, CINAHL, PsycINFO and the Cochrane library, that evaluated interventions based on monitoring and brief messaging to support medication adherence in patients with Type 2 diabetes, to examine the effectiveness of such interventions. **Results**A total of 11 trials, comparing 15 interventions, were identified. Only a small minority presented a low risk of bias. Three interventions were based on delivering brief messages, six were based on monitoring medication adherence, and six used both strategies. Messaging interventions included the use of short message service text messages, web-based feedback, and messages delivered through monitoring devices. Monitoring interventions included remote self-reporting of medication and telephone calls with healthcare staff. Improvements in medication adherence were observed in six interventions, although effect sizes were generally moderate. Only two interventions improved both adherence and clinical outcomes. A meta-analysis of five trials (eight interventions) combining monitoring and messaging strategies showed that the pooled difference in medication adherence between intervention and control was moderate and not statistically significant [standardized mean difference=0.22 (95% CI -0.05; 0.49)]. Only four trials were based on explicit theoretical frameworks. **Conclusions**Although interventions based on messaging and monitoring have the potential to improve medication adherence in patients with Type 2 diabetes, evidence of their efficacy is limited and additional high-quality, theory-based research is needed.

Farrand, P., et al. (2017). "Behavioural activation self-help to improve depression in people living with dementia: The PROMOTE treatment protocol." *New Zealand Journal of Psychology* 46(2): 51-62.

There is an increasing number of people living with dementia and depression, with support for people to live well with dementia becoming a global healthcare priority and seminal to the New Zealand Framework for Dementia Care (Ministry of Health, 2013). This paper overviews the clinical protocol for the PROMOTE self-help programme to inform the delivery of a written low intensity intervention based on behavioural activation for the treatment of depression and low mood in people with dementia. The primary aim of the programme is to decrease symptoms of depression and improve quality of life in people living with dementia. Support to the person living with dementia in the use of the PROMOTE programme is provided by an informal caregiver, who themselves receive guidance over the telephone by an appropriately trained mental health professional. This model of support and guidance represents a novel feature of the intervention, and one that potentially helps to increase access within the community.

Fathima, M., et al. (2019). "A mixed methods analysis of community pharmacists' perspectives on delivering COPD screening service to guide future implementation." *Research in Social & Administrative Pharmacy* 15(6): 662-672.

Background: Studies have shown that COPD screening by community pharmacists is effective, but it is unknown if it can be successfully implemented in Australian pharmacies. **Objective:** We aimed to investigate the pharmacist-perceived barriers and facilitators to the implementation of a community pharmacy-based COPD screening service guided by implementation science methodology. **Methods:** Trained pharmacists participated in a 6 month longitudinal study designed and based on implementation science frameworks. Pharmacists completed feedback questionnaires pre- and post-study and participated in semi-structured telephone interviews about their experience of implementing the service, the training provided, their views on patient recruitment, their interactions with health professionals and patients, and their future recommendations for such a service. Interviews were recorded and transcribed verbatim, analysed thematically, and questionnaire and interview data were triangulated. **Results:** Of 20 pharmacists providing questionnaire data, 15 pharmacists (male 53%; age 39.8 +/- 8.6yrs, rural 47%) participated in an interview. Questionnaire data revealed that pharmacists engaged positively with the service and reported that it was very useful for patients and for the

profession. In-depth qualitative analysis revealed 6 main implementation themes: 1. Patient recruitment (pharmacists lacked patient recruitment skills), 2. Adaptation and entrepreneurship (protocol adaptation increased patient engagement), 3. Training and resource needs (face-to-face training was preferred for skill-based learning), 4. Lack of GP involvement (sub-optimal GP-pharmacist collaboration), 5. Factors related to the operation or full implementation phase (high professional satisfaction, need for remuneration) and 6. Suggestions for refining the screening service (raise public awareness about the service, provide service remuneration, use electronic methods to improve GP referral uptake). A number of effective adaptations to the service were reported by pharmacists, such as advertising, recruitment practices, patient inclusion criteria and inter-professional communication with GPs which would be beneficial to implementation. Conclusion: This mixed methods study identified a number of key facilitators to service implementation and challenges such as difficulty with patient recruitment, low public awareness of pharmacy-based clinical services, remuneration, and sub-optimal GP-pharmacist collaboration. Working with stakeholders to identify and resolve challenges and to optimise the fit of the service for individual settings may lead to increasingly successful implementation of pharmacy-based service models.

Faulkner, K. and S. Walsh (2015). "Public health promotion: the role of the dermatologist." *British Journal of Dermatology* 173(1): 1-2.

Fedele, D. A., et al. (2019). "Topical Review: Design Considerations When Creating Pediatric Mobile Health Interventions: Applying the IDEAS Framework." *Journal of Pediatric Psychology* 44(3): 343-348.

Objective To present a guiding framework from the perspective of psychologists and technologists to develop effective mobile health (mHealth) interventions for pediatric populations. Methods This topical review uses the IDEAS framework as an organizational method to summarize current strategies to conceptualize, design, evaluate, and disseminate mHealth interventions. Results Incorporating theories of behavior change and feedback from target populations are essential when developing mHealth interventions. Following user-centered approaches that fully incorporate end users into design and development stages increases the likelihood that the intervention will be acceptable. Iterative design cycles and prototyping are important steps to gather user feedback to optimize an mHealth intervention. Broad sharing of knowledge and products generated during intervention development also is recommended. Assessment of behavioral principles, intervention components, or a full intervention package should be conducted to evaluate usability and efficacy. Conclusions Pediatric health-care researchers and clinicians are increasingly using mHealth technology to target health behaviors and improve related outcomes. Pediatric psychologists should consider applying the design strategies outlined in the IDEAS framework to produce and disseminate mHealth interventions tailored to the specific needs of pediatric populations.

Feiring, E. and A. E. Lie (2018). "Factors perceived to influence implementation of task shifting in highly specialised healthcare: a theory-based qualitative approach." *Bmc Health Services Research* 18.

Background: New approaches to control healthcare expenditures and increase access to quality care are required by decision-makers in high-income countries. One strategy is to reallocate tasks from doctors to nurses. Evidence suggests that quality, effectiveness and efficiency of task shifting are context sensitive and affected by implementation. However, little is known about implementability of task shifting in specialised healthcare. We aimed to identify factors perceived to influence implementation of doctor-to-nurse task shifting in a hospital setting and improve understanding of task shifting implementability by using theory-based frameworks for analysing behaviour. Nurse-led bone marrow examination exemplified task shifting from the medical to the nursing domain. Methods Doctors and nurses (n=17) in a haematology department at a Norwegian university hospital were asked about factors perceived to influence implementation of nurse-led bone marrow aspirations and biopsies. Methods: included in-depth semi-structured interviews (n=11) and focus-group discussion (n=6). Data were analysed using the Capability, Opportunity, and Motivation behaviour model and the Theoretical Domains Framework. Results: Ten factors perceived to influence implementation were identified. Three factors were related to capability, including (1) knowledge and acceptability of task shifting rationale; (2) dynamic role boundaries; and (3) technical skills to perform biopsies and aspirations. Five factors were related to motivation, including (4) beliefs about task shifting consequences, such as efficiency, quality and patient satisfaction; (5) beliefs about capabilities, such as technical, communicative and emotional skills; (6) job satisfaction and esteem; (7) organisational culture, such as team optimism; and (8) emotions, such as fear of informal nurse hierarchy and envy. The last two factors were related to opportunity, including (9) project planning and leadership, and voluntariness; and (10) patient preferences. Conclusion: Task shifting from doctors to nurses in specialised healthcare requires not only development of technical skills but also complex changes in organisation, clinical routines and role identity. Educational and organisational interventions to build a team-oriented culture could potentially increase the possibility of successful task shifting and stimulate nurses to take on untraditional responsibilities. Environmental

restructuring to support doctors using their time in activities only doctors can perform may be needed to realise potential efficiency gains.

Fennell, K. M., et al. (2018). "A comparison of barriers to accessing services for mental and physical health conditions in a sample of rural Australian adults." *Rural and Remote Health* 18(1).

Introduction: The prevalence of chronic disease, mortality and suicide rates is higher in rural Australia than in urban centres. Understanding rural Australians' barriers to accessing health services requires urgent attention. The purpose of this study was to compare barriers to help-seeking for physical and mental health issues among rural South Australian adults. Methods: A total of 409 people from three rural and remote regions in South Australia completed a computer-assisted telephone interview. They were presented a physical or mental health scenario and rated the extent to which barriers would prevent them from seeking help for that condition. Responses ranged from 1 (strongly disagree') to 5 (strongly agree') and were averaged to form domain scores (higher scores representing stronger barriers to seeking support), in addition to being examined at the item level. Results: Men reported higher barriers for the mental compared with physical health scenario across four domains ('need for control and self-reliance', 'minimising the problem, resignation and normalisation', 'privacy' and 'emotional control'). Women reported higher barriers for the mental compared to physical health scenario in two domains (need for control and self-reliance' and 'privacy). Both men and women endorsed many items in the mental health context (eg 'I don't like feeling controlled by other people', 'I wouldn't want to overreact to a problem that wasn't serious', 'Problems like this are part of life; they're just something you have to deal with', 'I'd prefer just to put up with it rather than dwell on my problems', 'Privacy is important to me, and I don't want other people to know about my problems' and 'I don't like to get emotional about things') but in the physical health context, barriers were endorsed only by men (eg 'I wouldn't want to overreact to a problem that wasn't serious', 'I'd prefer just to put up with it rather than dwell on my problems', 'Problems like this are part of life; they're just something you have to deal with', 'I like to make my own decisions and not be too influenced by others'). Conclusions: Both rural men and rural women report more barriers to help seeking for mental health issues than physical health issues across a range of domains. There is a need to educate the current and future rural health and mental health workforce about these barriers and to encourage them to test evidence-based strategies to address them, in particular to facilitate more widespread mental health help-seeking in rural Australia.

Ferguson, M., et al. (2018). "Development of a multimedia educational programme for first-time hearing aid users: a participatory design." *International Journal of Audiology* 57(8): 600-609.

Objective: To develop content for a series of interactive video tutorials (or reusable learning objects, RLOs) for first-time adult hearing aid users, to enhance knowledge of hearing aids and communication. Design: RLO content was based on an electronically-delivered Delphi review, workshops, and iterative peer-review and feedback using a mixed-methods participatory approach. Study sample: An expert panel of 33 hearing healthcare professionals, and workshops involving 32 hearing aid users and 11 audiologists. This ensured that social, emotional and practical experiences of the end-user alongside clinical validity were captured. Results: Content for evidence-based, self-contained RLOs based on pedagogical principles was developed for delivery via DVD for television, PC or Internet. Content was developed based on Delphi review statements about essential information that reached consensus (>90%), visual representations of relevant concepts relating to hearing aids and communication, and iterative peer-review and feedback of content. Conclusions: This participatory approach recognises and involves key stakeholders in the design process to create content for a user-friendly multimedia educational intervention, to supplement the clinical management of first-time hearing aid users. We propose participatory methodologies are used in the development of content for e-learning interventions in hearing-related research and clinical practice.

Fillion, L., et al. (2014). "Making healthcare teams aware of taking psychological suffering into account: Experience from the distress screening programme carried out at Qu,bec University Hospital." *Psycho-Oncologie* 8(1): 37-44.

From the experience at the Centre Hospitalier Universitaire (CHU) of Qu,bec, a reflection on training health care teams in screening for distress is proposed. Canadian and Quebec contexts as well as the initiative at the CHU of Quebec are first introduced. Screening for distress is proposed as a strategy and a process to facilitate access to supportive care, based on the needs of the person with cancer. Because the implementation of this person-centered care model is conducted systematically, it involves both organizational and clinical practice changes. These issues must be considered in training programs. Thus, health care teams training in screening for distress are discussed as both an organizational change and a change in clinical practice. Organizational change is described as a series of steps, including the preparation and consolidation. The change in practice involves a change in clinician behaviors and includes several potential barriers. The person-centered care model also implies taking into account the preferences of the person being cared for, while considering the values of all stakeholders in the organization. In addition, this type of model requires skills in inter-professional collaboration. Training of health care teams in screening for distress goes far beyond clinical empowerment.

Fingleton, N., et al. (2019). "Specialist Clinicians' Management of Dependence on Non-Prescription Medicines and Barriers to Treatment Provision: An Exploratory Mixed Methods Study Using Behavioural Theory." *Pharmacy* 7(1).

The aim of the study was to establish how non-prescription medicine (NPM) dependence is treated by doctors in specialist substance misuse treatment services and to identify perceived barriers to providing treatment. An online survey was conducted to establish current practice and whether changes to service provision are needed to facilitate treatment (n = 83). Semi-structured interviews, based on the Theoretical Domains Framework, were conducted to derive a detailed exploration of suggested changes (n = 11). Most survey respondents had encountered cases of NPM dependence. Analgesics containing codeine were the most frequently NPMs of dependence mentioned by respondents. Most respondents were unaware of specific guidelines for the treatment of NPM dependence. The most frequently identified barriers to providing treatment identified by interviewees were limited resources or capacity and the challenges presented by this client group. There was a perception that this client group could be difficult to treat due to comorbidities, and these this client group perceived themselves to be different from people dependent on alcohol or illicit drugs. This study identified a clear need for specific clinical guidelines for the treatment of NPM dependence. Such guidance should be appropriate for specialist and generalist clinicians as the current pressure on resources may force more treatment into general practice. Appropriate care pathways need to be established and defined, and sufficient resources allocated to accommodate this client group.

Fisher, J., et al. (2018). "What supports hospital pharmacist prescribing in Scotland? - A mixed methods, exploratory sequential study." *Research in Social & Administrative Pharmacy* 14(5): 488-497.

While approximately half of all qualified hospital pharmacist independent prescribers (PIPs) in Scotland are active prescribers, there are major differences in prescribing activity across geographical areas. This study aimed to explore, through focus groups, interviews and a questionnaire, hospital PIPs' perceptions of factors associated with prescribing activity and to investigate the infrastructure required to better support active prescribing by PIPs. Findings reinforced the perceived positive impact of supportive pharmacy leadership within the organisation, recognition that prescribing is integral to the clinical pharmacist role and a work environment conducive to prescribing. (c) 2017 The Authors. Published by Elsevier Inc.

Fitzgerald, M. and T. McClelland (2017). "What makes a mobile app successful in supporting health behaviour change?" *Health Education Journal* 76(3): 373-381.

Introduction: Health promotion apps designed to support and reinforce health behaviours or to reduce risk behaviours are the most commonly downloaded apps. Such technologies have the potential to reach and deliver health care to new populations. But the extent to which they are successful in enabling the adoption of new and desired behaviours can vary. Some apps are more effective than others, some are free to download while others require a nominal or substantial charge. Cost alone is not indicative of quality or effectiveness. This is important because the use of health apps by the public will likely increase, as is the expectation that health care professionals understand this technology and its heuristic role in personalised health. Practitioners therefore need to be better informed regarding what makes a health app appealing to service users and successful as an intervention to facilitate behaviour change. **Objective:** This paper describes and discusses how the structure and content of health care apps can facilitate or inhibit behavioural change. The aim is to support practitioners in the screening and identification of suitable apps for clinical use. **Method:** Theory and literature review. **Conclusion:** App content that involved clinician input at the design stage and included internal drivers such as motivation, self-efficacy and illness understanding and external drivers such as illness information, social networking and user compatibility tend to do better in facilitating behaviour change than those that do not. Of these factors, motivation is considered to be the most important.

Fitzpatrick, A. L., et al. (2019). "Using Targeted mHealth Messages to Address Hypertension and Diabetes Self-Management in Cambodia: Protocol for a Clustered Randomized Controlled Trial." *Jmir Research Protocols* 8(3).

Background: Hypertension and diabetes represent the first and third highest contributors to global disability. While mobile health (mHealth) messaging programs have rapidly increased in low- and middle-income countries (LMIC), adaptations for specific patient health needs is a new approach to manage chronic conditions. **Objective:** The primary aim of this study is to develop and test an mHealth communication intervention using electronic data capture (by tablet) and voice messaging to improve hypertension and diabetes self-management in Cambodia. The secondary aim is to share results with the Cambodian Ministry of Health and development partners to inform health policy and develop strategies for hypertension and diabetes control. **Methods:** The study design is a cluster randomized controlled clinical trial randomizing each of 75 Community peer educators (PEs), trained and coordinated by MoPoTsyo Patient Information Center in Phnom Penh, into one of 3 groups of 25 (approximately 60 patients each) to receive either tablet+messages, tablet only, or no intervention (control). The total sample within each group includes 25 clusters and approximately 1500

patients located in 7 Operational Districts in rural regions or urban slums in Cambodia. The interventions (groups 1 and 2) were compared with usual PE monitoring without the tablet or mHealth messaging interventions. Focus groups and informant interviews were conducted to develop messages according to specific themes—medications adherence, laboratory testing, physician visits, obesity, smoking, and general lifestyle issues. Using the data received at monthly PE monitoring meetings, patients will receive specific messages based on their individual health challenges. Following the intervention completion, clinical and process outcomes will be compared with baseline metrics between groups. Results: PEs were randomized in July 2017, and the intervention was implemented in September 2017 through June 2018. Analyses are underway. Conclusions: This project is unique in its combination of electronic data transfer, which can be accessed immediately, with voice messages most relevant to individual patients' needs. Positive results will indicate the value of using targeted messaging in patient-specific, self-management issues to improve hypertension and diabetes control.

Flannery, C., et al. (2018). "Enablers and barriers to physical activity in overweight and obese pregnant women: an analysis informed by the theoretical domains framework and COM-B model." *Bmc Pregnancy and Childbirth* 18.

Background: Obesity during pregnancy is associated with increased risk of gestational diabetes mellitus (GDM) and other complications. Physical activity is a modifiable lifestyle factor that may help to prevent these complications but many women reduce their physical activity levels during pregnancy. Interventions targeting physical activity in pregnancy are on-going but few identify the underlying behaviour change mechanisms by which the intervention is expected to work. To enhance intervention effectiveness, recent tools in behavioural science such as the Theoretical Domains Framework (TDF) and COM-B model (capability, opportunity, motivation and behaviour) have been employed to understand behaviours for intervention development. Using these behaviour change methods, this study aimed to identify the enablers and barriers to physical activity in overweight and obese pregnant women. Methods: Semi-structured interviews were conducted with a purposive sample of overweight and obese women at different stages of pregnancy attending a public antenatal clinic in a large academic maternity hospital in Cork, Ireland. Interviews were recorded and transcribed into NVivo V.10 software. Data analysis followed the framework approach, drawing on the TDF and the COM-B model. Results: Twenty one themes were identified and these mapped directly on to the COM-B model of behaviour change and ten of the TDF domains. Having the social opportunity to engage in physical activity was identified as an enabler; pregnant women suggested being active was easier when supported by their partners. Knowledge was a commonly reported barrier with women lacking information on safe activities during pregnancy and describing the information received from their midwife as 'limited'. Having the physical capability and physical opportunity to carry out physical activity were also identified as barriers; experiencing pain, a lack of time, having other children, and working prevented women from being active. Conclusion: A wide range of barriers and enablers were identified which influenced women's capability, motivation and opportunity to engage in physical activity with "knowledge" as the most commonly reported barrier. This study is a theoretical starting point in making a 'behavioural diagnoses' and the results will be used to inform the development of an intervention to increase physical activity levels among overweight and obese pregnant women.

Fleming, A., et al. (2014). "Antibiotic prescribing in long-term care facilities: a qualitative, multidisciplinary investigation." *Bmj Open* 4(11).

Objectives: To explore healthcare professionals' views of antibiotic prescribing in long-term care facilities (LTCFs). To use the findings to recommend intervention strategies for antimicrobial stewardship in LTCFs. Design: Qualitative semistructured interviews were conducted. The data were analysed by thematic content analysis. After the interviews, the emerging findings were mapped to the theoretical domains framework (TDF), and the behaviour change wheel and behaviour change technique (BCT) taxonomy were used to recommend future intervention strategies. Participants: Interviews were conducted with 37 healthcare professionals who work in LTCFs (10 general practitioners, 4 consultants, 14 nurses, 9 pharmacists) between December 2012 and March 2013. Setting: Interviews were conducted in the greater Cork region. Results: The main domains from the TDF which emerged were: 'Knowledge', 'Environmental context and resources', 'Social influences', 'Beliefs about consequences', 'Memory, attention and decision making', with the findings identifying a need for 'Behavioural regulation'. Many participants believed that antibiotic prescribing was satisfactory at their LTCF, despite the lack of surveillance activities. Conclusions: This study, using the TDF and BCT taxonomy, has found that antibiotic prescribing in LTCFs is influenced by many social and contextual factors. The challenges of the setting and patient population, the belief about consequences to the patient, and the lack of implementation of guidelines and knowledge regarding antibiotic prescribing patterns are significant challenges to address. On the basis of the study findings and the application of the TDF and BCT taxonomy, we suggest some practical intervention functions for antimicrobial stewardship in LTCFs.

Flenady, V., et al. (2016). "Stillbirths: recall to action in high-income countries." *Lancet* 387(10019): 691-702.

Variation in stillbirth rates across high-income countries and large equity gaps within high-income countries persist. If all high-income countries achieved stillbirth rates equal to the best performing countries, 19 439 late gestation (28 weeks or more) stillbirths could have been avoided in 2015. The proportion of unexplained stillbirths is high and can be addressed through improvements in data collection, investigation, and classification, and with a better understanding of causal pathways. Substandard care contributes to 20-30% of all stillbirths and the contribution is even higher for late gestation intrapartum stillbirths. National perinatal mortality audit programmes need to be implemented in all high-income countries. The need to reduce stigma and fatalism related to stillbirth and to improve bereavement care are also clear, persisting priorities for action. In high-income countries, a woman living under adverse socioeconomic circumstances has twice the risk of having a stillborn child when compared to her more advantaged counterparts. Programmes at community and country level need to improve health in disadvantaged families to address these inequities.

Fletcher, A., et al. (2016). "Realist complex intervention science: Applying realist principles across all phases of the Medical Research Council framework for developing and evaluating complex interventions." *Evaluation* 22(3): 286-303.

The integration of realist evaluation principles within randomised controlled trials (realist RCTs') enables evaluations of complex interventions to answer questions about what works, for whom and under what circumstances. This allows evaluators to better develop and refine mid-level programme theories. However, this is only one phase in the process of developing and evaluating complex interventions. We describe and exemplify how social scientists can integrate realist principles across all phases of the Medical Research Council framework. Intervention development, modelling, and feasibility and pilot studies need to theorise the contextual conditions necessary for intervention mechanisms to be activated. Where interventions are scaled up and translated into routine practice, realist principles also have much to offer in facilitating knowledge about longer-term sustainability, benefits and harms. Integrating a realist approach across all phases of complex intervention science is vital for considering the feasibility and likely effects of interventions for different localities and population subgroups.

Flodgren, G., et al. (2013). "Interventions to improve professional adherence to guidelines for prevention of device-related infections." *Cochrane Database of Systematic Reviews*(3).

Background Healthcare-associated infections (HAIs) are a major threat to patient safety, and are associated with mortality rates varying from 5% to 35%. Important risk factors associated with HAIs are the use of invasive medical devices (e. g. central lines, urinary catheters and mechanical ventilators), and poor staff adherence to infection prevention practices during insertion and care for the devices when in place. There are specific risk profiles for each device, but in general, the breakdown of aseptic technique during insertion and care for the device, as well as the duration of device use, are important factors for the development of these serious and costly infections. Objectives To assess the effectiveness of different interventions, alone or in combination, which target healthcare professionals or healthcare organisations to improve professional adherence to infection control guidelines on device-related infection rates and measures of adherence. Search methods We searched the following electronic databases for primary studies up to June 2012: the Cochrane Effective Paractice and Organisation of Care (EPOC) Group Specialised Register, the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, and CINAHL. We searched reference lists and contacted authors of included studies. We also searched the Cochrane Database of Systematic Reviews and Database of Abstracts of Reviews of Effectiveness (DARE) for related reviews. Selection criteria We included randomised controlled trials (RCTs), non-randomised controlled trials (NRCTs), controlled before-after (CBA) studies and interrupted time series (ITS) studies that complied with the Cochrane EPOC Group methodological criteria, and that evaluated interventions to improve professional adherence to guidelines for the prevention of device-related infections. Data collection and analysis Two review authors independently extracted data and assessed the risk of bias of each included study using the Cochrane EPOC 'Risk of bias' tool. We contacted authors of original papers to obtain missing information. Main results We included 13 studies: one cluster randomised controlled trial (CRCT) and 12 ITS studies, involving 40 hospitals, 51 intensive care units (ICUs), 27 wards, and more than 3504 patients and 1406 healthcare professionals. Six of the included studies targeted adherence to guidelines to prevent central line-associated blood stream infections (CLABSIs); another six studies targeted adherence to guidelines to prevent ventilator-associated pneumonia (VAP), and one study focused on interventions to improve urinary catheter practices. We judged all included studies to be at moderate or high risk of bias. The largest median effect on rates of VAP was found at nine months follow-up with a decrease of 7.36 (-10.82 to 3.14) cases per 1000 ventilator days (five studies and 15 sites). The one included cluster randomised controlled trial (CRCT) observed, improved urinary catheter practices five weeks after the intervention (absolute difference 12.2 percentage points), however, the statistical significance of this is unknown given a unit of analysis error. It is worth noting that N = 6 interventions that did result in significantly decreased infection rates involved more than one active intervention, which in some cases, was repeatedly administered over time, and further, that one intervention involving specialised oral care personnel showed the largest step change (-22.9 cases per 1000 ventilator days (standard error (SE) 4.0), and also the

largest slope change (-6.45 cases per 1000 ventilator days (SE 1.42, P = 0.002)) among the included studies. We attempted to combine the results for studies targeting the same indwelling medical device (central line catheters or mechanical ventilators) and reporting the same outcomes (CLABSI and VAP rate) in two separate meta-analyses, but due to very high statistical heterogeneity among included studies (I² up to 97%), we did not retain these analyses. Six of the included studies reported post-intervention adherence scores ranging from 14% to 98%. The effect on rates of infection were mixed and the effect sizes were small, with the largest median effect for the change in level (interquartile range (IQR)) for the six CLABSI studies being observed at three months follow-up was a decrease of 0.6 (-2.74 to 0.28) cases per 1000 central line days (six studies and 36 sites). This change was not sustained over longer follow-up times. Authors' conclusions The low to very low quality of the evidence of studies included in this review provides insufficient evidence to determine with certainty which interventions are most effective in changing professional behaviour and in what contexts. However, interventions that may be worth further study are educational interventions involving more than one active element and that are repeatedly administered over time, and interventions employing specialised personnel, who are focused on an aspect of care that is supported by evidence e. g. dentists/dental auxiliaries performing oral care for VAP prevention.

Fong, A. J., et al. (2018). "Exploring cancer centres for physical activity and sedentary behaviour support for breast cancer survivors." *Current Oncology* 25(5): E365-E372.

Background Up to 90% of breast cancer survivors report low levels of physical activity (PA) and spend approximately 70% of the day in sedentary behaviour. Survivors might not be receiving information about the health benefits of PA and the consequences of sedentary behaviour in the context of their cancer. The primary purpose of the present study was to evaluate cancer centres for PA and sedentary behaviour information and infrastructure. A secondary aim was to evaluate the quality of the information that is accessible to breast cancer survivors in cancer centres. **Methods** A built-environment scan of the 14 regional cancer centres in Ontario and an evaluation of the text materials about PA available at the cancer centres were completed. Data analyses included descriptive statistics, proportions, and inter-rater reliability. **Results** The infrastructure of the cancer centres provided few opportunities for dissemination of information related to PA through signs and printed notices. Televisions were present in all waiting rooms, which could provide a unique opportunity for dissemination of information about PA and sedentary behaviour. Text materials were rated as trustworthy, used some behaviour change techniques (for example, in formation about the consequences of lack of PA, barrier identification, and setting graded tasks), and were aesthetically pleasing. **Conclusions** These findings represent areas for knowledge dissemination both for the centre and for resources that could be further improved.

Fottrell, E., et al. (2019). "Community groups or mobile phone messaging to prevent and control type 2 diabetes and intermediate hyperglycaemia in Bangladesh (DMagic): a cluster-randomised controlled trial." *Lancet Diabetes & Endocrinology* 7(3): 200-212.

Background Strategies are needed to prevent and control type 2 diabetes and intermediate hyperglycaemia, which together affect roughly a third of adults in Bangladesh. We aimed to assess the effects of mHealth and community mobilisation on the prevalence of intermediate hyperglycaemia and diabetes among the general adult population in rural Bangladesh, and to assess the effect of these interventions on the incidence of type 2 diabetes among people with intermediate hyperglycaemia within the study population. **Methods** DMagic was a three-arm, cluster-randomised trial of participatory community mobilisation, mHealth mobile phone messaging, and usual care (control) in 96 villages (population roughly 125 000) in Bangladesh. Community mobilisation involved 18 monthly group meetings, led by lay facilitators, applying a participatory learning and action (PLA) cycle focused on diabetes prevention and control. mHealth involved twice-weekly voice messages over 14 months promoting behaviour change to reduce diabetes risk. The primary outcomes were the combined prevalence of type 2 diabetes and intermediate hyperglycaemia in the overall population at the end of the intervention implementation period, and 2-year cumulative incidence of type 2 diabetes in a cohort with intermediate hyperglycaemia at baseline. Primary outcomes were assessed through fasting blood glucose concentrations and 2-h oral glucose tolerance tests among a cross-section of adults aged 30 years and older and a cohort of individuals identified with intermediate hyperglycaemia. Prevalence findings are based on a cross-sectional survey at the end of the study; incidence findings are based on 2-year follow-up survey of a cohort of individuals identified with intermediate hyperglycaemia through a cross-sectional survey at baseline. We also assessed the cost-effectiveness of the interventions. This trial is registered with the ISRCTN registry, number ISRCTN41083256, and is completed. **Findings** The study took place between June 27, 2015, and June 28, 2018, with the PLA intervention running in 32 villages from June, 2016, to December, 2017, and the mHealth intervention running in 32 villages from Oct 21, 2016, to Dec 24, 2017. End-of study prevalence was assessed in 11 454 individuals and incidence in 2100 individuals. There was a large reduction in the combined prevalence of type 2 diabetes and intermediate hyperglycaemia in the PLA group compared with the control group at the end of the study (adjusted [for stratification, clustering, and wealth] odds ratio [aOR] 0.36 [0.27-0.48]), with an absolute reduction of 20.7% (95% CI 14.6-26.7). Among 2470 adults with intermediate hyperglycaemia at

baseline, 2100 (85%) were followed-up at 2 years. The 2-year cumulative incidence of diabetes in this cohort was significantly lower in the PLA group compared with control (aOR 0.39, 0.24-0.65), representing an absolute incidence reduction of 8.7% (3.5-14.0). There was no evidence of effect of mHealth on combined prevalence of intermediate hyperglycaemia and diabetes (aOR 0.93, 0.74-1.16) or the incidence of diabetes (1.02, 0.73-1.43). The incremental cost-effectiveness ratios for PLA were INT\$316 per case of intermediate hyperglycaemia or type 2 diabetes prevented and \$6518 per case of type 2 diabetes prevented among individuals with intermediate hyperglycaemia. Interpretation Our data provide strong evidence to support the use of community mobilisation based on PLA to prevent type 2 diabetes in this rural Bangladeshi population. Despite raising knowledge and awareness of diabetes, the mHealth intervention did not change disease outcomes in our population. Replication studies in other populations should be a priority. Copyright (c) 2019 The Author(s). Published by Elsevier Ltd.

Fottrell, E., et al. (2016). "The effect of community groups and mobile phone messages on the prevention and control of diabetes in rural Bangladesh: study protocol for a three-arm cluster randomised controlled trial." *Trials* 17.

Background: Increasing rates of type 2 diabetes mellitus place a substantial burden on health care services, communities, families and individuals living with the disease or at risk of developing it. Estimates of the combined prevalence of intermediate hyperglycaemia and diabetes in Bangladesh vary, and can be as high as 30% of the adult population. Despite such high prevalence, awareness and control of diabetes and its risk factors are limited. Prevention and control of diabetes and its complications demand increased awareness and action of individuals and communities, with positive influences on behaviours and lifestyle choices. In this study, we will test the effect of two different interventions on diabetes occurrence and its risk factors in rural Bangladesh. Methods/design: A three-arm cluster randomised controlled trial of mobile health (mHealth) and participatory community group interventions will be conducted in four rural upazillas in Faridpur District, Bangladesh. Ninety-six clusters (villages) will be randomised to receive either the mHealth intervention or the participatory community group intervention, or be assigned to the control arm. In the mHealth arm, enrolled individuals will receive twice-weekly voice messages sent to their mobile phone about prevention and control of diabetes. In the participatory community group arm, facilitators will initiate a series of monthly group meetings for men and women, progressing through a Participatory Learning and Action cycle whereby group members and communities identify, prioritise and tackle problems associated with diabetes and the risk of developing diabetes. Both interventions will run for 18 months. The primary outcomes of the combined prevalence of intermediate hyperglycaemia and diabetes and the cumulative 2-year incidence of diabetes among individuals identified as having intermediate hyperglycaemia at baseline will be evaluated through baseline and endline sample surveys of permanent residents aged 30 years or older in each of the study clusters. Data on blood glucose level, blood pressure, body mass index and hip-to-waist ratio will be gathered through physical measurements by trained fieldworkers. Demographic and socioeconomic data, as well as data on knowledge of diabetes, chronic disease risk factor prevalence and quality of life, will be gathered through interviews with sampled respondents. Discussion: This study will increase our understanding of diabetes and other non-communicable disease burdens and risk factors in rural Bangladesh. By documenting and evaluating the delivery, impact and cost-effectiveness of participatory community groups and mobile phone voice messaging, study findings will provide evidence on how population-level strategies of community mobilisation and mHealth can be implemented to prevent and control noncommunicable diseases and risk factors in this population.

Fox, A. E., et al. (2019). "Using Delays to Decrease Paper Consumption in Food Service and Laboratory Settings." *Psychological Record* 69(2): 215-223.

Recent research has indicated high economic and environmental costs of human paper usage. Technologies have been developed to reduce consumers' paper use behavior, including mechanical dispensers that institute a delay between opportunities to obtain each consecutive unit. However, there is no empirical evidence that these dispensers or delays reduce paper use. In Experiment 1, implementing a delay between paper-unit deliveries using mechanical dispensers in a university cafe resulted in a significant decrease in units per person, material per person, and cost per person, compared to free-access dispensers. In Experiment 2, a relatively long delay was more effective than a short delay in reducing paper consumption in a laboratory experiment using mechanical dispensers. These results indicate that delays could be used to decrease paper use in many contexts on a larger scale. More research is necessary to determine the underlying behavioral mechanisms responsible for the observed reduction and the cost-benefit relationship under different circumstances.

Fox, F., et al. (2015). "GPs role identifying young people who self-harm: a mixed methods study." *Family Practice* 32(4): 415-419.

Background: Self-harm is common among young people and is evident in increasingly younger age groups. Many young people who self-harm do visit their GP but do not access specialist support. GP's can find it challenging to raise and discuss this sensitive subject with young people during short consultations. Objective: To explore GP's capabilities,

motivations and opportunities for discussing self-harm and to identify barriers to and enablers for proactively discussing self-harm with young people. Design and setting: An exploratory, mixed methods study was designed comprising an online survey and a qualitative interview study with GPs in the South West of England. Methods: An online survey was completed by 28 GPs. Ten GPs took part by telephone, in semi-structured interviews. Quantitative data was analysed using descriptive statistical techniques and thematic analysis was used to analyse the qualitative data. Findings from the quantitative and qualitative analysis are synthesized to illustrate GPs' skills, knowledge and perceptions about young people who self-harm. Results: Experienced GPs may underestimate the prevalence of self-harm in young people, particularly in the 11-14 age range. While consultations with young people and their carers can be challenging, GPs acknowledge that it is their role to provide support for young people who self-harm. GPs would welcome training for themselves and other practice staff in talking to young people and practical information about self-harm. Conclusion: All primary care staff who provide frontline support to young people should receive education and practical training in talking about self-harm.

Francis, N. A., et al. (2013). "Parents' and clinicians' views of an interactive booklet about respiratory tract infections in children: a qualitative process evaluation of the EQUIP randomised controlled trial." *Bmc Family Practice* 14.

Background: 'When should I worry?' is an interactive booklet for parents of children presenting with respiratory tract infections (RTIs) in primary care and associated training for clinicians. A randomised controlled trial (the EQUIP study) demonstrated that this intervention reduced antibiotic prescribing and future consulting intentions. The aims of this qualitative process evaluation were to understand how acceptable the intervention was to clinicians and parents, how it was implemented, the mechanisms for any observed effects, and contextual factors that could have influenced its effects. Methods: Semi-structured interviews were conducted with 20 parents and 13 clinicians who participated in the trial. Interviews were audio-recorded and transcribed verbatim. Data were analysed using a framework approach, which involved five stages; familiarisation, development of a thematic framework, indexing, charting, and interpretation. Results: Most parents and clinicians reported that the 'When should I worry' interactive booklet (and online training for clinicians) was easy to use and valuable. Information on recognising signs of serious illness and the usual duration of illness were most valued. The interactive use of the booklet during consultations was considered to be important, but this did not always happen. Clinicians reported lack of time, lack of familiarity with using the booklet, and difficulty in modifying their treatment plan/style of consultation as barriers to use. Increased knowledge and confidence amongst clinicians and patients were seen as key components that contributed to the reductions in antibiotic prescribing and intention to consult seen in the trial. This was particularly pertinent in a context where decisions about the safe and appropriate management of childhood RTIs were viewed as complex and parents reported frequently receiving inconsistent messages. Conclusions: The 'When should I worry' booklet, which is effective in reducing antibiotic prescribing, has high acceptability for clinicians and parents, helps address gaps in knowledge, increases confidence, and provides a consistent message. However, it is not always implemented as intended. Plans for wider implementation of the intervention in health care settings would need to address clinician-related barriers to implementation.

Francis-Coad, J., et al. (2018). "Evaluating the impact of a falls prevention community of practice in a residential aged care setting: a realist approach." *Bmc Health Services Research* 18.

Background: Falls are a major socio-economic problem among residential aged care (RAC) populations resulting in high rates of injury including hip fracture. Guidelines recommend that multifactorial prevention strategies are implemented but these require translation into clinical practice. A community of practice (CoP) was selected as a suitable model to support translation of the best available evidence into practice, as it could bring together like-minded people with falls expertise and local clinical knowledge providing a social learning opportunity in the pursuit of a common goal; falls prevention. The aims of this study were to evaluate the impact of a falls prevention CoP on its membership; actions at facility level; and actions at organisation level in translating falls prevention evidence into practice. Methods: A convergent, parallel mixed methods evaluation design based on a realist approach using surveys, audits, observations and semi-structured interviews. Participants were 20 interdisciplinary staff nominating as CoP members between Nov 2013-Nov 2015 representing 13 facilities (approximately 780 beds) of a RAC organisation. The impact of the CoP was evaluated at three levels to identify how the CoP influenced the observed outcomes in the varying contexts of its membership (level i.), the RAC facility (level ii.) and RAC organisation (level iii.). Results: Staff participating as CoP members gained knowledge and awareness in falls prevention ($p < 0.001$) through connecting and sharing. Strategies prioritised and addressed at RAC facility level culminated in an increase in the proportion of residents supplemented with vitamin D ($p = 0.002$) and development of falls prevention education. At organisation level a falls policy reflecting preventative evidence-based guidelines and a new falls risk assessment procedure with aligned management plans were written, modified and implemented. A key disempowering mechanism identified by CoP members was limited time to engage in translation of evidence into practice whilst enabling mechanisms included proactive behaviours by staff and management. Conclusions: Interdisciplinary staff participating in a falls prevention CoP gained connectivity and

knowledge and were able to facilitate the translation of falls prevention evidence into practice in the context of their RAC facility and RAC organisation. Support from RAC organisational and facility management to make the necessary investment in staff time to enable change in falls prevention practice is essential for success.

Francis-Coad, J., et al. (2017). "Can a web-based community of practice be established and operated to lead falls prevention activity in residential care?" *Geriatric Nursing* 38(2): 133-140.

The aims of this study were to evaluate establishing and operating a web-based community of practice (CoP) to lead falls prevention in a residential aged care (RAC) setting. A mixed methods evaluation was conducted in two phases using a survey and transcripts from interactive electronic sources. Nurses and allied health staff (n = 20) with an interest in falls prevention representing 13 sites of an RAC organization participated. In Phase 1, the CoP was developed, and the establishment of its structure and composition was evaluated using determinants of success reported in the literature. In Phase 2, all participants interacted using the web, but frequency of engagement by any participant was low. Participatory barriers, including competing demands from other tasks and low levels of knowledge about information communication technology (ICT) applications, were identified by CoP members. A web based CoP can be established and operated across multiple RAC sites if RAC management support dedicated time for web-based participation and staff are given web-based training. (C) 2016 Elsevier Inc. All rights reserved.

Francis-Coad, J., et al. (2019). "Evaluation of care staff knowledge, confidence, motivation and opportunity for preventing falls in residential aged care settings: A cross-sectional survey." *International Journal of Older People Nursing* 14(2).

Aims To explore care staff knowledge about falls and confidence, motivation and opportunity to undertake fall prevention strategies, in residential aged care (RAC) along with preferences for fall prevention education. Background Falls account for the majority of adverse clinical events in RAC settings. Care staff in RAC settings are in a key position to influence residents' actions to prevent falls, provided they have the necessary knowledge and skills. Methods A cross-sectional survey design with a purposive sample of 147 care staff at eight RAC facilities was undertaken in 2015. A custom-designed questionnaire examining knowledge, confidence, motivation and opportunity to undertake falls prevention strategies was used. Results Only 39 (26.5%) care staff were aware that the residents they cared for were at high risk of falls. Care staff knowledge of intrinsic falls risk factors was very limited, for example, only 18 (13.53%) observed for side effects of medication and just four (1.04%) were aware of continence issues. Conflicting duties also limited care staff time to undertake falls prevention strategies. Preferences for falls prevention education indicated face-to-face interactive discussions in the workplace (n=98, [66.7%]) with reminder posters displayed around the facility (n=80, [70.8%]). Conclusions Residential aged care organisations need to engage with care staff to provide tailored falls education incorporating learning preferences and targeting knowledge gaps, to improve awareness of intrinsic risk factor impact and uptake of evidence-based prevention strategies. Despite care staff being highly motivated, they have limited opportunity to assist residents with fall prevention within their workload. RAC management and funding bodies must address opportunity for care staff to fulfil this crucial role to benefit resident safety. Implication for practice This study identified gaps in care staffs' knowledge and skills in undertaking falls prevention strategies in residential aged care settings. These findings will assist residential aged care organisations and health professional educators to design evidence-based falls prevention education tailored to their care staffs' needs and preferences to facilitate adoption.

Frayn, K. N. (2019). *Cardiovascular Disease Diet, Nutrition and Emerging Risk Factors Second Edition The Report of a British Nutrition Foundation Task Force Foreword.*

Free, C., et al. (2016). "Can text messages increase safer sex behaviours in young people? Intervention development and pilot randomised controlled trial." *Health Technology Assessment* 20(57): 1-+.

Background: Younger people bear the heaviest burden of sexually transmitted infections (STIs). Partner notification, condom use and STI testing can reduce infection but many young people lack the knowledge, skills and confidence needed to carry out these behaviours. Text messages can provide effective behavioural support. The acceptability and feasibility of a randomised controlled trial of safer sex support delivered by text message are not known. Objectives: To assess the acceptability and feasibility of a randomised controlled trial of a safer sex intervention delivered by text message for young people aged 16-24 years. Design: (1) Intervention development; (2) follow-up procedure development; (3) a pilot, parallel-arm randomised controlled trial with allocation via remote automated randomisation (ratio of 1 : 1) (participants were unmasked, whereas researchers analysing samples and data were masked); and (4) qualitative interviews. Setting: Participants were recruited from sexual health services in the UK. Participants: Young people aged 16-24 years diagnosed with chlamydia or reporting unprotected sex with more than one partner in the last year. Interventions: A theory-and evidence-based safer sex intervention designed, with young people's input, to reduce the incidence of STIs by increasing the correct treatment of STIs, partner notification, condom use and STI testing before unprotected sex with a new partner. The intervention was delivered via automated mobile phone messaging over 12

months. The comparator was a monthly text message checking contact details. Main outcome measures: (1) Development of the intervention based on theory, evidence and expert and user views; (2) follow-up procedures; (3) pilot trial primary outcomes: full recruitment within 3 months and follow-up rate for the proposed primary outcomes for the main trial; and (4) participants' views and experiences regarding the acceptability of the intervention. Results: In total, 200 participants were randomised in the pilot trial, of whom 99 were allocated to the intervention and 101 were allocated to the control. We fully recruited early and achieved an 81% follow-up rate for our proposed primary outcome of the cumulative incidence of chlamydia at 12 months. There was no differential follow-up between groups. In total, 97% of messages sent were successfully delivered to participants' mobile phones. Recipients reported that the tone, language, content and frequency of messages were appropriate. Messages reportedly increased knowledge of and confidence in how to use condoms and negotiate condom use and reduced stigma about STIs, enabling participants to tell a partner about a STI. Conclusions: Our research shows that the intervention is acceptable and feasible to deliver. Our pilot trial demonstrated that a main trial is feasible. It remains unclear which behaviour change techniques and elements of the intervention or follow-up procedures are associated with effectiveness. A further limitation is that in the trial one person entering data and the participants were unmasked. A randomised controlled trial to establish the effects of the intervention on STIs at 12 months is needed.

Frey, A. J., et al. (2015). "Expanding the range of the First Step to Success intervention: Tertiary-level support for children, teachers, and families." *Early Childhood Research Quarterly* 30: 1-11.

This study presents the findings of a quasi-experimental feasibility study examining the Tertiary First Step intervention, an enhanced version of the First Step to Success early intervention program. Tertiary First Step was developed to engage families more effectively and influence and improve parenting practices for children having challenging behavior. Process (fidelity, dosage, and social validity) and outcome data were collected for all participants in the Tertiary First Step condition (N=33). Parent- and teacher-reported outcomes were collected for the comparison condition (N = 22). Process data suggest the intervention was implemented with fidelity, and that teachers, parents, and coaches perceived the intervention as socially valid. This study presents the first empirical examination of the Tertiary First Step variation. The outcomes provide compelling evidence that the Tertiary First Step intervention is promising for improving student outcomes on social-behavioral indices, decreasing problem behavior, and improving academic engaged time. Published by Elsevier Inc.

Friesgaard, K. D., et al. (2017). "Acute pain in the emergency department: Effect of an educational intervention." *Scandinavian Journal of Pain* 15: 8-13.

Background and aims: Pain management is often inadequate in emergency departments (ED) despite the availability of effective analgesics. Interventions to change professional behavior may therefore help to improve the management of pain within the ED. We hypothesized that a 2-h educational intervention combining e-learning and simulation would result in improved pain treatment of ED patients with pain. Methods: Data were collected at the ED of Horsens Regional Hospital during a 3-week study period in March 2015. Pain intensity (NRS, 0-10) and analgesic administration were recorded 24 h a day for all patients who were admitted to the ED during the first and third study weeks. Fifty-three ED nurses and 14 ED residents participated in the educational intervention, which took place in the second study week. Results: In total, 247 of 796 patients had pain >3 on the NRS at the admission to the ED and were included in the data analysis. The theoretical knowledge of pain management among nurses and residents increased as assessed by a multiple choice test performed before and after the educational intervention (P = 0.001), but no change in clinical practice could be observed: The administration for analgesics [OR: 1.79 (0.97-3.33)] and for opioids [2.02 (0.79-5.18)] were similar before and after the educational intervention, as was the rate of clinically meaningful pain reduction (NRS >2) during the ED stay [OR: 0.81 (CI 0.45-1.44)]. Conclusions: Conduction of a 2-h educational intervention combining interactive case-based e-learning with simulation-based training in an ED setting was feasible with a high participation rate of nurses and residents. Their knowledge of pain management increased after completion of the program, but transfer of the new knowledge into clinical practice could not be found. Future research should explore the effects of repeated education of healthcare providers on pain management. Implications: It is essential for nurses and residents in emergency departments to have the basic theoretical and practical skills to treat acute pain properly. A modern approach including e-learning and simulation lead to increased knowledge of acute pain management. Further studies are needed to show how this increased knowledge is transferred into clinical practice. (C) 2016 Scandinavian Association for the Study of Pain. Published by Elsevier B.V. All rights reserved.

Frykman, M., et al. (2014). "Functions of behavior change interventions when implementing multi-professional teamwork at an emergency department: a comparative case study." *Bmc Health Services Research* 14.

Background: While there is strong support for the benefits of working in multi-professional teams in health care, the implementation of multi-professional teamwork is reported to be complex and challenging. Implementation

strategies combining multiple behavior change interventions are recommended, but the understanding of how and why the behavior change interventions influence staff behavior is limited. There is a lack of studies focusing on the functions of different behavior change interventions and the mechanisms driving behavior change. In this study, applied behavior analysis is used to analyze the function and impact of different behavior change interventions when implementing multi-professional teamwork. Methods: A comparative case study design was applied. Two sections of an emergency department implemented multi-professional teamwork involving changes in work processes, aimed at increasing inter-professional collaboration. Behavior change interventions and staff behavior change were studied using observations, interviews and document analysis. Using a hybrid thematic analysis, the behavior change interventions were categorized according to the DCOM (R) model. The functions of the behavior change interventions were then analyzed using applied behavior analysis. Results: The two sections used different behavior change interventions, resulting in a large difference in the degree of staff behavior change. The successful section enabled staff performance of teamwork behaviors with a strategy based on ongoing problem-solving and frequent clarification of directions. Managerial feedback initially played an important role in motivating teamwork behaviors. Gradually, as staff started to experience positive outcomes of the intervention, motivation for teamwork behaviors was replaced by positive task-generated feedback. Conclusions: The functional perspective of applied behavior analysis offers insight into the behavioral mechanisms that describe how and why behavior change interventions influence staff behavior. The analysis demonstrates how enabling behavior change interventions, managerial feedback and task-related feedback interact in their influence on behavior and have complementary functions during different stages of implementation.

Frykman, M., et al. (2017). "The work is never ending: uncovering teamwork sustainability using realistic evaluation." *Journal of Health Organization and Management* 31(1): 64-81.

Purpose - The purpose of this paper is to uncover the mechanisms influencing the sustainability of behavior changes following the implementation of teamwork. Design/methodology/approach - Realistic evaluation was combined with a framework (DCOM (R)) based on applied behavior analysis to study the sustainability of behavior changes two and a half years after the initial implementation of teamwork at an emergency department. The DCOM (R) framework was used to categorize the mechanisms of behavior change interventions (BCIs) into the four categories of direction, competence, opportunity, and motivation. Non-participant observation and interview data were used. Findings - The teamwork behaviors were not sustained. A substantial fallback in managerial activities in combination with a complex context contributed to reduced direction, opportunity, and motivation. Reduced direction made staff members unclear about how and why they should work in teams. Deterioration of opportunity was evident from the lack of problem-solving resources resulting in accumulated barriers to teamwork. Motivation in terms of management support and feedback was reduced. Practical implications - The implementation of complex organizational changes in complex healthcare contexts requires continuous adaption and managerial activities well beyond the initial implementation period. Originality/value - By integrating the DCOM (R) framework with realistic evaluation, this study responds to the call for theoretically based research on behavioral mechanisms that can explain how BCIs interact with context and how this interaction influences sustainability.

Fulton, E. A., et al. (2018). "Lost in Translation: Transforming Behaviour Change Techniques into Engaging Digital Content and Design for the StopApp." *Healthcare* 6(3).

Frameworks to support the application of behaviour change theory to the choice of behaviour change techniques (BCTs) in designing digital behaviour change interventions (DBCIs) are becoming well established, and have been employed by the authors in the development of StopApp. However, guidance on the next stage-effective operationalisation (translation) of these BCTs to a digital context, including the precise delivery and design of "behavioural intervention technology" (BIT) elements, is still in its infancy. This is despite growing recognition of the need to optimise engagement and usability, alongside a theoretical basis, for intervention effectiveness. The aim of this study was to explore methods to translate BCTs into digital content in an accurate and systematic manner. We describe the process of using co-creation (user-led) rather than expert-driven methods in the development of user-facing features and design in StopApp, including the iterative "bottom-up" and "top-down" processes necessary for accurate BCT translation. We found a small disparity between the intended and actual BCT content, reflecting the difficulties of translating BCTs into digital intervention content and the need for better guidance and methodical approaches to enhance this under-researched process. The involvement of our Patient and Public Involvement (PPI) group throughout these processes is described.

Gaff, C. L., et al. (2017). "Preparing for genomic medicine: a real world demonstration of health system change." *Npj Genomic Medicine* 2.

Organisations and governments seeking to implement genomics into clinical practice face numerous challenges across multiple, diverse aspects of the health care system. It is not sufficient to tackle any one aspect in isolation: to

create a system that supports genomic medicine, they must be addressed simultaneously. The growing body of global knowledge can guide decision-making, but each jurisdiction or organisation needs a model for genomic (or personalised) medicine that is tailored to its unique context, its priorities and the funds available. Poor decisions could greatly reduce the benefits that could potentially arise from genomic medicine. Demonstration projects enable models to be tested, providing valuable evidence and experience for subsequent implementation. Here, we present the Melbourne Genomics Health Alliance demonstration project as an exemplar of a collaborative, holistic approach to phased implementation of genomics across multiple autonomous institutions. The approach and lessons learned may assist others in determining how best to integrate genomics into their healthcare system.

Gainforth, H. L., et al. (2015). "Assessing Connections Between Behavior Change Theories Using Network Analysis." *Annals of Behavioral Medicine* 49(5): 754-761.

A cross-disciplinary scoping review identified 83 of behavior change theories, with many similarities and overlapping constructs. Investigating the derivation of these theories may provide further understanding of their contribution and intended application. To develop and apply a method to describe the explicit derivation of theories of behavior change. A network analysis of the explicit "contributing to" relations between the 83 theories was conducted. Identification of relations involved textual analysis of primary theory sources. One hundred and twenty-two connections between the theories were identified amounting to 1.8 % of the number possible. On average, theories contributed to one or two theories (mean = 1.47 +/- 3.69 contributions) and were informed by one or two theories (mean = 1.47 +/- 1.61 contributing theories). Most behavior change theories appear to be explicitly informed by few prior theories. If confirmed, this suggests a considerable dislocation between generations of theories which would be expected to undermine scientific progress.

Garbutt, J. M., et al. (2018). "Theory-based development of an implementation intervention to increase HPV vaccination in pediatric primary care practices." *Implementation Science* 13.

Background: The national guideline for use of the vaccine targeting oncogenic strains of the human papillomavirus (HPV) is an evidence-based practice that is poorly implemented in primary care. Recommendations include completion of the vaccine series before the 13th birthday for girls and boys, giving the first dose at the 11- to 12-year-old check-up visit, concurrent with other recommended vaccines. Interventions to increase implementation of this guideline have had little impact, and opportunities to prevent cancer continue to be missed. Methods: We used a theory-informed approach to develop a pragmatic intervention for use in primary care settings to increase implementation of the HPV vaccine guideline recommendation. Using a concurrent mixed methods design in 10 primary care practices, we applied the Consolidated Framework for Implementation Research (CFIR) to systematically investigate and characterize factors strongly influencing vaccine use. We then used the Behavior Change Wheel (BCW) and the Theoretical Domains Framework (TDF) to analyze provider behavior and identify behaviors to target for change and behavioral change strategies to include in the intervention. Results: We identified facilitators and barriers to guideline use across the five CFIR domains: most distinguishing factors related to provider characteristics, their perception of the intervention, and their process to deliver the vaccine. Targeted behaviors were for the provider to recommend the HPV vaccine the same way and at the same time as the other adolescent vaccines, to answer parents' questions with confidence, and to implement a vaccine delivery system. To this end, the intervention targeted improving provider's capability (knowledge, communication skills) and motivation (action planning, belief about consequences, social influences) regarding implementing guideline recommendations, and increasing their opportunity to do so (vaccine delivery system). Behavior change strategies included providing information and communication skill training with graded tasks and modeling, feedback of coverage rates, goal setting, and social support. These strategies were combined in an implementation intervention to be delivered using practice facilitation, educational outreach visits, and cyclical small tests of change. Conclusions: Using CFIR, the BCW and the TDF facilitated the development of a pragmatic, multi-component implementation intervention to increase use of the HPV vaccine in the primary care setting.

Garcia, R. C., et al. (2018). "Recommendations on lifestyle. PAPPS update 2018." *Atencion Primaria* 50: 29-40.

Gardiner, K. M., et al. (2019). "Health professional beliefs, knowledge, and concerns surrounding medicinal cannabis - A systematic review." *Plos One* 14(5).

Background The number of jurisdictions allowing access to medicinal cannabis has been steadily increasing since the state of California introduced legislation in 1996. Although there is a high degree of legislative heterogeneity across jurisdictions, the involvement of a health professional is common among all. This places health professionals at the forefront of therapy, yet no systematic review of literature has offered insight into the beliefs, knowledge, and concerns of health professionals regarding medicinal cannabis. Methods Using a predetermined study protocol, PubMed, EMBASE, PsycINFO, CINAHL, and Scopus databases were searched for studies indexed up to the 1st August 2018. Pre-defined

inclusion and exclusion criteria were applied uniformly. Screening for relevancy, full-text review, data extraction, and risk of bias were completed by two independent investigators. Risk of bias was assessed using CASP criteria (qualitative) and a modified domain-based risk assessment tool (quantitative). Results Of the 15,775 studies retrieved, 106 underwent full-text review and of these, 26 were included. The overall risk of bias was considered low across all included studies. The general impression was that health professionals supported the use of medicinal cannabis in practice; however, there was a unanimous lack of self-perceived knowledge surrounding all aspects of medicinal cannabis. Health professionals also voiced concern regarding direct patient harms and indirect societal harms. Conclusion This systematic review has offered a lens through which to view the existing literature surrounding the beliefs, knowledge, and concerns of health professionals regarding medicinal cannabis. These results are limited, however, by the implicit common-sense models of behaviour utilised by the included studies. Before strategies can be developed and implemented to change health professional behaviour, a more thorough understanding of the factors that underpin the delivery of medicinal cannabis is necessary.

Gardner, B., et al. (2014). "From 'does it work?' to 'what makes it work?': The importance of making assumptions explicit when designing and evaluating behavioural interventions." *European Journal of Cardiovascular Nursing* 13(4): 292-294.

Gardner, B., et al. (2017). "Specifying the content of home-based health behaviour change interventions for older people with frailty or at risk of frailty: an exploratory systematic review." *Bmj Open* 7(2).

Objectives: To identify trials of home-based health behaviour change interventions for frail older people, describe intervention content and explore its potential contribution to intervention effects. Design: 15 bibliographic databases, and reference lists and citations of key papers, were searched for randomised controlled trials of home-based behavioural interventions reporting behavioural or health outcomes. Setting: Participants' homes. Participants: Community-dwelling adults aged ≥ 65 years with frailty or at risk of frailty. Primary and secondary outcome measures: Trials were coded for effects on thematically clustered behavioural, health and well-being outcomes. Intervention content was described using 96 behaviour change techniques, and 9 functions (eg, education, environmental restructuring). Results: 19 eligible trials reported 22 interventions. Physical functioning was most commonly assessed (19 interventions). Behavioural outcomes were assessed for only 4 interventions. Effectiveness on most outcomes was limited, with at most 50% of interventions showing potential positive effects on behaviour, and 42% on physical functioning. 3 techniques (instruction on how to perform behaviour, adding objects to environment, restructuring physical environment) and 2 functions (education and enablement) were more commonly found in interventions showing potential than those showing no potential to improve physical function. Intervention content was not linked to effectiveness on other outcomes. Conclusions: Interventions appeared to have greatest impact on physical function where they included behavioural instructions, environmental modification and practical social support. Yet, mechanisms of effects are unclear, because impact on behavioural outcomes has rarely been considered. Moreover, the robustness of our findings is also unclear, because interventions have been poorly reported. Greater engagement with behavioural science is needed when developing and evaluating home-based health interventions.

Gardner, B., et al. (2017). "How did the public respond to the 2015 expert consensus public health guidance statement on workplace sedentary behaviour? A qualitative analysis." *Bmc Public Health* 17.

Background: In June 2015, an expert consensus guidance statement was published recommending that office workers accumulate 2-4 h of standing and light activity daily and take regular breaks from prolonged sitting. This paper describes public responses to media coverage of the guidance, so as to understand public acceptability of the recommendations within the guidance, and perceptions of sitting and standing as health behaviours. Methods: UK news media websites that had reported on the sedentary workplace guidance statement, and permitted viewers to post comments responding to the story, were identified. 493 public comments, posted in a one-month period to one of six eligible news media websites, were thematically analysed. Results: Three themes were extracted: (1) challenges to the credibility of the sedentary workplace guidance; (2) challenges to the credibility of public health; and (3) the guidance as a spur to knowledge exchange. Challenges were made to the novelty of the guidance, the credibility of its authors, the strength of its evidence base, and its applicability to UK workplaces. Public health was commonly mistrusted and viewed as a tool for controlling the public, to serve a paternalistic agenda set by a conspiracy of stakeholders with hidden non-health interests. Knowledge exchanges focused on correcting others' misinterpretations, raising awareness of historical or scientific context, debating current workplace health policies, and sharing experiences around sitting and standing. Conclusions: The guidance provoked exchanges of health-promoting ideas among some, thus demonstrating the potential for sitting reduction messages to be translated into everyday contexts by lay champions. However, findings also demonstrated confusion, misunderstanding and misapprehension among some respondents about the health value of sitting and standing. Predominantly unfavourable, mistrusting responses reveal significant hostility towards efforts to

displace workplace sitting with standing, and towards public health science more broadly. Concerns about the credibility and purpose of public health testify to the importance of public engagement in public health guidance development.

Gardner, D. M. (2014). "Competent Psychopharmacology." *Canadian Journal of Psychiatry-Revue Canadienne De Psychiatrie* 59(8): 406-411.

There is little doubt that undergraduate and post-graduate training of physicians, pharmacists, and nurses is insufficient to prepare them to use psychotropics safely and effectively, especially in the context of their expanded off-label uses. Therefore, the development of competencies in psychotropic prescribing needs to be approached as a long-term, practice-based learning commitment. Proposed are the abilities and knowledge components necessary for safe and effective use of psychotropics. Typical challenges in prescribing for chronic and recurrent illnesses include highly variable responses and tolerability, drug interactions, and adverse effects that can be serious, irreversible, and even fatal. Prescribing psychotropics is further complicated by negative public and professional reports and growing patient concerns about the quality of care, and questions about the efficacy, safety, and addictive risks of psychotropics. Increased efforts are needed to enhance clinical training and knowledge in psychopharmacology among trainees and practising clinicians, with more comprehensive and sustained attention to the assessment of individual patients, and greater reliance on patient education and collaboration. Improved competence in psychotropic prescribing should lead to more informed, thoughtful, and better-targeted applications as one component of more comprehensive clinical care.

Gate, L., et al. (2016). "Promoting lifestyle behaviour change and well-being in hospital patients: a pilot study of an evidence-based psychological intervention." *Journal of Public Health* 38(3): E292-E300.

Background Lifestyle risk behaviours show an inverse social gradient, clustering in vulnerable groups. We designed and piloted an intervention to address barriers to lifestyle behaviour change among hospital patients. Methods We designed our intervention using effective components of behaviour change interventions informed by psychological theory, Delivered by a health psychologist based at the Royal Free London NHS Foundation Trust, the 4-week intervention included detailed baseline assessment, personalized goal setting, psychological skills development, motivation support and referral to community services. Primary outcomes were feasibility and patient acceptability. We also evaluated changes to health and well-being. Results From 1 July 2013 to 31 September 2014, 686 patients were referred, 338 (49.3%) attended a first appointment and 172 (25.1 %) completed follow-up. Furthermore, 72.1 % of attenders were female with the median age 55 years and poor self-reported baseline health, After 4 weeks, self-efficacy, health and well-being scores significantly improved: 63% of lifestyle goals and 89% of health management goals were fully achieved; 58% of referrals to community lifestyle behaviour change services and 79% of referrals to other services (e.g. Citizen's Advice Bureau) were accepted; 99% were satisfied/very satisfied with the service. Conclusions Our hospital-based intervention was feasible, acceptable and showed preliminary health and well-being gains.

Gathara, D., et al. (2015). "Exploring sources of variability in adherence to guidelines across hospitals in low-income settings: a multi-level analysis of a cross-sectional survey of 22 hospitals." *Implementation Science* 10.

Background: Variability in processes of care and outcomes has been reported widely in high-income settings (at geographic, hospital, physician group and individual physician levels); however, such variability and the factors driving it are rarely examined in low-income settings. Methods: Using data from a cross-sectional survey undertaken in 22 hospitals (60 case records from each hospital) across Kenya that aimed at evaluating the quality of routine hospital services, we sought to explore variability in four binary inpatient paediatric process indicators. These included three prescribing tasks and use of one diagnostic. To examine for sources of variability, we examined intra-class correlation coefficients (ICC) and their changes using multi-level mixed models with random intercepts for hospital and clinician levels and adjusting for patient and clinician level covariates. Results: Levels of performance varied substantially across indicators and hospitals. The absolute values for ICCs also varied markedly ranging from a maximum of 0.48 to a minimum of 0.09 across the models for HIV testing and prescription of zinc, respectively. More variation was attributable at the hospital level than clinician level after allowing for nesting of clinicians within hospitals for prescription of quinine loading dose for malaria (ICC = 0.30), prescription of zinc for diarrhoea patients (ICC = 0.11) and HIV testing for all children (ICC = 0.43). However, for prescription of correct dose of crystalline penicillin, more of the variability was explained by the clinician level (ICC = 0.21). Adjusting for clinician and patient level covariates only altered, marginally, the ICCs observed in models for the zinc prescription indicator. Conclusions: Performance varied greatly across place and indicator. The variability that could be explained suggests interventions to improve performance might be best targeted at hospital level factors for three indicators and clinician factors for one. Our data suggest that better understanding of performance and sources of variation might help tailor improvement interventions although further data across a larger set of indicators and sites would help substantiate these findings.

Gauntlett-Gilbert, J. and P. Brook (2018). "Living well with chronic pain: the role of pain-management programmes." *Bja Education* 18(1): 3-7.

Gavens, L., et al. (2016). "Alcohol consumption after health deterioration in older adults: a mixed-methods study." *Public Health* 139: 79-87.

Objective: To examine if and how older adults modify their drinking after health deterioration, and the factors that motivate changing or maintaining stable drinking behaviour. **Study design:** Explanatory follow-up mixed-methods research. **Methods:** The association between health deterioration and changes in alcohol consumption was examined using secondary data from the English Longitudinal Study of Ageing, a biennial prospective cohort study of a random sample of adults aged 50 years and older living in England. Data were collected through a personal interview and self-completion questionnaire across three waves between 2004 and 2009. The sample size (response rate) across the three waves was 8781 (49.9%), 7168 (40.3%) and 6623 (37.3%). The Chi-squared test was used to examine associations between diagnosis with a long-term condition or a worsening of self-rated health (e.g. from good to fair or fair to poor) and changes in drinking frequency (e.g. everyday, 5-6 days per week, etc.) and volume (ethanol consumed on a drinking day) between successive waves. In-depth interviews with 19 older adults recently diagnosed with a long-term condition were used to explore the factors that influenced change or maintenance in alcohol consumption over time. A purposive sampling strategy was used to recruit a diverse sample of current and former drinkers from voluntary and community organizations in the north of England. An inductive approach was used to analyze the data, facilitating the development of an a posteriori framework for understanding drinking change. **Results:** There was no significant relationship between health deterioration and changes in drinking volume over time. There was however a significant association between health deterioration and changes in drinking frequency between successive waves ($\chi^2(2) = 15.24, P < 0.001$ and $\chi^2(2) = 17.28, P < 0.001$). For example, of participants reporting health deterioration between the first two waves, 47.6% had stable drinking frequency, 23.4% increased their drinking frequency and 29% reported decreased drinking frequency. In comparison, of participants reporting no health deterioration, 52.7% reported stable frequency, 20.8% increased frequency and 26.4% decreased frequency. In qualitative interviews, older adults described a wide range of factors that influence changes in drinking behaviour: knowledge gained from talking to healthcare professionals, online and in the media; tangible negative experiences that were attributed to drinking; mood and emotions (e.g. joy); the cost of alcohol; pub closures; and changes in social roles and activities. Health was just one part of a complex mix of factors that influenced drinking among older adults. **Conclusion:** Patterns of drinking change after health deterioration in older adults are diverse, including stable, increasing and decreasing alcohol consumption over time. Although health motivations to change drinking influence behaviour in some older adults, social and financial motivations to drink are also important in later life and thus a holistic approach is required to influence behaviour. (C) 2016 The Royal Society for Public Health. Published by Elsevier Ltd. All rights reserved.

Geng, E. H., et al. (2015). "Estimation of mortality among HIV-infected people on antiretroviral treatment in east Africa: a sampling based approach in an observational, multisite, cohort study." *Lancet Hiv* 2(3): E107-E116.

Background Mortality in HIV-infected people after initiation of antiretroviral treatment (ART) in resource-limited settings is an important measure of the effectiveness and comparative effectiveness of the global public health response. Substantial loss to follow-up precludes accurate accounting of deaths and limits our understanding of effectiveness. We aimed to provide a better understanding of mortality at scale and, by extension, the effectiveness and comparative effectiveness of public health ART treatment in east Africa. **Methods** In 14 clinics in five settings in Kenya, Uganda, and Tanzania, we intensively traced a sample of patients randomly selected using a random number generator, who were infected with HIV and on ART and who were lost to follow-up (>90 days late for last scheduled visit). We incorporated the vital status outcomes for these patients into analyses of the entire clinic population through probability-weighted survival analyses. **Findings** We followed 34 277 adults on ART from Mbarara and Kampala in Uganda, Eldoret, and Kisumu in Kenya, and Morogoro in Tanzania. The median age was 35 years (IQR 30-42), 11 628 (34%) were men, and median CD4 count before therapy was 154 cells per μL (IQR 70-234). 5780 patients (17%) were lost to follow-up, 991 (17%) were selected for tracing between June 10, 2011, and Aug 27, 2012, and vital status was ascertained for 860 (87%). With incorporation of outcomes from the patients lost to follow-up, estimated 3 year mortality increased from 3.9% (95% CI 3.6-4.2) to 12.5% (11.8-13.3). The sample-corrected, unadjusted 3 year mortality across settings was lowest in Mbarara (7.2%) and highest in Morogoro (23.6%). After adjustment for age, sex, CD4 count before therapy, and WHO stage, the sample-corrected hazard ratio comparing the settings with highest and lowest mortalities was 2.2 (95% CI 1.5-3.4) and the risk difference for death at 3 years was 11% (95% CI 5.0-17.7). **Interpretation** A sampling-based approach is widely feasible and important to an understanding of mortality after initiation of ART. After adjustment for measured biological drivers, mortality differs substantially across settings despite delivery of a similar clinical package of treatment. **Implementation research** to understand the systems, community, and patients' behaviours driving these differences is urgently needed.

Geng, E. H., et al. (2017). "Implementation science: Relevance in the real world without sacrificing rigor." *Plos Medicine* 14(4).

Geng, Z. H., et al. (2018). "Gauging the Effects of Self-efficacy, Social Support, and Coping Style on Self-management Behaviors in Chinese Cancer Survivors." *Cancer Nursing* 41(5): E1-E10.

Background Better self-management control in cancer survivors would benefit their functional status, quality of life, and health service utilization. Factors such as self-efficacy, social support, and coping style are important predictors of self-management behaviors of cancer survivors; however, the impact of these factors on self-management behaviors has not yet been empirically tested in Chinese cancer survivors. **Objectives** The aim of this study was to examine how self-efficacy, social support, and coping style affect specific self-management behaviors. **Methods** A secondary data analysis was completed from a cross-sectional study. A total of 764 cancer survivors were recruited in the study. Validated instruments were used to assess patients' self-efficacy, social support, and coping style. Structural equation modeling (SEM) was used to test the hypothesis. **Results** The SEM model fits the data very well, with root mean square error of approximation (RMSEA) of 0.034; close-fit test cannot reject the hypothesis of root mean square error of approximation of 0.05 or less, comparative fit index of 0.91, Tucker-Lewis index of 0.90, and weighted root mean square residual of 0.82. For the measurement models in the SEM, all items loaded highly on their underlying first-order factors, and the first-order factors loaded highly on their underlying second-order factors (self-efficacy and social support, respectively). The model demonstrated that self-efficacy and social support directly and indirectly, via coping style, affect 3 self-management behaviors (ie, communication, exercise, and information seeking). **Conclusion** Our results provide evidence that self-efficacy and social support impose significant direct effects, as well as indirect effects via coping style, on the self-management of cancer survivors. **Implications for Practice** Our findings may help nurses to further improve their care of cancer survivors in terms of their self-management behaviors, specifically communication, exercise, and information seeking.

Gerber, M., et al. (2018). "When Low Leisure-Time Physical Activity Meets Unsatisfied Psychological Needs: Insights From a Stress-Buffer Perspective." *Frontiers in Psychology* 9.

Background: Few studies have tested whether the stress-buffering effects of leisure-time physical activity (LTPA) depend on other resources, such as the satisfaction of basic psychological needs. Therefore, the present study examines the interaction between perceived stress, LTPA and psychological need satisfaction (PNS) on occupational burnout symptoms in a sample of Swiss workers. **Methods:** The sample consisted of 306 employees (48% women; M-age = 42.9 years, SD = 14.1). Perceived stress was assessed with the Perceived Stress Scale, LTPA with the International Physical Activity Questionnaire, PNS (autonomy, relatedness, and competence) with the Need Satisfaction Scale, and occupational burnout symptoms with the Shirom-Melamed Burnout Measure. A hierarchical regression analysis and single slopes tests were performed to examine two- and three-way interactions. **Results:** Stress was positively correlated with burnout, and negatively correlated with LTPA and PNS levels. LTPA was positively associated with PNS, and negatively correlated with burnout. A negative association existed between PNS and burnout. In the hierarchical regression analysis, all main effects, two- and three-way interactions were significant. People who engaged in more LTPA reported fewer burnout symptoms, if they reported high stress. However, the potential of LTPA to buffer stress was particularly evident in participants who reported low PNS. **Conclusion:** If adult workers are exposed to elevated stress, they are particularly likely to show increased burnout levels if they report low LTPA in combination with low PNS, specifically a lack of autonomy, competence and relatedness.

Gholami, M., et al. (2017). "Evaluation of the Impact of a Mass Media Campaign on Periodontal Knowledge among Iranian Adults: A Three-Month Follow-Up." *Plos One* 12(1).

Objectives This study aimed to evaluate the impact of a national media campaign to promote oral health and periodontal knowledge among adults after a three-month follow-up. **Methods** We conducted a population-based study of adults aged 18 to 50 years using a stratified multi-stage sampling method in Tehran, Iran in 2011. The campaign included an animation clip about periodontal health and disease telecast on national TV for ten consecutive days. We used an instrument to assess the effect of the campaign at baseline, immediately after the campaign and after a three-month follow-up. A total of 543 participants responded at baseline and immediately after the intervention, and 294 were interviewed at the three-month follow-up assessment (response rate: 54.1%). We assessed each participant's periodontal knowledge score, calculated as a sum of correct answers, and the change in their score following the campaign. We then used a five-item questionnaire to evaluate the participants' opinion of the success of the campaign. We used descriptive statistics and generalised estimating equations (GEE) analysis to conduct the statistical analysis. **Results** The mean score for knowledge improvement from baseline to immediate post-intervention evaluation was higher among those who saw the campaign (0.61) than among those who did not (0.29); the corresponding figures from immediate evaluation to three-

month followup were -0.17 and 0.15, respectively. Adjusting for baseline values, the GEE analysis demonstrated that improvement in the mean score of post-campaign knowledge associated significantly with age, education and seeing the campaign. Significant interaction between the time since seeing the campaign and whether the participant saw it ($p < 0.001$) revealed that the mean difference in the knowledge score between the groups who did and did not see the campaign was 0.4 at the immediate evaluation and -0.04 at the three-month follow-up. The participants received the campaign well in terms of being appealing (91.4%), worth bearing in mind (83.4%) and containing valuable information (80.3%). Conclusions Our findings indicate that a population-based media campaign promoting oral health and periodontal knowledge among adults had a positive short-term impact, although the effect seemed to plateau after three months.

Gibson, E. L., et al. (2016). "Differences in Knowledge, Stress, Sensation Seeking, and Locus of Control Linked to Dietary Adherence in Hemodialysis Patients." *Frontiers in Psychology* 7.

Patients with chronic kidney disease (CKD) often require regular hemodialysis (HD) to prolong life. However, between HD sessions, patients have to restrict their diets carefully to avoid excess accumulation of potassium, phosphate, sodium, and fluid, which their diseased kidneys can no longer regulate. Failure to adhere to their renal dietary regimes can be fatal; nevertheless, non-adherence is common, and yet little is known about the psychological variables that might predict this dietary behavior. Thus, this study aimed to assess whether dietary adherence might be affected by a variety of psychological factors including stress, personality, and health locus of control, as well as dietary knowledge, in chronic HD patients. Fifty-one patients (30 men; age range 25-85) who had undergone HD for at least 3 months and had been asked to restrict at least one of potassium, phosphate or fluid, were recruited from a hospital renal unit. Measures of adherence to each of potassium, phosphate, and fluid were derived from standard criteria for these physiological indices in renal patients. Knowledge of food/drink sources of these dietary factors, and their medical implications in relation to HD and CKD were assessed by a bespoke questionnaire. Psychological factors including stress, personality and health locus of control beliefs were measured by standardized questionnaires. Having to restrict a particular nutrient was associated with better knowledge of both food sources and medical complications for that nutrient; however, greater dietary knowledge was not linked to adherence, and knowledge of medical complications tended to be associated with poorer adherence to potassium and phosphate levels. Adherence to these two nutrient requirements was also associated with lower reported stress in the past week. Adherence was associated with differences in locus of control: these differences varied across indices although there was a tendency to believe in external loci. For potassium, phosphate, and fluid restriction, adherers were less likely to be sensation seekers but did not differ from non-adherers on impulsivity, anxiety sensitivity, or hopelessness. In conclusion, the links between dietary adherence and stress, locus of control and personality suggests that screening for such psychological factors may assist in managing adherence in HD patients.

Giglia, R. C. and T. Reibel (2019). "Has a national policy guideline influenced the practice of raising the topic of alcohol and breastfeeding by maternal healthcare practitioners?" *Australian Journal of Primary Health* 25(3): 275-280.

Globally, the public health recommendation for exclusive breastfeeding to the first 6 months of life is not being achieved by many low- and middle-income countries. Many factors have been determined to affect the early cessation of breastfeeding; however, little attention has been paid to the role of alcohol, an increasingly favoured commodity, particularly in these Westernised nations. Maternal healthcare practitioners play a pivotal role in a woman's breastfeeding journey by providing timely advice that can help support continued breastfeeding. Maternal healthcare practitioners (MHP) from across Australia were invited to take part in a semi-structured telephone interview ($n = 19$) to elicit their knowledge of a national alcohol policy guideline on alcohol and breastfeeding, their confidence to provide information on this topic, and if they were routinely incorporating conversations on alcohol and breastfeeding into their practice. The results affirmed that the majority of MHP were not aware of the national policy providing direction for safely consuming alcohol during lactation and were not incorporating this information into their practice. This study suggests having a national policy guideline for safe alcohol consumption during lactation has not promoted awareness of this topic among MHP as a potential strategy to support long-term breastfeeding duration.

Gilburt, H., et al. (2013). "Promoting recovery-oriented practice in mental health services: a quasi-experimental mixed-methods study." *Bmc Psychiatry* 13.

Background: Recovery has become an increasingly prominent concept in mental health policy internationally. However, there is a lack of guidance regarding organisational transformation towards a recovery orientation. This study evaluated the implementation of recovery-orientated practice through training across a system of mental health services. Methods: The intervention comprised four full-day workshops and an in-team half-day session on supporting recovery. It was offered to 383 staff in 22 multidisciplinary community and rehabilitation teams providing mental health services across two contiguous regions. A quasi-experimental design was used for evaluation, comparing behavioural intent with staff from a third contiguous region. Behavioural intent was rated by coding points of action on the care plans of a random

sample of 700 patients (400 intervention, 300 control), before and three months after the intervention. Action points were coded for (a) focus of action, using predetermined categories of care; and (b) responsibility for action. Qualitative inquiry was used to explore staff understanding of recovery, implementation in services and the wider system, and the perceived impact of the intervention. Semi-structured interviews were conducted with 16 intervention group team leaders post-training and an inductive thematic analysis undertaken. Results: A total of 342 (89%) staff received the intervention. Care plans of patients in the intervention group had significantly more changes with evidence of change in the content of patient's care plans (OR 10.94, 95% CI 7.01-17.07) and the attributed responsibility for the actions detailed (OR 2.95, 95% CI 1.68-5.18). Nine themes emerged from the qualitative analysis split into two superordinate categories. 'Recovery, individual and practice', describes the perception and provision of recovery orientated care by individuals and at a team level. It includes themes on care provision, the role of hope, language of recovery, ownership and multidisciplinary. 'Systemic implementation', describes organizational implementation and includes themes on hierarchy and role definition, training approaches, measures of recovery and resources. Conclusions: Training can provide an important mechanism for instigating change in promoting recovery-orientated practice. However, the challenge of systemically implementing recovery approaches requires further consideration of the conceptual elements of recovery, its measurement, and maximising and demonstrating organizational commitment.

Gilchrist, G., et al. (2017). "A Systematic Review and Meta-analysis of Psychosocial Interventions to Reduce Drug and Sexual Blood Borne Virus Risk Behaviours Among People Who Inject Drugs." *Aids and Behavior* 21(7): 1791-1811.

Opiate substitution treatment and needle exchanges have reduced blood borne virus (BBV) transmission among people who inject drugs (PWID). Psychosocial interventions could further prevent BBV. A systematic review and meta-analysis examined whether psychosocial interventions (e.g. CBT, skills training) compared to control interventions reduced BBV risk behaviours among PWID. 32 and 24 randomized control trials (2000-May 2015 in MEDLINE, PsycINFO, CINAHL, Cochrane Collaboration and Clinical trials, with an update in MEDLINE to December 2016) were included in the review and meta-analysis respectively. Psychosocial interventions appear to reduce: sharing of needles/syringes compared to education/information (SMD -0.52; 95% CI -1.02 to -0.03; I-2 = 10%; p = 0.04) or HIV testing/counselling (SMD -0.24; 95% CI -0.44 to -0.03; I-2 = 0%; p = 0.02); sharing of other injecting paraphernalia (SMD -0.24; 95% CI -0.42 to -0.06; I-2 = 0%; p < 0.01) and unprotected sex (SMD -0.44; 95% CI -0.86 to -0.01; I-2 = 79%; p = 0.04) compared to interventions of a lesser time/intensity, however, moderate to high heterogeneity was reported. Such interventions could be included with other harm reduction approaches to prevent BBV transmission among PWID.

Gilissen, J., et al. (2017). "Preconditions for successful advance care planning in nursing homes: A systematic review." *International Journal of Nursing Studies* 66: 47-59.

Objectives: There is growing evidence of the potential effectiveness of advance care planning. Yet important knowledge gaps remain regarding the preconditions for successful implementation of advance care planning in the nursing home setting. We aim to identify the preconditions related to successful advance care planning in the nursing home setting. By specifying those, we would be able to make well-founded choices for the future design and planning of advance care planning intervention programs. Design: A systematic review. Data sources: PubMed, PsycINFO, EMBASE and CINAHL. Review methods: Two authors independently screened publications. One author assessed methodological quality and extracted textual data, which was double-checked for a random sample. We extracted textual data and used thematic synthesis to identify "preconditions", defined as requirements, conditions and elements necessary to achieve the desired outcome of advance care planning, i.e. attaining concordance between residents' preferences and actual care or treatment received at the end of life. Main findings: Based on 38 publications, we identified 17 preconditions at five different levels: resident, family, health-care professional, facility and community. Most preconditions were situated on multiple levels but the majority addressed professionals and the nursing home itself. We summarized preconditions in five domains: to have sufficient knowledge and skills, to be willing and able to participate in advance care planning, to have good relationships, to have an administrative system in place, and contextual factors supporting advance care planning within the nursing home. Conclusion: There are multiple preconditions related to successfully implementing advance care planning in the complex nursing home setting that operate at micro, meso and macro level. Future interventions need to address these multiple domains and levels in a whole-system approach in order to be better implementable and more sustainable, while simultaneously target the important role of the health-care professional and the facility itself. (C) 2016 Elsevier Ltd. All rights reserved.

Gillespie, B. M., et al. (2014). "Postsurgery wound assessment and management practices: a chart audit." *Journal of Clinical Nursing* 23(21-22): 3250-3261.

Aims and Objectives. To examine wound assessment and management in patients following surgery and to compare these practices with current evidence-based guidelines for the prevention of surgical site infection across one healthcare services district in Queensland, Australia. Background. Despite innovations in surgical techniques,

technological advances and environmental improvements in the operating room, and the use of prophylactic antibiotics, surgical site infections remain a major source of morbidity and mortality in patients following surgery. Design. A retrospective clinical chart audit Methods. A random sample of 200 medical records of patients who had undergone surgery was undertaken over a two-year period (2010-2012). An audit tool was developed to collect the data on wound assessment and practice. The study was undertaken across one healthcare services district in Australia. Results. Of the 200 records that were randomly identified, 152 (76%) met the inclusion criteria. The excluded records were either miscoded or did not involve a surgical incision. Of the 152 records included, 87 (57.2%) procedures were classified as 'clean' and 106 (69.7%) were elective. Wound assessments were fully documented in 63/152 (41.4%) of cases, and 59/152 (38.8%) charts had assessments documented on a change of patient condition. Of the 15/152 (9.9%) patients with charted postoperative wound complications, 4/15 (26.6%) developed clinical signs of wound infection, which were diagnosed on days 3 to 5. Conclusions. The timing, content and accuracy of wound assessment documentation are variable. Standardising documentation will increase consistency and clarity and contribute to multidisciplinary communication. Relevance to clinical practice. These results suggest that postoperative wound care practices are not consistent with evidence-based guidelines. Consequently, it is important to involve clinicians in identifying possible challenges within the clinical environment that may curtail guideline use.

Gillespie, B. M., et al. (2017). "Unlocking the "black box" of practice improvement strategies to implement surgical safety checklists: a process evaluation." *Journal of Multidisciplinary Healthcare* 10: 157-166.

Background: Compliance with surgical safety checklists (SSCs) has been associated with improvements in clinical processes such as antibiotic use, correct site marking, and overall safety processes. Yet, proper execution has been difficult to achieve. Objectives: The objective of this study was to undertake a process evaluation of four knowledge translation (KT) strategies used to implement the Pass the Baton (PTB) intervention which was designed to improve utilization of the SSC. Methods: As part of the process evaluation, a logic model was generated to explain which KT strategies worked well (or less well) in the operating rooms of a tertiary referral hospital in Queensland, Australia. The KT strategies implemented included change champions/opinion leaders, education, audit and feedback, and reminders. In evaluating the implementation of these strategies, this study considered context, intervention and underpinning assumptions, implementation, and mechanism of impact. Observational and interview data were collected to assess implementation of the KT strategies relative to fidelity, feasibility, and acceptability. Results: Findings from 35 structured observations and 15 interviews with 96 intervention participants suggest that all of the KT strategies were consistently implemented. Of the 220 staff working in the department, that is, nurses, anesthetists, and surgeons, 160 (72.7%) knew about the PTB strategies. Qualitative analysis revealed that implementation was generally feasible and acceptable. A barrier to feasibility was physician engagement. An impediment to acceptability was participants' skepticism about the ability of the KT strategies to effect behavioral change. Conclusion: Overall, results of this evaluation suggest that success of implementation was moderate. Given the probable impact of contextual factors, that is, team culture and the characteristics of participants, the KT strategies may need modification prior to widespread implementation.

Gillespie, B. M. and A. Marshall (2015). "Implementation of safety checklists in surgery: a realist synthesis of evidence." *Implementation Science* 10.

Aim: The aim of this review is to present a realist synthesis of the evidence of implementation interventions to improve adherence to the use of safety checklists in surgery. Background: Surgical safety checklists have been shown to improve teamwork and patient safety in the operating room. Yet, despite the benefits associated with their use, universal implementation of and compliance with these checklists has been inconsistent. Data sources: An overview of the literature from 2008 is examined in relation to checklist implementation, compliance, and sustainability. Review methods: Pawson's and Rycroft-Malone's realist synthesis methodology was used to explain the interaction between context, mechanism, and outcome. This approach incorporated the following: defining the scope of the review, searching and appraising the evidence, extracting and synthesising the findings, and disseminating, implementing, and evaluating the evidence. We identified two theories a priori that explained contextual nuances associated with implementation and evaluation of checklists in surgery: the Normalisation Process Theory and Responsive Regulation Theory. Results: We identified four a priori propositions: (1) Checklist protocols that are prospectively tailored to the context are more likely to be used and sustained in practice, (2) Fidelity and sustainability is increased when checklist protocols can be seamlessly integrated into daily professional practice, (3) Routine embedding of checklist protocols in practice is influenced by factors that promote or inhibit clinicians' participation, and (4) Regulation reinforcement mechanisms that are more contextually responsive should lead to greater compliance in using checklist protocols. The final explanatory model suggests that the sustained use of surgical checklists is discipline-specific and is more likely to occur when medical staff are actively engaged and leading the process of implementation. Involving clinicians in tailoring the checklist to better fit their context of practice and giving them the opportunity to reflect and evaluate the implementation intervention enables greater participation and ownership of the process. Conclusions: A major limitation in the surgical checklist literature is

the lack of robust descriptions of intervention methods and implementation strategies. Despite this, two consequential findings have emerged through this realist synthesis: First, the sustained use of surgical checklists is discipline-specific and is more successful when physicians are actively engaged and leading implementation. Second, involving clinicians in tailoring the checklist to their context and encouraging them to reflect on and evaluate the implementation process enables greater participation and ownership.

Glegg, S. M. N., et al. (2019). "How the study of networks informs knowledge translation and implementation: a scoping review." *Implementation Science* 14.

BackgroundTo date, implementation science has focused largely on identifying the individual and organizational barriers, processes, and outcomes of knowledge translation (KT) (including implementation efforts). Social network analysis (SNA) has the potential to augment our understanding of KT success by applying a network lens that examines the influence of relationships and social structures on research use and intervention acceptability by health professionals. The purpose of this review was to comprehensively map the ways in which SNA methodologies have been applied to the study of KT with respect to health professional networks.**Methods**Systematic scoping review methodology involved searching five academic databases for primary research on KT that employed quantitative SNA methods, and inclusion screening using predetermined criteria. Data extraction included information on study aim, population, variables, network properties, theory use, and data collection methods. Descriptive statistics and chronology charting preceded theoretical analysis of findings.**Results**Twenty-seven retained articles describing 19 cross-sectional and 2 longitudinal studies reported on 28 structural properties, with degree centrality, tie characteristics (e.g., homophily, reciprocity), and whole network density being most frequent. Eleven studies examined physician-only networks, 9 focused on interprofessional networks, and 1 reported on a nurse practitioner network. Diffusion of innovation, social contagion, and social influence theories were most commonly applied.**Conclusions**Emerging interest in SNA for KT- and implementation-related research is evident. The included articles focused on individual level evidence-based decision-making: we recommend also applying SNA to meso- or macro-level KT activities. SNA research that expands the range of professions under study, examines network dynamics over time, extends the depth of analysis of the role of network structure on KT processes and outcomes, and employs mixed methods to triangulate findings, is needed to advance the field. SNA is a valuable approach for evaluating key network characteristics, structures and positions of relevance to KT, implementation, and evidence informed practice. Examining how network structure influences connections and the implications of those holding prominent network positions can provide insights to improve network-based KT processes.

Gloster, R., et al. (2018). "Behavioural insights into benefits claimants' training." *Education and Training* 60(1): 54-68.

Purpose - The purpose of this paper is to explore the behavioural determinants of work-related benefits claimants' training behaviours and to suggest ways to improve claimants' compliance with training referrals.**Design/methodology/approach** - Qualitative interviews were conducted with 20 Jobcentre Plus staff and training providers, and 60 claimants. Claimants were sampled based on whether or not they had been mandated to training and whether or not they subsequently participated. Along with general findings, differences between these groups are highlighted. **Findings** - Claimants' behaviours are affected by their capabilities, opportunities, and motivations in interrelated ways. Training programmes should appreciate this to better ensure claimants' completion of training programmes. **Originality/value** - Whilst past papers have largely examined a limited number of factors that affect claimants' training behaviours, this report offers a synchronised evaluation of all the behavioural factors that affect claimants' training behaviours.

Glynn, L., et al. (2015). "Patients' views and experiences of technology based self-management tools for the treatment of hypertension in the community: A qualitative study." *Bmc Family Practice* 16.

Background: Patients with hypertension in the community frequently fail to meet treatment goals. The optimal way to organize and deliver care to hypertensive patients has not been clearly identified. The powerful on-board computing capacity of mobile devices, along with the unique relationship individuals have with newer technologies, suggests that they have the potential to influence behaviour. However, little is known regarding the views and experiences of patients using such technology to self-manage their hypertension and associated lifestyle behaviours. The aim of this study was to explore patients' views and experiences of using technology based self-management tools for the treatment of hypertension in the community. **Methods:** This focus group study was conducted with known hypertensive patients over 45 years of age who were recruited in a community setting in Ireland. Taped and transcribed semi-structured interviews with a purposeful sample involving 50 participants in six focus groups were used. Framework analysis was utilized to analyse the data. **Results:** Four key inter-related themes emerged from the analysis: individualisation; trust; motivation; and communication. The globalisation of newer technologies has triggered many substantial and widespread behaviour changes within society, yet users are unique in their use and interactions with such technologies. Trust is an ever present issue in terms of its potential impact on engagement with healthcare providers and

motivation around self-management. The potential ability of technology to influence motivation through carefully selected and tailored messaging and to facilitate a personalised flow of communication between patient and healthcare provider was highlighted. Conclusions: Newer technologies such as mobile devices and the internet have been embraced across the globe despite technological challenges and concerns regarding privacy and security. In the design and development of technology based self-management tools for the treatment of hypertension, flexibility and security are vital to allow and encourage patients to customise, personalise and engage with their devices.

Godinho, C. A., et al. (2016). "Increasing the intent to receive a pandemic influenza vaccination: Testing the impact of theory-based messages." *Preventive Medicine* 89: 104-111.

Objective. Vaccination is an effective preventive measure to reduce influenza transmission, especially important in a pandemic. Despite the messages encouraging vaccination during the last pandemic, uptake remained low (37.6% in clinical risk groups). This study investigated the effect of different types of messages regarding length, content type, and framing on vaccination intention. **Method.** An online experiment was conducted in February 2015. A representative sample of 1424 people living in England read amock newspaper article about a novel influenza pandemic before being randomised to one of four conditions: standard Department of Health (DoH) (long message) and three brief theory-based messages an abridged version of the standard DoH and two messages additionally targeting pandemic influenza severity and vaccination benefits (framed as risk-reducing or health-enhancing, respectively). Intention to be vaccinated and potential mediators were measured. **Results.** The shortened DoH message increased vaccination intention more than the longer one, by increasing perceived susceptibility, anticipated regret and perceived message personal relevance while lowering perceived costs, despite the longer one being rated as slightly more credible. Intention to be vaccinated was not improved by adding information on severity and benefits, and the health-enhancing message was not more effective than the risk-reducing. **Conclusion.** A briefer message resulted in greater intention to be vaccinated, whereas emphasising the severity of pandemic influenza and the benefits of vaccination did not. Future campaigns should consider using brief theoretically-based messages, targeting knowledge about influenza and precautionary measures, perceived susceptibility to pandemic influenza, and the perceived efficacy and reduced costs of vaccination. (C) 2016 Elsevier Inc. All rights reserved.

Goldsmith, H., et al. (2018). "Using the trauma patient experience and evaluation of hospital discharge practices to inform practice change: A mixed methods study." *Journal of Clinical Nursing* 27(7-8): 1589-1598.

Aims and objectives: To explore the pain management experiences of recently discharged adult trauma patients and the discharge practices of the treating hospital. **Background:** Adult trauma patients are not always able to manage their pain effectively and as a result often experience intense and enduring injury pain at home. They describe their pain experience as unique and debilitating, and report feeling uninformed at hospital discharge. There is a need to understand what is fundamentally required for this population at hospital discharge, to facilitate competent pain management and promote best possible outcomes. **Design:** A mixed methods convergent study design. **Methods:** The quantitative results (incidence, intensity and impact of injury pain and the barriers to effective pain management) were merged with the qualitative results (patient experiences and beliefs) to produce greater understanding about the reasons behind the pain management practices of participants. **Results:** Integration of the quantitative and qualitative data produced four new themes. These themes demonstrate that recently discharged adult trauma patients do not have the knowledge or experience to understand or manage their injury pain effectively at home. Inadequate information and education by clinicians, at hospital discharge, contribute to this insufficiency. **Conclusions:** Clinicians need to understand the trauma patient pain experience to appreciate the importance of their discharge practices. Increased understanding and implementation of evidence-informed discharge processes would improve current discharge practices and ultimately support and improve the trauma patient's injury pain management practices at home. **Relevance to clinical practice:** By understanding the patient perspective in the pain management of injuries, clinicians are better able to appreciate what hospital discharge practices and information are genuinely required by the trauma patient to manage their pain effectively at home, potentially preventing the long-term consequences of injury pain.

Gonzales, R. and A. Cattamanchi (2015). "Changing Clinician Behavior When Less Is More." *Jama Internal Medicine* 175(12): 1921-1922.

Goodarzi, Z., et al. (2018). "Barriers and Facilitators for Guidelines with Depression and Anxiety in Parkinson's Disease or Dementia." *Canadian Journal on Aging-Revue Canadienne Du Vieillessement* 37(2): 185-199.

Our primary objective was to understand the barriers and facilitators associated with the implementation of high-quality clinical practice guidelines (CPGs) for depression and anxiety in patients with dementia or Parkinson's disease (PD). We conducted focus groups or interviews with participants experiencing dementia or PD, their caregivers, and physicians in Calgary, Alberta, and applied the theoretical domains framework and behaviour change wheel to guide data

collection and perform a framework analysis. Thirty-three physicians and seven PD patients/caregivers participated. We report barriers and facilitators to the implementation of guideline recommendations for diagnosis, management, and the use of the guidelines. An overarching theme was the lack of evidence for depression or anxiety disorders in dementia or PD, which was prominent for anxiety versus depression. Patients noted difficulties with communicating symptoms and accessing services. Although guidelines are available, physicians have difficulty implementing certain recommendations due primarily to a lack of evidence regarding efficacy.

Goodman, D., et al. (2016). "MH Explanation and elaboration of the SQUIRE (Standards for Quality Improvement Reporting Excellence) Guidelines, V.2.0: examples of SQUIRE elements in the healthcare improvement literature." *Bmj Quality & Safety* 25(12).

Since its publication in 2008, SQUIRE (Standards for Quality Improvement Reporting Excellence) has contributed to the completeness and transparency of reporting of quality improvement work, providing guidance to authors and reviewers of reports on healthcare improvement work. In the interim, enormous growth has occurred in understanding factors that influence the success, and failure, of healthcare improvement efforts. Progress has been particularly strong in three areas: the understanding of the theoretical basis for improvement work; the impact of contextual factors on outcomes; and the development of methodologies for studying improvement work. Consequently, there is now a need to revise the original publication guidelines. To reflect the breadth of knowledge and experience in the field, we solicited input from a wide variety of authors, editors and improvement professionals during the guideline revision process. This Explanation and Elaboration document (E&E) is a companion to the revised SQUIRE guidelines, SQUIRE 2.0. The product of collaboration by an international and interprofessional group of authors, this document provides examples from the published literature, and an explanation of how each reflects the intent of a specific item in SQUIRE. The purpose of the guidelines is to assist authors in writing clearly, precisely and completely about systematic efforts to improve the quality, safety and value of healthcare services. Authors can explore the SQUIRE statement, this E&E and related documents in detail at <http://www.squire-statement.org>.

Goodwin, N. J., et al. (2015). "Use of Behavior Change Techniques in Clean Cooking Interventions: A Review of the Evidence and Scorecard of Effectiveness." *Journal of Health Communication* 20: 43-54.

Despite decades of effort, around 2.8 billion people still rely on solid fuels to meet domestic energy needs. There is robust evidence this causes premature death and chronic disease, as well as wider economic, social, and environmental problems. Behavior change interventions are effective to reduce exposure to harm such as household air pollution, including those using health communications approaches. This article reports the findings of a project that reviewed the effectiveness of behavior change approaches in cleaner cooking interventions in resource-poor settings. The authors synthesized evidence of the use of behavior change techniques, along the cleaner cooking value chain, to bring positive health, economic, and environmental impacts. Forty-eight articles met the inclusion criteria, which documented 55 interventions carried out in 20 countries. The groupings of behavior change techniques most frequently used were shaping knowledge (n=47), rewards and threats (n=35), social support (n=35), and comparisons (n=16). A scorecard of behavior change effectiveness was developed to analyze a selection of case study interventions. Behavior change techniques have been used effectively as part of multilevel programs. Cooking demonstrations, the right product, and understanding of the barriers and benefits along the value chain have all played a role. Often absent are theories and models of behavior change adapted to the target audience and local context. Robust research methods are needed to track and evaluate behavior change and impact, not just technology disseminated. Behavior change approaches could then play a more prominent role as the "special sauce" in cleaner cooking interventions in resource poor settings.

Gorely, T. and G. Ryde (2018). *Sedentary Behaviour and the Social and Physical Environment*. *Sedentary Behaviour Epidemiology*. M. F. Leitzmann, C. Jochem and D. Schmid: 545-564.

Sedentary behaviour is influenced by factors across all levels of the social ecological model. This chapter focuses on the physical and social environmental level of analysis. The chapter summarizes environmental correlates of sedentary behaviour, addresses potential theoretical approaches, and examines the evidence for the effectiveness of environmental interventions on sedentary behaviour. Where relevant, the discussion is separated into young people, adults, and older adults. Some features of the home and workplace have been shown to be associated with sedentary behaviour; however, less is known about influences on sedentary behaviour in other contexts. Theoretical perspectives that may be particularly relevant when considering environmental influences are discussed, including social cognitive theory, habit theory, social network analysis, and systems theory. The theories employed need to try and capture the complex interrelationships between individuals, the groups they operate within and the physical and social context. There is evidence to suggest that incorporating environmental modifications into sedentary behaviour interventions is likely to be effective for both young people and adults.

Gould, G. S., et al. (2016). "Getting over the shock: taking action on Indigenous maternal smoking." *Australian Journal of Primary Health* 22(4): 276-282.

Smoking rates are slow to decline among pregnant Indigenous women. One in two pregnant Indigenous Australian women is a tobacco smoker compared with one in eight in the non-Indigenous population. The National Close the Gap strategy ambitiously aims to reduce Indigenous smoking prevalence to half by 2018, but this goal is unlikely to be achieved. Evidence is growing to better inform targeted strategies for Indigenous pregnant women based on national and international studies. It is proposed to be an appropriate time to refine translational approaches for anti-tobacco messages and cessation support in this population, rather than waiting for further empirical research before making these essential changes. Systemic barriers to Indigenous pregnant women receiving equitable primary health care have been identified, are remediable, and urgently require addressing. These barriers include: (1) lack of subsidised access to suitable oral forms of nicotine replacement therapy; (2) lack of clinician training in the complex area of management of maternal Indigenous smoking; and (3) lack of targeted health promotion programs addressing the psychosocial challenges that Indigenous women face. In the interim, translational strategies to target tobacco control and cessation in pregnant Indigenous women need to be based on current evidence.

Govender, R., et al. (2017). "Improving swallowing outcomes in patients with head and neck cancer using a theory-based pretreatment swallowing intervention package: protocol for a randomised feasibility study." *Bmj Open* 7(3).

Introduction: The incidence of head and neck cancer (HNC) in the UK is rising, with an average of 31 people diagnosed daily. Patients affected by HNC suffer significant short-term and long-term post-treatment morbidity as a result of dysphagia, which affects daily functioning and quality of life (QOL). Pretreatment swallowing exercises may provide additional benefit over standard rehabilitation in managing dysphagia after primary HNC treatments, but uncertainty about their effectiveness persists. This study was preceded by an intervention development phase to produce an optimised swallowing intervention package (SIP). The aim of the current study is to assess the feasibility of this new intervention and research processes within a National Health Service (NHS) setting. **Method and analysis:** A two-arm non-blinded randomised controlled feasibility study will be carried out at one tertiary referral NHS centre providing specialist services in HNC. Patients newly diagnosed with stage III and IV disease undergoing planned surgery and/or chemoradiation treatments will be eligible. The SIP will be delivered pre treatment, and a range of swallowing-related and QOL measures will be collected at baseline, 1, 3 and 6 months post-treatment. Outcomes will test the feasibility of a future randomised controlled trial (RCT), detailing rate of recruitment and patient acceptance to participation and randomisation. Salient information relating to protocol implementation will be collated and study material such as the case report form will be tested. A range of candidate outcome measures will be examined for suitability in a larger RCT. **Ethics and dissemination:** Ethical approval was obtained from an NHS Research Ethics Committee. Findings will be published open access in a peer-reviewed journal, and presented at relevant conferences and research meetings.

Govender, R., et al. (2017). "Swallowing interventions for the treatment of dysphagia after head and neck cancer: a systematic review of behavioural strategies used to promote patient adherence to swallowing exercises." *Bmc Cancer* 17.

Background: Dysphagia is a significant side-effect following treatment for head and neck cancers, yet poor adherence to swallowing exercises is frequently reported in intervention studies. Behaviour change techniques (BCTs) can be used to improve adherence, but no review to date has described the techniques or indicated which may be more associated with improved swallowing outcomes. **Methods:** A systematic review was conducted to identify behavioural strategies in swallowing interventions, and to explore any relationships between these strategies and intervention effects. Randomised and quasi-randomised studies of head and neck cancer patients were included. Behavioural interventions to improve swallowing were eligible provided a valid measure of swallowing function was reported. A validated and comprehensive list of 93 discrete BCTs was used to code interventions. Analysis was conducted via a structured synthesis approach. **Results:** Fifteen studies (8 randomised) were included, and 20 different BCTs were each identified in at least one intervention. The BCTs identified in almost all interventions were: instruction on how to perform the behavior, setting behavioural goals and action planning. The BCTs that occurred more frequently in effective interventions, were: practical social support, behavioural practice, self-monitoring of behaviour and credible source for example a skilled clinician delivering the intervention. The presence of identical BCTs in comparator groups may diminish effects. **Conclusions:** Swallowing interventions feature multiple components that may potentially impact outcomes. This review maps the behavioural components of reported interventions and provides a method to consistently describe these components going forward. Future work may seek to test the most effective BCTs, to inform optimisation of swallowing interventions.

Govender, R., et al. (2015). "Identification of behaviour change components in swallowing interventions for head and neck cancer patients: protocol for a systematic review." *Systematic Reviews* 4.

Background: Dysphagia (difficulty in swallowing) is a predictable consequence of head and neck cancer and its treatment. Loss of the ability to eat and drink normally has a devastating impact on quality of life for survivors of this type of cancer. Most rehabilitation programmes involve behavioural interventions that include swallowing exercises to help improve swallowing function. Such interventions are complex; consisting of multiple components that may influence outcomes. These interventions usually require patient adherence to recommended behaviour change advice. To date, reviews of this literature have explored whether variation in effectiveness can be attributed to the type of swallowing exercise, the use of devices to facilitate use of swallowing muscles, and the timing (before, during or after cancer treatment). This systematic review will use a behavioural science lens to examine the content of previous interventions in this field. It aims to identify (a) which behaviour change components are present, and (b) the frequency with which they occur in interventions deemed to be effective and non-effective. Methods/design: Clinical trials of behavioural interventions to improve swallowing outcomes in patients with head and neck cancers will be identified via a systematic and comprehensive search of relevant electronic health databases, trial registers, systematic review databases and Web of Science. To ascertain behaviour change intervention components, we will code the content for its theory basis, intervention functions and specific behaviour change techniques, using validated tools: the Theory Coding Scheme, Behaviour Change Wheel and Behaviour Change Technique Taxonomy v1. Study quality will be assessed for descriptive purposes only. Given the specialisation and focus of this review, a small yield of studies with heterogeneous outcome measures is anticipated. Therefore, narrative synthesis is considered more appropriate than meta-analysis. We will also compare the frequency of behavioural components in effective versus non-effective interventions, where effectiveness is indicated by statistically significant changes in swallowing outcomes. Discussion: This review will provide a synthesis of the behaviour change components in studies that currently represent best evidence for behavioural swallowing interventions for head and neck cancer patients. Results will provide some guidance on the choice of optimal behavioural strategies for the development of future interventions.

Govender, R., et al. (2017). "Patient Experiences of Swallowing Exercises After Head and Neck Cancer: A Qualitative Study Examining Barriers and Facilitators Using Behaviour Change Theory." *Dysphagia* 32(4): 559-569.

Poor patient adherence to swallowing exercises is commonly reported in the dysphagia literature on patients treated for head and neck cancer. Establishing the effectiveness of exercise interventions for this population may be undermined by patient non-adherence. The purpose of this study was to explore the barriers and facilitators to exercise adherence from a patient perspective, and to determine the best strategies to reduce the barriers and enhance the facilitators. In-depth interviews were conducted on thirteen patients. We used a behaviour change framework and model [Theoretical domains framework and COM-B (Capability-opportunity-motivation-behaviour) model] to inform our interview schedule and structure our results, using a content analysis approach. The most frequent barrier identified was psychological capability. This was highlighted by patient reports of not clearly understanding reasons for the exercises, forgetting to do the exercises and not having a system to keep track. Other barriers included feeling overwhelmed by information at a difficult time (lack of automatic motivation) and pain and fatigue (lack of physical capability). Main facilitators included having social support from family and friends, the desire to prevent negative consequences such as long-term tube feeding (reflective motivation), having the skills to do the exercises (physical capability), having a routine or trigger and receiving feedback on the outcome of doing exercises (automatic motivation). Linking these findings back to the theoretical model allows for a more systematic selection of theory-based strategies that may enhance the design of future swallowing exercise interventions for patients with head and neck cancer.

Graca, J., et al. (2019). "Consumption orientations may support (or hinder) transitions to more plant based diets." *Appetite* 140: 19-26.

There have been increasing calls for triggering and sustaining a large-scale transition toward healthier and more sustainable food systems. To help materialize this transition, the present work aims to inform efforts for developing, marketing and promoting plant-based meals and plant-forward lifestyles, following a consumption-focused approach. The findings (N-participants = 1600, Portugal; 52.6% female, M-age = 48.30) allowed to identify trends and differences on three sets of variables - (a) current eating habits (i.e., meat, fish, and plant-based meals), (b) consumer willingness to change (i.e., reduce meat consumption, follow a plant-based diet, maintain the status quo), and (c) enablers for eating plant-based meals more often (i.e., capability, opportunity, motivation) -, considering consumer orientations toward consumption in general, and food consumption in particular. Taken together, the results suggested that some consumption orientations were aligned with the transition to more plant-based diets (e.g., food orientation toward naturalness), others were open to - but not yet materialized in - the transition (e.g., general orientation toward consumption as exploration), and still others were in tension with the transition (e.g., food orientation toward pleasure). The discussion calls for developing and testing pathways to reduce meat consumption and increase plant-based eating which capture and build upon a range of consumption orientations, rather than against them.

Grady, A., et al. (2014). "Enablers of the Implementation of Tissue Plasminogen Activator in Acute Stroke Care: A Cross-Sectional Survey." *Plos One* 9(12).

Objective: To assess emergency physicians' perceptions of individual and system enablers to the use of tissue Plasminogen Activator in acute stroke. Method: Australian fellows and trainees of Australasian College for Emergency Medicine completed a 57-item online survey assessing enablers to implementation of evidence-based practice across six domains: knowledge, skills, modelling, monitoring, feedback, and maintenance. Demographic and workplace characteristics were obtained. Descriptive statistics were calculated to describe demographic and workplace characteristics of responders, and survey responses. Each domain received an overall score (%) based on the number of responders agreeing with all items within the domain. Results: A total of 429 (13%) Australasian College for Emergency Medicine members responded. 17.7% of respondents reported they and/or their workplace met all knowledge-related enablers, however only 2.3% had all skill-related enablers in place. Of respondents who decide which patients receive tissue Plasminogen Activator treatment, 18.1% agreed that all maintenance-related enablers are in place at their hospital, compared to 6.6% for those who do not decide which patients receive tissue Plasminogen Activator treatment. None of the respondents had all items in place cross all domains. Conclusions: Even when allowing for the low response rate, it seems likely there is a lack of individual and system enablers supporting the implementation of best-practice stroke care in a number of Australian hospitals. Quality improvement programs could target all domains, particularly the skills-training and feedback emergency physicians receive, to aid implementation of tissue Plasminogen Activator treatment for acute stroke.

Graham, H., et al. (2017). "Providing oxygen to children in hospitals: a realist review." *Bulletin of the World Health Organization* 95(4): 288-302.

Objective To identify and describe interventions to improve oxygen therapy in hospitals in low-resource settings, and to determine the factors that contribute to success and failure in different contexts. Methods Using realist review methods, we scanned the literature and contacted experts in the field to identify possible mechanistic theories of how interventions to improve oxygen therapy systems might work. Then we systematically searched online databases for evaluations of improved oxygen systems in hospitals in low- or middle-income countries. We extracted data on the effectiveness, processes and underlying theory of selected projects, and used these data to test the candidate theories and identify the features of successful projects. Findings We included 20 improved oxygen therapy projects (45 papers) from 15 countries. These used various approaches to improving oxygen therapy, and reported clinical, quality of care and technical outcomes. Four effectiveness studies demonstrated positive clinical outcomes for childhood pneumonia, with large variation between programmes and hospitals. We identified factors that help or hinder success, and proposed a practical framework depicting the key requirements for hospitals to effectively provide oxygen therapy to children. To improve clinical outcomes, oxygen improvement programmes must achieve good access to oxygen and good use of oxygen, which should be facilitated by a broad quality improvement capacity, by a strong managerial and policy support and multidisciplinary teamwork. Conclusion Our findings can inform practitioners and policy-makers about how to improve oxygen therapy in low-resource settings, and may be relevant for other interventions involving the introduction of health technologies.

Graham, H. R., et al. (2017). "Improving oxygen therapy for children and neonates in secondary hospitals in Nigeria: study protocol for a stepped-wedge cluster randomised trial." *Trials* 18.

Background: Oxygen is a life-saving, essential medicine that is important for the treatment of many common childhood conditions. Improved oxygen systems can reduce childhood pneumonia mortality substantially. However, providing oxygen to children is challenging, especially in small hospitals with weak infrastructure and low human resource capacity. Methods/design: This trial will evaluate the implementation of improved oxygen systems at secondary-level hospitals in southwest Nigeria. The improved oxygen system includes: a standardised equipment package; training of clinical and technical staff; infrastructure support (including improved power supply); and quality improvement activities such as supportive supervision. Phase 1 will involve the introduction of pulse oximetry alone; phase 2 will involve the introduction of the full, improved oxygen system package. We have based the intervention design on a theory-based analysis of previous oxygen projects, and used quality improvement principles, evidence-based teaching methods, and behaviour-change strategies. We are using a stepped-wedge cluster randomised design with participating hospitals randomised to receive an improved oxygen system at 4-month steps (three hospitals per step). Our mixed-methods evaluation will evaluate effectiveness, impact, sustainability, process and fidelity. Our primary outcome measures are childhood pneumonia case fatality rate and inpatient neonatal mortality rate. Secondary outcome measures include a range of clinical, quality of care, technical, and health systems outcomes. The planned study duration is from 2015 to 2018. Discussion: Our study will provide quality evidence on the effectiveness of improved oxygen systems, and how to better implement and scale-up oxygen systems in resource-limited settings. Our results should have important implications for policy-makers, hospital administrators, and child health organisations in Africa and globally.

Graham, H. R., et al. (2018). "Adoption of paediatric and neonatal pulse oximetry by 12 hospitals in Nigeria: a mixed-methods realist evaluation." *Bmj Global Health* 3(3).

Introduction Pulse oximetry is a life-saving tool for identifying children with hypoxaemia and guiding oxygen therapy. This study aimed to evaluate the adoption of oximetry practices in 12 Nigerian hospitals and identify strategies to improve adoption. **Methods** We conducted a mixed-methods realist evaluation to understand how oximetry was adopted in 12 Nigerian hospitals and why it varied in different contexts. We collected quantitative data on oximetry use (from case notes) and user knowledge (pretraining/post-training tests). We collected qualitative data via focus groups with project nurses (n=12) and interviews with hospital staff (n=11). We used the quantitative data to describe the uptake of oximetry practices. We used mixed methods to explain how hospitals adopted oximetry and why it varied between contexts. **Results** Between January 2014 and April 2017, 38 525 children (38% aged \leq 28 days) were admitted to participating hospitals (23 401 pretraining; 15 124 post-training). Prior to our intervention, 3.3% of children and 2.5% of neonates had oximetry documented on admission. In the 18 months of intervention period, all hospitals improved oximetry practices, typically achieving oximetry coverage on $>50\%$ of admitted children after 2-3 months and $>90\%$ after 6-12 months. However, oximetry adoption varied in different contexts. We identified key mechanisms that influenced oximetry adoption in particular contexts. **Conclusion** Pulse oximetry is a simple, life-saving clinical practice, but introducing it into routine clinical practice is challenging. By exploring how oximetry was adopted in different contexts, we identified strategies to enhance institutional adoption of oximetry, which will be relevant for scale-up of oximetry in hospitals globally.

Graham, S., et al. (2018). "Identifying Potentially Modifiable Factors Associated with Treatment Non-Adherence in Paediatric Growth Hormone Deficiency: A Systematic Review." *Hormone Research in Paediatrics* 90(4): 221-227.

Background: Despite the developments of recombinant growth hormone (rhGH) treatment and the benefits in long-term clinical health outcomes, evidence has shown that many children with growth hormone deficiency (GHD) still fail to achieve their target adult height. Suboptimal outcomes have been largely attributed to treatment non-adherence. **Methods:** A search of 11 electronic databases was undertaken to identify relevant articles, published in English, between 1985 and 2018. Additional search strategies included hand-searching topic review articles to identify eligible studies. Articles were screened against the inclusion eligibility criteria and data on sample characteristics, study design, outcomes, and key findings was extracted. The results were narratively synthesised and categorised using the COM-B theoretical framework. **Results:** Twenty-one full-text articles were assessed for eligibility, of which 6 articles met the inclusion criteria. The prevalence of non-adherence in the included studies varied from 7 to 71%. Potentially modifiable factors associated with rhGH non-adherence were categorised within the COM-B framework; key factors included: a lack of knowledge and understanding of the condition and treatment, discomfort and pain associated with injections, and the quality of the healthcare professional-patient relationship. **Conclusion:** This review highlights the scope of the adherence problem evident amongst the paediatric GHD population and in addition presents the wide range of potentially modifiable factors that explain this health-related behaviour. (C) 2018 S. Karger AG, Basel

Gramlich, L. M., et al. (2017). "Implementation of Enhanced Recovery After Surgery: a strategy to transform surgical care across a health system." *Implementation Science* 12.

Background: Enhanced Recovery After Surgery (ERAS) programs have been shown to have a positive impact on outcome. The ERAS care system includes an evidence-based guideline, an implementation program, and an interactive audit system to support practice change. The purpose of this study is to describe the use of the Theoretic Domains Framework (TDF) in changing surgical care and application of the Quality Enhancement Research Initiative (QUERI) model to analyze end-to-end implementation of ERAS in colorectal surgery across multiple sites within a single health system. The ultimate intent of this work is to allow for the development of a model for spread, scale, and sustainability of ERAS in Alberta Health Services (AHS). **Methods:** ERAS for colorectal surgery was implemented at two sites and then spread to four additional sites. The ERAS Interactive Audit System (EIAS) was used to assess compliance with the guidelines, length of stay, readmissions, and complications. Data sources informing knowledge translation included surveys, focus groups, interviews, and other qualitative data sources such as minutes and status updates. The QUERI model and TDF were used to thematically analyze 189 documents with 2188 quotes meeting the inclusion criteria. Data sources were analyzed for barriers or enablers, organized into a framework that included individual to organization impact, and areas of focus for guideline implementation. **Results:** Compliance with the evidence-based guidelines for ERAS in colorectal surgery at baseline was 40%. Post implementation compliance, consistent with adoption of best practice, improved to 65%. Barriers and enablers were categorized as clinical practice (22%), individual provider (26%), organization (19%), external environment (7%), and patients (25%). In the Alberta context, 26% of barriers and enablers to ERAS implementation occurred at the site and unit levels, with a provider focus 26% of the time, a patient focus 26% of the time, and a system focus 22% of the time. **Conclusions:** Using the ERAS care system and applying the QUERI model and TDF allow for

identification of strategies that can support diffusion and sustainment of innovation of Enhanced Recovery After Surgery across multiple sites within a health care system.

Granger, C. L., et al. (2017). "Understanding factors influencing physical activity and exercise in lung cancer: a systematic review." *Supportive Care in Cancer* 25(3): 983-999.

Despite evidence and clinical practice guidelines supporting physical activity (PA) for people with lung cancer, this evidence has not translated into clinical practice. This review aims to identify, evaluate and synthesise studies examining the barriers and enablers for patients with lung cancer to participate in PA from the perspective of patients, carers and health care providers (HCPs). Systematic review of articles using electronic databases: MEDLINE (1950-2016), CINAHL (1982-2016), EMBASE (1980-2016), Scopus (2004-2016) and Cochrane (2016). Quantitative and qualitative studies, published in English in a peer-reviewed journal, which assessed the barriers or enablers to PA for patients with lung cancer were included. Registered-PROSPERO (CRD4201603341). Twenty-six studies (n = 9 cross-sectional, n = 4 case series, n = 11 qualitative) including 1074 patients, 23 carers and 169 HCPs were included. Barriers and enablers to PA were identified (6 major themes, 18 sub-themes): Barriers included patient-level factors (physical capability, symptoms, comorbidities, previous sedentary lifestyle, psychological influences, perceived relevance), HCP factors (time/knowledge to deliver information) and environmental factors (access to services, resources, timing relative to treatment). Enablers included anticipated benefits, opportunity for behaviour change and influences from HCPs and carers. This systematic review has identified the volume of literature demonstrating that barriers and enablers to PA in lung cancer are multidimensional and span diverse factors. These include patient-level factors, such as symptoms, comorbidities, sedentary lifestyle, mood and fear, and environmental factors. These factors should be considered to identify and develop suitable interventions and clinical services in attempt to increase PA in patients with lung cancer.

Grant, A., et al. (2019). "Understanding health behaviour in pregnancy and infant feeding intentions in low-income women from the UK through qualitative visual methods and application to the COM-B (Capability, Opportunity, Motivation-Behaviour) model." *Bmc Pregnancy and Childbirth* 19.

Background Health behaviours during pregnancy and the early years of life have been proven to affect long term health, resulting in investment in interventions. However, interventions often have low levels of completion and limited effectiveness. Consequently, it is increasingly important for interventions to be based on both behaviour change theories and techniques, and the accounts of pregnant women. This study engaged with pregnant women from deprived communities, to understand their subjective experiences of health in pregnancy. Methods The study adopted a women-centred ethos and recruited a purposive sample of ten pregnant women, who lived in deprived areas and were on low incomes. Participants engaged with three creative techniques of visual data production (timelines, collaging and dyad sandboxing), followed by elicitation interviews. One participant only engaged in the initial activity and interview, resulting in a total of 28 elicitation interviews. This in-depth qualitative approach was designed to enable a nuanced account of the participants' thoughts, everyday experiences and social relationships. Data were deductively coded for alcohol, smoking and infant feeding and then mapped to the COM-B model (Capability, Opportunity, Motivation - Behaviour). Results Five participants had experience of smoking during pregnancy, four had consumed alcohol during pregnancy, and all participants, except one who had exclusively formula fed her child, disclosed a range of infant feeding experiences and intentions for their current pregnancies. Considerable variation was identified between the drivers of behaviour around infant feeding and that related to abstinence from tobacco and alcohol during pregnancy. Overall, knowledge and confidence (psychological capability), the role of partners (social opportunity) and support from services to overcome physical challenges (environmental opportunity) were reported to impact on (reflective) motivation, and thus women's behaviour. The role of the public in creating and reinforcing stigma (social opportunity) was also noted in relation to all three behaviours. Conclusions When designing new interventions to improve maternal health behaviours it is important to consider the accounts of pregnant women. Acknowledging pregnant women's subjective experiences and the challenges they face in negotiating acceptable forms of motherhood, can contribute to informed policy and practice, which can engage rather than isolate potential user groups.

Grant, S., et al. (2015). "Improving management and effectiveness of home blood pressure monitoring: a qualitative UK primary care study." *British Journal of General Practice* 65(640): E776-E783.

Background Self-monitoring blood pressure (SMBP) is becoming an increasingly prevalent practice in UK primary care, yet there remains little conceptual understanding of why patients with hypertension engage in self-monitoring. Aim To identify psychological factors or processes prompting the decision to self-monitor blood pressure. Design and setting A qualitative study of patients previously participating in a survey study about SMBP from four general practices in the West Midlands. Method Taped and transcribed in-depth interviews with 16 patients (6 currently monitoring, 2 used to self-monitor, and 8 had never self-monitored). Thematic analysis was undertaken. Results Three main themes emerged: 'self' and 'living with hypertension' described the emotional element of living with an asymptomatic condition; 'self-

monitoring behaviour and medication' described overall views about self-monitoring, current practice, reasons for monitoring, and the impact on medication adherence; and 'the GP-patient transaction' described the power relations affecting decisions to self-monitor. Self-monitoring was performed by some as a protective tool against the fears of a silent but serious condition, whereas others self-monitor simply out of curiosity. People who self-monitored tended not to discuss this with their nurse or GP, partly due to perceiving minimal or no interest from their clinician about home monitoring, and partly due to fear of being prescribed additional medication. Conclusion The decision to self-monitor appeared often to be an individual choice with no schedule or systems to integrate it with other medical care. Better recognition by clinicians that patients are self-monitoring, perhaps utilising the results in shared decision-making, might help integrate it into daily practice.

Greenland, K., et al. (2016). "Theory-based formative research on oral rehydration salts and zinc use in Lusaka, Zambia." *Bmc Public Health* 16.

Background: A theoretically grounded formative research study was carried out to investigate behaviour related to the use of Oral Rehydration Salts (ORS) and zinc tablets. The purpose was to inform the design of the behaviour change component of the Programme for Awareness and Elimination of Diarrhoea in Lusaka Province, Zambia, which aims to reduce childhood morbidity and mortality from diarrhoeal disease. Methods: Fourteen behaviour trials were conducted among caregivers of children under-five with diarrhoea. Caregivers were recruited from two clinics situated in rural and peri-urban Lusaka. Trials took ten days and data were captured using video, observation and repeated interviews. Additional data were collected through focus group discussions with mothers, observations in clinics and pharmacies and interviews with clinic and pharmacy staff. Findings were organised according to categories of behavioural determinants from Evo-Eco theory. Results: Participants were all familiar with ORS and most knew its purpose. ORS use was motivated by symptoms of dehydration, rather than the start of a diarrhoea episode, and was stopped when the child had visibly recovered energy. Only four of 14 behaviour trial participants were observed to correctly prepare ORS. Errors were mainly associated with measurement, resulting in a solution that was too concentrated. ORS was not observed to be given to children at clinics. Although zinc was unknown in this population, it was positively received by mothers keen to learn whether zinc would work better than alternative treatments to stop diarrhoea. Conclusions: ORS was sub-optimally prepared and used at home. It was not used while waiting to be seen at a clinic. In homes, the behaviour change intervention should promote early and continued use of correctly prepared ORS. In the longer-term, these behaviours may best be encouraged by changing the product design or sachet size. Despite its unfamiliarity, this population was well disposed to the use of zinc as a treatment for diarrhoea; when zinc is new to a population, promoting zinc as a solution to stopping diarrhoea, which mothers seek, may drive initial trial. Ensuring the availability of zinc in public clinics and private pharmacies prior to commencement of any promotion activities is crucial.

Greenwell, K., et al. (2018). "Intervention planning for the REDUCE maintenance intervention: a digital intervention to reduce reulceration risk among patients with a history of diabetic foot ulcers." *Bmj Open* 8(5).

Objectives To develop a comprehensive intervention plan for the REDUCE maintenance intervention to support people who have had diabetic foot ulcers (DFUs) to sustain behaviours that reduce reulceration risk. Methods Theory-based, evidence-based and person-based approaches to intervention development were used. In phase I of intervention planning, evidence was collated from a scoping review of the literature and qualitative interviews with patients who have had DFUs (n=20). This was used to identify the psychosocial needs and challenges of this population and barriers and facilitators to the intervention's target behaviours: regular foot checking, rapid self-referral in the event of changes in foot health, graded and regular physical activity and emotional management. In phase II, this evidence was combined with expert consultation to develop the intervention plan. Brief 'guiding principles' for shaping intervention development were created. 'Behavioural analysis' and 'logic modelling' were used to map intervention content onto behaviour change theory to comprehensively describe the intervention and its hypothesised mechanisms. Results Key challenges to the intervention's target behaviours included patients' uncertainty regarding when to self-refer, physical limitations affecting foot checking and physical activity and, for some, difficulties managing negative emotions. Important considerations for the intervention design included a need to increase patients' confidence in making a self-referral and in using the maintenance intervention and a need to acknowledge that some intervention content might be relevant to only some patients (emotional management, physical activity). The behavioural analysis identified the following processes hypothesised to facilitate long-term behaviour maintenance including increasing patients' skills, self-efficacy, knowledge, positive outcome expectancies, sense of personal control, social support and physical opportunity. Conclusions This research provides a transparent description of the intervention planning for the REDUCE maintenance intervention. It provides insights into potential barriers and facilitators to the target behaviours and potentially useful behaviour change techniques to use in clinical practice.

Greenwood, J., et al. (2019). "Rehabilitation following lumbar fusion surgery (REFS) a randomised controlled feasibility study." *European Spine Journal* 28(4): 735-744.

Purpose Following lumbar fusion surgery (LFS), 40% of patients are unsure/dissatisfied with their outcome. A prospective, single-centre, randomised, controlled trial was conducted to evaluate the feasibility (including clinical and economic impact) of a theoretically informed rehabilitation programme following LFS (REFS). Methods REFS was informed by an explicit theoretical framework and consisted of 10 consecutive weekly group rehabilitation sessions (education, low-tech cardiovascular, limb and spine strengthening exercises, and peer support). Participants were randomised to REFS or usual care. Primary feasibility outcomes included recruitment and engagement. Secondary outcomes, collected preoperatively and 3, 6, and 12 months postoperatively, comprised the Oswestry disability index, European Quality of Life 5 dimensions score, pain self-efficacy questionnaire, hospital anxiety and depression scale and the aggregated functional performance time. Economic impact was evaluated with the Client Services Receipt Inventory. Results Fifty-two of 58 eligible participants were recruited, and engagement with REFS was >95%. REFS participants achieved a clinically meaningful reduction in unadjusted mean short-term disability (-13.27/13.46), which was not observed in the usual care group (-2.42/12.33). This was maintained in the longer term (-14.72% +/- 13.34 vs -7.57 +/- 13.91). Multilevel regression analyses, adjusted for body mass index, baseline depression, and smoking status reported a statistically significant short-term improvement in disability ($p=0.014$) and pain self-efficacy ($p=0.007$). REFS costs 275 pound per participant. Conclusions Results suggest that REFS is feasible and potentially affordable for delivery in the National Health Service. It is associated with a clinically meaningful impact. A multicentre randomised controlled study to further elucidate these results is warranted. [GRAPHICS].

Grimmer, K., et al. (2019). "A South African experience in applying the Adopt-Contextualise-Adapt framework to stroke rehabilitation clinical practice guidelines." *Health Research Policy and Systems* 17.

Background Clinical practice guideline (CPG) activity has escalated internationally in the last 20 years, leading to increasingly sophisticated methods for CPG developers and implementers. Despite this, there remains a lack of practical support for end-users in terms of effectively and efficiently implementing CPG recommendations into local practice. This paper describes South African experiences in implementing international CPG recommendations for best practice stroke rehabilitation into local contexts, using a purpose-build approach. Methods Composite recommendations were synthesised from 16 international CPGs to address end-user questions about best practice rehabilitation for South African stroke survivors. End-user representatives on the project team included methodologists, policy-makers, clinicians, managers, educators, researchers and stroke survivors. The Adopt-Contextualise-Adapt model was applied as a decision-guide to streamline discussions on endorsement and development of implementation strategies. Where recommendations required contextualisation to address local barriers before they could be effectively implemented, prompts were provided to identify barriers and possible solutions. Where recommendations could not be implemented without additional local evidence (adaptation), options were identified to establish new evidence. Findings The structured implementation process was efficient in terms of time, effort, resources and problem solving. The process empowered the project team to make practical decisions about local uptake of international recommendations, develop local implementation strategies, and determine who was responsible, for what and when. Different implementation strategies for the same recommendation were identified for different settings, to address different barriers. Conclusion The South African evidence translation experience could be useful for evidence implementers in other countries, when translating CPG recommendations developed elsewhere, into local practice.

Groff, S., et al. (2018). "Examining the sustainability of Screening for Distress, the sixth vital sign, in two outpatient oncology clinics: A mixed-methods study." *Psycho-Oncology* 27(1): 141-147.

Background Research indicates that cancer patients experience significant multifactorial distress during their journey. To address this, cancer centers are implementing Screening for Distress programs; however, little is known about the sustainability of these programs. This study sought to examine the sustainability of a Screening for Distress program in 2 cancer clinics 6 months post implementation. Methods A mixed-methods cross-sectional design was utilized. To determine if screening rates, screening conversations and appropriate interventions occurred and the charts of 184 consecutive patients attending the head and neck or neuro-oncology clinics over a 3 week period were reviewed. To examine the barriers and facilitators of sustainability, 16 semi-structured interviews with administrators, physicians, and nurses were conducted. Results Of the 184 charts reviewed, 163 (88.6%) had completed screening tools. Of these 163, 130 (79.8%) indicated that a conversation occurred with the patient about the identified distress as reported on the screening tool. Of the 89 (54.6%) charts where the need for an intervention was indicated, 68 (76.4%) had an intervention documented. Six oncologists, 7 nurses, and 3 administrators were interviewed, and 5 themes which influenced the sustainability of the program emerged: (1) attitudes, knowledge, and beliefs about the program; (2) implementation approach; (3) outcome expectancy of providers; (4) integration with existing practices; and (5) external factors. Conclusions This study suggests that Screening for Distress was largely sustained, possibly due to positive attitudes and

outcome expectancy. However, sustainability may be enhanced by formally integrating screening with existing practices, addressing potential knowledge gaps, and ensuring engagement with all stakeholder groups.

Gronchi, G. (2018). "The Use of Network Theory for Analyzing Switching Behaviors: Assessing Cognitive and Educational-Based Intervention for Promoting Health." *Frontiers in Psychology* 9.

Gronchi, G., et al. (2018). "Nudging healthier behavior: psychological basis and potential solutions for enhancing adherence." *Clinical Cases in Mineral and Bone Metabolism* 15(2): 158-162.

The most common approaches for increasing healthy behavior and adherence are based on stages of change models. Despite a rich literature about health behavior theories and the efficacy of educational interventions, the actual factors that contribute to increased patients' adherence are still debated. However, reasoning and decision-making research may provide new insights into how to improve adherence. The dual process theory of thought posits that there are two parallel systems of reasoning: fast thinking, encompassing fast, effortless, and default-based behaviors; and slow thinking, consisting of slow, effortful, and rule-based decisions. The dual process theory underlies the nudge concept: the idea that indirect suggestions may exploit fast thinking behaviors in order to obtain non-forced compliance to physicians' prescriptions, and thus increase adherence. Exploiting default behaviors as nudges for enhancing adherence is still an under-used approach for osteoporosis treatment. Novel ideas of such interventions are discussed and proposed.

Gruber, R. (2017). "School-based sleep education programs: A knowledge-to-action perspective regarding barriers, proposed solutions, and future directions." *Sleep Medicine Reviews* 36: 13-28.

Sleep is associated with an array of physical and mental health outcomes that are essential for healthy adjustment in children. Unfortunately, transfer of this knowledge into action has been slow and largely ineffective. There are only 15 published school-based sleep health promotion programs, and findings are mixed in terms of their impact on sleep behavior, knowledge and health outcomes. This paper applies a knowledge-to-action (KTA) framework to assess the strengths and weaknesses of such programs and to identify strategies that can be used to enhance the translation of empirical evidence in pediatric sleep to effective action. It is proposed that effectiveness of interventions may be increased by defining specific targets for change, identifying prospectively the gap between current sleep practice or knowledge and intervention goals, assessing and addressing barriers and facilitators for program implementation, adapting the program for local use, tailoring it to the developmental needs of the target users, using rigorous designs to evaluate outcomes and improving sustainability by engaging multiple stakeholders throughout the KTA process. Collectively it is proposed that integrating a KTA framework and related strategies will enhance the effectiveness of these programs in translating empirical evidence in pediatric sleep to effective and sustained action. (C) 2016 Elsevier Ltd. All rights reserved.

Gucciardi, D. F. (2016). "Mental toughness as a moderator of the intention-behaviour gap in the rehabilitation of knee pain." *Journal of Science and Medicine in Sport* 19(6): 454-458.

Objectives: The purpose of this study was to investigate the role of mental toughness in maximising the effect of intentions to perform rehabilitative exercises on behaviour among a sample of people with knee pain. Design: Cross-sectional survey, with a 2-week time-lagged assessment of exercise behaviour. Methods: In total, 193 individuals (n(female) =107, n(male) = 84) aged between 18 and 69 years (M=30.79, SD = 9.39) participated, with 136 (70.5%) retained at both assessment points. At time 1, participants completed an online, multisection survey that encompassed measures of demographic details, severity of problems associated with the knee (e.g., pain, symptoms), past behaviour, mental toughness, and the theory of planned behaviour constructs (TPB; attitudes, subjective norms, perceived behavioural, intentions). Two weeks later, participants retrospectively reported their exercise behaviour for the past 14 days using an online survey. Results: Moderated regression analyses indicated that mental toughness and its interaction with intention accounted for an additional 3% and 4% of the variance in exercise behaviour, respectively. Past behaviour, attitudes, and mental toughness all had direct effects on behaviour, alongside a meaningful interaction between intentions and mental toughness. Specifically, intentions had a stronger effect on exercise behaviour among those individuals high in mental toughness compared to those low in this personal resource. Conclusions: The results of this study shed new light on the intention-behaviour gap by indicating that mental toughness increases the likelihood that intention is translated into action. (C) 2015 Sports Medicine Australia. Published by Elsevier Ltd. All rights reserved.

Guell, C., et al. (2018). "Towards co-designing active ageing strategies: A qualitative study to develop a meaningful physical activity typology for later life." *Health Expectations* 21(5): 919-926.

Background: Physical activity levels decline in later life despite the known benefits for physical, cognitive and mental health. Older people find it difficult to meet activity targets; therefore, more realistic and meaningful strategies are needed. We aimed to develop a typology of older people's motivations and lifelong habits of being active as a starting

point to co-designing active ageing strategies in a workshop. Methods: We conducted semi-structured interviews with 27 participants aged 65-80 in Norfolk, UK, and participant observation with 17 of them. At a workshop with 13 study participants and 6 government and civil society representatives, we invited reflections on preliminary findings. Results: Three types were developed. "Exercisers" had engaged in sport and exercise throughout their life but experienced physical ill health and limitations as barriers. "Out-and-about-ers" pursued social engagement and a variety of interests but experienced biographical disruption through retirement and loss of companions that limited social activities in later life. A final type characterized people who preferred "sedentary/solitary" activities. A workshop elicited suggestions for new strategies relating to these types that addressed people's specific motivations. An example was to combine social engagement and physical activity in "dog-parent"-walking schemes to link people through shared responsibility for a dog. Conclusions: We suggest that these potential strategies map more closely onto the everyday life-worlds in which public health might seek to intervene than common physical activity interventions. Most notably, this means a more differentiated understanding of barriers, and acknowledging that intellectual, social or solitary pursuits can include incidental physical activity.

Gunnell, D. O. A., et al. (2019). "The hazards of perception: evaluating a change blindness demonstration within a real-world driver education course." *Cognitive Research-Principles and Implications* 4.

Overconfidence in one's driving ability can lead to risky decision-making and may therefore increase the accident risk. When educating people about the risks of their driving behavior, it is all too easy for individuals to assume that the message is not meant for them and so can be ignored. In this study we developed and assessed the effect of a road safety demonstration based around the phenomenon of change blindness within a real-world Driver Awareness Course. We collected quantitative and qualitative data to evaluate the effectiveness of the demonstration in both a police-led environment (Experiment 1) and a laboratory environment (Experiment 2). We also compared the change blindness intervention to two control tasks. The results showed that participants' self-reported ability to spot important visual changes was reduced after the change blindness demonstration in both experiments, but was not reduced after participation in the control tasks of Experiment 2. Furthermore, participants described the change blindness demonstrations positively and would recommend that they were shown more widely.

Gupta, A., et al. (2019). "Applying the 'COST' (Culture, Oversight, Systems Change, and Training) Framework to De-Adopt the Neutropenic Diet." *American Journal of Medicine* 132(1): 42-47.

Gupta, A., et al. (2018). "Eliminating In-Hospital Fecal Occult Blood Testing: Our Experience with Disinvestment." *American Journal of Medicine* 131(7): 760-763.

Gupta, P., et al. (2018). "Stakeholders' perceptions regarding a salt reduction strategy for India: Findings from qualitative research." *Plos One* 13(8).

Background Scientific evidence indicates that high dietary salt intake has detrimental effects on blood pressure and associated cardiovascular disease (CVD). However, limited information is available on how to implement salt reduction in low and middle-income countries (LMICs) such as India, where the burden of hypertension and CVD is increasing rapidly. As part of a large study to create the evidence base required to develop a salt reduction strategy for India, we assessed the perspectives of various stakeholders regarding developing an India specific salt reduction strategy. Methods A qualitative research design was deployed to elicit various stakeholder's (government and policy-related stakeholders, industry, civil Society, consumers) perspectives on a salt reduction strategy for India, using in-depth interviews (IDIs) and focus group discussions (FGDs). We used an inductive approach for data analysis. Data were analyzed using thematic content analysis method. Results Forty-two IDIs and eight FGDs were conducted with various stakeholders of interest and relevance. Analysis indicated three major themes: 1. Barriers for salt reduction 2. Facilitators for salt reduction; 3. Strategies for salt reduction. Most of the stakeholders were in alignment with the need for a salt reduction programme in India to prevent and control hypertension and related CVD. Major barriers indicated by the stakeholders for salt reduction in India were social and cultural beliefs, a large unorganized food retail sector, and the lack of proper implementation of even existing food policies. Stakeholders from the food industry reported that there might be decreased sales due to salt reduction. Major facilitators included the fact that: salt reduction is currently a part of the National Multi-Sectoral Action Plan for the prevention and control of NCDs, salt reduction and salt iodine programme are compatible, and that few of the multinational food companies have already started working in the direction of initiating efforts for salt reduction. Based on the barriers and facilitators, few of the recommendations are to generate awareness among consumers, promote salt reduction by processed food industry, and implement consumer friendly food labelling. Conclusions In this study of multiple key influential stakeholders in India, most of the stakeholders were in alignment with the need for a salt reduction programme in India to prevent and control hypertension and related CVD. The development and adoption of the National Multi-sectoral Action Plan to reduce premature non-communicable

diseases (NCDs) in India, provides a potential platform that can be leveraged to drive, implement and monitor salt reduction efforts.

Gupta, Y., et al. (2019). "A lifestyle intervention programme for the prevention of Type 2 diabetes mellitus among South Asian women with gestational diabetes mellitus LIVING study : protocol for a randomized trial." *Diabetic Medicine* 36(2): 243-251.

Aim This study aims to determine whether a resource- and culturally appropriate lifestyle intervention programme in South Asian countries, provided to women with gestational diabetes (GDM) after childbirth, will reduce the incidence of worsening of glycaemic status in a manner that is affordable, acceptable and scalable. **Methods** Women with GDM (diagnosed by oral glucose tolerance test using the International Association of the Diabetes and Pregnancy Study Groups criteria) will be recruited from 16 hospitals in India, Sri Lanka and Bangladesh. Participants will undergo a repeat oral glucose tolerance test at 6 +/- 3 months postpartum and those without Type 2 diabetes, a total sample size of 1414, will be randomly allocated to the intervention or usual care. The intervention will consist of four group sessions, 84 SMS or voice messages and review phone calls over the first year. Participants requiring intensification of the intervention will receive two additional individual sessions over the latter half of the first year. Median follow-up will be 2 years. The primary outcome is the proportion of women with a change in glycaemic category, using the American Diabetes Association criteria: (i) normal glucose tolerance to impaired fasting glucose, or impaired glucose tolerance, or Type 2 diabetes; or (ii) impaired fasting glucose or impaired glucose tolerance to Type 2 diabetes. Process evaluation will explore barriers and facilitators of implementation of the intervention in each local context, while trial-based and modelled economic evaluations will assess cost-effectiveness. **Discussion** The study will generate important new evidence about a potential strategy to address the long-term sequelae of GDM, a major and growing problem among women in South Asia. (Clinical Trials Registry of India No: CTRI/2017/06/008744; Sri Lanka Clinical Trials Registry No: SLCTR/2017/001; and ClinicalTrials.gov Identifier No: NCT03305939)

Hagharast-Bidgoli, H., et al. (2018). "Protocol of economic evaluation and equity impact analysis of mHealth and community groups for prevention and control of diabetes in rural Bangladesh in a three-arm cluster randomised controlled trial." *Bmj Open* 8(8).

Introduction Type 2 diabetes mellitus (T2DM) is one of the leading causes of death and disability worldwide, generating substantial economic burden for people with diabetes and their families, and to health systems and national economies. Bangladesh has one of the largest numbers of adults with diabetes in the South Asian region. This paper describes the planned economic evaluation of a three-arm cluster randomised control trial of mHealth and community mobilisation interventions to prevent and control T2DM and non-communicable diseases' risk factors in rural Bangladesh (D-Magic trial). **Methods and analysis** The economic evaluation will be conducted as a within-trial analysis to evaluate the incremental costs and health outcomes of mHealth and community mobilisation interventions compared with the status quo. The analyses will be conducted from a societal perspective, assessing the economic impact for all parties affected by the interventions, including implementing agencies (programme costs), healthcare providers, and participants and their households. Incremental cost-effectiveness ratios (ICERs) will be calculated in terms of cost per case of intermediate hyperglycaemia and T2DM prevented and cost per case of diabetes prevented among individuals with intermediate hyperglycaemia at baseline and cost per mm Hg reduction in systolic blood pressure. In addition to ICERs, the economic evaluation will be presented as a cost-consequence analysis where the incremental costs and all statistically significant outcomes will be listed separately. Robustness of the results will be assessed through sensitivity analyses. In addition, an analysis of equity impact of the interventions will be conducted. **Ethics and dissemination** The approval to conduct the study was obtained by the University College London Research Ethics Committee (4766/002) and by the Ethical Review Committee of the Diabetic Association of Bangladesh (BADAS-ERC/EC/t5100246). The findings of this study will be disseminated through different means within academia and the wider policy sphere. Trial registration number ISRCTN41083256; Pre-results.

Halali, F., et al. (2018). "Motivators, barriers and strategies of weight management: A cross-sectional study among Finnish adults." *Eating Behaviors* 31: 80-87.

Background: Weight management (WM) is an ongoing global challenge. The purpose of this study was to analyze motivators, barriers, and strategies of WM among Finnish adults. **Methods:** Data were collected in the 'KULUMA' (Consumers at the Weight Management Market) project among 667 community-dwelling adults in Eastern and Central Finland (Kuopio and Jyväskylä). The self-reported questionnaire collected background information and responses to motivators, barriers, and strategy items. Principal component analysis (PCA) was used to extract components of motivators, barriers, and strategies of WM, along with K-means clustering to categorize the participants. **Results:** About 55% of the respondents were aiming to lose weight. The PCA resulted in a 3-component model for motivators (functional aspects, sociological aspects, and psychosocial aspects), a 4-component model for barriers (life situations, food

environment, personal issues, and resources) and a 2-component model for the strategies of WM (dietary strategies and life-management strategies). The components had several relationships with demographic characteristics (especially with age) but only a few with weight-related characteristics (e.g. weight loss attempts). Three clusters of participants were formed: Struggling weight managers (WMs), Independent WMs, and Determined WMs. Barriers to WM had a key role in differentiating clusters and weight satisfaction. Determined WMs were the most satisfied with their weight, whereas Struggling WMs perceived the highest level of barriers to WM. Conclusions: WM efforts are common among Finnish adults. Generally, weight-related activities and communication in society should focus more on barriers than merely on the motivation or strategies of WM in order to support individuals' WM efforts.

Hall, A., et al. (2018). "Barriers to correct child restraint use: A qualitative study of child restraint users and their needs." *Safety Science* 109: 186-194.

Motor vehicle crashes are a major cause of death and injury to children worldwide. Although risk of injury to child passengers can be reduced by using a child restraint, most restraints are incorrectly used. This greatly reduces the restraints' protective potential; however there is limited research on drivers of correct child restraint use. The aim of this study was to explore perceived barriers and motivators of correct child restraint use in experienced child restraint users, to inform interventions to promote correct use. Motivations and risk perceptions concerning incorrect child restraint use among high and low socioeconomic populations and culturally and linguistically diverse (CALD) child restraint users in Sydney, Australia were qualitatively examined. Six focus groups (N = 44 participants) were facilitated using a semi-structured discussion guide. Transcriptions were deductively analysed using QSR NVivo 1 software and the COM-B model of behaviour. Common perceived barriers to correct restraint use were: (a) difficulty interpreting instructions and labels, particularly among CALD participants; (b) remembering and attending to correct use information; (c) lack of information and behavioural feedback on how to correctly install and use a child restraint; and (d) low confidence in ability to install and use a child restraint correctly. The results indicate current child restraint product information is poorly understood, particularly among those whose first language is not English. Interventions to increase correct child restraint use should address access to correct use information, capability to understand and use these, and the influence of motivation, memory and attention in the process.

Hall, K. L., et al. (2018). "The ecology of multilevel intervention research." *Translational Behavioral Medicine* 8(6): 968-978.

Behavior change research to promote health and prevent disease increasingly relies on a complex set of interacting characteristics across levels of influence such as biological, psychological, behavioral, interpersonal, and environmental. How to best develop health-related interventions that incorporate the individual, the macro-environment, and their interactions remains a challenge. This article considers a set of key dimensions that constitute what we refer to as the ecology of research across a broad context of multilevel research (MLR), spanning fundamental multilevel research (FMLR), multilevel intervention research (MLIR), and multilevel implementation science (MIS). With the goal of promoting improvements in MLIR, we describe the inherent interdependencies among aspects of research and consider how the growth and development of evidence and resources influence the cross-talk among researchers from different perspectives (e.g., disciplines and domains). We propose a framework that highlights opportunities to reduce barriers and address gaps in areas critical to generating an evidence base through MLR, MLIR, and MIS. Overall, we aim to support strategic decisions that can accelerate our understanding of ML health outcomes and interactions among factors within and across levels, with the goal of strengthening the effectiveness of ML interventions across health-related outcomes.

Hall, N., et al. (2019). "Extending alcohol brief advice into non-clinical community settings: a qualitative study of experiences and perceptions of delivery staff." *Bmc Health Services Research* 19.

Background At a population level, the majority of alcohol-related harm is attributable to drinkers whose consumption exceeds recommended drinking levels, rather than those with severe alcohol dependency. Identification and Brief Advice (IBA) interventions offer a cost-effective approach for reducing this harm. Traditionally, IBA interventions have been delivered in healthcare settings and therefore contextual influences on their use in non-clinical settings are not well understood. Methods Qualitative face-to-face and telephone interviews with staff responsible for delivering a pilot IBA intervention across community settings in the UK. Interviews were recorded and transcribed verbatim. Inductive thematic analysis was used to identify key issues and the constant comparison method was employed to compare barriers and facilitators to implementation across and within settings. Results A number of facilitators and barriers to delivery and implementation was identified across settings. These included familiarity with the customer base, working within public spaces, and assimilation of the intervention within existing role boundaries. Despite underlying concerns relating to the sensitive nature of the topic, most delivery staff felt their respective settings were appropriate for the delivery of the intervention and had proactively engaged members of the public with varying levels of risky drinking and readiness for

behaviour change. Perceptions of actual or potential intervention success were conceptualised in relation to existing day-to-day role boundaries and responsibilities and the contexts in which they took place. Conclusions Findings support the potential value of multi-setting community approaches to facilitate more inclusive engagement with IBA. By comparing experiences and views from staff responsible for delivering the intervention across different community settings, our findings provide insight into how intervention acceptability and success are framed across settings, and how the intervention is assimilated within everyday practice and role boundaries. This study also highlights key areas to be addressed when implementing IBAs in non-clinical community settings by staff with diverse levels of health-related knowledge, skills and support needs. Although essential, the need for adaptable training and delivery approaches across different setting types is likely to result in methodological challenges that need to be addressed when evaluating future interventions and setting-specific influences on behaviour change and health outcomes.

Hamilton, K., et al. (2019). "Being active in pregnancy: Theory-based factors associated with physical activity among pregnant women." *Women & Health* 59(2): 213-228.

Although regular physical activity is recommended for pregnant women, compared to pre-pregnancy, antenatal physical activity often reduces or ceases completely. Drawing from the theory of planned behavior, self-determination theory, and theory on self-control, we aimed to test an integrative model of physical activity in a sample of pregnant women. The current study was conducted in Brisbane, Australia, in 2014-2015 using a prospective-correlational design with a one-week follow-up. Participants (N = 207, Time 1; Mean(age) = 30.03 years, SDage = 4.49 years) completed an initial survey measuring: intrinsic motivation from the self-determination theory, social cognitive constructs from the theory of planned behavior, and self-control from the self-control theory, followed by a self-report measure of physical activity one-week later (n = 117, Time 2). A well-fitting structural equation model accounted for 73 and 42 percent of the variance in intention and physical activity behavior, respectively. Perceived behavioral control and attitude, but not subjective norm, mediated the effect of intrinsic motivation on intention. Intention, perceived behavioral control, and self-control were positively associated with physical activity behavior. Future behavioral interventions aiming to promote physical activity during pregnancy, a period when the physical activity levels typically decline, should consider the multiple processes advocated in the integrative model as necessary for motivated action.

Han, S. S., et al. (2015). "Women's Views on Their Diagnosis and Management for Borderline Gestational Diabetes Mellitus." *Journal of Diabetes Research*.

Introduction. Little is known about women's views relating to a diagnosis of borderline gestational diabetes mellitus (GDM) and the subsequent management. This study aimed to explore women's experiences after being diagnosed with borderline GDM, their attitudes about treatment, and factors important to them for achieving any lifestyle changes. Methods. We conducted face-to-face, semistructured interviews with women diagnosed with borderline GDM. Results. A total of 22 women were interviewed. After a diagnosis of borderline GDM, 14 (64%) women reported not being concerned or worried. Management of borderline GDM was thought by 21 (95%) women to be very important or important. Eighteen (82%) women planned to improve their diet and/or exercise to manage their borderline GDM. The most frequently mentioned enabler for achieving intended lifestyle change was being more motivated to improve the health of their baby and/or themselves (15 women). The most frequent barrier was tiredness and/or being physically unwell (11 women). Conclusions. A diagnosis of borderline GDM caused some concern to one-third of women interviewed. The majority of women believed managing their borderline GDM was important and they planned to improve their lifestyle. Women's own and their babies' future health were powerful motivators for lifestyle change.

Hanbury, A., et al. (2013). "Immediate versus sustained effects: interrupted time series analysis of a tailored intervention." *Implementation Science* 8.

Background: Detailed intervention descriptions and robust evaluations that test intervention impact and explore reasons for impact are an essential part of progressing implementation science. Time series designs enable the impact and sustainability of intervention effects to be tested. When combined with time series designs, qualitative methods can provide insight into intervention effectiveness and help identify areas for improvement for future interventions. This paper describes the development, delivery, and evaluation of a tailored intervention designed to increase primary health care professionals' adoption of a national recommendation that women with mild to moderate postnatal depression (PND) are referred for psychological therapy as a first stage treatment. Methods: Three factors influencing referral for psychological treatment were targeted using three related intervention components: a tailored educational meeting, a tailored educational leaflet, and changes to an electronic system data template used by health professionals during consultations for PND. Evaluation comprised time series analysis of monthly audit data on percentage referral rates and monthly first prescription rates for antidepressants. Interviews were conducted with a sample of health professionals to explore their perceptions of the intervention components and to identify possible factors influencing intervention effectiveness. Results: The intervention was associated with a significant, immediate,

positive effect upon percentage referral rates for psychological treatments. This effect was not sustained over the ten month follow-on period. Monthly rates of anti-depressant prescriptions remained consistently high after the intervention. Qualitative interview findings suggest key messages received from the intervention concerned what appropriate antidepressant prescribing is, suggesting this to underlie the lack of impact upon prescribing rates. However, an understanding that psychological treatment can have long-term benefits was also cited. Barriers to referral identified before intervention were cited again after the intervention, suggesting the intervention had not successfully tackled the barriers targeted. Conclusion: A time series design allowed the initial and sustained impact of our intervention to be tested. Combined with qualitative interviews, this provided insight into intervention effectiveness. Future research should test factors influencing intervention sustainability, and promote adoption of the targeted behavior and dis adoption of competing behaviors where appropriate.

Handley, M. A., et al. (2016). "Applying the COM-B model to creation of an IT-enabled health coaching and resource linkage program for low-income Latina moms with recent gestational diabetes: the STAR MAMA program." *Implementation Science* 11.

Background: One of the fastest growing risk groups for early onset of diabetes is women with a recent pregnancy complicated by gestational diabetes, and for this group, Latinas are the largest at-risk group in the USA. Although evidence-based interventions, such as the Diabetes Prevention Program (DPP), which focuses on low-cost changes in eating, physical activity and weight management can lower diabetes risk and delay onset, these programs have yet to be tailored to postpartum Latina women. This study aims to tailor a IT-enabled health communication program to promote DPP-concordant behavior change among postpartum Latina women with recent gestational diabetes. The COM-B model (incorporating Capability, Opportunity, and Motivational behavioral barriers and enablers) and the Behavior Change Wheel (BCW) framework, convey a theoretically based approach for intervention development. We combined a health literacy-tailored health IT tool for reaching ethnic minority patients with diabetes with a BCW-based approach to develop a health coaching intervention targeted to postpartum Latina women with recent gestational diabetes. Current evidence, four focus groups (n = 22 participants), and input from a Regional Consortium of health care providers, diabetes experts, and health literacy practitioners informed the intervention development. Thematic analysis of focus group data used the COM-B model to determine content. Relevant cultural, theoretical, and technological components that underpin the design and development of the intervention were selected using the BCW framework. Results: STAR MAMA delivers DPP content in Spanish and English using health communication strategies to: (1) validate the emotions and experiences postpartum women struggle with; (2) encourage integration of prevention strategies into family life through mothers becoming intergenerational custodians of health; and (3) increase social and material supports through referral to social networks, health coaches, and community resources. Feasibility, acceptability, and health-related outcomes (weight loss, physical activity, consumption of healthy foods, breastfeeding, and glucose screening) will be evaluated at 9 months postpartum using a randomized controlled trial design. Conclusions: STAR MAMA provides a DPP-based intervention that integrates theory-based design steps. Through systematic use of behavioral theory to inform intervention development, STAR MAMA may represent a strategy to develop health IT intervention tools to meet the needs of diverse populations.

Hang, J. A., et al. (2016). "Assessing knowledge, motivation and perceptions about falls prevention among care staff in a residential aged care setting." *Geriatric Nursing* 37(6): 464-469.

Falls are a serious problem in residential aged care settings. The aims of the study were to determine the feasibility of surveying care staff regarding falls prevention, and describe care staff levels of knowledge and awareness of residents' risk of falls, knowledge about falls prevention, motivation and confidence to implement falls prevention strategies. A custom designed questionnaire was administered to care staff at one site of a large residential aged care organization in Australia. The survey response was 58.8%. Feedback from staff was used to inform the administration of the survey to the wider organization. Seven (29.2%) care staff reported they were unsure or thought residents were at low risk of falls. Only five (20.8%) care staff were able to suggest more than three preventive strategies. These preliminary findings suggest that education to change care staff behavior regarding falls prevention should target improving care staff knowledge and awareness of falls. (C) 2016 Elsevier Inc. All rights reserved.

Hankonen, N., et al. (2017). "What explains the socioeconomic status gap in activity? Educational differences in determinants of physical activity and screentime." *Bmc Public Health* 17.

Background: Designing evidence-based interventions to address socioeconomic disparities in health and health behaviours requires a better understanding of the specific explanatory mechanisms. We aimed to investigate a comprehensive range of potential theoretical mediators of physical activity (PA) and screen time in different socioeconomic status (SES) groups: a high SES group of high school students, and a low SES group of vocational school students. The COM-B system, including the Theoretical Domains Framework (TDF), was used as a heuristic framework to synthesise different theoretical determinants in this exploratory study. Methods: Finnish vocational and high school

students (N = 659) aged 16-19, responded to a survey assessing psychological, social and environmental determinants of activity (PA and screen time). These determinants are mappable into the COM-B domains: capability, opportunity and motivation. The outcome measures were validated self-report measures for PA and screen time. The statistical analyses included a bootstrapping-based mediation procedure. Results: Regarding PA, there were SES differences in all of the COM-B domains. For example, vocational school students reported using less self-monitoring of PA, weaker injunctive norms to engage in regular PA, and fewer intentions than high school students. Mediation analyses identified potential mediators of the SES-PA relationship in all of three domains: The most important candidates included self-monitoring (CI95 for b: 0.19-0.47), identity (0.04-0.25) and material resources available (0.01-0.16). However, SES was not related to most determinants of screentime, where there were mainly gender differences. Most determinants were similarly related with both behaviours in both SES groups, indicating no major moderation effect of SES on these relationships. Conclusions: This study revealed that already in the first years of educational differentiation, levels of key PA determinants differ, contributing to socioeconomic differences in PA. The analyses identified the strongest mediators of the SES-PA association, but additional investigation utilising longitudinal and experimental designs are needed. This study demonstrates the usefulness of combining constructs from various theoretical approaches to better understand the role of distinct mechanisms that underpin socioeconomic health behaviour disparities.

Hansen, S., et al. (2017). "MAP-IT: A Practical Tool for Planning Complex Behavior Modification Interventions." *Health Promotion Practice* 18(5): 696-705.

Health research often aims to prevent noncommunicable diseases and to improve individual and public health by discovering intervention strategies that are effective in changing behavior and/or environments that are detrimental to one's health. Ideally, findings from original research support practitioners in planning and implementing effective interventions. Unfortunately, interventions often fail to overcome the translational block between science and practice. They often ignore theoretical knowledge, overlook empirical evidence, and underrate the impact of the environment. Accordingly, sustainable changes in individual behavior and/or the environment are difficult to achieve. Developing theory-driven and evidence-based interventions in the real world is a complex task. Existing implementation frameworks and theories often do not meet the needs of health practitioners. The purpose of this article is to synthesize existing frameworks and to provide a tool, the Matrix Assisting Practitioner's Intervention Planning Tool (MAP-IT), that links research to practice and helps practitioners to design multicomponent interventions. In this article, we use physical activity of older adults as an example to explain the rationale of MAP-IT. In MAP-IT, individual as well as environmental mechanisms are listed and behavior change techniques are linked to these mechanisms and to intervention components. MAP-IT is theory-driven and evidence-based. It is time-saving and helpful for practitioners when planning complex interventions.

Hanson, C. L., et al. (2019). "How do participant experiences and characteristics influence engagement in exercise referral? A qualitative longitudinal study of a scheme in Northumberland, UK." *Bmj Open* 9(2).

Objectives Exercise referral schemes (ERSs) are internationally widespread. This study aimed to gain an insight into differential engagement through understanding participant experiences of patients referred by healthcare professionals to one such scheme in the UK. Design The study employed a qualitative longitudinal approach using semistructured interviews, with results reported using Consolidated criteria for Reporting Qualitative research guidelines. Setting Two leisure centres providing an 'emerging best-practice' ERS in northeast England. Participants Referred patients (n=11), who had not yet commenced the scheme, were recruited on a voluntary basis. Seven females and four males, with a range of non-communicable diseases, such as cardiovascular disease, mental health issues, diabetes, overweight/obesity and musculoskeletal problems, participated. Intervention 24-weeks, two times per week, of supervised exercise sessions and three one-to-one assessments (prescheme, 12 weeks and 24 weeks) for patients referred from primary and secondary care. Primary outcome measures Two longitudinal semistructured interviews, prior to commencement and 12-20 weeks later, were thematically analysed using the framework approach. Analysis comprised seven stages: transcription, familiarisation, coding, development and application of an analytical framework, charting data using a matrix and interpretation of data. Interpretation went beyond descriptions of individual cases to develop themes, which identified and offered possible explanations for differing participant experiences. Results Three overarching themes emerged. First, 'success', with engaged participants focused on health outcomes and reported increases in physical activity. Second, 'struggle', with short-term success but concerns regarding continued engagement. Participants reported scheme dependency and cyclical needs. Finally, 'defeat', where ill health, social anxiety and/or poor participation experience made engagement difficult. Conclusion Some success in engaging those with non-communicable diseases was reported, resulting in positive effects on health and well-being. The study highlights complexity within ERSs and inequality of access for those with challenging health and social circumstances. Improved, or different, behaviour change support is required for referrals finding engagement difficult.

Hanson, M., et al. (2017). "Interventions to prevent maternal obesity before conception, during pregnancy, and post partum." *Lancet Diabetes & Endocrinology* 5(1): 65-76.

Prevention of obesity in women of reproductive age is widely recognised to be important both for their health and for that of their off spring. Weight-control interventions, including drug treatment, in pregnant women who are obese or overweight have not had sufficient impact on pregnancy and birth outcomes, which suggests that the focus for intervention should include preconception or post-partum periods. Further research is needed into the long-term effects of nutritional and lifestyle interventions before conception. To improve preconception health, an integrated approach, including pregnancy prevention, planning, and preparation is needed, involving more than the primary health-care sector and adopting an ecological approach to risk reduction that addresses personal, societal, and cultural influences. Raising awareness of the importance of good health in the period before pregnancy will require a new social movement: combining bottom-up mobilisation of individuals and communities with a top-down approach from policy initiatives. Interventions to reduce or prevent obesity before conception and during pregnancy could contribute substantially to achievement of the global Sustainable Development Goals, in terms of health, wellbeing, productivity, and equity in current and future generations.

Harbury, C. M., et al. (2018). "Nutrition "fat facts" are not common knowledge." *Health Promotion Journal of Australia* 29(1): 93-99.

Issue addressed Individuals who are knowledgeable about nutrition are more likely to eat healthily. Yet, few studies have investigated levels of nutrition knowledge using a validated tool. The present study measured nutrition knowledge using the Re-examined General Nutrition Knowledge Questionnaire (R-GNKQ) to confirm influencing demographic characteristics. Methods Adults aged 18-60 years were recruited. Nutrition knowledge was assessed using the R-GNKQ, examining four domains (dietary guidelines, sources of nutrients, choosing everyday foods, and diet-disease relationships) with 96 questions. Results Of 606 respondents (mean age 38.8 11.8 years), 506 completed all questions. R-GNKQ score was positively associated with education ($p < 0.001$) and age ($p < 0.001$). Those with the highest education levels scored higher across 89% of the R-GNKQ and the oldest (50 years) respondents scored higher than younger respondents. Other characteristics that were associated with higher levels of knowledge were being female, and having a healthy BMI. Lowest knowledge pertained to questions about diet-disease relationships and fatty acids in foods. Conclusions The majority of individuals had a good understanding about the Australian Dietary Guidelines, however the health benefits of adhering to the dietary guidelines was less well understood. Gaps in knowledge pertained to the specific details of how to adhere to the guidelines, particularly knowledge about the types of beneficial fats and their everyday food sources. So what? Those with lower educational attainment, younger, males and those with higher BMI's would benefit from nutrition communications that identify foods with beneficial fatty acids to assist with adherence to the Australian Dietary Guidelines.

Hardefeldt, L. Y., et al. (2018). "Barriers to and enablers of implementing antimicrobial stewardship programs in veterinary practices." *Journal of Veterinary Internal Medicine* 32(3): 1092-1099.

Background Antimicrobial stewardship (AMS) programs are yet to be widely implemented in veterinary practice and medical programs are unlikely to be directly applicable to veterinary settings. Objective To gain an in-depth understanding of the factors that influence effective AMS in veterinary practices in Australia. Methods A concurrent explanatory mixed methods design was used. The quantitative phase of the study consisted of an online questionnaire to assess veterinarians' attitudes to antimicrobial resistance (AMR) and antimicrobial use in animals, and the extent to which AMS currently is implemented (knowingly or unknowingly). The qualitative phase used semi-structured interviews to gain an understanding of the barriers to and enablers of AMS in veterinary practices. Data were collected and entered into NVivo v.11, openly coded and analyzed according to mixed methods data analysis principles. Results Companion animal, equine, and bovine veterinarians participated in the study. Veterinary practices rarely had antimicrobial prescribing policies. The key barriers were a lack of AMS governance structures, client expectations and competition between practices, cost of microbiological testing, and lack of access to education, training and AMS resources. The enablers were concern for the role of veterinary antimicrobial use in development of AMR in humans, a sense of pride in the service provided, and preparedness to change prescribing practices. Conclusion and Clinical Importance Our study can guide development and establishment of AMS programs in veterinary practices by defining the major issues that influence the prescribing behavior of veterinarians.

Harden, S. M., et al. (2019). "Walk This Way: Our Perspective on Challenges and Opportunities for Extension Statewide Walking Promotion Programs." *Journal of Nutrition Education and Behavior* 51(5): 636-643.

Evidence-based walking programs exist and some have been tailored specifically for the national Cooperative Extension System; however, program outcomes and translational challenges and successes are underreported. This has presented a challenge to scaling the best-fit intervention for walking promotion within this national system. Here, we

describe existing open-access walking programs as well as implications for improving the fit and sustainability of this intervention type within the system. Our experience provides suggestions for pragmatic data collection, infrastructure to support pragmatic data collection, and novel ways to disseminate best practices, as well as considerations for de-implementing what is not working.

Hardicre, N. K., et al. (2017). "Partners at Care Transitions (PACT)-exploring older peoples' experiences of transitioning from hospital to home in the UK: protocol for an observation and interview study of older people and their families to understand patient experience and involvement in care at transitions." *Bmj Open* 7(11).

Introduction Length of hospital inpatient stays have reduced. This benefits patients, who prefer to be at home, and hospitals, which can treat more people when stays are shorter. Patients may, however, leave hospital sicker, with ongoing care needs. The transition period from hospital to home can be risky, particularly for older patients with complex health and social needs. Improving patient experience, especially through greater patient involvement, may improve outcomes for patients and is a key indicator of care quality and safety. In this research, we aim to: capture the experiences of older patients and their families during the transition from hospital to home, and identify opportunities for greater patient involvement in care, particularly where this contributes to greater individual level and organisational-level resilience. Methods and analysis A 'focused ethnography' comprising observations, 'Go-Along' and semistructured interviews will be used to capture patient and carer experiences during different points in the care transition from admission to 90 days after discharge. We will recruit 30 patients and their carers from six hospital departments across two National Health Service (NHS) Trusts. Analysis of observations and interviews will use a framework approach to identify themes to understand the experience of transitions and generate ideas about how patients could be more actively involved in their care. This will include exploring what 'good' care at transitions looks like and seeking out examples of success, as well as recommendations for improvement. Ethics and dissemination Ethical approval was received from the NHS Research Ethics Committee in Wales. The research findings will add to a growing body of knowledge about patient experience of transitions, in particular providing insight into the experiences of patients and carers throughout the transitions process, in 'real time'. Importantly, the data will be used to inform the development of a patient-centred intervention to improve the quality and safety of transitions.

Harris, K., et al. (2019). "Theory-based self-management intervention to improve adolescents' asthma control: a cluster randomised controlled trial protocol." *Bmj Open* 9(4).

Introduction Asthma-related morbidity and mortality in the UK is higher than elsewhere in Europe. Although the reasons for this are largely unclear, one explanation could be a higher prevalence of poorly controlled asthma in the UK. Findings from our earlier study found that, in a sample of 766 children with asthma, 45.7% had poorly controlled asthma. Our earlier study also showed that adherence to inhaled corticosteroids was low. Subsequent focus groups identified concerns regarding embarrassment and bullying as barriers to adherence, as well as forgetfulness and incorrect medication beliefs. Following this, a school-based self-management intervention has been developed, aimed to improve asthma control and self-management behaviours. Methods and analysis The theory-based cluster randomised controlled trial tests an intervention comprising two components: (1) a theatre workshop for all children in years 7 and 8, and (2) self-management workshops for children with asthma. The COM-B model was used to guide the development of the intervention. Questionnaire data will be collected in schools at baseline, immediately post intervention, and 3, 6 and 12 months post intervention. The data collected at 6 months will measure the effect of the intervention against the baseline data. The primary outcome will be asthma control, measured using the Asthma Control Test. All the data will be analysed quantitatively using generalised linear and non-linear mixed effects models. Ethics and dissemination Ethical approval was obtained by the Queen Mary University of London Ethics Committee on 12 April 2018. Regular meetings will be held with key patient and public stakeholders to plan the key messages from this research. Key messages from the study will also be tweeted via the project twitter account (@SchoolsAsthma). The findings of the study will be submitted for presentation at conferences, as well as written into a manuscript.

Hart, J., et al. (2018). "Factors Influencing Cane Use for the Management of Knee Osteoarthritis: A Cross-Sectional Survey." *Arthritis Care & Research* 70(10): 1455-1460.

Objective To investigate demographic, symptom-related, and cognitive determinants of cane use for knee osteoarthritis (OA) and prioritize the factors that could facilitate cane use in people with no previous cane use. Methods A survey of people ages 45 years with a clinical diagnosis of knee OA was conducted. The survey consisted of the following two sections: 1) demographic and cognitive determinants of cane use assessed via subscales of the Cane Cognitive Mediator Scale, and 2) 19 statements, underpinned by the Behaviour Change Wheel theoretical framework, relating to factors that could facilitate regular cane use. Logistic regression was used to examine determinants of cane use, while a priority pairwise ranking activity (1000minds software) determined the rank order of the 19 statements that could facilitate cane use. Results A total of 529 people completed Part 1 (80% females; 35% cane users) and 231 people

completed Part 2. Age (odds ratio [OR] 1.06, 95% confidence interval [95% CI] 1.03- 1.09), body mass index (BMI) (OR 1.03, 95% CI 1.01-1.06), knee pain 3 years (OR 2.62, 95% CI 1.63-4.21) and numeric rating scale pain level while walking (OR 1.19, 95% CI 1.09-1.30) were significant independent determinants of cane use. In people who had never used a cane, statements relating to cane-use technique, fitting, knowledge of benefits, and motivation were ranked highest overall. Conclusion Independent determinants of cane use include older age, higher BMI, greater pain duration, and greater severity of knee pain. Strategies targeting an individual's capability and motivation to use a cane may increase cane use among people with knee OA.

Hart, T., et al. (2019). "A Theory-Driven System for the Specification of Rehabilitation Treatments." *Archives of Physical Medicine and Rehabilitation* 100(1): 172-180.

The field of rehabilitation remains captive to the black-box problem: our inability to characterize treatments in a systematic fashion across diagnoses, settings, and disciplines, so as to identify and disseminate the active ingredients of those treatments. In this article, we describe the Rehabilitation Treatment Specification System (RTSS), by which any treatment employed in rehabilitation may be characterized, and ultimately classified according to shared properties, via the 3 elements of treatment theory: targets, ingredients, and (hypothesized) mechanisms of action. We discuss important concepts in the RTSS such as the distinction between treatments and treatment components, which consist of 1 target and its associated ingredients; and the distinction between targets, which are the direct effects of treatment, and aims, which are downstream or distal effects. The RTSS includes 3 groups of mutually exclusive treatment components: Organ Functions, Skills and Habits, and Representations. The last of these comprises not only thoughts and feelings, but also internal representations underlying volitional action; the RTSS addresses the concept of volition (effort) as a critical element for many rehabilitation treatments. We have developed an algorithm for treatment specification which is illustrated and described in brief. The RTSS stands to benefit the field in numerous ways by supplying a coherent, theory-based framework encompassing all rehabilitation treatments. Using a common framework, researchers will be able to test systematically the effects of specific ingredients on specific targets; and their work will be more readily replicated and translated into clinical practice. (C) 2018 by the American Congress of Rehabilitation Medicine

Hart, T., et al. (2014). "Toward a Theory-Driven Classification of Rehabilitation Treatments." *Archives of Physical Medicine and Rehabilitation* 95(1): S33-S44.

Rehabilitation is in need of an organized system or taxonomy for classifying treatments to aid in research, practice, training, and interdisciplinary communication. In this article, we describe a work-in-progress effort to create a rehabilitation treatment taxonomy (RTT) for classifying rehabilitation interventions by the underlying treatment theories that explain their effects. In the RTT, treatments are grouped together according to their targets, or measurable aspects of functioning they are intended to change; ingredients, or measurable clinician decisions and behaviors responsible for effecting changes; and the hypothesized mechanisms of action by which ingredients are transformed into changes in the target. Four treatment groupings are proposed: structural tissue properties, organ functions, skilled performances, and cognitive/affective representations, which are similar in the types of targets addressed, ingredients used, and mechanisms of action that account for change. The typical ingredients and examples of clinical treatments associated with each of these groupings are explored, and the challenges of further subdivision are discussed. Although a Linnaean hierarchical tree structure was envisioned at the outset of work on the RTT, further development may necessitate a model with less rigid boundaries between classification groups, and/or a matrix-like structure for organizing active ingredients along selected continua, to allow for both qualitative and quantitative variations of importance to treatment effects. (C) 2014 by the American Congress of Rehabilitation Medicine

Harting, J., et al. (2019). "Implementing multiple intervention strategies in Dutch public health-related policy networks." *Health Promotion International* 34(2): 193-203.

Improving public health requires multiple intervention strategies. Implementing such an intervention mix is supposed to require a multisectoral policy network. As evidence to support this assumption is scarce, we examined under which conditions public health-related policy networks were able to implement an intervention mix. Data were collected (2009-14) from 29 Dutch public health policy networks. Surveys were used to identify the number of policy sectors, participation of actors, level of trust, networking by the project leader, and intervention strategies implemented. Conditions sufficient for an intervention mix (≥ 3 of 4 non-educational strategies present) were determined in a fuzzy-set qualitative comparative analysis. A multisectoral policy network (≥ 7 of 14 sectors present) was neither a necessary nor a sufficient condition. In multisectoral networks, additionally required was either the active participation of network actors ($\geq 50\%$ actively involved) or active networking by the project leader (monthly contacts with network actors). In policy networks that included few sectors, a high level of trust (positive perceptions of each other's intentions) was needed-in the absence though of any of the other conditions. If the network actors were also actively involved, an extra requirement was active networking by the project leader. We conclude that the multisectoral composition of policy

networks can contribute to the implementation of a variety of intervention strategies, but not without additional efforts. However, policy networks that include only few sectors are also able to implement an intervention mix. Here, trust seems to be the most important condition.

Harvey, G. and A. Kitson (2015). "Translating evidence into healthcare policy and practice: Single versus multi-faceted implementation strategies - is there a simple answer to a complex question?" *International Journal of Health Policy and Management-Ijhpm* 4(3): 123-126.

How best to achieve the translation of research evidence into routine policy and practice remains an enduring challenge in health systems across the world. The complexities associated with changing behaviour at an individual, team, organizational and system level have led many academics to conclude that tailored, multifaceted strategies provide the most effective approach to knowledge translation. However, a recent overview of systematic reviews questions this position and sheds doubt as to whether multi-faceted strategies are any better than single ones. In this paper, we argue that this either-or distinction is too simplistic and fails to recognize the complexity that is inherent in knowledge translation. Drawing on organizational theory relating to boundaries and boundary management, we illustrate the need for translational strategies that take account of the type of knowledge to be implemented, the context of implementation and the people and processes involved.

Harvey, G. and A. Kitson (2016). "Single Versus Multi-Faceted Implementation Strategies - Is There a Simple Answer to a Complex Question? A Response to Recent Commentaries and a Call to Action for Implementation Practitioners and Researchers." *International Journal of Health Policy and Management* 5(3): 215-217.

Harvey, G. and E. McInnes (2015). "Disinvesting in Ineffective and Inappropriate Practice: The Neglected Side of Evidence-Based Health Care?" *Worldviews on Evidence-Based Nursing* 12(6): 309-312.

Hasson, H., et al. (2016). "Significance of scientific evidence in organizing care processes." *Journal of Health Organization and Management* 30(4): 597-612.

Purpose - The purpose of this paper is to analyze how staff and managers in health and social care organizations use scientific evidence when making decisions about the organization of care practices. Design/methodology/approach - Document analysis and repeated interviews (2008-2010) with staff (n = 39) and managers (n = 26) in health and social care organizations. The respondents were involved in a randomized controlled study about testing a continuum of care model for older people. Findings - Scientific evidence had no practical function in the social care organization, while it was a prioritized source of information in the health care organization. This meant that the decision making regarding care practices was different in these organizations. Social care tended to rely on ad hoc practice-based information and political decisions when organizing care, while health care to some extent also relied in an unreflected manner on the scientific knowledge. Originality/value - The study illustrates several difficulties that might occur when managers and staff try to consider scientific evidence when making complicated decisions about care practices.

Hasson, H., et al. (2018). "Empirical and conceptual investigation of de-implementation of low-value care from professional and health care system perspectives: a study protocol." *Implementation Science* 13.

Background: A considerable proportion of interventions provided to patients lacks evidence of their effectiveness. This implies that patients may receive ineffective, unnecessary, or even harmful care. Thus, in addition to implementing evidence based practices, there is also a need to abandon interventions that are not based on best evidence, i.e., low value care. However, research on de implementation is limited, and there is a lack of knowledge about how effective de implementation processes should be. The aim of this project is to explore the phenomenon of the de implementation of low value health care practices from the perspective of professionals and the health care system. Methods: Theories of habits and developmental learning in combination with theories of organizational alignment will be used. The project's work will be conducted in five steps. Step 1 is a scoping review of the literature, and Step 2 has an explorative design involving interviews with health care stakeholders. Step 3 has a prospective design in which workplaces and professionals are shadowed during an ongoing de implementation. In Step 4, a conceptual framework for de implementation will be developed based on the previous steps. In Step 5, strategies for de implementation are identified using a co design approach. Discussion: This project contributes new knowledge to implementation science consisting of empirical data, a conceptual framework, and strategy suggestions on de implementation of low value care. The professionals' perspectives will be highlighted, including insights into how they make decisions, handle de implementation in daily practice, and what consequences it has on their work. Furthermore, the health care system perspective will be considered and new knowledge on how de implementation can be understood across health care system levels will be obtained. The theories of habits and developmental learning can also offer insights into how context triggers and reinforces certain behaviors and how factors at the individual and the organizational levels

interact The project employs a solution oriented perspective by developing a framework for de implementation of low value practices and suggesting practical strategies to improve de implementation processes at all levels of the health care system The framework and the strategies can thereafter be evaluated for their validity and impact in future studies.

Hatfield, J., et al. (2019). "An evaluation of the effects of an innovative school-based cycling education program on safety and participation." *Accident Analysis and Prevention* 127: 52-60.

Cycling education programs for children could play a role in promoting both cycling participation and cycling safety, and they exist in many countries often in school settings. Evaluations have generally shown improvements in skills and knowledge, but effects on less-researched outcomes such as safety-related behaviour, crashes or injuries, cycling participation, and cycling confidence, are unclear. The present research evaluated Safe Cycle, an innovative Australian school-based program that addresses hazard awareness and overconfidence in addition to more typical content (e.g. handling skills), in terms of a comprehensive range of outcomes. Students from Years 4 to 8 (n = 108) completed online surveys in class before, immediately after, and approximately 14 weeks after, the 8-week program was delivered. Significant increases in knowledge and confidence were observed, while results also suggested increases in cycling participation. The program appeared to address illusory invulnerability effectively, but there was no evidence that the program improved safety-relevant cycling behaviours or experience of crashes. The benefits of Safe Cycle might be enhanced by including elements to increase motivation to perform safety-relevant behaviours and durability of program effects.

Hattingh, H. L., et al. (2017). "Implementation of a mental health medication management intervention in Australian community pharmacies: Facilitators and challenges." *Research in Social & Administrative Pharmacy* 13(5): 969-979.

Background: Community pharmacists are in an ideal position to promote and provide mental health medication management services. However, formalised or structured pharmacy services to support consumers with mental health conditions are scarce. Australian mental health consumers indicated a need for targeted community pharmacy mental health services which presented an opportunity to develop an intervention that were integrated with remunerated professional services. Objectives: The study aimed to pilot a mental health medication management intervention in Australian community pharmacies. Pharmacists worked in partnership with consumers, carers and mental health workers over three to six months to set and support achievement of individual goals related to medicines use, physical health and mental wellbeing. This paper provides a comparison of community pharmacies that successfully delivered the intervention with those that did not and identifies facilitators and challenges to service implementation. Methods: One hundred pharmacies opted to pilot the delivery of the intervention in three Australian states (Queensland, Western Australia and northern New South Wales). Of those, 55 successfully delivered the intervention (completers) whilst 45 were unsuccessful (non-completers). A mixed methods approach, including quantitative pharmacy surveys and qualitative semi-structured interviews, was used to gather data from participating pharmacies. Following intervention development, 142 pharmacists and 21 pharmacy support staff attended training workshops, received resource kits and ongoing support from consumer and pharmacist mentors throughout intervention implementation. Baseline quantitative data was collected from each pharmacy on staff profile, volume of medicines dispensed, the range of professional services delivered and relationships with health professionals. At the completion of the study participants were invited to complete an online exit survey and take part in a semi-structured interview that explored their experiences of intervention implementation and delivery. Twenty-nine staff members from completer pharmacies returned exit surveys and interviews were conducted with 30 staff from completer and non-completer pharmacies. Results: Descriptive analyses of quantitative data and thematic analyses of qualitative data were used to compare completers and non-completers. Baseline similarities included numbers of general and mental health prescriptions dispensed and established professional services. However, there was greater prevalence of diabetes management, opioid substitution services, and relationships with mental health services in completer pharmacies. Key facilitators for completers included pharmacy owner/manager support, staff buy-in and involvement, intervention flexibility, recruitment immediately following training, integration of intervention with existing services, changes to workflow, and regular consumer contact. Key barriers for both groups included lack of pharmacy owner/manager support or staff buy-in, time constraints, privacy limitations and pilot project associated paperwork. Conclusions: Insights into factors that underpinned successful intervention implementation and delivery should inform effective strategies for similar future studies and allocation of pharmacy mental health service delivery resources. (C) 2017 Elsevier Inc. All rights reserved.

Hawe, P. (2015). "Minimal, negligible and negligent interventions." *Social Science & Medicine* 138: 265-268.

Many interventions are not disruptive enough of the patterns that entrench poor health and health inequities. Ways forward may require a break with tradition to embrace system-focussed theory, complex logic modelling, and ways of funding and responding to problems that address the competition of ideas and needs. (C) 2015 Elsevier Ltd. All rights reserved.

Hawkes, C., et al. (2015). "Smart food policies for obesity prevention." *Lancet* 385(9985): 2410-2421.

Prevention of obesity requires policies that work. In this Series paper, we propose a new way to understand how food policies could be made to work more effectively for obesity prevention. Our approach draws on evidence from a range of disciplines (psychology, economics, and public health nutrition) to develop a theory of change to understand how food policies work. We focus on one of the key determinants of obesity: diet. The evidence we review suggests that the interaction between human food preferences and the environment in which those preferences are learned, expressed, and reassessed has a central role. We identify four mechanisms through which food policies can affect diet: providing an enabling environment for learning of healthy preferences, overcoming barriers to the expression of healthy preferences, encouraging people to reassess existing unhealthy preferences at the point-of-purchase, and stimulating a food-systems response. We explore how actions in three specific policy areas (school settings, economic instruments, and nutrition labelling) work through these mechanisms, and draw implications for more effective policy design. We find that effective food-policy actions are those that lead to positive changes to food, social, and information environments and the systems that underpin them. Effective food-policy actions are tailored to the preference, behavioural, socioeconomic, and demographic characteristics of the people they seek to support, are designed to work through the mechanisms through which they have greatest effect, and are implemented as part of a combination of mutually reinforcing actions. Moving forward, priorities should include comprehensive policy actions that create an enabling environment for infants and children to learn healthy food preferences and targeted actions that enable disadvantaged populations to overcome barriers to meeting healthy preferences. Policy assessments should be carefully designed on the basis of a theory of change, using indicators of progress along the various pathways towards the long-term goal of reducing obesity rates.

Hawkins, J., et al. (2017). "Development of a framework for the co-production and prototyping of public health interventions." *Bmc Public Health* 17.

Background: Existing guidance for developing public health interventions does not provide information for researchers about how to work with intervention providers to co-produce and prototype the content and delivery of new interventions prior to evaluation. The ASSIST + Frank study aimed to adapt an existing effective peer-led smoking prevention intervention (ASSIST), integrating new content from the UK drug education resource Talk to Frank (www.talktofrank.com) to co-produce two new school-based peer-led drug prevention interventions. A three-stage framework was tested to adapt and develop intervention content and delivery methods in collaboration with key stakeholders to facilitate implementation. Methods: The three stages of the framework were: 1) Evidence review and stakeholder consultation; 2) Co-production; 3) Prototyping. During stage 1, six focus groups, 12 consultations, five interviews, and nine observations of intervention delivery were conducted with key stakeholders (e.g. Public Health Wales [PHW] ASSIST delivery team, teachers, school students, health professionals). During stage 2, an intervention development group consisting of members of the research team and the PHW ASSIST delivery team was established to adapt existing, and co-produce new, intervention activities. In stage 3, intervention training and content were iteratively prototyped using process data on fidelity and acceptability to key stakeholders. Stages 2 and 3 took the form of an action-research process involving a series of face-to-face meetings, email exchanges, observations, and training sessions. Results: Utilising the three-stage framework, we co-produced and tested intervention content and delivery methods for the two interventions over a period of 18 months involving external partners. New and adapted intervention activities, as well as refinements in content, the format of delivery, timing and sequencing of activities, and training manuals resulted from this process. The involvement of intervention delivery staff, participants and teachers shaped the content and format of the interventions, as well as supporting rapid prototyping in context at the final stage. Conclusions: This three-stage framework extends current guidance on intervention development by providing step-by-step instructions for co-producing and prototyping an intervention's content and delivery processes prior to piloting and formal evaluation. This framework enhances existing guidance and could be transferred to co-produce and prototype other public health interventions.

Hawkins, M. and C. James (2018). "Developing a perspective on schools as complex, evolving, loosely linking systems." *Educational Management Administration & Leadership* 46(5): 729-748.

The rationale for this article is to give complexity the central place it warrants in school leadership, management and organisational practice and research. We analyse the relevant literature, particularly that relating to complex human systems and their loose coupling nature. The analysis reveals the dimensions of complex human systems and consequences that emanate from those dimensions, which include system evolution. We use the dimensions, together with notions of interactional capability, opportunities for interaction, the legitimacy of interactions and the extent to which the institutional primary task conditions interactions, to create an organisational/institutional perspective on schools as complex, evolving, loosely linking systems (CELLS). Five main systems of a school as a whole-school system are

identified: the teaching staff system; the ancillary staff system; the student system; the parent system; and significant other systems in the wider system. In the article, we illustrate the nature of the teaching staff system from a CELLS perspective. We discuss issues arising from our analyses: interaction, influence and leadership; ontological issues; the nature of the school; the significance of the parent system; the special nature of interactions between the members of the teaching staff system and the student system; and institutional performance.

Hay-Smith, J., et al. (2015). "Pelvic-floor-muscle-training adherence "modifiers": A review of primary qualitative studies 2011 ICS State-of-the-Science Seminar research paper III of IV." *Neurourology and Urodynamics* 34(7): 622-631.

AimsThis review aims to locate and summarize the findings of qualitative studies exploring the experience of and adherence to pelvic floor muscle training (PFMT) to recommend future directions for practice and research. **Methods**Primary qualitative studies were identified through a conventional subject search of electronic databases, reference-list checking, and expert contact. A core eligibility criterion was the inclusion of verbatim quotes from participants about PFMT experiences. Details of study aims, methods, and participants were extracted and tabulated. Data were inductively grouped into categories describing modifiers of adherence (verified by a second author) and systematically displayed with supporting illustrative quotes. **Results**Thirteen studies (14 study reports) were included; eight recruited only or predominantly women with urinary incontinence, three recruited postnatal women, and two included women with pelvic organ prolapse. The quality of methodological reporting varied. Six modifiers of adherence were described: knowledge; physical skill; feelings about PFMT; cognitive analysis, planning, and attention; prioritization; and service provision. **Conclusions**Individuals' experience substantial difficulties with capability (particularly knowledge and skills), motivation (especially associated with the considerable cognitive demands of PFMT), and opportunity (as external factors generate competing priorities) when adopting and maintaining a PFMT program. Expert consensus was that judicious selection and deliberate application of appropriate behavior change strategies directed to the modifiers of adherence identified in the review may improve PFMT outcomes. Future research is needed to explore whether the review findings are congruent with the PFMT experiences of antenatal women, men, and adults with fecal incontinence. *NeuroUrol. Urodynam.* 34:??-??, 2015. (c) 2015 Wiley Periodicals, Inc.

Hayek, A., et al. (2016). "An integrated general practice and pharmacy-based intervention to promote the use of appropriate preventive medications among individuals at high cardiovascular disease risk: protocol for a cluster randomized controlled trial." *Implementation Science* 11.

Background: Cardiovascular diseases (CVD) are responsible for significant morbidity, premature mortality, and economic burden. Despite established evidence that supports the use of preventive medications among patients at high CVD risk, treatment gaps remain. Building on prior evidence and a theoretical framework, a complex intervention has been designed to address these gaps among high-risk, under-treated patients in the Australian primary care setting. This intervention comprises a general practice quality improvement tool incorporating clinical decision support and audit/feedback capabilities; availability of a range of CVD polypills (fixed-dose combinations of two blood pressure lowering agents, a statin +/- aspirin) for prescription when appropriate; and access to a pharmacy-based program to support long-term medication adherence and lifestyle modification. **Methods:** Following a systematic development process, the intervention will be evaluated in a pragmatic cluster randomized controlled trial including 70 general practices for a median period of 18 months. The 35 general practices in the intervention group will work with a nominated partner pharmacy, whereas those in the control group will provide usual care without access to the intervention tools. The primary outcome is the proportion of patients at high CVD risk who were inadequately treated at baseline who achieve target blood pressure (BP) and low-density lipoprotein cholesterol (LDL-C) levels at the study end. The outcomes will be analyzed using data from electronic medical records, utilizing a validated extraction tool. Detailed process and economic evaluations will also be performed. **Discussion:** The study intends to establish evidence about an intervention that combines technological innovation with team collaboration between patients, pharmacists, and general practitioners (GPs) for CVD prevention.

Hayes, S., et al. (2017). "Randomised controlled pilot trial of an exercise plus behaviour change intervention in people with multiple sclerosis: the Step it Up study." *Bmj Open* 7(10).

Objective To investigate feasibility of multiple sclerosis (MS) exercise guidelines for inactive people with MS (PwMS) and to examine preliminary efficacy for walking. To investigate effect of augmenting that intervention with education based on social cognitive theory (SCT). **Design** Pilot multicentre, double-blind, randomised, parallel, controlled trial. **Setting** Community-delivered programme. **Participants** Sixty-five physically inactive PwMS walked independently, scored 0-3 on the Patient Determined Disease Steps Scale, had no MS relapse or change in MS medication in 12 weeks. **Interventions** 10-week exercise plus SCT education (SCT) compared with exercise plus attention control education (CON). **Outcome measures** Six-Minute Walk Test (6MWT), Timed Up and Go (TUG) test and Multiple Sclerosis Walking Scale-12 (MSWS-12). **Results** 174 expressed interest, 92 were eligible and 65 enrolled (SCT, n=32; CON, n=33). The intervention

was feasible and delivered as intended. 68% of SCT group and 50% of control group met the exercise guidelines after intervention. Using linear mixed effects models, intention-to-treat basis, there was insufficient evidence for difference between the groups over the trial (6MWT, $p=0.30$; TUG, $p=0.4$; MSWS-12, $p=0.8$). Using secondary analysis of a cohort with data for ≥ 3 assessments (SCT, $n=21$; CON, $n=20$), there was significant treatment effect favouring the intervention group ($p=0.04$) with mean effect for 6MWT 39.0 m (95% CI 2.26 to 75.73) at 12 weeks and 40.0 m (95% CI 2.3 to 77.8) at 36 weeks. Both groups improved significantly in 6MWT following 10-week intervention (SCT, mean Delta = 83.02, $SD=60.1$, $p \leq 0.01$; CON, mean Delta=56.92, $SD=73.5$, $p \leq 0.01$), TUG (SCT, Delta=-0.70, $SD=1.25$, $p < 0.01$; CON, Delta=-0.54, $SD=0.95$, $p \leq 0.01$) and MSWS-12 (SCT, Delta=-8.03, $SD=16.18$, $p=0.02$; CON, Delta=-0.86, $SD=18.74$, $p=0.81$). Conclusions A 10-week exercise programme based on the MS exercise guidelines for improving walking in previously inactive PwMS was feasible. There is marginal evidence of a treatment effect in favour of the exercise plus SCT intervention at 12 and 36 weeks.

Haynes, A., et al. (2016). "Figuring out fidelity: a worked example of the methods used to identify, critique and revise the essential elements of a contextualised intervention in health policy agencies." *Implementation Science* 11.

Background: In this paper, we identify and respond to the fidelity assessment challenges posed by novel contextualised interventions (i.e. interventions that are informed by composite social and psychological theories and which incorporate standardised and flexible components in order to maximise effectiveness in complex settings). We (a) describe the difficulties of, and propose a method for, identifying the essential elements of a contextualised intervention; (b) provide a worked example of an approach for critiquing the validity of putative essential elements; and (c) demonstrate how essential elements can be refined during a trial without compromising the fidelity assessment. We used an exploratory test-and-refine process, drawing on empirical evidence from the process evaluation of Supporting Policy In health with Research: an Intervention Trial (SPIRIT). Mixed methods data was triangulated to identify, critique and revise how the intervention's essential elements should be articulated and scored. Results: Over 50 provisional elements were refined to a final list of 20 and the scoring rationalised. Six (often overlapping) challenges to the validity of the essential elements were identified. They were (1) redundant-the element was not essential; (2) poorly articulated-unclear, too specific or not specific enough; (3) infeasible-it was not possible to implement the essential element as intended; (4) ineffective-the element did not effectively deliver the change principles; (5) paradoxical-counteracting vital goals or change principles; or (6) absent or suboptimal-additional or more effective ways of operationalising the theory were identified. We also identified potentially valuable 'prohibited' elements that could be used to help reduce threats to validity. Conclusions: We devised a method for critiquing the construct validity of our intervention's essential elements and modifying how they were articulated and measured, while simultaneously using them as fidelity indicators. This process could be used or adapted for other contextualised interventions, taking evaluators closer to making theoretically and contextually sensitive decisions upon which to base fidelity assessments.

Hedin, B., et al. (2017). Visualizing Carbon Footprint from School Meals. 2017 Fifth Ifip Conference on Sustainable Internet and Ict for Sustainability: 91-93.

Food is a major contributor of greenhouse gases in the world. Changing what you eat to a less greenhouse gas intensive diet can have a major impact on the greenhouse gas emission. While campaigns and efforts about changing diets directed towards individuals have a potential to reduce total greenhouse gases, efforts directed towards institutional producers of meals have much greater potential to have impact since just a few key players need to be affected. In this paper, we describe a system we have developed for calculating carbon footprint for school meals, making it possible for decisions makers to compare schools with each other, and identify schools with both low footprint (who can serve as good examples) and schools with high footprints (who have the greatest possibility to change). Preliminary results from 10 schools in the Stockholm area are also presented.

Heinsch, M., et al. (2016). "Re-conceptualising the link between research and practice in social work: A literature review on knowledge utilisation." *International Journal of Social Welfare* 25(1): 98-104.

Despite the recent movement towards greater research use in many areas of social work, criticisms persist that decision making in practice is seldom informed by sound research evidence. Discourse about the research-to-practice gap in social work has tended to focus on the feasibility of evidence-based practice for the profession, but has rarely drawn from the broader knowledge utilisation literature. There are important understandings to be gained from the knowledge utilisation field, which spans more than six decades of interdisciplinary research. This article introduces the wider knowledge utilisation literature to a social work audience. It considers the potential of this body of literature to facilitate research use in social work, as well as conceptual issues that may be hindering it from informing improvements to research utilisation in practice.

Henchion, M. and M. McCarthy (2019). Facilitators and Barriers for Foods Containing Meat Coproducts.

Henderson, R. I., et al. (2018). "First nations people's perspectives on barriers and supports for enhancing HPV vaccination: Foundations for sustainable, community-driven strategies." *Gynecologic Oncology* 149(1): 93-100.

Objective. In Canada, Indigenous people have higher human papillomavirus (HPV) infection rates, lower screening rates for cervical cancer, and higher rates of invasive cancer, leading to worse cervical cancer-related outcomes than observed in non-Indigenous Canadian women. Lingering harms from European colonization drive these health inequities and create public health challenges. Policy guidance is needed to optimize HPV vaccination rates and, thereby, decrease the burden of HPV-related illness, including high-morbidity surgical procedures and chemo-radiotherapy. The Enhancing HPV Vaccination In First Nations Populations in Alberta (EHVINA) project focuses on First Nations, a diverse subset of recognized Indigenous people in Canada, and seeks to increase HPV vaccination among girls and boys living in First Nation communities. **Methods.** Developing an effective strategy requires partnership with affected communities to better understand knowledge and perceptions about cancer, healthcare, and the HPV vaccine. A 2017 community gathering was convened to engage First Nations community members, health directors, and health services researchers in dialogue around unique barriers and supports to HPV vaccination in Alberta. Voices of community Elders, parents, health directors, and cancer survivors (n = 24) are presented as qualitative evidence to help inform intervention design. **Results.** Key findings from discussions indicate barriers to HPV vaccination include resource constraints and service infrastructure gaps, historical mistrust in healthcare systems, impacts of changing modes of communication, and community sensitivities regarding sexual health promotion. Supports were identified as strengthened inter-generational relationships in communities. **Conclusions and Future Direction.** Ongoing dialogue and co-development of community-based strategies to increase HPV vaccine uptake are required. The identification of possible barriers to HPV vaccination in a Canadian Indigenous population contributes to limited global literature on this subject and may inform researchers and policy makers who work with Indigenous populations in other regions. (C) 2017 Elsevier Inc. All rights reserved.

Hendriks, A. M., et al. (2015). "Perspectives of Fijian Policymakers on the Obesity Prevention Policy Landscape." *Biomed Research International*.

In Fiji and other Pacific Island countries, obesity has rapidly increased in the past decade. Therefore, several obesity prevention policies have been developed. Studies show that their development has been hampered by factors within Fiji's policy landscape such as pressure from industry. Since policymakers in the Fijian national government are primarily responsible for the development of obesity policies, it is important to understand their perspectives; we therefore interviewed 15 policymakers from nine Fijian ministries. By applying the "attractor landscape" metaphor from dynamic systems theory, we captured perceived barriers and facilitators in the policy landscape. A poor economic situation, low food self-sufficiency, power inequalities, inappropriate framing of obesity, limited policy evidence, and limited resource sharing hamper obesity policy developments in Fiji. Facilitators include policy entrepreneurs and policy brokers who were active when a window of opportunity opened and who strengthened intersectoral collaboration. Fiji's policy landscape can become more conducive to obesity policies if power inequalities are reduced. In Fiji and other Pacific Island countries, this may be achievable through increased food self-sufficiency, strengthened intersectoral collaboration, and the establishment of an explicit functional focal unit within government to monitor and forecast the health impact of policy changes in non-health sectors.

Hendriks, A. M., et al. (2014). "'Are we there yet?' - Operationalizing the concept of Integrated Public Health Policies." *Health Policy* 114(2-3): 174-182.

Objectives: Although 'integrated' public health policies are assumed to be the ideal way to optimize public health, it remains hard to determine how far removed we are from this ideal, since clear operational criteria and defining characteristics are lacking. **Methods:** A literature review identified gaps in previous operationalizations of integrated public health policies. We searched for an approach that could fill these gaps. **Results:** We propose the following defining characteristics of an integrated policy: (1) the combination of policies includes an appropriate mix of interventions that optimizes the functioning of the behavioral system, thus ensuring that motivation, capability and opportunity interact in such a way that they promote the preferred (health-promoting) behavior of the target population, and (2) the policies are implemented by the relevant policy sectors from different policy domains. **Conclusion:** Our criteria should offer added value since they describe pathways in the process towards formulating integrated policy. The aim of introducing our operationalization is to assist policy makers and researchers in identifying truly integrated cases. The Behavior Change Wheel proved to be a useful framework to develop operational criteria to assess the current state of integrated public health policies in practice. (C) 2013 Elsevier Ireland Ltd. All rights reserved.

Hendriks, A. M., et al. (2016). "One more question to guide the development and implementation of Health in All Policies: Integrate?" *Health Promotion International* 31(3): 735-737.

Hendriks, A. M., et al. (2015). "Local government officials' views on intersectoral collaboration within their organization - A qualitative exploration." *Health Policy and Technology* 4(1): 47-57.

Objectives: Intersectoral collaboration (ISC) is defined as collaboration between health and non-health local government officials and is a prerequisite for the development of integrated policies that address wicked public health problems. In practice, ISC has proven to be problematic, which might be related to differing views on ISC across various policy sectors. Therefore, our objective was to explore local officials views on ISC. Methods: We interviewed 19 officials responsible for 10 different policy sectors within two small-sized municipal governments within one Dutch region. We asked interviewees about ISC facilitators and barriers and categorized them in the theory-based concepts of capability, opportunity and motivation. Results: Capability was found to be determined by the ability to share policy goals, and was more likely to increase when officials had greater motivation to continue learning. Interviewees in both municipalities expected that flatter organizational structures and coaching of officials by managers could improve ISC opportunities. When the perceived feasibility of ISC and professional autonomy was low, motivation to learn new ISC skills was low. Conclusion: In the view of government officials, ISC is an appropriate tool to address wicked public health problems, but implementing ISC requires flatter organizational structures, merging of departmental cultures and leadership by heads of departments and town clerks in order to decrease officials fears of losing professional autonomy. Public Health Service officials can play a more active role in merging cultures by increasing understanding about the multi-dimensionality of public health and reframing health goals in the terminology of the non-health sector. (C) 2014 Published by Elsevier Ltd. on behalf of Fellowship of Postgraduate Medicine.

Hendriks, A. M., et al. (2013). "Proposing a conceptual framework for integrated local public health policy, applied to childhood obesity - the behavior change ball." *Implementation Science* 8.

Background: Childhood obesity is a 'wicked' public health problem that is best tackled by an integrated approach, which is enabled by integrated public health policies. The development and implementation of such policies have in practice proven to be difficult, however, and studying why this is the case requires a tool that may assist local policy-makers and those assisting them. A comprehensive framework that can help to identify options for improvement and to systematically develop solutions may be used to support local policy-makers. Discussion: We propose the 'Behavior Change Ball' as a tool to study the development and implementation of integrated public health policies within local government. Based on the tenets of the 'Behavior Change Wheel' by Michie and colleagues (2011), the proposed conceptual framework distinguishes organizational behaviors of local policy-makers at the strategic, tactical and operational levels, as well as the determinants (motivation, capability, opportunity) required for these behaviors, and interventions and policy categories that can influence them. To illustrate the difficulty of achieving sustained integrated approaches, we use the metaphor of a ball in our framework: the mountainous landscapes surrounding the ball reflect the system's resistance to change (by making it difficult for the ball to roll). We apply this framework to the problem of childhood obesity prevention. The added value provided by the framework lies in its comprehensiveness, theoretical basis, diagnostic and heuristic nature and face validity. Summary: Since integrated public health policies have not been widely developed and implemented in practice, organizational behaviors relevant to the development of these policies remain to be investigated. A conceptual framework that can assist in systematically studying the policy process may facilitate this. Our Behavior Change Ball adds significant value to existing public health policy frameworks by incorporating multiple theoretical perspectives, specifying a set of organizational behaviors and linking the analysis of these behaviors to interventions and policies. We would encourage examination by others of our framework as a tool to explain and guide the development of integrated policies for the prevention of wicked public health problems.

Henkemans, O. A. B., et al. (2015). Lost in persuasion A multidisciplinary approach for developing usable, effective, and reproducible persuasive technology for health promotion. *Proceedings of the 2015 9th International Conference on Pervasive Computing Technologies for Healthcare*: 49-56.

Despite its acknowledged benefits for health promotion, the full potential of persuasive technology is not (yet) reached in regard to usability, effectiveness, and reproducibility. It often lacks an effective combination of technical features and behavior change strategies. This paper presents a multidisciplinary approach, addressing both aspects. It builds on the frameworks of situated Cognitive Engineering and Intervention Mapping. The approach generates building blocks from theory originating from different relevant disciplines; it specifies change objectives and requirements, described in the context of use, for intervention (strategy) and interaction (technology); it evaluates process, effect and impact, whereby claims on interaction and intervention are validated. To cope with language barriers between developers from different disciplines, the approach is presented as a guideline, illustrated with a case study. This approach is expected to contribute to a sound design rationale, a broad reach and ongoing use of the technology, and larger results in regard to health promotion.

Hensen, B., et al. (2019). "Application of an HIV Prevention Cascade to Identify Gaps in Increasing Coverage of Voluntary Medical Male Circumcision Services in 42 Rural Zambian Communities." *Aids and Behavior* 23(5): 1095-1103.

Increased coverage of voluntary medical male circumcision (VMMC) is needed in countries with high HIV prevalence. We applied an HIV-prevention cascade to identify gaps in male circumcision coverage in Zambia. We used survey data collected in 2013 and 2014/15 to describe circumcision coverage at each time-point, and prevalence of variables related to demand for and supply of VMMC. We explored whether circumcision coverage in 2014/15 was associated with demand and supply among uncircumcised men in 2013. Results show that circumcision coverage was 11.5% in 2013 and 18.0% in 2014/15. Levels of having heard of circumcision and agreeing with prevention benefits was similar at both time-points (79.8% vs 83.2%, and 49.7% vs 50.7%, respectively). In 2013, 39.3% of men perceived services to be available compared to 54.7% in 2014/15. Levels of having heard of circumcision in 2013 was correlated with and higher perceived service availability associated with coverage in 2014/15. VMMC coverage was low in these study sites. Knowledge of prevention tools and of service availability are necessary to increase coverage but alone are insufficient.

Henshall, C., et al. (2018). "Improving the quality and content of midwives' discussions with low-risk women about their options for place of birth: Co-production and evaluation of an intervention package." *Midwifery* 59: 118-126.

Objective: Women's planned place of birth is gaining increasing importance in the UK, however evidence suggests that there is variation in the content of community midwives' discussions with low risk women about their place of birth options. The objective of this study was to develop an intervention to improve the quality and content of place of birth discussions between midwives and low-risk women and to evaluate this intervention in practice. Design: The study design comprised of three stages: (1) The first stage included focus groups with midwives to explore the barriers to carrying out place of birth discussions with women. (2) In the second stage, COM-B theory provided a structure for co-produced intervention development with midwives and women representatives; priority areas for change were agreed and the components of an intervention package to standardise the quality of these discussions were decided. (3) The third stage of the study adopted a mixed methods approach including questionnaires, focus groups and interviews with midwives to evaluate the implementation of the co-produced package in practice. Setting: A maternity NHS Trust in the West Midlands, UK. Participants: A total of 38 midwives took part in the first stage of the study. Intervention design (stage 2) included 58 midwives, and the evaluation (stage 3) involved 66 midwives. Four women were involved in the intervention design stage of the study in a Patient and Public Involvement role (not formally consented as participants). Findings: In the first study stage participants agreed that pragmatic, standardised information on the safety, intervention and transfer rates for each birth setting (obstetric unit, midwifery-led unit, home) was required. In the second stage of the study, co-production between researchers, women and midwives resulted in an intervention package designed to support the implementation of these changes and included an update session for midwives, a script, a leaflet, and ongoing support through a named lead midwife and regular team meetings. Evaluation of this package in practice revealed that midwives' knowledge and confidence regarding place of birth substantially improved after the initial update session and was sustained three months post-implementation. Midwives viewed the resources as useful in prompting discussions and aiding communication about place of birth options. Key conclusions and implications for practice: Co-production enabled development of a pragmatic intervention to improve the quality of midwives' place of birth discussions with low-risk women, supported by COM-B theory. These findings highlight the importance of co-production in intervention development and suggest that the place of birth package could be used to improve place of birth discussions to facilitate informed choice at other Trusts across the UK.

Herbec, A., et al. (2014). "The needs and preferences of pregnant smokers regarding tailored Internet-based smoking cessation interventions: a qualitative interview study." *Bmc Public Health* 14.

Background: Internet-based Smoking Cessation Interventions (ISCIs) may help pregnant smokers who are unable, or unwilling, to access face-to-face stop smoking support. Targeting ISCIs to specific groups of smokers could increase their uptake and effectiveness. The current study explored the needs and preferences of pregnant women seeking online stop smoking support with an aim to identify features and components of ISCIs that might be most attractive to this population. Methods: We conducted qualitative interviews with thirteen pregnant women who completed the intervention arm of a pilot randomized controlled trial of a novel ISCI for pregnant smokers ('MumsQuit'). The interviews explored women's views towards MumsQuit and online support with quitting smoking in general, as well as their suggestions for how ISCIs could be best targeted to pregnancy. Interview transcripts were analyzed using Framework Analysis. Results: Participants expressed preferences for an accessible, highly engaging and targeted to pregnancy smoking cessation website, tailored to individuals' circumstances as well as use of cessation medication, offering comprehensive and novel information on smoking and quitting smoking in pregnancy, ongoing support with cravings management, as well as additional support following relapse to smoking. Participants also viewed as important targeting of the feedback and progress reports to baby's health and development, offering personal support from experts, and providing a discussion forum allowing for communication with other pregnant women wanting to quit.

Conclusions: The present study has identified a number of potential building blocks for ISCI targeted to quitting smoking in pregnancy. Pregnant smokers willing to try using ISCI may particularly value an engaging intervention offering a high degree of targeting of comprehensive information to them as a group and tailoring support and advice to their individual needs, as well as one providing post-relapse support, peer-to-peer communication and personal support from experts.

Herber, O. R., et al. (2018). "Enhancing self-care adherence in patients with heart failure: a study protocol for developing a theory-based behaviour change intervention using the COM-B behaviour model (ACHIEVE study)." *Bmj Open* 8(9).

Introduction Although international guidelines recommend self-care as an integral part of routine heart failure management, and despite evidence supporting the positive outcomes related to self-care, patients are frequently unable to adhere. Self-care can be modified through behaviour change interventions (BCIs). However, previous self-care interventions have shown limited success in improving adherence to self-care, because they were neither theory-based nor well defined, which precludes the identification of underlying causal mechanisms as well as reproducibility of the intervention. Thus, our aim is to develop an intervention manual that contains theory-based BCIs that are well-defined using eight descriptors proposed to describe BCIs in a standardised way. Methods and analysis BCIs will be based on statements of findings derived through qualitative meta-summary techniques and a quantitative meta-analysis. These reviews will be used to extract factors (target behaviours) associated with self-care adherence/non-adherence. Extracted target behaviours will be mapped onto the Capability, Opportunity, Motivation and Behaviour' (COM-B) model to capture the underlying mechanisms involved. To develop approaches for change, the Taxonomy of Behaviour Change Techniques' will be used to allow effective mapping of the target behaviours onto established behaviour change techniques. Suggested BCIs will then be translated into locally relevant interventions using the Normalisation Process Theory to overcome the difficulties of implementing theoretically derived interventions into practice. Finally, a consensus development method will be employed to fine-tune the content and acceptability of the intervention manual to increase the likelihood of successfully piloting and implementing future BCIs into the German healthcare system. Ethics and dissemination This study has been reviewed and approved by the Ethics Committee of the Medical Faculty of the Heinrich Heine University Dusseldorf, Germany (Ref #: 2018-30). The results will be disseminated via peer-reviewed journal publications, conference presentations and stakeholder engagement activities. Trial registration number DRKS00014855; Pre-results.

Hernandez, D. C. and C. A. Johnston (2016). "Unidirectional or Bidirectional Relationships of Behaviors: The Importance of Positive Behavioral Momentum." *American Journal of Lifestyle Medicine* 10(6): 381-384.

Theoretically based behavioral interventions provide the most evidence for successful change; however, several issues should be considered when applying these interventions. For example, school-based obesity prevention programs can be used to teach children how to adopt healthy lifestyle behaviors from an early age. Ecological systems theory provides a framework to design, implement, and evaluate school-based obesity prevention programs. An ecological framework emphasizes that the characteristics within and between systems place children at risk for obesity. Although this developmental process is considered to occur continuously and simultaneously, in practice, we tend to consider the relationships to be unidirectional. Using a positive behavioral momentum approach in practice may assist in addressing these complexities.

Herring, L. Y., et al. (2018). "Physical Activity after Cardiac EventS (PACES) - a group education programme with subsequent text-message support designed to increase physical activity in individuals with diagnosed coronary heart disease: study protocol for a randomised controlled trial." *Trials* 19.

Background: Coronary heart disease (CHD) represents approximately 13% of deaths worldwide and is the leading cause of death in the UK with considerable associated health care costs. After a CHD event, timely cardiac rehabilitation optimises patient outcomes. However, a high percentage of these services do not meet necessary performance indicators such as course length and follow-up attendance. Uptake of such services is only 50% in UK patients and support provided 12 months after an event is often limited. To delay and prevent further CHD events leading to hospitalisation, supplementary self-management strategies such as group education, are necessary. Methods: This is a single-centre, randomised controlled trial (RCT) recruiting participants (n = 290) aged ≥ 18 years who are 12 to 48 months post diagnosis of a CHD-related cardiac event (myocardial infarction, angina and any other acute coronary syndrome). The study aims to implement a structured education programme, with text-message support over 12 months, and identify whether delivery of the programme, to individuals who have a history of a cardiac event, would be an effective and cost-effective strategy for increasing walking. The primary outcome, objectively measured average daily physical activity, specifically step count through walking activity, is assessed using the wrist-worn GENEActiv accelerometer at baseline, 6 and 12 months. Secondary outcomes at 12 months include cardiovascular risk factors such as smoking status, blood pressure, lipid profile, glycated haemoglobin (HbA1c), obesity, self-efficacy, quality of life, physical activity and physical function. Participants are randomised to either the control group receiving standard care and a physical activity

information leaflet, or the intervention group whose participants receive the leaflet and are invited to attend two group-based structured education sessions. These encourage participants to adopt and maintain healthy behaviours and self-manage their lifestyle. They are delivered approximately 2 weeks apart by trained facilitators and reinforced via subsequent text-message support. Discussion: To our knowledge, this is the first trial designed to assess the effectiveness of a group education programme 12 to 48 months after a CHD event diagnosis. If successful, the PACES programme could be translated into effective post-operative cardiac care and complement the current post-operative services available.

Hertwig, R. and T. Grune-Yanoff (2017). "Nudging and Boosting: Steering or Empowering Good Decisions." *Perspectives on Psychological Science* 12(6): 973-986.

In recent years, policy makers worldwide have begun to acknowledge the potential value of insights from psychology and behavioral economics into how people make decisions. These insights can inform the design of nonregulatory and nonmonetary policy interventions as well as more traditional fiscal and coercive measures. To date, much of the discussion of behaviorally informed approaches has emphasized "nudges," that is, interventions designed to steer people in a particular direction while preserving their freedom of choice. Yet behavioral science also provides support for a distinct kind of nonfiscal and noncoercive intervention, namely, 'boosts.' The objective of boosts is to foster people's competence to make their own choices that is, to exercise their own choices—that is to, exercise agency. Building on this distinction, we further elaborate on how boosts are conceptually distinct from nudges: The two kinds of interventions differ with respect to (a) their immediate intervention targets, (b) their roots in different research programs, (c) the causal pathways through which they affect behavior, (d) their assumptions about human cognitive architecture, (e) the reversibility of their effects, (f) their programmatic ambitions, and (g) their normative implications. We discuss each of these dimensions, provide an initial taxonomy of boosts, and address some possible misconceptions.

Hiam, D., et al. (2019). "The effectiveness of high intensity intermittent training on metabolic, reproductive and mental health in women with polycystic ovary syndrome: study protocol for the iHIT- randomised controlled trial." *Trials* 20.

Background Polycystic ovary syndrome (PCOS) is a reproductive-metabolic condition. Insulin resistance is a hallmark of PCOS and is related to increased hyperandrogenism that drives inherent metabolic, reproductive and psychological features of the syndrome. Insulin resistance in women with PCOS is managed by weight loss, lifestyle interventions (i.e. exercise, diet) and insulin-sensitising medications. This manuscript describes the protocol of our study evaluating the effectiveness of high intensity intermittent training (HIIT) or moderate intensity exercise on cardiometabolic, reproductive and mental health in overweight women with PCOS. Methods/design We will employ a three arm, parallel-group, randomised controlled trial recruiting 60 women diagnosed with PCOS, aged between 18 and 45 years and with a body mass index (BMI) greater than 25 kg/m². Following screening and baseline testing, women will be randomised by simple randomisation procedure using computer generated sequence allocation to undergo one of two 12-week supervised interventions: either HIIT or moderate intensity exercise (standard supervised exercise), or to standard care [Con] (unsupervised lifestyle advice) at a 1:1:1 allocation ratio. The primary outcome for this trial is to measure the improvements in metabolic health; specifically changes in insulin sensitivity in response to different exercise intensities. Baseline and post-intervention testing include anthropometric measurements, cardiorespiratory fitness testing, reproductive hormone profiles (anti-mullerian hormone and steroid profiles), metabolic health, health-related quality of life and mental health questionnaires and objective and subjective lifestyle monitoring. Reporting of the study will follow the CONSORT statement. Discussion This trial aims to demonstrate the comparative efficacy and maintenance of different exercise intensities to advance the understanding of PCOS management and provide insight into the optimal exercise intensity for improved cardiometabolic outcomes. Secondary outcomes will include the impact of different exercise protocols on reproductive hormone profiles, mental health and health-related quality of life. Trial registration Australian New Zealand Clinical Trials Registry, ACTRN12615000242527. Registered on 17 March 2015.

Hickey, M. D., et al. (2017). "Specification of implementation interventions to address the cascade of HIV care and treatment in resource-limited settings: a systematic review." *Implementation Science* 12.

Background: The global response to HIV has started over 18 million persons on life-saving antiretroviral therapy (ART)-the vast majority in low-and middle-income countries (LMIC)-yet substantial gaps remain: up to 40% of persons living with HIV (PLHIV) know their status, while another 30% of those who enter care are inadequately retained after starting treatment. Identifying strategies to enhance use of treatment is urgently needed, but the conceptualization and specification of implementation interventions is not always complete. We sought to assess the completeness of intervention reporting in research to advance uptake of treatment for HIV globally. Methods: We carried out a systematic review to identify interventions targeting the adult HIV care cascade in LMIC dating from 1990 to 2017. We identified components of each intervention as "intervention types" to decompose interventions into common components. We grouped "intervention types" into a smaller number of more general "implementation approaches" to aid summarization. We assessed the reporting of six intervention characteristics adapted from the implementation science literature: the

actor, action, action dose, action temporality, action target, and behavioral target in each study. Findings: In 157 unique studies, we identified 34 intervention "types," which were empirically grouped into six generally understandable "approaches." Overall, 42% of interventions defined the actor, 64% reported the action, 41% specified the intervention "dose," 43% reported action temporality, 61% defined the action target, and 69% reported a target behavior. Average completeness of reporting varied across approaches from a low of 50% to a high of 72%. Dimensions that involved conceptualization of the practices themselves (e.g., actor, dose, temporality) were in general less well specified than consequences (e.g., action target and behavioral target).

Hickson, S., et al. (2016). "Modifying researchers' data management practices: A behavioural framework for library practitioners." *Ifla Journal-International Federation of Library Associations* 42(4): 253-265.

Data is the new buzzword in academic libraries, as policy increasingly mandates that data must be open and accessible, funders require formal data management plans, and institutions are implementing guidelines around best practice. Given concerns about the current datamanagement practices of researchers, this paper reports on the initial findings from a project being undertaken at Griffith University to apply a conceptual (A-COM-B) framework to understanding researchers' behaviour. The objective of the project is to encourage the use of institutionally endorsed solutions for research data management. Based on interviews conducted by a team of librarians in a small, social science research centre, preliminary results indicate that attitude is the key element which will need to be addressed in designing intervention strategies to modify behaviour. The paper concludes with a discussion of the next stages in the project, which involve further data collection and analysis, the implementation of targeted strategies, and a follow-up activity to assess the extent of modifications to current undesirable practices.

Higgins, N., et al. (2018). "Implementation of the Safewards model in public mental health facilities: A qualitative evaluation of staff perceptions." *International Journal of Nursing Studies* 88: 114-120.

Background: The Safewards model is gaining increasing acceptance in the mental health field in Australia and overseas. One of the most important goals of inpatient psychiatric services is to provide a safe and therapeutic environment for both patients and staff. However, this goal can be difficult to achieve if staff-patient interaction is not conducive to preventing violence and aggression. Objective: The purpose of this study was to explore nursing staff perceptions of the factors impacting on their capacity to establish Safewards in acute adult inpatient wards. Design: This study was guided by a phenomenological approach to develop a rich understanding of staff perceptions using semi-structured interviews. Setting and sample: The setting was three acute mental health wards attached to general hospitals; one in a large provincial hospital and two in metropolitan hospitals in south-east Queensland. Interview participants were a purposive sample of fifteen registered nurses across each of the three wards. Method: Semi-structured interviews were conducted at 12 months post-implementation of Safewards. The study was underpinned by Michie's integrative framework of behaviour change that helped identify target areas in order to enhance successful implementation of this model. Results: Content analysis of interview transcripts highlighted a range of factors including failure to address the difficulties encountered by some staff in engaging with Safewards interventions, lack of support from management, poor use of nurse educator time, the 'language' of Safewards, high acuity on the study wards, and staff and patient turnover. Conclusion: This study highlights some difficulties with implementing Safewards and maintaining fidelity of the Safewards interventions in busy acute inpatient wards. Although these findings are from a qualitative study consisting of only 15 staff, our results indicate that efforts to implement Safewards need to address challenges faced by staff in engaging with the interventions, ensure buy-in from management, ensure adequate training and support during implementation and review training materials to ensure they fit with the local (i.e. Australian) context. Safewards provides an opportunity for a change in attitudes and development of a more therapeutic ward environment.

Hill, A. M., et al. (2013). "Tailored Education for Older Patients to Facilitate Engagement in Falls Prevention Strategies after Hospital Discharge-A Pilot Randomized Controlled Trial." *Plos One* 8(5).

Background: The aims of the study were to evaluate the effect of providing tailored falls prevention education in hospital on: i) engagement in targeted falls prevention behaviors in the month after discharge: ii) patients' self-perceived risk and knowledge about falls and falls prevention strategies after receiving the education. Methods: A pilot randomized controlled trial (n = 50): baseline and outcome assessments conducted by blinded researchers. Participants: hospital inpatients 60 years or older, discharged to the community. Participants were randomized into two groups. The intervention was a tailored education package consisting of multimedia falls prevention information with trained health professional follow-up, delivered in addition to usual care. Outcome measures were engagement in falls prevention behaviors in the month after discharge measured at one month after discharge with a structured survey, and participants' knowledge, confidence and motivation levels before and after receiving the education. The feasibility of providing the intervention was examined and falls outcomes (falls, fall-related injuries) were also collected. Results: Forty-eight patients (98%) provided follow-up data. The complete package was provided to 21 (84%) intervention group participants.

Participants in the intervention group were significantly more likely to plan how to safely restart functional activities [Adjusted odds ratio 3.80, 95% CI (1.07, 13.52), $p = 0.04$] and more likely to complete other targeted behaviors such as completing their own home exercise program [Adjusted odds ratio 2.76, 95% CI (0.72, 10.50), $p = 0.14$] than the control group. The intervention group was significantly more knowledgeable, confident and motivated to engage in falls prevention strategies after receiving the education than the control group. There were 23 falls ($n = 5$ intervention; $n = 18$ control) and falls rates were 5.4/1000 patient days (intervention); 18.7/1000 patient days (control). Conclusion: This tailored education was received positively by older people, resulted in increased engagement in falls prevention strategies after discharge and is feasible to deliver to older hospital patients.

Hill, A. M., et al. (2017). "Reducing falls after hospital discharge: a protocol for a randomised controlled trial evaluating an individualised multimodal falls education programme for older adults." *Bmj Open* 7(2).

Introduction: Older adults frequently fall after discharge from hospital. Older people may have low self-perceived risk of falls and poor knowledge about falls prevention. The primary aim of the study is to evaluate the effect of providing tailored falls prevention education in addition to usual care on falls rates in older people after discharge from hospital compared to providing a social intervention in addition to usual care. Methods and analyses: The 'Back to My Best' study is a multisite, single blind, parallel-group randomised controlled trial with blinded outcome assessment and intention-to-treat analysis, adhering to CONSORT guidelines. Patients ($n = 390$) (aged 60 years or older; score more than 7/10 on the Abbreviated Mental Test Score; discharged to community settings) from aged care rehabilitation wards in three hospitals will be recruited and randomly assigned to one of two groups. Participants allocated to the control group shall receive usual care plus a social visit. Participants allocated to the experimental group shall receive usual care and a falls prevention programme incorporating a video, workbook and individualised follow-up from an expert health professional to foster capability and motivation to engage in falls prevention strategies. The primary outcome is falls rates in the first 6 months after discharge, analysed using negative binomial regression with adjustment for participant's length of observation in the study. Secondary outcomes are injurious falls rates, the proportion of people who become fallers, functional status and health-related quality of life. Healthcare resource use will be captured from four sources for 6 months after discharge. The study is powered to detect a 30% relative reduction in the rate of falls (negative binomial incidence ratio 0.70) for a control rate of 0.80 falls per person over 6 months. Ethics and dissemination: Results will be presented in peer-reviewed journals and at conferences worldwide. This study is approved by hospital and university Human Research Ethics Committees.

Hill, A. M., et al. (2016). "'My independent streak may get in the way': how older adults respond to falls prevention education in hospital." *Bmj Open* 6(7).

Objectives: The aim of the study was to determine how providing individualised falls prevention education facilitated behaviour change from the perspective of older hospital patients on rehabilitation wards and what barriers they identified to engaging in preventive strategies. Design: A prospective qualitative survey. Methods: Older patients ($n = 757$) who were eligible (mini-mental state examination score $>23/30$) received falls prevention education while admitted to eight rehabilitation hospital wards in Western Australia. Subsequently, 610 participants were surveyed using a semistructured questionnaire to gain their response to the in-hospital education and their identified barriers to engaging in falls prevention strategies. Deductive content analysis was used to map responses against conceptual frameworks of health behaviour change and risk taking. Results: Participants who responded ($n = 473$) stated that the education raised their awareness, knowledge and confidence to actively engage in falls prevention strategies, such as asking for assistance prior to mobilising. Participants' thoughts and feelings about their recovery were the main barriers they identified to engaging in safe strategies, including feeling overconfident or desiring to be independent and thinking that staff would be delayed in providing assistance. The most common task identified as potentially leading to risk-taking behaviour was needing to use the toilet. Conclusions: Individualised education assists older hospital rehabilitation patients with good levels of cognition to engage in suitable falls prevention strategies while on the ward. Staff should engage with patients to understand their perceptions about their recovery and support patients to take an active role in planning their rehabilitation.

Hill, A. M., et al. (2015). "Educators' perspectives about how older hospital patients can engage in a falls prevention education programme: a qualitative process evaluation." *Bmj Open* 5(12).

Objectives Falls are the most frequent adverse event reported in hospitals. Patient and staff education delivered by trained educators significantly reduced falls and injurious falls in an older rehabilitation population. The purpose of the study was to explore the educators' perspectives of delivering the education and to conceptualise how the programme worked to prevent falls among older patients who received the education. Design A qualitative exploratory study. Methods Data were gathered from three sources: conducting a focus group and an interview ($n = 10$ educators), written educator notes and reflective researcher field notes based on interactions with the educators during the primary

study. The educators delivered the programme on eight rehabilitation wards for periods of between 10 and 40 weeks. They provided older patients with individualised education to engage in falls prevention and provided staff with education to support patient actions. Data were thematically analysed and presented using a conceptual framework. Results Falls prevention education led to mutual understanding between staff and patients which assisted patients to engage in falls prevention behaviours. Mutual understanding was derived from the following observations: the educators perceived that they could facilitate an effective three-way interaction between staff actions, patient actions and the ward environment which led to behaviour change on the wards. This included engaging with staff and patients, and assisting them to reconcile differing perspectives about falls prevention behaviours. Conclusions Individualised falls prevention education effectively provides patients who receive it with the capability and motivation to develop and undertake behavioural strategies that reduce their falls, if supported by staff and the ward environment.

Hill, A. M., et al. (2015). "Fall rates in hospital rehabilitation units after individualised patient and staff education programmes: a pragmatic, stepped-wedge, cluster-randomised controlled trial." *Lancet* 385(9987): 2592-2599.

Background Falls are the most frequent adverse events that are reported in hospitals. We examined the effectiveness of individualised falls-prevention education for patients, supported by training and feedback for staff, delivered as a ward-level programme. Methods Eight rehabilitation units in general hospitals in Australia participated in this stepped-wedge, cluster-randomised study, undertaken during a 50 week period. Units were randomly assigned to intervention or control groups by use of computer-generated, random allocation sequences. We included patients admitted to the unit during the study with a Mini-Mental State Examination (MMSE) score of more than 23/30 to receive individualised education that was based on principles of changes in health behaviour from a trained health professional, in addition to usual care. We provided information about patients' goals, feedback about the ward environment, and perceived barriers to engagement in falls-prevention strategies to staff who were trained to support the uptake of strategies by patients. The coprimary outcome measures were patient rate of falls per 1000 patient-days and the proportion of patients who were fallers. All analyses were by intention to treat. This trial is registered with the Australian New Zealand Clinical Trials registry, number ACTRN12612000877886). Findings Between Jan 13, and Dec 27, 2013, 3606 patients were admitted to the eight units (n=1983 control period; n=1623 intervention period). There were fewer falls (n=196, 7.80/1000 patient-days vs n=380, 13.78/1000 patient-days, adjusted rate ratio 0.60 [robust 95% CI 0.42-0.94], p=0.003), injurious falls (n=66, 2.63/1000 patient-days vs 131, 4.75/1000 patient-days, 0.65 [robust 95% CI 0.42-0.88], p=0.006), and fallers (n=136 [8.38%] vs n=248 [12.51%] adjusted odds ratio 0.55 [robust 95% CI 0.38 to 0.81], p=0.003) in the intervention compared with the control group. There was no significant difference in length of stay (intervention median 11 days [IQR 7-19], control 10 days [6-18]). Interpretation Individualised patient education programmes combined with training and feedback to staff added to usual care reduces the rates of falls and injurious falls in older patients in rehabilitation hospital-units.

Hill, A. M., et al. (2017). "Pregnant women's awareness, knowledge and beliefs about pelvic floor muscles: a cross-sectional survey." *International Urogynecology Journal* 28(10): 1557-1565.

Pregnant women benefit from completing pelvic floor muscle exercises (PFMEs). The aims of the study were to evaluate pregnant women's levels of awareness, knowledge, and beliefs about the pelvic floor muscles (PFMs) and PFMEs. A cross-sectional survey was conducted. Respondents were pregnant women over the age of 18 years who attended antenatal clinics in Western Australia (WA). Questionnaire items measured awareness and knowledge about PFMs, confidence and beliefs about engaging in PFMEs, and attendance at antenatal education (ANE) classes. Chi-squared tests examined potential associations between questionnaire items and respondent characteristics. Mean gestation of respondents (n = 633 out of 850; 74% response rate) was 28.7 (+7.8) weeks and 50% were giving birth for the first time. Although 76% of respondents knew that PFMs can prevent urinary incontinence, only 27% knew that they prevented faecal incontinence and 41% thought it was normal to leak urine when pregnant. Only n = 72 (11%) were practicing PFMEs. Respondents who had attended ANE (28%) were significantly more knowledgeable about pelvic floor function (p < .001) and significantly less likely to believe that leaking urine during pregnancy was normal (p = 0.02), compared with those who had not attended ANE. Respondents who did not speak English at home (18%) were significantly less knowledgeable about PFMs and PFMEs, and significantly less likely to have attended, or planned to attend, ANE classes. Pregnant women require more health education regarding PFMs. Education should be provided using diverse modes, especially for women from migrant backgrounds and women who do not plan to attend formal ANE classes.

Hill, A. M., et al. (2016). "'It promoted a positive culture around falls prevention': staff response to a patient education programme-a qualitative evaluation." *Bmj Open* 6(12).

Objectives: The purpose of this study was to understand how staff responded to individualised patient falls prevention education delivered as part of a cluster randomised trial, including how they perceived the education contributed to falls prevention on their wards. Design: A qualitative explanatory study. Methods: 5 focus groups were

conducted at participatory hospital sites. The purposive sample of clinical staff (including nurses, physiotherapists and quality improvement staff) worked on aged care rehabilitation wards when a cluster randomised trial evaluating a patient education programme was conducted. During the intervention period, an educator, who was a trained health professional and not a member of staff, provided individualised falls prevention education to patients with good levels of cognition (Mini-Mental State Examination >23/30). Clinical staff were provided with training to support the programme and their feedback was sought after the trial concluded, to understand how they perceived the programme impacted on falls prevention. Data were thematically analysed using NVivo qualitative data analysis software. Results: 5 focus groups were conducted at different hospitals (n=30 participants). Staff perceived that the education created a positive culture around falls prevention and further, facilitated teamwork, whereby patients and staff worked together to address falls prevention. The educator was perceived to be a valuable member of the team. Staff reported that they developed increased knowledge and awareness about creating a safe ward environment. Patients being proactive and empowered to engage in falls prevention strategies, such as ringing the bell for assistance, was viewed as supporting staff falls prevention efforts and motivating staff to change practice. Conclusions: Staff responded positively to patient falls prevention education being delivered on their wards. Providing individualised patient education to older patients with good levels of cognition can empower staff and patients to work as a team to address falls prevention on hospital rehabilitation wards.

Hill, J. J. and J. L. Keating (2016). "Encouraging healthy spine habits to prevent low back pain in children: an observational study of adherence to exercise." *Physiotherapy* 102(3): 229-235.

Background Low back pain (LBP) in adolescence is a predictor of adult LBP. Strategies to educate children and encourage healthy spine habits may prevent LBP. Poor adherence to health programmes can be a barrier to their success. This study addresses the potential for habitualisation of a short daily exercise programme that draws attention to factors thought to keep the spine healthy. Objectives To describe adherence to a 9-month exercise programme, and analyse factors that may influence adherence. Design Observational cohort study. Setting Four primary schools in New Zealand. Outcome measures Outcomes included self-evaluation of adherence to exercise, and self-reported incidence and severity of LBP. Participants Children (n = 469) aged 8 to 11 years. Methods Participants were taught four simple spine movements for daily practice as part of a health programme that emphasised 'back awareness' and self-care of the spine. Strategies to encourage adherence were implemented. Data on self-reported adherence and episodes of LBP during the previous week were collected through an online survey completed on trial days 7, 21, 49, 105, 161 and 270 over a 9-month period. Results Daily exercise adherence was 34% on day 7 and dropped to 9% by day 270. Exercise adherence of at least once per week was 84% on day 7 and 47% by day 270. Frequency of exercise was not associated with episodes of LBP [odds ratio (OR) 1.16, 95% confidence interval (CI) 0.92 to 1.47, P=0.21], previous history of LBP (OR 0.97, 95% CI 0.77 to 1.23, P=0.77), lifetime first episode of LBP (defined as the first episode of LBP in the study period for participants with no previous history of LBP) (OR 0.39, 95% CI 0.15 to 1.34, P=0.14) or severity of LBP (OR 1.59, 95% CI 0.99 to 2.52, P=0.05). Conclusion This study applied a comprehensive set of strategies considered to be important in encouraging adherence, but was not successful in sustaining the interest of more than half of the cohort. Innovative strategies are needed to develop new exercise habits in children. (C) 2015 Chartered Society of Physiotherapy. Published by Elsevier Ltd. All rights reserved.

Hill, Z., et al. (2019). "People have started to deliver in the facility these days': a qualitative exploration of factors affecting facility delivery in Ethiopia." *Bmj Open* 9(6).

Objectives To understand the recent rise in facility deliveries in Ethiopia. Design A qualitative study. Setting Four rural communities in two regions of Ethiopia. Participants 12 narrative, 12 in-depth interviews and four focus group discussions with recently delivered women; and four focus group discussions with each of grandmothers, fathers and community health workers. Results We found that several interwoven factors led to the increase in facility deliveries, and that respondents reported that the importance of these factors varied over time. The initial catalysts were a saturation of messages around facility delivery, improved accessibility of facilities, the prohibition of traditional birth attendants, and elders having less influence on deciding the place of delivery. Once women started to deliver in facilities, the drivers of the behaviour changed as women had positive experiences. As more women began delivering in facilities, families shared positive experiences of the facilities, leading to others deciding to deliver in a facility. Conclusion Our findings highlight the need to employ strategies that act at multiple levels, and that both push and pull families to health facilities.

Hillier-Brown, F. C., et al. (2017). "The impact of interventions to promote healthier ready-to-eat meals (to eat in, to take away or to be delivered) sold by specific food outlets open to the general public: a systematic review." *Obesity Reviews* 18(2): 227-246.

Introduction: Ready-to-eat meals sold by food outlets that are accessible to the general public are an important target for public health intervention. We conducted a systematic review to assess the impact of such interventions.

Methods: Studies of any design and duration that included any consumer-level or food-outlet-level before-and-after data were included. Results: Thirty studies describing 34 interventions were categorized by type and coded against the Nuffield intervention ladder: restrict choice = trans fat law (n = 1), changing pre-packed children's meal content (n = 1) and food outlet award schemes (n = 2); guide choice = price increases for unhealthier choices (n = 1), incentive (contingent reward) (n = 1) and price decreases for healthier choices (n = 2); enable choice = signposting (highlighting healthier/unhealthier options) (n = 10) and telemarketing (offering support for the provision of healthier options to businesses via telephone) (n = 2); and provide information = calorie labelling law (n = 12), voluntary nutrient labelling (n = 1) and personalized receipts (n = 1). Most interventions were aimed at adults in US fast food chains and assessed customer-level outcomes. More 'intrusive' interventions that restricted or guided choice generally showed a positive impact on food-outlet-level and customer-level outcomes. However, interventions that simply provided information or enabled choice had a negligible impact. Conclusion: Interventions to promote healthier ready-to-eat meals sold by food outlets should restrict choice or guide choice through incentives/disincentives. Public health policies and practice that simply involve providing information are unlikely to be effective.

Hillier-Brown, F. C., et al. (2017). "A description of interventions promoting healthier ready-to-eat meals (to eat in, to take away, or to be delivered) sold by specific food outlets in England: a systematic mapping and evidence synthesis." *Bmc Public Health* 17.

Background: Ready-to-eat meals (to eat in, to take away or to be delivered) sold by food outlets are often more energy dense and nutrient poor compared with meals prepared at home, making them a reasonable target for public health intervention. The aim of the research presented in this paper was to systematically identify and describe interventions to promote healthier ready-to-eat meals (to eat in, to take away, or to be delivered) sold by specific food outlets in England. Methods: A systematic search and sift of the literature, followed by evidence mapping of relevant interventions, was conducted. Food outlets were included if they were located in England, were openly accessible to the public and, as their main business, sold ready-to-eat meals. Academic databases and grey literature were searched. Also, local authorities in England, topic experts, and key health professionals and workers were contacted. Two tiers of evidence synthesis took place: type, content and delivery of each intervention were summarised (Tier 1) and for those interventions that had been evaluated, a narrative synthesis was conducted (Tier 2). Results: A total of 75 interventions were identified, the most popular being awards. Businesses were more likely to engage with cost neutral interventions which offered imperceptible changes to price, palatability and portion size. Few interventions involved working upstream with suppliers of food, the generation of customer demand, the exploration of competition effects, and/or reducing portion sizes. Evaluations of interventions were generally limited in scope and of low methodological quality, and many were simple assessments of acceptability. Conclusions: Many interventions promoting healthier ready-to-eat meals (to eat in, to take away, or to be delivered) sold by specific food outlets in England are taking place; award-type interventions are the most common. Proprietors of food outlets in England that, as their main business, sell ready-to-eat meals, can be engaged in implementing interventions to promote healthier ready-to-eat-food. These proprietors are generally positive about such interventions, particularly when they are cost neutral and use a health by stealth approach.

Hilton, C. E. and L. H. Johnston (2017). "Health psychology: It's not what you do, it's the way that you do it." *Health Psychology Open* 4(2).

Despite the growth in theoretical understandings of health behaviour and standardised approaches to health interventions (e.g. behaviour change taxonomies), health psychology has paid comparatively less attention to the importance of the implementation processes - 'how to' rather than 'what to' of such interventions. The clinical and interpersonal skills that often reflect these implementation processes are poorly defined within the health psychology literature. The level of proficiency in such skills expected of Health and Care Professions Council registered practitioner health psychologists is unclear and poorly documented within the UK training requirements. This article explores the potential impact of this and offers some pragmatic solutions.

Hingle, M. and H. Patrick (2016). "There Are Thousands of Apps for That: Navigating Mobile Technology for Nutrition Education and Behavior." *Journal of Nutrition Education and Behavior* 48(3): 213-+.

Mobile health (mHealth) is an emerging field devoted to the use of mobile and wireless devices to affect health outcomes, health care services, and health research. Despite great promise, little research has examined its effectiveness. It is the authors' view that the full potential of mHealth has yet to be realized in research and practice. This Perspective article explores when and for whom mHealth approaches are effective, strengths and limitations of commercially and academically generated apps, research design considerations, and public-private partnerships. These topics have implications for researchers and practitioners who wish to advance the science and practice of mHealth.

Hirschhorn, L. R., et al. (2018). "Integration of the Opportunity-Ability-Motivation behavior change framework into a coaching-based WHO Safe Childbirth Checklist program in India." *International Journal of Gynecology & Obstetrics* 142(3): 321-328.

Objective: To evaluate whether integration of the Opportunity-Ability-Motivation plus Supplies (OAMS) framework into coaching improved the delivery of essential birth practices in a low-resource setting. Methods: This prospective mixed-methods study used routine coaching visit data obtained from the first eight intervention facilities of the BetterBirth trial in Uttar Pradesh, India, between December 19, 2014, and October 21, 2015. The 8-month intervention was peer coaching that integrated the OAMS framework to support uptake of the WHO Safe Childbirth Checklist. Descriptive statistics were used to measure nonadherence to essential birth practices. The frequency and accuracy of coaches' coding of barriers and the appropriateness of chosen resolution strategies to measure feasibility, acceptability, and fidelity of using OAMS, were assessed. Results: Coaches observed 666 deliveries, including 12 602 practices. Overall, essential practice nonadherence decreased from 15.6% (262/1675 practices observed) to 4.5% (4/88 practices) ($P < 0.001$). Of the 1048 barriers identified, opportunity (556 [53.1%]) and motivation (287 [27.4%]) were the most frequently reported categories; the frequency of both decreased over time ($P = 0.003$ and $P < 0.001$, respectively). The coaches appropriately categorized 930 (99.8%) of 932 barriers and provided an appropriate strategy for 800 (85.8%). The commonest reason for unaddressed barriers was lack of coaching opportunities. Conclusion: Successful integration of OAMS framework into delivery attendant coaching enabled coaches to rapidly diagnose barriers to practice adherence and develop responsive strategies.

Hodgins, F., et al. (2016). "How lay health workers tailor in effective health behaviour change interventions: a protocol for a systematic review." *Systematic Reviews* 5.

Background: Lay health workers (LHWs) are utilised as a channel of delivery in many health interventions. While they have no formal professional training related to their role, they utilise their connections with the target group or community in order to reach individuals who would not normally readily engage with health services. Lay health worker programmes are often based on psychological theories of behaviour change that point to 'tailoring to individuals' needs or characteristics' as key to success. Although lay health workers have been shown to be effective in many contexts, there is, as yet, little clarity when it comes to how LHWs assess individuals' needs in order to tailor their interventions. This study aims to develop a better understanding of the effective implementation of tailoring in lay health worker interventions by appraising evidence and synthesising studies that report evaluations of tailored interventions. Method: Health and psychology electronic databases (EMBASE, CINAHL, MEDLINE and PsycINFO) will be searched. Reference lists of included studies will also be searched. For articles that are deemed to be potentially relevant, we will employ a 'cluster searching' technique in order to identify all published papers related to a relevant intervention. Cluster searching will be undertaken in an effort to maximise the breadth and depth of description of the intervention. Quantitative studies will be assessed using the Quality Assessment Tool for Quantitative Studies, developed by the Effective Public Health Practice Project, ON, Canada. Qualitative studies will be assessed using the Critical Appraisal Skills Programme (CASP) checklist for qualitative research. Synthesising the data will enable the development of a taxonomy of strategies for the criteria used for individual assessment of recipients' needs and the ways in which messages or actions are tailored to these individual criteria by LHWs. Discussion: This systematic review focuses specifically on how health promotion and support is individually tailored in effective programmes by LHWs. This study will be of value to those involved in the design and implementation of interventions that utilise a LHW.

Hodgkins, C. E., et al. (2015). "Guiding healthier food choice: systematic comparison of four front-of-pack labelling systems and their effect on judgements of product healthiness." *British Journal of Nutrition* 113(10): 1652-1663.

Different front-of-pack (FOP) labelling systems have been developed in Europe by industry and organisations concerned with health promotion. A study (n 2068) was performed to establish the extent to which inclusion of the most prevalent FOP systems - guideline daily amounts (GDA), traffic lights (TL), GDA+TL hybrid (HYB) and health logos (HL) - impact consumer perceptions of healthiness over and above the provision of a FOP basic label (BL) containing numerical nutritional information alone. The design included within- and between-subjects factors. The within-subjects factors were: food (pizzas, yogurts and biscuits), healthiness of the food (high health, medium health and low health) and the repeated measurements under BL and test FOP label conditions. The between-subjects factors were: the system (GDA, TL, GDA+TL hybrid, HL), portion size (typical portion size and a 50% reduction of a typical portion) and country (the UK, Germany, Poland and Turkey). Although the FOP systems tested did result in small improvements for objective understanding under some conditions, there was little difference between the provision of an FOP label containing basic numerical nutritional information alone or between the various systems. Thus, any structured and legible presentation of key nutrient and energy information on the FOP label is sufficient to enable consumers to detect a healthier alternative within a food category when provided with foods that have distinctly different levels of healthiness. Future research

should focus on developing greater understanding of the psychological and contextual factors that impact motivation and the opportunity to use the various FOP systems in real-world shopping settings.

Hodson, A. (2018). "INLAND REVENUE'S NEW CIRCULAR COMPLIANCE MODEL - AN OVERVIEW." *Journal of the Australasian Tax Teachers Association* 13(1): 187-211.

New Zealand Inland Revenue adopted the Braithwaite Compliance Model in 2001. It was regarded as transformational at the time it was introduced. More recently Inland Revenue have developed and adopted a new circular compliance model. At the centre of the new model is the 'Customer'. The new model builds upon the Braithwaite Compliance Model and was released in late 2015. This paper examines why the Braithwaite Compliance Model was replaced and provides an overview of the new circular compliance model with its One, Three, Five, and Seven aesthetic. It considers whether the various wheels of the new compliance model will lead to an improved tax compliance environment for New Zealand. The conclusion is that the new compliance model is a thinking tool with positive sentiment and recognises that compliance decisions and the interface between a revenue authority and its customers remains multifaceted.

Hoek, A. C., et al. (2017). "Shrinking the food-print: A qualitative study into consumer perceptions, experiences and attitudes towards healthy and environmentally friendly food behaviours." *Appetite* 108: 117-131.

Internationally, there is increasing recognition of the importance of multilevel policies and actions that address healthy and environmentally friendly food behaviours. However it is not yet clear which actions are most suitable to support consumers to adopt both behaviours concurrently. To this end, we undertook a qualitative study to assess consumer perceptions, experiences and attitudes towards healthy and environmentally friendly foods and four target behaviours: reducing overconsumption of food beyond energy needs, reducing consumption of low-nutrient energy dense foods, eating less animal- and more plant-derived foods, and reducing food waste. Online in-depth interviews were held with 29 Australian food shoppers representing different levels of involvement with health and environment in daily food choices. The results indicate that compared to health, the relationship between food and the environment is rarely considered by consumers. The four target food behaviours were primarily associated and motivated by an impact on health, except for not wasting foods. Participants had the most positive attitude and highest motivation for eating less processed and packaged foods, mostly to avoid excessive packaging and 'chemicals' in foods. This was followed by the behaviours reducing food waste and overconsumption. Conversely, there was a predominantly negative attitude towards, and low motivation for, eating less animal-derived products and more plant based foods. Overall, consumers found a joined concept of healthy and environmentally friendly foods an acceptable idea. We recommend that health should remain the overarching principle for policies and actions concerned with shifting consumer behaviours, as this personal benefit appears to have a greater potential to support behaviour change. Future consumer focused work could pay attention to framing behavioural messages, providing intermediate behavioural goals, and a multiple target approach to change habitual behaviours. (C) 2016 Elsevier Ltd. All rights reserved.

Hollands, G. J., et al. (2013). "Altering micro-environments to change population health behaviour: towards an evidence base for choice architecture interventions." *Bmc Public Health* 13.

Background: The idea that behaviour can be influenced at population level by altering the environments within which people make choices (choice architecture) has gained traction in policy circles. However, empirical evidence to support this idea is limited, especially its application to changing health behaviour. We propose an evidence-based definition and typology of choice architecture interventions that have been implemented within small-scale micro-environments and evaluated for their effects on four key sets of health behaviours: diet, physical activity, alcohol and tobacco use. Discussion: We argue that the limitations of the evidence base are due not simply to an absence of evidence, but also to a prior lack of definitional and conceptual clarity concerning applications of choice architecture to public health intervention. This has hampered the potential for systematic assessment of existing evidence. By seeking to address this issue, we demonstrate how our definition and typology have enabled systematic identification and preliminary mapping of a large body of available evidence for the effects of choice architecture interventions. We discuss key implications for further primary research, evidence synthesis and conceptual development to support the design and evaluation of such interventions. Summary: This conceptual groundwork provides a foundation for future research to investigate the effectiveness of choice architecture interventions within micro-environments for changing health behaviour. The approach we used may also serve as a template for mapping other under-explored fields of enquiry.

Hollis, V., et al. (2017). "What Does All This Data Mean for My Future Mood? Actionable Analytics and Targeted Reflection for Emotional Well-Being." *Human-Computer Interaction* 32(5-6): 208-267.

We explore the Examined Life, informing the design of reflective systems to promote emotional well-being, a critical health issue. People now have increasingly rich, digital records of highly personal data about what they said, did,

and felt in the past. But social science research shows that people have difficulty in tracking and regulating their emotions. New reflective technologies that promote constructive analysis of rich personal data potentially offer transformative ways that individuals might better understand themselves and improve well-being. However, there are important system design challenges in supporting effective reflection about personal data. We explore fidelity in recording and representing past personal mood data, and forecasting future actions, feelings, and thoughts. Much prior personal informatics work has been dedicated to past-centric tools for recording and capture. In contrast, forecasting examines how we might use such past data to inform and motivate our future selves, providing recommendations about remedial actions to improve future well-being. Fidelity addresses both how and what reflective systems should show people about their pasts, in particular whether we should filter negative past experiences. To inform reflective system design, we examine forecasting and fidelity in controlled field trial interventions that explore two novel system designs for presenting and reflecting on mood data. We detail findings from 165 participants, 4,693 participant logfiles, 65 surveys, and 15 user interviews. Our novel forecasting system, EmotiCal, uses past mood data to model and visualize future user moods with the goal of encouraging participants to adopt remedial new behaviors to regulate negative moods before they occur. Such forecasting both improved mood and subsequent emotional self-awareness compared with controls who simply monitored their past. Consistent with system goals, interview responses also indicated that participants generated important insights into behaviors that affect their moods. Our second intervention examined filtering; it assessed the impact on well-being of recording and revisiting past experiences containing negative emotions. We compared participants who were encouraged to record and reflect on positive versus negative experiences. Long-term measures of happiness and ruminative behaviors improved by recording and reflecting on positive but not negative experiences, although this depended on the intensity of the negative experience. We discuss general design and theory implications for future systems that support monitoring, reflection, and forecasting to facilitate productive examination of our emotional lives.

Holm, I., et al. (2019). "A Pragmatic Approach to the Implementation of Osteoarthritis Guidelines Has Fewer Potential Barriers Than Recommended Implementation Frameworks." *Journal of Orthopaedic & Sports Physical Therapy* 49(1): 1-4.

Holmen, H., et al. (2014). "A Mobile Health Intervention for Self-Management and Lifestyle Change for Persons With Type 2 Diabetes, Part 2: One-Year Results From the Norwegian Randomized Controlled Trial RENEWING HEALTH." *Jmir Mhealth and Uhealth* 2(4).

Background: Self-management is crucial in the daily management of type 2 diabetes. It has been suggested that mHealth may be an important method for enhancing self-management when delivered in combination with health counseling. Objective: The objective of this study was to test whether the use of a mobile phone-based self-management system used for 1 year, with or without telephone health counseling by a diabetes specialist nurse for the first 4 months, could improve glycated hemoglobin A(1c) (HbA(1c)) level, self-management, and health-related quality of life compared with usual care. Methods: We conducted a 3-arm prospective randomized controlled trial involving 2 intervention groups and 1 control group. Eligible participants were persons with type 2 diabetes with an HbA1c level $\geq 7.1\%$ (≥ 54.1 mmol/mol) and aged ≥ 18 years. Both intervention groups received the mobile phone-based self-management system Few Touch Application (FTA). The FTA consisted of a blood glucose-measuring system with automatic wireless data transfer, diet manual, physical activity registration, and management of personal goals, all recorded and operated using a diabetes diary app on the mobile phone. In addition, one intervention group received health counseling based on behavior change theory and delivered by a diabetes specialist nurse for the first 4 months after randomization. All groups received usual care by their general practitioner. The primary outcome was HbA1c level. Secondary outcomes were self-management (heiQ), health-related quality of life (SF-36), depressive symptoms (CES-D), and lifestyle changes (dietary habits and physical activity). Data were analyzed using univariate methods (t test, ANOVA) and multivariate linear and logistic regression. Results: A total of 151 participants were randomized: 51 to the FTA group, 50 to the FTA-health counseling (FTA-HC) group, and 50 to the control group. Follow-up data after 1 year were available for 120 participants (79%). HbA(1c) level decreased in all groups, but did not differ between groups after 1 year. The mean change in the heiQ domain skills and technique acquisition was significantly greater in the FTA-HC group after adjusting for age, gender, and education ($P=.04$). Other secondary outcomes did not differ between groups after 1 year. In the FTA group, 39% were substantial users of the app; 34% of the FTA-HC group were substantial users. Those aged ≥ 63 years used the app more than their younger counterparts did (OR 2.7; 95% CI 1.02-7.12; $P=.045$). Conclusions: The change in HbA(1c) level did not differ between groups after the 1-year intervention. Secondary outcomes did not differ between groups except for an increase in the self-management domain of skill and technique acquisition in the FTA-HC group. Older participants used the app more than the younger participants did.

Honary, M., et al. (2019). "Understanding the Role of Healthy Eating and Fitness Mobile Apps in the Formation of Maladaptive Eating and Exercise Behaviors in Young People." *Jmir Mhealth and Uhealth* 7(6).

Background: Healthy eating and fitness mobile apps are designed to promote healthier living. However, for young people, body dissatisfaction is commonplace, and these types of apps can become a source of maladaptive eating and exercise behaviors. Furthermore, such apps are designed to promote continuous engagement, potentially fostering compulsive behaviors. Objective: The aim of this study was to identify potential risks around healthy eating and fitness app use and negative experience and behavior formation among young people and to inform the understanding around how current commercial healthy eating and fitness apps on the market may, or may not, be exasperating such behaviors. Methods: Our research was conducted in 2 phases. Through a survey (n= 106) and 2 workshops (n= 8), we gained an understanding of young people's perceptions of healthy eating and fitness apps and any potential harm that their use might have; we then explored these further through interviews with experts (n= 3) in eating disorder and body image. Using insights drawn from this initial phase, we then explored the degree to which leading apps are preventing, or indeed contributing to, the formation of maladaptive eating and exercise behaviors. We conducted a review of the top 100 healthy eating and fitness apps on the Google Play Store to find out whether or not apps on the market have the potential to elicit maladaptive eating and exercise behaviors. Results: Participants were aged between 18 and 25 years and had current or past experience of using healthy eating and fitness apps. Almost half of our survey participants indicated that they had experienced some form of negative experiences and behaviors through their app use. Our findings indicate a wide range of concerns around the wider impact of healthy eating and fitness apps on individuals at risk of maladaptive eating and exercise behavior, including (1) guilt formation because of the nature of persuasive models, (2) social isolation as a result of personal regimens around diet and fitness goals, (3) fear of receiving negative responses when targets are not achieved, and (4) feelings of being controlled by the app. The app review identified logging functionalities available across the apps that are used to promote the sustained use of the app. However, a significant number of these functionalities were seen to have the potential to cause negative experiences and behaviors. Conclusions: In this study, we offer a set of responsibility guidelines for future researchers, designers, and developers of digital technologies aiming to support healthy eating and fitness behaviors. Our study highlights the necessity for careful considerations around the design of apps that promote weight loss or body modification through fitness training, especially when they are used by young people who are vulnerable to the development of poor body image and maladaptive eating and exercise behaviors.

Honig, M., et al. (2015). "A Conceptual Framework to Enable the Changes Required for a One-Planet Future." *Environmental Values* 24(5): 663-688.

We conceptualise a framework that incorporates psychological and non-psychological factors influencing pro-environmental behaviour. We conducted qualitative investigations in five sectors in South Africa, where individuals and groups are dealing with significant environmental issues, including climate change, biodiversity loss and land-use change. We found three fundamental elements necessary for behavioural change to be realised: awareness (A) is defined as an understanding that society and earth systems are connected; motivation (M) involves the personal and operational drivers that encourage an individual or organisation to respond to new levels of awareness; and pathways (P) recognise the practical solutions and opportunities that facilitate actual change. AMP was built up from thirty-eight variables that cut across between three and five of the case studies, which were further grouped into fourteen categories. The interconnectedness of AMP suggests that for pro-environmental behaviour to occur, attention cannot be focused on satisfying one of the elements in isolation. This is the first attempt to integrate theory from social psychology, sociology, organisational theory and management in a conceptual framework for pro-environmental behaviour. The AMP framework is useful for supporting practitioners or change-agents designing environmental sustainability initiatives.

Hoo, Z. H., et al. (2017). "Determinants of objective adherence to nebulised medications among adults with cystic fibrosis: an exploratory mixed methods study comparing low and high adherers." *Health Psychology and Behavioral Medicine* 5(1): 299-316.

Objectives: Adherence to nebulised treatment is typically low among people with cystic fibrosis (CF). This study sought to identify factors differentiating high or low nebuliser adherence patterns (i.e. $\geq 80\%$ or $<50\%$ of all nebulised treatments over one year) among adults with CF. Design: A mixed methods cross-sectional exploratory comparison of low and high adherers to nebulised medications. Methods: Of 36 eligible adults invited from a UK CF centre, 20 were recruited (10 high, 10 low adherers). Adherence was objectively measured using electronic data capture. Participants completed a self-report questionnaire comprising measures of hypothesised predictors (habit, self-control, life chaos, perceived treatment burden, capability, motivation and opportunity), then took part in a semi-structured interview. Quantitative data were compared between groups, and interview data were thematically analysed. Results: High adherers reported stronger habit and greater opportunities, though habit and perceived opportunity scores were highly positively correlated. No other quantitative measure distinguished between groups. Habitual instigation tendency attenuated the relationship between treatment complexity and perceived treatment burden. Indeed, in interviews, high

adherers reported that routinisation and greater automaticity made treatment burden more manageable. Conclusions: High adherers seized more opportunities for nebuliser use, adapted their lives more effectively to using nebulisers and were more likely to make nebuliser use habitual. Nebuliser adherence interventions among adults with CF might usefully target development of routines for instigating nebuliser use, and identification of opportune moments for nebuliser use.

Hoo, Z. H., et al. (2019). "Role of habit in treatment adherence among adults with cystic fibrosis." *Thorax* 74(2): 197-199.

Among adults with cystic fibrosis (CF), medication adherence is low and reasons for low adherence are poorly understood. Our previous exploratory study showed that stronger 'habit' (ie, automatically experiencing an urge to use a nebuliser) was associated with higher nebuliser adherence. We performed a secondary analysis of pilot trial data (n=61) to replicate the earlier study and determine whether habit-adherence association exists in other cohorts of adults with CF. In this study, high adherers also reported stronger habit compared with low adherers. Habit may be a promising target for self-management interventions.

Horne, R., et al. (2019). "Supporting Adherence to Medicines for Long-Term Conditions A Perceptions and Practicalities Approach Based on an Extended Common-Sense Model." *European Psychologist* 24(1): 82-96.

Pharmaceutical prescriptions are core to the treatment of most chronic illnesses, yet only half are taken as prescribed. Despite the high costs of nonadherence to individuals and society, effective adherence-promoting interventions are elusive. This is partly due to the sheer complicity of the issue. There are numerous determinants of adherence, both internal to the patient (intrinsic) and external (extrinsic, e.g., environmental or health system-related factors). Also, the relative importance of these determinants varies between individuals and even within the same individual over time and across treatments, presenting a challenge for intervention design. One complication is that interventions can target several levels: (1) patient (e.g., enhancing motivation and/or ability to adhere), (2) patient-provider interactions (e.g., improving communication and the prescribing process), and (3) the healthcare system (e.g., providing the opportunity to access medication through regulatory approval and co-payment schemes). Here, we focus on level 1: the patient. Although environmental factors are important, the effect of an intervention designed to change them will depend on how they impact on the individual. We describe the Perceptions and Practicalities Approach (PAPA), a pragmatic framework positing that adherence/nonadherence is essentially a produce of individual motivation and ability. Adherence interventions, targeted at any level, will therefore be more effective if tailored to address the perceptions and practicalities underpinning individual motivation and ability. We discuss how PAPA can be operationalized, including the application of theoretical models of illness and treatment representation (Necessity-Concerns Framework and Leventhat's Common-Sense Model) to address salient adherence-related perceptions.

Horodyska, K., et al. (2015). "Implementation conditions for diet and physical activity interventions and policies: an umbrella review." *Bmc Public Health* 15.

Background: This umbrella review aimed at identifying evidence-based conditions important for successful implementation of interventions and policies promoting a healthy diet, physical activity (PA), and a reduction in sedentary behaviors (SB). In particular, we examined if the implementation conditions identified were intervention-specific or policy-specific. This study was undertaken as part of the DEterminants of Diet and Physical Activity (DEDIPAC) Knowledge Hub, a joint action as part of the European Joint Programming Initiative a Healthy Diet for a Healthy Life. Methods: A systematic review of reviews and stakeholder documents was conducted. Data from nine scientific literature databases were analyzed (95 documents met the inclusion criteria). Additionally, published documentation of eight major stakeholders (e.g., World Health Organization) were systematically searched (17 documents met the inclusion criteria). The RE-AIM framework was used to categorize elicited conditions. Across the implementation conditions 25 % were identified in at least four documents and were subsequently classified as having obtained sufficient support. Results: We identified 312 potential conditions relevant for successful implementation; 83 of these received sufficient support. Using the RE-AIM framework eight implementation conditions that obtained support referred to the reach in the target population; five addressed efficacy of implementation processes; 24 concerned adoption by the target staff, setting, or institutions; 43 referred to consistency, costs, and adaptations made in the implementation process; three addressed maintenance of effects over time. The vast majority of implementation conditions (87.9 %; 73 of 83) were supported by documents referring to both interventions and policies. There were seven policy-specific implementation conditions, which focused on increasing complexities of coexisting policies/legal instruments and their consequences for implementation, as well as politicians' collaboration in implementation. Conclusions: The use of the proposed list of 83 conditions for successful implementation may enhance the implementation of interventions and policies which pursue identification of the most successful actions aimed at improving diet, PA and reducing SB.

Horodyska, K., et al. (2015). "Good practice characteristics of diet and physical activity interventions and policies: an umbrella review." *Bmc Public Health* 15.

Background: This umbrella review aimed at eliciting good practice characteristics of interventions and policies aiming at healthy diet, increasing physical activity, and lowering sedentary behaviors. Applying the World Health Organization's framework, we sought for 3 types of characteristics, reflecting: (1) main intervention/policy characteristics, referring to the design, targets, and participants, (2) monitoring and evaluation processes, and (3) implementation issues. This investigation was undertaken by the DEDPIAC Knowledge Hub (the Knowledge Hub on the DEterminants of DIet and Physical ACTivity), which is an action of the European Union's joint programming initiative. **Methods:** A systematic review of reviews and stakeholder documents was conducted. Data from 7 databases was analyzed (99 documents met inclusion criteria). Additionally, resources of 7 major stakeholders (e. g., World Health Organization) were systematically searched (10 documents met inclusion criteria). Overall, the review yielded 74 systematic reviews, 16 position review papers, and 19 stakeholders' documents. Across characteristics, 25% were supported by = 4 systematic reviews. Further, 25% characteristics were supported by = 3 stakeholders' documents. If identified characteristics were included in at least 4 systematic reviews or at least 3 stakeholders' documents, these good practice characteristics were classified as relevant. **Results:** We derived a list of 149 potential good practice characteristics, of which 53 were classified as relevant. The main characteristics of intervention/policy (n = 18) fell into 6 categories: the use of theory, participants, target behavior, content development/management, multidimensionality, practitioners/settings. Monitoring and evaluation characteristics (n = 18) were grouped into 6 categories: costs/funding, outcomes, evaluation of effects, time/effect size, reach, the evaluation of participation and generalizability, active components/underlying processes. Implementation characteristics (n = 17) were grouped into eight categories: participation processes, training for practitioners, the use/integration of existing resources, feasibility, maintenance/sustainability, implementation partnerships, implementation consistency/adaptation processes, transferability. **Conclusions:** The use of the proposed list of 53 good practice characteristics may foster further development of health promotion sciences, as it would allow for identification of success vectors in the domains of main characteristics of interventions/policies, their implementation, evaluation and monitoring processes.

Horppu, R., et al. (2018). "Application of the Theoretical Domains Framework and the Behaviour Change Wheel to Understand Physicians' Behaviors and Behavior Change in Using Temporary Work Modifications for Return to Work: A Qualitative Study." *Journal of Occupational Rehabilitation* 28(1): 135-146.

Purpose Applying the theoretical domains framework (TDF) and the Behaviour Change Wheel (BCW) to understand physicians' behaviors and behavior change in using temporary work modifications (TWMs) for return to work (RTW). **Methods** Interviews and focus group discussions were conducted with 15 occupational physicians (OPs). Responses were coded using the TDF and the BCW. **Results** Key behaviors related to applying TWMs were initiating the process with the employee, making recommendations to the workplace, and following up the process. OP behaviors were influenced by several factors related to personal capability and motivation, and opportunities provided by the physical and social environment. Capability comprised relevant knowledge and skills related to applying TWMs, remembering to initiate TWMs and monitor the process, and being accustomed to reflective practice. Opportunity comprised physical resources (e.g., time, predefined procedures, and availability of modified work at companies), and social pressure from stakeholders. Motivation comprised conceptions of a proper OP role, confidence to carry out TWMs, personal RTW-related goals, beliefs about the outcomes of one's actions, feedback received from earlier cases, and feelings related to applying TWMs. OPs' perceived means to target these identified factors were linked to the following BCW intervention functions: education, training, persuasion, environmental restructuring, and enablement. The results suggest that at least these functions should be considered when designing future interventions. **Conclusions** Our study illustrates how theoretical frameworks TDF and BCW can be utilized in a RTW context to understand which determinants of physicians' behavior need to be targeted, and how, to promote desired behaviors.

Horsch, C., et al. (2017). "Reminders make people adhere better to a self-help sleep intervention." *Health and Technology* 7(2-3): 173-188.

The experiment presented in this paper investigated the effects of different kinds of reminders on adherence to automated parts of a cognitive behavioural therapy for insomnia (CBT-I) delivered via a mobile device. Previous studies report that computerized health interventions can be effective. However, treatment adherence is still an issue. Reminders are a simple technique that could improve adherence. A minimal intervention prototype in the realm of sleep treatment was developed to test the effects of reminders on adherence. Two prominent ways to determine the reminder-time are: a) ask users when they want to be reminded, and b) let an algorithm decide when to remind users. The prototype consisted of a sleep diary, a relaxation exercise and reminders. A within subject design was used in which the effect of reminders and two underlying principles were tested by 45 participants that all received the following three different conditions (in random order): a) event-based reminders b) time-based reminders c) no reminders. Both types of reminders improved adherence compared to no reminders. No differences were found between the two types of reminders. Opportunity and self-empowerment could partly mediate adherence to filling out the sleep diary, but not to

the number of relaxation exercises conducted. Although the study focussed on CBT-I, we expect that designers of other computerized health interventions benefit from the tested opportunity and self-empowerment principles for reminders to improve adherence, as well.

Hosie, A., et al. (2019). "Multicomponent non-pharmacological intervention to prevent delirium for hospitalised people with advanced cancer: study protocol for a phase II cluster randomised controlled trial." *Bmj Open* 9(1).

Introduction Delirium is a significant medical complication for hospitalised patients. Up to one-third of delirium episodes are preventable in older inpatients through non-pharmacological strategies that support essential human needs, such as physical and cognitive activity, sleep, hydration, vision and hearing. We hypothesised that a multicomponent intervention similarly may decrease delirium incidence, and/or its duration and severity, in inpatients with advanced cancer. Prior to a phase III trial, we aimed to determine if a multicomponent non-pharmacological delirium prevention intervention is feasible and acceptable for this specific inpatient group. **Methods and analysis** The study is a phase II cluster randomised wait-listed controlled trial involving inpatients with advanced cancer at four Australian palliative care inpatient units. Intervention sites will introduce delirium screening, diagnostic assessment and a multicomponent delirium prevention intervention with six domains of care: preserving natural sleep; maintaining optimal vision and hearing; optimising hydration; promoting communication, orientation and cognition; optimising mobility; and promoting family partnership. Interdisciplinary teams will tailor intervention delivery to each site and to patient need. Control sites will first introduce only delirium screening and diagnosis, later implementing the intervention, modified according to initial results. The primary outcome is adherence to the intervention during the first seven days of admission, measured for 40 consecutively admitted eligible patients. Secondary outcomes relate to fidelity and feasibility, acceptability and sustainability of the study intervention, processes and measures in this patient population, using quantitative and qualitative measures. Delirium incidence and severity will be measured to inform power calculations for a future phase III trial. Ethics and dissemination Ethical approval was obtained for all four sites. Trial results, qualitative substudy findings and implementation of the intervention will be submitted for publication in peer-reviewed journals, and reported at conferences, to study sites and key peak bodies.

Hossain, L. N., et al. (2017). "Qualitative meta-synthesis of barriers and facilitators that influence the implementation of community pharmacy services: perspectives of patients, nurses and general medical practitioners." *Bmj Open* 7(9).

Objectives The integration of community pharmacy services (CPSs) into primary care practice can be enhanced by assessing (and further addressing) the elements that enable (ie, facilitators) or hinder (ie, barriers) the implementation of such CPSs. These elements have been widely researched from the perspective of pharmacists but not from the perspectives of other stakeholders who can interact with and influence the implementation of CPSs. The aim of this study was to synthesise the literature on patients', general practitioners' (GPs) and nurses' perspectives of CPSs to identify barriers and facilitators to their implementation in Australia. **Methods** A meta-synthesis of qualitative studies was performed. A systematic search in PubMed, Scopus and Informit was conducted to identify studies that explored patients', GPs' or nurses' views about CPSs in Australia. Thematic synthesis was performed to identify elements influencing CPS implementation, which were further classified using an ecological approach. **Results** Twenty-nine articles were included in the review, addressing 63 elements influencing CPS implementation. Elements were identified as a barrier, facilitator or both and were related to four ecological levels: individual patient (n= 14), interpersonal (n= 24), organisational (n= 16) and community and healthcare system (n= 9). It was found that patients, nurses and GPs identified elements reported in previous pharmacist-informed studies, such as pharmacist's training/education or financial remuneration, but also new elements, such as patients' capability to follow service's procedures, the relationships between GP and pharmacy professional bodies or the availability of multidisciplinary training/education. **Conclusions** Patients, GPs and nurses can describe a large number of elements influencing CPS implementation. These elements can be combined with previous findings in pharmacists-informed studies to produce a comprehensive framework to assess barriers and facilitators to CPS implementation. This framework can be used by pharmacy service planners and policy makers to improve the analysis of the contexts in which CPSs are implemented.

Houlihan, S. (2018). "Dual-process models of health-related behaviour and cognition: a review of theory." *Public Health* 156: 52-59.

Objective: The aim of this review was to synthesise a spectrum of theories incorporating dual-process models of health-related behaviour. **Study design:** Review of theory, adapted loosely from Cochrane-style systematic review methodology. **Methods:** Inclusion criteria were specified to identify all relevant dual-process models that explain decision-making in the context of decisions made about human health. Data analysis took the form of iterative template analysis (adapted from the conceptual synthesis framework used in other reviews of theory), and in this way theories were synthesised on the basis of shared theoretical constructs and causal pathways. Analysis and synthesis proceeded in turn, instead of moving uni-directionally from analysis of individual theories to synthesis of multiple theories. Namely,

the reviewer considered and reconsidered individual theories and theoretical components in generating the narrative synthesis' main findings. Results: Drawing on systematic review methodology, 11 electronic databases were searched for relevant dual-process theories. After de-duplication, 12,198 records remained. Screening of title and abstract led to the exclusion of 12,036 records, after which 162 fulltext records were assessed. Of those, 21 records were included in the review. Moving back and forth between analysis of individual theories and the synthesis of theories grouped on the basis of theme or focus yielded additional insights into the orientation of a theory to an individual. Theories could be grouped in part on their treatment of an individual as an irrational actor, as social actor, as actor in a physical environment or as a self-regulated actor. Conclusions: Synthesising identified theories into a general dual-process model of health-related behaviour indicated that such behaviour is the result of both propositional and unconscious reasoning driven by an individual's response to internal cues (such as heuristics, attitude and affect), physical cues (social and physical environmental stimuli) as well as regulating factors (such as habit) that mediate between them. (C) 2017 Published by Elsevier Ltd on behalf of The Royal Society for Public Health.

Howard, M., et al. (2018). "Development and Psychometric Properties of a Survey to Assess Barriers to Implementing Advance Care Planning in Primary Care." *Journal of Pain and Symptom Management* 55(1): 12-21.

Context. Valid and reliable measurement of barriers to advance care planning (ACP) in health care settings can inform the design of robust interventions. Objective. This article describes the development and psychometric evaluation of an instrument to measure the presence and magnitude of perceived barriers to ACP discussion with patients from the perspective of family physicians. Methods. A questionnaire was designed through literature review and expert input, asking family physicians to rate the importance of barriers (0 = not at all a barrier and 6 = an extreme amount) to ACP discussions with patients and administered to 117 physicians. Floor effects and missing data patterns were examined. Item-by-item correlations were examined using Pearson correlation. Exploratory factor analysis was conducted (iterated principle factor analysis with oblique rotation), internal consistency (Cronbach's alpha) overall and within factors was calculated, and construct validity was evaluated by calculating three correlations with related questions that were specified a priori. Results. The questionnaire included 31 questions in three domains relating to the clinician, patient/family and system or external factors. No items were removed due to missing data, floor effects, or high correlation with another item. A solution of three factors accounted for 71% of variance. One item was removed because it did not load strongly on any factor. All other items except one remained in the original domain in the questionnaire. Cronbach's alpha for the three factors ranged from 0.84 to 0.90. Two of three a priori correlations with related questions were statistically significant. Conclusion. This questionnaire to assess barriers to ACP discussion from the perspective of family physicians demonstrates preliminary evidence of reliability and validity. (C) 2017 American Academy of Hospice and Palliative Medicine. Published by Elsevier Inc. All rights reserved.

Hudson, J. L., et al. (2016). "IMPROVING DISTRESS IN DIALYSIS (iDiD): A TAILORED CBT SELF-MANAGEMENT TREATMENT FOR PATIENTS UNDERGOING DIALYSIS." *Journal of Renal Care* 42(4): 223-238.

Background: There is significant psychological distress in adults with end-stage kidney disease (ESKD). However, psychological treatments tailored to address the unique challenges of kidney failure are absent. We identified psychological correlates of distress in ESKD to develop a cognitive-behavioural therapy (CBT) treatment protocol that integrates the mental health needs of patients alongside their illness self-management demands. Methods: Studies which examined relationships between distress and psychological factors that apply in the context of ESKD including: health threats, cognitive illness representations and illness management behaviours were narratively reviewed. Review findings were translated into a CBT formulation model to inform the content of a renal-specific seven session CBT treatment protocol, which was commented on and refined by patient representatives. Results: Health threats related to distress were grouped into four themes including: acute ESKD events, loss of role, uncertainty and illness self-management. Having pessimistic illness and treatment perceptions were associated with elevated distress. Non-adherence and avoidance behaviours were related to feelings of distress, whereas cognitive reappraisal, acceptance, social support and assertiveness were associated with less distress. Conclusions: The dialysis-specific CBT formulation identifies the importance of targeting ESKD-specific correlates of distress to allow the delivery of integrated mental and physical health care. The 'Improving Distress in Dialysis (iDiD)' treatment protocol now requires further evaluation in terms of content, feasibility and potential efficacy.

Hunt, K., et al. (2014). "Do weight management programmes delivered at professional football clubs attract and engage high risk men? A mixed-methods study." *Bmc Public Health* 14.

Background: The prevalence of obesity in men in the UK is amongst the highest in Europe but men are less likely than women to use existing weight loss programmes. Developing weight management programmes which are appealing and acceptable to men is a public health priority. Football Fans in Training (FFIT), a men-only weight management programme delivered to groups of men at top professional football clubs, encourages men to lose weight by working

with, not against, cultural ideals of masculinity. To inform further development of interventions in football club settings, the current study explored who is attracted to FFIT and why overweight/obese men choose to take part. Methods: A mixed-methods study analysing baseline data on 747 men aged 35-65 years with BMI \geq 28 kg/m² who were participants in a randomised controlled trial of FFIT, and data from 13 focus group discussions with 63 men who had attended the programme. Results: Objectively-measured mean body mass index was 35.3 kg/m² (sd 4.9). Overall over 90% of participants were at very high or extremely high risk of future ill-health. Around three-quarters of participants in all age groups were at 'very high' risk of type 2 diabetes, hypertension and cardiovascular disease (72%, 73% and 80% of men aged 35-44, 45-54 and 55-64 years respectively). A further 21%, 16% and 13% were at 'extremely high' risk. Qualitative data revealed that the powerful 'draw' of the football club attracted men otherwise reluctant to attend existing weight management programmes. The location and style of delivery of early FFIT sessions fostered team spirit; men appreciated being with others 'like them' and the opportunity to undertake weight management in circumstances that enhanced physical and symbolic proximity to something they valued highly, the football club. Conclusions: The delivery of a weight management intervention via professional football clubs attracted men at high risk of ill-health. The setting enabled men to join a weight management programme in circumstances that felt 'right' rather than threatening to themselves as men. FFIT is an example of how to facilitate health promotion activities in a way that is consistent with, rather than challenging to, common ideals of masculinity.

Huynh, E., et al. (2015). "Beating Diabetes Together: A Mixed-Methods Analysis of a Feasibility Study of Intensive Lifestyle Intervention for Youth with Type 2 Diabetes." *Canadian Journal of Diabetes* 39(6): 484-490.

Objectives: The purpose of this study was to assess the feasibility and lived experiences of an intensive group-based lifestyle intervention for youth with type 2 diabetes (Beating Diabetes Together) (BDT). Methods: The study included 12 Indigenous youth with type 2 diabetes (mean age, 14 years; n=9 girls); they participated in a 16-week pilot study of an intensive, group-based lifestyle intervention. We conducted a mixed-methods investigation of the cardiometabolic responses and lived experiences in the intervention. Of the 12 youth with cardiometabolic risk data, 5 youth and 2 mothers participated in semistructured interviews. Interview participants were purposely selected based on the frequency of attendance and availability. Results: The intervention was well attended (>75% retention), and youth perceived significant benefits from participation. Thematic analysis of the interviews revealed 3 major themes. First, youth and parents described living with type 2 diabetes as being emotionally challenging. They described this experience as being isolating and connected to feelings of guilt and defeat. Second, youth and parents discussed benefits of participating in BDT. They shared the significance of positive relationships and experiences and how those have helped to manage their illness. Third, youth described the aspects that they most enjoyed at BDT. Peer support was an important determinant of physical activity, but they considered dietary changes to be individual behaviours. Glycemic control, blood pressure and anthropometric measures were not different following the intervention. Conclusions: Our findings support the importance of maintaining an inclusive environment and relationship building when designing strategies to promote behaviour modification for Indigenous youth living with type 2 diabetes. (C) 2015 Canadian Diabetes Association. Published by Elsevier Inc. All rights reserved.

Ibrahim, K., et al. (2018). "The Construction and Validation of Child, Adolescent and Parental Decision Aids for Considering Methylphenidate Drug Holidays in ADHD." *Pharmacy* 6(4).

Guidelines recommend encouraging young people with attention deficit hyperactivity disorder (ADHD) who are taking medication long-term, to discuss their preferences for stopping or changing their treatment, including a discussion about 'drug holidays', with their doctor. Yet, to date, no written information has been available to empower children and adolescents with ADHD and their parents to make informed decisions about drug holidays. The aim of this study was to design and develop a suite of decision aids to help families decide if they want to take a drug holiday from methylphenidate. The material was designed with reference to the literature and in consultation with a secondary-care specialist, and validated with two panels composed of specialists and parents using content validity questionnaires and interviews; before being finished and branded by a design service. Three decision aids were produced, with parental and adolescent versions composed of a booklet and a pull-out form for self-completion, and the child version being a booklet for reading and self-completion. Existing research calls for suitable written materials to feasibly increase the uptake of practitioner-initiated planned drug holidays from methylphenidate. We envisage these materials will open up the space to discuss drug holidays in ADHD during annual reviews, in line with UK government guidelines.

Igwezi-Chidobe, C. N., et al. (2015). "Effective components of exercise and physical activity-related behaviour-change interventions for chronic non-communicable diseases in Africa: protocol for a systematic mixed studies review with meta-analysis." *Bmj Open* 5(8).

Introduction: Chronic non-communicable diseases (NCDs) account for a high burden of mortality and morbidity in Africa. Evidence-based clinical guidelines recommend exercise training and promotion of physical activity behaviour

changes to control NCDs. Developing such interventions in Africa requires an understanding of the essential components that make them effective in this context. This is a protocol for a systematic mixed studies review that aims to determine the effective components of exercise and physical activity-related behaviour-change interventions for chronic diseases in Africa, by combining quantitative and qualitative research evidence from studies published until July 2015. Methods and analysis: We will conduct a detailed search to identify all published and unpublished studies that assessed the effects of exercise and physical activity-related interventions or the experiences/perspectives of patients to these interventions for NCDs from bibliographic databases and the grey literature. Bibliographic databases include MEDLINE, EMBASE, CENTRAL (Cochrane Central Register of Controlled Trials), PsycINFO, CINAHL and Web of Science. We will include the following African regional databases: African Index Medicus (AIM) and AFROLIB, which is the WHO's regional office database for Africa. The databases will be searched from inception until 18 July 2015. Appraisal of study quality will be performed after results synthesis. Data synthesis will be performed independently for quantitative and qualitative data using a mixed methods sequential explanatory synthesis for systematic mixed studies reviews. Meta-analysis will be conducted for the quantitative studies, and thematic synthesis for qualitative studies and qualitative results from the non-controlled observational studies. The primary outcome will include exercise adherence and physical activity behaviour changes. This review protocol is reported according to Preferred Reporting Items for Systematic reviews and Meta-Analysis protocols (PRISMA-P) 2015 guidelines. Ethics and dissemination: There is no ethical requirement for this study, as it utilises published data. This review is expected to inform the development of exercise and physical activity-related behaviour-change interventions in Africa, and will be presented at conferences, and published in peer reviewed journals and a PhD thesis at King's College London.

Igwesi-Chidobe, C. N., et al. (2018). "Physical activity containing behavioural interventions for adults living with modifiable chronic non-communicable diseases in Africa: a systematic mixed-studies review." *International Health* 10(3): 137-148.

Background: Physical activity improves physiological, cognitive and psychosocial functioning in chronic non-communicable diseases (NCDs). This study reviewed papers on the effects and patients' experiences of physical activity interventions for chronic NCDs in Africa. Methods: We conducted a systematic review of clinical and qualitative studies by searching eight bibliographic databases and grey literature until 19 April 2017. The mixed-methods appraisal and Cochrane Collaboration's tools were used for quality and risk of bias assessments. Three-stage sequential explanatory syntheses were done. Results: One randomized controlled trial (RCT), two non-controlled before and after studies and two qualitative studies of diabetic South African and Reunion patients were included. Exercise and sports unrelated to home and occupational activities were increased in the long term (1 year, moderate quality evidence) and short term immediately after a 4-week intervention (low quality evidence). There was conflicting evidence of intervention effects on home and occupational physical activities. Behaviour-change techniques improving chronic disease knowledge, addressing environmental barriers and stimulating/supporting physical activity were important to patients. Procedure-related components-health professional training and adequate health facilities-were important to patients, but were not addressed. Conclusion: High quality RCTs are needed to confirm the intervention components for improving physical activity for chronic NCD management in Africa.

Ilesanmi, R. E., et al. (2015). "Tailoring International Pressure Ulcer Prevention Guidelines for Nigeria: A Knowledge Translation Study Protocol." *Healthcare* 3(3): 619-629.

Background: The 2014 International Pressure Ulcer Prevention (PUP) Clinical Practice Guidelines (CPG) provides the most current evidence based strategies to prevent Pressure Ulcer (PU). The evidence upon which these guidelines have been developed has predominantly been generated from research conducted in developed countries. Some of these guidelines may not be feasible in developing countries due to structural and resource issues; therefore there is a need to adapt these guidelines to the context thus making it culturally acceptable. Aim: To present a protocol detailing the tailoring of international PUPCPG into a care bundle for the Nigerian context. Methods: Guided by the Knowledge to Action (KTA) framework, a two phased study will be undertaken. In Phase 1, the Delphi technique with stakeholder leaders will be used to review the current PUPCPG, identifying core strategies that are feasible to be adopted in Nigeria. These core strategies will become components of a PUP care bundle. In Phase 2, key stakeholder interviews will be used to identify the barriers, facilitators and potential implementation strategies to promote uptake of the PUP care bundle. Results: A PUP care bundle, with three to eight components is expected to be developed from Phase 1. Implementation strategies to promote adoption of the PUP care bundle into clinical practice in selected Nigerian hospitals, is expected to result from Phase 2. Engagement of key stakeholders and consumers in the project should promote successful implementation and translate into better patient care. Conclusion: Using KTA, a knowledge translation framework, to guide the implementation of PUPCPG will enhance the likelihood of successful adoption in clinical practice. In implementing a PUP care bundle, developing countries face a number of challenges such as the feasibility of its components and the required resources.

Irimu, G., et al. (2018). "Approaching quality improvement at scale: a learning health system approach in Kenya." *Archives of Disease in Childhood* 103(11): 1013-1019.

Jabbour, M., et al. (2013). "Best strategies to implement clinical pathways in an emergency department setting: study protocol for a cluster randomized controlled trial." *Implementation Science* 8.

Background: The clinical pathway is a tool that operationalizes best evidence recommendations and clinical practice guidelines in an accessible format for 'point of care' management by multidisciplinary health teams in hospital settings. While high-quality, expert-developed clinical pathways have many potential benefits, their impact has been limited by variable implementation strategies and suboptimal research designs. Best strategies for implementing pathways into hospital settings remain unknown. This study will seek to develop and comprehensively evaluate best strategies for effective local implementation of externally developed expert clinical pathways. Design/methods: We will develop a theory-based and knowledge user-informed intervention strategy to implement two pediatric clinical pathways: asthma and gastroenteritis. Using a balanced incomplete block design, we will randomize 16 community emergency departments to receive the intervention for one clinical pathway and serve as control for the alternate clinical pathway, thus conducting two cluster randomized controlled trials to evaluate this implementation intervention. A minimization procedure will be used to randomize sites. Intervention sites will receive a tailored strategy to support full clinical pathway implementation. We will evaluate implementation strategy effectiveness through measurement of relevant process and clinical outcomes. The primary process outcome will be the presence of an appropriately completed clinical pathway on the chart for relevant patients. Primary clinical outcomes for each clinical pathway include the following: Asthma-the proportion of asthmatic patients treated appropriately with corticosteroids in the emergency department and at discharge; and Gastroenteritis-the proportion of relevant patients appropriately treated with oral rehydration therapy. Data sources include chart audits, administrative databases, environmental scans, and qualitative interviews. We will also conduct an overall process evaluation to assess the implementation strategy and an economic analysis to evaluate implementation costs and benefits. Discussion: This study will contribute to the body of evidence supporting effective strategies for clinical pathway implementation, and ultimately reducing the research to practice gaps by operationalizing best evidence care recommendations through effective use of clinical pathways.

Jabbour, M., et al. (2018). "Defining barriers and enablers for clinical pathway implementation in complex clinical settings." *Implementation Science* 13.

While clinical pathways have the potential to improve patient outcomes and reduce healthcare costs, their true impact has been limited by variable implementation strategies and suboptimal research designs. This paper explores a comprehensive set of factors perceived by emergency department staff and administrative leads to influence clinical pathway implementation within the complex and dynamic environments of community emergency department settings. This descriptive, qualitative study involved emergency health professionals and administrators of 15 community hospitals across Ontario, Canada. As part of our larger cluster randomized controlled trial, each site was in the preparation phase to implement one of two clinical pathways: pediatric asthma or pediatric vomiting and diarrhea. Data were collected from three sources: (i) a mediated group discussion with site champions during the project launch meeting; (ii) a semi-structured site visit of each emergency department; and (iii) key informant interviews with an administrative lead from each hospital. The Theoretical Domains Framework (TDF) was used to guide the interviews and thematically analyze the data. Domains within each major theme were then mapped onto the COM-B model-capability, opportunity, and motivation-of the Behaviour Change Wheel. Seven discrete themes and 58 subthemes were identified that comprised a set of barriers and enablers relevant to the planned clinical pathway implementation. Within two themes, three distinct levels of impact emerged, namely (i) the individual health professional, (ii) the emergency department team, and (iii) the broader hospital context. The TDF domains occurring most frequently were Memory, Attention and Decision Processes, Environmental Context and Resources, Behavioural Regulation, and Reinforcement. Mapping these barriers and enablers onto the COM-B model provided an organized perspective on how these issues may be interacting. Several factors were viewed as both negative and positive across different perspectives. Two of the seven themes were limited to one component, while four involved all three components of the COM-B model. Using a theory-based approach ensured systematic and comprehensive identification of relevant barriers and enablers to clinical pathway implementation in ED settings. The COM-B system of the Behaviour Change Wheel provided a useful perspective on how these factors might interact to effect change.

Jabbour, M., et al. (2016). "Improving mental health care transitions for children and youth: a protocol to implement and evaluate an emergency department clinical pathway." *Implementation Science* 11.

Background: While the emergency department (ED) is often a first point of entry for children and youth with mental health (MH) concerns, there is a limited capacity to respond to MH needs in this setting. Child MH systems are typically fragmented among multiple ministries, organizations, and providers. Communication among these groups is

often poor, resulting in gaps, particularly in transitions of care, for this vulnerable population. The evidence-based Emergency Department Mental Health Clinical Pathway (EDMHCP) was created with two main goals: (1) to guide risk assessment and disposition decision-making for children and youth presenting to the ED with MH concerns and (2) to provide a streamlined transition to follow-up services with community MH agencies (CMHAs) and other providers. The purpose of this paper is to describe our study protocol to implement and evaluate the EDMHCP. Methods/design: This mixed methods health services research project will involve implementation and evaluation of the EDMHCP in four exemplar ED-CMHA dyads. The Theoretical Domains Framework will be used to develop a tailored intervention strategy to implement the EDMHCP. A multiple baseline study design and interrupted time-series analysis will be used to determine if the EDMHCP has improved health care utilization, medical management of the MH problems, and health sector coordination. The primary process outcome will be the proportion of patients with MH-specific recommendations documented in the health record. The primary service outcome will be the proportion of patients receiving the EDMHCP-recommended follow-up at 24-h or at 7 days. Data sources will include qualitative interviews, health record audits, administrative databases, and patient surveys. A concurrent process evaluation will be conducted to assess the degree of variability and fidelity in implementation across the sites. Discussion: This paper presents a novel model for measuring the effects of the EDMHCP. Our development process will identify how the EDMHCP is best implemented among partner organizations to deliver evidence-based risk management of children and youth presenting with MH concerns. More broadly, it will contribute to the body of evidence supporting clinical pathway implementation within novel partnerships.

Jackson, S. E., et al. (2019). "Finding smoking hot-spots: a cross-sectional survey of smoking patterns by housing tenure in England." *Addiction* 114(5): 889-895.

Aims To examine smoking prevalence, motivation and attempts to stop smoking, markers of cigarette addiction and success in quit attempts of people living in social housing in England compared with other housing tenures. **Design and setting** A large cross-sectional survey of a representative sample of the English population conducted between January 2015 and October 2017. **Participants** A total of 57 522 adults (aged \geq 16 years). **Measurements** Main outcomes were smoking status, number of cigarettes per day, time to first cigarette, exposure to smoking by others, motivation to stop smoking, past-year quit attempts and use of cessation support. **Covariates** were age, sex, social grade, region and survey year. **Findings** Adults in social housing had twice the odds of being smokers than those living in other housing types [odds ratio (OR) = 2.09, 95% confidence interval (CI) = 1.98-2.22, $P < 0.001$]. Smokers in social housing consumed more cigarettes daily (adjusted mean difference = 1.09 cigarettes, 95% CI = 0.72-1.46, $P < 0.001$) and were more likely to smoke within 30 minutes of waking (OR = 1.63, 95% CI = 1.48-1.79, $P < 0.001$) than smokers living in other housing types. Prevalence of high motivation to stop smoking was similar across housing types (OR = 1.04, 95% CI = 0.91-1.19, $P = 0.553$). The prevalence of quit attempts and use of cessation support within the past year were greater in social compared with other housing (OR = 1.14, 95% CI = 1.03-1.26, $P = 0.011$; OR = 1.30, 95% CI = 1.09-1.54, $P = 0.003$), but success in quitting was much lower (OR = 0.57, 95% CI = 0.45-0.72, $P < 0.001$). **Conclusions** In England, living in social housing is a major independent risk factor for smoking. These easily identifiable hot-spots consist of smokers who are at least as motivated to stop as other smokers, but find it more difficult.

Jager, C., et al. (2016). "Process evaluation of five tailored programs to improve the implementation of evidence-based recommendations for chronic conditions in primary care." *Implementation Science* 11.

Background: Although there is evidence that tailored implementation strategies can be effective, there is little evidence on which methods of tailoring improve the effect. We designed and evaluated five tailored programs (TPs) each consisting of various strategies. The aim of this study was to examine (a) how determinants of practice prioritized in the design phase of the TPs were perceived by health care professionals who had been exposed to the TPs and whether they suggested other important determinants of practice and (b) how professionals used the offered strategies and whether they suggested other strategies that might have been more effective. **Methods:** We conducted a mixed-method process evaluation linked to five cluster-randomized trials carried out in five European countries to implement recommendations for five chronic conditions in primary care settings. The five TPs used a total of 28 strategies which aimed to address 38 determinants of practice. Interviews of professionals in the intervention groups and a survey of professionals in the intervention and control groups were performed. Data collection was conducted by each research team in the respective national language. The interview data were first analyzed inductively by each research team, and subsequently, a meta-synthesis was conducted. The survey was analyzed descriptively. **Results:** We conducted 71 interviews; 125 professionals completed the survey. The survey showed that 76 % ($n = 29$) of targeted determinants of practice were perceived as relevant and 95 % ($n = 36$) as being modified by the implementation interventions by 66 to 100 % of professionals. On average, 47 % of professionals reported using the strategies and 51 % considered them helpful, albeit with substantial variance between countries and strategies. In the interviews, 89 determinants of practice were identified, of which 70 % ($n = 62$) had been identified and 45 % ($n = 40$) had been prioritized in the design phase. The interviewees suggested 65 additional strategies, of which 54 % ($n = 35$) had been identified and 20 % ($n = 13$) had been prioritized, but not selected

in the final programs. Conclusions: This study largely confirmed the perceived relevance of the targeted determinants of practice. This contrasts with the fact that no impact of the trials on the implementation of the recommendations could be observed. The findings suggest that better methods for prioritization of determinants and strategies are needed.

Janols, R. and H. Lindgren (2017). A Method for Co-Designing Theory-Based Behaviour Change Systems for Health Promotion. *Informatics for Health: Connected Citizen-Led Wellness and Population Health*. R. Randell, R. Cornet, C. McCowan, N. Peek and P. J. Scott. 235: 368-372.

A methodology was defined and developed for designing theory-based behaviour change systems for health promotion that can be tailored to the individual. Theories from two research fields were combined with a participatory action research methodology. Two case studies applying the methodology were conducted. During and between group sessions the participants created material and designs following the behaviour change strategy themes, which were discussed, analysed and transformed into a design of a behaviour change system. Theories in behavioural change and persuasive technology guided the data collection, data analyses, and the design of a behaviour change system. The methodology has strong emphasis on the target group's participation in the design process. The different aspects brought forward related to behaviour change strategies defined in literature on persuasive technology, and the dynamics of these are associated to needs and motivation defined in literature on behaviour change. It was concluded that the methodology aids the integration of theories into a participatory action research design process, and aids the analyses and motivations of design choices.

Jansons, P. S., et al. (2018). "Barriers and enablers to ongoing exercise for people with chronic health conditions: Participants' perspectives following a randomized controlled trial of two interventions." *Archives of Gerontology and Geriatrics* 76: 92-99.

Background: At present there is no clear evidence to support any one particular intervention for engaging adults with chronic health issues in ongoing exercise. An understanding of consumer perceptions and preferences is important, because low rates of exercise adherence are likely to limit any benefits obtained. Objective: To identify and compare participants' perceptions about their own motivation, capacity and opportunity to adhere to an allocated exercise program during either a gym-based or a home-based exercise program with telephone follow-up. Method/design: This qualitative study used convenience sampling to recruit participants (adults with chronic health issues) immediately after a randomised controlled trial comparing gym-and home-based exercise programs conducted for 12 months. Ten people, five from each intervention group, attended face-to-face semi-structured interviews at a local Community Health Service. Thematic analysis methods were used to analyse the dataset. Results: Improved social interaction in the gym-based program was seen to contribute to adherence, however home-based programs were perceived as more convenient and easily integrated into daily routines. Individualized exercise prescription by a health professional with regular follow up (in person or by telephone) promoted an active practitioner-participant relationship. Health coaching combined with exercise was perceived to improve self-efficacy and assisted with the removal of intrinsic and extrinsic exercise barriers. Conclusion: This research presented many common and different themes in participant's motivation, capacity and opportunity in sustained adherence to a gym or home-based exercise program. However, this study found no superior intervention or individual preference to improve ongoing exercise adherence.

Jeggle, L. M., et al. (2019). "Changing dentists' carious tissue removal behavior: Qualitative study and behavioral change simulation experiment." *Journal of Dentistry* 81: 43-51.

Objectives: We aimed to understand why German dentists remain reluctant about selective carious tissue removal (SE), and to develop and test two interventions for changing dentists' behavior. Methods: Ten one-to-one interviews with German dentists were conducted, and identified themes linked to the Behavioral Change Wheel to develop two interventions. The intervention "Guideline" summarized a scientific statement on SE, while the intervention "Tool" simulated dentists having a removal tool (self-limiting handpiece) allowing them to reliably perform SE. For testing these interventions, a postal behavioral-change simulation-experiment was performed on German dentists (n = 1226/intervention), delivered via sealed envelopes. Dentists were first, without knowledge of the intervention, asked to fill out a questionnaire, including a question on their simulated removal behavior in deep lesions in vital teeth, measured via the dentin hardness dentists would leave close to the pulp. After opening the sealed envelope and receiving the simulated intervention, dentists filled out a second identical questionnaire. Results: Based on identified barriers (lack of guidelines, discrepancy between established and "new" knowledge, lack of routine) and facilitators (understanding the biological foundations for SE, knowing it was evidence-based, having reliable criteria for determining the endpoint of SE), the two interventions were developed. 504 dentists participated in the experiment (response rate:24.9%). For both interventions, the outcome behavior improved significantly after the intervention (p < 0.001), with 29.6% (guideline) and 17.9% (tool) changing their behavior towards SE, respectively. There were no significant differences in the outcome

behavior between the two interventions ($p = 0.933$). Conclusion: Systematically developed behavior-change interventions may be efficacious to improve the uptake of SE.

Jenkins, H. J., et al. (2018). "Using behaviour change theory and preliminary testing to develop an implementation intervention to reduce imaging for low back pain." *Bmc Health Services Research* 18.

Background: Imaging is overused in the management of low back pain (LBP). Interventions designed to decrease non-indicated imaging have predominantly targeted practitioner education alone; however, these are typically ineffective. Barriers to reducing imaging have been identified for both patients and practitioners. Interventions aimed at addressing barriers in both these groups concurrently may be more effective. The Behaviour Change Wheel provides a structured framework for developing implementation interventions to facilitate behavioural change. The aim of this study was to develop an implementation intervention aiming to reduce non-indicated imaging for LBP, by targeting both general medical practitioner (GP) and patient barriers concurrently. Methods: The Behaviour Change Wheel was used to identify the behaviours requiring change, and guide initial development of an implementation intervention. Preliminary testing of the intervention was performed with: 1) content review by experts in the field; and 2) qualitative analysis of semi-structured interviews with 10 GPs and 10 healthcare consumers, to determine barriers and facilitators to successful implementation of the intervention in clinical practice. Results informed further development of the implementation intervention. Results: Patient pressure on the GP to order imaging, and the inability of the GP to manage a clinical consult for LBP without imaging, were determined to be the primary behaviours leading to referral for non-indicated imaging. The developed implementation intervention consisted of a purpose-developed clinical resource for GPs to use with patients during a LBP consult, and a GP training session. The implementation intervention was designed to provide GP and patient education, remind GPs of preferred behaviour, provide clinical decision support, and facilitate GP-patient communication. Preliminary testing found experts, GPs, and healthcare consumers were supportive of most aspects of the developed resource, and thought use would likely decrease non-indicated imaging for LBP. Suggestions for improvement of the implementation intervention were incorporated into a final version. Conclusions: The developed implementation intervention, aiming to reduce non-indicated imaging for LBP, was informed by behaviour change theory and preliminary testing. Further testing is required to assess feasibility of use in clinical practice, and the effectiveness of the implementation intervention in reducing imaging for LBP, before large-scale implementation can be considered.

Jennings, A. A., et al. (2018). "'Working away in that Grey Area' A qualitative exploration of the challenges general practitioners experience when managing behavioural and psychological symptoms of dementia." *Age and Ageing* 47(2): 295-303.

Background: general practitioners (GPs) have identified the management of behavioural and psychological symptoms of dementia (BPSD) as a particularly challenging aspect of dementia care. However, there is a paucity of research on why GPs find BPSD challenging and how this influences the care they offer to their patients with dementia. Objectives: to establish the challenges GPs experience when managing BPSD; to explore how these challenges influence GPs' management decisions; and to identify strategies for overcoming these challenges. Design: qualitative study of GPs experiences of managing BPSD. Methods: semi-structured interviews were conducted with 16 GPs in the Republic of Ireland. GPs were purposively recruited to include participants with differing levels of experience caring for people with BPSD in nursing homes and in community settings to provide maximum diversity of views. Interviews were analysed thematically. Results: three main challenges of managing BPSD were identified; lack of clinical guidance, stretched resources and difficulties managing expectations. The lack of relevant clinical guidance available affected GPs' confidence when managing BPSD. In the absence of appropriate resources GPs felt reliant upon sedative medications. GPs believed their advocacy role was further compromised by the difficulties they experienced managing expectations of family caregivers and nursing home staff. Conclusions: this study helps to explain the apparent discrepancy between best practice recommendations in BPSD and real-life practice. It will be used to inform the design of an intervention to support the management of BPSD in general practice.

Jennings, A. A., et al. (2018). "General practitioners' knowledge, attitudes and experiences of managing behavioural and psychological symptoms of dementia: protocol of a mixed methods systematic review and meta-ethnography." *Systematic Reviews* 7.

Background: In the context of rising dementia prevalence, the workload of general practitioners (GPs) in dementia care is set to increase. However, there are many aspects of dementia care that GPs find challenging. Behavioural and psychological symptoms of dementia (BPSD) affect the majority of people with dementia and is an aspect of dementia care that GPs find particularly difficult to manage. The aim of this mixed methods systematic review is to undertake a synthesis of qualitative and quantitative studies on GPs' knowledge, attitudes and experiences of managing BPSD. Methods: Seven electronic bibliographic databases will be searched from inception to present. All qualitative or quantitative studies that explore the knowledge, attitude or experiences of GPs towards the management of BPSD in

community and/or residential settings will be eligible for inclusion. A meta-ethnography will be conducted to synthesise included studies. Primary outcome measures will include GPs' experiences of managing BPSD, GPs' knowledge of BPSD and their attitude to different approaches to the management of BPSD, in particular their attitude to non-pharmacological approaches. All included papers will be independently assessed for methodological validity by two reviewers using the following tools: the Joanna Briggs Institute checklist for qualitative research, the Effective Public Health Practice Project (EPHPP) tool for intervention studies and the National Institute of Health (NIH) quality assessment tool for observational and analytical cross-sectional studies. As there is no agreed quality assessment tool for descriptive cross-sectional studies, an original tool will be developed. Two independent reviewers will apply the Confidence in the Evidence from Reviews of Qualitative Research (CERQual) tool to the review findings. The results will be reported in line with the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) statement. Discussion: This study will be the first systematic review that synthesises the existing literature of GPs' knowledge, attitudes and experiences of managing BPSD in community and residential care. This review will improve our understanding of GPs' perspectives on the management of BPSD, and the results will be used to inform the development of an intervention to improve the management of BPSD in general practice.

Jennings, H. M., et al. (2019). "Developing a theory-driven contextually relevant mHealth intervention." *Global Health Action* 12(1).

Background: mHealth interventions have huge potential to reach large numbers of people in resource poor settings but have been criticised for lacking theory-driven design and rigorous evaluation. This paper shares the process we developed when developing an awareness raising and behaviour change focused mHealth intervention, through applying behavioural theory to in-depth qualitative research. It addresses an important gap in research regarding the use of theory and formative research to develop an mHealth intervention. Objectives: To develop a theory-driven contextually relevant mHealth intervention aimed at preventing and managing diabetes among the general population in rural Bangladesh. Methods: In-depth formative qualitative research (interviews and focus group discussions) were conducted in rural Faridpur. The data were analysed thematically and enablers and barriers to behaviour change related to lifestyle and the prevention of and management of diabetes were identified. In addition to the COM-B (Capability, Opportunity, Motivation-Behaviour) model of behaviour change we selected the Transtheoretical Domains Framework (TDF) to be applied to the formative research in order to guide the development of the intervention. Results: A six step-process was developed to outline the content of voice messages drawing on in-depth qualitative research and COM-B and TDF models. A table to inform voice messages was developed and acted as a guide to scriptwriters in the production of the messages. Conclusions: In order to respond to the local needs of a community in Bangladesh, a process of formative research, drawing on behavioural theory helped in the development of awareness-raising and behaviour change mHealth messages through helping us to conceptualise and understand behaviour (for example by categorising behaviour into specific domains) and subsequently identify specific behavioural strategies to target the behaviour.

Jensen, B. B., et al. (2012). "Changing micronutrient intake through (voluntary) behaviour change. The case of folate." *Appetite* 58(3): 1014-1022.

The objective of this study was to relate behaviour change mechanisms to nutritionally relevant behaviour and demonstrate how the different mechanisms can affect attempts to change these behaviours. Folate was used as an example to illuminate the possibilities and challenges in inducing behaviour change. The behaviours affecting folate intake were recognised and categorised. Behaviour change mechanisms from "rational model of man", behavioural economics, health psychology and social psychology were identified and aligned against folate-related behaviours. The folate example demonstrated the complexity of mechanisms influencing possible behavioural changes, even though this only targets the intake of a single micronutrient. When considering possible options to promote folate intake, the feasibility of producing the desired outcome should be related to the mechanisms of required changes in behaviour and the possible alternatives that require no or only minor changes in behaviour. Dissecting the theories provides new approaches to food-related behaviour that will aid the development of batteries of policy options when targeting nutritional problems. (C) 2012 Elsevier Ltd. All rights reserved.

Jeon, Y. H., et al. (2019). "A pragmatic randomised controlled trial (RCT) and realist evaluation of the interdisciplinary home-bAsed Reablement program (I-HARP) for improving functional independence of community dwelling older people with dementia: an effectiveness-implementation hybrid design." *Bmc Geriatrics* 19.

Background: A major gap exists internationally in providing support to maintain functional and social independence of older people with dementia living at home. This project evaluates a model of care that integrates evidence-based strategies into a person-centred interdisciplinary rehabilitation package: Interdisciplinary Home-bAsed Reablement Program (I-HARP). Two central aims are: 1) to determine the effectiveness of I-HARP on functional independence, mobility, quality of life and depression among people with dementia, their home environmental safety,

carer burden and quality of life, and I-HARP cost-effectiveness; and 2) to evaluate the processes, outcomes and influencing factors of the I-HARP implementation. Methods: I-HARP is a 4-month model of care, integrated in community aged care services and hospital-based community geriatric services, and consists of: 1) 8-12 home visits, tailored to the individual client's needs, by an occupational therapist, registered nurse, and other allied health staff; 2) minor home modifications/assistive devices to the value of <A\$ 1000 per participant; and 3) three individual carer support sessions. The overarching design is a mixed-methods action research approach, consisting of a multi-centre pragmatic parallel-arm randomised controlled trial (RCT) and realist evaluation, conducted in two phases. Participants include 176 dyads (person aged ≥ 60 years with mild to moderate dementia and his/her carer). During Phase I, I-HARP advisory group is established and training of I-HARP interventionists is completed, and the effectiveness of I-HARP is examined using a pragmatic RCT. Phase II, conducted concurrently with Phase I, focuses on the process evaluation of the I-HARP implementation using a realist approach. Semi-structured interviews with participants and focus groups with I-HARP interventionists and participating site managers will provide insights into the contexts, mechanisms and outcomes of I-HARP. Discussion: I-HARP is being evaluated within the real-world systems of hospital-based and community-based aged care services in Australia. Future directions and strategies for reablement approaches to care for community dwelling people living with dementia, will be developed. The study will provide evidence to inform key stakeholders in their decision making and the use/ delivery of the program, as well as influence future systems-thinking and changes for dementia care.

Jessup, M., et al. (2018). "Multidisciplinary evaluation of an emergency department nurse navigator role: A mixed methods study." *Australian Critical Care* 31(5): 303-310.

Aim: To utilise multidisciplinary staff feedback to assess their perceptions of a novel emergency department nurse navigator role and to understand the impact of the role on the department. Background: Prolonged emergency department stays impact patients, staff and quality of care, and are linked to increased morbidity and mortality. One innovative strategy to facilitate patient flow is the navigator: a nurse supporting staff in care delivery to enhance efficient, timely movement of patients through the department. However, there is a lack of rigorous research into this emerging role. Design: Sequential exploratory mixed methods. Methods: A supernumerary emergency department nurse navigator was implemented week-off-week-on, seven days a week for 20 weeks. Diaries, focus groups, and an online survey (24-item Navigator Role Evaluation tool) were used to collect and synthesise data from the perspectives of multidisciplinary departmental staff. Results: Thematic content analysis of cumulative qualitative data drawn from the navigators' diaries, focus groups and survey revealed iterative processes of the navigators growing into the role and staff incorporating the role into departmental flow, manifested as: Reception of the role and relationships with staff; Defining the role; and Assimilation of the role. Statistical analysis of survey data revealed overall staff satisfaction with the role. Physicians, nurses and others assessed it similarly. However, only 44% felt the role was an overall success, less than half (44%) considered it necessary, and just over a third (38%) thought it positively impacted inter-professional relationships. Investigation of individual items revealed several areas of uncertainty about the role. Within-group differences between nursing grades were noted, junior nurses rating the role significantly higher than more senior nurses. Conclusion: Staff input yielded invaluable insider feedback for ensuing modification and optimal instigation of the navigator role, rendering a sense of departmental ownership. However, results indicate further work is needed to clarify and operationalise it. (c) 2017 Australian College of Critical Care Nurses Ltd. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Jirovsky, E., et al. (2018). "Development and evaluation of a web-based capacity building course in the EUR-HUMAN project to support primary health care professionals in the provision of high-quality care for refugees and migrants." *Global Health Action* 11(1).

Background: The ongoing refugee crisis has revealed the need for enhancing primary health care (PHC) professionals' skills and training. Objectives: The aim was to strengthen PHC professionals in European countries in the provision of high-quality care for refugees and migrants by offering a concise modular training that was based on the needs of the refugees and PHC professionals as shown by prior research in the EUR-HUMAN project. Methods: We developed, piloted, and evaluated an online capacity building course of 8 stand-alone modules containing information about acute health issues of refugees, legal issues, provider-patient communication and cultural aspects of health and illness, mental health, sexual and reproductive health, child health, chronic diseases, health promotion, and prevention. The English course template was translated into seven languages and adapted to the local contexts of six countries. Pre- and post-completion knowledge tests were administered to effectively assess the progress and knowledge increase of participants so as to issue CME certificates. An online evaluation survey post completion was used to assess the acceptability and practicability of the course from the participant perspective. These data were analyzed descriptively. Results: A total of 390 participants registered for the online course in 6 countries with 175 completing all modules of the course, 47.7 % of them medical doctors. The mean time for completion was 10.77 hours. In total, 123 participants completed the online evaluation survey; the modules on acute health needs, legal issues (both 44.1%), and provider-

patient communication/cultural issues (52.9%) were found particularly important for the daily practice. A majority expressed a will to promote the online course among their peers. Conclusion: This course is a promising learning tool for PHC professionals and when relevant supportive conditions are met. The course has the potential to empower PHC professionals in their work with refugees and other migrants.

Joffe, H., et al. (2016). "How to increase earthquake and home fire preparedness: the fix-it intervention." *Natural Hazards* 84(3): 1943-1965.

Published, evaluated community intervention studies concerning natural hazard preparedness are rare. Most lack a rigorous methodology, thereby hampering the development of evidence-based interventions. This paper describes the rationale and methodology of a cross-cultural, longitudinal intervention study on earthquake and home fire preparedness, termed fix-it. The aim is to evaluate whether and how the intervention brings about behaviour change in the targeted communities in two coastal cities with high seismic risk: Seattle, USA and Izmir, Turkey. Participants are adult residents of these cities. The intervention group attends a 6-h workshop, which focuses on securing items in the household. The control group does not attend the workshop. All participants complete baseline and post-intervention, as well as 3- and 12-month follow-up assessments. The primary outcome measure is an observational measure of nine preparedness items for earthquake and fire in participants' homes. This is evaluated alongside participants' self-reports concerning their preparedness levels. Secondary outcomes are changes in levels of self-efficacy, perceived outcome, trust, corruption, empowerment, anxiety and social cohesion. Results from the first of the studies, conducted in Seattle in September 2015, indicate that while the fix-it intervention is effective, in the longer term, multi-hazard preparedness is increased by the mere act of going into people's homes to observe their preparedness levels along with assessing self-reported preparedness and sociopsychological orientation towards natural hazards. This protocol and study aim to augment the empirical literature on natural hazard preparedness, informing national and international policy on delivery of evidence-based community interventions to promote multi-hazard preparedness in households.

Joffe, H., et al. (2019). "The Fix-it face-to-face intervention increases multihazard household preparedness crossculturally." *Nature Human Behaviour* 3(5): 453-461.

Vulnerability to natural disasters is increasing globally(1-3). In parallel, the responsibility for natural hazard preparedness has shifted to communities and individuals(4). It is therefore crucial that households increase their preparedness, yet adoption of household preparedness measures continues to be low, even in high-risk regions(5-8). In addition, few hazard-preparedness interventions have been evaluated longitudinally using observational measures. Therefore, we conducted a controlled intervention with a 12-month follow-up on adults in communities in the United States and Turkey that focused on improving household earthquake and fire preparedness. We show that this Fix-it intervention, involving evidence-based, face-to-face workshops, increased multihazard preparedness in both cultures longitudinally. Compared to baseline, the primary outcome-overall preparedness-increased significantly in the intervention groups, with more improvement in earthquake preparedness in the Turkish participants and more improvements in fire preparedness in the US participants. High baseline outcome expectancy and home ownership predicted overall preparedness change in both intervention groups longitudinally, implying that a sense of agency influences preparedness. An unintended consequence of observation is that it may increase preparedness, as even the control groups changed their behaviour. Therefore, observation of home preparatory behaviours by an external source may be a way to extend multihazard preparedness across a population.

John, P. and P. John (2018). *How Far to Nudge?: Assessing Behavioural Public Policy*.

John, P. and G. Stoker (2019). "Rethinking the role of experts and expertise in behavioural public policy." *Policy and Politics* 47(2): 209-225.

Nudge and behavioural public policy tools have won support from governments across the world for improving the effectiveness of public interventions. Yet nudge still attracts strong criticisms for promoting paternalism and manipulation as legitimate government actions. To move beyond this divide, this paper offers a comprehensive reorientation, which is necessary because the intellectual foundations of the policy are at fault. A more secure foundation can be achieved by expanding the cognitive scope of behavioural policy, and ensuring that it does not rely on the narrow assumption that intuitive reasoning is flawed and that expert advice is always preferable. This shift in the cognitive range of nudge moves behavioural policy toward citizen reflection and initiative, pointing away from expert-led interventions. It amounts to more than incremental advances in nudge practice. As a result, nudge can escape the charge of not respecting individual autonomy. What we call 'nudge plus' would link more closely with other types of governmental intervention that embrace citizen involvement.

Johnson, F. M., et al. (2017). "Identifying mechanisms of change in a conversation therapy for aphasia using behaviour change theory and qualitative methods." *International Journal of Language & Communication Disorders* 52(3): 374-387.

Background: Conversation therapy for aphasia is a complex intervention comprising multiple components and targeting multiple outcomes. UK Medical Research Council (MRC) guidelines published in 2008 recommend that in addition to measuring the outcomes of complex interventions, evaluation should seek to clarify how such outcomes are produced, including identifying the hypothesized mechanisms of change. Aims: To identify mechanisms of change within a conversation therapy for people with aphasia and their partners. Using qualitative methods, the study draws on behaviour change theory to understand how and why participants make changes in conversation during and after therapy. Methods & Procedures: Data were derived from 16 participants (eight people with aphasia; eight conversation partners) who were recruited to the Better Conversations with Aphasia research project and took part in an eight session conversation therapy programme. The dataset consists of in- therapy discussions and post- therapy interviews, which are analysed using Framework Analysis. Outcomes & Results: Seven mechanisms of conversational behaviour change are identified and linked to theory. These show how therapy can activate changes to speakers' skills and motivation for using specific behaviours, and to the conversational opportunities available for strategy use. Conclusions & Implications: These clinically relevant findings offer guidance about the processes involved in producing behavioural change via conversation therapy. A distinction is made between the process involved in motivating change and that involved in embedding change. Differences are also noted between the process engaged in reducing unhelpful behaviour and that supporting new uses of compensatory strategies. Findings are expected to have benefits for those seeking to replicate therapy's core processes both in clinical practice and in future research.

Johnson, K. B., et al. (2016). "The feasibility of text reminders to improve medication adherence in adolescents with asthma." *Journal of the American Medical Informatics Association* 23(3): 449-455.

Objective Personal health applications have the potential to help patients with chronic disease by improving medication adherence, self-efficacy, and quality of life. The goal of this study was to assess the impact of MyMediHealth (MMH) - a website and a short messaging service (SMS)-based reminder system - on medication adherence and perceived self-efficacy in adolescents with asthma. Methods We conducted a block-randomized controlled study in academic pediatric outpatient settings. There were 98 adolescents enrolled. Subjects who were randomized to use MMH were asked to create a medication schedule and receive SMS reminders at designated medication administration times for 3 weeks. Control subjects received action lists as a part of their usual care. Primary outcome measures included MMH usage patterns and self-reports of system usability, medication adherence, asthma control, self-efficacy, and quality of life. Results Eighty-nine subjects completed the study, of whom 46 were randomized to the intervention arm. Compared to controls, we found improvements in self-reported medication adherence ($P = .011$), quality of life ($P = .037$), and self-efficacy ($P = .016$). Subjects reported high satisfaction with MMH; however, the level of system usage varied widely, with lower use among African American patients. Conclusions MMH was associated with improved medication adherence, perceived quality of life, and self-efficacy.

Johnston, K. N., et al. (2013). "Barriers to, and facilitators for, referral to pulmonary rehabilitation in COPD patients from the perspective of Australian general practitioners: a qualitative study." *Primary Care Respiratory Journal* 22(3): 319-324.

Background: Pulmonary rehabilitation (PR) is recommended in the management of people with chronic obstructive pulmonary disease (COPD), but referral to this service is low. Aims: To identify barriers to, and facilitators for, referral to PR programmes from the perspective of Australian general practitioners. Methods: Semi-structured interviews were conducted with general practitioners involved in the care of people with COPD. Interview questions were informed by a validated behavioural framework and asked about participants' experience of referring people with COPD for PR, and barriers to, or facilitators of, this behaviour. Interviews were audiotaped, transcribed verbatim, and analysed using content analysis. Results: Twelve general practitioners participated in this study, 10 of whom had never referred a patient to a PR programme. Four major categories relating to barriers to referral were identified: low knowledge of PR for COPD; low knowledge of how to refer; actual or anticipated access difficulties for patients; and questioning the need to do more to promote exercise behaviour change. Awareness of benefit was the only current facilitator. Three major categories of potential facilitators were identified: making PR part of standard COPD care through financial incentive; improving information flow with regard to referrals and services; and informing patients and public. Conclusions: Significant barriers to referral exist, but opportunities to change the organisation of practice and information management were identified. Behaviour change strategies which directly target these barriers and incorporate facilitators should make up the key components of interventions to improve referral to PR by general practitioners who care for people with COPD. (C) 2013 Primary Care Respiratory Society UK. All rights reserved.

Johnston, M. (2016). "A science for all reasons: A comment on Ogden (2016)." *Health Psychology Review* 10(3): 256-259.

Johnston, M. (2017). "A Small Book With Big Messages for Measurement in Health Psychology." *Measurement-Interdisciplinary Research and Perspectives* 15(1): 11-13.

Johnston, M. and D. Dixon (2014). "Developing an integrated biomedical and behavioural theory of functioning and disability: adding models of behaviour to the ICF framework." *Health Psychology Review* 8(4): 381-403.

The International Classification of Functioning Disability and Health (ICF) offers an agreed language on which a scientific model of functional outcomes can be built. The ICF defines functional outcomes as activity and activity limitations (AL) and defines both in behavioural terms. The ICF, therefore, appears to invite explanations of AL as behaviours. Studies of AL find that psychological variables, especially perceptions of control, add to biomedical variables in predicting AL. Therefore, two improved models are proposed, which integrate the ICF with two psychological theories, the theory of planned behaviour (TPB) and social cognitive theory (SCT). These models have a sound evidence base as good predictors of behaviour, include perceived control constructs and are compatible with existing evidence about AL. When directly tested in studies of community and clinic-based populations, both integrated models (ICF/TPB and ICF/SCT) outperform each of the three basic models (ICF, TPB and SCT). However, when predicting activity rather than AL, the biomedical model of the ICF does not improve prediction of activity by TPB and SCT on their own. It is concluded that these models offer a better explanation of functional outcomes than the ICF alone and could form the basis for the development of improved models.

Johnston, M. and D. Johnston (2017). "What Is Behavioural Medicine? Commentary on Definition Proposed by Dekker, Stauder and Penedo." *International Journal of Behavioral Medicine* 24(1): 8-11.

Purpose Dekker et al. (2016) propose an updated definition of behavioural medicine. In this commentary, we discuss how the field and the disciplines involved have changed over time before suggesting small amendments to the proposed definition. We suggest that the range of medicine which might be considered 'behavioural' is increasing to encompass virtually all medical practice. In addition, the role of behaviour and the potential for behaviour change as a means of improving health have become increasingly important. A defining characteristic of behavioural medicine is the involvement of multiple disciplines, working together or in parallel and, as the extent of the field expands, more disciplines are likely to be involved. We therefore propose that the definition should represent the full width of the research, practice and disciplines involved in behavioural medicine.

Johnston, N., et al. (2016). "Systematic reviews: causes of non-adherence to P2Y12 inhibitors in acute coronary syndromes and response to intervention." *Open Heart* 3(2).

To understand the factors associated with non-adherence to oral antiplatelet (OAP) therapy in acute coronary syndromes (ACS), and where interventions have modified these factors. Linked systematic reviews were undertaken in accordance with the Preferred Reporting Items for Systematic reviews and Meta-analysis guidelines, using CINAHL Plus, MEDLINE, PsycINFO and PubMed databases. The searches were limited to studies available in English and published from 2000 onwards; last run in June 2015. Review 1: factors. Fifteen articles were identified that reported 25 different factors associated with OAP non-adherence. Factors were categorised into: Demographic, Treatment, Healthcare System Processes, Clinical, Opportunity (ie, factors outside the patients, such as cost and healthcare access) and Psychosocial. It was not possible to determine if any of these factors were more impactful than others, either overall or temporally. Review 2: interventions. Six articles were identified that described interventions targeting adherence in patients with acute coronary syndromes (ACS)/coronary artery disease (CAD). Four broad categories of intervention were identified: treatment counselling and education, educational materials, SMS reminders and telephone monitoring and reinforcement delivered different practitioners. Only reminder-based interventions had a consistently successful impact on adherence outcomes at both 3 and 12 months. A number of factors are associated with OAP non-adherence, and encouragingly, there is some evidence of the effectiveness of intervention to modify treatment adherence in patients with ACS/CAD. Future evaluations ensuring a better cohesion between the factors studied as associated with non-adherence and those targeted by intervention would further increase understanding and lead to improved results.

Joinson, A., et al. (2017). *BEHAVIOR CHANGE RESEARCH AND THEORY PSYCHOLOGICAL AND TECHNOLOGICAL PERSPECTIVES* Conclusion.

Jokar, F., et al. (2015). "Behavioral Change Challenges in the Context of Center-Based Cardiac Rehabilitation: A Qualitative Study." *Iranian Red Crescent Medical Journal* 17(6).

Background: Cardiovascular disease is chronic and often a sign of long-standing unhealthy lifestyle habits. Patients need support to reach lifestyle changes, well-being, join in social and vocational activity. Thus, patient responsibility should to be encouraged to provide quality as well as longevity. Cardiac rehabilitation programs aid patients in the attainment of these objectives. However, research shows that behavioral change following the diagnosis of a

chronic disease is a challenge. Objectives: We sought to determine behavioral change challenges in patients with cardiovascular disease to improve intervention programs. Patients and Methods: Using a descriptive qualitative approach, we collected the data using 30 in-depth semi-structure interviews. Thematic analysis was conducted to identify themes from the data. Results: Three sources of behavioral change challenges emerged regarding the nature of cardiac disease and the role of the individual and the family in the recovery process. These challenges acted at two levels: intra- and interpersonal. The intrapersonal factors comprised value, knowledge and judgment about cardiovascular disease, and self-efficacy to fulfill the rehabilitation task. Family overprotection constituted the principal component of the interpersonal level. Conclusions: Behaviors are actually adopted and sustained by patients are so far from that recommended by health professionals. This gap could be reduced by identifying behavioral change challenges, rooted in the beliefs of the individual and the family. Therefore, culturally-based interventions to enhance disease self-management should be considered.

Jolliffe, L., et al. (2019). "Using audit and feedback to increase clinician adherence to clinical practice guidelines in brain injury rehabilitation: A before and after study." *Plos One* 14(3).

Objective This study evaluated whether frequent (fortnightly) audit and feedback cycles over a sustained period of time (>12 months) increased clinician adherence to recommended guidelines in acquired brain injury rehabilitation. **Design** A before and after study design. **Setting** A metropolitan inpatient brain injury rehabilitation unit. **Participants** Clinicians; medical, nursing and allied health staff. **Interventions** Fortnightly cycles of audit and feedback for 14 months. Each fortnight, medical file and observational audits were completed against 114 clinical indicators. **Main outcome measure** Adherence to guideline indicators before and after intervention, calculated by proportions, Mann-Whitney U and Chi square analysis. **Results** Clinical and statistical significant improvements in median clinical indicator adherence were found immediately following the audit and feedback program from 38.8% (95% CI 34.3 to 44.4) to 83.6% (95% CI 81.8 to 88.5). Three months after cessation of the intervention, median adherence had decreased from 82.3% to 76.6% (95% CI 72.7 to 83.3, $p < 0.01$). Findings suggest that there are individual indicators which are more amenable to change using an audit and feedback program. **Conclusion** A fortnightly audit and feedback program increased clinicians' adherence to guideline recommendations in an inpatient acquired brain injury rehabilitation setting. We propose future studies build on the evidence-based method used in the present study to determine effectiveness and develop an implementation toolkit for scale-up.

Jolly, K., et al. (2018). "Protocol for a feasibility trial for improving breast feeding initiation and continuation: assets-based infant feeding help before and after birth (ABA)." *Bmj Open* 8(1).

Introduction Breast feeding improves the health of mothers and infants; the UK has low rates, with marked socioeconomic inequalities. While trials of peer support services have been effective in some settings, UK trials have not improved breast feeding rates. Qualitative research suggests that many women are alienated by the focus on breast feeding. We propose a change from breast feeding-focused interactions to respecting a woman's feeding choices, inclusion of behaviour change theory and an increased intensity of contacts in the 2 weeks after birth when many women cease to breast feed. This will take place alongside an assets-based approach that focuses on the positive capability of individuals, their social networks and communities. We propose a feasibility study for a multicentre randomised controlled trial of the Assets feeding help Before and After birth (ABA) infant feeding service versus usual care. **Methods and analysis** A two-arm, non-blinded randomised feasibility study will be conducted in two UK localities. Women expecting their first baby will be eligible, regardless of feeding intention. The ABA infant feeding intervention will apply a proactive, assets-based, woman centred, non-judgemental approach, delivered antenatally and postnatally tailored through face-to-face contacts, telephone and SMS texts. **Outcomes** will test the feasibility of delivering the intervention with recommended intensity and duration to disadvantaged women; acceptability to women, feeding helpers and professionals; and feasibility of a future randomised controlled trial (RCT), detailing recruitment rates, willingness to be randomised, followup rates at 3 days, 8 weeks and 6 months, and level of outcome completion. Outcomes of the proposed full trial will also be collected. **Mixed methods** will include qualitative interviews with women/partners, feeding helpers and health service staff; feeding helper logs; and review of audio-recorded helper women interactions to assess intervention fidelity. **Ethics and dissemination** Study results will inform the design of a larger multicentre RCT. The National Research Ethics Service Committee approved the study protocol.

Jones, K., et al. (2016). "Adoption of unconventional approaches in construction: The case of cross-laminated timber." *Construction and Building Materials* 125: 690-702.

Achieving sustainable development requires the decoupling of economic growth from the use of non-renewable resources. This depends on industry adopting unconventional approaches to production. This research explores the root causes of barriers to the adoption of such approaches in the construction industry, and applies a behavioural model to assess whether companies are hindered by capability, opportunity or motivation. The long history of lowest-cost

tendering in construction has led to a path-dependent lock-in to conventional market-driven objectives of cost and risk reduction; it is suggested that locked-in companies lack the commercial opportunity and hence motivation, rather than the capability, to adopt approaches perceived to increase cost or risk. Such companies will therefore tend to resist unconventional approaches, restricting the physical opportunity for other project participants. This theory is explored in a case study of first adoptions of cross-laminated timber (CLT) in UK projects, using a survey and series of semi-structured interviews. The case study found that project contexts created market niches. This provided designers, who were motivated to use CLT, the opportunity to promote its use in the project. CLT was seen as key to successful resolution of project constraints, thereby providing motivation to other project participants to adopt the material. (C) 2016 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Jones, S. T., et al. (2015). "Promoting adherence to nebulized therapy in cystic fibrosis: poster development and a qualitative exploration of adherence." *Patient Preference and Adherence* 9: 1109-1120.

Background: Cystic fibrosis (CF) health care professionals recognize the need to motivate people with CF to adhere to nebulizer treatments, yet little is known about how best to achieve this. We aimed to produce motivational posters to support nebulizer adherence by using social marketing involving people with CF in the development of those posters. Methods: The Sheffield CF multidisciplinary team produced preliminary ideas that were elaborated upon with semi-structured interviews among people with CF to explore barriers and facilitators to the use of nebulized therapy. Initial themes and poster designs were refined using an online focus group to finalize the poster designs. Results: People with CF preferred aspirational posters describing what could be achieved through adherence in contrast to posters that highlighted the adverse consequences of nonadherence. A total of 14 posters were produced through this process. Conclusion: People with CF can be engaged to develop promotional material to support adherence, providing a unique perspective differing from that of the CF multidisciplinary team. Further research is needed to evaluate the effectiveness of these posters to support nebulizer adherence.

Jones, T. M., et al. (2016). "Application of Intervention Mapping to the Development of a Complex Physical Therapist Intervention." *Physical Therapy* 96(12): 1994-2004.

Background. Physical therapist interventions, such as those designed to change physical activity behavior, are often complex and multifaceted. In order to facilitate rigorous evaluation and implementation of these complex interventions into clinical practice, the development process must be comprehensive, systematic, and transparent, with a sound theoretical basis. Intervention Mapping is designed to guide an iterative and problem-focused approach to the development of complex interventions. Purpose. The purpose of this case report is to demonstrate the application of an Intervention Mapping approach to the development of a complex physical therapist intervention, a remote self-management program aimed at increasing physical activity after acquired brain injury. Case Description. Intervention Mapping consists of 6 steps to guide the development of complex interventions: (1) needs assessment; (2) identification of outcomes, performance objectives, and change objectives; (3) selection of theory-based intervention methods and practical applications; (4) organization of methods and applications into an intervention program; (5) creation of an implementation plan; and (6) generation of an evaluation plan. The rationale and detailed description of this process are presented using an example of the development of a novel and complex physical therapist intervention, myMoves a program designed to help individuals with an acquired brain injury to change their physical activity behavior. Conclusion. The Intervention Mapping framework may be useful in the development of complex physical therapist interventions, ensuring the development is comprehensive, systematic, and thorough, with a sound theoretical basis. This process facilitates translation into clinical practice and allows for greater confidence and transparency when the program efficacy is investigated.

Jonkman, N. H., et al. (2017). "Complex self-management interventions in chronic disease unravelled: a review of lessons learned from an individual patient data meta-analysis." *Journal of Clinical Epidemiology* 83: 48-56.

Objectives: Meta-analyses using individual patient data (IPD) rather than aggregated data are increasingly applied to analyze sources of heterogeneity between trials and have only recently been applied to unravel multicomponent, complex interventions. This study reflects on methodological challenges encountered in two IPD meta-analyses on self-management interventions in patients with heart failure or chronic obstructive pulmonary disease. Study Design and Setting: Critical reflection on prior IPD meta-analyses and discussion of literature. Results: Experience from two IPD meta-analyses illustrates methodological challenges. Despite close collaboration with principal investigators, assessing the effect of characteristics of complex interventions on the outcomes of trials is compromised by lack of sufficient details on intervention characteristics and limited data on fidelity and adherence. Furthermore, trials collected baseline variables in a highly diverse way, limiting the possibilities to study subgroups of patients in a consistent manner. Possible solutions are proposed based on lessons learnt from the methodological challenges. Conclusion: Future

researchers of complex interventions should pay considerable attention to the causal mechanism underlying the intervention and conducting process evaluations. Future researchers on IPD meta-analyses of complex interventions should carefully consider their own causal assumptions and availability of required data in eligible trials before undertaking such resource-intensive IPD meta-analysis. (C) 2017 Elsevier Inc. All rights reserved.

Jordaan, S., et al. (2018). "Reflections on mentoring experiences for evidence-informed decision-making in South Africa and Malawi." *Development in Practice* 28(4): 456-467.

This article is based on the consensus that the availability and utilisation of research enhances policy discussions. The article reflects on the experiences within one approach: capacity building through mentoring. The UJ-BCURE programme aimed to increase the capacity of decision-makers to use evidence in decision-making via mentoring models. Mentoring is described as an interactive, facilitated process that promotes learning. The features of the models that have contributed to the programme's success are orientation workshops with mentees combined with participatory, needs-led, and flexible approaches. UJ-BCURE experiences are relevant to the field of evidence-informed decision-making in an African government context.

Jordan, K. P., et al. (2017). "Effect of a model consultation informed by guidelines on recorded quality of care of osteoarthritis (MOSAICS): a cluster randomised controlled trial in primary care." *Osteoarthritis and Cartilage* 25(10): 1588-1597.

Objective: To determine the effect of a model osteoarthritis (OA) consultation (MOAC) informed by National Institute for Health and Care Excellence (NICE) recommendations compared with usual care on recorded quality of care of clinical OA in general practice. Design: Two-arm cluster randomised controlled trial. Setting: Eight general practices in Cheshire, Shropshire, or Staffordshire UK. Participants: General practitioners and nurses with patients consulting with clinical OA. Intervention: Following six-month baseline period practices were randomised to intervention (n = 4) or usual care (n = 4). Intervention practices delivered MOAC (enhanced initial GP consultation, nurse-led clinic, OA guidebook) to patients aged ≥ 45 years consulting with clinical OA. An electronic (e-)template for consultations was used in all practices to record OA quality care indicators. Outcomes: Quality of OA care over six months recorded in the medical record. Results: 1851 patients consulted in baseline period (1015 intervention; 836 control); 1960 consulted following randomisation (1118 intervention; 842 control). At baseline wide variations in quality of care were noted. Post-randomisation increases were found for written advice on OA (4-28%), exercise (4-22%) and weight loss (1-15%) in intervention practices but not controls (1-3%). Intervention practices were more likely to refer to physiotherapy (10% vs 2%, odds ratio 5.30; 95% CI 2.11, 13.34), and prescribe paracetamol (22% vs 14%, 1.74; 95% CI 1.27, 2.38). Conclusions: The intervention did not improve all aspects of care but increased core NICE recommendations of written advice on OA, exercise and weight management. There remains a need to reduce variation and uniformly enhance improvement in recorded OA care. Trial registration number: ISRCTN06984617. (C) 2017 The Authors. Published by Elsevier Ltd on behalf of Osteoarthritis Research Society International.

Joseph-Williams, N., et al. (2014). "Power imbalance prevents shared decision making." *Bmj-British Medical Journal* 348.

Jovicic, A., et al. (2015). "Identifying the content of home-based health behaviour change interventions for frail older people: a systematic review protocol." *Systematic Reviews* 4.

Background: Meeting the needs of the growing number of older people is a challenge for health and social care services. Home-based interventions aiming to modify health-related behaviours of frail older people have the potential to improve functioning and well-being. Previous reviews have focused on whether such interventions are effective, rather than what might make them effective. Recent advances in behavioural science make possible the identification of potential 'active ingredients' of effective interventions, such as component behaviour change techniques (BCTs), and intended intervention functions (IFs; e.g. to educate, to impart skills). This paper reports a protocol for a systematic review that seeks to (a) identify health behaviour change interventions for older frail people, (b) describe the content of these interventions, and (c) explore links between intervention content and effectiveness. The protocol is reported in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA-P) 2015 guidelines. Methods/design: Studies will be identified through a systematic search of 15 electronic databases, supplemented by citation tracking. Studies will be retained for review where they report randomised controlled trials focusing on home-based health promotion delivered by a health professional for frail older people in community settings, written in English, and either published from 1980 onwards, or, for registered trials only, unpublished but completed with results obtainable from authors. Interventions will be coded for their content (BCTs, IFs) and for evidence of effectiveness (outcome data relating to behavioural and health outcomes). Analyses will describe characteristics of all interventions. Interventions for which effectiveness data are available will be categorised into those showing evidence of effectiveness versus those showing no such evidence. The potential for each intervention characteristic to contribute

to change in behaviour or health outcomes will be estimated by calculating the percentage of all interventions featuring those characteristics that have shown effectiveness. Discussion: Results will reveal the strategies that have been drawn on within home-based interventions to modify the health behaviours of frail older people, and highlight those more associated with positive changes in behaviour and health. Findings from this review will provide a useful basis for understanding, developing, and implementing behaviour change interventions in this field.

Juriso, M., et al. (2018). "Beyond buying: The application of service design methodology to understand adoption of clean cookstoves in Kenya and Zambia." *Energy Research & Social Science* 39: 164-176.

A shift to advanced cookstoves can bring significant health and environmental benefits, but only with proper and consistent use. Despite this, the empirical evidence of what drives the initial purchase, and in particular, the continued use of advanced cooking technologies remains limited. This paper describes two case studies in peri-urban Kiambu County (Kenya) and urban Lusaka (Zambia) where we examine the factors influencing the purchase and use of clean biomass cookstoves over time. We apply service design methodology to build "user journeys" to illustrate the cook's experience with the technology, from the point of hearing about it, to purchasing it, learning to use it, and making it part of their daily routine. We find that often, the primary factors influencing initial purchase do not motivate people to use the stove regularly in the longer term. From the user-journey mapping, we identify some key behaviour change techniques that could be applied, primarily by cookstove implementers, at different phases in the adoption journey to support users in the process of overcoming behavioural barriers to adopting a new technology. Our findings emphasize that complex factors affect people's decision-making around the purchase and use of clean cookstoves, and highlight the need to carefully map user's experience to pinpoint where support is most needed in the process of change.

Juul, J. S., et al. (2016). "Implementation of immunochemical faecal occult blood test in general practice: a study protocol using a cluster-randomised stepped-wedge design." *Bmc Cancer* 16.

Background: Colorectal cancer is a common malignancy and a leading cause of cancer-related death. Half of patients with colorectal cancer initially present with non-specific or vague symptoms. In the need for a safe low-cost test, the immunochemical faecal occult blood test (iFOBT) may be part of the evaluation of such patients in primary care. Currently, Danish general practitioners have limited access to this test. The aim of this article is to describe a study that will assess the uptake and clinical use of iFOBT in general practice. Furthermore, it will investigate the diagnostic value and the clinical implications of using iFOBT in general practice on patients presenting with non-alarm symptoms of colorectal cancer. Methods/Design: The study uses a cluster-randomised stepped-wedge design and is conducted in the Central Denmark Region among 836 GPs in 381 general practices. The municipalities of the Region and their appertaining general practitioners will be included sequentially in the study during the first 7 months of the 1-year study period. The following intervention has been developed for the study: a mandatory intervention providing all general practitioners with a starting package of 10 iFOBTs, a clinical instruction on iFOBT use in general practice and online information material from the date of inclusion, and an optional intervention consisting of a continuous medical education on colorectal cancer diagnostics and use of iFOBT. Discussion: This study is among the first and largest trials to investigate the diagnostic use and the clinical value of iFOBT on patients presenting with non-alarm symptoms of colorectal cancer. The findings will be of national and international importance for the future planning of colorectal cancer diagnostics, particularly for 'low-risk-but-not-no-risk' patients with non-alarm symptoms of colorectal cancer.

Kalema, D., et al. (2019). "Perspectives of alcohol treatment providers and users on alcohol addiction and its facilitating factors in Uganda and Belgium." *Drugs-Education Prevention and Policy* 26(2): 184-194.

Background: Although conceptualisation of addiction varies with time and culture, literature on intercultural studies between high and low income countries is scarce. This article uses Diagnostic and Statistical Manual of Mental Disorders (DSM)-5 guidelines on diagnosis of Alcohol Use Disorder (AUD) and the Capability Opportunity Motivation - Behaviour (COM-B) model to explore perspectives on alcohol addiction and its facilitating factors in Uganda and Belgium. Method: Sixty qualitative interviews (40 with service providers and 20 service users) were administered in four alcohol treatment centres, two in Uganda and two in Belgium. Interviews were transcribed and analysed thematically using Nvivo software. Result: While addiction was primarily regarded as a disease enabled by capability factors (affordability and the absence of life and social skills) by Belgian respondents, many Ugandans viewed it as a moral or criminal issue; motivated by the varied roles of informal alcohol use amidst weak restrictions. Opportunity-related factors including; acceptability, availability, media influence, cultural/religious beliefs and practices and peer influence were recognised as facilitating factors in both countries, while stigma was equally prevalent. Conclusion: Interventions in Uganda could explore strengthening legislation and research on utilisation of the well-entrenched religious and cultural institutions to encourage alternatives to alcohol use. In Belgium, promotion of life and social skills, alcohol regulation in educational institutions and other demand reduction strategies seem essential to delay the onset of (mis)use. In both societies;

general reduction of opportunities for access, early intervention, programmes for young persons and prevention of stigma through awareness-raising can be explored for mitigation of AUD.

Kaljonen, M., et al. (2019). "Attentive, speculative experimental research for sustainability transitions: An exploration in sustainable eating." *Journal of Cleaner Production* 206: 365-373.

The critical role of everyday practices in climate change mitigation has placed experimental approaches at the top of the environmental policy agenda. In this paper we discuss the value of behavioural approaches, practice theories, pragmatic tinkering and speculative thinking with respect to experimentation. Whereas the first two have been much discussed within sustainability science and transition research, the notions of pragmatic tinkering and speculative thinking radically broaden the scope of experimental research and its contribution to sustainable everyday practices. Pragmatism brings to the fore the need to coordinate multiple practices and understandings of good eating, as these may clash in practice. Through this lens, the value of experimental research lies in revealing frictions that need to be resolved, or tinkered, in practice. Speculative experimentation, in turn, refers to the power of experiments to challenge the experimental setting itself and force thinking about new possibilities and avenues. We investigate the value of all four approaches in relation to our experiments with sustainable eating in the Finnish and Nordic context. Our elaboration justifies the need to broaden the conception of experimental research in order to capture the multiplicity of sustainable eating. Hence, we call for attentive, speculative experimental research aimed not only at testing solutions for sustainable everyday practice, but also at reflecting on the practice of experimentation itself. (C) 2018 The Authors. Published by Elsevier Ltd.

Kamal, S., et al. (2018). "Content analysis of antiretroviral adherence enhancing interview reports." *Patient Education and Counseling* 101(9): 1676-1682.

Objective: To identify factors associated with low or high antiretroviral (ARV) adherence through computational text analysis of an adherence enhancing programme interview reports. Methods: Using text from 8428 interviews with 522 patients, we constructed a term-frequency matrix for each patient, retaining words that occurred at least ten times overall and used in at least six interviews with six different patients. The text included both the pharmacist's and the patient's verbalizations. We investigated their association with an adherence threshold (above or below 90%) using a regularized logistic regression model. In addition to this data-driven approach, we studied the contexts of words with a focus group. Results: Analysis resulted in 7608 terms associated with low or high adherence. Terms associated with low adherence included disruption in daily schedule, side effects, socio-economic factors, stigma, cognitive factors and smoking. Terms associated with high adherence included fixed medication intake timing, no side effects and positive psychological state. Conclusion: Computational text analysis helps to analyze a large corpus of adherence enhancing interviews. It confirms main known themes affecting ARV adherence and sheds light on new emerging themes. Practice implications: Health care providers should be aware of factors that are associated with low or high adherence. This knowledge should reinforce the supporting factors and try to resolve the barriers together with the patient. (C) 2018 Elsevier B.V. All rights reserved.

Kara, N., et al. (2017). "The BetterBirth Program: Pursuing Effective Adoption and Sustained Use of the WHO Safe Childbirth Checklist Through Coaching-Based Implementation in Uttar Pradesh, India." *Global Health-Science and Practice* 5(2): 232-243.

Shifting childbirth into facilities has not improved health outcomes for mothers and newborns as significantly as hoped. Improving the quality and safety of care provided during facility-based childbirth requires helping providers to adhere to essential birth practices-evidence-based behaviors that reduce harm to and save lives of mothers and newborns. To achieve this goal, we developed the BetterBirth Program, which we tested in a matched-pair, cluster-randomized controlled trial in Uttar Pradesh, India. The goal of this intervention was to improve adoption and sustained use of the World Health Organization Safe Childbirth Checklist (SCC), an organized collection of 28 essential birth practices that are known to improve the quality of facility-based childbirth care. Here, we describe the BetterBirth Program in detail, including its 4 main features: implementation tools, an implementation strategy of coaching, an implementation pathway (Engage-Launch-Support), and a sustainability plan. This coaching-based implementation of the SCC motivates and empowers care providers to identify, understand, and resolve the barriers they face in using the SCC with the resources already available. We describe important lessons learned from our experience with the BetterBirth Program as it was tested in the BetterBirth Trial. For example, the emphasis on relationship building and respect led to trust between coaches and birth attendants and helped influence change. In addition, the cloud-based data collection and feedback system proved a valuable asset in the coaching process. More research on coaching-based interventions is required to refine our understanding of what works best to improve quality and safety of care in various settings. Note: At the time of publication of this article, the results of evaluation of the impact of the BetterBirth Program were pending

publication in another journal. After the impact findings have been published, we will update this article with a reference to the impact findings.

Karlsen, R. and A. Andersen (2019). "Recommendations with a Nudge." *Technologies* 7(2).

In areas such as health, environment, and energy consumption, there is a need to do better. A common goal in society is to get people to behave in ways that are sustainable for the environment or support a healthier lifestyle. Nudging is a term known from economics and political theory, for influencing decisions and behavior using suggestions, positive reinforcement, and other non-coercive means. With the extensive use of digital devices, nudging within a digital environment (known as digital nudging) has great potential. We introduce smart nudging, where the guidance of user behavior is presented through digital nudges tailored to be relevant to the current situation of each individual user. The ethics of smart nudging and the transparency of nudging is also discussed. We see a smart nudge as a recommendation to the user, followed by information that both motivates and helps the user choose the suggested behavior. This paper describes such nudge recommendations, the design of a smart nudge, and an architecture for a smart nudging system. We compare smart nudging to traditional models for recommender systems, and we describe and discuss tools (or approaches) for nudge design. We discuss the challenges of designing personalized smart nudges that evolve and adapt according to the user's reactions to the previous nudging and possible behavioral change of the user.

Kassianos, A. P., et al. (2017). "Smartphone Applications for Educating and Helping Non-motivating Patients Adhere to Medication That Treats Mental Health Conditions: Aims and Functioning." *Frontiers in Psychology* 8.

Background : Patients prescribed with medication that treats mental health conditions benefit the most compared to those prescribed with other types of medication. However, they are also the most difficult to adhere. The development of mobile health (mHealth) applications ("apps") to help patients monitor their adherence is fast growing but with limited evidence on their efficacy. There is no evidence on the content of these apps for patients taking psychotropic medication. The aim of this study is to identify and evaluate the aims and functioning of available apps that are aiming to help and educate patients to adhere to medication that treats mental health conditions. Method : Three platform descriptions (Apple, Google, and Microsoft) were searched between October 2015 and February 2016. Included apps need to focus on adherence to medication that treats mental health conditions and use at least a reinforcement strategy. Descriptive information was extracted and apps evaluated on a number of assessment criteria using content analysis. Results : Sixteen apps were identified. All apps included self-monitoring properties like reminders and psycho-educational properties like mood logs. It was unclear how the latter were used or how adherence was measured. Major barriers to medication adherence like patients' illness and medication beliefs and attitudes were not considered nor where information to patients about medication side effects. Very few apps were tailored and none was developed based on established theories explaining the processes for successful medication adherence like cognitions and beliefs. Reported information on app development and validation was poor. Discussion : A variety of apps with different properties that tackle both intentional and unintentional non-adherence from a different perspective are identified. An evidence-based approach and co-creation with patients is needed. This will ensure that the apps increase the possibility to impact on non-adherence. Theories like social cognition models can be useful in ensuring that patients' education, motivation, skills, beliefs, and type of adherence are taken into consideration when developing the apps. Findings from this study can help clinicians and patients make informed choices and pursue policy-makers to integrate evidence when developing future apps. Quality-assurance tools are needed to ensure the apps are systematically evaluated.

Kassianos, A. P., et al. (2019). "A systematic review and meta-analysis of interventions incorporating behaviour change techniques to promote breastfeeding among postpartum women." *Health Psychology Review* 13(3): 344-372.

The benefits of exclusive breastfeeding are well documented, yet few women adhere to recommendations. We report the Behaviour Change Techniques (BCTs) within interventions trialled internationally after pregnancy to promote exclusive and mixed breastfeeding as well as evidence of effectiveness. PsycINFO, EMBASE and MEDLINE databases were screened. Twenty-three (n = 23) studies met inclusion criteria. Three authors independently extracted data, coded interventions using the BCT v.1 taxonomy, and assessed study quality. There was a moderate significant effect of the interventions promoting exclusive breastfeeding up to four weeks postpartum (OR 1.77, [95% CI: 1.47-2.13]) but this effect slightly declined beyond thirteen weeks (OR 1.63, [95% CI: 1.07-2.47]). Twenty-nine BCTs were identified within interventions. 'Credible source' and 'instruction on how to perform the behaviour' were the most prevalent and 'social support (unspecified)' contributed to the effectiveness of exclusive breastfeeding interventions five to eight weeks postpartum. Using BCTs with cognitive and behavioural aspects may help women develop coping mechanisms promoting exclusive breastfeeding. Further trials are needed in countries with low breastfeeding rates such as the UK. The use of programme theory during intervention development and clear description of intervention components is recommended. This meta-analysis provides guidance for trials evaluating postpartum breastfeeding interventions.

Kassianos, G., et al. (2018). "Motors of influenza vaccination uptake and vaccination advocacy in healthcare workers: A comparative study in six European countries." *Vaccine* 36(44): 6546-6552.

Background: Annual vaccination is the most effective way to prevent and control the health and economic burden caused by seasonal influenza. Healthcare workers (HCWs) play a crucial role in vaccine acceptance and advocacy for their patients. This study explored the drivers of HCWs' vaccine acceptance and advocacy in six European countries. Methods: Healthcare workers (mainly general practitioners, specialist physicians, and nurses) voluntarily completed a questionnaire in Bulgaria (N = 485), Czech Republic (N = 518), Kosovo (N = 466), Poland (N = 772), Romania (N = 155), and the United Kingdom (N = 80). Twelve-item scales were used to analyse sentiment clusters for influenza vaccination acceptance and engagement with vaccination advocacy. Past vaccination behaviour and patient recommendation were also evaluated. All data were included in a single analysis. Results: For vaccination acceptance, the main cluster (engaged sentiment: 68%) showed strong positive attitudes for influenza vaccination. A second cluster (hesitant sentiment: 32%) showed more neutral attitudes. Cluster membership was predicted by country of origin and age. The odds ratio for past vaccination in the engaged cluster was 39.6 (95% CI 12.21-128.56) although this varied between countries. For vaccination advocacy, the main cluster (confident sentiment: 73%) showed strong positive attitudes towards advocacy; a second cluster (diffident sentiment: 27%) showed neutral attitudes. Cluster membership was predicted by country of origin, age and profession, with specialist physicians being the least likely to belong to the confident sentiment cluster. HCWs characterised by confident advocacy sentiments were also more likely recommend flu vaccination. Again, this association was moderated by country of origin. Conclusions: These data show that there is room to improve both vaccination acceptance and advocacy rates in European HCWs, which would be expected to lead to higher rates of HCW vaccination. Benefits that could be expected from such an outcome are improved advocacy and better control of morbidity and mortality related to seasonal influenza infection. (C) 2018 Elsevier Ltd. All rights reserved.

Kayser, L., et al. (2018). "Theory and Practice in Digital Behaviour Change: A Matrix Framework for the Co-Production of Digital Services That Engage, Empower and Emancipate Marginalised People Living with Complex and Chronic Conditions." *Informatics-Basel* 5(4).

Background: The WHO framework on integrated people-centred health services promotes a focus on the needs of people and their communities to empower them to have a more active role in their own health. It has advocated five strategies including: Engaging and empowering people and communities; co-ordinating services within and across sectors; and, creating an enabling environment. Any implementation of these strategies needs to occur at individual, community, and health service levels. Useful steps to reorganising health service provision are already being guided by existing models of care linked to increased adoption and use of digital technologies with examples including: Wagner's Chronic Care Model (CCM); Valentijn's Rainbow Model of Integrated Care (RMIC); and Phanareth's et al.'s Epital Care Model (ECM). However, what about individuals and the communities they live in? How will strategies be implemented to address known inequities in: the social determinants of health; access to, and use of digital technologies, and individual textual, technical, and health literacies? Proposal of a matrix framework: This paper argues that people with complex and chronic conditions (PwCCC) living in communities that are at risk of being under-served or marginalised in health service provision require particular attention. It articulates a step-by-step process to identify these individuals and co-produce mechanisms to engage, empower and ultimately emancipate these individuals to become activated in living with their conditions and in their interactions with the health system and community. This step-by-step process focuses on key issues related to the design and role of digital services in mitigating the effects of the health service inequity and avoiding the creation of an e-health divide amongst users when advocating digital behaviour change initiatives. This paper presents a matrix framework providing a scaffold across three inter-related levels of the individual; the provider, and the health and care system. The matrix framework supports examination of and reflection on the design and role of digital technologies in conjunction with pre-existing motivational instruments. This matrix framework is illustrated with examples from practice. Conclusion: It is anticipated that the matrix framework will evolve and can be used to map and reflect on approaches and practices aiming to enrich and stimulate co-production activities supported by digital technology focused on enhancing people-centred health services for the marginalised.

Kebede, M. M., et al. (2017). "Characterizing Active Ingredients of eHealth Interventions Targeting Persons With Poorly Controlled Type 2 Diabetes Mellitus Using the Behavior Change Techniques Taxonomy: Scoping Review." *Journal of Medical Internet Research* 19(10).

Background: The behavior change technique taxonomy v1 (BCTTv1; Michie and colleagues, 2013) is a comprehensive tool to characterize active ingredients of interventions and includes 93 labels that are hierarchically clustered into 16 hierarchical clusters. Objective: The aim of this study was to identify the active ingredients in electronic health (eHealth) interventions targeting patients with poorly controlled type 2 diabetes mellitus (T2DM) and relevant outcomes. Methods: We conducted a scoping review using the BCTTv1. Randomized controlled trials (RCTs), studies with

or pre-post-test designs, and quasi-experimental studies examining efficacy and effectiveness of eHealth interventions for disease management or the promotion of relevant health behaviors were identified by searching PubMed, Web of Science, and PsycINFO. Reviewers independently screened titles and abstracts for eligibility using predetermined eligibility criteria. Data were extracted following a data extraction sheet. The BCTTv1 was used to characterize active ingredients of the interventions reported in the included studies. Results: Of the 1404 unique records screened, 32 studies fulfilled the inclusion criteria and reported results on the efficacy and or effectiveness of interventions. Of the included 32 studies, 18 (56%) were Web-based interventions delivered via personal digital assistant (PDA), tablet, computer, and/or mobile phones; 7 (22%) were telehealth interventions delivered via landline; 6 (19%) made use of text messaging (short service message, SMS); and 1 employed videoconferencing (3%). Of the 16 hierarchical clusters of the BCTTv1, 11 were identified in interventions included in this review. Of the 93 individual behavior change techniques (BCTs), 31 were identified as active ingredients of the interventions. The most common BCTs identified were instruction on how to perform behavior, adding objects to the environment, information about health consequences, self-monitoring of the outcomes and/or and prefers to be explicit to avoid ambiguity. Response: Checked and avoided of a certain behavior Author: Please note that the journal discourages the use of parenthesis to denote either and/or and prefers to be explicit to avoid ambiguity. Response: Checked and avoided "and/or" and prefers to be explicit to avoid ambiguity. Response: Checked and avoided, and feedback on outcomes of behavior. Conclusions: Our results suggest that the majority of BCTs employed in interventions targeting persons with T2DM revolve around the promotion of self-regulatory behavior to manage the disease or to assist patients in performing health behaviors necessary to prevent further complications of the disease. Detailed reporting of the BCTs included in interventions targeting this population may facilitate the replication and further investigation of such interventions.

Kelly, A., et al. (2018). "Outcome Measures in Rheumatology - Interventions for medication Adherence (OMERACT-Adherence) Core Domain Set for Trials of Interventions for Medication Adherence in Rheumatology: 5 Phase Study Protocol." *Trials* 19.

Background: Over the last 20 years, there have been marked improvements in the availability of effective medications for rheumatic conditions such as gout, osteoporosis and rheumatoid arthritis (RA), which have led to a reduction in disease flares and the risk of re-fracture in osteoporosis, and the slowing of disease progression in RA. However, medication adherence remains suboptimal, as treatment regimens can be complex and difficult to continue long term. Many trials have been conducted to improve adherence to medication. Core domains, which are the outcomes of most relevance to patients and clinicians, are a pivotal component of any trial. These core domains should be measured consistently, so that all relevant trials can be combined in systematic reviews and meta-analyses to reach conclusions that are more valid. Failure to do this severely limits the potential for trial-based evidence to inform decisions on how to support medication adherence. The Outcome Measures in Rheumatology (OMERACT) - Interventions for Medication Adherence study by the OMERACT-Adherence Group aims to develop a core domain set for interventions that aim to support medication adherence in rheumatology. Methods/design: This OMERACT-Adherence study has five phases: (1) a systematic review to identify outcome domains that have been reported in interventions focused on supporting medication adherence in rheumatology; (2) semi-structured stakeholder interviews with patients and caregivers to determine their views on the core domains; (3) focus groups using the nominal group technique with patients and caregivers to identify and rank domains that are relevant to them, including the reasons for their choices; (4) an international three-round modified Delphi survey involving patients with diverse rheumatic conditions, caregivers, health professionals, researchers and other stakeholders to develop a preliminary core domain set; and (5) a stakeholder workshop with OMERACT members to review, vote on and reach a consensus on the core domain set for interventions to support medication adherence in rheumatology. Discussion: Establishing a core domain set to be reported in all intervention studies undertaken to support patients with medication adherence will enhance the relevance and the impact of these results and improve the lives of people with rheumatic conditions.

Kelly, M., et al. (2017). "Doctors' experience of the contraceptive consultation: a qualitative study in Australia." *Journal of Family Planning and Reproductive Health Care* 43(2): 119-125.

Background Contraception is a field in which good doctor-patient communication is crucial and core to shared decision making. Despite the centrality of contraception to primary health care in Australia, little is known about how doctors manage the contraceptive consultation. In particular, little is known about how doctors discuss sexual issues related to contraception. Methods Fifteen contraceptive providers participated in qualitative interviews averaging 45 min. Interviews were audio recorded, transcribed verbatim, and analysed using an inductive thematic approach. Results We found doctors were aware that they had to modify their illness-based 'scripts' in consultations about contraception, and said it was challenging always to adhere to a shared model of decision making. Prescribing behaviour reflected personal preferences in relation to some forms of contraception, and doctors were enthusiastic about the levonorgestrel-releasing intrauterine system. Doctors identified gaps in training in relation to sexuality and reported feeling tentative in

raising sexual issues, even within contraceptive consultations. Conclusions A range of factors-including tendencies to use illness scripts, personal preferences, and discomfort with communications about sexuality-appear to influence doctors' approaches to contraceptive management. Medical training that enables doctors to move out of an illness-treating framework and to improve their understanding of and comfort in discussing sexuality issues will improve their management of healthy women seeking contraception.

Kelly, M. P., et al. (2017). "Evidence-based medicine meets democracy: the role of evidence-based public health guidelines in local government." *Journal of Public Health* 39(4): 678-684.

Background In 2013, many public health functions transferred from the National Health Service to local government in England. From 2006 NICE had produced public health guidelines based on the principles of evidence-based medicine. This study explores how the guidelines were received in the new environment in local government and related issues raised relating to the use of evidence in local authorities. Methods In depth, interviews with 31 elected members and officers, including Directors of Public Health, from four very different local government organizations ('local authorities'). Results Participants reported that (i) there were tensions between evidence-based, and political decision-making; (ii) there were differences in views about what constituted 'good' evidence and (iii) that organizational life is an important mediator in the way evidence is used. Conclusions Democratic political decision-making does not necessarily naturally align with decision-making based on evidence from the international scientific literature, and local knowledge and local evidence are very important in the ways that public health decisions are made.

Kelly, S., et al. (2016). "Barriers and Facilitators to the Uptake and Maintenance of Healthy Behaviours by People at Mid-Life: A Rapid Systematic Review." *Plos One* 11(1).

Background With an ageing population, there is an increasing societal impact of ill health in later life. People who adopt healthy behaviours are more likely to age successfully. To engage people in health promotion initiatives in mid-life, a good understanding is needed of why people do not undertake healthy behaviours or engage in unhealthy ones. Methods Searches were conducted to identify systematic reviews and qualitative or longitudinal cohort studies that reported mid-life barriers and facilitators to healthy behaviours. Mid-life ranged from 40 to 64 years, but younger adults in disadvantaged or minority groups were also eligible to reflect potential earlier disease onset. Two reviewers independently conducted reference screening and study inclusion. Included studies were assessed for quality. Barriers and facilitators were identified and synthesised into broader themes to allow comparisons across behavioural risks. Findings From 16,426 titles reviewed, 28 qualitative studies, 11 longitudinal cohort studies and 46 systematic reviews were included. Evidence was found relating to uptake and maintenance of physical activity, diet and eating behaviours, smoking, alcohol, eye care, and other health promoting behaviours and grouped into six themes: health and quality of life, sociocultural factors, the physical environment, access, psychological factors, evidence relating to health inequalities. Most of the available evidence was from developed countries. Barriers that recur across different health behaviours include lack of time (due to family, household and occupational responsibilities), access issues (to transport, facilities and resources), financial costs, entrenched attitudes and behaviours, restrictions in the physical environment, low socioeconomic status, lack of knowledge. Facilitators include a focus on enjoyment, health benefits including healthy ageing, social support, clear messages, and integration of behaviours into lifestyle. Specific issues relating to population and culture were identified relating to health inequalities. Conclusions The barriers and facilitators identified can inform the design of tailored interventions for people in mid-life.

Kemper, J. A. and P. W. Ballantine (2017). "Socio-Technical Transitions and Institutional Change: Addressing Obesity through Macro-Social Marketing." *Journal of Macromarketing* 37(4): 381-392.

Obesity, climate change and poverty are some of the most serious health, environmental and social issues of the 21st century. Current initiatives to address these wicked issues typically focus on the individual and community, with social marketing being a common tool. However, the effectiveness of social marketing in helping to combat these wicked issues has been mixed at best. We use the multi-level perspective on socio-technical transitions (MLP) to further our understanding of how macro-social marketing might be used to address the wicked problem of obesity. In doing so, we further conceptualize how formal and informal institutions might contribute to the emerging field of macro-social marketing.

Kennelly, M. A., et al. (2016). "Pregnancy, exercise and nutrition research study with smart phone app support (Pears): Study protocol of a randomized controlled trial." *Contemporary Clinical Trials* 46: 92-99.

Objective: Maternal adiposity confers an increased risk of GDM in pregnancy. A low glycemic index (GI) dietary intervention has been found to improve glucose homeostasis and reduce gestational weight gain. Mobile Health (mHealth) Technology-assisted interventions are becoming commonplace as an aid to treating many chronic diseases. The aim of this study is to assess the impact of a 'healthy lifestyle package' with mHealth smart phone technology as

support compared with usual care on the incidence of GDM in an overweight and obese pregnant population. Methods: We propose a randomized controlled trial of an mHealth assisted healthy lifestyle intervention package versus standard obstetric care in pregnant women with a BMI ≥ 25 kg/m²-39.9 kg/m². Patients are randomized to control or intervention group in a 1:1 ratio. The intervention arm healthy lifestyle package includes a motivational counseling session to encourage behavior change, involving targeted, low GI nutritional advice and daily physical activity prescription delivered before 18 weeks gestation, as well as a smart phone app to provide ongoing healthy lifestyle advice and support throughout pregnancy. The primary outcome is the incidence of GDM at 29 weeks' gestation and power analysis indicates that 253 women are required in each group to detect a difference. Conclusion: This will be the first clinical trial to evaluate the effectiveness of a smart phone technology-assisted targeted healthy lifestyle intervention, which is grounded in behavior change theories and techniques, to support antenatal management of an overweight and obese pregnant population in preventing GDM. (C) 2015 Elsevier Inc All rights reserved.

Kenyon, S., et al. (2017). "Evaluation of a bespoke training to increase uptake by midwifery teams of NICE Guidance for membrane sweeping to reduce induction of labour: a stepped wedge cluster randomised design." *Trials* 18.

Background: National guidance recommends pregnant women are offered membrane sweeping at term to reduce induction of labour. Local audit suggested this was not being undertaken routinely across two maternity units in the West Midlands, UK between March and November 2012. Methods: Bespoke training session for midwifery teams (nine community and one antenatal clinic) was developed to address identified barriers to encourage offer of membrane sweeping, together with an information leaflet for women and appointment of a champion within each team. The timing of training session on membrane sweeping to ten midwifery teams was randomly allocated using a stepped wedge cluster randomised design. All women who gave birth in the Trusts after 39 + 3/40 weeks gestation within the study time period were eligible. Relevant anonymised data were extracted from maternity notes for three months before and after training. Data were analysed using a generalised linear mixed model, allowing for clustering and adjusting for temporal effects. Primary outcomes were number of women offered and accepting membrane sweeping and average number of sweeps per woman. Sub-group comparisons were undertaken for adherence to Trust guidance and potential influence of pre-specified maternal characteristics. Data included whether sweeping was offered but declined and no record of membrane sweeping. Results: Training was given to all teams as planned. Analyses included data from 2787 of the 2864 (97%) eligible low-risk women over 39 + 4 weeks pregnant. Characteristics of the women were similar before and after training. No evidence of difference in proportion of women being offered and accepting membrane sweeping (44.4% before training versus 46.8% after training (adjusted relative risk [aRR] = 0.90, 95% confidence interval [CI] = 0.71-1.13), nor in average number of sweeps per woman (0.603 versus 0.627, aRR = 0.83, 95% CI = 0.67-1.01). No differences in any secondary outcomes nor influence of maternal characteristics were demonstrated. The midwives evaluated training positively. Conclusions: This stepped wedge cluster trial enabled randomised evaluation within a natural roll-out and demonstrates the importance of robust evaluation in circumstances in which it is rarely undertaken. While the midwives evaluated the training positively, it did not appear to change practice.

Keogh, A., et al. (2018). "An assessment of physiotherapist's delivery of behaviour change techniques within the SOLAS feasibility trial." *British Journal of Health Psychology* 23(4): 908-932.

Objectives To investigate physiotherapist's (PTs) fidelity to 31 protocol-listed behaviour change techniques (BCTs) during a group-based self-management intervention. This study also explored the PTs delivery of these BCTs beyond the present or absent dichotomy, using a third variable, partial delivery (i.e., attempted). Design Assessment of the intervention arm of the Self-management of Osteoarthritis and Low back pain through Activity and Skills (SOLAS) cluster, randomized controlled feasibility trial, using quantitative methods. Methods Eight PTs delivered six SOLAS classes each, of which 50% were audio-recorded and transcribed. Transcripts were coded by two raters using the Behaviour Change Technique Taxonomy v1 and an intervention-specific manual and assessed for the delivery (i.e., full, partial, or absent) of the 31 BCTs and their target behaviours. Fidelity was calculated as fully delivered BCTs listed as a percentage of those due to take place within each class. Results Physiotherapists delivered a mean 20.5 BCTs per class (68.3%; range=64.9-72.4%). Of these, 17 BCTs were fully delivered in each class representing moderate fidelity to the protocol (56.8%; range=53.5-59.3%). A further 3.5 BCTs per class (11.5%; range=8.7-14.8%) were partially delivered. BCTs associated with goals and planning' were often poorly delivered. Conclusions Delivering the SOLAS intervention BCTs with high fidelity was not feasible. The assessment of partial delivery of BCTs provided greater insight into the techniques that should be removed from the protocol or that may require further training. Complex interventions should consider a list of core' or mandatory BCTs alongside optional' BCTs, depending on the target behaviour, and the needs of individual participants. BCT delivery was assessed in greater depth than previous research, including partial delivery. Highlights the need for appropriate training in BCTs that are difficult to deliver, particularly those associated with goals and planning' Highlights the need for intervention-specific criteria as to what constitutes high', moderate', and low' fidelity.

Keogh, A., et al. (2015). "A review of behaviour change theories and techniques used in group based self-management programmes for chronic low back pain and arthritis." *Manual Therapy* 20(6): 727-735.

Background: Medical Research Council (MRC) guidelines recommend applying theory within complex interventions to explain how behaviour change occurs. Guidelines endorse self-management of chronic low back pain (CLBP) and osteoarthritis (OA), but evidence for its effectiveness is weak. Objective: This literature review aimed to determine the use of behaviour change theory and techniques within randomised controlled trials of group-based self-management programmes for chronic musculoskeletal pain, specifically CLBP and OA. Methods: A two-phase search strategy of electronic databases was used to identify systematic reviews and studies relevant to this area. Articles were coded for their use of behaviour change theory, and the number of behaviour change techniques (BCTs) was identified using a 93-item taxonomy, Taxonomy (v1). Results: 25 articles of 22 studies met the inclusion criteria, of which only three reported having based their intervention on theory, and all used Social Cognitive Theory. A total of 33 BCTs were coded across all articles with the most commonly identified techniques being 'instruction on how to perform the behaviour', 'demonstration of the behaviour', 'behavioural practice', 'credible source', 'graded tasks' and 'body changes'. Conclusion: Results demonstrate that theoretically driven research within group based self-management programmes for chronic musculoskeletal pain is lacking, or is poorly reported. Future research that follows recommended guidelines regarding the use of theory in study design and reporting is warranted. (C) 2015 Elsevier Ltd. All rights reserved.

Kerrison, R. S., et al. (2018). "Use of Two Self-referral Reminders and a Theory-Based Leaflet to Increase the Uptake of Flexible Sigmoidoscopy in the English Bowel Scope Screening Program: Results From a Randomized Controlled Trial in London." *Annals of Behavioral Medicine* 52(11): 941-951.

Background We previously initiated a randomized controlled trial to test the effectiveness of two self-referral reminders and a theory-based leaflet (sent 12 and 24 months after the initial invitation) to increase participation within the English Bowel Scope Screening program. Purpose This study reports the results following the second reminder. Methods Men and women included in the initial sample (n = 1,383) were re-assessed for eligibility 24 months after their invitation (12 months after the first reminder) and excluded if they had attended screening, moved away, or died. Eligible adults received the same treatment they were allocated 12 months previous, that is, no reminder ("control"), or a self-referral reminder with either the standard information booklet ("Reminder and Standard Information Booklet") or theory-based leaflet designed using the Behavior Change Wheel ("Reminder and Theory-Based Leaflet"). The primary outcome was the proportion screened within each group 12 weeks after the second reminder. Results In total, 1,218 (88.1%) individuals were eligible. Additional uptake following the second reminder was 0.4% (2/460), 4.8% (19/399), and 7.9% (29/366) in the control, Reminder and Standard Information Booklet, and Reminder and Theory-Based Leaflet groups, respectively. When combined with the first reminder, the overall uptake for each group was 0.7% (3/461), 14.5% (67/461), and 21.5% (99/461). Overall uptake was significantly higher in the Reminder and Standard Information Booklet and Reminder and Theory-Based Leaflet groups than in the control (odds ratio [OR] = 26.1, 95% confidence interval [CI] = 8.1-84.0, p < .001 and OR = 46.9, 95% CI = 14.7-149.9, p < .001, respectively), and significantly higher in the Reminder and Theory-Based Leaflet group than in the Reminder and Standard Information Booklet group (OR = 1.8, 95% CI = 1.3-2.6, p < .001). Conclusion A second reminder increased uptake among former nonparticipants. The added value of the theory-based leaflet highlights a potential benefit to reviewing the current information booklet.

Kettlewell, J., et al. (2018). "Informing evaluation of a smartphone application for people with acquired brain injury: a stakeholder engagement study." *Bmc Medical Informatics and Decision Making* 18.

Background: Brain in Hand is a smartphone application (app) that allows users to create structured diaries with problems and solutions, attach reminders, record task completion and has a symptom monitoring system. Brain in Hand was designed to support people with psychological problems, and encourage behaviour monitoring and change. The aim of this paper is to describe the process of exploring the barriers and enablers for the uptake and use of Brain in Hand in clinical practice, identify potential adaptations of the app for use with people with acquired brain injury (ABI), and determine whether the behaviour change wheel can be used as a model for engagement. Methods: We identified stakeholders: ABI survivors and carers, National Health Service and private healthcare professionals, and engaged with them via focus groups, conference presentations, small group discussions, and through questionnaires. The results were evaluated using the behaviour change wheel and descriptive statistics of questionnaire responses. Results: We engaged with 20 ABI survivors, 5 carers, 25 professionals, 41 questionnaires were completed by stakeholders. Comments made during group discussions were supported by questionnaire results. Enablers included smartphone competency (capability), personalisation of app (opportunity), and identifying perceived need (motivation). Barriers included a physical and cognitive inability to use smartphone (capability), potential cost and reliability of technology (opportunity), and no desire to use technology or change from existing strategies (motivation). The stakeholders identified potential uses and changes to the app, which were not easily mapped onto the behaviour change wheel, e.g. monitoring fatigue levels, method of logging task completion, and editing the diary on their smartphone. Conclusions: The study identified

that both ABI survivors and therapists could see a use for Brain in Hand, but wanted users to be able to personalise it themselves to address individual user needs, e.g. monitoring activity levels. The behaviour change wheel is a useful tool when designing and evaluating engagement activities as it addresses most aspects of implementation, however additional categories may be needed to explore the specific features of assistive technology interventions, e.g. technical functions.

Keyworth, C., et al. (2018). "Are healthcare professionals delivering opportunistic behaviour change interventions? A multi-professional survey of engagement with public health policy." *Implementation Science* 13.

Background: "Making Every Contact Count" (MECC), a public health policy in the UK, compels healthcare professionals to deliver opportunistic health behaviour change interventions to patients during routine medical consultations. Professionals' awareness of, and engagement with, the policy is unclear. This study examined (1) awareness of the MECC policy, and (2) the prevalence of MECC-related practice in relation to (a) perceived patient benefit, (b) how often healthcare professionals deliver interventions during routine consultations, and (c) the time spent on this activity. Methods: Cross-sectional national survey was administered in 2017 of 1387 healthcare professionals working in the UK's National Health Service (NHS). Descriptive statistics were used to assess awareness and practice consistent with the MECC policy. Chi-square was used to gauge the potential representativeness of our sample compared to NHS employment data. Results: 31.4% of healthcare professionals reported having heard of the policy; nevertheless, healthcare professionals perceived a need to provide patients with opportunistic behaviour change interventions in 55.9% (32,946/58,906) of consultations. However, healthcare professionals did not deliver interventions on 50.0% of occasions in which they perceived a need. Where behaviour change interventions were delivered to patients, this constituted 35.3% of the appointment time. Conclusions: Policy makers must address the gap between the proportion of patients that healthcare professionals perceive would benefit from opportunistic behaviour change interventions and those receiving them (an estimated 50.0%; 16,473 additional patients could have benefited). Future research should consider how healthcare professionals identify patients who might benefit from opportunistic behaviour change interventions and developing training for efficient delivery of interventions.

Keyworth, C., et al. (2018). "What maximizes the effectiveness and implementation of technology-based interventions to support healthcare professional practice? A systematic literature review." *Bmc Medical Informatics and Decision Making* 18.

Background: Technological support may be crucial in optimizing healthcare professional practice and improving patient outcomes. A focus on electronic health records has left other technological supports relatively neglected. Additionally, there has been no comparison between different types of technology-based interventions, and the importance of delivery setting on the implementation of technology-based interventions to change professional practice. Consequently, there is a need to synthesise and examine intervention characteristics using a methodology suited to identifying important features of effective interventions, and the barriers and facilitators to implementation. Three aims were addressed: to identify interventions with a technological component that are successful at changing professional practice, to determine if and how such interventions are theory-based, and to examine barriers and facilitators to successful implementation. Methods: A literature review informed by realist review methods was conducted involving a systematic search of studies reporting either: (1) behavior change interventions that included technology to support professional practice change; or (2) barriers and facilitators to implementation of technological interventions. Extracted data was quantitative and qualitative, and included setting, target professionals, and use of Behaviour Change Techniques (BCTs). The primary outcome was a change in professional practice. A thematic analysis was conducted on studies reporting barriers and facilitators of implementation. Results: Sixty-nine studies met the inclusion criteria; 48 (27 randomized controlled trials) reported behavior change interventions and 21 reported practicalities of implementation. The most successful technological intervention was decision support providing healthcare professionals with knowledge and/or person-specific information to assist with patient management. Successful technologies were more likely to operationalise BCTs, particularly instruction on how to perform the behavior. Facilitators of implementation included aligning studies with organisational initiatives, ensuring senior peer endorsement, and integration into clinical workload. Barriers included organisational challenges, and design, content and technical issues of technology-based interventions. Conclusions: Technological interventions must focus on providing decision support for clinical practice using recognized behavior change techniques. Interventions must consider organizational context, clinical workload, and have clearly defined benefits for improving practice and patient outcomes.

Keyworth, C., et al. (2015). "Do English healthcare settings use 'Choice Architecture' principles in promoting healthy lifestyles for people with psoriasis? An observational study." *Bmc Health Services Research* 15.

Background: The influence of environmental factors in shaping behaviour is becoming increasingly prominent in public health policy, but whether health promotion strategies use this knowledge is unknown. Health promotion is

important in the management of psoriasis, a long-term inflammatory skin condition, and health centre waiting areas are ideal places to promote health information to such patients. We systematically examined patient information materials containing either general, or specific, health messages for patients with psoriasis. Methods: An observation schedule was used to record the frequency and quality of leaflets and posters addressing lifestyle behaviour change in health centre waiting areas. Content analysis was used to analyse: frequency, characteristics and standard of the materials. Results: Across 24 health centres 262 sources of lifestyle information were recorded (median per site = 10; range = 0-40). These were mainly: generic posters/displays of lifestyle support (n = 113); and generic materials in waiting areas (n = 98). Information quality was poor and poorly displayed, with no high quality psoriasis-specific patient materials evident. Conclusions: There is little attempt to promote healthy lifestyle as an important aspect of psoriasis management in the clinic environment. Evidence about using environmental cues/techniques to prompt behaviour change in people with psoriasis does not currently inform the design and display of such information in standard health centre settings, which are prime locations for communicating messages about healthy lifestyle. Future research should test the efficacy and impact of theory-informed, high quality health promotion messages on health outcomes for patients with psoriasis.

Khan, S., et al. (2018). "Combining theories, process models, and frameworks to guide implementation." *Implementation Science* 13.

Khanal, S., et al. (2017). "Development of a Patient-Centred, Psychosocial Support Intervention for Multi-Drug-Resistant Tuberculosis (MDR-TB) Care in Nepal." *Plos One* 12(1).

Multi-drug-resistant tuberculosis (MDR-TB) poses a major threat to public health worldwide, particularly in low-income countries. The current long (20 month) and arduous treatment regime uses powerful drugs with side-effects that include mental ill-health. It has a high loss to-follow-up (25%) and higher case fatality and lower cure-rates than those with drug sensitive tuberculosis (TB). While some national TB programmes provide small financial allowances to patients, other aspects of psychosocial ill-health, including iatrogenic ones, are not routinely assessed or addressed. We aimed to develop an intervention to improve psycho social well-being for MDR-TB patients in Nepal. To do this we conducted qualitative work with MDR-TB patients, health professionals and the National TB programme (NTP) in Nepal. We conducted semi-structured interviews (SSIs) with 15 patients (10 men and 5 women, aged 21 to 68), four family members and three frontline health workers. In addition, three focus groups were held with MDR-TB patients and three with their family members. We conducted a series of meetings and workshops with key stakeholders to design the intervention, working closely with the NTP to enable government ownership. Our findings highlight the negative impacts of MDR-TB treatment on mental health, with greater impacts felt among those with limited social and financial support, predominantly married women. Michie et al's (2011) framework for behaviour change proved helpful in identifying corresponding practice- and policy-level changes. The findings from this study emphasise the need for tailored psychosocial support. Recent work on simple psychological support packages for the general population can usefully be adapted for use with people with MDR-TB.

Khong, L., et al. (2015). ""We are all one together": peer educators' views about falls prevention education for community-dwelling older adults - a qualitative study." *Bmc Geriatrics* 15.

Background: Falls are common in older people. Despite strong evidence for effective falls prevention strategies, there appears to be limited translation of these strategies from research to clinical practice. Use of peers in delivering falls prevention education messages has been proposed to improve uptake of falls prevention strategies and facilitate translation to practice. Volunteer peer educators often deliver educational presentations on falls prevention to community-dwelling older adults. However, research evaluating the effectiveness of peer-led education approaches in falls prevention has been limited and no known study has evaluated such a program from the perspective of peer educators involved in delivering the message. The purpose of this study was to explore peer educators' perspective about their role in delivering peer-led falls prevention education for community-dwelling older adults. Methods: A two-stage qualitative inductive constant comparative design was used. In stage one (core component) focus group interviews involving a total of eleven participants were conducted. During stage two (supplementary component) semi-structured interviews with two participants were conducted. Data were analysed thematically by two researchers independently. Key themes were identified and findings were displayed in a conceptual framework. Results: Peer educators were motivated to deliver educational presentations and importantly, to reach an optimal peer connection with their audience. Key themes identified included both personal and organisational factors that impact on educators' capacity to facilitate their peers' engagement with the message. Personal factors that facilitated message delivery and engagement included peer-to-peer connection and perceived credibility, while barriers included a reluctance to accept the message that they were at risk of falling by some members in the audience. Organisational factors, including ongoing training for peer educators and formative feedback following presentations, were perceived as essential because they affect successful message delivery. Conclusions: Peer educators have the potential to effectively deliver falls prevention education to older

adults and influence acceptance of the message as they possess the peer-to-peer connection that facilitates optimal engagement. There is a need to consider incorporating learnings from this research into a formal large scale evaluation of the effectiveness of the peer education approach in reducing falls in older adults.

Kien, C., et al. (2018). "Pathways leading to success and non-success: a process evaluation of a cluster randomized physical activity health promotion program applying fuzzy-set qualitative comparative analysis." *Bmc Public Health* 18.

Background Health promotion programs can only lead to improvements in health outcomes if they are effectively implemented. However, most studies assessing implementation success focus on only one condition, although more conditions influence this process. Therefore, evidence is scarce on what conditions play a role in successful implementation and how they interact. Hence, we aimed to identify which combinations of teacher and implementation process characteristics affected the emotional and social school experience (SCE) of pupils participating in a school-based health promotion program. **Methods** This study was part of an effectiveness and process evaluation including 24 intervention and 27 control classes. We used fuzzy-set qualitative comparative analysis (fsQCA) to identify combinations of conditions that were associated with either an increase or no increase in the outcome SCE in comparison to the control group at 20 months post intervention. We deductively selected five conditions based on the Consolidated Framework for Implementation Research: teachers' perceived self-efficacy, teachers' expectations of the benefits of the intervention, teachers' previous knowledge about the intervention, dosage of physical activity breaks, and quality of the implementation. **Results** We identified five different pathways that led to no increase in the pupils' outcome (parameters of fit: consistency 94%, coverage 66%). The combination of an unsatisfying quality of implementing the intervention and a low previous knowledge about the intervention showed the highest empirical relevance. Similarly, fewer physical activity breaks in combination with other conditions impeded the program's success. Furthermore, we identified two different pathways characterizing ways to success (consistency: 81%, coverage: 52%). The most relevant combination was good quality implementation of physical activity breaks, implemented by teachers with a high self-efficacy, and a good previous knowledge about the intervention. **Conclusions** QCA has potential for an in-depth analysis of complex interventions as it can rely on small to medium sample sizes and analyze pathways to success and non-success separately. The investigated program can be improved by considering the following suggestions: The quality of the implementation process should be monitored during the implementation phase, and regular feedback loops and learning opportunities for teachers should accompany a program. Clear recommendations regarding the dosage should be established. **Trial registration** German register of clinical studies: DRKS00000622. Retrospectively registered: December 3, 2010, (http://www.drks.de/drks_web/setLocale_EN.do). Approved by the Ethics Committee of Lower Austria (GS4-EK-4/107-2010).

King, G., et al. (2018). "Program opportunities of residential immersive life skills programs for youth with disabilities." *Research in Developmental Disabilities* 83: 233-246.

Purpose: Residential immersive life skills programs provide youth with the skills and outlooks needed to adopt new roles in life. Observed program opportunities and service providers' perceptions of opportunities were examined to determine program fidelity. Service providers' views of how the programs work were also examined. **Method:** 107 activity settings were observed across two summers at three programs, with opportunities assessed using the Measure of Environmental Qualities of Activity Settings (MEQAS-48). Activity settings were classified by session format (instructional versus experiential) and activity type (active physical, skill-based, self-improvement). Qualitative interviews were held with seven service providers. **Results:** Service providers indicated the importance of life-preparatory learning opportunities for social interaction, choice, and skill development, which aligned with high observed MEQAS-48 opportunities for social interaction, choice in experiential session formats, and personal growth. Providers individualized program delivery to provide youth with personally meaningful and challenging experiences. Providers also discussed emergent, transformational outcomes, including enhanced awareness of strengths, enhanced confidence in skills, identity development, and greater awareness of future life possibilities. **Conclusions:** The study provided evidence of program fidelity, along with robust evidence for program opportunities as an active ingredient that may be transferable to the design and delivery of other transition-support programs.

Kirk, J. W., et al. (2016). "Barriers and facilitators for implementing a new screening tool in an emergency department: A qualitative study applying the Theoretical Domains Framework." *Journal of Clinical Nursing* 25(19-20): 2786-2797.

Aim. The aim was to identify the factors that were perceived as most important as facilitators or barriers to the introduction and intended use of a new tool in the emergency department among nurses and a geriatric team. **Background.** A high incidence of functional decline after hospitalisation for acute medical illness has been shown in the oldest patients and those who are physically frail. In Denmark, more than 35% of older medical patients acutely admitted to the emergency department are readmitted within 90 days after discharge. A new screening tool for use in the emergency department aiming to identify patients at particularly high risk of functional decline and readmission was

developed. Design. Qualitative study based on semistructured interviews with nurses and a geriatric team in the emergency department and semistructured single interviews with their managers. Methods. The Theoretical Domains Framework guided data collection and analysis. Content analysis was performed whereby new themes and themes already existing within each domain were described. Results. Six predominant domains were identified: (1) professional role and identity; (2) beliefs about consequences; (3) goals; (4) knowledge; (5) optimism and (6) environmental context and resources. The content analysis identified three themes, each containing two subthemes. The themes were professional role and identity, beliefs about consequences and preconditions for a successful implementation. Conclusions. Two different cultures were identified in the emergency department. These cultures applied to different professional roles and identity, different actions and sense making and identified how barriers and facilitators linked to the new screening tool were perceived.

Kirschbaum, M., et al. (2019). "Q sample construction: a novel approach incorporating a Delphi technique to explore opinions about codeine dependence." *Bmc Medical Research Methodology* 19.

Background Q methodology is an evidenced approach to researching subjectivity, involving a combination of qualitative and quantitative techniques. The methodology has been used successfully in healthcare research to explore the opinions of patients and healthcare providers about topics such as the illness experience, healthcare services, clinical practice and professional training. Q methodology studies require the generation of a Q sample, a set of opinion statements representing the phenomenon of interest. This paper describes a novel and rigorous approach to develop a Q sample for a study exploring misusers' opinions about over-the-counter (OTC) codeine dependence and critically examines the associated methodological issues. Methods Development of the Q sample in this study involved three steps; (1) identification of opinion statements via a comprehensive literature search, (2) application of a theoretical framework, the Capability, Opportunity, Motivation - Behaviour (COM-B) model of behaviour, to group and then reduce the number of statements and (3) use of a Delphi technique to achieve expert consensus on the final selection of statements. The Delphi component involved a multidisciplinary panel of 15 addiction experts comprised of doctors, nurses, pharmacists, psychologists and researchers, who were recruited purposively. Experts rated each statement using a 5-point scale of perceived importance. Two Delphi rounds were undertaken and consensus for inclusion of a statement was set at a median score of 4 and an interquartile range of 1. Results A total of 842 statements representing codeine misusers' opinions about OTC codeine dependence were identified from the literature. Statements were grouped thematically using the COM-B framework and representative statements were selected, reducing the number to 111. After two Delphi rounds, addiction experts achieved consensus on 46 statements which formed the final Q sample. Conclusions This paper describes a new and systematic approach to Q sample construction and explores associated methodological issues that could be useful for those considering Q methodology and for furthering the rigour of this research technique.

Kitson, A., et al. (2013). "Knowledge translation within a population health study: how do you do it?" *Implementation Science* 8.

Background: Despite the considerable and growing body of knowledge translation (KT) literature, there are few methodologies sufficiently detailed to guide an integrated KT research approach for a population health study. This paper argues for a clearly articulated collaborative KT approach to be embedded within the research design from the outset. Discussion: Population health studies are complex in their own right, and strategies to engage the local community in adopting new interventions are often fraught with considerable challenges. In order to maximise the impact of population health research, more explicit KT strategies need to be developed from the outset. We present four propositions, arising from our work in developing a KT framework for a population health study. These cover the need for an explicit theory-informed conceptual framework; formalizing collaborative approaches within the design; making explicit the roles of both the stakeholders and the researchers; and clarifying what counts as evidence. From our deliberations on these propositions, our own co-creating (co-KT) Framework emerged in which KT is defined as both a theoretical and practical framework for actioning the intent of researchers and communities to co-create, refine, implement and evaluate the impact of new knowledge that is sensitive to the context (values, norms and tacit knowledge) where it is generated and used. The co-KT Framework has five steps. These include initial contact and framing the issue; refining and testing knowledge; interpreting, contextualising and adapting knowledge to the local context; implementing and evaluating; and finally, the embedding and translating of new knowledge into practice. Summary: Although descriptions of how to incorporate KT into research designs are increasing, current theoretical and operational frameworks do not generally span a holistic process from knowledge co-creation to knowledge application and implementation within one project. Population health studies may have greater health impact when KT is incorporated early and explicitly into the research design. This, we argue, will require that particular attention be paid to collaborative approaches, stakeholder identification and engagement, the nature and sources of evidence used, and the role of the research team working with the local study community.

Kitto, S., et al. (2018). "Uncharted territory Knowledge translation of competency-based continuing professional development in family medicine." *Canadian Family Physician* 64(4): 250-253.

Kitto, S., et al. (2018). "Unexplored territory The transfer of knowledge on continuing professional development focussed on family medicine skills." *Canadian Family Physician* 64(4): E133-E136.

Kjaer, P., et al. (2018). "GLA:D-(R) Back group-based patient education integrated with exercises to support self-management of back pain- development, theories and scientific evidence." *Bmc Musculoskeletal Disorders* 19.

Background Clinical guidelines recommend that people with back pain be given information and education about their back pain, advice to remain active and at work, and exercises to improve mobility and physical activity. Guidelines, however, rarely describe how this is best delivered. The aim of this paper is to present the development, theories, and underlying evidence for GLA:D Back' - a group education and exercise program that translates guideline recommendations into a clinician-delivered program for the promotion of self-management in people with persistent/recurrent back pain. Methods GLA:D Back, which included a rationale and objectives for the program, theory and evidence for the interventions, and program materials, was developed using an iterative process. The content of patient education and exercise programs tested in randomised trials was extracted and a multidisciplinary team of expert researchers and clinicians prioritised common elements hypothesised to improve back pain beliefs and management skills. The program was tested on eight people with persistent back pain in a university clinic and 152 patients from nine primary care physiotherapy and chiropractic clinics. Following feedback from the clinicians and patients involved, the working version of the program was created. Results Educational components included pain mechanisms, pain modulation, active coping strategies, imaging, physical activity, and exercise that emphasised a balance between the sum of demands and the individual's capacity. These were operationalised in PowerPoint presentations with supporting text to aid clinicians in delivering two one-hour patient education lectures. The exercise program included 16 supervised one-hour sessions over 8 weeks, each comprising a warm-up section and eight types of exercises for general flexibility and strengthening of six different muscle groups at four levels of difficulty. The aims of the exercises were to improve overall back fitness and, at the same time, encourage patients to explore variations in movement by incorporating education content into the exercise sessions. Conclusion From current best evidence about prognostic factors in back pain and effective treatments for back pain, research and clinical experts developed a ready-to-use structured program - GLA:D (R) Back - to support self-management for people with persistent/recurrent back pain.

Klein, O. A., et al. (2019). "Assessment and management of cognitive problems in people with multiple sclerosis: A National Survey of Clinical Practice." *International Journal of Clinical Practice* 73(3).

Background People diagnosed with multiple sclerosis often have cognitive problems. However, it is unclear how cognitive impairment is currently assessed and managed in the UK. Aim The aim of this study was to understand the current clinical practice of assessment and management of cognitive impairment in people with MS and to highlight any national variation. Methods A survey was posted to 150 MS centres and large hospitals and an online version was shared via email and on social media. Results Responses were analysed from 109 healthcare professionals. Approximately 59% (n = 64) reported that they used cognitive assessment tools: the Montreal Cognitive Assessment (MoCA) was the most widely used. Assessments were usually done by occupational therapists (55%; n = 60) or clinical neuropsychologist and psychologists (38%; n = 41); 49% (n = 53) of respondents developed and implemented a cognitive rehabilitation plan when the assessment indicated that patients had cognitive problems; 16% (n = 17) indicated that they would refer patients to specialist cognitive rehabilitation for symptom management; 3% (n = 3) followed a manual when providing a cognitive rehabilitation programme. Conclusions Clinical pathways for assessing and managing cognitive problems vary and are dependent on the individual expertise of health professionals, available resources, and access to specialist services. Although healthcare professionals highlight the importance of assessment and management, cognitive rehabilitation programmes are not routinely offered in the UK.

Kliemann, N., et al. (2016). "Development and validation of the Self-Regulation of Eating Behaviour Questionnaire for adults." *International Journal of Behavioral Nutrition and Physical Activity* 13.

Background: Eating self-regulatory capacity can help individuals to cope with the obesogenic environment and achieve, as well as maintain, a healthy weight and diet. At present, there is no comprehensive, reliable and valid questionnaire for assessing this capacity and measuring change in response to self-regulation interventions in adults. This paper reports the development of the Self-regulation of Eating Behaviour Questionnaire (SREBQ) for use in UK adults, and presents evidence for its reliability and construct validity. The development of the SREBQ involved generation of an item pool, followed by two pilot studies (Samples 1 and 2) and a test of the questionnaire's underlying factor structure (Sample 3). The final version of the SREBQ was then assessed for reliability and construct validity (Sample 4). Results: Development of the SREBQ resulted in a 5-item questionnaire. The face validity was satisfactory, as assessed by the pilot

studies. The factor structure analysis (Sample 3) suggested that it has a single underlying factor, which was confirmed in a second sample (Sample 4). The SREBQ had strong construct validity, showing a positive correlation with general measures of self-regulation. It was also positively correlated with motivation and behavioural automaticity, and negatively correlated with food responsiveness and emotional over-eating ($p < 0.001$). It showed good discriminant validity, as it was only weakly associated with satiety responsiveness, food fussiness and slowness in eating. Conclusions: The SREBQ is a reliable and valid measure for assessment of eating self-regulatory capacity in the general UK adult population.

Knowles, S., et al. (2015). "Knowledge, attitudes, beliefs and behaviour intentions for three bowel management practices in intensive care: effects of a targeted protocol implementation for nursing and medical staff." *Bmc Nursing* 14.

Background: Bowel management protocols have the potential to minimize complications for critically ill patients. Targeted implementation can increase the uptake of protocols by clinicians into practice. The theory of planned behaviour offers a framework in which to investigate clinicians' intention to perform the behaviour of interest. This study aimed to evaluate the effect of implementing a bowel management protocol on intensive care nursing and medical staffs' knowledge, attitude, subjective norms, perceived behavioural control, behaviour intentions, role perceptions and past behaviours in relation to three bowel management practices. Methods: A descriptive before and after survey using a self-administered questionnaire sent to nursing and medical staff working within three intensive care units before and after implementation of our bowel management protocol (pre: May - June 2008; post: Feb - May 2009). Results: Participants had significantly higher knowledge scores post-implementation of our protocol (pre mean score 17.6; post mean score 19.3; $p = 0.004$). Post-implementation there was a significant increase in: self-reported past behaviour (pre mean score 5.38; post mean score 7.11; $p = 0.002$) and subjective norms scores (pre mean score 3.62; post mean score 4.18; $p = 0.016$) for bowel assessment; and behaviour intention (pre mean score 5.22; post mean score 5.65; $p = 0.048$) for administration of enema. Conclusion: This evaluation, informed by the theory of planned behaviour, has provided useful insights into factors that influence clinician intentions to perform evidence-based bowel management practices in intensive care. Addressing factors such as knowledge, attitudes and beliefs can assist in targeting implementation strategies to positively affect clinician behaviour change. Despite an increase in clinicians' knowledge scores, our implementation strategy did not, however, significantly change clinician behaviour intentions for all three bowel management practices. Further research is required to explore the influence of opinion leaders and organizational culture on clinicians' behaviour intentions related to bowel management for intensive care patients.

Kongsted, A., et al. (2019). "GLA:D-(R) Back: implementation of group-based patient education integrated with exercises to support self-management of back pain - protocol for a hybrid effectiveness-implementation study." *Bmc Musculoskeletal Disorders* 20.

Background Reassuring patient education and exercise therapy are widely recommended interventions for back pain in clinical guidelines. However, many patients are offered non-guideline endorsed options, and strategies for effective implementation of guideline-based care have not yet been developed. This protocol outlines the evaluation of a strategy for nationwide implementation of standardised patient education and exercise therapy for people with persistent or recurrent back pain in a hybrid implementation-effectiveness design. The strategy and the evaluation were planned using the framework of the Behaviour Change Wheel. Methods The main activity of the implementation strategy is a two-days course for physiotherapists and chiropractors in delivering patient education and exercise therapy that is aimed at supporting patient self-management. This comes with ready-to-use patient education materials and exercise programs. The clinical intervention is a group-based program consisting of two sessions of patient education and 8 weeks of supervised exercises. The program uses a cognitive-behavioural approach and the aim of the exercise component is to restore the patient's ability and confidence to move freely. The implementation process is evaluated in a dynamic process monitoring the penetration, adoption and fidelity of the clinical intervention. The clinical intervention and potential effect mechanisms will be evaluated at the patient-level using measures of knowledge, skills, beliefs, performance, self-efficacy and success in self-management. The education of clinicians will be evaluated via clinician-level outcomes, including the Pain Attitudes and Beliefs Scale, the Practitioner Confidence Scale, and the Determinants of Implementation Behaviour Questionnaire. Effects at a national level will be investigated via data from national registries of health care utilisation and sick-leave. Discussion This implementation-effectiveness study is designed to evaluate the process of implementing an evidence-based intervention for back pain. It will inform the development of strategies for implementing evidence-based care for musculoskeletal pain conditions, it will enhance the understanding of mechanisms for developing patient self-management skills, and it will demonstrate the outcomes that are achievable in everyday clinical practice. Trial registration ClinicalTrials.gov NCT03570463. Registered 27 June 2018.

Korenvain, C., et al. (2018). "Exploring deprescribing opportunities for community pharmacists: Protocol for a qualitative study." *Canadian Pharmacists Journal* 151(4): 228-232.

Kourouche, S., et al. (2019). "Designing strategies to implement a blunt chest injury care bundle using the behaviour change wheel: a multi-site mixed methods study." *Bmc Health Services Research* 19.

Background Blunt chest injury can lead to significant morbidity and mortality if not treated appropriately. A blunt chest injury care bundle was to be implemented at two sites to guide care. **Aim** To identify facilitators and barriers to the implementation of a blunt chest injury care bundle and design strategies tailored to promote future implementation. **Methods** 1) A mixed-method survey based on the theoretical domains framework (TDF) was used to identify barriers and facilitators to the implementation of a blunt chest injury care bundle. This survey was distributed to 441 staff from 12 departments across two hospitals. Quantitative data were analysed using SPSS and qualitative using inductive content analysis. 2) The quantitative and qualitative results from the survey were integrated and mapped to each of the TDF domains. 3) The facilitators and barriers were evaluated using the Behaviour Change Wheel to extract specific intervention functions, policies, behaviour change techniques and implementation strategies. Each phase was assessed against the Affordability, Practicability, Effectiveness and cost-effectiveness, Acceptability, Side-effects or safety and Equity (APEASE) criteria. **Results** One hundred ninety eight staff completed the survey. All departments surveyed were represented. Nine facilitators and six barriers were identified from eight domains of the TDF. Facilitators (TDF domains) were: understanding evidence-informed patient care and understanding risk factors (Knowledge); patient assessment skills and blunt chest injury management skills (Physical skills); identification with professional role (Professional role and identity); belief of consequences of care bundle (Belief about consequences); provision of training and protocol design (Environmental context and resources); and social supports (Social influences). Barriers were: not understanding the term care bundle' (Knowledge); lacking regional analgesia skills (Physical skills); not remembering to follow protocol (Memory, attention, and decision processes); negative emotions relating to new protocols (Emotions); equipment and protocol access (Environmental context and resources). Implementation strategies were videos, education sessions, visual prompt for electronic medical records and change champions. **Conclusions** Multiple facilitators and barriers were identified that may affect the implementation of a blunt chest injury care bundle. Implementation strategies developed through this process have been included in a plan for implementation in the emergency departments of two hospitals. Evaluation of the implementation is underway.

Koutoukidis, D. A., et al. (2018). "Use of intervention mapping to adapt a health behavior change intervention for endometrial cancer survivors: the shape-up following cancer treatment program." *Bmc Public Health* 18.

Background: About 80% of endometrial cancer survivors (ECS) are overweight or obese and have sedentary behaviors. Lifestyle behavior interventions are promising for improving dietary and physical activity behaviors, but the constructs associated with their effectiveness are often inadequately reported. The aim of this study was to systematically adapt an evidence-based behavior change program to improve healthy lifestyle behaviors in ECS. **Methods:** Following a review of the literature, focus groups and interviews were conducted with ECS (n = 16). An intervention mapping protocol was used for the program adaptation, which consisted of six steps: a needs assessment, formulation of matrices of change objectives, selection of theoretical methods and practical applications, program production, adoption and implementation planning, and evaluation planning. Social Cognitive Theory and Control Theory guided the adaptation of the intervention. **Results:** The process consisted of eight 90-min group sessions focusing on shaping outcome expectations, knowledge, self-efficacy, and goals about healthy eating and physical activity. The adapted performance objectives included establishment of regular eating, balanced diet, and portion sizes, reduction in sedentary behaviors, increase in lifestyle and organized activities, formulation of a discrepancy-reducing feedback loop for all above behaviors, and trigger management. Information on managing fatigue and bowel issues unique to ECS were added. **Conclusions:** Systematic intervention mapping provided a framework to design a cancer survivor-centered lifestyle intervention. ECS welcomed the intervention and provided essential feedback for its adaptation. The program has been evaluated through a randomized controlled trial.

Kredo, T., et al. (2016). "Guide to clinical practice guidelines: the current state of play." *International Journal for Quality in Health Care* 28(1): 122-128.

Introduction: Extensive research has been undertaken over the last 30 years on the methods underpinning clinical practice guidelines (CPGs), including their development, updating, reporting, tailoring for specific purposes, implementation and evaluation. This has resulted in an increasing number of terms, tools and acronyms. Over time, CPGs have shifted from opinion-based to evidence-informed, including increasingly sophisticated methodologies and implementation strategies, and thus keeping abreast of evolution in this field of research can be challenging. **Methods:** This article collates findings from an extensive document search, to provide a guide describing standards, methods and systems reported in the current CPG methodology and implementation literature. This guide is targeted at those working in health care quality and safety and responsible for either commissioning, researching or delivering health care. It is presented in a way that can be updated as the field expands. **Conclusion:** CPG development and implementation have

attracted the most international interest and activity, whilst CPG updating, adopting (with or without contextualization), adapting and impact evaluation are less well addressed.

Kredo, T., et al. (2018). "Using the behavior change wheel to identify barriers to and potential solutions for primary care clinical guideline use in four provinces in South Africa." *Bmc Health Services Research* 18.

BackgroundClinical practice guidelines risk having little impact on healthcare if not effectively implemented. Theory informed, targeted implementation may maximise their impact. Our study explored barriers to and facilitators of guideline implementation and use by South African primary care nurses and allied healthcare workers in four provinces in South Africa. We also proposed interventions to address the issues identified.**Methods**We used qualitative research methods, comprising focus group discussions using semi-structured topic guides. Seven focus group discussions were conducted (48 providers) in four South African provinces (Eastern Cape, Western Cape, Kwazulu-Natal, Limpopo). Participants included mostly nurses, dieticians, dentists, and allied health practitioners, from primary care facilities in rural and peri-urban settings. The analysis proceeded in three phases. Firstly, two analysts conducted inductive thematic content analysis to develop themes of data. This was followed by fitting emergent themes to the Theoretical Domains Framework and finally to the associated Behaviour Change Wheel to identify relevant interventions.**Results**Participants are knowledgeable about guidelines, generally trust their credibility and are receptive and motivated to use them. Guidelines are seen by nurses to provide confidence and reassurance, as well as professional authority and independence where doctors are scarce. Barriers to guideline use include: inadequate systems for printed book distribution, insufficient and substandard photocopies, linguistic inappropriateness (e.g. complicated language, lack of summaries, unavailable in local languages), unsupportive auditing procedures, limited involvement of end-users in guideline development, and patchy training that may not filter back to all providers. Future aspirations identified include: improving the design features of guidelines, accessible places to find guidelines, making digitally-formatted versions available, more supplementary materials (e.g. posters) to support patient engagement, accessible clinical support following training, and in-facility training for all professional cadres to ensure fair access, similar levels of capability and interdisciplinary consistency.**Conclusions**South African primary care nurses and allied health practitioners have high levels of motivation to use guidelines, but face many systemic barriers. We used the Behaviour Change Wheel to suggest relevant, implementable interventions addressing identified barriers. This theory-informed approach may improve clinical guideline implementation and impact healthcare for South Africa.

Krog, M. D., et al. (2018). "Barriers and facilitators to using a web-based tool for diagnosis and monitoring of patients with depression: a qualitative study among Danish general practitioners." *Bmc Health Services Research* 18.

Background: Depression constitutes a significant part of the global burden of diseases. General practice plays a central role in diagnosing and monitoring depression. A telemedicine solution comprising a web-based psychometric tool may reduce number of visits to general practice and increase patient empowerment However, the current use of telemedicine solutions in the field of general practice is limited. This study aims to explore barriers and facilitators to using a web-based version of the Major Depression Inventory (eMDI) for psychometric testing of potentially depressive patients in general practice. **Methods:** Semi-structured individual interviews were conducted with nine general practitioners (GPs) from eight general practices in the Central Denmark Region. All interviewees had previous experience in using the eMDI in general practice. Determinants for using the eMDI were identified in relation to the GPs' capability, opportunity and motivation to change clinical behaviour (the COM-B system). **Results:** Our results indicate that the main barriers for using the eMDI are related to limitations in the GPs' opportunity in regards to having the time it takes to introduce change. Further, the use of the eMDI seems to be hampered by the time-consuming login process. Facilitating factors included behavioural aspects of capability, opportunity and motivation. The implementation of the eMDI was facilitated by the interviewees' previous familiarity with the paper-based version of the tool. Continued use of the eMDI was facilitated by a time-saving documentation process and motivational factors associated with clinical core values. These factors included perceptions of improved consultation quality and services for patients, improved possibilities for GPs to prioritise their patients and improved possibilities for disease monitoring. Furthermore, the flexible nature of the eMDI allowed the GPs to use the paper-based MDI for patients whom the eMDI was not considered appropriate. **Conclusions:** Implementation of a telemedicine intervention in general practice can be facilitated by resemblance between the intervention and already existing tools as well as the perception among GPs that the intervention is time-saving and improves quality of care for the patients.

Krogh, E., et al. (2019). "Mindfulness and the clinical relationship: steps to a resilience in medicine." *Revista Medica De Chile* 147(5): 618-627.

Medical resilience is a dynamic capacity, which has the potential to improve the well-being of physicians and to enhance the quality of the clinical relationship. Strategies to promote resilience are important to achieve a sustainable medical practice and improve patient care. Mindfulness training has demonstrated to be an effective tool to promote

resilience in physicians. This paper contextualizes the place of mindfulness in medical practice and describes the ways through which it can contribute to resilience in medicine. The concept of mindfulness, its relationship with health practice is reviewed and the benefits of the practice of mindfulness in the clinical relationship are described. We suggest that the benefits achieved through a mindfulness-based medical practice are mediated by two axes. One is the nonspecific and specific effect of mindfulness-based practices and the other is the integration of explicit and implicit knowledge of clinical practice. We conclude that medical practice that integrates mindfulness can contribute to the challenge of achieving greater levels of individual, staff and institutional resilience. There is a need to have continuing mindfulness training programs for health professionals and to integrate this concept in the curriculum of health care professionals.

Kronish, I. M., et al. (2017). "Barriers to conducting ambulatory and home blood pressure monitoring during hypertension screening in the United States." *Journal of the American Society of Hypertension* 11(9): 573-580.

In 2015, the US Preventive Services Task Force updated their hypertension recommendations to advise that adults with elevated office blood pressure (BP) undergo out-of-office BP measurement to exclude white coat hypertension before diagnosis. Our goal was to determine the most important barriers to primary care providers' ordering ambulatory and home BP monitoring in the United States. We enrolled 63 primary care providers into nominal group panels in which participants iteratively listed and ranked barriers to ambulatory and home BP monitoring. Top-ranked barriers to ambulatory BP monitoring were challenges in accessing testing, costs of testing, concerns about the willingness or ability of patients to successfully complete tests, and concerns about the accuracy and benefits of testing. Top-ranked barriers to home BP monitoring were concerns about compliance with the correct test protocol, accuracy of tests results, out-of-pocket costs of home BP devices, and time needed to instruct patients on home BP monitoring protocol. Efforts to increase the use of ambulatory and home BP monitoring by primary care providers in the United States should prioritize increasing the financial and personnel resources available for testing and addressing provider concerns about patients' ability to conduct high-quality tests. (C) 2017 American Society of Hypertension. All rights reserved.

Kuipers, P., et al. (2018). "A pilot study using participatory, translational, social science research methods to explore stakeholder perspectives on preventing delayed diagnosis in leprosy." *Leprosy Review* 89(2): 124-138.

Objectives: This study sought to enhance and complement existing knowledge on preventing delay in diagnosis of leprosy, through the application of inclusive research methods which incorporate perspectives of multiple stakeholders. Study Design: An innovative, sequential, qualitative and participatory method was used comprising interviews with people affected by leprosy, reflection and discussion groups with multiple community level stakeholders and research translation meetings with management level staff of a major NGO and the relevant state government department. Results: Enhancing the skills and roles of people affected, lay people and grassroots community workers was identified as a foundational strategy. Targeted and active case finding approaches are required. A broad-scale dissemination approach to public education and awareness on leprosy is also recommended, using ubiquitous and high profile media. Intervention planners must ensure alignment between general aspirations or goals, and more practical and specific strategies. Conclusion: The current findings align well with the Behaviour Change Wheel, and provide a worthwhile framework to guide multifaceted and holistic service development to address delayed diagnosis.

Kwah, K. L., et al. (2019). "Accessing National Health Service Stop Smoking Services in the UK: a COM-B analysis of barriers and facilitators perceived by smokers, ex-smokers and stop smoking advisors." *Public Health* 171: 123-130.

Objective: Smokers who access free National Health Service (NHS) Stop Smoking Services (SSS) in the UK are four times more likely to stop smoking, yet uptake of the services has been in decline in recent years. Evidence was collated to explore the beliefs of smokers, ex-smokers and Stop Smoking Advisors (SSAs) about SSS and the barriers and facilitators to access. Study design: Mixed-methods design including i) a search of the literature; ii) a cross-sectional online questionnaire completed by 38 smokers and ex-smokers; and iii) semi-structured interviews with 5 SSAs. Methods: PubMed, Web of Science, Scopus, Prospero and the NIHR Portfolio were searched in October 2017 to identify relevant studies. Smokers and ex-smokers were recruited to the online questionnaire via Public Health websites and social media in Warwickshire. SSAs identified via Public Health Warwickshire were invited to take part in an interview conducted over the telephone. Findings were collated and analysed using the COM-B ('Capability', 'Opportunity', 'Motivation' and 'Behaviour') model framework. Results: A range of practical and psychological or belief-based barriers and facilitators to accessing SSS were identified within all the components of the COM-B model, aside from physical capability, for example; 'Psychological capability', such as lack of understanding about what the service offers; 'Reflective motivation', such as lack of confidence in service efficacy; and 'Social opportunity', such as recommendations from healthcare professionals to attend. Suggestions and consideration on how future tobacco control intervention and public health messages can address these components are reported. Conclusions: Public health interventions and campaigns may benefit from focussing on addressing the well-known perceived barriers and facilitators smokers experience, in particular focussing on

the components of the COM-B that have been identified as being important to increase the uptake of SSS. (C) 2019 Published by Elsevier Ltd on behalf of The Royal Society for Public Health.

Kyle, S. D., et al. (2015). "Towards standardisation and improved understanding of sleep restriction therapy for insomnia disorder: A systematic examination of CBT-I trial content." *Sleep Medicine Reviews* 23: 83-88.

Sleep restriction therapy is a core element of contemporary cognitive-behavioural therapy for insomnia and is also effective as a single-component therapeutic strategy. Since its original description, sleep restriction therapy has been applied in several different ways, potentially limiting understanding of key therapeutic ingredients, mode of action, evidence synthesis, and clinical implementation. We sought to examine the quality of reporting and variability in the application of sleep restriction therapy within the context of insomnia intervention trials. Systematic literature searches revealed 88 trials of cognitive-behavioural therapy/sleep restriction therapy that met pre-defined inclusion/exclusion criteria. All papers were coded in relation to their description of sleep restriction therapy procedures. Findings indicate that a large proportion of papers (39%) do not report any details regarding sleep restriction therapy parameters and, for those papers that do, variability in implementation is present at every level (sleep window generation, minimum time-in-bed, sleep efficiency titration criteria, and positioning of sleep window). Only 7% of papers reported all parameters of sleep restriction treatment. Poor reporting and variability in the application of sleep restriction therapy may hinder progress in relation to evidence synthesis, specification of mechanistic components, and refinement of therapeutic procedures for patient benefit. We set out guidelines for the reporting of sleep restriction therapy as well as a research agenda aimed at advancing understanding of sleep restriction therapy. (C) 2015 Elsevier Ltd. All rights reserved.

Laba, T. L., et al. (2013). "Strategies to improve adherence to medications for cardiovascular diseases in socioeconomically disadvantaged populations: A systematic review." *International Journal of Cardiology* 167(6): 2430-2440.

Medication non-adherence poses a major barrier to reducing cardiovascular disease (CVD) burden globally, and is increasingly recognised as a socioeconomically determined problem. Strategies promoting CVD medication adherence appear of moderate effectiveness and cost-effectiveness. Potentially, 'one-size-fits-all' measures are ill-equipped to address heterogeneous adherence behaviour between social groups. This review aims to determine the effects of strategies to improve adherence to CVD-related medications in socioeconomically disadvantaged groups. Randomised/quasi-randomised controlled trials (1996-June 2012, English), testing strategies to increase adherence to CVD-related medications prescribed to adult patients who may experience health inequity (place of residence, occupation, education, or socioeconomic position) were reviewed. 772 abstracts were screened, 111 full-text articles retrieved, and 16 full-text articles reporting on 14 studies, involving 7739 patients (age range 41-66 years), were included. Methodological and clinical heterogeneity precluded quantitative data synthesis. Studies were thematically grouped by targeted outcomes; underlying interventions and policies were classified using Michie et al.'s Behaviour Change Wheel. Contrasting with patient or physician/practice strategies, those simultaneously directed at patients and physicians/practices resulted in statistically significant improvements in relative adherence (16-169%). Comparative cost and cost-effectiveness analyses from three studies did not find cost-saving or cost-effective strategies. Unlike much current evidence in general populations, promising evidence exists about what strategies improve adherence in disadvantaged groups. These strategies were generally complex: simultaneously targeting patients and physicians; addressing social, financial, and treatment-related adherence barriers; and supported by broader guidelines, regulatory and communication-based policies. Given their complexity and potential resource implications, comprehensive process evaluations and cost and cost-effectiveness evidence are urgently needed. (C) 2013 Elsevier Ireland Ltd. All rights reserved.

Lacroix, K. and R. Gifford (2019). "Reducing meat consumption: Identifying group-specific inhibitors using latent profile analysis." *Appetite* 138: 233-241.

Consumption of animal products is an important greenhouse gas emitting behavior. However, perceived hindrances to incorporating more plant-based diets present challenges for the successful design of behavior-change interventions. Latent profile analysis of survey responses revealed three distinct groups. Meat-reducers perceive the fewest inhibitors and are the most willing to incorporate more meat-free days in their diets. Moderate-hindrance meat eaters perceive many more inhibitors, and are hindered by a lack of social support, attachment to meat, not wanting to change their routine, and less awareness of the health benefits of eating less meat. They are willing to incorporate new healthy foods in their diet and are somewhat willing to avoid meat on some days. Strong-hindrance meat eaters report weak self-efficacy and the most inhibitors but are somewhat willing to incorporate healthier foods in their diets. Implications for tailored meat-reduction interventions are discussed. For example, when targeting meat-attached individuals, it might be beneficial to focus on replacing red meats with less carbon-intensive protein sources.

Laine, H., et al. (2017). "Acceptability of Strategies to Reduce Student Sitting: A Mixed-Methods Study With College Teachers." *Health Promotion Practice* 18(1): 44-53.

Background. As school days among adolescents include long periods of prolonged sitting, teachers are key agents to deliver interventions to reduce youth sedentary behavior. To develop an intervention, acceptability and feasibility of alternative strategies should be tested. We aimed to examine teachers' current use and willingness to use various strategies to decrease student sitting and potential barriers and facilitators of use. **Method.** Mixed-methods design with college teachers using an online cross-sectional survey ($n = 192$) and focus group interviews ($n = 13$). **Findings.** Although a vast majority (87%) of the teachers found reducing prolonged sitting an important goal, only 47% were actually including practices to reduce sitting in their classroom. 89% of the teachers reported willingness to use at least one of the five alternative strategies presented. Focus groups revealed a discussion emphasis on environmental opportunity and motivation as key to implementation. Teachers also generated additional ideas for intervention content. **Discussion.** Despite low levels of current sitting reduction, teachers were willing to try at least one strategy to reduce sitting. Results informed intervention development regarding parameters of use for each strategy. When possible, interventions should provide teachers with a variety of alternative strategies that are easy to use to reduce prolonged sitting.

Lambert, M. F. (2016). "Assessing potential local routine monitoring indicators of reach for the NHS health checks programme." *Public Health* 131: 92-98.

Objectives: Success in reaching target populations is an important factor in determining the impact of public health programmes. The NHS Health Check (NHSCH) Programme is directed towards reducing excess cardiovascular mortality in England. As the programme is locally commissioned, local monitoring of programme reach is essential. This study aimed to assess indicators of programme reach available to local service commissioners. **Study design:** Ecological. **Methods:** The programme reach of NHSCH was assessed in three health districts in the North East of England. Local data returned from GP practices to commissioners on their NHSCH activities was collated for the period October 2010 to March 2013 together with related national published data. Three candidate indicators were chosen and the association between each of these and NHSCHs at GP practice level was examined by univariate logistic regression. **Results:** Data were available from 101 GP practices, together undertaking almost 20,000 health checks a year. Number of NHSCHs by practices explained most (77-92%) of the variance the numbers identified at high risk of cardiovascular disease (two for every ten NHSCHs). NHSCHs were not associated with growth in GP practice disease registers for either diabetes or hypertension. NHSCHs predicted practices identification of new cases of hypertension (with one case identified for every ten checks), albeit the proportion of variation explained was much more variable (2-60%) less consistent effect. **Conclusions:** Data routinely available to NHSCH commissioners can support monitoring programme reach, with numbers of new cases of hypertension being the most promising indicator of reach. (C) 2015 The Royal Society for Public Health. Published by Elsevier Ltd. All rights reserved.

Lamontagne, M. E., et al. (2018). "A Survey of Perceived Implementation Gaps for a Clinical Practice Guideline for the Rehabilitation of Adults With Moderate to Severe Traumatic Brain Injury." *Journal of Head Trauma Rehabilitation* 33(5): 306-316.

Objective: Appraising current practice is an important prerequisite for implementation of clinical practice guidelines (CPGs). The study objective was to determine the perceived level of implementation, priority, and feasibility of a subset of key CPG recommendations for the rehabilitation of individuals with moderate to severe traumatic brain injury (MSTBI). **Methods:** Fifty-one teams at acute care and rehabilitation facilities were invited to complete an electronic survey addressing the perceived level of implementation, priority, and feasibility of 109 fundamental and priority recommendations from the CPG-MSTBI. **Results:** Forty-four clinical teams responded across 2 Canadian provinces. Most of the recommendations were deemed as fully or mostly implemented, while relative gaps in implementation were perceived in recommendations regarding coordination with mental health and addiction providers (>75% of respondents indicated low levels of implementation), Caregivers and Families (26%), and Psychosocial and Adaptation Issues (25%). Priority levels and perceived feasibility were generally high (>60% and >86%, respectively) for recommendations with low levels of implementation. Priority recommendations for implementation were identified for both acute care and rehabilitation settings in Quebec and Ontario. **Conclusions:** Assessment of clinician perception provides a helpful perspective for implementation. Exploring perceived implementation gaps based on users' needs and expectation should be a part of an implementation process.

Landis-Lewis, Z., et al. (2015). "Computer-supported feedback message tailoring: theory-informed adaptation of clinical audit and feedback for learning and behavior change." *Implementation Science* 10.

Background: Evidence shows that clinical audit and feedback can significantly improve compliance with desired practice, but it is unclear when and how it is effective. Audit and feedback is likely to be more effective when feedback

messages can influence barriers to behavior change, but barriers to change differ across individual health-care providers, stemming from differences in providers' individual characteristics. Discussion: The purpose of this article is to invite debate and direct research attention towards a novel audit and feedback component that could enable interventions to adapt to barriers to behavior change for individual health-care providers: computer-supported tailoring of feedback messages. We argue that, by leveraging available clinical data, theory-informed knowledge about behavior change, and the knowledge of clinical supervisors or peers who deliver feedback messages, a software application that supports feedback message tailoring could improve feedback message relevance for barriers to behavior change, thereby increasing the effectiveness of audit and feedback interventions. We describe a prototype system that supports the provision of tailored feedback messages by generating a menu of graphical and textual messages with associated descriptions of targeted barriers to behavior change. Supervisors could use the menu to select messages based on their awareness of each feedback recipient's specific barriers to behavior change. We anticipate that such a system, if designed appropriately, could guide supervisors towards giving more effective feedback for health-care providers. Summary: A foundation of evidence and knowledge in related health research domains supports the development of feedback message tailoring systems for clinical audit and feedback. Creating and evaluating computer-supported feedback tailoring tools is a promising approach to improving the effectiveness of clinical audit and feedback.

Langford, B. J., et al. (2019). "Nudging In MicroBiology Laboratory Evaluation (NIMBLE): A scoping review." *Infection Control and Hospital Epidemiology* 40(12): 1400-1406.

Background: Nudging in microbiology is an antimicrobial stewardship strategy to influence decision making through the strategic reporting of microbiology results while preserving prescriber autonomy. The purpose of this scoping review was to identify the evidence that demonstrates the effectiveness of nudging strategies in susceptibility result reporting to improve antimicrobial use. Methods: A search for studies in Ovid MEDLINE, Embase, PsycINFO, and All EBM Reviews was conducted. All simulated and vignette studies were excluded. Two independent reviewers were used throughout screening and data extraction. Results: Of a total of 1,346 citations screened, 15 relevant studies were identified. Study types included pre- and postintervention (n = 10), retrospective cohort (n = 4), and a randomized controlled trial (n = 1). Most studies were performed in acute-care settings (n = 13), and the remainder were in primary care (n = 2). Most studies used a strategy to alter the default antibiotic choices on the antibiotic report. All studies reported at least 1 outcome of antimicrobial use: utilization (n = 9), appropriateness (n = 7), de-escalation (n = 2), and cost (n = 1). Moreover, 12 studies reported an overall benefit in antimicrobial use outcomes associated with nudging, and 4 studies evaluated the association of nudging strategy with subsequent antimicrobial resistance, with 2 studies noting overall improvement. Conclusions: The number of heterogeneous studies evaluating the impact of applying nudging strategies to susceptibility result reports is small; however, most strategies do show promise in altering prescriber's antibiotic selection. Selective and cascade reporting of targeted agents in a hospital setting represent the majority of current research. Gaps and opportunities for future research identified from our scoping review include performing prospective randomized controlled trials and evaluating other approaches aside from selective reporting.

Langley, T., et al. (2013). "Characterizing tobacco control mass media campaigns in England." *Addiction* 108(11): 2001-2008.

AimsTo characterize publically funded tobacco control campaigns in England between 2004 and 2010 and to explore if they were in line with recommendations from the literature in terms of their content and intensity. International evidence suggests that campaigns which warn of the negative consequences of smoking and feature testimonials from real-life smokers are most effective, and that four exposures per head per month are required to reduce smoking prevalence. DesignCharacterization of tobacco control advertisements using a theoretically based framework designed to describe advertisement themes, informational and emotional content and style. Study of the intensity of advertising and exposure to different types of advertisement using data on population-level exposure to advertisements shown during the study period. SettingEngland. MeasurementsTelevision Ratings (TVRs), a standard measure of advertising exposure, were used to calculate exposure to each different campaign type. FindingsA total of 89% of advertising was for smoking cessation; half of this advertising warned of the negative consequences of smoking, while half contained how-to-quit messages. Acted scenes featured in 72% of advertising, while only 17% featured real-life testimonials. Only 39% of months had at least four exposures to tobacco control campaigns per head. ConclusionsA theory-driven approach enabled a systematic characterization of tobacco control advertisements in England. Between 2004 and 2010 only a small proportion of tobacco control advertisements utilized the most effective strategiesnegative health effects messages and testimonials from real-life smokers. The intensity of campaigns was lower than international recommendations.

Larkin, L., et al. (2015). "Behaviour change interventions to promote physical activity in rheumatoid arthritis: a systematic review." *Rheumatology International* 35(10): 1631-1640.

Research has shown that people who have rheumatoid arthritis (RA) do not usually participate in enough physical activity to obtain the benefits of optimal physical activity levels, including quality of life, aerobic fitness and disease-related characteristics. Behaviour change theory underpins the promotion of physical activity. The aim of this systematic review was to explore behaviour change interventions which targeted physical activity behaviour in people who have RA, focusing on the theory underpinning the interventions and the behaviour change techniques utilised using specific behaviour change taxonomy. An electronic database search was conducted via EBSCOhost, PubMed, Cochrane Central Register of Controlled Trials and Web of Science databases in August 2014, using Medical Subject Headings and keywords. A manual search of reference lists was also conducted. Randomised control trials which used behaviour change techniques and targeted physical activity behaviour in adults who have RA were included. Two reviewers independently screened studies for inclusion. Methodological quality was assessed using the Cochrane risk of bias tool. Five studies with 784 participants were included in the review. Methodological quality of the studies was mixed. The studies consisted of behaviour change interventions or combined practical physical activity and behaviour change interventions and utilised a large variety of behaviour change techniques. Four studies reported increased physical activity behaviour. All studies used subjective methods of assessing physical activity with only one study utilising an objective measure. There has been varied success of behaviour change interventions in promoting physical activity behaviour in people who have RA. Further studies are required to develop and implement the optimal behaviour change intervention in this population.

Larkin, L., et al. (2017). "It might hurt, but still it's good': People with rheumatoid arthritis beliefs and expectations about physical activity interventions." *Journal of Health Psychology* 22(13): 1678-1690.

Many people who have rheumatoid arthritis report low levels of physical activity. We conducted 17 interviews with people who have rheumatoid arthritis to gain insight into how they view physical activity and to explore how their levels of activity may be increased. Interviews were transcribed verbatim and analysed using thematic analysis. Four main themes were generated: being active, barriers and facilitators, information and advice, and supporting physical activity. A lack of information about being active fostered negative emotions limiting physical activity participation. Improved provision of physical activity advice is warranted to promote physical activity in people who have rheumatoid arthritis.

Larkin, L., et al. (2015). "Promoting physical activity in rheumatoid arthritis: a narrative review of behaviour change theories." *Disability and Rehabilitation* 37(25): 2359-2366.

Purpose: Despite physical activity having significant health benefits for people with rheumatoid arthritis (RA), current levels of physical activity in this population are suboptimal. Changing behaviour is challenging and interventions aimed at increasing physical activity in this context have had varying levels of success. This review provides an overview of common behaviour change theories used in interventions to promote physical activity and their application for promoting physical activity in people with RA. Method: A scoping, narrative review was conducted of English language literature, using the search terms physical activity/exercise and keywords, which are associated with behaviour change interventions. The theoretical basis of such interventions in people with RA was assessed using the theory coding scheme. Results: Six theories which have been used in physical activity research are discussed. Further, four studies which aimed to increase physical activity levels in people with RA are explored in detail. Conclusions: To date, behaviour change interventions conducted in RA populations to increase physical activity levels have not had a strong theoretical underpinning. It is proposed that an intervention utilising the theory of planned behaviour is developed with the aim of increasing physical activity in people with RA. Implications for Rehabilitation: Interventions to promote physical activity in the rheumatoid arthritis (RA) population have failed to change participants' behaviour. A small number of studies have used behaviour change theories in the development and delivery of interventions. The theory of planned behaviour is recommended as the theoretical basis for an intervention to promote physical activity in the RA population.

LaRocca, R., et al. (2012). "The effectiveness of knowledge translation strategies used in public health: a systematic review." *Bmc Public Health* 12.

Background: Literature related to the effectiveness of knowledge translation (KT) strategies used in public health is lacking. The capacity to seek, analyze, and synthesize evidence-based information in public health is linked to greater success in making policy choices that have the best potential to yield positive outcomes for populations. The purpose of this systematic review is to identify the effectiveness of KT strategies used to promote evidence-informed decision making (EIDM) among public health decision makers. Methods: A search strategy was developed to identify primary studies published between 2000-2010. Studies were obtained from multiple electronic databases (CINAHL, Medline, EMBASE, and the Cochrane Database of Systematic Reviews). Searches were supplemented by hand searching and checking the reference lists of included articles. Two independent review authors screened studies for relevance, assessed methodological quality of relevant studies, and extracted data from studies using standardized tools. Results: After removal of duplicates, the search identified 64,391 titles related to KT strategies. Following title and abstract review, 346 publications were deemed potentially relevant, of which 5 met all relevance criteria on full text screen. The

included publications were of moderate quality and consisted of five primary studies (four randomized controlled trials and one interrupted time series analysis). Results were synthesized narratively. Simple or single KT strategies were shown in some circumstances to be as effective as complex, multifaceted ones when changing practice including tailored and targeted messaging. Multifaceted KT strategies led to changes in knowledge but not practice. Knowledge translation strategies shown to be less effective were passive and included access to registries of pre-processed research evidence or print materials. While knowledge brokering did not have a significant effect generally, results suggested that it did have a positive effect on those organizations that at baseline perceived their organization to place little value on evidence-informed decision making. Conclusions: No singular KT strategy was shown to be effective in all contexts. Conclusions about interventions cannot be taken on their own without considering the characteristics of the knowledge that was being transferred, providers, participants and organizations.

Latimer-Cheung, A. E., et al. (2016). "The Canadian 24-Hour Movement Guidelines for Children and Youth: Implications for practitioners, professionals, and organizations." *Applied Physiology Nutrition and Metabolism* 41(6): S328-S335.

The new Canadian 24-Hour Movement Guidelines for Children and Youth emphasize the integration of all movement behaviours that occur over a whole day (i.e., light, moderate, and vigorous physical activity, sedentary behaviour, and sleep). These guidelines shift the paradigm away from considering each behaviour in isolation. This concept of the "whole day matters" not only calls for a change in thinking about movement but also for redevelopment of dissemination and implementation practice. Past guideline launch activities largely have aimed to create awareness through passive dissemination strategies (e.g., Website posts, distribution of print resources). For the integrated guidelines to have public health impact, we must move beyond dissemination and raising of awareness to implementation and behaviour change. Shifting this focus requires new, innovative approaches to intervention, including interdisciplinary collaboration, policy change, and refocused service provision. The purpose of this paper is to identify practitioners, professionals, and organizations with potential to disseminate and/or implement the guidelines, discuss possible implementation strategies for each of these groups, and describe the few resources being developed and those needed to support dissemination and implementation efforts. This discussion makes readily apparent the need for a well-funded, comprehensive, long-term dissemination, implementation, and evaluation plan to ensure uptake and activation of the guidelines.

Lau, E. Y. and G. Faulkner (2019). "Program implementation and effectiveness of a national workplace physical activity intervention: UPnGO with ParticipACTION." *Canadian Journal of Public Health-Revue Canadienne De Sante Publique* 110(2): 187-197.

Intervention UPnGO with ParticipACTION (UPnGO) is a 6-week workplace physical activity (PA) initiative aiming to increase habitual PA (steps) during the workday. Core intervention components included (1) self-monitoring of steps and action planning behaviours using a Web/mobile app with incentives and (2) organizational support, which included senior management's role modeling and endorsement of the program. Research question What is the effectiveness and levels of implementation of the UPnGO intervention? What is the relationship between effectiveness and levels of implementation? Methods A single-arm, pre-/post-test study design was used. Participants were 660 employees from nine organizations who had valid step data and complete socio-demographic information at baseline. The primary outcome (mean daily steps) was assessed by Garmin VivoFit. Using the usage data from the UPnGO web-based system, a composite score for levels of implementation was calculated based on participant's compliance with the self-monitoring component and senior management's role modeling. Associations of interest were analyzed using linear mixed-effects models. Results Levels of implementation were highly variable across organizations (mean = 68.22% +/- 18.75, range = 19.8 to 100%). A significant Time x Implementation (IM) status interaction effect was observed. When stratified by IM status, a significant increase in mean daily steps at week 6 was found among participants in the high (beta = 540.01 +/- 202.69, p= 0.011) but not low (beta = - 81.54 +/- 291.96, p= 0.78) implementation group. Conclusion Findings suggest significant intervention effects in increasing average daily steps among participants who were exposed to optimal levels of implementation (similar to 70%). UPnGO may be a scalable workplace PA intervention at a national level, although this needs further verification with more rigorous study designs.

Laur, C., et al. (2018). "The Sustain and Spread Framework: strategies for sustaining and spreading nutrition care improvements in acute care based on thematic analysis from the More-2-Eat study." *Bmc Health Services Research* 18.

Background Successful improvements in health care practice need to be sustained and spread to have maximum benefit. The rationale for embedding sustainability from the beginning of implementation is well recognized; however, strategies to sustain and spread successful initiatives are less clearly described. The aim of this study is to identify strategies used by hospital staff and management to sustain and spread successful nutrition care improvements in Canadian hospitals. Methods The More-2-Eat project used participatory action research to improve nutrition care practices. Five hospital units in four Canadian provinces had one year to improve the detection, treatment, and

monitoring of malnourished patients. Each hospital had a champion and interdisciplinary site implementation team to drive changes. After the year (2016) of implementing new practices, site visits were completed at each hospital to conduct key informant interviews (n=45), small group discussions (4 groups; n=10), and focus groups (FG) (11 FG; n=71) (total n=126) with staff and management to identify enablers and barriers to implementing and sustaining the initiative. A year after project completion (early 2018) another round of interviews (n=12) were conducted to further understand sustaining and spreading the initiative to other units or hospitals. Verbatim transcription was completed for interviews. Thematic analysis of interview transcripts, FG notes, and context memos was completed. Results After implementation, sites described a culture change with respect to nutrition care, where new activities were viewed as the expected norm and best practice. Strategies to sustain changes included: maintaining the new routine; building intrinsic motivation; continuing to collect and report data; and engaging new staff and management. Strategies to spread included: being responsive to opportunities; considering local context and readiness; and making it easy to spread. Strategies that supported both sustaining and spreading included: being and staying visible; and maintaining roles and supporting new champions. Conclusions The More-2-Eat project led to a culture of nutrition care that encouraged lasting positive impact on patient care. Strategies to spread and sustain these improvements are summarized in the Sustain and Spread Framework, which has potential for use in other settings and implementation initiatives. Trial registration Retrospectively registered ClinicalTrials.gov Identifier: NCT02800304, June 7, 2016.

Laur, C., et al. (2019). "Impact of Facilitated Behavior Change Strategies on Food Intake Monitoring and Body Weight Measurements in Acute Care: Case Examples From the More-2-Eat Study." *Nutrition in Clinical Practice* 34(3): 459-474.

Background: Assessing and monitoring food intake and body weight of all hospital patients is considered part of "best practice" nutrition care. This study presents case examples describing the impact of behavior change strategies on embedding these 2 monitoring processes in hospitals. Methods: Four hospital medical units that participated in the More-2-Eat implementation study to improve nutrition care focused on improving food intake and/or weight monitoring practices. The percentage of admitted patients who received these care practices were tracked through chart audits over 18 months. Implementation progress and behavior change strategies were documented through interviews, focus groups, scorecards, and monthly telephone calls. Case examples are explored using mixed methods. Results: Of the 4 units, 3 implemented food intake monitoring. One provided food service workers the opportunity to record food intake, with low intake discussed by an interdisciplinary team during bedside rounds (increased from 0% to 97%). Another went from 0% to 61% of patients monitored by introducing a new form ("environmental restructuring") reminding staff to ask patients about low intake. A third unit increased motivation to improve documentation of low intake and improved from 3% to 95%. Two units focused on regularity of body weight measurement. One unit encouraged a team approach and introduced 2 weigh days/week (improved from 14% to 63%), while another increased opportunity by having all patients weighed on Saturdays (improved from 11% to 49%). Conclusion: Difficult-to-change nutrition care practices can be implemented using diverse and ongoing behavior change strategies, staff input, a champion, and an interdisciplinary team.

Laur, C., et al. (2015). "Becoming Food Aware in Hospital: A Narrative Review to Advance the Culture of Nutrition Care in Hospitals." *Healthcare* 3(2): 393-407.

The Nutrition Care in Canadian Hospitals (2010-2013) study identified the prevalence of malnutrition on admission to medical and surgical wards as 45%. Nutrition practices in the eighteen hospitals, including diagnosis, treatment and monitoring of malnourished patients, were ad hoc. This lack of a systematic approach has demonstrated the need for the development of improved processes and knowledge translation of practices aimed to advance the culture of nutrition care in hospitals. A narrative review was conducted to identify literature that focused on improved care processes and strategies to promote the nutrition care culture. The key finding was that a multi-level approach is needed to address this complex issue. The organization, staff, patients and their families need to be part of the solution to hospital malnutrition. A variety of strategies to promote the change in nutrition culture have been proposed in the literature, and these are summarized as examples for others to consider. Examples of strategies at the organizational level include developing policies to support change, use of a screening tool, protecting mealtimes, investing in food and additional personnel (healthcare aides, practical nurses and/or diet technicians) to assist patients at mealtimes. Training for hospital staff raises awareness of the issue, but also helps them to identify their role and how it can be modified to improve nutrition care. Patients and families need to be aware of the importance of food to their recovery and how they can advocate for their needs while in hospital, as well as post-hospitalization. It is anticipated that a multi-level approach that promotes being "food aware" for all involved will help hospitals to achieve patient-centred care with respect to nutrition.

Laur, C., et al. (2017). "Changing nutrition care practices in hospital: a thematic analysis of hospital staff perspectives." *Bmc Health Services Research* 17.

Background: Many patients are admitted to hospital and are already malnourished. Gaps in practice have identified that care processes for these patients can be improved. Hospital staff, including management, needs to work towards optimizing nutrition care in hospitals to improve the prevention, detection and treatment of malnutrition. The objective of this study was to understand how staff members perceived and described the necessary ingredients to support change efforts required to improve nutrition care in their hospital. **Methods:** A qualitative study was conducted using purposive sampling techniques to recruit participants for focus groups (FG) (n = 11) and key informant interviews (n = 40) with a variety of hospital staff and management. Discussions based on a semi-structured schedule were conducted at five diverse hospitals from four provinces in Canada as part of the More-2-Eat implementation project. One researcher conducted 2-day site visits over a two-month period to complete all interviews and FGs. Interviews were transcribed verbatim while key points and quotes were taken from FGs. Transcripts were coded line-by-line with initial thematic analysis completed by the primary author. Other authors (n = 3) confirmed the themes by reviewing a subset of transcripts and the draft themes. Themes were then refined and further detailed. Member checking of site summaries was completed with site champions. **Results:** Participants (n = 133) included nurses, physicians, food service workers, dietitians, and hospital management, among others. Discussion regarding ways to improve nutrition care in each specific site facilitated the thought process during FG and interviews. Five main themes were identified: building a reason to change; involving relevant people in the change process; embedding change into current practice; accounting for climate; and building strong relationships within the hospital team. **Conclusions:** Hospital staff need a reason to change their nutrition care practices and a significant change driver is perceived and experienced benefit to the patient. Participants described key ingredients to support successful change and specifically engaging the interdisciplinary team to effect sustainable improvements in nutrition care.

Lavallee, J. F., et al. (2018). "Barriers and facilitators to preventing pressure ulcers in nursing home residents: A qualitative analysis informed by the Theoretical Domains Framework." *International Journal of Nursing Studies* 82: 79-89.

Background: Pressure ulcers are areas of localised damage to the skin and underlying tissue; and can cause pain, immobility, and delay recovery, impacting on health-related quality of life. The individuals who are most at risk of developing a pressure ulcer are those who are seriously ill, elderly, have impaired mobility and/or poor nutrition; thus, many nursing home residents are at risk. **Objectives:** To understand the context of pressure ulcer prevention in nursing homes and to explore the potential barriers and facilitators to evidence-informed practices. **Methods:** Semi-structured interviews were conducted with nursing home nurses, healthcare assistants and managers, National Health Service community-based wound specialist nurses (known in the UK as tissue viability nurses) and a nurse manager in the North West of England. The interview guide was developed using the Theoretical Domains Framework to explore the barriers and facilitators to pressure ulcer prevention in nursing home residents. Data were analysed using a framework analysis and domains were identified as salient based on their frequency and the potential strength of their impact. **Findings:** 25 participants (nursing home: 2 managers, 7 healthcare assistants, 11 qualified nurses; National Health Service community services: 4 tissue viability nurses, 1 manager) were interviewed. Depending upon the behaviours reported and the context, the same domain could be classified as both a barrier and a facilitator. We identified seven domains as relevant in the prevention of pressure ulcers in nursing home residents mapping to four "barrier" domains and six "facilitator" domains. The four "barrier" domains were knowledge, physical skills, social influences and environmental context and resources and the six "facilitator" domains were interpersonal skills, environmental context and resources, social influences, beliefs about capabilities, beliefs about consequences and social/professional role and identity). Knowledge and insight into these barriers and facilitators provide a theoretical understanding of the complexities in preventing pressure ulcers with reference to the staff capabilities, opportunities and motivation related to pressure ulcer prevention. **Conclusion:** Pressure ulcer prevention in nursing home residents is complex and is influenced by several factors. The findings will inform a theory and evidence-based intervention to aid the prevention of pressure ulcers in nursing home settings.

Lavallee, J. F., et al. (2019). "Preventing pressure injury in nursing homes: developing a care bundle using the Behaviour Change Wheel." *Bmj Open* 9(6).

Objective To develop, with nurse specialists and nursing home care staff, a theory and evidence-informed pressure injury prevention care bundle for use in nursing home settings. **Design** The development of a care bundle. **Methods** We undertook a detailed, multistaged and theoretically driven development process. First, we identified evidence-informed pressure injury prevention practices: these formed an initial set of possible target behaviours to be considered for inclusion in the bundle. During a 4-hour workshop and supplemental email consultation with a total of 13 healthcare workers, we agreed the key target behaviours for the care bundle. We explored with staff the barriers and facilitators to prevention activity and defined intervention functions and behaviour change practices using the Behaviour Change Wheel. **Setting** North West England. **Results** The target behaviours consisted of three elements: support surfaces, skin inspection and repositioning. We identified capability, opportunity and reflective motivation as influencing the

pressure injury prevention behaviours of nursing home care staff. The intervention functions (education, training, modelling) and behaviour change techniques (information about social and environmental consequences, information on health consequences, feedback on behaviour, feedback on the outcome of behaviour, prompts/cues, instruction on how to perform the behaviour, demonstration of behaviour) were incorporated into the care bundle. Conclusion This is the first description of a pressure injury prevention care bundle for nursing homes developed using the Behaviour Change Wheel. Key stakeholders identified and prioritised the appropriate target behaviours to aid pressure injury prevention in a nursing home setting.

Lavorini, F., et al. (2016). "Optimising Inhaled Pharmacotherapy for Elderly Patients with Chronic Obstructive Pulmonary Disease: The Importance of Delivery Devices." *Drugs & Aging* 33(7): 461-473.

Chronic obstructive pulmonary disease (COPD) is common in older people. Inhaled medications are the mainstay of pharmacological treatment of COPD, and are typically administered by handheld inhalers, such as pressurised metered-dose inhalers and dry powder inhalers, or by nebulisers. For each of the three major categories of aerosol delivery devices, several new inhalers have recently been launched, each with their own particularities, advantages and disadvantages. Consequently, broader availability of new drug-device combinations will increase prescription opportunities. Despite this, however, there is limited guidance available in published guidelines on the choice of inhalers, and still less consideration is given to elderly patients with COPD. The aim of this article is to provide a guide for healthcare professionals on device selection and factors to be considered for effective inhaled drug delivery in elderly COPD patients, including device factors (device type and complexity of use), patient factors (inspiratory capabilities, manual dexterity and hand strength, cognitive ability, co-morbidities) and considerations for healthcare professionals (proper education of patients in device use).

Lawrence, M., et al. (2015). "Multimodal Secondary Prevention Behavioral Interventions for TIA and Stroke: A Systematic Review and Meta-Analysis." *Plos One* 10(3).

Background Guidelines recommend implementation of multimodal interventions to help prevent recurrent TIA/stroke. We undertook a systematic review to assess the effectiveness of behavioral secondary prevention interventions. Strategy Searches were conducted in 14 databases, including MEDLINE (1980-January 2014). We included randomized controlled trials (RCTs) testing multimodal interventions against usual care/modified usual care. All review processes were conducted in accordance with Cochrane guidelines. Results Twenty-three papers reporting 20 RCTs (6,373 participants) of a range of multimodal behavioral interventions were included. Methodological quality was generally low. Meta-analyses were possible for physiological, lifestyle, psychosocial and mortality/recurrence outcomes. Note: all reported confidence intervals are 95%. Systolic blood pressure was reduced by 4.21 mmHg (mean) (-6.24 to -2.18, $P = 0.01$ $I^2 = 58\%$, 1,407 participants); diastolic blood pressure by 2.03 mmHg (mean) (-3.19 to -0.87, $P = 0.004$, $I^2 = 52\%$, 1,407 participants). No significant changes were found for HDL, LDL, total cholesterol, fasting blood glucose, high sensitivity-CR, BMI, weight or waist: hip ratio, although there was a significant reduction in waist circumference (-6.69 cm, -11.44 to -1.93, $P = 0.006$, $I^2 = 0\%$, 96 participants). There was no significant difference in smoking continuance, or improved fruit and vegetable consumption. There was a significant difference in compliance with antithrombotic medication (OR 1.45, 1.21 to 1.75, $P < 0.0001$, $I^2 = 0\%$, 2,792 participants) and with statins (OR 2.53, 2.15 to 2.97, $P < 0.00001$, $I^2 = 0\%$, 2,636 participants); however, there was no significant difference in compliance with antihypertensives. There was a significant reduction in anxiety (-1.20, -1.77 to -0.63, $P < 0.0001$, $I^2 = 85\%$, 143 participants). Although there was no significant difference in odds of death or recurrent TIA/stroke, there was a significant reduction in the odds of cardiac events (OR 0.38, 0.16 to 0.88, $P = 0.02$, $I^2 = 0\%$, 4,053 participants). Conclusions There are benefits to be derived from multimodal secondary prevention interventions. However, the findings are complex and should be interpreted with caution. Further, high quality trials providing comprehensive detail of interventions and outcomes, are required.

Laxer, R. E., et al. (2018). "Behavioural patterns only predict concurrent BMI status and not BMI trajectories in a sample of youth in Ontario, Canada." *Plos One* 13(1).

Background & para;& para; Youth are engaging in multiple risky behaviours, increasing their risk of overweight, obesity, and related chronic diseases. The objective of this study was to examine the effect of engaging in unique clusters of unhealthy behaviours on youths' body mass index (BMI) trajectories.& para;& para; Methods & para;& para; This study used a linked-longitudinal sample of Grades 9 and 10 students (13 to 17 years of age) participating in the COMPASS host study. Students reported obesity-related and other risky behaviours at baseline and height and weight (to derive BMI) at baseline (2012/2013) and annually for 2 years post-baseline (2013/14 and 2014/15). Students were grouped into behavioural clusters based on response probabilities. Linear mixed effects models, using BMI as a continuous outcome measure, were used to examine the effect of engaging in clusters of risky behaviours on BMI trajectories.& para;& para; Results & para;& para; There were significant differences in BMI of the four behavioural clusters at baseline that remained consistent over time. Higher BMI values were found among youth classified at baseline to be Typical High

School Athletes (beta = 0.232 kg/m²), [confidence interval (CI): 0.03-0.50]), Inactive High Screen-User (beta = 0.348 kg/m²), CI: 0.11-0.59) and Moderately Active Substance Users (beta = 0.759 kg/m²), CI: 0.36-1.15) compared to students classified as Health Conscious. Despite these baseline differences, BMI appeared to increase across all behavioural clusters annually by the same amount (beta = 0.6097 kg/m²), (CI) = 0.57-0.64). Although annual increases in BMI did not differ by behavioural clusters, membership in a particular behavioural cluster was associated with baseline BMI, and these differences remained consistent over time. Results indicate that intervening and modifying unhealthy behaviours earlier might have a greater impact than during adolescence. Health promotion strategies targeting the highest risk youth as they enter secondary school might be promising means to prevent or delay the onset of obesity.

Leask, C. F., et al. (2016). "Modifying Older Adults' Daily Sedentary Behaviour Using an Asset-based Solution: Views from Older Adults." *Aims Public Health* 3(3): 542-554.

Objective: There is a growing public health focus on the promotion of successful and active ageing. Interventions to reduce sedentary behaviour (SB) in older adults are feasible and are improved by tailoring to individuals' context and circumstances. SB is ubiquitous; therefore part of the tailoring process is to ensure individuals' daily sedentary routine can be modified. The aim of this study was to understand the views of older adults and identify important considerations when creating a solution to modify daily sedentary patterns. **Method:** This was a qualitative research study. Fifteen older adult volunteers (mean age = 78 years) participated in 1 of 4 focus groups to identify solutions to modify daily sedentary routine. Two researchers conducted the focus groups whilst a third took detailed fieldnotes on a flipchart to member check the findings. Data were recorded and analysed thematically. **Results:** Participants wanted a solution with a range of options which could be tailored to individual needs and circumstances. The strategy suggested was to use the activities of daily routine and reasons why individuals already naturally interrupting their SB, collectively framed as assets. These assets were categorised into 5 sub-themes: physical assets (eg. standing up to reduce stiffness); psychological assets (eg. standing up to reduce feelings of guilt); interpersonal assets (eg. standing up to answer the phone); knowledge assets (eg. standing up due to knowing the benefits of breaking SB) and activities of daily living assets (eg. standing up to get a drink). **Conclusion:** This study provides important considerations from older adults' perspectives to modify their daily sedentary patterns. The assets identified by participants could be used to co-create a tailored intervention with older adults to reduce SB, which may increase effectiveness and adherence.

Lee, A., et al. (2016). "What do Pregnant Women Know About the Healthy Eating Guidelines for Pregnancy? A Web-Based Questionnaire." *Maternal and Child Health Journal* 20(10): 2179-2188.

Objectives This study explored nutrition knowledge of pregnant women, and how it correlated with participant characteristics, their main sources of information and changes to their diet since becoming pregnant. **Methods** Pregnant women residing in Australia accessing pregnancy forums on the internet were invited to complete a web-based questionnaire on general nutrition and pregnancy-specific nutrition guidelines. **Results** Of the 165 eligible questionnaire responses, 114 were complete and included in the analysis. Pregnancy nutrition knowledge was associated with education ($r(s) = 0.21, p < 0.05$) and income ($r(s) = 0.21, p < 0.05$). Only 2 % of pregnant women achieved nutrition knowledge scores over 80 %. Few women received nutrition advice during their pregnancy, of which most were advised by their doctor. Dietary changes adopted since becoming pregnant included consuming more fruit, vegetables, dairy and high fibre foods. **Conclusions for Practice** Pregnant women in this study had limited knowledge of the dietary guidelines for healthy eating during pregnancy. Furthermore, nutrition counselling in maternity care appears to be infrequent. One approach to optimising maternal diets and subsequently preventing adverse health outcomes is to enhance their knowledge of the pregnancy nutrition guidelines through the provision of nutritional counselling. Furthermore, research exploring the access and use of nutrition resources, and nutrition advice provided to pregnant women is recommended to understand how knowledge impacts on dietary behaviour.

Lee, A., et al. (2018). "What do pregnant women eat, and are they meeting the recommended dietary requirements for pregnancy?" *Midwifery* 67: 70-76.

Objective: To compare the dietary intake of pregnant women to the 2013 Australian Dietary Guidelines and explore factors associated with inadequate intake. **Design:** Dietary intake data were collected between July 2011 and July 2012 (n= 1570) using a 74-item food frequency questionnaire. **Setting:** Metropolitan public health hospitals in Melbourne, Australia. **Participants:** Pregnant women, at least 16 years of age, with a singleton pregnancy, and literate in English. **Measurements and Findings:** The highest proportion of women met the recommended daily servings for fruit (65.7%), followed by dairy products (55.2%), meat/meat alternatives (31.1%), vegetables (10.3%), and then grain foods (1.8%). A majority of women (83.8%) regularly consumed up to 2.5 serves of discretionary foods per day. Only one woman met the minimum recommended daily servings for all five food groups. Women who were obese were more likely to consume an inadequate diet (Adj. OR 2.13, 95% CI 1.53, 2.95); and having a university degree was associated with a lower odds of

consuming an inadequate diet (Adj. OR 0.63, 95% CI 0.50, 0.78). Key Conclusions and Implications for Practice: Pregnancy care providers need to be aware of women's low compliance with the national dietary guidelines, particularly regarding the poor intake of vegetables and grain foods; targeted as well as population-based approaches may be required. (C) 2018 Elsevier Ltd. All rights reserved.

Lee, J. S., et al. (2018). "Opioid Prescribing After Curative-Intent Surgery: A Qualitative Study Using the Theoretical Domains Framework." *Annals of Surgical Oncology* 25(7): 1843-1851.

Excessive opioid prescribing is common after curative-intent surgery, but little is known about what factors influence prescribing behaviors among surgeons. To identify targets for intervention, we performed a qualitative study of opioid prescribing after curative-intent surgery using the Theoretical Domains Framework, a well-established implementation science method for identifying factors influencing healthcare provider behavior. Prior to data collection, we constructed a semi-structured interview guide to explore decision making for opioid prescribing. We then conducted interviews with surgical oncology providers at a single comprehensive cancer center. Interviews were recorded, transcribed verbatim, then independently coded by two investigators using the Theoretical Domains Framework to identify theoretical domains relevant to opioid prescribing. Relevant domains were then linked to behavior models to select targeted interventions likely to improve opioid prescribing. Twenty-one subjects were interviewed from November 2016 to May 2017, including attending surgeons, resident surgeons, physician assistants, and nurses. Five theoretical domains emerged as relevant to opioid prescribing: environmental context and resources; social influences; beliefs about consequences; social/professional role and identity; and goals. Using these domains, three interventions were identified as likely to change opioid prescribing behavior: (1) enablement (deploy nurses during preoperative visits to counsel patients on opioid use); (2) environmental restructuring (provide on-screen prompts with normative data on the quantity of opioid prescribed); and (3) education (provide prescribing guidelines). Key determinants of opioid prescribing behavior after curative-intent surgery include environmental and social factors. Interventions targeting these factors are likely to improve opioid prescribing in surgical oncology.

Leece, P., et al. (2017). "Improving opioid safety practices in primary care: protocol for the development and evaluation of a multifaceted, theory-informed pilot intervention for healthcare providers." *Bmj Open* 7(4).

Introduction In North America, drug overdose deaths are reaching unprecedented levels, largely driven by increasing prescription opioid-related deaths. Despite the development of several opioid guidelines, prescribing behaviours still contribute to poor patient outcomes and societal harm. Factors at the provider and system level may hinder or facilitate the application of evidence-based guidelines; interventions designed to address such factors are needed. Methods and analysis Using implementation science and behaviour change theory, we have planned the development and evaluation of a comprehensive Opioid Self-Assessment Package, designed to increase adherence to the Canadian Opioid Guideline among family physicians. The intervention uses practical educational and self-assessment tools to provide prescribers with feedback on their current knowledge and practices, and resources to improve their practice. The evaluation approach uses a pretest and post-test design and includes both quantitative and qualitative methods at baseline and 6 months. We will recruit a purposive sample of approximately 10 family physicians in Ontario from diverse practice settings, who currently treat patients with long-term opioid therapy for chronic pain. Quantitative data will be analysed using basic descriptive statistics, and qualitative data will be analysed using the Framework Method. Ethics and dissemination The University Health Network Research Ethics Board approved this study. Dissemination plan includes publications, conference presentations and brief stakeholder reports. This evidenceinformed, theory-driven intervention has implications for national application of opioid quality improvement tools in primary care settings. We are engaging experts and end users in advisory and stakeholder roles throughout our project to increase its national relevance, application and sustainability. The performance measures could be used as the basis for health system quality improvement indicators to monitor opioid prescribing. Additionally, the methods and approach used in this study could be adapted for other opioid guidelines, or applied to other areas of preventive healthcare and clinical guideline implementation processes.

Leeman, J., et al. (2017). "Beyond "implementation strategies": classifying the full range of strategies used in implementation science and practice." *Implementation Science* 12.

Background: Strategies are central to the National Institutes of Health's definition of implementation research as "the study of strategies to integrate evidence-based interventions into specific settings." Multiple scholars have proposed lists of the strategies used in implementation research and practice, which they increasingly are classifying under the single term "implementation strategies." We contend that classifying all strategies under a single term leads to confusion, impedes synthesis across studies, and limits advancement of the full range of strategies of importance to implementation. To address this concern, we offer a system for classifying implementation strategies that builds on Proctor and colleagues' (2013) reporting guidelines, which recommend that authors not only name and define their

implementation strategies but also specify who enacted the strategy (i.e., the actor) and the level and determinants that were targeted (i.e., the action targets). Main body: We build on Wandersman and colleagues' Interactive Systems Framework to distinguish strategies based on whether they are enacted by actors functioning as part of a Delivery, Support, or Synthesis and Translation System. We build on Damschroder and colleague's Consolidated Framework for Implementation Research to distinguish the levels that strategies target (intervention, inner setting, outer setting, individual, and process). We then draw on numerous resources to identify determinants, which are conceptualized as modifiable factors that prevent or enable the adoption and implementation of evidence-based interventions. Identifying actors and targets resulted in five conceptually distinct classes of implementation strategies: dissemination, implementation process, integration, capacity-building, and scale-up. In our descriptions of each class, we identify the level of the Interactive System Framework at which the strategy is enacted (actors), level and determinants targeted (action targets), and outcomes used to assess strategy effectiveness. We illustrate how each class would apply to efforts to improve colorectal cancer screening rates in Federally Qualified Health Centers. Conclusions: Structuring strategies into classes will aid reporting of implementation research findings, alignment of strategies with relevant theories, synthesis of findings across studies, and identification of potential gaps in current strategy listings. Organizing strategies into classes also will assist users in locating the strategies that best match their needs.

Legare, F., et al. (2013). "Impact of DECISION + 2 on patient and physician assessment of shared decision making implementation in the context of antibiotics use for acute respiratory infections." *Implementation Science* 8.

Background: DECISION + 2, a training program for physicians, is designed to implement shared decision making (SDM) in the context of antibiotics use for acute respiratory tract infections (ARTIs). We evaluated the impact of DECISION + 2 on SDM implementation as assessed by patients and physicians, and on physicians' intention to engage in SDM. Methods: From 2010 to 2011, a multi-center, two-arm, parallel randomized clustered trial appraised the effects of DECISION + 2 on the decision to use antibiotics for patients consulting for ARTIs. We randomized 12 family practice teaching units (FPTUs) to either DECISION + 2 or usual care. After the consultation, both physicians and patients independently completed questionnaires based on the D-Option scale regarding SDM behaviors during the consultation. Patients also answered items assessing the role they assumed during the consultation (active/collaborative/passive). Before and after the intervention, physicians completed a questionnaire based on the Theory of Planned Behavior to measure their intention to engage in SDM. To account for the cluster design, we used generalized estimating equations and generalized linear mixed models to assess the impact of DECISION + 2 on the outcomes of interest. Results: A total of 270 physicians (66% women) participated in the study. After DECISION + 2, patients' D-Option scores were 80.1 +/- 1.1 out of 100 in the intervention group and 74.9 +/- 1.1 in the control group ($p = 0.001$). Physicians' D-Option scores were 79.7 +/- 1.8 in the intervention group and 76.3 +/- 1.9 in the control group ($p = 0.2$). However, subgroup analyses showed that teacher physicians D-Option scores were 79.7 +/- 1.5 and 73.0 +/- 1.4 respectively ($p = 0.001$). More patients reported assuming an active or collaborative role in the intervention group (67.1%), than in the control group (49.2%) ($p = 0.04$). There was a significant relation between patients' and physicians' D-Option scores ($p < 0.01$) and also between patient-reported assumed roles and both D-Option scores (as assessed by patients, $p < 0.01$; and physicians, $p = 0.01$). DECISION + 2 had no impact on the intention of physicians to engage in SDM. Conclusion: DECISION + 2 positively influenced SDM behaviors as assessed by patients and teacher physicians. Physicians' intention to engage in SDM was not affected by DECISION + 2.

Legare, F., et al. (2012). "Training health professionals in shared decision-making: An international environmental scan." *Patient Education and Counseling* 88(2): 159-169.

Objective: To identify and analyze training programs in shared decision-making (SDM) for health professionals. Methods: We conducted an environmental scan looking for programs that train health professionals in SDM. Pairs of reviewers independently analyzed the programs identified using a standardized data extraction sheet. The developers of the programs validated the data extracted. Results: We identified 54 programs conducted between 1996 and 2011 in 14 countries and 10 languages. Thirty-four programs targeted licensed health professionals, 10 targeted pre-licensure health professionals, and 10 targeted both. Most targeted only the medical profession ($n = 32$): six targeted more than one health profession. The five most frequently mentioned teaching methods were case-based discussion, small group educational session, role play, printed educational material, and audit and feedback. Thirty-six programs reported having evaluated their impacts but evaluation data was available only for 17. Conclusions: Health professional training programs in SDM vary widely in how and what they deliver, and evidence of their effectiveness is sparse. Practice implications: This study suggests there is a need for international consensus on ways to address the variability in SDM training programs. We need agreed criteria for certifying the programs and for determining the most effective types of training. (C) 2012 Elsevier Ireland Ltd. All rights reserved.

Legare, F. and P. Zhang (2013). Barriers and facilitators Strategies for identification and measurement.

Lenferink, A., et al. (2013). "A self-management approach using self-initiated action plans for symptoms with ongoing nurse support in patients with Chronic Obstructive Pulmonary Disease (COPD) and comorbidities: The COPE-III study protocol." *Contemporary Clinical Trials* 36(1): 81-89.

Background: Chronic Obstructive Pulmonary Disease (COPD) frequently coexists with other diseases. Whereas COPD action plans are currently part of usual care, they are less suitable and potentially unsafe for use in the presence of comorbidities. This study evaluates whether an innovative treatment approach directed towards COPD and frequently existing comorbidities can reduce COPD exacerbation days. We hypothesise that this approach, which combines self-initiated action plans and nurse support, will accelerate proper treatment actions and lead to better control of deteriorating symptoms. Methods: In this multicenter randomised controlled trial we aim to include 300 patients with COPD (GOLD II-IV), and with at least one comorbidity (cardiovascular disease, diabetes, anxiety and/or depression). Patients will be recruited from hospitals in the Netherlands (n = 150) and Australia (n = 150) and will be assigned to an intervention or control group. All patients will learn to complete daily symptom diaries for 12-months. Intervention group patients will participate in self-management training sessions to learn the use of individualised action plans for COPD and comorbidities, linked to the diary. The primary outcome is the number of COPD exacerbation days. Secondary outcomes include hospitalisations, quality of life, self-efficacy, adherence, patient's satisfaction and confidence, health care use and cost data. Analyses: Intention-to-treat analyses (random effect negative binomial regression and random effect mixed models) and cost-effectiveness analyses will be performed. Discussion: Prudence should be employed before extrapolating the use of COPD specific action plans in patients with comorbidities. This study evaluates the efficacy of tailored action plans for both COPD and common comorbidities. (C) 2013 Elsevier Inc. All rights reserved.

Leslie, H. H., et al. (2016). "Training And Supervision Did Not Meaningfully Improve Quality Of Care For Pregnant Women Or Sick Children In Sub-Saharan Africa." *Health Affairs* 35(9): 1716-1724.

In-service training courses and supportive supervision of health workers are among the most common interventions to improve the quality of health care in low-and middle-income countries. Despite extensive investment from donors, evaluations of the long-term effect of these two interventions are scarce. We used nationally representative surveys of health systems in seven countries in sub-Saharan Africa to examine the association of in-service training and supervision with provider quality in antenatal and sick child care. The results of our analysis showed that observed quality of care was poor, with fewer than half of evidence-based actions completed by health workers, on average. In-service training and supervision were associated with quality of sick child care; they were associated with quality of antenatal care only when provided jointly. All associations were modest-at most, improvements related to interventions were equivalent to 2 additional provider actions out of the 18-40 actions expected per visit. In-service training and supportive supervision as delivered were not sufficient to meaningfully improve the quality of care in these countries. Greater attention to the quality of health professional education and national health system performance will be required to provide the standard of health care that patients deserve.

Lestari, T., et al. (2019). "Bridging the knowledge-practice gap in tuberculosis contact management in a high-burden setting: a mixed-methods protocol for a multicenter health system strengthening study." *Implementation Science* 14.

Background: People in close contact with tuberculosis should have screening and appropriate management, as an opportunity for active case detection and prevention. However, implementation of tuberculosis contact screening and management is limited in high-burden settings. Behaviour change is needed across three levels of the healthcare system-policy-makers, healthcare providers, and patients. To bridge the wide policy-practice gap, this study draws on the Consolidated Framework for Implementation Research, the Behaviour Change Wheel, and the RE-AIM model (Reach, Effectiveness, Adoption, Implementation, Maintenance) to respectively understand barriers, implement change, and evaluate process and outcome. Methods: This methods paper describes a mixed-methods intervention study in Eastern Indonesia. Quantitative data will be collected during baseline, intervention, and sustainability periods and analyzed using time series analysis. The primary outcome is the number of individuals completing tuberculosis preventive therapy by the end of the two-year intervention phase. Of an estimated 10,000 contacts during this period, we anticipate that a minimum of 416 will be found to have active TB or will complete preventive therapy. Qualitative data (semi-structured interviews, focus group discussions, and observations) will be collected from consenting healthcare providers, patients, and contacts. Activities to promote policy implementation include healthcare provider training, quarterly continuous quality improvement workshops, a social media discussion forum, and promotional materials. The Consolidated Framework for Implementation Research will be used to identify reasons for limited policy implementation at baseline. The Behaviour Change Wheel will be used to ensure that a suitable range of activities are implemented to facilitate change. The RE-AIM model will be used as the evaluation framework. Discussion: Use of theoretical frameworks in combination can ensure a comprehensive understanding of, and robust response to, health policy underimplementation.

The selected frameworks are highly applicable to this pragmatic intervention study, in a setting where End TB Strategy targets will not be met without substantial behavior change within health systems. Continuous quality improvement cycles will provide a way to engage staff and stakeholders in understanding local data to motivate behavior change. If successful, up to 500 people could be prevented from developing complications of tuberculosis through early case-finding or receiving preventive therapy over a two-year period.

Levac, D., et al. (2015). "Best Practice Recommendations for the Development, Implementation, and Evaluation of Online Knowledge Translation Resources in Rehabilitation." *Physical Therapy* 95(4): 648-662.

The knowledge-to-practice gap in rehabilitation has spurred knowledge translation (KT) initiatives aimed at promoting clinician behavior change and improving patient care. Online KT resources for physical therapists and other rehabilitation clinicians are appealing because of their potential to reach large numbers of individuals through self-paced, self-directed learning. This article proposes best practice recommendations for developing online KT resources that are designed to translate evidence into practice. Four recommendations are proposed with specific steps in the development, implementation, and evaluation process: (1) develop evidence-based, user-centered content; (2) tailor content to online format; (3) evaluate impact; and (4) share results and disseminate knowledge. Based on KT evidence and instructional design principles, concrete examples are provided along with insights gained from experiences in creating and evaluating online KT resources for physical therapists. In proposing these recommendations, the next steps for research are suggested, and others are invited to contribute to the discussion.

Lewin, S., et al. (2017). "Assessing the complexity of interventions within systematic reviews: development, content and use of a new tool (iCAT_SR)." *Bmc Medical Research Methodology* 17.

Background: Health interventions fall along a spectrum from simple to more complex. There is wide interest in methods for reviewing 'complex interventions', but few transparent approaches for assessing intervention complexity in systematic reviews. Such assessments may assist review authors in, for example, systematically describing interventions and developing logic models. This paper describes the development and application of the intervention Complexity Assessment Tool for Systematic Reviews (iCAT_SR), a new tool to assess and categorise levels of intervention complexity in systematic reviews. Methods: We developed the iCAT_SR by adapting and extending an existing complexity assessment tool for randomized trials. We undertook this adaptation using a consensus approach in which possible complexity dimensions were circulated for feedback to a panel of methodologists with expertise in complex interventions and systematic reviews. Based on these inputs, we developed a draft version of the tool. We then invited a second round of feedback from the panel and a wider group of systematic reviewers. This informed further refinement of the tool. Results: The tool comprises ten dimensions: (1) the number of active components in the intervention; (2) the number of behaviours of recipients to which the intervention is directed; (3) the range and number of organizational levels targeted by the intervention; (4) the degree of tailoring intended or flexibility permitted across sites or individuals in applying or implementing the intervention; (5) the level of skill required by those delivering the intervention; (6) the level of skill required by those receiving the intervention; (7) the degree of interaction between intervention components; (8) the degree to which the effects of the intervention are context dependent; (9) the degree to which the effects of the interventions are changed by recipient or provider factors; (10) and the nature of the causal pathway between intervention and outcome. Dimensions 1-6 are considered 'core' dimensions. Dimensions 7-10 are optional and may not be useful for all interventions. Conclusions: The iCAT_SR tool facilitates more in-depth, systematic assessment of the complexity of interventions in systematic reviews and can assist in undertaking reviews and interpreting review findings. Further testing of the tool is now needed.

Leygue, C., et al. (2017). "Saving energy in the workplace: Why, and for whom?" *Journal of Environmental Psychology* 53: 50-62.

Saving energy at work might be considered altruistic; because often no personal benefits accrue. However, we consider the possibility that it can be a form of impure-altruism in that the individual experiences some rewards. We develop a scale to measure motivations to save energy at work and test its predictive power for energy-saving intentions and sustainable choices. In two studies (N = 293 and N = 94) motivations towards helping their organization and the planet were rated as important motivations, as was warm-glow (feeling good), indicating that impure-altruism does exist in this context. Energy saving was predicted by environmental concern and the desire to help one's organization. Notably, the stronger the motivations to promote one's reputation were, the weaker was the intention to save energy. Promoting motivations, particularly those that focus on benefits to the organization, may be an effective addition to environmental messages typically used as motivations in campaigns. (C) 2017 The Authors. Published by Elsevier Ltd.

Li, D., et al. (2017). "Energy use behaviors in buildings: Towards an integrated conceptual framework." *Energy Research & Social Science* 23: 97-112.

To achieve significant energy reductions in buildings, decision-makers can engage occupants in different types of interventions such as information sharing, feedback and social marketing. To improve the effectiveness of these energy saving interventions, this study develops and tests a model which is capable of identifying occupants' energy use characteristics and the influential factors of their energy use behaviors (e.g., turning off lights when not in use). The consumer segmentation approach from social marketing is adopted to divide occupants into different categories using three metrics: motivation, opportunity and ability. As a result, a set of hypotheses and corresponding measures are identified to study the effect of influential factors on occupants' energy use characteristics and intentional energy use behaviors. The occupants are then clustered into five main segments that take into account how the occupants will respond to interventions. In the case study, a survey is designed to test the hypotheses and their validity using descriptive statistical analysis and structural equation modeling. The proposed framework is expected to provide decision-makers with useful information to design effective energy saving interventions to reduce overall energy consumption in buildings. (C) 2016 Elsevier Ltd. All rights reserved.

Li, D., et al. (2019). "Understanding energy-saving behaviors in the American workplace: A unified theory of motivation, opportunity, and ability." *Energy Research & Social Science* 51: 198-209.

Occupant behavior has a significant impact on building energy consumption. To reduce energy use in office buildings, various intervention strategies have been investigated to promote energy-saving behaviors among occupants. However, the influential factors of these behaviors have not been fully understood in existing studies. To fill this gap, this study proposes an integrated Motivation-Opportunity-Ability (MOA) framework which incorporates social-psychological constructs from the Norm Activation Model and the Theory of Planned Behavior to investigate the determinants of energy-saving behaviors in the office environment. An online survey is distributed to collect data from multiple office buildings across the U.S. Results of the structural equation model (n = 612) show that opportunity has the strongest effect on energy-saving behaviors, followed by motivation and ability. In addition, motivation mediates the effect of opportunity and ability. This proposed framework offers an approach for decision-makers to design effective energy interventions based on the constraining factors in the targeted buildings.

Li, P. and X. S. Song (2019). "Organic Food Amino Acid Nutrition and Financial Risk Calculation for PPP Project." *Archivos Latinoamericanos De Nutricion* 69(6): 183-190.

Organic red bean is a kind of health food with high protein and low fat, which contains high protein and carbohydrate, but relatively low fat. Red bean contains unsaturated fatty acid linoleic acid, vitamin and more dietary fiber. In addition, red beans contain vitamins, mainly B vitamins and dietary fiber and other substances for the heart protection have a good effect. In this paper, the author analyzes the organic food amino acid nutrition and financial risk calculation for PPP project. The success of the project construction project under the PPP model needs a high level of pre planning and the common planning of all parties. In PPP projects, it is very important for the operation of the whole project to realize reasonable management and control of funds. Therefore, it is necessary to scientifically prepare the budget and strengthen the management and control of funds. At the same time, it is necessary to carry out accurate investment planning for the funds in the project, scientific arrangement and planning for loans and bonds, and realize the scientific distribution and management of the funds input and use.

Li, Z. G., et al. (2019). "An Adaptive, Data-Driven Personalized Advisor for Increasing Physical Activity." *Ieee Journal of Biomedical and Health Informatics* 23(3): 999-1010.

In recent years, there has been growing interest in the use of fitness trackers and smartphone applications for promoting physical activity. Many of these applications use accelerometers to estimate the level of activity that users engage in and provide visual reports of a user's step counts. When provided, most recommendations are limited to popular general health advice. In our study, we develop an approach for providing data-driven and personalized recommendations for intraday activity planning. We generate an hour-by-hour activity plan that is based on the user's probability of adhering to the plan. The user's probability of adherence to the plan is personalized, based on his/her past activity patterns and current activity target. Using this approach, we can tailor notifications (e.g., reminders, encouragement) to each user. We can also dynamically update the user's activity plan at mid-day, if his/her actual activity deviates sufficiently from the original plan. In this paper, we describe an implementation of our approach and report our technical findings with respect to identifying typical activity patterns from historical data, predicting whether an activity target will be achieved, and adapting an activity plan based on a user's actual performance throughout the day.

Liberati, E. G., et al. (2018). "WOS:000425643500007 Learning from high risk industries may not be straightforward: a qualitative study of the hierarchy of risk controls approach in healthcare." *International Journal for Quality in Health Care* 30(1): 39-43.

Objective: Though healthcare is often exhorted to learn from 'high-reliability' industries, adopting tools and techniques from those sectors may not be straightforward. We sought to examine the hierarchies of risk controls approach, used in high-risk industries to rank interventions according to supposed effectiveness in reducing risk, and widely advocated as appropriate for healthcare. **Design:** Classification of risk controls proposed by clinical teams following proactive detection of hazards in their clinical systems. Classification was based on a widely used hierarchy of controls developed by the US National Institute for Occupational Safety and Health (NIOSH). **Setting and participants:** A range of clinical settings in four English NHS hospitals. **Results:** The four clinical teams in our study planned a total of 42 risk controls aimed at addressing safety hazards. Most (n = 35) could be classed as administrative controls, thus qualifying among the weakest type of interventions according to the HoC approach. Six risk controls qualified as 'engineering' controls, i.e. the intermediate level of the hierarchy. Only risk control qualified as 'substitution', classified as the strongest type of intervention by the HoC. **Conclusions:** Many risk controls introduced by clinical teams may cluster towards the apparently weaker end of an established hierarchy of controls. Less clear is whether the HoC approach as currently formulated is useful for the specifics of healthcare. Valuable opportunities for safety improvement may be lost if inappropriate hierarchical models are used to guide the selection of patient safety improvement interventions. Though learning from other industries may be useful, caution is needed.

Lindgren, H., et al. (2017). Personalised Persuasive Coaching to Increase Older Adults' Physical and Social Activities: A Motivational Model. *Advances in Practical Applications of Cyber-Physical Multi-Agent Systems: The Paams Collection*, Paams 2017. Y. Demazeau, P. Davidsson, J. Bajo and Z. Vale. 10349: 170-182.

The overall aim of this research is to develop an adaptive digital coaching system that gives seniors personalized support for increasing physical activity, and promoting participation in social activity and their own care. The main research question is how can different behavioral and motivational factors of an individual be formally integrated into the knowledge base of a coach agent for generating support tailored to the individual's needs and preferences in a specific situation? The results include a theory-based motivational model incorporating different person-centric factors, and an algorithm for generating the adaptive and persuasive behavior of the agent that aims to motivate the individual. These are integrated in a mobile coaching application together with a set of theory-based motivating messages targeting primarily physical and social activities. Future work includes the development of methods for handling conflicting motives, and user studies.

Lipman, S. A. and S. A. Burt (2017). "Self-reported prevalence of pests in Dutch households and the use of the health belief model to explore householders' intentions to engage in pest control." *Plos One* 12(12).

Pests in the home are a health risk because they can be vectors for infectious disease, contribute to allergies and cause damage to buildings. The aims of this study were to record which categories of pests were reported in homes and to use a social cognition model, the health belief model, to investigate which psychological factors influence householders' intentions to control pests. An online questionnaire was completed by 413 respondents between 11 September and 31 November 2015. A large majority of respondents reported pests in or around their home within the previous year. The prevalences were: flying insects 98%, crawling insects 85%, rodents 62%, birds 58%, and moles 20%. Regression analysis for the health belief model revealed that perceiving greater benefits and fewer barriers to pest control and expecting severe consequences of zoonotic infections predicted higher intention to control pests. Intentions towards pest control were not influenced by perceiving oneself as susceptible to catching a disease from pests or health motivation (striving towards a healthy lifestyle). Intentions to engage in pest control were lower for households reporting bird prevalence. The findings suggest that interventions aimed at improving the effectiveness of domestic pest control should focus on increasing the benefits that individuals associate with effective pest control, lowering barriers, and on underlining the severity of the diseases that pests may carry.

Litchfield, I. J., et al. (2017). "Adaption, implementation and evaluation of collaborative service improvements in the testing and result communication process in primary care from patient and staff perspectives: a qualitative study." *Bmc Health Services Research* 17.

Background: Increasing numbers of blood tests are being ordered in primary care settings and the swift and accurate communication of test results is central to providing high quality care. The process of testing and result communication is complex and reliant on the coordinated actions of care providers, external groups in laboratory and hospital settings, and patients. This fragmentation leaves it vulnerable to error and the need to improve an apparently fallible system is apparent. However, primary care is complex and does not necessarily adopt change in a linear and prescribed manner influenced by a range of factors relating to practice staff, patients and organisational factors. To account for these competing perspectives, we worked in conjunction with both staff and patients to develop and implement strategies intended to improve patient satisfaction and increase efficiency of existing processes. **Methods:** The study applied the principles of 'experience-based co-design' to identify key areas of weakness and source proposals

for change from staff and patients. The study was undertaken within two primary practices situated in South Birmingham (UK) of contrasting size and socio-economic environment. Senior practice staff were involved in the refinement of the interventions for introduction. We conducted focus groups singly constituted of staff and patients at each practice to determine suitability, applicability and desirability alongside the practical implications of their introduction. Results: At each practice four of the six proposals for change were implemented these were increased access to phlebotomy, improved receptionist training, proactive communication of results, and increased patient awareness of the tests ordered and the means of their communication. All were received favourably by both patients and staff. The remaining issues around the management of telephone calls and the introduction of electronic alerts for missing results were not addressed due to constraints of time and available resources. Conclusions: Approaches to tackling the same area of weakness differed at practices and was determined by individual staff attitudes and by organisational and patient characteristics. The long-term impact of the changes requires further quantitative evaluation.

Litterbach, E. K., et al. (2017). "Factors Influencing Engagement and Behavioral Determinants of Infant Feeding in an mHealth Program: Qualitative Evaluation of the Growing Healthy Program." *Jmir Mhealth and Uhealth* 5(12).

Background: Infant feeding practices, including breastfeeding and optimal formula feeding practices, can play a role in the prevention of childhood obesity. The ubiquity of smartphone ownership among women of childbearing age provides important opportunities for the delivery of low-cost, broad reach parenting interventions delivered by mobile phone (mHealth or mobile health interventions). Little is known about how parents engage with mHealth programs targeting infant feeding and how such programs might influence infant feeding practices. Objective: The objectives of this study were to explore participant views on (1) factors influencing engagement with the Growing healthy program, an mHealth program targeting healthy infant feeding practices from birth to 9 months of age, and (2) the ways in which the program influenced behavioral determinants of capability, opportunity, and motivation for breastfeeding and optimal formula feeding behaviors. Methods: Semistructured, telephone interviews were conducted with a purposeful sample (n=24) of mothers participating in the Growing healthy program. Interviews explored participants' views about engagement with the program and its features, and the ways the program influenced determinants of infant feeding behaviors related to breastfeeding and optimal formula feeding. The interview schedule was informed by the Capability, Opportunity, Motivation, and Behavior (COM-B) model. Results: Participants reported that engagement fluctuated depending on need and the degree to which the program was perceived to fit with existing parenting beliefs and values. Participants identified that the credibility of the program source, the user friendly interface, and tailoring of content and push notifications to baby's age and key transition points promoted engagement, whereas technical glitches were reported to reduce engagement. Participants discussed that the program increased confidence in feeding decisions. For breastfeeding mothers, this was achieved by helping them to overcome doubts about breast milk supply, whereas mothers using formula reported feeling more confident to feed to hunger and satiety cues rather than encouraging infants to finish the bottle. Participants discussed that the program provided around-the-clock, readily accessible, nonjudgmental information and support on infant feeding and helped to reinforce information received by health professionals or encouraged them to seek additional help if needed. Participants reflected that their plans for feeding were typically made before joining the program, limiting the potential for the program to influence this aspect of motivation. Rather, the program provided emotional reassurance to continue with current feeding plans. Conclusions: Our findings suggest that engagement with the program was influenced by an interplay between the program features and needs of the user. Participants reported that the program enhanced confidence in feeding decisions by providing a 24/7 accessible, expert, nonjudgmental support for infant feeding that complemented health professional advice. It is likely that interventions need to commence during pregnancy to maximize the impact on breastfeeding intentions and plans.

Liu, H. M., et al. (2015). "Patients' and Providers' Perspectives of a Polypill Strategy to Improve Cardiovascular Prevention in Australian Primary Health Care A Qualitative Study Set Within a Pragmatic Randomized, Controlled Trial." *Circulation-Cardiovascular Quality and Outcomes* 8(3): 301-308.

Background-This study explores health provider and patient attitudes toward the use of a cardiovascular polypill as a health service strategy to improve cardiovascular prevention. Methods and Results-In-depth, semistructured interviews (n= 94) were conducted with health providers and patients from Australian general practice, Aboriginal community-controlled and government-run Indigenous Health Services participating in a pragmatic randomized controlled trial evaluating a polypill-based strategy for high-risk primary and secondary cardiovascular disease prevention. Interview topics included polypill strategy acceptability, factors affecting adherence, and trial implementation. Transcribed interview data were analyzed thematically and interpretively. Polypill patients commented frequently on cost-savings, ease, and convenience of a daily-dosing pill. Most providers considered a polypill strategy to facilitate improved patient medication use. Indigenous Health Services providers and indigenous patients thought the strategy acceptable and beneficial for indigenous patients given the high disease burden. Providers noted the inflexibility

of the fixed dose regimen, with dosages sometimes inappropriate for patients with complex management considerations. Future polypill formulations with varied strengths and classes of medications may overcome this barrier. Many providers suggested the polypill strategy, in its current formulations, might be more suited to high-risk primary prevention patients. Conclusions-The polypill strategy was generally acceptable to patients and providers in cardiovascular prevention. Limitations to provider acceptability of this particular polypill were revealed, as was a perception it might be more suitable for high-risk primary prevention patients, though future combinations could facilitate its use in secondary prevention. Participants suggested a polypill-based strategy as particularly appropriate for lowering the high cardiovascular burden in indigenous populations.

Lloyd, B., et al. (2014). "The New South Wales Allied Health Workplace Learning Study: barriers and enablers to learning in the workplace." *Bmc Health Services Research* 14.

Background: Workplace learning refers to continuing professional development that is stimulated by and occurs through participation in workplace activities. Workplace learning is essential for staff development and high quality clinical care. The purpose of this study was to explore the barriers to and enablers of workplace learning for allied health professionals within NSW Health. Methods: A qualitative study was conducted with a purposively selected maximum variation sample (n = 46) including 19 managers, 19 clinicians and eight educators from 10 allied health professions. Seven semi-structured interviews and nine focus groups were audio-recorded and transcribed. The 'framework approach' was used to guide the interviews and analysis. Textual data were coded and charted using an evolving thematic framework. Results: Key enablers of workplace learning included having access to peers, expertise and 'learning networks', protected learning time, supportive management and positive staff attitudes. The absence of these key enablers including heavy workload and insufficient staffing were important barriers to workplace learning. Conclusion: Attention to these barriers and enablers may help organisations to more effectively optimise allied health workplace learning. Ultimately better workplace learning may lead to improved patient, staff and organisational outcomes.

Lloyd-Evans, B., et al. (2015). "Evaluation of a community awareness programme to reduce delays in referrals to early intervention services and enhance early detection of psychosis." *Bmc Psychiatry* 15.

Background: Reducing treatment delay and coercive pathways to care are accepted aims for Early Intervention Services (EIS) for people experiencing first episode psychosis but how to achieve this is unclear. A one-year community awareness programme was implemented in a London EIS team, targeting staff in non-health service community organisations. The programme comprised psycho-educational workshops and EIS link workers, and offering direct referral routes to EIS. Its feasibility and its impact on duration of untreated psychosis and pathways to EIS were evaluated. Methods: Evaluation comprised: pre and post questionnaires with workshop participants assessing knowledge and attitudes to psychosis and mental health services; and a comparison of new service users' "service DUP" (time from first psychotic symptom to first contact with EIS) and pathways to care in the intervention year and preceding year. Focus groups sought stakeholders' views regarding the benefits and limitations of the programme and what else might promote help-seeking. Results: 41 workshops at 36 community organisations were attended by 367 staff. 19 follow up workshops were conducted and 16 services were allocated an EIS link worker. Participants' knowledge and attitudes to psychosis and attitudes to mental health services improved significantly following workshops. In the year of the intervention, only 6 of 110 new service users reached EIS directly via community organisations. For all new referrals accepted by EIS, in the intervention year compared to the previous year, there was no difference in mean or median service DUP. A clear impact on pathways to care could not be discerned. Stakeholders suggested that barriers to referral remained. These included: uncertainty about the signs of early psychosis, disengagement by young people when becoming unwell, and worries about stigma or coercive treatment from mental health services. More general, youth focused, mental health services were proposed. Conclusions: The community awareness programme did not reduce treatment delays for people experiencing first episode psychosis. Further research is needed regarding effective means to reduce duration of untreated psychosis. Although EIS services are guided to promote access through community engagement, this may not be an effective use of their limited resources.

Lockton, D., et al. (2013). "Exploring Problem-framing through Behavioural Heuristics." *International Journal of Design* 7(1): 37-53.

Design for behaviour change aims to influence user behaviour, through design, for social or environmental benefit. Understanding and modelling human behaviour has thus come within the scope of designers' work, as in interaction design, service design and user experience design more generally. Diverse approaches to how to model users when seeking to influence behaviour can result in many possible strategies, but a major challenge for the field is matching appropriate design strategies to particular behaviours (Zachrisson & Boks, 2012). In this paper, we introduce and explore behavioural heuristics as a way of framing problem-solution pairs (Dorst & Cross, 2001) in terms of simple rules. These act as a 'common language' between insights from user research and design principles and techniques, and draw on ideas

from human factors, behavioural economics, and decision research. We introduce the process via a case study on interaction with office heating systems, based on interviews with 16 people. This is followed by worked examples in the 'other direction', based on a workshop held at the Interaction '12 conference, extracting heuristics from existing systems designed to influence user behaviour, to illustrate both ends of a possible design process using heuristics.

Logren, A., et al. (2017). "Self-reflective talk in group counselling." *Discourse Studies* 19(4): 422-440.

Reflective processing is a joint social action that develops in interaction. Using conversation analysis and discursive psychology, this article focuses on self-reflective turns of talk in group counselling for adults at risk of type 2 diabetes. We show how reflective processing unfolds in patterns of interaction, wherein group members take an observing, evaluating or interpreting position towards their own actions and experiences. Self-reflective talk is neither exclusively dependent on counsellors' actions nor limited to the niches the counselling programme structure offers. Self-reflective talk is one method of generating joint reflective processing. Such talk makes a topic available for discussion by connecting details of counselling with individuals' experiences and enabling sharing. Self-reflective talk thus serves as a way for group members to participate in constructing a lifestyle problem, to invite or provide sharing of experiences and to display their orientation to the institutional task at hand.

Lokker, C., et al. (2015). "A scoping review of classification schemes of interventions to promote and integrate evidence into practice in healthcare." *Implementation Science* 10.

Background: Many models and frameworks are currently used to classify or describe knowledge translation interventions to promote and integrate evidence into practice in healthcare. Methods: We performed a scoping review of intervention classifications in public health, clinical medicine, nursing, policy, behaviour science, improvement science and psychology research published to May 2013 by searching MEDLINE, PsycINFO, CINAHL and the grey literature. We used five stages to map the literature: identifying the research question; identifying relevant literature; study selection; charting the data; collating, summarizing, and reporting results. Results: We identified 51 diverse classification schemes, including 23 taxonomies, 15 frameworks, 8 intervention lists, 3 models and 2 other formats. Most documents were public health based, 55% included a literature or document review, and 33% were theory based. Conclusions: This scoping review provides an overview of schemes used to classify interventions which can be used for evaluation, comparison and validation of existing and emerging models. The collated taxonomies can guide authors in describing interventions; adequate descriptions of interventions will advance the science of knowledge translation in healthcare.

Long, J. C., et al. (2019). "Process evaluation of a behaviour change approach to improving clinical practice for detecting hereditary cancer." *Bmc Health Services Research* 19.

Background This retrospective process evaluation reports on the application of a 1-year implementation program to increase identification and management of patients at high risk of a hereditary cancer syndrome. The project used the Theoretical Domains Framework Implementation (TDFI) approach, a promising implementation methodology, used successfully in the United Kingdom to address patient safety issues. This Australian project run at two large public hospitals aimed to increase referrals of patients flagged as being at risk of Lynch syndrome on the basis of a screening test to genetic services. At the end of the project, the pathologists' processes had changed, but the referral rate remained inconsistent and low. Methods Semi-structured interviews explored participants' perceptions of the TDFI approach and Health services researchers wrote structured reflections. Interview transcripts and reflections were coded initially against implementation outcomes for the various TDFI approach activities: acceptability, appropriateness, feasibility, value for time cost, and adoption. On a second pass, themes were coded around challenges to the approach. Results Interviews were held with nine key project participants including pathologists, oncologists, surgeons, genetic counsellors and an administrative officer. Two health services researchers wrote structured reflections. The first of two major themes was 'Theory-related challenges', with subthemes of accessibility of theory underpinning the TDFI, commitment to that theory-based approach, and the problem of complexity. The second theme was 'Practical challenges' with subthemes of stakeholder management, navigating the system, and perceptions of the problem. Health services researchers reflected on the benefits of bridging professional divides and facilitating collective learning and problem solving, but noted frustrations around clinicians' time constraints that led to sparse interactions with the team, and lack of authority to effect change themselves. Conclusions Mixed success of adoption as an outcome was attributed to the complexity and highly nuanced nature of the setting. This made identifying the target behaviour, a key step in the TDFI approach, challenging. Introduced changes in the screening process led to new, unexpected issues yet to be addressed. Strategies to address challenges are presented, including using an internal facilitator with a focus on applying a theory-based implementation approach.

Longman, J. M., et al. (2018). "Improving implementation of the smoking cessation guidelines with pregnant women: How to support clinicians?" *Midwifery* 58: 137-144.

Objective: this study aimed to explore the enablers and barriers to implementation of the Australian smoking cessation in pregnancy guidelines. These guidelines direct clinicians to follow the 5As of cessation: Ask, Advise, Assess, Assist and Arrange follow-up. **Design:** semi-structured interviews based on the Theoretical Domains Framework (TDF) elicited clinicians' views and experiences of implementing the guidelines. **Setting:** antenatal care in the NSW public health system. **Participants:** 27 maternity service managers, obstetricians and midwives. **Findings:** participants confirmed that implementation of the smoking cessation guidelines was sub-optimal. This was particularly the case with Assist and Arrange follow up at the initial visit, and with following any of the 5As at subsequent visits. Key barriers included systems which did not support implementation or monitoring, lack of knowledge, skills and training, perceived time restrictions, 'difficult conversations' and perceiving smoking as a social activity. Enablers included clinicians' knowledge of the harms of smoking in pregnancy, clinicians' skills in communicating with pregnant women, positive emotions, professional role and identity, the potential of training and of champions to influence practice, and systems that regulated behaviour. **Key conclusions:** these findings will contribute to the development of a multifaceted intervention to support clinicians in implementing the guidelines.

Los, F. S., et al. (2019). "The view and policy of management of occupational health services on the performance of workers' health surveillance: a qualitative exploration." *Bmc Health Services Research* 19.

Background Although workers' health surveillance is an important preventive activity, it is not regularly performed. In addition to the occupational physician, the management of occupational health services can also be involved in the performance of workers' health surveillance. The present study investigated the view and policy of the managements of occupational health services on the performance of workers' health surveillance by occupational physicians. **Method** Semi-structured face-to-face interviews about the mission, view, and policy of the occupational health services with respect to workers' health surveillance were conducted with eighteen randomly selected board members of occupational health services in the Netherlands. The results were transcribed verbatim and were analysed using MAXQDA software to form themes and categories. **Results** The first theme found was the view of the management of occupational health services. Categories found were mission statements of occupational health services and the attitude of the management of occupational health services towards workers' health surveillance. Three types of mission statements were mentioned by the board members: keeping workers at work, improving the health of workers, or helping the employer with sick-leave management. Both positive and negative attitudes towards workers' health surveillance appeared from the interviews. Some board members mentioned that workers' health surveillance can improve workers' health, and creates awareness about workers' health. Other board members mentioned that performing workers' health surveillance is eliciting problems, and that employers do not have a positive attitude towards workers' health surveillance. The second theme was the policy on performing workers' health surveillance. Categories found were the policy on performing workers' health surveillance towards companies, and the policy on performing workers' health surveillance towards professionals. Some occupational health services recommend workers' health surveillance to all companies. However, in general workers' health surveillance was only performed at request of companies, and no instructions or training programmes for occupational physicians were provided. **Conclusion** Although some of the mentioned views on workers' health surveillance are positive, the policy of occupational health services on workers' health surveillance does, so far, in general, not stimulate occupational physicians or employers to perform or organize workers' health surveillance.

Loveday, A., et al. (2016). "Novel technology to help understand the context of physical activity and sedentary behaviour." *Physiological Measurement* 37(10): 1834-1851.

When used in large, national surveillance programmes, objective measurement tools provide prevalence estimates of low physical activity guideline compliance and high amounts of sedentary time. There are undoubtedly a plethora of reasons for this but one possible contributing factor is the current lack of behavioural context offered by accelerometers and posture sensors. Context includes information such as where the behaviour occurs, the type of activity being performed and is vital in allowing greater refinement of intervention strategies. Novel technologies are emerging with the potential to provide this information. Example data from three ongoing studies is used to illustrate the utility of these technologies. Study one assesses the concurrent validity of electrical energy monitoring and wearable cameras as measures of television viewing. This study found that on average the television is switched on for 202 min d(-1) but is visible in just 90 min of wearable camera images with a further 52 min where the participant is in their living room but the television is not visible in the image. Study two utilises indoor location monitoring to assess where older adult care home residents accumulate their sedentary time. This study found that residents were highly sedentary (sitting for an average of 720 min d(-1)) and spent the majority of their time in their own rooms with more time spent in communal areas in the morning than in the afternoon. Lastly, study three discusses the use of proximity sensors to quantify exposure to a height adjustable desk. These studies are example applications of this technology, with many

other technologies available and applications possible. The adoption of these technologies will provide researchers with a more complete understanding of the behaviour than has previously been available.

Lovell, M., et al. (2019). "Screening and Audit as Service-Level Strategies to Support Implementation of Australian Guidelines for Cancer Pain Management in Adults: A Feasibility Study." *Pain Management Nursing* 20(2): 113-117.

Background: Pain in people with cancer is common but often under-recognized and under-treated. Guidelines can improve the quality of pain care, but need targeted strategies to support implementation. Aim: To test the feasibility of two service-level strategies for supporting guideline implementation: a screening system and medical record audit. Design: Multimethods. Setting: One oncology outpatient service, and one palliative care outpatient and inpatient service. Participants: Patients with advanced cancer. Methods: Patients were screened in the waiting room with a modified version of the Edmonton Symptom Assessment System-revised either electronically or in paper-based format. Feasibility indicated the percentage of patients successfully screened from the total number attending the services. An audit assessed adherence to key indicators of pain assessment and management. Feasibility thresholds were set at 75% incidence for screening and a median of 30 minutes per patient for audit. Results: Of 452 patient visits, 95% (n = 429) were successfully screened, 34% (n = 155) electronically and 61% (n = 274) paper-based. Electronic pain screening was technically challenging and time-intensive for nurses. Thirtyone patients consented to have their records audited. The median audit time was 37.5 minutes (range 10-120 minutes). Variability arose from the number and type of record (outpatient or inpatient). Adherence to indicators varied from 63% (pain assessment at first presentation) to 94% (regular pain assessment and medication prescribed at regular intervals). Conclusions: This study confirmed the need to implement evidence-based guidelines for cancer pain and generated useful insights into the feasibility of pain screening and audit. Crown copyright (C) 2019 Published by Elsevier Inc. on behalf of the American Society for Pain Management Nursing

Lovell, M. R., et al. (2014). "Patient Education, Coaching, and Self-Management for Cancer Pain." *Journal of Clinical Oncology* 32(16): 1712-+.

Purpose Multiple systematic reviews and meta-analyses have identified the effectiveness of patient education in improving cancer pain management. However, the mechanisms by which patient education improves pain outcomes are uncertain, as are the optimal delivery, content, timing, frequency, and duration. This review provides best-bet recommendations based on available evidence to guide service managers and clinicians in developing a patient education program. Methods We used patient-centered care, self-management, coaching, and a behavior change wheel as lenses through which to consider the evidence for elements of patient education most likely to be effective within the context of other strategies for overcoming barriers to cancer pain assessment and management. Results The evidence suggests that optimal strategies include those that are patient-centered and tailored to individual needs, are embedded within health professional-patient communication and therapeutic relationships, empower patients to self-manage and coordinate their care, and are routinely integrated into standard cancer care. An approach that integrates patient education with processes and systems to ensure implementation of key standards for pain assessment and management and education of health professionals has been shown to be most effective. Conclusion Patient education is effective in reducing cancer pain and should be standard practice in all settings. For optimal results, patient education should be integrated with other strategies for implementing evidence-based, person-centered care and overcoming barriers at the levels of patient, provider, and health system. (C) 2014 by American Society of Clinical Oncology

Lowson, K., et al. (2015). "Examining the implementation of NICE guidance: cross-sectional survey of the use of NICE interventional procedures guidance by NHS Trusts." *Implementation Science* 10.

Background: In the UK, NHS hospitals receive large amounts of evidence-based recommendations for care delivery from the National Institute for Health and Care Excellence (NICE) and other organisations. Little is known about how NHS organisations implement such guidance and best practice for doing so. This study was therefore designed to examine the dissemination, decision-making, and monitoring processes for NICE interventional procedures (IP) guidance and to investigate the barriers and enablers to the implementation of such guidance. Methods: A cross-sectional survey questionnaire was developed and distributed to individuals responsible for managing the processes around NICE guidance in all 181 acute NHS hospitals in England, Scotland, Wales and Northern Ireland. A review of acute NHS hospital policies for implementing NICE guidance was also undertaken using information available in the public domain and from organisations' websites. Results: The response rate to the survey was 75 % with 135 completed surveys received. Additionally, policies from 25 % of acute NHS hospitals were identified and analysed. NHS acute hospitals typically had detailed processes in place to implement NICE guidance, although organisations recognised barriers to implementation including organisational process barriers, clinical engagement and poor targeting with a large number of guidance issued. Examples of enablers to, and good practice for, implementation of guidance were found, most notably the value of shared learning experiences between NHS hospitals. Implications for NICE were also identified. These included making

improvements to the layout of guidance, signposting on the website and making better use of their shared learning platform. Conclusions: Most organisations have robust processes in place to deal with implementing guidance. However, resource limitations and the scope of guidance received by organisations create barriers relating to organisational processes, clinician engagement and financing of new procedures. Guidance implementation can be facilitated through encouragement of shared learning by organisations such as NICE and open knowledge transfer between organisations.

Luca, N. R., et al. (2016). "Towards a service-dominant approach to social marketing." *Marketing Theory* 16(2): 194-218.

Over the last decade, social marketing has moved away from traditional marketing management approaches towards service-oriented theory, integrating concepts from other disciplines, to account for the distinctive nature of social change and develop an ecological perspective. This article extends prior literature by interrogating the applicability of service-dominant logic (SDL) to social marketing, with a particular emphasis on how a systems perspective can offer new ways to address challenges of social change. In so doing, it examines how the social marketing benchmarks can be extended through applying (and adapting) the principles, concepts and theories of SDL. The article provides critical reflection on the challenges of transferring service-dominant theory to social change contexts highlighting implications for practice and a future research agenda.

Lucas, P. J., et al. (2017). "Development of an intervention to reduce antibiotic use for childhood coughs in UK primary care using critical synthesis of multi-method research." *Bmc Medical Research Methodology* 17.

Background: Overuse of antibiotics contributes to the global threat of antimicrobial resistance. Antibiotic stewardship interventions address this threat by reducing the use of antibiotics in occasions or doses unlikely to be effective. We aimed to develop an evidence-based, theory-informed, intervention to reduce antibiotic prescriptions in primary care for childhood respiratory tract infections (RTI). This paper describes our methods for doing so. Methods: Green and Krueger's Precede/Proceed logic model was used as a framework to integrate findings from a programme of research including 5 systematic reviews, 3 qualitative studies, and 1 cohort study. The model was populated using a strength of evidence approach, and developed with input from stakeholders including clinicians and parents. Results: The synthesis produced a series of evidence-based statements summarizing the quantitative and qualitative evidence for intervention elements most likely to result in changes in clinician behaviour. Current evidence suggests that interventions which reduce clinical uncertainty, reduce clinician/parent miscommunication, elicit parent concerns, make clear delayed or no-antibiotic recommendations, and provide clinicians with alternate treatment actions have the best chance of success. We designed a web-based within-consultation intervention to reduce clinician uncertainty and pressure to prescribe, designed to be used when children with RTI present to a prescribing clinician in primary care. Conclusions: We provide a worked example of methods for the development of future complex interventions in primary care, where multiple factors act on multiple actors within a complex system. Our synthesis provided intervention guidance, recommendations for practice, and highlighted evidence gaps, but questions remain about how best to implement these recommendations. The funding structure which enabled a single team of researchers to work on a multi-method programme of related studies (NIHR Programme Grant scheme) was key in our success.

Luck, K. E. (2017). "A proposed program theory for a smoke-free hospital property." *Social Theory & Health* 15(3): 323-345.

Health promotion includes a broad range of interventions, often informed by various theories to influence individuals and their social settings; however, few studies fully document their theoretical foundations or explain their rationale for their theory selection and application. This article examines four commonly used health promotion theories/models including the Social Ecology Model, Health Belief Model, Transtheoretical Model, and Social Cognitive Theory to inform intervention and activities in the development of a program theory for a smoke-free hospital property. Drawing on these theories, a program theory by way of a logic model is presented to illumine the underlying assumptions used to develop an initiative that would accomplish health promotion goals. This article emphasizes the identification, consideration, and application of the key strategies in health promotion together with the theoretical underpinnings of commonly used ecology and health behavior theories to develop a more robust and informed program theory to inform program implementation in the area of smoke-free properties.

Luckett, T., et al. (2018). "Protocol for a phase III pragmatic stepped wedge cluster randomised controlled trial comparing the effectiveness and cost-effectiveness of screening and guidelines with, versus without, implementation strategies for improving pain in adults with cancer attending outpatient oncology and palliative care services: the Stop Cancer PAIN trial." *Bmc Health Services Research* 18.

Background: Pain is a common and distressing symptom in people with cancer, but is under-recognised and under-treated. Australian guidelines for 'Cancer Pain Management in Adults' are available on the Cancer Council Australia Cancer Guideline Wiki. This study aims to evaluate the effectiveness and cost-effectiveness of a suite of guideline

implementation strategies for improving pain outcomes in adults with cancer in oncology and palliative care outpatient settings. Methods: The study will use a stepped-wedge cluster randomised controlled design, with oncology and palliative care outpatient services as the clusters. Patients will be eligible if they are adults with cancer and pain presenting to participating services during the study period. During an initial control arm, services will routinely screen patients for average and worst pain over the past 24 h using a 0-10 numerical rating scale (NRS) and have unfettered access to online guidelines. During the intervention arm, staff at each service will be encouraged to use: 1) a patient education booklet and self-management resource; 2) an online spaced learning cancer pain education module for clinicians from different disciplines; and 3) audit and feedback of service performance on key indices of cancer pain screening, assessment and management. Service-based clinical change champions will lead implementation of these strategies. The trial's primary outcome will be the probability that patients initially screened as having moderate-severe ($\geq 5/10$ NRS) worst pain experience a clinically important improvement one week later, defined as $\geq 30\%$ reduction. Secondary outcomes will include patient empowerment and quality of life, carer experience, and cost-effectiveness. For the main analysis, linear mixed models will be used, accounting for clustering and the longitudinal design. Eighty-two patients per service at six services ($N = 492$) will provide $> 90\%$ power. A qualitative sub-study and analyses of structural and process factors will explore opportunities for further refinement and tailoring of the intervention. Discussion: This pragmatic trial will inform implementation of guidelines across a range of oncology and palliative care outpatient service contexts. If found effective, the implementation strategies will be made freely available on the Wiki alongside the guidelines.

Lukaszuk, C., et al. (2016). "Fall prevention services for older Aboriginal people: investigating availability and acceptability." *Public Health Research & Practice* 26(5).

Background: Falls and fall-related injury are emerging issues for older Aboriginal people. Despite this, it is unknown whether older Aboriginal people access available fall prevention programs, or whether these programs are effective or acceptable to this population. Objective: To investigate the use of available fall prevention services by older Aboriginal people and identify features that are likely to contribute to program acceptability for Aboriginal communities in New South Wales (NSW), Australia. Methods: A questionnaire was distributed to Aboriginal and mainstream health and community services across NSW to identify the fall prevention and healthy ageing programs currently used by older Aboriginal people. Services with experience in providing fall prevention interventions for Aboriginal communities, and key Aboriginal health services that delivered programs specifically for older Aboriginal people, were followed up and staff members were nominated from within each service to be interviewed. Service providers offered their suggestions as to how a fall prevention program could be designed and delivered to meet the health and social needs of their older Aboriginal clients. Results: Of the 131 services that completed the questionnaire, four services (3%) had past experience in providing a mainstream fall prevention program to Aboriginal people; however, there were no programs being offered at the time of data collection. From these four services, and from a further five key Aboriginal health services, 10 staff members experienced in working with older Aboriginal people were interviewed. Barriers preventing services from offering appropriate fall prevention programs to their older Aboriginal clients were identified, including limited funding, a lack of available Aboriginal staff, and communication difficulties between health services and sectors. According to the service providers, an effective and acceptable fall prevention intervention would be evidence based, flexible, community-oriented and social, held in a familiar and culturally safe location and delivered free of cost. Conclusion: This study identified a gap in the availability of acceptable fall prevention programs designed for, and delivered to, older Aboriginal people in NSW. Further consultation with older Aboriginal people is necessary to determine how an appropriate and effective program can be designed and delivered. Terminology: The authors recognise the two distinctive Indigenous populations of Australia: Aboriginal and Torres Strait Islander people. Because the vast majority of the NSW Aboriginal and Torres Strait Islander population is Aboriginal (95.4%)(1), this population will be referred to as 'Aboriginal' in this manuscript.

Lunt, J., et al. (2019). "Ensuring safe behaviour on a global scale: L'Oreal's approach." *Policy and Practice in Health and Safety* 17(1): 32-53.

A case study is presented that systematically examines how L'Oreal builds upon compliance to prevent unsafe behaviour globally. It does so by using a gap analysis methodology to compare the content and implementation of L'Oreal's approach with a template that captures essential evidence-based behaviour change features for Occupational Health and Safety (OSH) interventions. Strategies are unpacked for maintaining OSH prioritization in a multinational organization with a strong commercial tradition, and for ensuring global standard adherence across a culturally diverse workforce. This case study demonstrates how an OSH behaviour change evidence-based gap analysis can guide a company on how it can more reliably improve the effectiveness of its approach by filling gaps in content and implementation. As is occurring in other behaviour change fields, such methodology could help pave the way for a much-needed standardized approach to designing, implementing and evaluating behaviour change in the OSH context.

Luxton, N. A., et al. (2019). "Smoking Cessation Care in Cardiothoracic Surgery: A Qualitative Study Exploring the Views of Australian Clinicians." *Heart Lung and Circulation* 28(8): 1246-1252.

Background Smoking cessation (SC) care in the perioperative period of cardiothoracic surgery is important to reduce surgical risk and help achieve long-term smoking abstinence in patients who continue to smoke. The implementation of clinical guidelines for SC care in the perioperative period has proved challenging, yet little is known of what influences the inter-disciplinary team involved in the cardiothoracic area. This qualitative study explored the views of the clinicians involved in perioperative period of cardiothoracic surgery in Australia on their SC advice and support. Methods Semi-structured interviews were conducted with 52 cardiothoracic surgeons, anaesthetists, nurses and physiotherapists in three public tertiary referral hospitals and three private hospitals in New South Wales (NSW). Data was thematically analysed, and categorised using the Behaviour Change Wheel "Capabilities, Opportunity, Motivation & Behaviour" (COM-B) analysis framework to understand the factors that influence clinicians' views and perceived abilities to provide SC care. Results Barriers and facilitators to providing SC care were identified. The most commonly identified barriers in capability were the lack of knowledge, training and institutional engagement. Opportunity was hindered by lack of time, hospital support and resources, yet facilitated by the existence of a collaborative, multidisciplinary team and the ability to follow-up patients long term. In motivation, clinicians' attitudes and experience negatively influenced the initiation of the cessation conversation, while intrinsic attributes of empathy and positivity were drivers to provide SC care. Conclusions Clinicians' views, together with inadequate SC training, resources and engagement to implement clinical guidelines, contribute to inconsistent SC care. There is a need for hospitals to provide adequate SC resources and training to all clinicians to improve SC care to cardiothoracic surgery patients throughout the perioperative period.

Lydon, S., et al. (2019). "Psychometric evaluation of a measure of factors influencing hand hygiene behaviour to inform intervention." *Journal of Hospital Infection* 102(4): 407-412.

Background: Although the hand hygiene (HH) procedure is simple, the related behaviour is complex and is not readily understood, explained or changed. There is a need for practical tools to provide data that can guide healthcare managers and practitioners not only on the 'what' (the standards that must be met), but also the 'how' (guidance on how to achieve the standards). Aim: To develop a valid questionnaire to evaluate attitudes to the factors that influence engagement in HH behaviour that can be readily completed, administered and analysed by healthcare professionals to identify appropriate intervention strategies. Construct validity was assessed using confirmatory factor analysis, predictive validity was assessed through comparison with self-reported HH behaviour, and convergent validity was assessed through direct unit-level observation of HH behaviour. Methods: The Capability, Opportunity, Motivation-Behaviour (COM-B) model was used to design a 25-item questionnaire that was distributed to intensive care unit (ICU) personnel in Ireland. Direct observation of HH behaviour was carried out at two ICUs. Findings: In total, 292 responses to the survey (response rate 41.0%) were included in the analysis. Confirmatory factor analysis resulted in a 17-item questionnaire. Multiple regression revealed that a model including capability, opportunity and motivation was a significant predictor of self-reported behavioural intention [$F(3,209)=22.58, P<0.001$]. However, the opportunity factor was not found to make a significant contribution to the regression model. Conclusion: The COM-B HH questionnaire is reliable and valid, and provides data to support the development and evaluation of HH interventions that meet the needs of specific healthcare units. (C) 2019 The Healthcare Infection Society. Published by Elsevier Ltd. All rights reserved.

Lynch, E. A., et al. (2018). "Implementation-The Missing Link in the Research Translation Pipeline: Is It Any Wonder No One Ever Implements Evidence-Based Practice?" *Neurorehabilitation and Neural Repair* 32(9): 751-761.

Despite the exponential growth in the evidence base for stroke rehabilitation, there is still a paucity of knowledge about how to consistently and sustainably deliver evidence-based stroke rehabilitation therapies in clinical practice. This means that people with stroke will not consistently benefit from research breakthroughs, simply because clinicians do not always have the skills, authority, knowledge or resources to be able to translate the findings from a research trial and apply these in clinical practice. This "point of view" article by an interdisciplinary, international team illustrates the lack of available evidence to guide the translation of evidence to practice in rehabilitation, by presenting a comprehensive and systematic content analysis of articles that were published in 2016 in leading clinical stroke rehabilitation journals commonly read by clinicians. Our review confirms that only a small fraction (2.5%) of published stroke rehabilitation research in these journals evaluate the implementation of evidence-based interventions into health care practice. We argue that in order for stroke rehabilitation research to contribute to enhanced health and well-being of people with stroke, journals, funders, policy makers, researchers, clinicians, and professional associations alike need to actively support and promote (through funding, conducting, or disseminating) implementation and evaluation research.

Lynch, E. A., et al. (2018). "Activity monitors for increasing physical activity in adult stroke survivors." *Cochrane Database of Systematic Reviews*(7).

Background Stroke is the third leading cause of disability worldwide. Physical activity is important for secondary stroke prevention and for promoting functional recovery. However, people with stroke are more inactive than healthy age-matched controls. Therefore, interventions to increase activity after stroke are vital to reduce stroke-related disability. Objectives To summarise the available evidence regarding the effectiveness of commercially available, wearable activity monitors and smartphone applications for increasing physical activity levels in people with stroke. Search methods We searched the Cochrane Stroke Group Trials Register, CENTRAL, MEDLINE, Embase, CINAHL, SPORTDiscus, and the following clinical trial registers: WHO International Clinical Trials Registry Platform, Clinical Trials, EU Clinical Trial Register, ISRCTN Registry, Australian and New Zealand Clinical Trial Registry, and Stroke Trials Registry to 3 March 2018. We also searched reference lists, Web of Science forward tracking, and Google Scholar, and contacted trial authors to obtain further data if required. We did not restrict the search on language or publication status. Selection criteria We included all randomised controlled trials (RCTs) and randomised cross-over trials that included use of activity monitors versus no intervention, another type of intervention, or other activity monitor. Participants were aged 18 years or older with a diagnosis of stroke, in hospital or living in the community. Primary outcome measures were steps per day and time in moderate-to-vigorous intensity activity. Secondary outcomes were sedentary time, time spent in light intensity physical activity, walking duration, fatigue, mood, quality of life, community participation and adverse events. We excluded upper limb monitors that only measured upper limb activity. Data collection and analysis We followed standard Cochrane methodology to analyse and interpret the data. At least two authors independently screened titles and abstracts for inclusion. We resolved disagreements by consulting a third review author. We extracted the following data from included studies into a standardised template: type of study, participant population, study setting, intervention and co-interventions, timeframe, and outcomes. We graded levels of bias as high, low, or unclear, and assessed the quality of evidence for each outcome using the GRADE approach. Main results We retrieved 28,098 references, from which we identified 29 potential articles. Four RCTs (in 11 reports) met the inclusion criteria. The sample sizes ranged from 27 to 135 (total 245 participants). Time poststroke varied from less than one week ($n = 1$), to one to three months ($n = 2$), or a median of 51 months ($n = 1$). Stroke severity ranged from a median of one to six on the National Institutes of Health Stroke Scale (NIHSS). Three studies were conducted in inpatient rehabilitation, and one was in a university laboratory. All studies compared use of activity monitor plus another intervention (e.g. a walking retraining programme or an inpatient rehabilitation programme) versus the other intervention alone. Three studies reported on the primary outcome of daily step counts. There was no clear effect for the use of activity monitors in conjunction with other interventions on step count in a community setting (mean difference (MD) -1930 steps, 95% confidence interval (CI) -4410 to 550; 1 RCT, 27 participants; very low-quality evidence), or in an inpatient rehabilitation setting (MD 1400 steps, 95% CI -40 to 2840; 2 RCTs, 83 participants; very low-quality evidence). No studies reported the primary outcome moderate-to-vigorous physical activity, but one did report time spent in moderate and vigorous intensity activity separately: this study reported that an activity monitor in addition to usual inpatient rehabilitation increased the time spent on moderate intensity physical activity by 4.4 minutes per day (95% CI 0.28 to 8.52; 1 RCT, 48 participants; low-quality evidence) compared with usual rehabilitation alone, but there was no clear effect for the use of an activity monitor plus usual rehabilitation for increasing time spent in vigorous intensity physical activity compared to usual rehabilitation (MD 2.6 minutes per day, 95% CI -0.8 to 6; 1 RCT, 48 participants; low-quality evidence). The overall risk of bias was low, apart from high-risk for blinding of participants and study personnel. None of the included studies reported any information relating to adverse effects. Authors' conclusions Only four small RCTs with 274 participants (three in inpatient rehabilitation and one in the community) have examined the efficacy of activity monitors for increasing physical activity after stroke. Although these studies showed activity monitors could be incorporated into practice, there is currently not enough evidence to support the use of activity monitors to increase physical activity after stroke.

Maar, M. A., et al. (2016). "Unpacking the Black Box: A Formative Research Approach to the Development of Theory-Driven, Evidence-Based, and Culturally Safe Text Messages in Mobile Health Interventions." *Jmir Mhealth and Uhealth* 4(1): 266-278.

Background: Mobile-cellular subscriptions have increased steadily over the past decade. The accessibility of SMS messages over existing mobile networks is high and has almost universal availability even on older and unsophisticated mobile phones and in geographic settings where wireless coverage is weak. There is intensive exploration of this inexpensive mobile telecommunication technology to improve health services and promote behavior change among vulnerable populations. However, a neglected area of research is the documentation and critical analysis of the formative research process required in the development and refinement of effective SMS messages. Objective: The objective of this qualitative research study was to identify major factors that may impact on the effectiveness of evidence-based SMS messages designed to reduce health inequities in hypertension management in low resource settings, including Aboriginal populations in high-income countries and rural populations in low-income countries. Specifically, we were interested in uncovering the range of mediators that impact on appropriate message content transmission and, ultimately, on health behavior improvements in a range of these sociocultural settings. Methods: Collaborative

qualitative research with Canadian Aboriginal and Tanzanian participants was conducted to deconstruct the content and transmission of evidence-based health information contained in SMS messages in the context of an international research project designed to address health inequalities in hypertension, and to develop a grounded theory of the major factors that mediate the effectiveness of this communication. We also examined the interrelationship of these mediators with the three essential conditions of the behavior system of the Behavioral Change Wheel model (capability, opportunity, and motivation) and cultural safety. Results: Four focus groups with a total of 45 participants were conducted. Our grounded theory research revealed how discrepancies develop between the evidence-based text message created by researchers and the message received by the recipient in mobile health interventions. These discrepancies were primarily generated by six mediators of meaning in SMS messages: (1) negative or non-affirming framing of advocacies, (2) fear-or stress-inducing content, (3) oppressive or authoritarian content, (4) incongruity with cultural and traditional practices, (5) disconnect with the reality of the social determinants of health and the diversity of cultures within a population, and (6) lack of clarity and/or practicality of content. These 6 mediators of meaning provide the basis for sound strategies for message development because they impact directly on the target populations' capability, opportunity, and motivation for behavior change. Conclusions: The quality of text messages impacts significantly on the effectiveness of a mobile health intervention. Our research underscores the urgent need for interventions to incorporate and evaluate the quality of SMS messages and to examine the mediators of meaning within each targeted cultural and demographic group. Reporting on this aspect of mobile health intervention research will allow researchers to move away from the current black box of SMS text message development, thus improving the transparency of the process as well as the quality of the outcomes.

MacDonald, L., et al. (2016). "Improving medication adherence in bipolar disorder: A systematic review and meta-analysis of 30 years of intervention trials." *Journal of Affective Disorders* 194: 202-221.

Background: Medication non-adherence in bipolar disorder is a significant problem resulting in increased morbidity, hospitalisation and suicide. Interventions to enhance adherence exist but it is not clear how effective they are, or what works and why. Methods: We systematically searched bibliographic databases for RCTs of interventions to support adherence to medication in bipolar disorder. Study selection and data extraction was performed by two investigators. Data was extracted on intervention design and delivery, study characteristics, adherence outcomes and study quality. The meta-analysis used pooled odds ratios for adherence using random effects models. Results: Searches identified 795 studies, of which 24 met the inclusion criteria, 18 provided sufficient data for meta-analysis. The pooled OR was 2.27 (95% CI 1.45-3.56) equivalent to a two-fold increase in the odds of adherence in the intervention group relative to control. Smaller effects were seen where the control group consisted of an active comparison and with increasing intervention length. The effects were robust across other factors of intervention and study design and delivery. Limitations: Many studies did not report sufficient information to classify intervention design and delivery or judge quality and the interventions were highly variable. Therefore, the scope of moderation analysis was limited. Conclusions: Even brief interventions can improve medication adherence. Limitations in intervention and study design and reporting prevented assessment of which elements of adherence support are most effective. Applying published guidance and quality criteria for designing and reporting adherence interventions is a priority to inform the implementation of cost-effective adherence support. (C) 2016 Elsevier B.V. All rights reserved.

Machin, L., et al. (2019). "Do nutritional warnings do their work? Results from a choice experiment involving snack products." *Food Quality and Preference* 77: 159-165.

Nutritional warnings have been recently introduced as a new front-of-pack nutrition labelling scheme. Its particular goal is to facilitate the identification of products with excessive content of nutrients, given these are associated with non-communicable diseases. The aim of the present study was to evaluate the influence of nutritional warnings on consumers' choice of a snack in a choice experiment involving real products. A total of 199 participants were asked to evaluate a series of bread images on a computer screen using eye-tracking glasses. Once they finished the task, they were invited to help themselves a snack from a shelf as a compensation for their participation in the study. A total of 15 snack products with different nutritional composition were included on the shelf. Participants were randomly divided into groups: one that made their choice from a shelf containing products that did not include front-of-package nutritional information, whereas the other chose among products that featured nutritional warnings. Participants in both experiments invested an average of 14s to select their product. When products were presented with warnings, 50% of the participants fixated their gaze on the warnings during the choice task. Significant differences in the frequency of selection of the products ($p = 0.002$) were found between the groups. When the warnings were present, participants chose products with fewer warnings and lower average sodium, saturated fat, and sugar content ($p < 0.001$). These findings confirm the potential of nutritional warnings to encourage more healthful food choices.

Mackay, H. J., et al. (2019). "Establishing an evidenced-based dietetic model of care in haemodialysis using implementation science." *Nutrition & Dietetics* 76(2): 150-157.

AimTo establish an evidence-based dietetics service in an in-centre haemodialysis unit utilising implementation science. **Methods**The service was developed through the Knowledge-to-Action Framework. The steps of the Action Cycle were addressed through a literature review, identification of evidence-based guidelines, benchmarking and local staff engagement. The theoretical domains framework (TDF) was used to identify barriers/enablers, and behaviour change wheel to determine appropriate interventions. To monitor, evaluate outcomes and assess sustained knowledge use we employed multidisciplinary team engagement and database use. Audit data were collected at baseline, 6 and 12 months on nutrition assessment (Patient-Generated Subjective Global Assessment), intervention timeliness and alignment to dietetic workforce recommendations. Descriptive statistics, McNemar tests and a linear mixed model were applied. **Results**Barriers existed in the knowledge, skills, environmental context and resources TDF domains. Suitable interventions were identified with training on nutritional management of haemodialysis patients delivered to 148 nurses, and nutrition management recommendations summarised into local procedural resources. A database to prompt and monitor outcome measures was created and indicated that over 18 months post-service commencement, eligible patients received nutrition assessment at least 6-monthly, aligning with recommendations. Prevalence of malnutrition was 28% (n= 9/32) at baseline, 23% (n= 5/22) at 6 months and 20% (n= 4/20) at 12 months (P = 0.50). **Conclusions**We demonstrated benefits to service development and implementation with implementation science providing a structured and methodical approach to translating guidelines into practice. Development of training, resources and prompts for outcome measures has supported the establishment of an evidence-based dietetics service in a haemodialysis unit.

Mackie, B. R., et al. (2018). "The impact of interventions that promote family involvement in care on adult acute-care wards: An integrative review." *Collegian* 25(1): 131-140.

Background: Healthcare that involves patients and their families in care has been recommended to improve patient safety and quality. With limited direction on care partnerships for adult acute care patients, their families and healthcare teams, there is a need for a review of interventions that have been used to promote family in patient care within adult acute care wards. **Aim:** The aim of this integrative review was to describe interventions that have been used to promote family involvement in patient care within adult acute care wards. **Method:** Electronic databases of Cumulative Index of Nursing and Allied Health Literature (CINAHL), Cochrane, PubMed, and PsycINFO were searched between 1994 and 2016 using key search terms and word variations 'family involvement', 'family nursing', 'family centred care', 'family interventions', 'family therapies'. Additional literature was sourced from reference lists of relevant original publications. The Mixed Methods Appraisal Tool and Template for Intervention Description and Replication informed study and intervention assessment. **Findings:** Eleven single centered studies were included with interventions designed to improve functional capacity, cognitive function, and communication. Nurses were involved in intervention delivery for six of the 11 interventions. Outcomes of interest included patient outcomes (n = 8) and intervention acceptability and feasibility (n = 3). Improved patient outcomes were reported for seven studies. Intervention design and implementation were generally poorly described. **Conclusion:** Interventions designed to promote family in patient care on adult acute care wards improved patient outcomes in some instances, however, methodological limitations confound the evidence base for family involvement having a direct and positive impact on patient outcomes. Allowing patients and family members to partner in intervention design may enhance uptake and improve outcomes. Process and economic evaluations should also be included in future studies to allow assessment of clinical feasibility. (C) 2017 Australian College of Nursing Ltd. Published by Elsevier Ltd.

Mackintosh, N., et al. (2018). "Employing the arts for knowledge production and translation: Visualizing new possibilities for women speaking up about safety concerns in maternity." *Health Expectations* 21(3): 647-658.

ObjectivesThis project used animated film to translate research findings into accessible health information aimed at enabling women to speak up and secure professional help for serious safety concerns during pregnancy and after birth. We tested as proof of concept our use of the arts both as product (knowledge production) and process (enabling involvement). **Background**Emergencies during pregnancy and birth, while unusual, can develop rapidly and unexpectedly, with catastrophic consequences. Women's tacit knowledge of changes in their condition is an important resource to aid early detection, but women can worry about the legitimacy of their concerns and struggle to get these taken seriously by staff. **Design**Arts-based knowledge translation. A user group of women who had experienced complications in the perinatal period (n=34) helped us develop and pilot test the animation. Obstetricians and midwives (15), clinical leads (3) and user group representatives (8) helped with the design and testing. **Findings**The consultation process, script and storyboard enabled active interaction with the evidence, meaningful engagement with stakeholders and new understandings about securing help for perinatal complications. The method enabled us to address gender stereotypes and social norms about speaking up and embed a social script for women within the animation, to help structure their help seeking. While for some women, there was an emotional burden, the majority were glad to have

been part of the animation's development and felt it had enabled their voices to be heard. Conclusion This project has demonstrated the benefits of arts-science collaborations for meaningful co-production and effective translation of research evidence.

MacLennan, S., et al. (2017). "Re: Low Adherence to Guidelines in Nonmuscle-invasive Disease." *European Urology* 71(4): 689-689.

Macleod, M., et al. (2018). "Feasibility study to assess the delivery of a lifestyle intervention (TreatWELL) for patients with colorectal cancer undergoing potentially curative treatment." *Bmj Open* 8(6).

Objectives To assess the feasibility of delivering and evaluating a lifestyle programme for patients with colorectal cancer undergoing potentially curative treatments. **Study design** Non-randomised feasibility trial. **Setting** National Health Service (NHS) Tayside. **Participants** Adults with stage I-III colorectal cancer. **Intervention** The programme targeted smoking, alcohol, physical activity, diet and weight management. It was delivered in three face-to-face counselling sessions (plus nine phone calls) by lifestyle coaches over three phases (1: presurgery, 2: surgical recovery and 3: post-treatment recovery). **Primary outcome** Feasibility measures (recruitment, retention, programme implementation, achieved measures, fidelity, factors affecting protocol adherence and acceptability). **Secondary outcomes** Measured changes in body weight, waist circumference, walking and self-reported physical activity, diet, smoking, alcohol intake, fatigue, bowel function and quality of life. **Results** Of 84 patients diagnosed, 22 (26%) were recruited and 15 (18%) completed the study. Median time for intervention delivery was 5.5 hours. Coaches reported covering most (>70%) of the intervention components but had difficulties during phase 2. Evaluation measures (except walk test) were achieved by all participants at baseline, and most (<90%) at end of phase 2 and phase 3, but <20% at end of phase 1. Protocol challenges included limited time between diagnosis and surgery and the presence of comorbidities. The intervention was rated highly by participants but limited support from NHS staff was noted. The majority of participants (77%) had a body mass index >25 kg/m² and none was underweight. Physical activity data showed a positive trend towards increased activity overall, but no other changes in secondary outcomes were detected. **Conclusions** To make this intervention feasible for testing as a full trial, further research is required on (a) recruitment optimisation, (b) appropriate assessment tools, (c) protocols for phase 2 and 3, which can build strengths in flexibility and (d) ways for NHS staff to facilitate the programme.

Macleod, M. R., et al. (2014). "Biomedical research: increasing value, reducing waste." *Lancet* 383(9912): 101-104.

MacLure, K. and D. Stewart (2015). "Self-Reported Digital Literacy of the Pharmacy Workforce in North East Scotland." *Pharmacy* 3(4): 182-196.

In their day-to-day practice, pharmacists, graduate (pre-registration) pharmacists, pharmacy technicians, dispensing assistants and medicines counter assistants use widely available office, retail and management information systems alongside dedicated pharmacy management and electronic health (ehealth) applications. The ability of pharmacy staff to use these applications at home and at work, also known as digital literacy or digital competence or e-skills, depends on personal experience and related education and training. The aim of this research was to gain insight into the self-reported digital literacy of the pharmacy workforce in the North East of Scotland. A purposive case sample survey was conducted across NHS Grampian in the NE of Scotland. Data collection was based on five items: sex, age band, role, pharmacy experience plus a final question about self-reported digital literacy. The study was conducted between August 2012 and March 2013 in 17 community and two hospital pharmacies. With few exceptions, pharmacy staff perceived their own digital literacy to be at a basic level. Secondary outcome measures of role, age, gender and work experience were not found to be clear determinants of digital literacy. Pharmacy staff need to be more digitally literate to harness technologies in pharmacy practice more effectively and efficiently.

MacWilliams, K., et al. (2017). "Barriers and Facilitators to Implementing the HEADS-ED A Rapid Screening Tool for Pediatric Patients in Emergency Departments." *Pediatric Emergency Care* 33(12): 774-780.

Objectives This study sought to identify barriers and facilitators to the implementation of the HEADS-ED, a screening tool appropriate for use in the emergency department (ED) that facilitates standardized assessments, discharge planning, charting, and linking pediatric mental health patients to appropriate community resources. **Methods** A qualitative theory-based design was used to identify barriers and facilitators to implementing the HEADS-ED tool. Focus groups were conducted with participants recruited from 6 different ED settings across 2 provinces (Ontario and Nova Scotia). The Theoretical Domains Framework was used as a conceptual framework to guide data collection and to identify themes from focus group discussions. **Results** The following themes spanning 12 domains were identified as reflective of participants' beliefs about the barriers and facilitators to implementing the HEADS-ED tool: knowledge, skills, beliefs about capabilities, social professional role and identity, optimism, beliefs about consequences, reinforcement,

environmental context and resources, social influences, emotion, behavioral regulation and memory, and attention and decision process. Conclusions The HEADS-ED has the potential to address the need for better discharge planning, complete charting, and standardized assessments for the increasing population of pediatric mental health patients who present to EDs. This study has identified potential barriers and facilitators, which should be considered when developing an implementation plan for adopting the HEADS-ED tool into practice within EDs.

Madigan, C. D., et al. (2014). "A randomised controlled trial of the effectiveness of self-weighing as a weight loss intervention." *International Journal of Behavioral Nutrition and Physical Activity* 11.

Background: There is a need to find simple cost effective weight loss interventions that can be used in primary care. There is evidence that self-monitoring is an effective intervention for problem drinking and self-weighing might be an effective intervention for weight loss. Purpose: To examine the efficacy of daily self-weighing as an intervention for weight loss. Methods: A randomised controlled trial of 183 obese adults, follow-up three months. The intervention group were given a set of weighing scales and instructed to weigh themselves daily and record their weight. Both groups received two weight loss consultations which were known to be ineffective. Results: 92 participants were randomised to the intervention group and 91 to the control group. The intervention group lost 0.5 kg (95% CI 0.3 to 1.3 kg) more than the control group, but this was not significant. There was no evidence that self-weighing frequency was associated with more weight loss. Conclusions: As an intervention for weight loss, instruction to weigh daily is ineffective. Unlike other studies, there was no evidence that greater frequency of self-weighing is associated with greater weight loss.

Mahamuni, R., et al. (2017). *Service Design Meets Design for Behaviour Change: Opportunities and Challenges*. *Human-Computer Interaction - Interact 2017, Pt Iv*. R. Bernhaupt, G. Dalvi, A. Joshi et al. 10516: 535-537.

There is a growing recognition about a need to influence and change user behaviours in their own interest to meet several social challenges, be it at the level of an individual or society. Designers intentionally or unintentionally end up shaping the user behaviour. Service Design and Design for Behaviour Change have significant congruence in terms of concern for value creation over long duration, dynamic usage contexts and accounting for diversity of users, among others. However, despite the affinity of these two fields, we do not come across works that demonstrate practice that blends both the fields or synthesised design knowledge base. Practitioners might be tacitly blending these two disciplines. This workshop aims to understand these practices currently, the challenges designers are facing and how they are addressing those. We hope to uncover this tacit knowledge, provide preliminary knowledge from the disciplines and synthesise through hands on work followed by collective reflection.

Maidment, D. W., et al. (2019). "Applying the COM-B Model to Assess the Usability of Smartphone-Connected Listening Devices in Adults with Hearing Loss." *Journal of the American Academy of Audiology* 30(5): 417-430.

Background: Unlike conventional hearing aids, smartphone-connected listening devices may require limited or no input from a trained audiologist in terms of device programming and adjustment. However, there is a lack of peer-reviewed evidence assessing the real-world perspectives of people living with hearing loss toward such technological innovations. Purpose: This study assessed the everyday experiences of adults living with hearing loss toward a range of smartphone-connected listening devices using the Capability, Opportunity, Motivation, Behaviour (COM-B) model as a theoretical framework. Research Design: A qualitative study where participants trialed one of the following smartphone-connected listening devices for two weeks in their everyday lives: made-for-smartphone hearing aid, personal sound amplification product, and smartphone "hearing aid" app with wired earphones or wireless hearable. Individual semistructured interviews were conducted. Study Sample: Twenty adults (13 male and 7 female; mean age = 62.25 years, SD = 11.59) with mild-to-moderate hearing loss (mean better ear pure-tone average = 30.49 dB HL, SD = 17.51) were recruited using a convenience sampling strategy. All participants owned conventional hearing aids. Data Analysis: The data were analyzed using an established deductive thematic analysis procedure within the context of the COM-B model. The model stipulates that for individuals to engage in a particular behavior (B), they must have sufficient capability (C), opportunity (O), and motivation (M). Results: Capability. One of the key advantages facilitating use and adherence of smartphone-connected listening devices was the ability for participants to make fine-tune adjustments in any listening situation. Opportunity. Participants commented that these devices could address issues surrounding stigma as smartphones are ubiquitous in everyday life. Motivation: Participants consistently reported that the ability to make adjustments via a smartphone provided them with a greater sense of autonomy and empowerment. As a result, they felt more in control of their hearing loss. Conclusions: This study lays the foundation for further high-quality research to explore whether smartphone-connected technologies have the potential to yield optimum benefits for people living with hearing loss.

Main, C. J., et al. (2016). "Implementation Science and Employer Disability Practices: Embedding Implementation Factors in Research Designs." *Journal of Occupational Rehabilitation* 26(4): 448-464.

Purpose For work disability research to have an impact on employer policies and practices it is important for such research to acknowledge and incorporate relevant aspects of the workplace. The goal of this article is to summarize recent theoretical and methodological advances in the field of Implementation Science, relate these to research of employer disability management practices, and recommend future research priorities. Methods The authors participated in a year-long collaboration culminating in an invited 3-day conference, "Improving Research of Employer Practices to Prevent Disability", held October 14-16, 2015, in Hopkinton, MA, USA. The collaboration included a topical review of the literature, group conference calls to identify key areas and challenges, drafting of initial documents, review of industry publications, and a conference presentation that included feedback from peer researchers and a question/answer session with a special panel of knowledge experts with direct employer experience. Results A 4-phase implementation model including both outer and inner contexts was adopted as the most appropriate conceptual framework, and aligned well with the set of process evaluation factors described in both the work disability prevention literature and the grey literature. Innovative interventions involving disability risk screening and psychologically-based interventions have been slow to gain traction among employers and insurers. Research recommendations to address this are : (1) to assess organizational culture and readiness for change in addition to individual factors; (2) to conduct process evaluations alongside controlled trials; (3) to analyze decision-making factors among stakeholders; and (4) to solicit input from employers and insurers during early phases of study design. Conclusions Future research interventions involving workplace support and involvement to prevent disability may be more feasible for implementation if organizational decision-making factors are imbedded in research designs and interventions are developed to take account of these influences.

Malan, Z., et al. (2015). "Development of a training programme for primary care providers to counsel patients with risky lifestyle behaviours in South Africa." *African Journal of Primary Health Care & Family Medicine* 7(1).

Background: We are facing a global epidemic of non-communicable disease (NCDs), which has been linked with four risky lifestyle behaviours. It is recommended that primary care providers (PCPs) provide individual brief behaviour change counselling (BBCC) as part of everyday primary care, however currently training is required to build capacity. Local training programmes are not sufficient to achieve competence. Aim: This study aimed to redesign the current training for PCPs in South Africa, around a new model for BBCC that would offer a standardised approach to addressing patients' risky lifestyle behaviours. Setting: The study population included clinical nurse practitioners and primary care doctors in the Western Cape Province. Methods: The analyse, design, develop, implement and evaluate (ADDIE) model provided a systematic approach to the analysis of learning needs, the design and development of the training programme, its implementation and initial evaluation. Results: This study designed a new training programme for PCPs in BBCC, which was based on a conceptual model that combined the 5As (ask, alert, assess, assist and arrange) with a guiding style derived from motivational interviewing. The programme was developed as an eight-hour training programme that combined theory, modelling and simulated practice with feedback, for either clinical nurse practitioners or primary care doctors. Conclusion: This was the first attempt at developing and implementing a best practice BBCC training programme in our context, targeting a variety of PCPs, and addressing different risk factors.

Manea, V. and K. Wac (2019). "WellCo: Wellbeing and Health Virtual Coach." *Ercim News*(118): 37-38.

WellCo is a European H2020 project that aims to design and evaluate an engaging virtual coach to help older adults make positive behavioural choices that benefit their long-term health, wellbeing, and quality of life in physical, psychological and social interaction domains.

Mann, D. M., et al. (2014). "Dietary Approaches to Stop Hypertension: Lessons Learned From a Case Study on the Development of an mHealth Behavior Change System." *Jmir Mhealth and Uhealth* 2(4).

Background: Evidence-based solutions for changing health behaviors exist but problems with feasibility, sustainability, and dissemination limit their impact on population-based behavior change and maintenance. Objective: Our goal was to overcome the limitations of an established behavior change program by using the inherent capabilities of smartphones and wireless sensors to develop a next generation mobile health (mHealth) intervention that has the potential to be more feasible. Methods: In response to the clinical need and the growing capabilities of smartphones, our study team decided to develop a behavioral hypertension reduction mHealth system inspired by Dietary Approaches to Stop Hypertension (DASH), a lifestyle modification program. We outline the key design and development decisions that molded the project including decisions about behavior change best practices, coaching features, platform, multimedia content, wireless devices, data security, integration of systems, rapid prototyping, usability, funding mechanisms, and how all of these issues intersect with clinical research and behavioral trials. Results: Over the 12 months, our study team faced many challenges to developing our prototype intervention. We describe 10 lessons learned that will ultimately stimulate more effective and sustainable approaches. Conclusions: The experiences presented in this case study can be

used as a reference for others developing mHealth behavioral intervention development projects by highlighting the benefits and challenges facing mHealth research.

Mansell, G., et al. (2016). "Behaviour change and self-management interventions in persistent low back pain." *Best Practice & Research in Clinical Rheumatology* 30(6): 994-1002.

Self-management interventions for persistent low back pain (LBP) promote active involvement of the patient in managing their condition. Such interventions can be characterised as behaviour change interventions, in that they are designed to help the patient learn and adopt a set of health behaviours that they can use in everyday life to benefit their condition by reducing or managing their symptoms. Self-management interventions are recommended in several key guidelines for the treatment of persistent LBP, but the evidence for the effectiveness of these types of interventions is inconclusive. In this article, we discuss the existing literature within self-management interventions for persistent LBP and make suggestions for how research in this area can be improved, specifically addressing areas where evidence is currently lacking. Existing definitions of self management are examined, and the importance of the choice of an underlying theory and appropriate outcome measures are discussed. Crown Copyright (C) 2017 Published by Elsevier Ltd. All rights reserved.

Mansfield, L., et al. (2018). ""Could you sit down please?" A qualitative analysis of employees' experiences of standing in normally-seated workplace meetings." *Plos One* 13(6).

Office workers spend most of their working day sitting, and prolonged sitting has been associated with increased risk of poor health. Standing in meetings has been proposed as a strategy by which to reduce workplace sitting but little is known about the standing experience. This study documented workers' experiences of standing in normally seated meetings. Twenty-five participants (18+ years), recruited from three UK universities, volunteered to stand in 3 separate, seated meetings that they were already scheduled to attend. They were instructed to stand when and for however long they deemed appropriate, and gave semi-structured interviews after each meeting. Verbatim transcripts were analysed using Framework Analysis. Four themes, central to the experience of standing in meetings, were extracted: physical challenges to standing; implications of standing for meeting engagement; standing as norm violation; and standing as appropriation of power. Participants typically experienced some physical discomfort from prolonged standing, apparently due to choosing to stand for as long as possible, and noted practical difficulties of fully engaging in meetings while standing. Many participants experienced marked psychological discomfort due to concern at being seen to be violating a strong perceived sitting norm. While standing when leading the meeting was felt to confer a sense of power and control, when not leading the meeting participants felt uncomfortable at being misperceived to be challenging the authority of other attendees. These findings reveal important barriers to standing in normally-seated meetings, and suggest strategies for acclimatising to standing during meetings. Physical discomfort might be offset by building standing time slowly and incorporating more sit-stand transitions. Psychological discomfort may be lessened by notifying other attendees about intentions to stand. Organisational buy-in to promotional strategies for standing may be required to dispel perceptions of sitting norms, and to progress a wider workplace health and wellbeing agenda.

Maramaldi, P., et al. (2018). "Oral health and cancer screening in long-term care nursing facilities: Motivation and opportunity as intervention targets." *Gerodontology* 35(4): 407-416.

Objective: The objective of this study is to propose empirically and conceptually supported interventions that might increase the capability and opportunity to provide of oral hygiene care and oral cancer screening in long-term nursing care facilities. Background: Improving the oral health in the older adult population is a priority of the Healthy People 2020 initiative. Poor oral health disproportionately affects older populations, which indicates lower participation in regular oral health care (OHC) that includes screening and early detection of oral cancer. Material and methods: A rigorous recruitment protocol yielded a purposive sample of nursing home Administrators and Directors of Nursing who participated in nine discrete focus groups (n = 34) in several regions of Massachusetts. Interview data were integrated with a conceptual framework of the Health Belief Model and the "capability," "opportunity," "motivation" and "behavior" of the COM-B system to identify potential interventions to increase oral health and oral cancer screening. We used NVivo to identify conceptual themes related to potential intervention targets. Results: Participants identified several impediments to oral hygiene and cancer screening in the context of the conceptual model. High barriers, low opportunities and low motivation were themes identified as potential targets for intervention. Conclusions: Our findings suggest that the intervention likely to increase OHC and consequently oral cancer screening include: training certified nurses' aides using dental students and volunteers; educating family members about OHC and oral cancer screening, and increasing oral cancer awareness.

Marie, N., et al. (2013). "Optimal patient education for cancer pain: a systematic review and theory-based meta-analysis." *Supportive Care in Cancer* 21(12): 3529-3537.

Previous systematic reviews have found patient education to be moderately efficacious in decreasing the intensity of cancer pain, but variation in results warrants analysis aimed at identifying which strategies are optimal. A systematic review and meta-analysis was undertaken using a theory-based approach to classifying and comparing educational interventions for cancer pain. The reference lists of previous reviews and MEDLINE, PsycINFO, and CENTRAL were searched in May 2012. Studies had to be published in a peer-reviewed English language journal and compare the effect on cancer pain intensity of education with usual care. Meta-analyses used standardized effect sizes (ES) and a random effects model. Subgroup analyses compared intervention components categorized using the Michie et al. (Implement Sci 6:42, 2011) capability, opportunity, and motivation behavior (COM-B) model. Fifteen randomized controlled trials met the criteria. As expected, meta-analysis identified a small-moderate ES favoring education versus usual care (ES, 0.27 [-0.47, -0.07]; $P = 0.007$) with substantial heterogeneity ($I^2 = 71\%$). Subgroup analyses based on the taxonomy found that interventions using "enablement" were efficacious (ES, 0.35 [-0.63, -0.08]; $P = 0.01$), whereas those lacking this component were not (ES, 0.18 [-0.46, 0.10]; $P = 0.20$). However, the subgroup effect was nonsignificant ($P = 0.39$), and heterogeneity was not reduced. Factoring in the variable of individualized versus non-individualized influenced neither efficacy nor heterogeneity. The current meta-analysis follows a trend in using theory to understand the mechanisms of complex interventions. We suggest that future efforts focus on interventions that target patient self-efficacy. Authors are encouraged to report comprehensive details of interventions and methods to inform synthesis, replication, and refinement.

Marquillier, T., et al. (2017). "Therapeutic education in pediatric dentistry: analysis of obstacles and levers to the development of programmes in France in 2016." *Sante Publique* 29(6): 781-792.

Objective: Over recent years, therapeutic patient education has become part of dental medicine. Management of early childhood caries, known to be a very common chronic disease, has evolved to include an educational dimension. The objective of this study was to identify the levers and barriers to the development of formalized therapeutic education programmes and alternatives. Methods: A comprehensive exploratory qualitative study was conducted between November 2015 and June 2016 on a targeted sample of 15 people aware of the problem of TPE in dentistry. Results: The study showed that TPE training in dentistry is underdeveloped, despite its numerous benefits: change of the healthcare professional's approach, implementation of structured educational programmes, development of research, etc. There are many obstacles to the development of TPE programmes: insufficient resources, rigid legislation or lack of knowledge of TPE practices. The dental profession is an obstacle itself because of its lack of understanding and variable degrees of integration in the medical community. There are multiple levers, but the main ones are changing attitudes of the profession and the provision of resources to develop TPE. Although alternatives to TPE programmes exist (accompanying measures, short educational strategies, connected health), they cannot replace TPE. Conclusion: More educational strategies must be developed in the field of dentistry. However, the framework of TPE must be adapted to the profession to ensure good uptake.

Martin, P. and D. W. Hine (2017). "Using behavioural science to improve Australia's environmental regulation." *Rangeland Journal* 39(5-6): 551-561.

Australia has many environmental regulations intended to alter the behaviour of rural landholders. One key issue relates to managing invasive plants and animals, where effective action requires sustained (and largely voluntary) action and sustained investment. Eliciting high levels of compliance is a difficult problem, because different landholders have widely different attitudes and motivations. What works with one group of people may not work with another, and indeed may be counterproductive. This study demonstrates the use of contemporary psychological methods to identify groups of landholders who demonstrate different attitudes and behaviours in relation to weed control. It shows that identifiable segments do respond differently to different mixes of regulation, incentives and community action. It suggests that some commonly promoted interventions may actually be counterproductive in encouraging desirable action with some groups. The study shows that behavioural precision is important in creating effective compliance strategies in weeds management, and it demonstrates some of the methods that may be used to achieve that precision.

Martin, P. and A. Kennedy (2015). Introduction: a jurisprudence of environmental governance?

Martin, P., et al. (2017). "Engagement: Australia's weak link in biodiversity protection." *Environmental and Planning Law Journal* 34(5): 383-397.

International and domestic conservation laws aim to address the biodiversity decline that is caused by intertwined environmental and human behaviour factors. In Australia, despite the country being a signatory to relevant conventions and having many biodiversity conservation laws, policy instruments and associated biodiversity strategies are not adequately protecting nature. For Australia to meet its Convention commitments to biodiversity protection a more effective approach to managing human behaviours is needed. Both tangible and intangible resources, including

more scientifically sophisticated approaches to managing community engagement, are essential if legal instruments are to be made effective. This article forms part of a growing body of scholarship on the implementation of environmental instruments, and suggests that legal effectiveness will require new academic and policy approaches that take into account the diverse drivers and practical constraints on human behaviour.

Martin, P. and C. Tannenbaum (2017). "A realist evaluation of patients' decisions to deprescribe in the EMPOWER trial." *Bmj Open* 7(4).

Background and objectives Successful mechanisms for engaging patients in the deprescribing process remain unknown but may include: (1) triggering motivation to deprescribe by increasing patients' knowledge and concern about medications; (2) building capacity to taper by augmenting self-efficacy and (3) creating opportunities to discuss and receive support for deprescribing from a healthcare provider. We tested these mechanisms during the Eliminating Medications through Patient Ownership of End Results (EMPOWER) () trial and investigated the contexts that led to positive and negative deprescribing outcomes. **Design** A realist evaluation using a sequential mixed methods approach, conducted alongside the EMPOWER randomised clinical trial. **Setting** Community, Quebec, Canada. **Participants** 261 older chronic benzodiazepine consumers, who received the EMPOWER intervention and had complete 6-month follow-up data. **Intervention** Mailed deprescribing brochure on benzodiazepines. **Measurements** Motivation (intent to discuss deprescribing; change in knowledge test score; change in beliefs about the risk-benefits of benzodiazepines, measured with the Beliefs about Medicines Questionnaire), capacity (self-efficacy for tapering) and opportunity (support from a physician or pharmacist). **Results** The intervention triggered the motivation to deprescribe among 167 (n=64%) participants (mean age 74.6 years +/- 6.3, 72% women), demonstrated by improved knowledge (risk difference, 58.50% (95% CI 46.98% to 67.44%)) and increased concern about taking benzodiazepines (risk difference, 67.67% (95% CI 57.36% to 74.91%)). Those who attempted to taper exhibited increased self- efficacy (risk difference, 56.90% (95% CI 45.41% to 65.77%)). Contexts where the deprescribing mechanisms failed included lack of support from a healthcare provider, a focus on shortterm quality of life, intolerance to withdrawal symptoms and perceived poor health. **Conclusion** Deprescribing mechanisms that target patient motivation and capacity to deprescribe yield successful outcomes in contexts where healthcare providers are supportive, and patients do not have internal competing desires to remain on drug therapy.

Martin, P. and N. Taylor (2018). "Environmental Stewardship Duties in Biosecurity: Issues and Challenges." *Environmental and Planning Law Journal* 35(6): 743-762.

On the basis that it is desirable to consider the risks associated with legal innovations, this article examines the implementation challenges of a landholder duty of care to the environment. This is a recent importation of the duty of care concept into the management of a complex challenge, the control of invasive species. The management of invasive species is an issue of environmental and economic significance where prior laws have been insufficiently effective to meet public policy goals. This article finishes with observations about implementation effectiveness and considers what might be needed to systematically address the implementation risk of duty-based instruments.

Martin, P. V. (2018). "Managing the risks of ecosystem services markets." *Ecosystem Services* 29: 404-410.

Environmental governance is undergoing innovation in the use of market instruments, including payments for environmental services. As it is in nature, in society change (such as commercial or policy innovation) brings the risk of failure or of unanticipated consequences. Good governance requires intelligent precautions against what can go wrong. In investment markets governance safeguards such as competition and market regulation manage the risk that private gains accrue to the ruthless at the cost of the innocent, or that inexperience or incompetence lead to high public and private costs. For environmental markets risk safeguards are under developed. This paper explores the risk dimension of payments for environmental services, and suggests that systematic risk governance could make it more likely that these innovations will serve the public interest.

Martin, R. and E. M. Murtagh (2015). "An intervention to improve the physical activity levels of children: Design and rationale of the 'Active Classrooms' cluster randomised controlled trial." *Contemporary Clinical Trials* 41: 180-191.

Background: Recent evidence demonstrates that children are not engaging in the recommended 60 min of moderate to vigorous physical activity per day. Physical activity (PA) interventions have been acknowledged by the WHO (2010) as a key strategy to increase the PA levels of children. School has been recognised as a primary location for reaching the majority of children and providing PA opportunities for them. However, the sedentary nature of lessons carried out in the classroom has been identified as a contributing factor to physical inactivity among this age group. **Purpose:** The aim of this study is to develop and evaluate a classroom-based intervention which integrates PA and academic content, and evaluate its effects on the PA levels of children aged 8-11 in Ireland. **Methods:** Active Classrooms is an 8-week classroom based intervention guided by the behaviour change wheel (BCW) framework (Michie et al. 2011)

that will be evaluated using a cluster randomised controlled trial (RCT). Study measures will be taken at baseline, during the final week of the intervention and at follow-up after 4 months. The primary outcome is minutes of moderate-to-vigorous intensity physical activity during school time objectively assessed using accelerometers (Actigraph). Teachers' perceptions on the effectiveness and use of the intervention and students' enjoyment of the programme will be evaluated post intervention. Conclusions: Changing teacher behaviour towards using physically active teaching methods may increase the moderate to vigorous physical activity levels of their students. Therefore, the results of this study may have important implications for the health of children both now and into the future. (C) 2015 Elsevier Inc. All rights reserved.

Martin, R. and E. M. Murtagh (2015). "Preliminary findings of Active Classrooms: An intervention to increase physical activity levels of primary school children during class time." *Teaching and Teacher Education* 52: 113-127.

This study evaluates the effects of a behaviour change intervention, which encourages the integration of physical activity into the teaching of academic lessons, on physical activity levels of students. The main outcome is mean minutes of moderate-to-vigorous physical activity (MVPA) daily generated during the intervention lessons. Teacher's perceptions and students' enjoyment of the programme were also evaluated. Students accumulated a mean of 8 min MVPA during the intervention lessons daily. The teacher and students were very satisfied with the programme. Therefore, changing teacher behaviour towards using physically active teaching methods is a promising way of increasing children's physical activity levels. (C) 2015 Elsevier Ltd. All rights reserved.

Martin, R. and E. M. Murtagh (2017). "Teachers' and students' perspectives of participating in the 'Active Classrooms' movement integration programme." *Teaching and Teacher Education* 63: 218-230.

This paper evaluates perceptions of 5 teachers and 129 students, of participating in an 8-week primary school movement integration intervention. Following training and provision of resources, teachers were asked to teach 2 active lessons each day. Teachers completed questionnaires at post-intervention. Students participated in 'draw and write' activities and focus group interviews. Teachers reported great satisfaction, noting student enjoyment, enhanced teaching and learning, and provision of resources as contributing to the success of the programme. Students expressed high levels of enjoyment, with emphasis on peer-engagement, perceived health benefits, and improved academic motivation. (C) 2017 Elsevier Ltd. All rights reserved.

Martinez, C., et al. (2017). "Factors associated with implementation of the 5A's smoking cessation model." *Tobacco Induced Diseases* 15.

Background: Several health organizations have adopted the 5A's brief intervention model (Ask, Advise, Assess, Assist, Arrange), based on evidence-based guidelines for smoking cessation. We examine individual, cognitive, behavioral, and organizational factors associated with the 5A's performance among clinical healthcare workers in Catalonia. We also investigate how these factors interact and potentially predict the implementation of each component of the 5A's. Methods: A cross-sectional survey was conducted among clinical health workers enrolled in an online smoking cessation training course (n = 580). The survey included questions about individual characteristics as well as cognitive, behavioral, and organizational factors previously identified in research. We assessed self-reported performance of the 5A's, assessed on a scale from 0 to 10, and used Multivariate regression to examine factors associated with its performance. Results: The performance means (standard deviation) were moderate for the first 3A's [Ask: 6.4 (3.1); Advise: 7.1 (2.7); Assess: 6.3 (2.8)] and low for the last 2A's [Assist: 4.4 (2.9); Arrange: 3.2 (3.3)]. We observed a high correlation between Assist and Arrange ($r = 0.704$, $p < 0.001$). Having positive experiences and feeling competent were positively associated with performing the 5A's model and having organizational support with Assist and Arrange. Personal tobacco use among healthcare workers was negatively associated with Advise and Arrange. Conclusions: Our study found that clinical healthcare workers do not perform the 5A's completely. The main barriers identified suggest the need of training and making available practical guidelines in healthcare services. Organizational support is essential for moving towards the implementation of Assist and Arrange.

Matus, J., et al. (2019). "A PRACTICAL TOOLKIT OF STRATEGIES FOR BUILDING RESEARCH CAPACITY IN ALLIED HEALTH." *Asia Pacific Journal of Health Management* 14(2): 5-18.

OBJECTIVES The objectives of this project were firstly to develop a practical toolkit of evidence-informed strategies for building research capacity in allied health, and secondly to disseminate and apply this toolkit to inform tailored research capacity building plans for allied health teams. DESIGN: This project used a plan, do, study, act (PDSA) quality improvement methodology to develop, disseminate and apply a toolkit which was based on the results of a recent systematic review of allied health research capacity building frameworks and a narrative review of other interventions and theoretical recommendations. SETTING Eight allied health professional teams in a publicly funded tertiary health service were supported to develop tailored research capacity building plans based on their specific needs, goals and

context. MAIN outcome measures: The outcomes of this project were evaluated using process measures including whether a research capacity building plan was developed and to what extent short-term goals were achieved within three months. RESULTS A practical toolkit was developed which consolidates existing evidence-informed strategies and organises these around three components including 'supporting clinicians in research', 'working together' and 'valuing research for excellence' and 17 sub-components. Several barriers and facilitators to applying the toolkit to teams were identified and this paper suggests some recommendations and future directions for addressing these. CONCLUSIONS This toolkit may be a useful resource to inform the development of team-based research capacity building plans for allied health. The application of the toolkit may be enhanced by a need's assessment and facilitation from a researcher.

Mayrhuber, E. A. S., et al. (2018). "Vulnerability to heatwaves and implications for public health interventions - A scoping review." *Environmental Research* 166: 42-54.

Background: Heatwaves form a serious public health threat, especially for vulnerable groups. Interventions such as active outreach programs, exposure reduction measures and monitoring and mapping of at-risk groups are increasingly implemented across the world but little is known about their effect. Objectives: To assess how vulnerable groups are identified and reached in heat health interventions, to understand the effectiveness and efficiency of those interventions, and to identify research gaps in existing literature. Methods: We performed a literature search in relevant scientific literature databases and searched with a four element search model for articles published from 1995 onward. We extracted data on intervention measures, target group and evaluation of effectiveness and efficiency. Results: We identified 23 eligible studies. Patterns exist in type of interventions 1) to detect and 2) to influence extrinsic and intrinsic risk and protective factors. Results showed several intervention barriers related to the variety and intersection of these factors, as well as the self-perception of vulnerable groups, and misconceptions and unfavorable attitudes towards intervention benefits. While modest indications for the evidence on the effectiveness of interventions were found, efficiency remains unclear. Discussion: Interventions entailed logical combinations of measures, subsumed as packages. Evidence for effective and efficient intervention is limited by the difficulty to determine effects and because single measures are mutually dependent. Interventions prioritized promoting behavioral change and were based on behavioral assumptions that remain untested and mechanisms not worked out explicitly. Conclusions: Multifaceted efforts are needed to tailor interventions, compiled in heat health warning systems and action plans for exposure reduction and protection of vulnerable populations, to fit the social, economic and geographical context. Besides adequately addressing relevant risk and protective factors, the challenge is to integrate perspectives of vulnerable groups. Future research should focus on intervention barriers and improving the methods of effectiveness and efficiency evaluation.

Mbalinda, S., et al. (2018). "Experience of perceived barriers and enablers of safe uninterrupted skin-to-skin contact during the first hour after birth in Uganda." *Midwifery* 67: 95-102.

Objective: To identify barriers and enablers to conducting safe uninterrupted skin-to-skin contact (SSC) in the first hour after birth in a low-resource setting and to evaluate how health care professionals coped with the identified barriers after completion of an intervention package. Design and setting: A qualitative method using focus-group and individual interviews with health professionals at a governmental hospital in Uganda. Participants: 81 health professionals. Interventions: A 6-step intervention package including, amongst other things, showing a DVD on safe uninterrupted SSC following birth and discussing with the professionals what barriers and possibilities there were to changing practice to allow SSC for one hour. Measurements and findings: The thematic analysis of the intervention interviews yielded the following themes: Perceived barriers including medical events, psychosocial issues and standard midwifery practice; Pragmatic barriers including economic constraints in the hospital and community; Anticipated barriers by staff and families; Enabling events including staff involvement. Most of the barriers involving expenses were not solved. When the mother and infant had to move to the postnatal ward within one hour after birth, there were difficulties in keeping SSC during the transportation, but this obstacle was partly solved. A few mothers (i.e. depressed and/or adolescent) were considered to be unwilling to keep the infant skin-to-skin; this difficulty was not solved. Practising SSC led the participants to find advantages such as reduced work load and positive effects on pain during suturing. Conclusions: SSC following birth was shown to be applicable and accepted by the health professionals. The involvement of professionals had clinical implications, such as initiatives to broadcast the message of SSC by radio to the community and introduce SSC to women having a Caesarean section. (C) 2018 Elsevier Ltd. All rights reserved.

Mc Sharry, J., et al. (2016). "Implementing international sexual counselling guidelines in hospital cardiac rehabilitation: development of the CHARMS intervention using the Behaviour Change Wheel." *Implementation Science* 11.

Background: Decreased sexual activity and sexual problems are common among people with cardiovascular disease, negatively impacting relationship satisfaction and quality of life. International guidelines recommend routine delivery of sexual counselling to cardiac patients. The Cardiac Health and Relationship Management and Sexuality (CHARMS) baseline study in Ireland found, similar to international findings, limited implementation of sexual counselling

guidelines in practice. The aim of the current study was to develop the CHARMS multi-level intervention to increase delivery of sexual counselling by healthcare professionals. We describe the methods used to develop the CHARMS intervention following the three phases of the Behaviour Change Wheel approach: understand the behaviour, identify intervention options, and identify content and implementation options. Survey (n = 60) and focus group (n = 14) data from two previous studies exploring why sexual counselling is not currently being delivered were coded by two members of the research team to understand staff's capability, opportunity, and motivation to engage in the behaviour. All potentially relevant intervention functions to change behaviour were identified and the APEASE (affordability, practicability, effectiveness, acceptability, side effects and equity) criteria were used to select the most appropriate. The APEASE criteria were then used to choose between all behaviour change techniques (BCTs) potentially relevant to the identified functions, and these BCTs were translated into intervention content. The Template for Intervention Description and Replication (TIDieR) checklist was used to specify details of the intervention including the who, what, how and where of proposed intervention delivery. Results: Providing sexual counselling group sessions by cardiac rehabilitation staff to patients during phase III cardiac rehabilitation was identified as the target behaviour. Education, enablement, modelling, persuasion and training were selected as appropriate intervention functions. Twelve BCTs, linked to intervention functions, were identified for inclusion and translated into CHARMS intervention content. Conclusions: This paper details the use of Behaviour Change Wheel approach to develop an implementation intervention in an under-researched area of healthcare provision. The systematic and transparent development of the CHARMS intervention will facilitate the evaluation of intervention effectiveness and future replication and contribute to the advancement of a cumulative science of implementation intervention design.

McArdle, D. and Z. Kabir (2018). "Implementing a tobacco-free hospital campus in Ireland: lessons learned." *Irish Journal of Medical Science* 187(2): 287-296.

The Irish Health Service Executive (HSE) had set a target that all HSE facilities should implement the HSE Tobacco Free Campus (TFC) policy by 2015. The aims of this study are to examine hospital staff awareness and to assess the progress of selected HSE health care facilities towards a TFC policy. Three health care facilities that were conveniently located were self-selected in County Cork, namely, an acute hospital, a mental health service and an older person's facility. Three different types of quantitative data were collected between May and September 2016 drawn on Standards 3, 4 and 5 of the European Network for Tobacco Free Health Care Services (ENSH-Global) tools: (1) face-to-face consultation with health care facility managers on their progress towards the HSE TFC policy, (2) self-administered questionnaire to a purposive sample of 153 staff members across three health care facilities and (3) physical observation of signs of smoking and smoking-related information across each health care facility for objective verification of compliance. Of the 153 staff who completed the questionnaire, 64% were females, 39% were nurses, 20% were smokers and 76% agreed with the TFC policy. However, only 26% of the 153 staff had received training on motivational and tobacco cessation techniques. Seventy-seven percent of the 153 staff stated that the campus was not tobacco-free. Physical observation suggested signs of smoking within the campus across all three health care facilities surveyed. Staff awareness of the HSE TFC policy across selected health care facilities in Ireland is positive but is not sufficient. There are gaps in the implementation process of the HSE TFC policy in the health care facilities. Therefore, proper communication on the importance of the ENSH-Global standards and cessation training to all staff is necessary to help reduce smoking rates across the health care facilities and also to move towards a Tobacco Free Campus in Ireland.

McArthur, C., et al. (2018). ""We get them up, moving, and out the door. How do we get them to do what is recommended?" Using behaviour change theory to put exercise evidence into action for rehabilitation professionals." *Archives of Osteoporosis* 13(1).

Recommendations suggest a multicomponent exercise for people with osteoporosis. We identified rehabilitation professionals' barriers and facilitators to implementing exercise recommendations with people with osteoporosis, and used those to make suggestions for targeted knowledge translation interventions. Future work will report on development and evaluation of the interventions informed by our study. Purpose Rehabilitation professionals can help people with osteoporosis to engage in a multicomponent exercise program and perform activities of daily living safely. However, rehabilitation professional face barriers to implementing exercise evidence, especially for specific disease conditions like osteoporosis. We performed a behavioural analysis and identified rehabilitation professionals' barriers to and facilitators of implementing disease-specific physical activity and exercise recommendations (Too Fit to Fracture recommendations), and used the Behaviour Change Wheel to select interventions. Methods Semi-structured interviews and focus groups were conducted with rehabilitation professionals, including physical therapists, kinesiologists, and occupational therapists, and transcribed verbatim. Two researchers coded data and identified emerging themes. Using the Behaviour Change Wheel framework, themes were categorized into capability, opportunity, and motivation, and relevant interventions were identified. Results Ninety-four rehabilitation professionals (mean age 40.5 years, 88.3% female) participated. Identified barriers were as follows: capability-lack of training in behaviour change,

how to modify recommendations for physical and cognitive impairments; opportunity-lack of resources, time, and team work; motivation-lack of trust between providers, fear in providing interventions that may cause harm. Interventions selected were as follows: education, training, enablement, modelling and persuasion. Policy categories are communication/marketing, guidelines, service provision and environmental/social planning. Conclusions Key barriers to implementing the recommendations are rehabilitation professionals' ability to use behaviour change techniques, to modify the recommendations for physical and cognitive limitations and to feel comfortable with delivering challenging but safe interventions for people with osteoporosis, and lacking trust and team work across sectors. Future work will report on development and evaluation of knowledge translation interventions informed by our study.

McCann, L., et al. (2018). "An e-Prehabilitation System of Care for Teenagers and Young Adults Diagnosed With Cancer: Protocol for a Qualitative Co-Design Study." *Jmir Research Protocols* 7(9).

Background: A diagnosis of cancer in young adulthood can pose many different and unique challenges for individuals. The provision of adequate and appropriate information as well as care and support for teenagers and young adults at the time of diagnosis is central to their health care experience going forward. Moreover, appropriate and accessible information provision is critical to ensure that young individuals with cancer feel equipped and empowered to make decisions about, and be involved in, their treatment and recovery throughout their experience; this is a concept known as prehabilitation. As digital interventions and resources that support teenagers and young adults with cancer are an increasingly desirable part of health care provision, this study will focus on the development of an age- and population-appropriate electronic prehabilitation (e-Prehabilitation) system of care. **Objective:** We will conduct an exploratory, co-design research project that will inform the development of an e-Prehabilitation system of care to support teenagers and young adults diagnosed with cancer. A collaborative approach to data collection and prototype design will ensure that a patient-centered approach is embedded throughout. **Methods:** A qualitative, co-design study utilizing surveys, interviews, and focus group discussions is being conducted with teenagers and young adults, health care professionals, and technologists. **Results:** This research study is in progress; recruitment and data collection activities have commenced and findings are expected in early 2019. **Conclusions:** The findings of this study will have important implications for informing the future development and evaluation of an e-Prehabilitation system of care to support teenagers and young adults diagnosed with cancer.

McCarthy, O. L., et al. (2016). "Safetxt: a pilot randomised controlled trial of an intervention delivered by mobile phone to increase safer sex behaviours in young people." *Bmj Open* 6(12).

Objective: To test the procedures proposed for a main trial of a safer sex intervention for young people delivered by mobile phone text message ('safetxt'). **Design and setting:** Pilot randomised controlled trial. Participants were recruited through sexual health services in the UK. An independent online randomisation system allocated participants to receive the safetxt intervention or to receive the control text messages (monthly messages about participation in the study). Texting software delivered the messages in accordance with a predetermined schedule. **Participants:** Residents of England aged 16-24 who had received either a positive chlamydia test result or reported unsafe sex in the last year (defined as more than 1 partner and at least 1 occasion of sex without a condom). **Intervention:** The safetxt intervention is designed to reduce sexually transmitted infection in young people by supporting them in using condoms, telling a partner about an infection and testing before unprotected sex with a new partner. Safetxt was developed drawing on: behavioural science; face-to-face interventions; the factors known to influence safer sex behaviours and the views of young people. **Outcomes:** The coprimary outcomes of the pilot trial were the recruitment rate and completeness of follow-up. **Results:** We recruited 200 participants within our target of 3 months and we achieved 81% (162/200) follow-up response for the proposed primary outcome of the main trial, cumulative incidence of chlamydia at 12 months. **Conclusions:** Recruitment, randomisation, intervention delivery and follow-up were successful and a randomised controlled trial of the safetxt intervention is feasible.

McCarty, C. A., et al. (2018). "How Do Patients Respond to Genetic Testing for Age-related Macular Degeneration?" *Optomtry and Vision Science* 95(3): 166-170.

SIGNIFICANCE The American Academy of Ophthalmology currently recommends against routine genetic testing for complex diseases such as age-related macular degeneration (AMD). The results of this study demonstrate that patients are very interested in predictive genetic testing for AMD, find the information useful, and make behavioral changes as a result of the information. **PURPOSE** The goal of this project was to conduct a pilot AMD genomic medicine study. **METHODS** Eligible patients were aged 50 to 65 years with no personal history of AMD. DNA samples were genotyped for five single-nucleotide polymorphisms (SNPs) in the CFH gene, one SNP in the ARMS-2 gene, one SNP in the C3 gene, and one SNP in the mitochondrial ND2 gene. A risk score was calculated utilizing a model based on odds ratios, lifetime risk of advanced AMD and known population prevalence of genotype, haplotype, and smoking risk. The study optometrist provided the patient's risk score and counseling for personal protective behaviors. Telephone interviews

were conducted 1 to 3 months after the counseling visit. RESULTS One hundred one subjects (85%) participated in the genetic testing; 78 (77.2%) were female. Follow-up interviews were conducted with 94 participants (93.1%). More than half (n = 48) of the participants said that they were motivated to participate in the study because they had a family member with AMD or another eye or genetic disorder. Despite low risk levels, many participants reported making changes as a result of the genetic testing. Twenty-seven people reported making specific changes, including wearing sunglasses and brimmed hat and taking vitamin supplements. Another 16 people said that they were already doing the recommended activities, including wearing glasses, quitting smoking, and/or taking vitamins. CONCLUSIONS Interest in genetic testing for future risk of AMD was high in this population and resulted in support to continue current health behaviors or incentive to improve behaviors related to eye health.

McClurg, D., et al. (2015). "Scoping review of adherence promotion theories in pelvic floor muscle training-2011 ics state-of-the-science seminar research paper i of iv." *Neurourology and Urodynamics* 34(7): 606-614.

AimsThis paper, the first of four emanating from the International Continence Society's 2011 State-of-the-Science Seminar on pelvic-floor-muscle training (PFMT) adherence, aimed to summarize the literature on theoretical models to promote PFMT adherence, as identified in the research, or suggested by the seminar's expert panel, and recommends future directions for clinical practice and research. **Methods**Existing literature on theories of health behavior were identified through a conventional subject search of electronic databases, reference-list checking, and input from the expert panel. A core eligibility criterion was that the study included a theoretical model to underpin adherence strategies used in an intervention to promote PFM training/exercise. **Results**A brief critique of 12 theoretical models/theories is provided and, where appropriate, their use in PFMT adherence strategies identified or examples of possible uses in future studies outlined. **Conclusion**A better theoretical-based understanding of interventions to promote PFMT adherence through changes in health behaviors is required. The results of this scoping review and expert opinions identified several promising models. Future research should explicitly map the theories behind interventions that are thought to improve adherence in various populations (e.g., perinatal women to prevent or lessen urinary incontinence). In addition, identified behavioral theories applied to PFMT require a process whereby their impact can be evaluated. *Neurourol. Urodynam.* 34:??-???, 2015. (c) 2015 Wiley Periodicals, Inc.

McCool, J., et al. (2018). "Moving beyond the individual: mHealth tools for social change in low-resource settings." *Bmj Global Health* 3(6).

McCormick, S. A., et al. (2017). "Psychosocial therapy for Parkinson's-related dementia: study protocol for the INVEST randomised controlled trial." *Bmj Open* 7(6).

Introduction Parkinson's disease (PD) with mild cognitive impairment (MCI-PD) or dementia (PDD) and dementia with Lewy bodies (DLB) are characterised by motor and 'non-motor' symptoms which impact on quality of life. Treatment options are generally limited to pharmacological approaches. We developed a psychosocial intervention to improve cognition, quality of life and companion burden for people with MCI-PD, PDD or DLB. Here, we describe the protocol for a single-blind randomised controlled trial to assess feasibility, acceptability and tolerability of the intervention and to evaluate treatment implementation. The interaction among the intervention and selected outcome measures and the efficacy of this intervention in improving cognition for people with MCI-PD, PDD or DLB will also be explored. **Methods and analysis** Dyads will be randomised into two treatment arms to receive either 'treatment as usual' (TAU) or cognitive stimulation therapy specifically adapted for Parkinson's-related dementias (CST-PD), involving 30 min sessions delivered at home by the study companion three times per week over 10 weeks. A mixed-methods approach will be used to collect data on the operational aspects of the trial and treatment implementation. This will involve diary keeping, telephone follow-ups, dyad checklists and researcher ratings. Analysis will include descriptive statistics summarising recruitment, acceptability and tolerance of the intervention, and treatment implementation. To pilot an outcome measure of efficacy, we will undertake an inferential analysis to test our hypothesis that compared with TAU, CST-PD improves cognition. Qualitative approaches using thematic analysis will also be applied. Our findings will inform a larger definitive trial. **Ethics and dissemination** Ethical opinion was granted (REC reference: 15/YH/0531). Findings will be published in peer-reviewed journals and at conferences. We will prepare reports for dissemination by organisations involved with PD and dementia.

McCullough, A. R., et al. (2015). "'All illness is personal to that individual': a qualitative study of patients' perspectives on treatment adherence in bronchiectasis." *Health Expectations* 18(6): 2477-2488.

Background Adherence to treatment is low in bronchiectasis and is associated with poorer health outcomes. Factors affecting adherence decisions have not been explored in patients with bronchiectasis. **Objective** We aimed to explore patients' perspectives on adherence, factors affecting adherence decision making and to develop a conceptual model explaining this decision-making process in adults with bronchiectasis. **Methods** Adults with bronchiectasis participated in one-to-one semi-structured interviews. Interviews were audio-recorded, transcribed verbatim and

analysed independently by two researchers using thematic analysis. Data from core themes were extracted, categorized into factors affecting adherence decision making and used to develop the conceptual model. Results Participants' beliefs about treatment, the practical aspects of managing treatment, their trust in health-care professionals and acceptance of disease and treatment were important aspects of treatment adherence. The conceptual model demonstrated that adherence decisions were influenced by participants' individual balance of barriers and motivating factors (treatment-related, disease-related, health-care-related, personal and social factors). Conclusion Adherence decision-making in bronchiectasis is complex, but there is the potential to enhance adherence by understanding patients' specific barriers and motivators to adherence and using this to tailor adherence strategies to individual patients and treatments.

McCutchan, G., et al. (2016). "Barriers to cancer symptom presentation among people from low socioeconomic groups: a qualitative study." *Bmc Public Health* 16.

Background: Socioeconomic inequalities in cancer survival can in part be explained by long patient intervals among people from deprived groups; however, the reasons for this are unclear. This qualitative study explores the actual and anticipated barriers to cancer symptom presentation in the context of socioeconomic deprivation. Methods: Thirty participants were recruited through the International Cancer Benchmarking Partnership Welsh database (n = 20), snowball sampling (n = 8) and community partners (n = 2). Semi-structured qualitative interviews were conducted with symptomatic and asymptomatic adults over the age of 50 years, who were identified as being from a low socioeconomic group based on multiple individual and group level indicators. Transcripts were analysed using a Framework approach based on the COM-B model (Capability, Opportunity, Motivation-Behaviour). Results: There was evidence of poor awareness of non-specific cancer symptoms (Capability), fearful and fatalistic beliefs about cancer (Motivation), and various barriers to accessing an appointment with the family physician (Opportunity) and full disclosure of symptoms (Capability). These in combination were associated with a lengthened patient interval among participants. Social networks (Opportunity) were influential on the formation of knowledge and beliefs about cancer. Participants' behavioural and normative beliefs were usually formed and reinforced by people they knew with cancer, and such beliefs were considered to lengthen the patient interval. Discussing symptoms with a family member or friend before a visit to the family physician was the norm, and could act as a barrier or facilitator depending on the quality of advice given (Opportunity). Economic hardship meant fulfilling basic day-to-day needs such as finding money for food were prioritised over medical help seeking (Opportunity). Conclusions: The complex interaction between individual characteristics and socio-environmental factors is important for understanding cancer symptom presentation behaviour, especially in the context of socioeconomic deprivation. Interventions targeted at deprived communities should take into account the wider social influences on symptom presentation behaviour.

McDermott, M. S., et al. (2015). "The theory of planned behaviour and discrete food choices: a systematic review and meta-analysis." *International Journal of Behavioral Nutrition and Physical Activity* 12.

The combination of economic and social costs associated with non-communicable diseases provide a compelling argument for developing strategies that can influence modifiable risk factors, such as discrete food choices. Models of behaviour, such as the Theory of Planned Behaviour (TPB) provide conceptual order that allows program designers and policy makers to identify the substantive elements that drive behaviour and design effective interventions. The primary aim of the current review was to examine the association between TPB variables and discrete food choice behaviours. A systematic literature search was conducted to identify relevant studies. Calculation of the pooled mean effect size ($r(+)$) was conducted using inverse-variance weighted, random effects meta-analysis. Heterogeneity across studies was assessed using the Q-and I²-statistics. Meta-regression was used to test the impact of moderator variables: type of food choice behaviour; participants' age and gender. A total of 42 journal articles and four unpublished dissertations met the inclusion criteria. TPB variables were found to have medium to large associations with both intention and behaviour. Attitudes had the strongest association with intention ($r(+)$ = 0.54) followed by perceived behavioural control (PBC, $r(+)$ = 0.42) and subjective norm (SN, $r(+)$ = 0.37). The association between intention and behaviour was $r(+)$ = 0.45 and between PBC and behaviour was $r(+)$ = 0.27. Moderator analyses revealed the complex nature of dietary behaviour and the factors that underpin individual food choices. Significantly higher PBC-behaviour associations were found for choosing health compromising compared to health promoting foods. Significantly higher intention-behaviour and PBC-behaviour associations were found for choosing health promoting foods compared to avoiding health compromising foods. Participant characteristics were also found to moderate associations within the model. Higher intention-behaviour associations were found for older, compared to younger age groups. The variability in the association of the TPB with different food choice behaviours uncovered by the moderator analyses strongly suggest that researchers should carefully consider the nature of the behaviour being exhibited prior to selecting a theory.

McDonagh, L. K., et al. (2017). "Facilitators and barriers to chlamydia testing in general practice for young people using a theoretical model (COM-B): a systematic review protocol." *Bmj Open* 7(3).

Introduction: Chlamydia is a key health concern with high economic and social costs. There were over 200 000 chlamydia diagnoses made in England in 2015. The burden of chlamydia is greatest among young people where the highest prevalence rates are found. Annual testing for sexually active young people is recommended; however, many of those at risk do not receive testing. General practice has been identified as an ideal setting for testing, yet efforts to increase testing in this setting have not been effective. One theoretical model which may provide insight into the underpinnings of chlamydia testing is the Capability, Opportunity and Motivation Model of Behaviour (COM-B model). The aim of this systematic review is to: (1) identify barriers and facilitators to chlamydia testing for young people in general practice and (2) use a theoretical model to conduct a behavioural analysis of chlamydia testing behaviour. **Methods and analysis:** Qualitative, quantitative and mixed methods studies published after 2000 will be included. Seven databases (MEDLINE, PubMed, EMBASE, Informit, PsycInfo, Scopus, Web of Science) will be searched to identify peer-reviewed publications which examined barriers and facilitators to chlamydia testing in general practice. Risk of bias will be assessed using the Critical Appraisal Skills Programme. Data regarding study design and key findings will be extracted. The data will be analysed using thematic analysis and the resultant factors will be mapped onto the COM-B model components. All findings will be reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. **Ethics and dissemination:** Ethical approval is not required. The results will be disseminated via submission for publication to a peer-review journal when complete and for presentation at national and international conferences. The review findings will be used to inform the development of interventions to facilitate effective and efficient chlamydia testing in general practice.

McDonagh, L. K., et al. (2018). "Application of the COM-B model to barriers and facilitators to chlamydia testing in general practice for young people and primary care practitioners: a systematic review." *Implementation Science* 13.

BackgroundChlamydia is a major public health concern, with high economic and social costs. In 2016, there were over 200,000 chlamydia diagnoses made in England. The highest prevalence rates are found among young people. Although annual testing for sexually active young people is recommended, many do not receive testing. General practice is one ideal setting for testing, yet attempts to increase testing in this setting have been disappointing. The Capability, Opportunity, and Motivation Model of Behaviour (COM-B model) may help improve understanding of the underpinnings of chlamydia testing. The aim of this systematic review was to (1) identify barriers and facilitators to chlamydia testing for young people and primary care practitioners in general practice and (2) map facilitators and barriers onto the COM-B model.**Methods**Qualitative, quantitative, and mixed methods studies published after 2000 were included. Seven databases were searched to identify peer-reviewed publications which examined barriers and facilitators to chlamydia testing in general practice. The quality of included studies was assessed using the Critical Appraisal Skills Programme. Data (i.e., participant quotations, theme descriptions, and survey results) regarding study design and key findings were extracted. The data was first analysed using thematic analysis, following this, the resultant factors were mapped onto the COM-B model components. All findings are reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.**Results**Four hundred eleven papers were identified; 39 met the inclusion criteria. Barriers and facilitators were identified at the patient (e.g., knowledge), provider (e.g., time constraints), and service level (e.g., practice nurses). Factors were categorised into the subcomponents of the model: physical capability (e.g., practice nurse involvement), psychological capability (e.g.: lack of knowledge), reflective motivation (e.g., beliefs regarding perceived risk), automatic motivation (e.g., embarrassment and shame), physical opportunity (e.g., time constraints), social opportunity (e.g., stigma).**Conclusions**This systematic review provides a synthesis of the literature which acknowledges factors across multiple levels and components. The COM-B model provided the framework for understanding the complexity of chlamydia testing behaviour. While we cannot at this juncture state which component represents the most salient influence on chlamydia testing, across all three levels, multiple barriers and facilitators were identified relating psychological capability and physical and social opportunity. Implementation should focus on (1) normalisation, (2) communication, (3) infection-specific information, and (4) mode of testing. In order to increase chlamydia testing in general practice, a multifaceted theory- and evidence-based approach is needed.**Trial registration**PROSPERO CRD42016041786

McDonald, J. L. and J. Clements (2019). "Engaging with Socio-Economically Disadvantaged Communities and Their Cats: Human Behaviour Change for Animal and Human Benefit." *Animals* 9(4).

Simple Summary The overpopulation of domestic cats (*Felis catus*) is an important welfare concern and can be a particular problem in socio-economically deprived areas. Trap-Neuter-Return (TNR) activities are a humane way of managing unowned cat populations; however continued movement of cats into an area can derail the TNR effort. Consequently, for sustainable change, it is recommended that TNR activities are linked with community engagement to encourage positive behaviours towards cats, such as continued reporting of unowned cats for neutering. We investigated the impact of a community-based partnership approach to TNR, in order to (1) determine the acceptability of the project within the community; (2) determine whether the project leads to sustainable behaviour change and (3) assess the

potential benefits of participation in activities. We found residents had increased self-efficacy and confidence to help the cats within the community and were more likely to report unowned cats for neutering now compared to previous years. Engaging communities with programs to control cat numbers, can effectively overcome barriers to helping cats. We hope that the promising results from this program will encourage future efforts to consider community participation when cat management is being delivered, to overcome barriers to helping cats in often hard-to-reach populations. Abstract The overpopulation of free-roaming domestic cats (*Felis catus*) is fuelled by uncontrolled breeding of both owned and unowned populations and has been identified as a particular problem in socio-economically deprived areas. Consequently, for sustainable change, it is recommended that Trap-Neuter-Return activities are linked with community engagement to encourage positive behaviours towards cats. This paper assesses the acceptability and impact of a community-partnership program called Bulwell Cat Watch (BCW), set-up to control cat numbers in Bulwell, UK. The data are based on a (1) cross-sectional survey ($n = 478$); (2) pre-post analysis ($n = 21$); and (3) targeted survey of people known to engage with BCW ($n = 34$). We found significant associations between awareness of BCW and an increased likelihood of reporting unowned cats now compared to previous years. Respondents reported increased self-efficacy and confidence to help cats. Our pre-post study corroborated these findings with residents significantly more likely to report unowned cats compared to when surveyed pre-BCW. An indirect benefit to residents engaged with the program was the positive impact on confidence and self-esteem. Taken in combination these results show community partnerships can effectively engage often hard-to-reach populations and foster sustainable management by overcoming barriers to helping cats, alongside the potential for wider community benefits.

McDonald, J. L., et al. (2018). "Integrating Trap-Neuter-Return Campaigns Into a Social Framework: Developing Long-Term Positive Behavior Change Toward Unowned Cats in Urban Areas." *Frontiers in Veterinary Science* 5.

Cat management is often discussed in terms of population reduction, with trap-neuter-return (TNR) campaigns commonly organized to manage unowned urban cat populations. However, long-term effectiveness is only possible if positive neutering practices are continued by local residents. Here we discuss how implementing TNR within a wider framework of social engagement has the potential to tackle cat overpopulation and instill long-term positive behavior change toward them. We demonstrate how community engagement pre-TNR can help establish a baseline of the attitudes, knowledge and behavior concerning cats. Using a case study, we explore whether this information can be linked with positive intended behavior based on intentions to arrange for neutering of unowned cats. Structural equation modeling indicated that negative attitudes toward cats and reduced knowledge around neutering reduced the likelihood of positive intended behavior. This result was underpinned by the indirect effects of perceptions of unowned cats and reduced understanding of their needs. Utilizing these results alongside an understanding of the values and motivation of the community allows for tailored and targeted education and intervention. In turn, this addresses the underlying knowledge gaps and perceptions regarding cat welfare. This framework can help address the challenge of cat management because it: (1) takes an integrative approach to identifying the motivations of communities to take responsibility for unowned cats; (2) changes the structure of the social environment, encouraging positive neutering practices for unowned cats. In turn this improves the impact and longevity of TNR campaigns whilst promoting positive welfare change for unowned and owned cats; and (3) appreciates that opinions are likely to vary hugely between areas, therefore providing an adaptable community level approach.

McDonnell, J., et al. (2014). "Building capacity to improve respiratory care: the education strategy of the International Primary Care Respiratory Group 2014-2020." *Npj Primary Care Respiratory Medicine* 24.

Significant attention has been given to the global burden of noncommunicable diseases including respiratory diseases and the potential of primary care to address this challenge. The International Primary Care Respiratory Group (IPCRG) has a potentially significant role to build capacity through research and education in a complex global network with varying degrees of capability. In this paper we outline a comprehensive strategy, which revisits the IPCRG's educational role, our aims, audiences and approach in this context. The paper was developed through a collaborative process involving experts in global health, primary care and respiratory education, leading to a consensus educational strategy statement. This is further informed by a review of recent trends in continuing medical education. Professional education and training of health-care workers is a core component of the global response to the challenge of managing respiratory conditions in primary care. This paper offers a revised strategy for building capacity and improving clinical practice in IPCRG member countries by revisiting and broadening our aims, exploring the key audiences, focus and approaches.

McGinley, J., et al. (2018). "Physical activity in people with Parkinson's disease: A qualitative study." *Movement Disorders* 33: S466-S466.

McGoldrick, E. L., et al. (2016). "Consumers attitudes and beliefs towards the receipt of antenatal corticosteroids and use of clinical practice guidelines." *Bmc Pregnancy and Childbirth* 16.

Background: Active participation of consumers in health care decision making, policy and clinical research is increasingly encouraged by governments, influential bodies and funders. Identifying the best way to achieve this is difficult due to the paucity of evidence. Consumers have mixed feelings towards clinical practice guidelines (CPG) demonstrating scepticism towards their purpose and applicability to their needs. There is no information pertaining to consumers' views and attitudes on the receipt of antenatal corticosteroids (ACS). The aim of this study was to examine the barriers and enablers to receiving ACS and use of CPG amongst consumers. Methods: Consumers were recruited from neonatal units across three district health boards (DHBs) in Auckland, New Zealand. Participants completed a semi-structured interview or questionnaire. The questions posed and analyses were informed by the Theoretical Domains Framework (TDF). Barriers and enablers were identified by the presence of conflicting beliefs within a domain; the frequency of beliefs; and the likely strength of the impact of a belief on use of CPG and receipt of ACS. Results: Twenty four consumers participated in the study. Six domains were identified as barriers to receipt of ACS and use of CPG. Key barriers to receipt of ACS included: difficulty retaining information conveyed, requiring further information in a variety of formats, and time constraints faced by consumers and health professionals in the provision and understanding of information to facilitate decision making. Barriers to use of CPG included: uncertainty about applicability of guideline use among consumers and scepticism about health professionals adhering too rigidly to guidelines. Enablers to receipt of ACS included: optimism toward ACS use, a strong knowledge of why ACS were administered, improved resilience in their pregnancy and confidence in their decision making following receipt of information about ACS. Enablers to use of CPG included: validation and standardisation of decision making among health professionals providing care and facilitating the best care for women and their babies. Conclusions: Key barriers and enablers exist among consumers regarding receipt of ACS and use of CPG. These need to be addressed or modified in any intervention strategy to facilitate implementation of the ACS CPG.

McGowan, J. E. and K. Murray (2016). "Exploring resilience in nursing and midwifery students: a literature review." *Journal of Advanced Nursing* 72(10): 2272-2283.

Aim. The aim of this study was to explore the concepts of 'resilience' and 'hardiness' in nursing and midwifery students in educational settings and to identify educational interventions to promote resilience. Background. Resilience in healthcare professionals has gained increasing attention globally, yet to date resilience and resilience education in nursing and midwifery students remain largely under-researched. Design. An integrative literature review was planned, however, only quantitative evidence was identified therefore, a review of quantitative studies was undertaken using a systematic approach. Data sources. A comprehensive search was undertaken using Medline, CINAHL, Embase, PsycINFO and Maternity and Infant Care databases January 1980-February 2015. Review methods. Data were extracted using a specifically designed form and quality assessed using an appropriate checklist. A narrative summary of findings and statistical outcomes was undertaken. Results. Eight quantitative studies were included. Research relating to resilience and resilience education in nursing and midwifery students is sparse. There is a weak evidence that resilience and hardiness is associated with slightly improved academic performance and decreased burnout. However, studies were heterogeneous in design and limited by poor methodological quality. No study specifically considered student midwives. Conclusion. A greater understanding of the theoretical underpinnings of resilience in nursing and midwifery students is essential for the development of educational resources. It is imperative that future research considers both nursing and midwifery training cohorts and should be of strong methodological quality.

McGuckin, T., et al. (2017). "The use and evaluation of a theory-informed, multi-component intervention to reduce sedentary behaviour in the workplace." *Cogent Psychology* 4(1).

Occupational sedentary behaviour is a growing health concern which accounts for almost half of overall sedentary behaviour. Multi-component interventions are effective for reducing occupational sedentary behaviour. The aim of the study was to evaluate the effectiveness of a theory-informed, personalised intervention for the reduction of occupational sedentary behaviour of office workers. Full-time office-based workers were asked to complete an online survey to explore their perception of sedentary behaviour. Following this, pre-intervention activity patterns were collected for 5 days via an ActivPAL and a self-report workbook. The participants met with the investigator to discuss the key themes identified from the online survey, individual ActivPAL and self-report data. Participants set goals for the 6-week intervention, signed a commitment contract with stage of change and self-efficacy explored. During the final intervention week, participants wore an ActivPAL and were invited to participate in a follow-up interview. Twenty-seven office-based workers reduced occupational sitting time by an average of 45.2 +/- 60.7 min per workday. Self-efficacy increased post intervention (pre: 69 +/- 21%; post: 82 +/- 16%). The follow-up interviews indicated that the intervention increased awareness of occupational sedentary behaviour and provided insight into the key behaviour change strategies utilised in the intervention.

Mclsaac, J. L., et al. (2018). "The application of implementation science theories for population health: A critical interpretive synthesis." *Aims Public Health* 5(1): 13-30.

Background and Purpose: Over the last decade, the field of implementation science (IS) has yielded an array of theoretical approaches to clarify and understand how factors influence the application and scaling-up of evidence-based practice in health care. These developments have led to questions about whether IS theories and frameworks might be of value to population health researchers and decision makers. The purpose of this research was to conduct a critical interpretive synthesis to explore, if, and how, key IS theories and frameworks might inform population health interventions aimed at reducing the burden of illness across populations. **Methods:** An initial list of theories and frameworks was developed based on previous published research and narrowed to focus on theories considered as formative for the field of IS. A standardized data extraction form was used to gather key features of the theories and critically appraise their relevance to population health interventions. **Results:** Ten theories were included in the review and six deemed most applicable to population health based on their consideration of broader contextual and system-level factors. The remaining four were determined to have less relevant components for population health due to their limited consideration of macro-level factors, often focusing on micro (individual) and meso (organizational) level factors. **Conclusions:** Theories and frameworks are important to guide the implementation and sustainability of population health interventions. The articulation of meso level factors common in IS theories may be of value to interventions targeted at the population level. However, some of the reviewed theories were limited in their consideration of broader contextual factors at the macro level (community, policy or societal). This critical interpretive synthesis also found that some theories lacked provision of practical guidance to address interventions targeting structural factors such as key social determinants of health (e.g., housing, income).

McKenzie, J. E., et al. (2013). "Evidence-based care of older people with suspected cognitive impairment in general practice: protocol for the IRIS cluster randomised trial." *Implementation Science* 8.

Background: Dementia is a common and complex condition. Evidence-based guidelines for the management of people with dementia in general practice exist; however, detection, diagnosis and disclosure of dementia have been identified as potential evidence-practice gaps. Interventions to implement guidelines into practice have had varying success. The use of theory in designing implementation interventions has been limited, but is advocated because of its potential to yield more effective interventions and aid understanding of factors modifying the magnitude of intervention effects across trials. This protocol describes methods of a randomised trial that tests a theory-informed implementation intervention that, if effective, may provide benefits for patients with dementia and their carers. **Aims:** This trial aims to estimate the effectiveness of a theory-informed intervention to increase GPs' (in Victoria, Australia) adherence to a clinical guideline for the detection, diagnosis, and management of dementia in general practice, compared with providing GPs with a printed copy of the guideline. **Primary objectives** include testing if the intervention is effective in increasing the percentage of patients with suspected cognitive impairment who receive care consistent with two key guideline recommendations: receipt of a i) formal cognitive assessment, and ii) depression assessment using a validated scale (primary outcomes for the trial). **Methods:** The design is a parallel cluster randomised trial, with clusters being general practices. We aim to recruit 60 practices per group. Practices will be randomised to the intervention and control groups using restricted randomisation. Patients meeting the inclusion criteria, and GPs' detection and diagnosis behaviours directed toward these patients, will be identified and measured via an electronic search of the medical records nine months after the start of the intervention. Practitioners in the control group will receive a printed copy of the guideline. In addition to receipt of the printed guideline, practitioners in the intervention group will be invited to participate in an interactive, opinion leader-led, educational face-to-face workshop. The theory-informed intervention aims to address identified barriers to and enablers of implementation of recommendations. Researchers responsible for identifying the cohort of patients with suspected cognitive impairment, and their detection and diagnosis outcomes, will be blind to group allocation.

McKenzie, S. H. and M. F. Harris (2013). "Understanding the relationship between stress, distress and healthy lifestyle behaviour: a qualitative study of patients and general practitioners." *Bmc Family Practice* 14.

Background: The process of initiating and maintaining healthy lifestyle behaviours is complex, includes a number of distinct phases and is not static. Theoretical models of behaviour change consider psychological constructs such as intention and self efficacy but do not clearly consider the role of stress or psychological distress. General practice based interventions addressing lifestyle behaviours have been demonstrated to be feasible and effective however it is not clear whether general practitioners (GPs) take psychological health into consideration when discussing lifestyle behaviours. This qualitative study explores GPs' and patients' perspectives about the relationship between external stressors, psychological distress and maintaining healthy lifestyle behaviours. **Methods:** Semi-structured telephone interviews were conducted with 16 patients and 5 GPs. Transcripts from the interviews were thematically analysed and a conceptual

model developed to explain the relationship between external stressors, psychological distress and healthy lifestyle behaviours. Results: Participants were motivated to maintain a healthy lifestyle however they described a range of external factors that impacted on behaviour in both positive and negative ways, either directly or via their impact on psychological distress. The impact of external factors was moderated by coping strategies, beliefs, habits and social support. In some cases the process of changing or maintaining healthy behaviour also caused distress. The concept of a threshold level of distress was evident in the data with patients and GPs describing a certain level of distress required before it negatively influenced behaviour. Conclusion: Maintaining healthy lifestyle behaviours is complex and constantly under challenge from external stressors. Practitioners can assist patients with maintaining healthy behaviour by providing targeted support to moderate the impact of external stressors.

McLeod, L. J., et al. (2017). "Refining Online Communication Strategies for Domestic Cat Management." *Anthrozoos* 30(4): 635-649.

Management of the domestic cat (*Felis catus*) relies on community members adopting appropriate management practices toward both companion and unowned (stray, free-living) animals. Getting people to change their behavior and sustain these changes over time can be a challenging process. To date, very few studies have evaluated the effectiveness of interventions aimed at changing people's behavior toward these cats. This study provides a quantitative and qualitative content analysis of a sample of online cat management communications from 40 different organizations sourced using a general English language web search in 2014/2015. The potential effectiveness of these interventions was assessed using identified best-practice principles of behavior change and persuasive communication. Education through the provision of factbased information to persuade individuals to change their current behaviors was the most popular behavior-change strategy (88%). Three-quarters of the interventions only scored average or below on the scales that described the ease of use and ability to promote action. Persuasive communication techniques such as commitment, prompts, goal setting, story-telling, descriptive norms, and likable and identifiable messengers were under-used. Other techniques such as the debunking of misinformation and framing of messages were not used effectively. We make suggestions on how to improve the behavioral effectiveness of cat management intervention designs.

McLeod, L. J., et al. (2015). "Born to roam? Surveying cat owners in Tasmania, Australia, to identify the drivers and barriers to cat containment." *Preventive Veterinary Medicine* 122(3): 339-344.

Free-roaming domestic cats, *Felis catus*, are a major public nuisance in neighbourhoods across the world, and have been linked to biodiversity loss and a host of community health problems. Owners who let their cats roam, also place their cats at risk of serious injury. One management strategy that is gaining considerable support involves encouraging cat owners to contain their pets within their property. Contemporary behaviour change models highlight the importance of identifying drivers and barriers that encourage and discourage target behaviours such as cat containment. Results from a random dial phone survey of 356 cat owners in northern Tasmania identified four distinct cat containment profiles: owners who contained their cat all the time, owners who only contained their cat at night, owners who sporadically contained their cat with no set routine, and owners who made no attempt to contain their pet. Our results indicated that cat-owners' decisions to contain or not contain their cats were guided by a range of factors including owners' beliefs about their ability to implement an effective containment strategy and their views about the physical and psychological needs of their cats. The results are discussed in terms of improving the behavioural effectiveness of cat containment interventions by selecting appropriate behavioural change tools for the identified drivers and barriers, and developing targeted engagement strategies and messaging. (C) 2015 Elsevier B.V. All rights reserved.

McLeod, L. J., et al. (2017). "Assessing the impact of different persuasive messages on the intentions and behaviour of cat owners: A randomised control trial." *Preventive Veterinary Medicine* 146: 136-142.

Owners of free-ranging domestic cats (*Felis catus*) are under increasing pressure to keep their pet contained within their house or yard, in an effort to reduce adverse impacts on cat welfare, ecosystem biodiversity and neighbourhoods. We conducted a randomised online experiment to assess the effectiveness of two persuasive messages to encourage cat owners to contain their pets. A total of 512 Australian cat owners, who currently do not contain their cats, were randomly assigned to view one of three short video messages: one framed to highlight the negative impact of cats' on wildlife and biodiversity ('wildlife protection' frame), one framed to highlight the health and safety benefits of keeping cats contained ('cat benefit' frame), and a control message focused on general information about cats ('neutral' frame). We assessed the impact of these video messages on two post-treatment outcome variables: (1) the intention of owners to contain their cat; and (2) the adoption of containment practices, based on a 4-week follow-up survey. Mediation analysis revealed both the 'wildlife protection' and 'cat benefit' messages increased owners' motivation to contain their cat and their beliefs that they could effectively contain their cat to achieve the desired outcomes (response efficacy). In turn, higher levels of motivation and response efficacy predicted increased cat containment intentions and

increased adoption of cat containment. In addition, the response efficacy effects of the 'cat benefit' message were strengthened by the cat owner's bond to their pet, suggesting audience segmentation may improve the effectiveness of interventions. Implications for future intervention development are discussed.

McLeod, L. J., et al. (2015). "Applying behavioral theories to invasive animal management: Towards an integrated framework." *Journal of Environmental Management* 161: 63-71.

Invasive species wreak an estimated \$1.4 trillion in damages globally, each year. To have any hope of reducing this damage, best-practice control strategies must incorporate behavior change interventions. Traditional interventions, based on the knowledge-transfer model, assume that if land managers are properly educated about risks and strategies, they will develop supportive attitudes and implement appropriate control strategies. However, the social sciences have produced a large number of behavioral models and frameworks that demonstrate that knowledge transfer, by itself, fails to change behavior. The challenge then lies in knowing which behavioral model to choose, and when, from a potentially overwhelming 'universe'. In this paper, we review nine behavior theories relevant to invasive species management. We then introduce the Behavior Change Wheel as a tool for integrating these theories into a single practical framework. This framework links drivers of and barriers to behavior change with intervention strategies and policies, in what we consider, from an applied perspective, to be an important advance. Crown Copyright (C) 2015 Published by Elsevier Ltd. All rights reserved.

McMahon, N., et al. (2019). "Effects of prevention and harm reduction interventions on gambling behaviours and gambling related harm: An umbrella review." *Addictive Behaviors* 90: 380-388.

Background: Harms related to gambling have been found not only to affect problem gamblers, but also to occur amongst low- and moderate-risk gamblers. This has resulted in calls for a public health approach to address a possible 'prevention paradox' in gambling related harm. The aim of this study was to evaluate the systematic review evidence base on the effects of prevention and harm reduction interventions on gambling behaviours, and gambling related harm. We also aimed to examine differential effects of interventions across socio-demographic groups. Methods: Systematic methods were used to locate and evaluate published systematic reviews of prevention and harm reduction interventions. We designed the review using the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) Equity extension Guidelines. Four databases were searched from their start date until May 2018. The quality of the included articles was determined using A MeaSurement Tool to Assess systematic Reviews (AMSTAR 2). Results: Ten systematic reviews were identified reporting 55 unique relevant primary studies. Much of the review evidence-base related to pre-commitment and limit setting (24%), self-exclusion (20%), youth prevention programmes (20%), and machine messages/feedback (20%). The effectiveness of harm reduction interventions are limited by the extent to which users adhere to voluntary systems. Less than half of studies examining youth prevention programmes demonstrated positive effects on behaviour. No review extracted data or reported on the differential effects of intervention strategies across sociodemographic groups. The quality of the included reviews (and their primary studies) were generally poor and clear gaps in the evidence base have been highlighted. Conclusions: The evidence base is dominated by evaluations of individual-level harm reduction interventions, with a paucity of research on supply reduction interventions. Review conclusions are limited by the quality and robustness of the primary research. Future research should consider the equity effects of intervention strategies.

McMahon, N. E., et al. (2016). "Mechanisms of change of a novel weight loss programme provided by a third sector organisation: a qualitative interview study." *Bmc Public Health* 16.

Background: There is a need for theory-driven studies that explore the underlying mechanisms of change of complex weight loss programmes. Such studies will contribute to the existing evidence-base on how these programmes work and thus inform the future development and evaluation of tailored, effective interventions to tackle overweight and obesity. This study explored the mechanisms by which a novel weight loss programme triggered change amongst participants. The programme, delivered by a third sector organisation, addressed both diet and physical activity. Over a 26 week period participants engaged in three weekly sessions (education and exercise in a large group, exercise in a small group and a one-to-one education and exercise session). Novel aspects included the intensity and duration of the programme, a competitive selection process, milestone physical challenges (e.g. working up to a 5 K and 10 K walk/run during the programme), alumni support (face-to-face and online) and family attendance at exercise sessions. Methods: Data were collected through interviews with programme providers (n = 2) and focus groups with participants (n = 12). Discussions were audio-recorded, transcribed and analysed using NVivo10. Published behaviour change frameworks and behaviour change technique taxonomies were used to guide the coding process. Results: Clients' interactions with components of the weight loss programme brought about a change in their commitment, knowledge, beliefs about capabilities and social and environmental contexts. Intervention components that generated these changes included the competitive selection process, group and online support, family involvement and overcoming milestone challenges over

the 26 week programme. The mechanisms by which these components triggered change differed between participants. Conclusions: There is an urgent need to establish robust interventions that can support people who are overweight and obese to achieve a healthy weight and maintain this change. Third sector organisations may be a feasible alternative to private and public sector weight loss programmes. We have presented findings from one example of a novel community-based weight loss programme and identified how the programme components resulted in change amongst the participants. Further research is needed to robustly test the effectiveness, and cost-effectiveness, of this programme.

McNaughton, S. A. (2015). "Advancing nutrition promotion research and practice." *Nutrition & Dietetics* 72(4): 305-308.

McParlin, C., et al. (2017). "What helps or hinders midwives to implement physical activity guidelines for obese pregnant women? A questionnaire survey using the Theoretical Domains Framework." *Midwifery* 49: 110-116.

Objective: to investigate barriers and facilitators to physical activity (PA) guideline implementation for midwives when advising obese pregnant women. Design: a cross-sectional, self-completion, anonymous questionnaire was designed using the Theoretical Domains Framework. this framework was developed to evaluate the implementation of guidelines by health care professionals. A total of 40 questions were included. These were informed by previous research on pregnant women's and midwives views, knowledge and attitudes to PA, and supported by national evidence based guidelines. Demographic information and free text comments were also collected. Setting: three diverse NHS Trusts in the North East of England. Participants: all midwives employed by two hospital Trusts and the community midwives from the third Trust (n= 375) were invited to participate. Measurements: mean domain scores were calculated. Factor and regression analysis were performed to describe which theoretical domains may be influencing practice. Free text comments were analysed thematically. Findings: 192 (53%) questionnaires were returned. Mean domain scores were highest for social professional role and knowledge, and lowest for skills, beliefs about capabilities and behaviour regulation. Regression analysis indicated that skills and memory/attention/decision domains had a statistically significant influence on midwives discussing PA with obese pregnant women and advising them accordingly. Midwives comments indicated that they felt it was part of their role to discuss PA with all pregnant women but felt they lacked the skills and resources to do so effectively. Key conclusions: midwives seem to have the necessary knowledge about the need/importance of PA advice for obese women and believe it is part of their role, but perceive they lack necessary skills and resources, and do not plan or prioritise the discussion regarding PA with obese pregnant woman.

McQuaid, D. (2019). "DIGITAL INTERVENTIONS AND BEHAVIOUR CHANGE MAKING A DIFFERENCE IN MANAGING CONGESTIVE HEART FAILURE." *Heart* 105: A1-A1.

Meador, N., et al. (2017). "Multiple Risk Behavior Interventions: Meta-analyses of RCTs." *American Journal of Preventive Medicine* 53(1): E19-E30.

Context: Multiple risk behaviors are common and associated with developing chronic conditions such as heart disease, cancer, or Type 2 diabetes. A systematic review, meta-analysis, and metaregression of the effectiveness of multiple risk behavior interventions was conducted. Evidence acquisition: Six electronic databases including MEDLINE, EMBASE, and PsycINFO were searched to August 2016. RCTs of non-pharmacologic interventions in general adult populations were selected. Studies targeting specific at-risk groups (such as people screened for cardiovascular risk factors or obesity) were excluded. Studies were screened independently. Study characteristics and outcomes were extracted and risk of bias assessed by one researcher and checked by another. The Behaviour Change Wheel and Oxford Implementation Index were used to code intervention content and context. Evidence synthesis: Random-effects meta-analyses were conducted. Sixty-nine trials involving 73,873 individuals were included. Interventions mainly comprised education and skills training and were associated with modest improvements in most risk behaviors: increased fruit and vegetable intake (0.31 portions, 95% CI = 0.17, 0.45) and physical activity (standardized mean difference, 0.25; 95% CI = 0.13, 0.38), and reduced fat intake (standardized mean difference, -0.24; 95% CI = -0.36, -0.12). Although reductions in smoking were found (OR = 0.78, 95% CI = 0.68, 0.90), they appeared to be negatively associated with improvement in other behaviors (such as diet and physical activity). Preliminary evidence suggests that sequentially changing smoking alongside other risk behaviors was more effective than simultaneous change. But most studies assessed simultaneous rather than sequential change in risk behaviors; therefore, comparisons are sparse. Follow-up period and intervention characteristics impacted effectiveness for some outcomes. Conclusions: Interventions comprising education (e.g., providing information about behaviors associated with health risks) and skills training (e.g., teaching skills that equip participants to engage in less risky behavior) and targeting multiple risk behaviors concurrently are associated with small changes in diet and physical activity. Although on average smoking was reduced, it appeared changes in smoking were negatively associated with changes in other behaviors, suggesting it may not be optimal to target smoking simultaneously with other risk behaviors. (C) 2017 American Journal of Preventive Medicine. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license.

Meder, B., et al. (2018). "Beyond the confines of choice architecture: A critical analysis." *Journal of Economic Psychology* 68: 36-44.

Behavioral science units across the world advise policy makers on the use of 'nudge' techniques with the goal to improve health, wealth, and happiness. Nudges use psychology to steer people toward or away from making particular choices by designing choice architectures that frame or highlight options in particular ways. What has been missing from debates on nudging is a systematic consideration of the environments in which they are embedded. We argue that a detailed examination of the wider environment in which the policy issue is situated is essential for designing, implementing, and evaluating policy-making tools, nudge-like or otherwise. Successful policy making requires a good fit between intervention and the environment, otherwise we risk miscasting policy issues and designing futile interventions. Using real-world cases, we characterize the role of the environment in different policy problems and present a basic taxonomy for policy makers to identify critical factors in the environment beyond the confines of the choice architecture.

Mehta, R., et al. (2019). "Use of monitoring data to improve implementation of a home fortification program in Bihar, India." *Maternal and Child Nutrition* 15(3).

This paper describes the use of program-monitoring data to track program performance and inform activities. Monitoring data were collected as part of an effectiveness trial of multiple micronutrient powders (MNPs) for children 6-18 months in Bihar, India. Communities (n = 70; reaching over 10,000 children) were randomized to receive either counselling on infant and young child feeding or both counselling and MNPs. Government frontline health workers (FLWs) implemented and monitored program activities with support from CARE India and university partners. Monitoring data were collected over the duration of the entire program to assess program impact pathways using various checklists, which captured information about (a) attendance and training of FLWs at health subcentre meetings, (b) distribution of MNPs, (c) receipt and use of MNPs at the household level, and (d) midline mixed methods survey. At the beginning of the program, 72% of households reported receiving and 53% reported currently consuming MNPs. These numbers fell to 40% and 43% at midline, respectively. The main barrier to use by household was a lack of MNPs, due in part to infrequent FLW distribution. However, FLWs rarely reported MNP shortages at Anganwadi centres. Side effects also emerged as a barrier and were addressed through revised recommendations for MNP use. Qualitative data indicated high community acceptance of MNPs and a good understanding of the program by FLWs. The use of real-time program data allowed for recognition of key program issues and decision-making to enhance program implementation.

Mele, B., et al. (2019). "Barriers and facilitators to diagnosing and managing apathy in Parkinson's disease: a qualitative study." *Bmc Neurology* 19.

BackgroundApathy is a prominent non-motor symptom in Parkinson's disease (PD). People with apathy show a lack of emotion, passion, and motivation. Between 17 and 70% of persons with PD have apathy; the extreme heterogeneity in these estimates is due to limited heterogeneous knowledge concerning how to diagnose PD. The lack of a widely utilized diagnostic process limits understandings on how to treat and manage apathy in PD. A scoping review of apathy in PD identified only one qualitative study investigating this symptom. It was our objective to assess perceived barriers and facilitators to diagnosing, treating, and managing apathy in PD, as described by key stakeholders.**Methods**This research applied qualitative methodology, utilizing focus groups and interviews with health care practitioners (HCPs), persons with PD, and caregivers. Evidence gathered from a scoping review on apathy in PD informed discussions that took place with participants. Data collection and analysis was conducted using framework analysis, applying the Theoretical Domains Framework and Behaviour Change Wheel.**Results**Eleven HCPs and five persons with PD/caregivers participated. Themes included interdisciplinary teams and communication with family to facilitate diagnosis and treatment, and the use of education and increased awareness of apathy to facilitate management. Themes surrounding barriers included lack of initiative and motivation to maintain treatment plans, and a lack of evidence for apathy specific interventions. While a key barrier identified was the lack of information HCPs have access to, persons with PD and caregivers would prefer to receive a diagnosis of apathy even with limited management methods. Thus, education and awareness were noted as two of the most important facilitators, overall.**Conclusion**These findings suggest that diagnosing, treating, and managing apathy in PD requires interdisciplinary teams, that include family and caregivers. We identified that where HCPs perceive lack of knowledge as a barrier to diagnosis, persons with PD and caregivers find being given a diagnosis facilitates understanding. These findings highlight the importance of qualitative research involving persons with PD and apathy, caregivers, and HCPs who aid in management of this symptom. Barriers reported suggest future research must aim to identify apathy specific treatments, both pharmacologic and non-pharmacologic.

Mendys, P., et al. (2014). "Medication adherence: process for implementation." *Patient Preference and Adherence* 8: 1025-1034.

Improving medication adherence is a critically important, but often enigmatic objective of patients, providers, and the overall health care system. Increasing medication adherence has the potential to reduce health care costs while improving care quality, patient satisfaction and health outcomes. While there are a number of papers that describe the benefits of medication adherence in terms of cost, safety, outcomes, or quality of life, there are limited reviews that consider how best to seamlessly integrate tools and processes directed at improving medication adherence. We will address processes for implementing medication adherence interventions with the goal of better informing providers and health care systems regarding the safe and effective use of medications.

Menor-Campos, D. J., et al. (2019). "Human-Directed Empathy and Attitudes Toward Animal Use: A Survey of Spanish Veterinary Students." *Anthrozoos* 32(4): 471-487.

Veterinary practitioners are thought of as guardians of animal health and wellbeing, and are considered important in the development of policies on animals. Measuring veterinary students' attitudes toward animals and animal use is needed when assessing the effectiveness of education programs focused on animal welfare and ethics. The present study examined Spanish veterinary students' attitudes toward different types of animal use, their human-directed empathy, and the relationship between these and various personal variables. The sample comprised 200 students who completed an online questionnaire. Attitudes toward animal use varied significantly, depending on the type of use in question. There was also a relationship between attitudes toward animal use, one component of human-directed empathy, "Empathic Concern," and a number of personal variables such as gender, career choice, and contact with animal welfare organizations. Concern about the use of animals for research and animal management was lower in students who were in the later years of their studies. Reasons for this and the role of veterinary education are discussed.

Mercuri, M., et al. (2018). "Barriers to the use of emergency medical services for ST-elevation myocardial infarction: Determining why many patients opt for self-transport." *Journal of Evaluation in Clinical Practice* 24(2): 375-379.

Rationale, aims, and objectives Access to timely ST-elevation myocardial infarction (STEMI) care is facilitated by paramedics and emergency medical services (EMS). However, a large proportion of STEMI patients do not access care through EMS. This study sought to identify patient-reported factors for their decision to use (or not use) EMS. Methods Semi-structured interviews were conducted with a sample of STEMI patients admitted to a large tertiary care centre between November 2011 and January 2012. Participants were grouped according to mode of transportation to hospital at time of index event (EMS vs self-transport). Participant responses were classified using a published framework (modified for a STEMI population) as barriers or facilitators to EMS use, and compared between groups. Results Data were collected on 61 patients (32 EMS, 29 self-transport). Mean age was 60.3 (SD 11.5), and 23% were female. EMS users were more likely to have a Killip Class >1 (25% vs 4%; $P=0.03$). Self-transport patients were more likely to perceive EMS as slower (48% vs 0%) and express concerns over resources misuse (34% vs 3%; $P=0.002$), when compared to EMS patients. Patients who accessed EMS were more likely to acknowledge the benefits of EMS (44% vs 7%; $P=0.001$) and were more likely to have been encouraged by a family member to call EMS (34% vs 4%; $P=0.003$). Conclusions STEMI patient perceptions are a key factor in determining EMS use. Health care stakeholders should target the identified barriers to improve utilization of EMS, and develop strategies to optimize care for patients who do not access EMS.

Mesner, S. A., et al. (2016). "Implementation interventions to improve the management of non-specific low back pain: a systematic review." *Bmc Musculoskeletal Disorders* 17.

Background: Recommendations in clinical practice guidelines for non-specific low back pain (NSLBP) are not necessarily translated into practice. Multiple studies have investigated different interventions to implement best evidence into clinical practice yet no synthesis of these studies has been carried out to date. The aim of this study was to systematically review available studies to determine whether implementation interventions in this field have been effective and to identify which strategies have been most successful in changing healthcare practitioner behaviours and improving patient outcomes. Methods: A systematic review was undertaken, searching electronic databases until end of December 2012 plus hand searching, writing to key authors and using prior knowledge of the field to identify papers. Included studies evaluated an implementation intervention to improve the management of NSLBP in clinical practice, measured key outcomes regarding change in practitioner behaviour and/or patient outcomes and subjected their data to statistical analysis. The Cochrane Effective Practice and Organisation of Care (EPOC) recommendations about systematic review conduct were followed. Study inclusion, data extraction and study risk of bias assessments were conducted independently by two review authors. Results: Of 7654 potentially eligible citations, 17 papers reporting on 14 studies were included. Risk of bias of included studies was highly variable with 7 of 17 papers rated at high risk. Single intervention or one-off implementation efforts were consistently ineffective in changing clinical practice. Increasing the frequency and duration of implementation interventions led to greater success with those continuously ongoing over time the most successful in improving clinical practice in line with best evidence recommendations. Conclusions: Single intervention or one-off implementation interventions may seem attractive but are largely unsuccessful in effecting

meaningful change in clinical practice for NSLBP. Increasing frequency and duration of implementation interventions seems to lead to greater success and the most successful implementation interventions used consistently sustained strategies.

Mevisen, F. E. F., et al. (2018). "Development of Long Live Love plus , a school-based online sexual health programme for young adults. An intervention mapping approach." *Sex Education-Sexuality Society and Learning* 18(1): 47-73.

This paper describes the development of a Dutch online programme called Long Live Love+ focusing on positive, coercion-free relationships, contraception use, and the prevention of STIs, using the Intervention Mapping (IM) approach. All six steps of the approach were followed. Step 1 confirmed the need for a sexual health programme targeting young people aged 15 and over enrolled in higher level secondary education. Step 2 resulted in the production of a series of matrices-of-changes, including detailed programme objectives at the behavioural and the psycho-social level. Step 3 involved the selection of relevant methods and applications. Step 4 consisted of programme development, resulting in a sexual health programme with online and offline components, and including interactive exercises. Step 5 focused on adoption and implementation and included the production of a detailed teacher manual. Step 6 involved detailed planning for the process and effect evaluation and included interviews with teachers and focus group discussions with students to evaluate their experiences of the programme. The inclusion of a linkage group - and especially the inclusion of teachers in the development of the programme - turned out to be essential in terms of developing a programme in line with their context and needs.

Michie, S. and M. Johnston (2012). "Theories and techniques of behaviour change: Developing a cumulative science of behaviour change." *Health Psychology Review* 6(1): 1-6.

Michie, S., et al. (2013). "The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions." *Annals of Behavioral Medicine* 46(1): 81-95.

CONSORT guidelines call for precise reporting of behavior change interventions: we need rigorous methods of characterizing active content of interventions with precision and specificity. The objective of this study is to develop an extensive, consensually agreed hierarchically structured taxonomy of techniques [behavior change techniques (BCTs)] used in behavior change interventions. In a Delphi-type exercise, 14 experts rated labels and definitions of 124 BCTs from six published classification systems. Another 18 experts grouped BCTs according to similarity of active ingredients in an open-sort task. Inter-rater agreement amongst six researchers coding 85 intervention descriptions by BCTs was assessed. This resulted in 93 BCTs clustered into 16 groups. Of the 26 BCTs occurring at least five times, 23 had adjusted kappas of 0.60 or above. "BCT taxonomy v1," an extensive taxonomy of 93 consensually agreed, distinct BCTs, offers a step change as a method for specifying interventions, but we anticipate further development and evaluation based on international, interdisciplinary consensus.

Michie, S., et al. (2013). "Moving From Theory to Practice and Back in Social and Health Psychology." *Health Psychology* 32(5): 581-585.

Progressive advancement of interventions in health psychology requires improvements in underlying theory. The theoretical advances described in this special issue offer a number of possibilities for intervention development. These include advances in understanding the role of cognitive biases, priming effects, effective planning, the role of specific affective states, and the influence of attachment style on response to interventions. For these advances to translate into progressive improvements in interventions and realized gains in public health, we propose that the theories should: (a) be explicitly linked to the major theories from which they draw; (b) reflect the context sensitivity and dynamic nature of the intervention target; (c) show convincing evidence of improved effectiveness of interventions they spawn according to rigorous criteria; and (d) address the full translation process, including implementation by health care providers and engagement by the target population.

Michie, S., et al. (2015). "Behaviour change techniques: the development and evaluation of a taxonomic method for reporting and describing behaviour change interventions (a suite of five studies involving consensus methods, randomised controlled trials and analysis of qualitative data)." *Health Technology Assessment* 19(99): 1-+.

Background: Meeting global health challenges requires effective behaviour change interventions (BCIs). This depends on advancing the science of behaviour change which, in turn, depends on accurate intervention reporting. Current reporting often lacks detail, preventing accurate replication and implementation. Recent developments have specified intervention content into behaviour change techniques (BCTs) -the 'active ingredients', for example goal-setting, self-monitoring of behaviour. BCTs are 'the smallest components compatible with retaining the postulated active ingredients, i.e. the proposed mechanisms of change. They can be used alone or in combination with other BCTs' (Michie

S, Johnston M. Theories and techniques of behaviour change: developing a cumulative science of behaviour change. *Health Psychol Rev* 2012; 6: 1-6). Domain-specific taxonomies of BCTs have been developed, for example healthy eating and physical activity, smoking cessation and alcohol consumption. We need to build on these to develop an internationally shared language for specifying and developing interventions. This technology can be used for synthesising evidence, implementing effective interventions and testing theory. It has enormous potential added value for science and global health. Objective: (1) To develop a method of specifying content of BCIs in terms of component BCTs; (2) to lay a foundation for a comprehensive methodology applicable to different types of complex interventions; (3) to develop resources to support application of the taxonomy; and (4) to achieve multidisciplinary and international acceptance for future development. Design and participants: Four hundred participants (systematic reviewers, researchers, practitioners, policy-makers) from 12 countries engaged in investigating, designing and/or delivering BCIs. Development of the taxonomy involved a Delphi procedure, an iterative process of revisions and consultation with 41 international experts; hierarchical structure of the list was developed using inductive 'bottom-up' and theory-driven 'top-down' open-sort procedures (n = 36); training in use of the taxonomy (1-day workshops and distance group tutorials) (n = 161) was evaluated by changes in intercoder reliability and validity (agreement with expert consensus); evaluating the taxonomy for coding interventions was assessed by reliability (intercoder; test-retest) and validity (n = 40 trained coders); and evaluating the taxonomy for writing descriptions was assessed by reliability (intercoder; test-retest) and by experimentally testing its value (n = 190). Results: Ninety-three distinct, non-overlapping BCTs with clear labels and definitions formed Behaviour Change Technique Taxonomy version 1 (BCTTv1). BCTs clustered into 16 groupings using a 'bottom-up' open-sort procedure; there was overlap between these and groupings produced by a theory-driven, 'top-down' procedure. Both training methods improved validity (both $p < 0.05$), doubled the proportion of coders achieving competence and improved confidence in identifying BCTs in workshops (both $p < 0.001$) but did not improve intercoder reliability. Good intercoder reliability was observed for 80 of the 93 BCTs. Good within-coder agreement was observed after 1 month ($p < 0.001$). Validity was good for 14 of 15 BCTs in the descriptions. The usefulness of BCTTv1 to report descriptions of observed interventions had mixed results. Conclusions: The developed taxonomy (BCTTv1) provides a methodology for identifying content of complex BCIs and a foundation for international cross-disciplinary collaboration for developing more effective interventions to improve health. Further work is needed to examine its usefulness for reporting interventions.

Mickan, S., et al. (2019). "The impact of a small-group educational intervention for allied health professionals to enhance evidence-based practice: mixed methods evaluation." *Bmc Medical Education* 19.

Background Healthcare professionals are recommended to use evidence-based practice (EBP) principles to update and improve clinical practice. Well-designed educational initiatives, together with practice and feedback opportunities can improve individuals' EBP knowledge, skills and attitudes. Methods A concurrent mixed methods assessment was designed to evaluate the effectiveness and feasibility of four monthly workshops on allied health professionals' knowledge, skills, self-efficacy and behaviour. In between workshops, professionals were encouraged to practice and integrate EBP learnings with colleagues in their workplace. Participants completed three pre and post intervention assessments: Evidence-based Practice Confidence Scale; adapted Fresno test; and an adapted EBP Implementation Scale. A purpose designed satisfaction questionnaire was completed immediately after the educational intervention and follow up focus groups were conducted after 3 months. Mean change in assessment data was quantitatively assessed and comments from the clinician satisfaction questionnaire and focus groups were thematically analysed and interpreted together with quantitative data using the Classification Rubric for EBP Assessment tools in Education (CREATE). Results Sixteen allied health professionals participated in the EBP workshops and completed all baseline and post intervention assessments. Seven clinicians participated in follow up focus groups. All clinicians reported a positive reaction to the learning experience, preferring short monthly workshops to a full day session. They self-reported improvements in self-efficacy (mean change 15 $p < 0.001$) and implementing EBP behaviours (mean change 7, $p < 0.001$) from pre- to post-intervention. Although the positive change in EBP knowledge measured by the adapted Fresno test was not statistically significant (mean change 10, $p = 0.21$), clinicians described examples of improved knowledge and skills across all five key steps of EBP during the focus groups. A further, post hoc analysis of individual questions in the two self-reported scales indicated consistent improvement across key EBP knowledge and skills. Conclusions A tailored small group EBP education intervention can enhance AHPs' self-efficacy to develop answerable questions, search the literature, critically appraise, apply and evaluate research evidence. Through practicing these behaviours and sharing new learning with their peers, allied health professionals can enhance their capability and motivation to use research evidence to potentially improve clinical practice.

Mickan, S., et al. (2017). "Strategies for research engagement of clinicians in allied health (STRETCH): a mixed methods research protocol." *Bmj Open* 7(9).

Introduction Allied health professionals (AHPs) report positive attitudes to using research evidence in clinical practice, yet often lack time, confidence and skills to use, participate in and conduct research. A range of multifaceted strategies including education, mentoring and guidance have been implemented to increase AHPs' use of and participation in research. Emerging evidence suggests that knowledge brokering activities have the potential to support research engagement, but it is not clear which knowledge brokering strategies are most effective and in what contexts they work best to support and maintain clinicians' research engagement. Methods and analysis This protocol describes an exploratory concurrent mixed methods study that is designed to understand how allied health research fellows use knowledge brokering strategies within tailored evidence-based interventions, to facilitate research engagement by allied health clinicians. Simultaneously, a realist approach will guide a systematic process evaluation of the research fellows' pattern of use of knowledge brokering strategies within each case study to build a programme theory explaining which knowledge brokering strategies work best, in what contexts and why. Learning and behavioural theories will inform this critical explanation. Ethics and dissemination An explanation of how locally tailored evidence-based interventions improve AHPs use of, participation in and leadership of research projects will be summarised and shared with all participating clinicians and within each case study. It is expected that local recommendations will be developed and shared with medical and nursing professionals in and beyond the health service, to facilitate building research capacity in a systematic and effective way.

Middleton, S., et al. (2016). "Triage, treatment and transfer of patients with stroke in emergency department trial (the T-3 Trial): a cluster randomised trial protocol." *Implementation Science* 11.

Background: Internationally recognised evidence-based guidelines recommend appropriate triage of patients with stroke in emergency departments (EDs), administration of tissue plasminogen activator (tPA), and proactive management of fever, hyperglycaemia and swallowing before prompt transfer to a stroke unit to maximise outcomes. We aim to evaluate the effectiveness in EDs of a theory-informed, nurse-initiated, intervention to improve multidisciplinary triage, treatment and transfer (T-3) of patients with acute stroke to improve 90-day death and dependency. Organisational and contextual factors associated with intervention uptake also will be evaluated. Methods: This prospective, multicentre, parallel group, cluster randomised trial with blinded outcome assessment will be conducted in EDs of hospitals with stroke units in three Australian states and one territory. EDs will be randomised 1: 1 within strata defined by state and tPA volume to receive either the T-3 intervention or no additional support (control EDs). Our T-3 intervention comprises an evidence-based care bundle targeting: (1) triage: routine assignment of patients with suspected stroke to Australian Triage Scale category 1 or 2; (2) treatment: screening for tPA eligibility and administration of tPA where applicable; instigation of protocols for management of fever, hyperglycaemia and swallowing; and (3) transfer: prompt admission to the stroke unit. We will use implementation science behaviour change methods informed by the Theoretical Domains Framework [1, 2] consisting of (i) workshops to determine barriers and local solutions; (ii) mixed interactive and didactic education; (iii) local clinical opinion leaders; and (iv) reminders in the form of email, telephone and site visits. Our primary outcome measure is 90 days post-admission death or dependency (modified Rankin Scale >2). Secondary outcomes are health status (SF-36), functional dependency (Barthel Index), quality of life (EQ-5D); and quality of care outcomes, namely, monitoring and management practices for thrombolysis, fever, hyperglycaemia, swallowing and prompt transfer. Outcomes will be assessed at the patient level. A separate process evaluation will examine contextual factors to successful intervention uptake. At the time of publication, EDs have been randomised and the intervention is being implemented. Discussion: This theoretically informed intervention is aimed at addressing important gaps in care to maximise 90-day health outcomes for patients with stroke.

Miikkola, M., et al. (2019). "Challenges of foot self-care in older people: a qualitative focus-group study." *Journal of Foot and Ankle Research* 12.

Background Foot health is an important aspect of general health, and it can be maintained and promoted through foot self-care. However, little is known about older people's experiences of caring for their feet. The aim of this study was to gather knowledge about experiences of foot self-care from the perspective of healthy older people in order to improve their welfare and their management of foot health. Methods A qualitative descriptive design with focus groups was used. Seventeen older people recruited from daytime activity centres participated in the focus groups (n=4). The data were analysed using inductive content analysis. Results The participants described their foot self-care as including various activities, but they were hindered by the following factors: physical (e.g. changes in nail structure), external (e.g. seeking help from multi-level professionals) and internal (e.g. related to ageing). Foot self-care was considered to be important, but it was not systematically carried out. The participants thought that health-care professionals neglected patients' feet. Conclusions Older people use a variety of methods to care for their feet. However, several factors hinder their ability to do so. Older people need advice, education and support to maintain their foot health. Future research is needed to identify effective ways to support older people in foot self-care and improve their welfare as active citizens.

Mills, N., et al. (2018). "Training health professionals to recruit into challenging randomized controlled trials improved confidence: the development of the QuinteT randomized controlled trial recruitment training intervention." *Journal of Clinical Epidemiology* 95: 34-44.

Objectives: The objective of this study was to describe and evaluate a training intervention for recruiting patients to randomized controlled trials (RCTs), particularly for those anticipated to be difficult for recruitment. **Study Design and Setting:** One of three training workshops was offered to surgeons and one to research nurses. Self-confidence in recruitment was measured through questionnaires before and up to 3 months after training; perceived impact of training on practice was assessed after. Data were analyzed using two-sample t-tests and supplemented with findings from the content analysis of free-text comments. **Results:** Sixty-seven surgeons and 32 nurses attended. Self-confidence scores for all 10 questions increased after training [range of mean scores before 5.1-6.9 and after 6.9-8.2 (scale 0-10, all 95% confidence intervals are above 0 and all P-values <0.05)]. Awareness of hidden challenges of recruitment following training was high—surgeons' mean score 8.8 [standard deviation (SD), 1.2] and nurses' 8.4 (SD, 1.3) (scale 0-10); 50% (19/38) of surgeons and 40% (10/25) of nurses reported on a 4-point Likert scale that training had made "a lot" of difference to their RCT discussions. Analysis of free text revealed this was mostly in relation to how to convey equipoise, explain randomization, and manage treatment preferences. **Conclusion:** Surgeons and research nurses reported increased self-confidence in discussing RCTs with patients, a raised awareness of hidden challenges and a positive impact on recruitment practice following QuinteT RCT Recruitment Training. Training will be made more available and evaluated in relation to recruitment rates and informed consent. (C) 2017 The Authors. Published by Elsevier Inc.

Mills, W. L., et al. (2019). "Nursing Home Staff Perceptions of Barriers and Facilitators to Implementing a Quality Improvement Intervention." *Journal of the American Medical Directors Association* 20(7): 810-815.

Objectives: Quality improvement (QI) may be a promising approach for staff to improve the quality of care in nursing homes. However, little is known about the challenges and facilitators to implementing QI interventions in nursing homes. This study examines staff perspectives on the implementation process. **Design:** We conducted semistructured interviews with staff involved in implementing an evidence-based QI intervention ("LOCK") to improve interactions between residents and staff through targeted staff behavior change. The LOCK intervention consists of 4 practices: (1) Learn from the bright spots, (2) Observe, (3) Collaborate in huddles, and (4) Keep it bite sized. **Setting and participants:** We interviewed staff members in 6 Veterans Health Administration nursing homes [ie, Community Living Centers (CLCs)] via opportunistic and snowball sampling. **Measures:** The semistructured interviews were grounded in the Capability, Opportunity, Motivation, Behavior (COM-B) model of behavior change and covered staff experience, challenges, facilitators, and lessons learned during the implementation process. The interviews were analyzed using thematic content analysis. **Results:** Overall, staff accepted the intervention and appreciated the focus on the positives. Challenges fell largely within the categories of capability and opportunity and included difficulty finding time to complete intervention activities, inability to interpret data reports, need for ongoing training, and misunderstanding of study goals. Facilitators were largely within the motivation category, including incentives for participation, reinforcement of desired behavior, feasibility of intervention activities, and use of data to quantify improvements. **Conclusions/Implications:** As QI programs become more common in nursing homes, it is critical that interventions are tailored for this unique setting. We identified barriers and facilitators of our intervention's implementation and learned that no challenge was insurmountable or derailed the implementation of LOCK. This ability of frontline staff to overcome implementation challenges may be attributed to LOCK's inherently motivational features. Future nursing home QI interventions should consider including built-in motivational components. Published by Elsevier Inc. on behalf of AMDA - The Society for Post-Acute and Long-Term Care Medicine.

Minard, L. V., et al. (2016). "Pharmacists' Perceptions of the Barriers and Facilitators to the Implementation of Clinical Pharmacy Key Performance Indicators." *Plos One* 11(4).

Background In hospitals around the world, there has been no consensus regarding which clinical activities a pharmacist should focus on until recently. In 2011, a Canadian clinical pharmacy key performance indicator (cpKPI) collaborative was formed. The goal of the collaborative was to advance pharmacy practice in order to improve patient outcomes and enhance the quality of care provided to patients by hospital pharmacists. Following a literature review, which indicated that pharmacists can improve patient outcomes by carrying out specific activities, and an evidence-informed consensus process, a final set of eight cpKPIs were established. Canadian hospitals leading the cpKPI initiative are currently in the early stages of implementing these indicators. **Objective** To explore pharmacists' perceptions of the barriers and facilitators to the implementation of cpKPIs. **Methods** Clinical pharmacists employed by the Nova Scotia Health Authority were invited to participate in focus groups. Focus group discussions were audio-recorded and transcribed, and data was analyzed using thematic analysis. **Findings** Three focus groups, including 26 pharmacists, were conducted in February 2015. Three major themes were identified. Resisting the change was comprised of documentation challenges, increased workload, practice environment constraints, and competing priorities. Embracing cpKPIs was

composed of seeing the benefit, demonstrating value, and existing supports. Navigating the unknown was made up of quality versus quantity battle, and insights into the future. Conclusions Although pharmacists were challenged by documentation and other changes associated with the implementation of cpKPIs, they demonstrated significant support for cpKPIs and were able to see benefits of the implementation. Pharmacists came up with suggestions for overcoming resistance associated with the implementation of cpKPIs and provided insights into the future of pharmacy practice. The identification of barriers and facilitators to cpKPI implementation will be used to inform the implementation process on a local and national level.

Minian, N., et al. (2018). "The effects of interventions targeting multiple health behaviors on smoking cessation outcomes: a rapid realist review protocol." *Systematic Reviews* 7.

Background: Health behaviors directly impact the health of individuals, and populations. Since individuals tend to engage in multiple unhealthy behaviors such as smoking, excessive alcohol use, physical inactivity, and eating an unhealthy diet simultaneously, many large community-based interventions have been implemented to reduce the burden of disease through the modification of multiple health behaviors. Smoking cessation can be particularly challenging as the odds of becoming dependent on nicotine increase with every unhealthy behavior a smoker exhibits. This paper presents a protocol for a rapid realist review which aims to identify factors associated with effectively changing tobacco use and target two or more additional unhealthy behaviors. Methods: An electronic literature search will be conducted using the following bibliographic databases: MEDLINE, Embase, PsycINFO, Cumulative Index to Nursing and Allied Health Literature (CINAHL), The Cochrane Library, Social Science Abstracts, Social Work Abstracts, and Web of Science. Two reviewers will screen titles and abstracts for relevant research, and the selected full papers will be used to extract data and assess the quality of evidence. Throughout this process, the rapid realist approach proposed by Saul et al., 2013 will be used to refine our initial program theory and identify contextual factors and mechanisms that are associated with successful multiple health behavior change. Discussion: This review will provide evidence-based research on the context and mechanisms that may drive the success or failure of interventions designed to support multiple health behavior change. This information will be used to guide curriculum and program development for a government funded project on improving smoking cessation by addressing multiple health behaviors in people in Canada. Systematic review registration: PROSPERO CRD42017064430

Moatamed, B., et al. (2016). Low-cost Indoor Health Monitoring System. 2016 IEEE 13th International Conference on Wearable and Implantable Body Sensor Networks: 159-164.

The advent of smart infrastructure or Internet of Things (IoT) has enabled scenarios in which objects with unique identifiers can communicate and transfer data over a network without human to human/computer interactions. Incorporating hardware in such networks is so cheap that it has opened the possibility of connecting just about anything from simple nodes to complex, remotely-monitored sensor networks. In the paper, we describe a low-cost scalable and potentially ubiquitous system for indoor remote health monitoring using low energy bluetooth beacons and a smartwatch. Our system was implemented in a rehabilitation facility in Los Angeles and the overall assessments revealed promising results.

Mohite, D. S., et al. (2019). "Using Qualitative Methods to Explore Farrier-Related Barriers to Successful Farriery Interventions for Equine Welfare in India." *Animals* 9(5).

Simple Summary Farriery is important for maintaining equine (horse, mule and donkey) foot health, but is often poorly-executed in low and middle-income countries like India. It is important to understand the challenges in providing farriery services if external agencies want to improve them. This study, undertaken in North India, started to build this understanding by collecting information from farriers' points of view. Through focus group discussion, it became clear that farriery in this area was very demand-led: farriers found it difficult to practice improved techniques if animal owners were not prepared, or unable, to pay for the extra time that this takes. This was linked to the self-perceived status of farriers within the community: those with higher status (often due to having additional income streams) were more confident in their interactions with animal owners. Difficulties associated with demand were closely linked to the external environment: farriers whose work relied on the local brick kilns had been significantly affected by a recent down-turn in that industry. Training and technical knowledge varied; training was more popular when it was inclusive and addressed the questions farriers had about their work. Understanding this system from the perspective of the stakeholders within it is essential for successful improvement programmes. Abstract Farriery is a critical component of healthcare services for working equids. However, in India, an informal workforce, lack of structured training facilities and non-implementation of farriery regulations pose challenges for quality farriery. Brooke India, an equine welfare organisation, has undertaken many initiatives aiming to improve farriery services, including technical training and engagement with equid-owning communities. However, this has met with varying success. The study aimed to identify factors that prevent farriers providing quality farriery services. Focus-group discussions were conducted with farriers from two districts of

Uttar Pradesh with varying programme outcomes. Within each area, farriers were grouped according to previous level of engagement with Brooke programmes. Demand for services, farrier status, the external environment and technical training and knowledge were identified as key elements that affected farriery work. These factors were very context specific: in areas where brick kilns provided the majority of customers, recent closures had resulted in an increase in those farriers' feeling of insecurity. A systems approach to improving farriery services, taking these factors into account, is advised. Mentoring-based capacity building, which is closely aligned to farrier needs and expectations, is expected to have positive results in terms of technical skill and farrier engagement.

Molloy, G. J. (2013). "Behavioral Science and Reasons for Nonadherence to Medication." *Medical Care* 51(5): 468-468.

Molloy, G. J., et al. (2018). "Network meta-analysis in health psychology and behavioural medicine: a primer." *Health Psychology Review* 12(3): 254-270.

Progress in the science and practice of health psychology depends on the systematic synthesis of quantitative psychological evidence. Meta-analyses of experimental studies have led to important advances in understanding health-related behaviour change interventions. Fundamental questions regarding such interventions have been systematically investigated through synthesising relevant experimental evidence using standard pairwise meta-analytic procedures that provide reliable estimates of the magnitude, homogeneity and potential biases in effects observed. However, these syntheses only provide information about whether particular types of interventions work better than a control condition or specific alternative approaches. To increase the impact of health psychology on health-related policy-making, evidence regarding the comparative efficacy of all relevant intervention approaches - which may include biomedical approaches - is necessary. With the development of network meta-analysis (NMA), such evidence can be synthesised, even when direct head-to-head trials do not exist. However, care must be taken in its application to ensure reliable estimates of the effect sizes between interventions are revealed. This review paper describes the potential importance of NMA to health psychology, how the technique works and important considerations for its appropriate application within health psychology.

Molloy, G. J., et al. (2015). "Prescription contraception use: a cross-sectional population study of psychosocial determinants." *Bmj Open* 5(8).

Objective: Many forms of contraception are available on prescription only for example, the oral contraceptive pill (OCP) and long-acting reversible contraceptives (LARCs). In this analysis we aim to identify key determinants of prescription contraceptive use. Design: Cross-sectional population survey. Data on sociodemographic indices, concerns about the OCP and perceived barriers to access were collected. Setting: Data set constructed from a representative population-based telephone survey of community dwelling adults in the Republic of Ireland (RoI) Participants: 1515 women aged between 18 and 45 years Main outcome measure: Self-reported user of the OCP or LARCs (intrauterine contraception, contraceptive injections or subdermal contraceptive implants) in the previous 12 months. Results: For at least some of the previous year, 35% had used the OCP and 14% had used LARCs, while 3% had used two or more of these methods. OCP users were significantly younger, more likely to be unmarried and had higher income than non-users. Overall, 68% agreed with the statement 'that taking a break from long-term use of the contraceptive pill is a good idea' and 37% agreed with the statement that 'the OCP has dangerous side effects' and this was the strongest predictor variable of non-use of the OCP. Intrauterine contraception users were significantly older, more likely to be married and had lower income than non-users. Injections or subdermal contraceptive implant users were significantly younger, less likely to be married, had lower income and were less likely to agree that taking a break from long-term use of the pill is a good idea than non-users. Conclusions: Prescription contraceptive use is sociodemographically patterned, with LARCs in particular being associated with lower incomes in the RoI. Concerns about the safety of the OCP remain prevalent and are important and modifiable determinants of contraceptive-related behaviour.

Molloy, L. E., et al. (2013). "Understanding Real-World Implementation Quality and "Active Ingredients" of PBIS." *Prevention Science* 14(6): 593-605.

Programs delivered in the "real world" often look substantially different from what was originally intended by program developers. Depending on which components of a program are being trimmed or altered, such modifications may seriously undermine the effectiveness of a program. In the present study, these issues are explored within a widely used school-based, non-curricular intervention, Positive Behavioral Intervention and Supports. The present study takes advantage of a uniquely large dataset to gain a better understanding of the "real-world" implementation quality of PBIS and to take a first step toward identifying the components of PBIS that "matter most" for student outcomes. Data from 27,689 students and 166 public primary and secondary schools across seven states included school and student demographics, indices of PBIS implementation quality, and reports of problem behaviors for any student who received an office discipline referral during the 2007-2008 school year. Results of the present study identify three key components

of PBIS that many schools are failing to implement properly, three program components that were most related to lower rates of problem behavior (i.e., three "active ingredients" of PBIS), and several school characteristics that help to account for differences across schools in the quality of PBIS implementation. Overall, findings highlight the importance of assessing implementation quality in "real-world" settings, and the need to continue improving understanding of how and why programs work. Findings are discussed in terms of their implications for policy.

Monk, E. J. M., et al. (2018). "Factors affecting tuberculosis health message recall 2 years after active case finding in Blantyre, Malawi." *International Journal of Tuberculosis and Lung Disease* 22(9): 1007-+.

SETTING: Urban slums, Blantyre, Malawi. OBJECTIVE : To explore tuberculosis (TB) community-wide active case finding (cwACF) recall and accompanying messaging 2 years after the intervention. DESIGN: This mixed-methods study used population-weighted random cluster sampling to select three cwACF-receiving and three non-cwACF-receiving neighbourhoods in Blantyre. Qualitative data were collected using 12 focus group discussions (community peer-group members) and five in-depth interviews (TB officers) with script guides based on the concepts of the Health Belief Model (HBM). Thematic analysis was used to explore transcripts employing deductive coding. Questionnaires completed by focus group participants were used to collect quantitative data, providing a 'knowledge score' evaluated through univariate/multivariate analysis, analysis of variance and multiple linear regression. RESULTS : Community peer-group participants (n = 118) retained high awareness and positive opinions of cwACF and recognised the relationship between early diagnosis and reduced transmission, considering cwACF to have prompted subsequent health-seeking behaviour. TB-affected individuals (personal/family: 47.5%) had significantly higher knowledge scores than unaffected individuals (P = 0.039), but only if resident in cwACF-receiving neighbourhoods (P = 0.005 vs. P = 0.582), implying effect modification between exposures, albeit statistically under-powered (P = 0.229). CONCLUSION: Consistent with epidemiological evidence and HBM theory, cwACF may have a permanent impact on knowledge and behaviour, particularly in communities with a high prevalence of TB-affected individuals. Behaviour change strategies should be explicitly included in cwACF planning and evaluation.

Moodie, S. T., et al. (2011). "Knowledge Translation in Audiology: Promoting the Clinical Application of Best Evidence." *Trends in Amplification* 15(1-2): 5-22.

The impetus for evidence-based practice (EBP) has grown out of widespread concern with the quality, effectiveness (including cost-effectiveness), and efficiency of medical care received by the public. Although initially focused on medicine, EBP principles have been adopted by many of the health care professions and are often represented in practice through the development and use of clinical practice guidelines (CPGs). Audiology has been working on incorporating EBP principles into its mandate for professional practice since the mid-1990s. Despite widespread efforts to implement EBP and guidelines into audiology practice, gaps still exist between the best evidence based on research and what is being done in clinical practice. A collaborative dynamic and iterative integrated knowledge translation (KT) framework rather than a researcher-driven hierarchical approach to EBP and the development of CPGs has been shown to reduce the knowledge-to-clinical action gaps. This article provides a brief overview of EBP and CPGs, including a discussion of the barriers to implementing CPGs into clinical practice. It then offers a discussion of how an integrated KT process combined with a community of practice (CoP) might facilitate the development and dissemination of evidence for clinical audiology practice. Finally, a project that uses the knowledge-to-action (KTA) framework for the development of outcome measures in pediatric audiology is introduced.

Moore, A. P., et al. (2017). "Co-design of a culturally-tailored diet & lifestyle intervention for diabetes management in the UK African-Caribbean community." *Proceedings of the Nutrition Society* 76(OCE4): E163-E163.

Moore, G. F., et al. (2019). "From complex social interventions to interventions in complex social systems: Future directions and unresolved questions for intervention development and evaluation." *Evaluation* 25(1): 23-45.

Complex systems approaches to social intervention research are increasingly advocated. However, there have been few attempts to consider how models of intervention science, such as the UK's Medical Research Council complex interventions framework, might be reframed through a complex systems lens. This article identifies some key areas in which this framework might be reconceptualized, and a number of priority areas where further development is needed if alignment with a systems perspective is to be achieved. We argue that a complex systems perspective broadens the parameters of 'relevant' evidence and theory for intervention development, before discussing challenges in defining feasibility in dynamic terms. We argue that whole systems evaluations may be neither attainable, nor necessary; acknowledgment of complexity does not mean that evaluations must be complex, or investigate all facets of complexity. However, a systems lens may add value to evaluation design through guiding identification of key uncertainties, and informing decisions such as timings of follow-up assessments.

Moore, H. E. and J. Boldero (2017). "Designing Interventions that Last: A Classification of Environmental Behaviors in Relation to the Activities, Costs, and Effort Involved for Adoption and Maintenance." *Frontiers in Psychology* 8.

Policy makers draw on behavioral research to design interventions that promote the voluntary adoption of environmental behavior in societies. Many environmental behaviors will only be effective if they are maintained over the long-term. In the context of climate change and concerns about future water security, behaviors that involve reducing energy consumption and improving water quality must be continued indefinitely to mitigate global warming and preserve scarce resources. Previous reviews of environmental behavior have focused exclusively on factors related to adoption. This review investigates the factors that influence both adoption and maintenance, and presents a classification of environmental behaviors in terms of the activities, costs, and effort required for both adoption and maintenance. Three categories of behavior are suggested. One-off behaviors involve performing an activity once, such as purchasing an energy efficient washing machine, or signing a petition. Continuous behaviors involve the performance of the same set of behaviors for adoption and for maintenance, such as curbside recycling. Dynamic behaviors involve the performance of different behaviors for adoption and maintenance, such as revegetation. Behaviors can also be classified into four categories related to cost and effort: those that involve little cost and effort for adoption and maintenance, those that involve moderate cost and effort for adoption and maintenance, those that involve a high cost or effort for adoption and less for maintenance, and those that involve less cost or effort for adoption and a higher amount for maintenance. In order to design interventions that last, policy makers should consider the factors that influence the maintenance as well as the adoption of environmental behaviors.

Moore, J. E., et al. (2019). "Can the effects of the mobilization of vulnerable elders in Ontario (MOVE ON) implementation be replicated in new settings: an interrupted time series design." *Bmc Geriatrics* 19.

Background: Bed rest for older hospitalized patients places them at risk for hospital-acquired morbidity. We previously evaluated an early mobilization intervention and found it to be effective at improving mobilization rates and decreasing length of stay on internal medicine units. The aim of this study was to conduct a replication study evaluating the impact of the evidence-informed mobilization intervention on surgery, psychiatry, medicine, and cardiology inpatient units. Methods: A multi-component early mobilization intervention was tailored to the local context at seven hospitals in Ontario, Canada. The primary outcome was patient mobilization measured by conducting visual audits twice a week, three times a day. Secondary outcomes were hospital length of stay and discharge destination, which were obtained from hospital decision support data. The study population was patients aged 65 years and older who were admitted to surgery, psychiatry, medicine, and cardiology inpatient units between March and August 2014. Using an interrupted time series design, the intervention was evaluated over three time periods-pre-intervention, during, and post-intervention. Results: A total of 3098 patients [mean age 78.46years (SD 8.38)] were included in the overall analysis. There was a significant increase in mobility immediately after the intervention period compared to pre-intervention with a slope change of 1.91 (95% confidence interval [CI] 0.74-3.08, P-value=0.0014). A decreasing trend in median length of stay was observed in the majority of the participating sites. Overall, a median length of stay of 26.24days (95% CI 23.67-28.80) was observed pre-intervention compared to 23.81days (95% CI 20.13-27.49) during the intervention and 24.69days (95% CI 22.43-26.95) post-intervention. The overall decrease in median length of stay was associated with the increase in mobility across the sites. Conclusions: MOVE increased mobilization and these results were replicated across surgery, psychiatry, medicine, and cardiology inpatient units.

Moore, J. E., et al. (2018). "Supporting the implementation of stroke quality-based procedures (QBPs): a mixed methods evaluation to identify knowledge translation activities, knowledge translation interventions, and determinants of implementation across Ontario." *Bmc Health Services Research* 18.

Background: In 2013, Health Quality Ontario introduced stroke quality-based procedures (QBPs) to promote use of evidence-based practices for patients with stroke in Ontario hospitals. The study purpose was to: (a) describe the knowledge translation (KT) interventions used to support stroke QBP implementation, (b) assess differences in the planned and reported KT interventions by region, and (c) explore determinants perceived to have affected outcomes. Methods: A mixed methods approach was used to evaluate: activities, KT interventions, and determinants of stroke QBP implementation. In Phase 1, a document review of regional stroke network work plans was conducted to capture the types of KT activities planned at a regional level; these were mapped to the knowledge to action framework. In Phase 2, we surveyed Ontario hospital staff to identify the KT interventions used to support QBP implementation at an organizational level. Phase 3 involved qualitative interviews with staff to elucidate deeper understanding of survey findings. Results: Of the 446 activities identified in the document review, the most common were 'dissemination' (24.2%; n = 108), 'implementation' (22.6%; n = 101), 'implementation planning' (15.0%; n = 67), and 'knowledge tools' (10.5%; n = 47). Based on survey data (n = 489), commonly reported KT interventions included: staff educational meetings (43.1%; n = 154), champions (41.5%; n = 148), and staff educational materials (40.6%; n = 145). Survey participants perceived stroke QBP implementation to be successful (median = 5/7; interquartile range = 4-6; range = 1-7; n = 335). Forty-four

people (e.g., managers, senior leaders, regional stroke network representatives, and frontline staff) participated in interviews/focus groups. Perceived facilitators to QBP implementation included networks and collaborations with external organizations, leadership engagement, and hospital prioritization of stroke QBP. Perceived barriers included lack of funding, size of the hospital (i.e., too small), lack of resources (i.e., staff and time), and simultaneous implementation of other QBPs. Conclusions: Information on the types of activities and KT interventions used to support stroke QBP implementation and the key determinants influencing uptake of stroke QBPs can be used to inform future activities including the development and evaluation of interventions to address barriers and leverage facilitators.

Moore, J. E., et al. (2014). "Mapping barriers and intervention activities to behaviour change theory for Mobilization of Vulnerable Elders in Ontario (MOVE ON), a multi-site implementation intervention in acute care hospitals." *Implementation Science* 9.

Background: As evidence-informed implementation interventions spread, they need to be tailored to address the unique needs of each setting, and this process should be well documented to facilitate replication. To facilitate the spread of the Mobilization of Vulnerable Elders in Ontario (MOVE ON) intervention, the aim of the current study is to develop a mapping guide that links identified barriers and intervention activities to behaviour change theory. Methods: Focus groups were conducted with front line health-care professionals to identify perceived barriers to implementation of an early mobilization intervention targeted to hospitalized older adults. Participating units then used or adapted intervention activities from an existing menu or developed new activities to facilitate early mobilization. A thematic analysis was performed on the focus group data, emphasizing concepts related to barriers to behaviour change. A behaviour change theory, the 'capability, opportunity, motivation-behaviour (COM-B) system', was used as a taxonomy to map the identified barriers to their root causes. We also mapped the behaviour constructs and intervention activities to overcome these. Results: A total of 46 focus groups were conducted across 26 hospital inpatient units in Ontario, Canada, with 261 participants. The barriers were conceptualized at three levels: health-care provider (HCP), patient, and unit. Commonly mentioned barriers were time constraints and workload (HCP), patient clinical acuity and their perceived 'sick role' (patient), and lack of proper equipment and human resources (unit level). Thirty intervention activities to facilitate early mobilization of older adults were implemented across hospitals; examples of unit-developed intervention activities include the 'mobility clock' communication tool and the use of staff champions. A mapping guide was created with barriers and intervention activities matched through the lens of the COM-B system. Conclusions: We used a systematic approach to develop a guide, which maps barriers, intervention activities, and behaviour change constructs in order to tailor an implementation intervention to the local context. This approach allows implementers to identify potential strategies to overcome local-level barriers and to document adaptations.

Moore, J. E., et al. (2018). "Longitudinal evaluation of a course to build core competencies in implementation practice." *Implementation Science* 13.

Background: Few training opportunities are available for implementation practitioners; we designed the Practicing Knowledge Translation (PKT) to address this gap. The goal of PKT is to train practitioners to use evidence and apply implementation science in healthcare settings. The aim of this study was to describe PKT and evaluate participant use of implementation science theories, models, and frameworks (TMFs), knowledge, self-efficacy, and satisfaction and feedback on the course. Methods: PKT was delivered to implementation practitioners between September 2015 and February 2016 through a 3-day workshop, 11 webinars. We assessed PKT using an uncontrolled before and after study design, using convergent parallel mixed methods. The primary outcome was use of TMFs in implementation projects. Secondary outcomes were knowledge and self-efficacy across six core competencies, factors related to each of the outcomes, and satisfaction with the course. Participants completed online surveys and semi-structured interviews at baseline, 3, 6, and 12 months. Results: Participants (n = 15) reported an increase in their use of implementation TMFs (mean = 2.11; estimate = 2.11; standard error (SE) = 0.4; p = 0.03). There was a significant increase in participants' knowledge of developing an evidence-informed, theory-driven program (ETP) (estimate = 4.10; SE = 0.37; p = 0.002); evidence implementation (estimate = 2.68; SE = 0.42; p < 0.001); evaluation (estimate = 4.43; SE = 0.36; p < 0.001); sustainability, scale, and spread (estimate = 2.55; SE = 0.34; p < 0.001); and context assessment (estimate = 3.86; SE = 0.32; p < 0.001). There was a significant increase in participants' self-efficacy in developing an ETP (estimate = 3.81; SE = 0.34; p < 0.001); implementation (estimate = 3.01; SE = 0.36; p < 0.001); evaluation (estimate = 3.83; SE = 0.39; p = 0.002); sustainability, scale, and spread (estimate = 3.06; SE = 0.46; p = 0.003); and context assessment (estimate = 4.05; SE = 0.38; p = 0.016). Conclusion: Process and outcome measures collected indicated that PKT participants increased use of, knowledge of, self-efficacy in KT. Our findings highlight the importance of longitudinal evaluations of training initiatives to inform how to build capacity for implementers.

Moore, J. E., et al. (2016). "Navigating barriers: two-year follow up on recommendations to improve the use of maternal health guidelines in Kosovo." *Bmc Public Health* 16.

Background: Although there are a growing number of initiatives aimed at supporting guideline implementation in resource-constrained settings, few studies assess progress on achieving next steps and goals after the initial activities are completed and the initial funding period has ended. The aim of the current study was to conduct a qualitative process evaluation of progress, barriers, facilitators, and proposed solutions to operationalize nine recommendations to prepare Kosovo to implement the 2012 World Health Organization (WHO) prevention and treatment of postpartum haemorrhage guideline. **Methods/Design:** In 2012, we co-created nine recommendations designed to support implementing the WHO's guideline on the prevention and treatment of postpartum haemorrhage in Kosovo. The current study uses a realist evaluation approach to assess activities and progress two years after the recommendations were developed. The study involved conducting qualitative focus groups and one-on-one interviews with participants from the first meeting to evaluate the activities and progress on the nine recommendations. **Results:** Forty-three participants provided insights into the barriers and opportunities experienced to date and proposed future directions. Although progress has been made towards implementation of a number of the recommendations, scaling up has been limited by barriers, such as lack of awareness, limited resources, and evaluation challenges. Participants proposed addressing these barriers by building within-and between-country partnerships to facilitate guideline implementation. In addition, participants reported less progress on implementing recommendations related to broader cultural changes, which indicates a need for specific and actionable recommendations to operationalize implementation efforts. **Conclusions:** In the two years since the initial meeting, there has been mixed progress on the recommendations. Based on participant feedback, we refined the recommendations so that they can be operationalized by health care system stakeholders in Kosovo to further support implementation efforts. It is beneficial to share these lessons learned throughout the implementation process to inform next steps in Kosovo and offer ideas for use in other settings.

Morgan, H., et al. (2015). "Benefits of Incentives for Breastfeeding and Smoking cessation in pregnancy (BIBS): a mixed-methods study to inform trial design." *Health Technology Assessment* 19(30): 1-+.

Background: Smoking in pregnancy and/or not breastfeeding have considerable negative health outcomes for mother and baby. **Aim:** To understand incentive mechanisms of action for smoking cessation in pregnancy and breastfeeding, develop a taxonomy and identify promising, acceptable and feasible interventions to inform trial design. **Design:** Evidence syntheses, primary qualitative survey, and discrete choice experiment (DCE) research using multidisciplinary, mixed methods. Two mother-and-baby groups in disadvantaged areas collaborated throughout. **Setting:** UK. **Participants:** The qualitative study included 88 pregnant women/recent mothers/partners, 53 service providers, 24 experts/decision-makers and 63 conference attendees. The surveys included 1144 members of the general public and 497 health professionals. The DCE study included 320 women with a history of smoking. **Methods:** (1) Evidence syntheses: incentive effectiveness (including meta-analysis and effect size estimates), delivery processes, barriers to and facilitators of smoking cessation in pregnancy and/or breastfeeding, scoping review of incentives for lifestyle behaviours; (2) qualitative research: grounded theory to understand incentive mechanisms of action and a framework approach for trial design; (3) survey: multivariable ordered logit models; (4) DCE: conditional logit regression and the log-likelihood ratio test. **Results:** Out of 1469 smoking cessation and 5408 breastfeeding multicomponent studies identified, 23 smoking cessation and 19 breastfeeding studies were included in the review. Vouchers contingent on biochemically proven smoking cessation in pregnancy were effective, with a relative risk of 2.58 (95% confidence interval 1.63 to 4.07) compared with non-contingent incentives for participation (four studies, 344 participants). Effects continued until 3 months post partum. Inconclusive effects were found for breastfeeding incentives compared with no/smaller incentives (13 studies) but provider commitment contracts for breastfeeding show promise. Intervention intensity is a possible confounder. The acceptability of seven promising incentives was mixed. Women (for vouchers) and those with a lower level of education (except for breastfeeding incentives) were more likely to disagree. Those aged ≤ 44 years and ethnic minority groups were more likely to agree. Agreement was greatest for a free breast pump and least for vouchers for breastfeeding. Universal incentives were preferred to those targeting low-income women. Initial daily text/telephone support, a quitting pal, vouchers for >20.00 pound per month and values up to 80.00 pound increase the likelihood of smoking cessation. Doctors disagreed with provider incentives. A 'ladder' logic model emerged through data synthesis and had face validity with service users. It combined an incentive typology and behaviour change taxonomy. Autonomy and well-being matter. Personal difficulties, emotions, socialising and attitudes of others are challenges to climbing a metaphorical 'ladder' towards smoking cessation and breastfeeding. Incentive interventions provide opportunity 'rungs' to help, including regular skilled flexible support, a pal, setting goals, monitoring and outcome verification. Individually tailored and non-judgemental continuity of care can bolster women's capabilities to succeed. Rigid, prescriptive interventions placing the onus on women to behave 'healthily' risk them feeling pressurised and failing. To avoid 'losing face', women may disengage.' **Limitations:** Included studies were heterogeneous and of variable quality, limiting the assessment of incentive effectiveness. No cost-effectiveness data were reported. In surveys, selection bias and confounding are possible. The validity and utility of the ladder logic model requires evaluation with more diverse samples

of the target population. Conclusions: Incentives provided with other tailored components show promise but reach is a concern. Formal evaluation is recommended. Collaborative service-user involvement is important.

Morris, A. S., et al. (2019). "A multi-component intervention to sit less and move more in a contact centre setting: a feasibility study." *Bmc Public Health* 19.

Background Call agents spend 90% of their working day seated, which may negatively impact health, productivity, and wellbeing. This study aimed to explore the acceptability and feasibility of a multi-component workplace intervention targeting increased activity and decreased prolonged sitting in the contact centre setting prior to a full-scale effectiveness trial. **Methods** An 8-week non-randomised pre-post feasibility study was conducted. Using a mixed methods approach, focus groups and interviews were thematically analysed to explore the acceptability and feasibility of key study phases, and provide context to agents' process evaluation and survey responses. The multi-component intervention, conducted in a single call centre, included height-adjustable workstations, emails, education and training sessions, and support from team leaders and a workplace champion. **Results** Six (of 20) team leaders were recruited, with 17 of 84 call agents (78% female, 39.311.9years) completing baseline assessments and 13 completing follow-up. High workload influenced recruitment. Call agents perceived assessments as acceptable, though strategies are needed to enhance fidelity. Education sessions, height-adjustable workstations and emails were perceived as the most effective components; however, height-adjustable hot-desks were not perceived as feasible in this setting. **Conclusions** This study has identified unique, pragmatic considerations for conducting a multi-level, multi-component PA and SB intervention and associated evaluation in highly sedentary call agents in the challenging contact centre setting. The intervention was largely perceived positively, with call agents and team leaders describing numerous perceived positive effects on behavioural, health and work-related outcomes. Findings will be of value to researchers attempting to intervene in contact centres and will be used by the current authors to design a subsequent trial.

Morris, E., et al. (2019). "Dietary Approaches to the Management Of type 2 Diabetes (DIAMOND): protocol for a randomised feasibility trial." *Bmj Open* 9(1).

Introduction Some clinicians have observed that low-carbohydrate, low-energy diets can improve blood glucose control, with reports of remission from type 2 diabetes in some patients. In clinical trials, support for low-carbohydrate, low-energy diets has been provided by specialist staff and these programmes are unsuitable for widespread deployment in routine primary care. The aim of this trial is to test whether a newly developed behavioural support programme can effectively deliver a low-energy, low-carbohydrate diet in a primary care setting. **Methods and analysis** This is a feasibility randomised controlled trial (RCT) with embedded qualitative study. Thirty adult patients with type 2 diabetes and body mass index ≥ 30 kg/m² in 2-4 general practices will be randomised 2: 1 intervention or control and followed up over 12 weeks. The intervention diet comprises 8 weeks of a low-carbohydrate food-based diet providing around 800 kcal/day, followed by 4 weeks of weight maintenance. This programme will be delivered by practice nurses, who will also support patients through goal-setting, motivation and self-monitoring across four appointments, and provide a self-help booklet with recipes, shopping lists and other behavioural support. Primary outcome measures of feasibility will be met if CIs do not cross the following proportions: that 60% of intervention group participants attempt the dietary intervention, healthcare professionals conduct the intervention delivery session with at least 60% of essential elements present and 60% of participants attend the final follow-up session. Secondary outcome measures will assess process and qualitative measures, as well as exploratory outcomes including change in haemoglobin A1c and change in weight. **Ethics and dissemination** This study has been granted ethical approval by the National Research Ethics Service, South Central Oxford B Research Ethics Committee (ref: 18/SC/0071). The study results will inform whether to progress to a full-scale RCT to test the efficacy of offering this programme for patients with type 2 diabetes in primary care. Trial registration number ISRCTN62452621; Pre-results.

Morris, J. H., et al. "Implementation in rehabilitation: a roadmap for practitioners and researchers." *Disability and Rehabilitation*.

Purpose: Despite growth in rehabilitation research, implementing research findings into rehabilitation practice has been slow. This creates inequities for patients and is an ethical issue. However, methods to investigate and facilitate evidence implementation are being developed. This paper aims to make these methods relevant and accessible for rehabilitation researchers and practitioners. **Methods:** Rehabilitation practice is varied and complex and occurs within multilevel healthcare systems. Using a "road map" analogy, we describe how implementation concepts and theories can inform implementation strategies in rehabilitation. The roadmap involves a staged journey that considers: the nature of evidence; context for implementation; navigation tools for implementation; strategies to facilitate implementation; evaluation of implementation outcomes; and sustainability of implementation. We have developed a model to illustrate the journey, and four case studies exemplify implementation stages in rehabilitation settings. **Results and Conclusions:** Effective implementation strategies for the complex world of rehabilitation are urgently required. The journey we

describe unpacks that complexity to provide a template for effective implementation, to facilitate translation of the growing evidence base in rehabilitation into improved patient outcomes. It emphasizes the importance of understanding context and application of relevant theory, and highlights areas which should be targeted in new implementation research in rehabilitation.

Morrison, L. G. (2015). "Theory-based strategies for enhancing the impact and usage of digital health behaviour change interventions: A review." *Digital Health* 1.

There is growing evidence that digital interventions can successfully effect meaningful changes in health-related behaviour. However, optimisation of digital intervention delivery is challenged by low usage, high attrition and small effect sizes. Whilst a number of conceptual frameworks and models exist to guide intervention planning and development, insufficient attention has been paid to how existing psychological theory could inform the optimal implementation and delivery of the design features commonly used in digital health behaviour change interventions. This paper provides a critical review of psychological theories and models in order to consider their implications for the design of digital interventions. The theories reviewed include theories of: persuasion and attitude change; motivation; volition and self-regulation; patient preferences for participation in medical decision making; and social support. A set of theory-based guidelines is provided to inform the development of future interventions.

Morton, R. W., et al. (2014). "Adherence in childhood asthma: the elephant in the room." *Archives of Disease in Childhood* 99(10): 949-953.

Adherence to inhaled steroids is suboptimal in many children with asthma and can lead to poor disease control. Many previous studies in paediatric populations have used subjective and inaccurate adherence measurements, reducing their validity. Adherence studies now often use objective electronic monitoring, which can give us an accurate indication of the extent of non-adherence in children with asthma. A review of the studies using electronic adherence monitoring shows that half of them report mean adherence rates of 50% or below, and the majority report rates below 75%. Reasons for non-adherence are both intentional and non-intentional, incorporating illness perceptions, medication beliefs and practical adherence barriers. Interventions to improve adherence in the paediatric population have had limited success, with the most effective containing both educational and behavioural aspects.

Moss, J. L., et al. (2016). "Collaborative patient-provider communication and uptake of adolescent vaccines." *Social Science & Medicine* 159: 100-107.

Rationale: Recommendations from healthcare providers are one of the most consistent correlates of adolescent vaccination, but few studies have investigated other elements of patient-provider communication and their relevance to uptake. Objective: We examined competing hypotheses about the relationship of patient-driven versus provider driven communication styles with vaccination. Methods: We gathered information about vaccine uptake from healthcare provider-verified data in the 2010 National Immunization Survey-Teen for tetanus, diphtheria, and pertussis (Tdap) booster, meningococcal vaccine, and human papillomavirus (HPV) vaccine (initiation among females) for adolescents ages 13-17. We categorized communication style in parents' conversations with healthcare providers about vaccines, based on parents' reports (of whether a provider recommended a vaccine and, if so, if conversations were informed, shared, or efficient) (N = 9021). Results: Most parents reported either no provider recommendation (Tdap booster: 35%; meningococcal vaccine: 46%; and HPV vaccine: 31%) or reported a provider recommendation and shared patient provider communication (43%, 38%, and 49%, respectively). Provider recommendations were associated with increased odds of vaccination (all ps < 0.001). In addition, more provider-driven communication styles were associated with higher rates of uptake for meningococcal vaccine (efficient style: 82% vs. shared style: 77% vs. informed style: 68%; p < 0.001 for shared vs.. informed) and HPV vaccine (efficient style: 90% vs. shared style: 70% vs. informed style: 33%; p < 0.05 for all comparisons). Conclusion: Efficient communication styles were used rarely (<= 2% across vaccines) but were highly effective for encouraging meningococcal and HPV vaccination. Intervention studies are needed to confirm that efficient communication approaches increase HPV vaccination among adolescents. (C) 2016 Elsevier Ltd. All rights reserved.

Moullin, J. C., et al. (2016). "Qualitative study on the implementation of professional pharmacy services in Australian community pharmacies using framework analysis." *Bmc Health Services Research* 16.

Background: Multiple studies have explored the implementation process and influences, however it appears there is no study investigating these influences across the stages of implementation. Community pharmacy is attempting to implement professional services (pharmaceutical care and other health services). The use of implementation theory may assist the achievement of widespread provision, support and integration. The objective was to investigate professional service implementation in community pharmacy to contextualise and advance the concepts of a generic implementation framework previously published. Methods: Purposeful sampling was used to investigate implementation across a range of levels of implementation in community pharmacies in Australia. Twenty-five semi-structured interviews

were conducted and analysed using a framework methodology. Data was charted using implementation stages as overarching themes and each stage was thematically analysed, to investigate the implementation process, the influences and their relationships. Secondary analyses were performed of the factors (barriers and facilitators) using an adapted version of the Consolidated Framework for Implementation Research (CFIR), and implementation strategies and interventions, using the Expert Recommendations for Implementing Change (ERIC) discrete implementation strategy compilation. Results: Six stages emerged, labelled as development or discovery, exploration, preparation, testing, operation and sustainability. Within the stages, a range of implementation activities/steps and five overarching influences (pharmacys' direction and impetus, internal communication, staffing, community fit and support) were identified. The stages and activities were not applied strictly in a linear fashion. There was a trend towards the greater the number of activities considered, the greater the apparent integration into the pharmacy organization. Implementation factors varied over the implementation stages, and additional factors were added to the CFIR list and definitions modified/contextualised for pharmacy. Implementation strategies employed by pharmacies varied widely. Evaluations were lacking. Conclusions: The process of implementation and five overarching influences of professional services implementation in community pharmacy have been outlined. Framework analysis revealed, outside of the five overarching influences, factors influencing implementation varied across the implementation stages. It is proposed at each stage, for each domain, the factors, strategies and evaluations should be considered. The Framework for the Implementation of Services in Pharmacy incorporates the contextualisation of implementation science for pharmacy.

Munday, J., et al. (2019). "Barriers and enablers to the implementation of perioperative hypothermia prevention practices from the perspectives of the multidisciplinary team: a qualitative study using the Theoretical Domains Framework." *Journal of Multidisciplinary Healthcare* 12: 395-417.

Purpose: Inadvertent perioperative hypothermia is a significant problem for surgical patients globally, and is associated with many detrimental side-effects. Despite the availability of rigorously developed international evidence-based guidelines for prevention, a high incidence of this complication persists. This qualitative study aims to identify and examine the domains which act as barriers and enablers to perioperative hypothermia prevention practices, from the perspectives of the key healthcare professionals involved with perioperative temperature management. Methods: A qualitative study employing semi-structured interviews was utilized. A purposive sample of key stakeholders involved in perioperative temperature management, including perioperative nurses, anesthetists, surgeons, and perioperative managers, were recruited via email. The interview guide was developed in reference to the Theoretical Domains Framework. All interviews were recorded, de-identified, transcribed, and coded. Belief statements were generated within each domain, and a frequency score generated for each belief. Finally, the domains were mapped to the COM-B model of the Behavior Change Wheel to develop recommendations for future interventions. Results: Twelve participants were included including eight nurses, two surgeons, and two anesthetists. Eleven key theoretical domains that influence the uptake of perioperative hypothermia practices were identified: knowledge; skills; social/professional role and identity; beliefs about capabilities; optimism; beliefs about consequences; reinforcement; goals; memory, attention, and decision processes; environmental context and resources; social influence. Suggested intervention strategies include training, reminder systems, audit, and feedback, organizational support to resolve lack of control of ambient temperature, as well as provision of accurate temperature measurement devices. Conclusion: Future interventions to address the key behavioral domains and improve perioperative hypothermia prevention need to be evaluated in the context of feasibility, effectiveness, safety, acceptability, and cost by the target users. All suggested intervention strategies need to take a team-based, multi-modal approach, as this is most likely to facilitate improvements in perioperative hypothermia prevention.

Munoz, K., et al. (2015). "Improving Support for Parents of Children with Hearing Loss: Provider Training on Use of Targeted Communication Strategies." *Journal of the American Academy of Audiology* 26(2): 116-127.

Background: When proper protocols are followed, children who are identified with a permanent hearing loss early in life have opportunities to develop language on par with their typical hearing peers. Young children with hearing loss are dependent on their parents to manage intervention during early years critical to their development, and parents' ability to effectively integrate recommendations in daily life is foundational for intervention success. Audiologists and early intervention professionals not only need to provide current evidence-based services, but also must address parents' emotional and learning needs related to their child's hearing loss. Purpose: This study explored practice patterns related to education and support provided to parents of children with hearing loss and the influence of an in-service training on provider attitudes. Research Design: This study used a prepost design with a self-report questionnaire to identify practice patterns related to communication skills and support used by providers when working with parents of children with hearing loss. Study Sample: A total of 45 participants (21 professionals and 24 graduate students) currently working with children completed the pretraining questionnaire, and 29 participants (13 professionals and 16 graduate students) completed the postquestionnaire. Data Collection and Analysis: Data were collected using an online questionnaire before

the training and 1 mo after training. Descriptive analyses were done to identify trends, and paired-samples t-tests were used to determine changes pretraining to posttraining. Results: Findings revealed that professionals most frequently teach skills to mothers (91%) and infrequently teach skills to fathers (19%) and other caregivers (10%). Professionals reported frequently collaborating with other intervention providers (76%) and infrequently collaborating with primary care physicians (19%). One-third of the professionals reported addressing symptoms of depression and anxiety as an interfering factor with the ability to implement management recommendations. For providers who completed both the prequestionnaires and postquestionnaires, an increase in confidence was reported for several areas of communication; however, as expected, practices remained similar, and all of the practicing professionals and 94% of the graduate students indicated a desire for more training on how to be effective in supporting parents with implementing intervention recommendations. Conclusions: Providers do not necessarily use effective methods of communication, needed to adequately help parents, requiring additional focused training to change how providers interact with parents and how support is provided.

Munroe, B., et al. (2018). "Optimising implementation of a patient-assessment framework for emergency nurses: A mixed-method study." *Journal of Clinical Nursing* 27(1-2): E269-E286.

Aims and objectivesTo determine potential facilitators and barriers and tailor interventions to optimise future implementation of a patient-assessment framework into emergency nursing practice. **Background**An evidence-informed patient-assessment framework HIRAID (History, Identify Red flags, Assessment, Interventions, Diagnostics, communication and reassessment) improves the quality of patient assessments performed by emergency nurses. Facilitators and barriers must be understood and tailored interventions selected to optimise implementation. **Design**A mixed-method convergent study design was used. **Methods**Thirty eight early career emergency nurses from five Australian hospitals participated in an education workshop on the HIRAID assessment framework. Simulated clinical scenarios enabled participants to experience conducting a patient assessment with and without using the framework. All participants completed surveys, interviews and focus groups to identify potential facilitators and barriers. Twenty three participants completed follow-up telephone surveys 4-6months later. Quantitative and qualitative data were analysed separately using descriptive statistics and inductive content analysis, prior to integration. **Implementation interventions** were selected using the Behaviour Change Wheel. **Results**Nine facilitators and nine barriers were identified to potentially effect implementation of the HIRAID assessment framework. Twelve of the 23 participants (52.2%) who completed follow-up surveys reported using the framework in the clinical setting. To optimise future implementation, the education workshop needs refinement, and environmental restructuring, modelling and social support are required. **Conclusion**A multimodal strategy is needed to promote future successful implementation of the HIRAID assessment framework into emergency nursing practice. **Relevance for clinical practice**The successful implementation of the HIRAID assessment framework has the potential to improve nursing assessments of patients in emergency and other acute care settings. This study demonstrates how to systematically identify facilitators and barriers to behaviour change and select interventions to optimise implementation of evidence-informed nursing practices.

Munscher, R., et al. (2016). "A Review and Taxonomy of Choice Architecture Techniques." *Journal of Behavioral Decision Making* 29(5): 511-524.

We present a taxonomy of choice architecture techniques that focus on intervention design, as opposed to the underlying cognitive processes that make an intervention work. We argue that this distinction will facilitate further empirical testing and will assist practitioners in designing interventions. The framework is inductively derived from empirically tested examples of choice architecture and consists of nine techniques targeting decision information, decision structure, and decision assistance. An inter-rater reliability test demonstrates that these techniques can be used in an intersubjectively replicable way to describe sample choice architectures. We conclude by discussing limitations of the framework and key issues concerning the use of the techniques in the development of new choice architectures. Copyright (C) 2015 John Wiley & Sons, Ltd.

Murphy, A., et al. (2015). "Pharmacists' performance in a telephone-based simulated patient study after a mental health capacity-building program." *International Journal of Clinical Pharmacy* 37(6): 1009-1013.

Background The More Than Meds program was developed to enhance community pharmacy based services for people with mental illness. **Objective** To evaluate the care of pharmacists who participated in this specific program using a telephone-based simulated patient with insomnia. **Methods** A trained actor used a simulated patient case scenario and telephoned pharmacists (i.e., intervention group pharmacists) and a control group of pharmacists approximately 6 months following training. Pharmacists were scored on their assessment of the patient and problem, guidance provided on both pharmacological and nonpharmacological care, communications, and overall quality. **Results** Sixty-three pharmacists (n = 29 intervention, n = 34 controls) were reached. Call duration was longer with intervention versus control group pharmacists [4.93 min (SD 2.3) vs. 4.00 min (SD 1.8)]. Medication recommendations were made by 76 and 100 %

of intervention versus control pharmacists ($p = 0.002$), respectively. Intervention group pharmacists scored significantly higher on most components within communication and overall quality scores. Scores for assessing the patient, the problem, sleep, and medication supply were lower than expected for both groups. Conclusion Intervention group pharmacists performed better than controls on several components of a telephone-based simulated patient scenario for insomnia following More Than Meds training. More research is needed regarding telephone consultations in pharmacy practice.

Murphy, A. L. and D. M. Gardner (2019). "Pharmacists' acceptability of a men's mental health promotion program using the Theoretical Framework of Acceptability." *Aims Public Health* 6(2): 195-208.

Introduction: Community pharmacists are accessible, knowledgeable, and capable of providing mental health promotion and care in communities. This may not be a role that is recognized by the public, and men in particular. Differences between men and women exist in help seeking practices. Headstrong-Taking Things Head-On is a men's mental health promotion program for community pharmacies that was designed to increase the capacity of community pharmacists in caring for men with lived experience of mental illness and addictions. The program's core components included signage in pharmacies, education and training for pharmacists, and a website for use with patients. Methods: We applied the Theoretical Framework of Acceptability as the coding scheme to pharmacists' qualitative interviews to examine the acceptability of Headstrong for pharmacists. Results: Nine pharmacists consented to participate and all chose telephone interviews. With the exceptions of ethicality, affective attitude, and opportunity costs, all components from the TFA were coded in each of the nine transcripts. The most frequently coded constructs were perceived effectiveness of the intervention, burden, and self-efficacy. These were coded at least 20 times. The remaining categories ethicality, intervention coherence, affective attitude, and opportunity costs were coded between 11 to 17 times. Pharmacists' perceptions of the effectiveness of the program was mixed. The overall burden was perceived to be low, but opportunity costs appear to have limited the participation of some pharmacists in the program. Conclusion: Use of the Theoretical Framework of Acceptability as a coding scheme for qualitative data from community pharmacists in a men's mental health program was helpful for identifying issues with the program that may require redesign (e.g., signage). Program design should consider how services are advertised in the pharmacy setting, how personal values of pharmacists influence intervention coherence, and whether minimizing the burden of an intervention negates issues related to opportunity costs.

Murphy, A. L., et al. (2015). "Community pharmacists and the assessment and management of suicide risk." *Canadian Pharmacists Journal* 148(4): 171-175.

Murphy, A. L., et al. (2018). "Patient care activities by community pharmacists in a capitation funding model mental health and addictions program." *Bmc Psychiatry* 18.

Background: Community pharmacists are autonomous, regulated health care professionals located in urban and rural communities in Canada. The accessibility, knowledge, and skills of community pharmacists can be leveraged to increase mental illness and addictions care in communities. Methods: The Bloom Program was designed, developed, and implemented based on the Behaviour Change Wheel and a program of research in community pharmacy mental healthcare capacity building. We evaluated the Bloom Program as a demonstration project using mixed methods. A retrospective chart audit was conducted to examine outcomes and these are reported in this paper. Results: We collected 201 patient charts from 23 pharmacies in Nova Scotia with 182 patients having at least one or more follow-up visits. Anxiety ($n = 126$, 69%), depression ($n = 112$, 62%), and sleep disorders ($n = 64$, 35%) were the most frequent mental health problems. Comorbid physical health problems were documented in 57% ($n = 104$). The average number of prescribed medications was 5.5 (range 0 to 24). Sixty seven percent ($n = 122$) were taking multiple psychotropics and 71% ($n = 130$) reported taking more than one medication for physical health problems. Treatment optimization was the leading reason for enrollment with more than 80% seeking improvements in symptom management and daily functioning. There were a total of 1233 patient-care meetings documented, of which the duration was recorded in 1098. The median time for enrolling, assessing, and providing follow-up care by pharmacists was 142 min (mean 176, SD 128) per patient. The median follow-up encounter duration was 15 min. A total of 146 patient care encounters were 60 min or longer, representing 13.3% of all timed encounters. Conclusions: Pharmacists work with patients with lived experience of mental illness and addictions to improve medication related outcomes including those related to treatment optimization, reducing polytherapy, and facilitating withdrawal from medications. Pharmacists can offer their services frequently and routinely without the need for an appointment while affording patient confidentiality and privacy. Important roles for pharmacists around the deprescribing of various medications (e.g., benzodiazepines) have previously been supported and should be optimized and more broadly implemented. Further research on the best mechanisms to incentivize pharmacists in mental illness and addiction's care should be explored.

Murphy, A. L., et al. (2016). "System struggles and substitutes: A qualitative study of general practitioner and psychiatrist experiences of prescribing antipsychotics to children and adolescents." *Clinical Child Psychology and Psychiatry* 21(4): 634-648.

There are significant controversies regarding rising antipsychotic prescription trends in children and adolescents. Many pharmacoepidemiology trend studies have been published, and interpretations of these data are helpful in explaining what is happening in prescribing practices, but not why these patterns exist. There is a lack of qualitative data in this area, and the experience of prescribing antipsychotics to children and adolescents has not been adequately researched. We conducted a qualitative study using an interpretive phenomenological analysis of physicians' experiences of antipsychotic prescribing to children and adolescents. Prescribers participated in individual interviews and a focus group. We used a staged approach for data analysis of transcriptions. In all, 11 physicians including psychiatrists and general practitioners participated in our study. We identified themes related to context, role and identity, and decision-making and filtering. Struggles with health system gaps were significant leading to the use of antipsychotics as substitutes for other treatments. Physicians prescribed antipsychotics to youth for a range of indications and had significant concerns regarding adverse effects. Our results provide knowledge regarding the prescribers' experience of antipsychotics for children and adolescents. Important gaps exist within the health system that are creating opportunities for the initiation and continued use of these agents.

Murphy, A. L., et al. (2014). "A theory-informed approach to mental health care capacity building for pharmacists." *International Journal of Mental Health Systems* 8.

Background: Pharmacists are knowledgeable, accessible health care professionals who can provide services that improve outcomes in mental health care. Various challenges and opportunities can exist in pharmacy practice to hinder or support pharmacists' efforts. We used a theory-informed approach to development and implementation of a capacity-building program to enhance pharmacists' roles in mental health care. Methods: Theories and frameworks including the Consolidated Framework for Implementation Research, the Theoretical Domains Framework, and the Behaviour Change Wheel were used to inform the conceptualization, development, and implementation of a capacity-building program to enhance pharmacists' roles in mental health care. Results: The More Than Meds program was developed and implemented through an iterative process. The main program components included: an education and training day; use of a train-the-trainer approach from partnerships with pharmacists and people with lived experience of mental illness; development of a community of practice through email communications, a website, and a newsletter; and use of educational outreach delivered by pharmacists. Theories and frameworks used throughout the program's development and implementation facilitated a means to conceptualize the component parts of the program as well as its overall presence as a whole from inception through evolution in implementation. Using theoretical foundations for the program enabled critical consideration and understanding of issues related to trialability and adaptability of the program. Conclusions: Theory was essential to the underlying development and implementation of a capacity-building program for enhancing services by pharmacists for people with lived experience of mental illness. Lessons learned from the development and implementation of this program are informing current research and evolution of the program.

Murphy, A. L., et al. (2015). "Partnering to enhance mental health care capacity in communities: A qualitative study of the More Than Meds program." *Canadian Pharmacists Journal* 148(6): 314-324.

Background: Community pharmacists care for and support people with lived experience of mental illness in their communities. We developed a program called More Than Meds to facilitate enhancing capacity of community pharmacists' roles in mental health care. Methods: We conducted a qualitative study and used a directed content analysis with application of the Theoretical Domains Framework as part of our underlying theory of behaviour change and our analytic framework. Results: Ten interviews (n = 6 pharmacists, n = 4 community members) were conducted with participants from the More Than Meds program. Three key themes were identified from the experiences of More Than Meds participants: networking and bridging, stigma, and expectations and permissions. The most frequently coded domains in the data from the Theoretical Domains Framework were social/professional role, skills, beliefs about capabilities, knowledge and environmental context and resources. Conclusions: The More than Meds Program enabled community pharmacists to increase their capabilities, opportunities and motivation in providing mental health care and support. Involving community pharmacists together with people with lived experience of mental illness was identified as an innovative component of the program.

Murphy, A. L., et al. (2016). "From personal crisis care to convenience shopping: an interpretive description of the experiences of people with mental illness and addictions in community pharmacies." *Bmc Health Services Research* 16.

Background: The role of community pharmacists is changing globally with pharmacists engaging in more clinically-oriented roles, including in mental health care. Pharmacists' interventions have been shown to improve mental health related outcomes but various barriers can limit pharmacists in their care of patients. We aimed to explore the

experiences of people with lived experience of mental illness and addictions in community pharmacies to generate findings to inform practice improvements. Methods: We used interpretive description methodology with analytic procedures of thematic analysis to explore the experiences of people with lived experience of mental illness and addictions with community pharmacy services. Participants were recruited through multiple mechanisms (e.g., paper and online advertisements), offered honorarium for their time, and given the option of a focus group or interview for participation in our study. Data were gathered during July to September of 2012. Interviews and focus groups were audio-recorded, transcribed verbatim, and analyzed by two researchers. Results: We collected approximately nine hours of audio data from 18 individuals in two focus groups (n = 12) and six individual interviews. Fourteen participants were female and the average age was 41 years (range 24 to 57 years). Expectations, decision-making, and supports were identified as central themes underlying the community pharmacy experiences of people with lived experience of mental illness and addictions. Eight subthemes were identified including: relationships with pharmacy staff; patient's role in the pharmacist-patient relationship; crisis and triage; privacy and confidentiality; time; stigma and judgment; medication-related and other services; and transparency. Conclusions: People with lived experience of mental illness and addictions demonstrate a high regard and respect for pharmacist's knowledge and abilities but hold conservative expectations of pharmacy health services shaped by experience, observations, and assumptions. To some extent, expectation management occurs with the recognition of the demands on pharmacists and constraints inherent to community pharmacy practice. Relationships with pharmacy staff are critical to people with lived experience and influence their decision-making. Research in the area of pharmacists' roles in crises and triage, especially in the area of suicide assessment and mitigation, is needed urgently.

Murphy, A. L., et al. (2016). "Community pharmacists' experiences in mental illness and addictions care: a qualitative study." *Substance Abuse Treatment Prevention and Policy* 11.

Background: Community pharmacists are accessible health care professionals who encounter people with lived experience of mental illness and addictions in daily practice. Although some existing research supports that community pharmacists' interventions result in improved patient mental health outcomes, gaps in knowledge regarding the pharmacists' experiences with service provision to this population remain. Improving knowledge regarding the pharmacists' experiences with mental illness and addictions service provision can facilitate a better understanding of their perspectives and be used to inform the development and implementation of interventions delivered by community pharmacists for people with lived experience of mental illness and addictions in communities. Methods: We conducted a qualitative study using a directed content analysis and the Theoretical Domains Framework as part of our underlying theory of behaviour change and our analytic framework for theme development. The Theoretical Domains Framework facilitates understanding of behaviours of health care professionals and implementation challenges and opportunities for interventions in health care. Thematic analysis co-occurred throughout the process of the directed content analysis. We recruited community pharmacists, with experience dispensing psychotropics, at a minimum, through multiple mechanisms (e.g., professional associations) in a convenience sampling approach. Potential participants were offered the option of focus groups or interviews. Results: Data were collected from one focus group and two interviews involving six pharmacists. Theoretical Domains Framework coding was primarily weighted in two domains: social/professional role and identity and environmental context and resources. We identified five main themes in the experiences of pharmacists in mental illness and addictions care: competing interests, demands, and time; relationships, rapport, and trust; stigma; collaboration and triage; and role expectations and clarity. Conclusions: Pharmacists are not practicing to their full scope of practice in mental illness and addictions care for several reasons including limitations within the work environment and lack of structures and processes in place to be fully engaged as health care professionals. More research and policy work are needed to examine better integration of pharmacists as members of the mental health care team in communities.

Murphy, E., et al. (2015). "Primary care organisational interventions for secondary prevention of ischaemic heart disease: a systematic review and meta-analysis." *British Journal of General Practice* 65(636): E460-E468.

Background Ischaemic heart disease (IHD) is the most common cause of death worldwide. Aim To determine the long-term impact of organisational interventions for secondary prevention of IHD. Design and setting Systematic review and meta-analysis of studies from CENTRAL, MEDLINE (R), Embase, and CINAHL published January 2007 to January 2013. Method Searches were conducted for randomised controlled trials of patients with established IHD, with long-term follow-up, of cardiac secondary prevention programmes targeting organisational change in primary care or community settings. A random effects model was used and risk ratios were calculated. Results Five studies were included with 4005 participants. Meta-analysis of four studies with mortality data at 4.7-6 years showed that organisational interventions were associated with approximately 20% reduced mortality, with a risk ratio (RR) for all-cause mortality of 0.79 (95% confidence interval (CI) = 0.66 to 0.93), and a RR for cardiac-related mortality of 0.74 (95% CI = 0.58 to 0.94). Two studies reported mortality data at 10 years. Analysis of these data showed no significant differences between groups. There were

insufficient data to conduct a meta-analysis on the effect of interventions on hospital admissions. Additional analyses showed no significant association between organisational interventions and risk factor management or appropriate prescribing at 4.7-6 years. Conclusion Cardiac secondary prevention programmes targeting organisational change are associated with a reduced risk of death for at least 4-6 years. There is insufficient evidence to conclude whether this beneficial effect is maintained indefinitely.

Murphy, M. E., et al. (2017). "Development of a complex intervention to promote appropriate prescribing and medication intensification in poorly controlled type 2 diabetes mellitus in Irish general practice." *Implementation Science* 12.

Background: Poorly controlled type 2 diabetes mellitus (T2DM) can be seen as failure to meet recommended targets for management of key risk factors including glycaemic control, blood pressure and lipids. Poor control of risk factors is associated with significant morbidity, mortality and healthcare costs. Failure to intensify medications for patients with poor control of T2DM when indicated is called clinical inertia and is one contributory factor to poor control of T2DM. We aimed to develop a theory and evidence-based complex intervention to improve appropriate prescribing and medication intensification in poorly controlled T2DM in Irish general practice. Methods: The first stage of the Medical Research Council Framework for developing and evaluating complex interventions was utilised. To identify current evidence, we performed a systematic review to examine the effectiveness of interventions targeting patients with poorly controlled T2DM in community settings. The Behaviour Change Wheel theoretical approach was used to identify suitable intervention functions. Workshops, simulation, collaborations with academic partners and observation of physicians were utilised to operationalise the intervention functions and design the elements of the complex intervention. Results: Our systematic review highlighted that professional-based interventions, potentially through clinical decision support systems, could address poorly controlled T2DM. Appropriate intensification of anti-glycaemic and cardiovascular medications, by general practitioners (GPs), for adults with poorly controlled T2DM was identified as the key behaviour to address clinical inertia. Psychological capability was the key driver of the behaviour, which needed to change, suggesting five key intervention functions (education, training, enablement, environmental restructuring and incentivisation) and nine key behaviour change techniques, which were operationalised into a complex intervention. The intervention has three components: (a) a training program/academic detailing of target GPs, (b) a remote finder tool to help GPs identify patients with poor control of T2DM in their practice and (c) A web-based clinical decision support system. Conclusions: This paper describes a multifaceted process including an exploration of current evidence and a thorough theoretical understanding of the predictors of the behaviour resulting in the design of a complex intervention to promote the implementation of evidence-based guidelines, through appropriate prescribing and medication intensification in poorly controlled T2DM.

Murtagh, E. M., et al. (2018). "Mothers and teenage daughters walking to health: using the behaviour change wheel to develop an intervention to improve adolescent girls' physical activity." *Public Health* 158: 37-46.

Objectives: The majority of adolescent girls fail to meet public health guidelines for physical activity. Engaging mothers in the promotion of physical activity for their daughters may be an important strategy to facilitate behaviour change. The aim of this study was to use the behaviour change wheel (BCW) framework to design the components of an intervention to improve adolescent girls' physical activity. Study design: Cross-sectional study to inform intervention development. Methods: The BCW framework was used to (1) understand the behaviour, (2) identify intervention functions and (3) select content and implementation options. A circular development process was undertaken by the research team to collectively design the intervention in accordance with the steps recommended by the BCW. Results: The BCW design process resulted in the selection of six intervention functions (education, persuasion, incentivization, training, modelling, enablement) and 18 behaviour change techniques delivered via group-based, face-to-face mode. Behaviour change technique groupings include: goals and planning; feedback and monitoring; social support; shaping knowledge; natural consequences; comparison of behaviour; associations; comparison of outcomes; reward and threat; identity; and, self-belief. Conclusions: The BCW process allowed an in-depth consideration of the target behaviours and provided a systematic framework for developing the intervention. The feasibility and preliminary efficacy of the programme will be examined. (c) 2018 The Royal Society for Public Health. Published by Elsevier Ltd. All rights reserved.

Nabec, L. (2017). "Improving dietary behaviour with nutrition labelling: Towards a research agenda that serves consumer well-being." *Recherche Et Applications En Marketing-English Edition* 32(2): 71-97.

The nutrition labelling on food products represents a major challenge for the public authorities: to improve the dietary behaviour of consumers. This article provides an overview of current knowledge on this issue and invites marketing researchers to consider the contributions of transformative consumer research (TCR) as part of a new research agenda. It aims to understand the effects of nutrition labelling on the food well-being of consumers in light of the specific features of their social, cultural and societal context.

Nadler, M. B., et al. (2019). "Moving Cancer Care Ontario's Exercise for People with Cancer guidelines into oncology practice: using the Theoretical Domains Framework to validate a questionnaire." *Supportive Care in Cancer* 27(6): 1965-1968.

Evidence supporting the benefits of exercise surrounding cancer treatment has led to internationally published guidelines, with minimal uptake by oncology care providers (OCPs). There is a need to understand how to implement research evidence into practice. Our team developed a questionnaire to assess OCPs' knowledge of exercise guidelines and barriers/facilitators to exercise counseling and program referral. We validated the questionnaire using the Theoretical Domains Framework, a knowledge translation (KT) framework used to implement evidence-based guidelines into practice. In this commentary, we describe this process and the rationale for integrating a KT framework into intervention development and implementation in oncology practice. The revised questionnaire, entitled *Clinicians Perspectives on Exercise in Patients with Cancer (CliPEC)*, is shared to facilitate the implementation process and allow for comparison across oncology practices.

Napier, A. D., et al. (2014). "Culture and health." *Lancet* 384(9954): 1607-1639.

Nash, R., et al. (2018). "HealthLit4Kids study protocol; crossing boundaries for positive health literacy outcomes." *Bmc Public Health* 18.

Background: Health attitudes and behaviours formed during childhood greatly influence adult health patterns. This paper describes the research and development protocol for a school-based health literacy program. The program, entitled HealthLit4Kids, provides teachers with the resources and supports them to explore the concept of health literacy within their school community, through classroom activities and family and community engagement. Methods: HealthLit4Kids is a sequential mixed methods design involving convenience sampling and pre and post intervention measures from multiple sources. Data sources include individual teacher health literacy knowledge, skills and experience; health literacy responsiveness of the school environment (HeLLO Tas); focus groups (parents and teachers); teacher reflections; workshop data and evaluations; and children's health literacy artefacts and descriptions. The HealthLit4Kids protocol draws explicitly on the eight Ophelia principles: outcomes focused, equity driven, co-designed, needs-diagnostic, driven by local wisdom, sustainable, responsive, systematically applied. By influencing on two levels: (1) whole school community; and (2) individual classroom, the HealthLit4Kids program ensures a holistic approach to health literacy, raised awareness of its importance and provides a deeper exploration of health literacy in the school environment. The school-wide health literacy assessment and resultant action plan generates the annual health literacy targets for each participating school. Discussion: Health promotion cannot be meaningfully achieved in isolation from health literacy. Whilst health promotion activities are common in the school environment, health literacy is not a familiar concept HealthLit4Kids recognizes that a one-size fits all approach seldom works to address health literacy. Long-term health outcomes are reliant on embedded, locally owned and co-designed programs which respond to local health and health literacy needs.

Nasstrom, A., et al. (2019). "The implementation of a decision-tree did not increase decision-making in patients with temporomandibular disorders in the public dental health service." *Acta Odontologica Scandinavica* 77(5): 394-399.

Objective: Many patients with temporomandibular disorders (TMD) seem to go undetected within primary dental health care. Primarily we evaluated if the implemented intervention increased the clinical decision-making for TMD patients; secondarily we evaluated if other factors could be identified that predicted performed or recommended TMD treatment. Material and Methods: This case-control study was carried out within the Public Dental Health service in Vasterbotten County, Sweden. An intervention based on a decision-tree with three screening questions for TMD (3Q/TMD) was implemented during 2015 in four clinics and compared with the remaining county. A total of 400 individuals were selected-200 3Q-positives and 200 3Q-negatives. The 3Q/TMD consists of Q1-frequent jaw pain, Q2-frequent pain on function, and Q3-frequent catching and/or locking of jaw. The 3Q/TMD answers were analyzed in relation to TMD treatment and any TMD related decision that was collected from the digital dental records. Results: The intervention did not increase the frequencies of traceable clinical decisions among patients with TMD. Conclusions: Despite the implemented intervention aimed, the indicated undertreatment of patients with TMD remains. Future studies are still needed to gain a deeper understanding of the clinical decision-making process for TMD patients in general practice dentistry.

Neil, S., et al. (2016). "Applying theories of health behaviour and change to hearing health research: Time for a new approach." *International Journal of Audiology* 55: S99-S104.

Objective: In recent years, there has been an increase in the application of behavioural models, such as social cognition models, to the promotion of hearing health. Despite this, there exists a well-developed body of literature that suggests such models may fail to consistently explain reliable amounts of variability in human behaviours. Design: This

paper provides a summary of this research across selected models of health-related behaviour, outlining the current state of the evidence. Results: Recent work in the field of behaviour change is presented together with commentary on the design and reporting of behaviour change interventions. Conclusions: We propose that attempts to use unreliable models to explain and predict hearing health behaviours should now be replaced by work which integrates the latest in behaviour change science, such as the Behaviour Change Wheel and Theoretical Domains Framework.

Neubeck, L., et al. (2015). "The mobile revolution-using smartphone apps to prevent cardiovascular disease." *Nature Reviews Cardiology* 12(6): 350-360.

Cardiovascular disease (CVD) is the leading cause of morbidity and mortality globally. Mobile technology might enable increased access to effective prevention of CVDs. Given the high penetration of smartphones into groups with low socioeconomic status, health-related mobile applications might provide an opportunity to overcome traditional barriers to cardiac rehabilitation access. The huge increase in low-cost health-related apps that are not regulated by health-care policy makers raises three important areas of interest. Are apps developed according to evidenced-based guidelines or on any evidence at all? Is there any evidence that apps are of benefit to people with CVD? What are the components of apps that are likely to facilitate changes in behaviour and enable individuals to adhere to medical advice? In this Review, we assess the current literature and content of existing apps that target patients with CVD risk factors and that can facilitate behaviour change. We present an overview of the current literature on mobile technology as it relates to prevention and management of CVD. We also evaluate how apps can be used throughout all age groups with different CVD prevention needs.

Neupert, E. C., et al. (2019). "Training-Monitoring Engagement: An Evidence-Based Approach in Elite Sport." *International Journal of Sports Physiology and Performance* 14(1): 99-104.

Purpose: Poor athlete buy-in and adherence to training-monitoring systems (TMS) can be problematic in elite sport. This is a significant issue, as failure to record, interpret, and respond appropriately to negative changes in athlete well-being and training status may result in undesirable consequences such as maladaptation and/or underperformance. This study examined the perceptions of elite athletes to their TMS and their primary reasons for noncompletion. Methods: Nine national-team sprint athletes participated in semistructured interviews on their perceptions of their TMS. Interview data were analyzed qualitatively, based on grounded theory, and TMS adherence information was collected. Results: Thematic analysis showed that athletes reported their main reason for poor buy-in to TMS was a lack of feedback on their monitoring data from key staff. Furthermore, training modifications made in response to meaningful changes in monitoring data were sometimes perceived to be disproportionate, resulting in dishonest reporting practices. Conclusions: Perceptions of opaque or unfair decision making on training-program modifications and insufficient feedback were the primary causes for poor athlete TMS adherence. Supporting TMS implementation with a behavioral-change model that targets problem areas could improve buy-in and enable limited resources to be appropriately directed.

Newby, K. V., et al. (2017). "Development of an Intervention to Increase Sexual Health Service Uptake by Young People." *Health Promotion Practice* 18(3): 391-399.

This study aimed to develop and implement an intervention, delivered via a website and Web app, to increase the uptake of sexual health services by young people. The intervention was co-designed with a group of 10 young people. Intervention mapping was used to guide development. To identify barriers and facilitators of access to sexual health services, three focus groups with 24 young people aged 13 to 19 years, and interviews with 12 professionals recruited from across a range of health and social services, were conducted. Data were analyzed using content analysis. Evidence was supplemented through a literature review. Barriers and facilitators were categorized as theoretical determinants and then suitable behavior change techniques (BCTs) for targeting them were selected. Targeted determinants were attitude, subjective norm, perceived behavioral control, and knowledge. Selected BCTs included information about others' approval, framing/reframing, and credible source. The website/app enable users to search for services, access key information about them, watch videos about what to expect, and have key concerns removed/addressed. This is the first known digital evidence-based intervention to target this behavior described in the literature. A clear and full description of intervention development and content, including of theorized causal pathways, is provided to aid interpretation of future outcome evaluations.

Newby, K. V., et al. (2013). "Increasing young adults' condom use intentions and behaviour through changing chlamydia risk and coping appraisals: study protocol for a cluster randomised controlled trial of efficacy." *Bmc Public Health* 13.

Background: Chlamydia is the most commonly diagnosed sexually transmitted infection (STI) in England and has serious public health consequences. Young people carry a disproportionate burden of infection. A number of social cognition models identify risk appraisal as a primary motivator of behaviour suggesting that changing risk appraisals for STIs may be an effective strategy in motivating protective behaviour. Meta-analytic evidence indicates that the

relationship between risk appraisal and health behaviour is small, but studies examining this relationship have been criticised for their many conceptual and methodological weaknesses. The effect of risk appraisal on health behaviour may therefore be of larger size. The proposed study aims to examine the efficacy of an intervention to increase condom use intentions and behaviour amongst young people through changing chlamydia risk and coping appraisals. Coping appraisal is targeted to avoid the intervention being counterproductive amongst recipients who do not feel able to perform the behaviour required to reduce the threat. An experimental design with follow-up, a conditional measure of risk appraisal, and analysis which controls for past behaviour, enable the relationship between risk appraisal and protective behaviour to be accurately assessed. **Methods/Design:** The proposed study is a two-arm cluster randomised controlled trial using a waiting-list control design to test the efficacy of the intervention compared to a control group. Participants will be school pupils aged 13-16 years old recruited from approximately ten secondary schools. Schools will be randomised into each arm. Participants will receive their usual teaching on STIs but those in the intervention condition will additionally receive a single-session sex education lesson on chlamydia. Measures will be taken at baseline, post-intervention and at follow-up three months later. The primary outcome measure is intention to use condoms with casual sexual partners. **Discussion:** As far as the authors are aware, this is the first controlled trial testing the efficacy of an intervention to increase condom use intentions and behaviour through changing chlamydia risk appraisals. It is one of few experimental studies to accurately test the relationship between risk appraisal and precautionary sexual behaviour using a conditional measure of risk appraisal and controlling for past behaviour.

Newham, R., et al. (2015). "Barriers to the safe and effective use of intravenous gentamicin and vancomycin in Scottish hospitals, and strategies for quality improvement." *European Journal of Hospital Pharmacy-Science and Practice* 22(1): 32-37.

Objectives Avoiding harm when patients interact with healthcare services is a global issue. Guidelines are often produced to improve the prescribing and monitoring of medication with a narrow therapeutic index. Adherence to guidelines may not occur in clinical practice. This paper aims to explore the barriers faced by clinical pharmacists and junior doctors when using complex guidelines to support the prescribing and therapeutic drug monitoring of gentamicin and vancomycin. **Methods** Twenty-three junior doctors and 27 clinical pharmacists took part in focus groups at four hospital sites in four Scottish health boards between March and July 2011. Focus groups were run separately at each hospital site for the two clinical groups. The data were organised using the framework approach, validated, and a thematic analysis was conducted. **Results** Five themes emerged to explain barriers to effective initial prescribing and therapeutic drug monitoring, which were divided into two types. Barriers could be a direct result of the content of the guidelines specifically that clinicians required experience to use the guidelines effectively. Barriers also resulted from a failure in the context in which the guidelines function which was related to insufficient dissemination, communication issues within the hospital site, unmet educational needs and staffing issues. **Conclusions** Improved patient safety cannot be assumed due to the existence of gentamicin and vancomycin guidelines. The findings of this study highlight the complexities associated with their appropriate use. Future quality improvement strategies must consider where the guidelines will be implemented, and the context in which they will function.

Newlands, R. S., et al. (2018). "Quality improvement of community pharmacy services: a prioritisation exercise." *International Journal of Pharmacy Practice* 26(1): 39-48.

Objectives Effective strategies are needed to translate knowledge (evidence) into practice to improve the quality of community pharmacy services. We report the first step of a novel knowledge translation process which involved the systematic identification and prioritisation of community pharmacy services in Scotland which were perceived to require improvement and/or guideline development. **Methods** This process involved three stages and a stakeholder group comprising community pharmacists, policy makers, lay and pharmacy organisation representatives. A modified nominal group technique (NGT) was used for topic generation (August 2013) followed by an electronic Delphi survey (eDelphi), (October-December 2013) and topic rationalisation (December 2013) based on feasibility, acceptability, and potential impact for practice improvement. **Key findings** In total, 63 items were identified during the modified NGT which were categorised into 20 topics to form the starting point of the eDelphi. In total, 74 individuals (mostly community pharmacists) indicated an interest in the eDelphi, which achieved response rates of 63.5%, 67.6%, and 70.3%, respectively in Rounds 1, 2, and 3. Consensus was achieved with six topics: promoting the appropriate sale and supply of over-the-counter medicines; patient counselling for prescribed medication; pharmaceutical care to promote medication adherence; promotion and delivery of a Minor Ailment Scheme; pharmaceutical care of vulnerable patients; and effective use of community pharmacy workforce. Of these, the priority topic selected for the next stage of the programme was promoting the appropriate sale and supply of over-the-counter medicines. **Conclusions** This study adopted a systematic, inclusive, and rapid approach to identify priorities for community pharmacy practice improvement in Scotland.

Newton, J. T. and K. Asimakopoulou (2015). "Managing oral hygiene as a risk factor for periodontal disease: a systematic review of psychological approaches to behaviour change for improved plaque control in periodontal management." *Journal of Clinical Periodontology* 42: S36-S46.

Background Plaque control in patients with periodontal disease is critically dependent upon self-care through specific oral hygiene-related behaviours. **Objectives** To determine the relationship between adherence to oral hygiene instructions in adult periodontal patients and psychological constructs. To determine the effect of interventions based on psychological constructs on oral health-related behaviour in adult periodontal patients. **Data Sources** The Cochrane Oral Health Group's Trials Register, MEDLINE, EMBASE and PsycINFO. **Study Appraisal and Synthesis Methods** Studies were grouped according to the study design, and appraised using an appropriate methodology, either the Newcastle-Ottawa assessment for observational studies, or the Cochrane criteria for trials. **Results** Fifteen reports of studies were identified. **Limitations** There was a low risk of bias identified for the observational studies. Older trials suffered from high risk of bias, but more recent trials had low risk of bias. However, the specification of the psychological intervention was generally poor. **Conclusions and Implications of Key Findings** The use of goal setting, self-monitoring and planning are effective interventions for improving oral hygiene-related behaviour in patients with periodontal disease. Understanding the benefits of behaviour change and the seriousness of periodontal disease are important predictors of the likelihood of behaviour change.

Newton, J. T. and K. Asimakopoulou (2017). "Minimally invasive dentistry: Enhancing oral health related behaviour through behaviour change techniques." *British Dental Journal* 223(3): 147-150.

Enhancing patients' oral health related behaviour is a critical component of the preventive approach which is central to the practice of minimally invasive dentistry. The first step in the process of behaviour change is creating capability to change behaviour through the provision of information and guidance. The second step involves enhancing the motivation to change through emphasising the benefits of behaviour change and emphasising the individual patients' susceptibility or risk of oral disease. The third step seeks to put motivation into action through creating opportunities to practice oral health behaviour. Planning interventions are one approach to achieving this. This article outlines the techniques for carrying out these steps in practice.

Newton, J. T. and K. Asimakopoulou (2018). "Behavioral models for periodontal health and disease." *Periodontology* 2000 78(1): 201-211.

Ng, B. J., et al. (2018). "Deprescribing Benzodiazepines in Older Patients: Impact of Interventions Targeting Physicians, Pharmacists, and Patients." *Drugs & Aging* 35(6): 493-521.

Benzodiazepines (BZDs; including the related Z-drugs) are frequently targets for deprescribing; long-term use in older people is harmful and often not beneficial. BZDs can result in significant harms, including falls, fractures, cognitive impairment, car crashes and a significant financial and legal burden to society. Deprescribing BZDs is problematic due to a complex interaction of drug, patient, physician and systematic barriers, including concern about a potentially distressing but rarely fatal withdrawal syndrome. Multiple studies have trialled interventions to deprescribe BZDs in older people and are discussed in this narrative review. Reported success rates of deprescribing BZD interventions range between 27 and 80%, and this variability can be attributed to heterogeneity of methodological approaches and limited generalisability to cognitively impaired patients. Interventions targeting the patient and/or carer include raising awareness (direct-to-consumer education, minimal interventions, and 'one-off' geriatrician counselling) and resourcing the patient (gradual dose reduction [GDR] with or without cognitive behavioural therapy, teaching relaxation techniques, and sleep hygiene). These are effective if the patient is motivated to cease and is not significantly cognitively impaired. Interventions targeted to physicians include prescribing interventions by audit, algorithm or medication review, and providing supervised GDR in combination with medication substitution. Pharmacists have less frequently been the targets for studies, but have key roles in several multifaceted interventions. Interventions are evaluated according to the Behaviour Change Wheel. Research supports trialling a stepwise approach in the cognitively intact older person, but having a low threshold to use less-consultative methods in patients with dementia. Several resources are available to support deprescribing of BZDs in clinical practice, including online protocols.

Ni She, E. N., et al. (2019). "Clarifying the mechanisms and resources that enable the reciprocal involvement of seldom heard groups in health and social care research: A collaborative rapid realist review process." *Health Expectations* 22(3): 298-306.

Objective Public and patient involvement is increasingly embedded as a core activity in research funding calls and best practice guidelines. However, there is recognition of the challenges that prevail to achieve genuine and equitable forms of engagement. Our objective was to identify the mechanisms and resources that enable the reciprocal involvement of seldom heard groups in health and social care research. **Methods** A rapid realist review of the literature

that included: (a) a systematic search of CINAHL, PsycINFO, PubMed and Open Grey (2007-2017); (b) documents provided by expert panel members of relevant journals and grey literature. Six reference panels were undertaken with homeless, women's, transgender, disability and Traveller and Roma organizations to capture local insights. Data were extracted into a theory-based grid linking context to behaviour change policy categories. Main results From the review, 20 documents were identified and combined with the reference panel summaries. The expert panel reached consensus about 33 programme theories. These relate to environmental and social planning (7); service provision (6); guidelines (4); fiscal measures (6); communication and marketing (4); and regulation and legislation (6). Conclusions While there is growing evidence of the merits of undertaking PPI, this rarely extends to the meaningful involvement of seldom heard groups. The 33 programme theories agreed by the expert panel point to a variety of mechanisms and resources that need to be considered. Many of the programme theories identified point to the need for a radical shift in current practice to enable the reciprocal involvement of seldom heard groups.

Nilsen, P. (2015). "Making sense of implementation theories, models and frameworks." *Implementation Science* 10.

Background: Implementation science has progressed towards increased use of theoretical approaches to provide better understanding and explanation of how and why implementation succeeds or fails. The aim of this article is to propose a taxonomy that distinguishes between different categories of theories, models and frameworks in implementation science, to facilitate appropriate selection and application of relevant approaches in implementation research and practice and to foster cross-disciplinary dialogue among implementation researchers. Discussion: Theoretical approaches used in implementation science have three overarching aims: describing and/or guiding the process of translating research into practice (process models); understanding and/or explaining what influences implementation outcomes (determinant frameworks, classic theories, implementation theories); and evaluating implementation (evaluation frameworks). Summary: This article proposes five categories of theoretical approaches to achieve three overarching aims. These categories are not always recognized as separate types of approaches in the literature. While there is overlap between some of the theories, models and frameworks, awareness of the differences is important to facilitate the selection of relevant approaches. Most determinant frameworks provide limited "how-to" support for carrying out implementation endeavours since the determinants usually are too generic to provide sufficient detail for guiding an implementation process. And while the relevance of addressing barriers and enablers to translating research into practice is mentioned in many process models, these models do not identify or systematically structure specific determinants associated with implementation success. Furthermore, process models recognize a temporal sequence of implementation endeavours, whereas determinant frameworks do not explicitly take a process perspective of implementation.

Niven, A. and D. Hu (2018). "Office workers' beliefs about reducing sitting time at work: a belief elicitation study." *Health Psychology and Behavioral Medicine* 6(1): 15-29.

Objectives: Prolonged sitting has adverse health consequences, yet office workers can spend over 10 hours sitting each day. The Theory of Planned Behaviour may offer a useful perspective for understanding and enhancing psychological determinants of sitting at work. The aim of this belief elicitation study was to identify office workers' most salient beliefs relating to achieving the recently published Public Health England recommendation of accumulating at least two hours per day of standing and light activity at work. Methods: Full-time office-based workers (n = 105) responded to our invitation on Twitter to complete an on-line questionnaire. Participants responded to six open-ended questions about their behavioural (i.e. advantages/disadvantages), normative (i.e. who would approve/disapprove), and control (i.e. easy/difficult) beliefs relating to the target behaviour, and the data were content analysed to identify the most salient themes. Results: The most salient advantage of the behaviour was better health (n = 243), and most salient disadvantage was decreased work productivity (n = 64). Participants believed that people in work with a remit for health (n = 34) were likely to approve of the behaviour, but that managers (n = 68) would be likely to disapprove. It was believed that a better physical environment (n = 75) would make it easier, and work demands (n = 102) would make it difficult to execute the behaviour. Conclusions: Although participants recognised many benefits of engaging in the behaviour, there was consistent evidence that participants believed the behaviour may have implications for working effectively, and would be influenced by the physical environment and work culture. Interventions should target these salient beliefs.

Norcini, J., et al. (2018). "2018 Consensus framework for good assessment." *Medical Teacher* 40(11): 1102-1109.

Introduction: In 2010, the Ottawa Conference produced a set of consensus criteria for good assessment. These were well received and since then the working group monitored their use. As part of the 2010 report, it was recommended that consideration be given in the future to preparing similar criteria for systems of assessment. Recent developments in the field suggest that it would be timely to undertake that task and so the working group was reconvened, with changes in membership to reflect broad global representation. Methods: Consideration was given to whether the initially proposed criteria continued to be appropriate for single assessments and the group believed that

they were. Consequently, we reiterate the criteria that apply to individual assessments and duplicate relevant portions of the 2010 report. Results and discussion: This paper also presents a new set of criteria that apply to systems of assessment and, recognizing the challenges of implementation, offers several issues for further consideration. Among these issues are the increasing diversity of candidates and programs, the importance of legal defensibility in high stakes assessments, globalization and the interest in portable recognition of medical training, and the interest among employers and patients in how medical education is delivered and how progression decisions are made.

Noremark, M., et al. (2016). "Swedish Farmers' Opinions about Biosecurity and Their Intention to Make Professionals Use Clean Protective Clothing When Entering the Stable." *Frontiers in Veterinary Science* 3.

The study was part of a series of studies aiming to increase knowledge about spread and prevention of livestock diseases in Sweden. A specific biosecurity behavior, i.e., making professionals (e.g., veterinarian, repairman, livestock transporter) wear clean protective clothing when entering the stables was investigated through focus groups and a questionnaire survey. This behavior was seen as a proxy for other biosecurity behaviors. As part of questionnaire development, three focus group discussions with a total of 11 participating livestock farmers were held. The questionnaire was based on the model of Theory of Planned Behavior. Response was received from 2,081 farmers. In the focus groups, farmers expressed a willingness to provide visitors with clean protective clothing. However, some had experienced difficulties in making veterinarians use protective clothing, and mentioned a reluctance to correct their veterinarians. The participants mostly focused on diseases regulated by control programs, especially Salmonella. In parts, participants were well informed but some showed a lack of knowledge concerning routes of disease spread. They also mentioned external factors that made them deviate from biosecurity recommendations. Farmers called for biosecurity advice with focus on cost-benefit return. Among survey respondents, the intention to make visitors wear protective clothing was moderate. Analysis of underlying elements showed that a majority of farmers (88%) had a neutral attitude, i.e., they were neither in favor nor against this behavior. Measures of subjective norm indicated a varying degree of social pressure among respondents. However, the majority (63%) indicated a strong behavioral control, thus suggesting that they could make visitors use protective clothing if they wanted to. Although most farmers (84%) indicated a strong willingness to comply with the opinion of their veterinarians in biosecurity matters, 30% replied that their farm veterinarian is indifferent or negative toward making visitors use protective clothing. Demographic factors were significantly associated with the intention, and farmers with pigs, larger herds, and female farmers had a stronger intention. Regional differences were also found. The findings provide new insights into why farmers apply, or do not apply, biosecurity routines, and will be useful in the on-going work to improve farm biosecurity in Sweden.

Norris, E., et al. (2016). "Protocol for the 'Virtual Traveller' cluster-randomised controlled trial: a behaviour change intervention to increase physical activity in primary-school Maths and English lessons." *Bmj Open* 6(6).

Introduction Physical activity (PA) has been shown to be an important factor for health and educational outcomes in children. However, a large proportion of children's school day is spent in sedentary lesson-time. There is emerging evidence about the effectiveness of physically active lessons: integrating physical movements and educational content in the classroom. Virtual Traveller' is a novel 6-week intervention of 10-min sessions performed 3 days per week, using classroom interactive whiteboards to integrate movement into primary-school Maths and English teaching. The primary aim of this project is to evaluate the effect of the Virtual Traveller intervention on children's PA, on-task behaviour and student engagement. Methods and analysis This study will be a cluster-randomised controlled trial with a waiting-list control group. Ten year 4 (aged 8-9 years) classes across 10 primary schools will be randomised by class to either the 6-week Virtual Traveller intervention or the waiting-list control group. Data will be collected 5 times: at baseline, at weeks 2 and 4 of the intervention, and 1 week and 3 months post-intervention. At baseline, anthropometric measures, 4-day objective PA monitoring (including 2 weekend days; Actigraph accelerometer), PA and on-task behaviour observations and student engagement questionnaires will be performed. All but anthropometric measures will be repeated at all other data collection points. Changes in overall PA levels and levels during different time-periods (eg, lesson-time) will be examined. Changes in on-task behaviour and student engagement between intervention groups will also be examined. Multilevel regression modelling will be used to analyse the data. Process evaluation will be carried out during the intervention period. Ethics and dissemination The results of this study will be disseminated through peer-review publications and conference presentations. Ethical approval was obtained through the University College London Research Ethics Committee (reference number: 3500-004).

Norris, J. M., et al. (2017). "How do stakeholders from multiple hierarchical levels of a large provincial health system define engagement? A qualitative study." *Implementation Science* 12.

Background: Engaging stakeholders from varied organizational levels is essential to successful healthcare quality improvement. However, engagement has been hard to achieve and to measure across diverse stakeholders. Further, current implementation science models provide little clarity about what engagement means, despite its importance. The

aim of this study was to understand how stakeholders of healthcare improvement initiatives defined engagement. **Methods:** Participants (n = 86) in this qualitative thematic study were purposively sampled for individual interviews. Participants included leaders, core members, frontline clinicians, support personnel, and other stakeholders of Strategic Clinical Networks in Alberta Health Services, a Canadian provincial health system with over 108,000 employees. We used an iterative thematic approach to analyze participants' responses to the question, "How do you define engagement?" **Results:** Regardless of their organizational role, participants defined engagement through three interrelated themes. First, engagement was active participation from willing and committed stakeholders, with levels that ranged from information sharing to full decision-making. Second, engagement centered on a shared decision-making process about meaningful change for everyone "around the table," those who are most impacted. Third, engagement was two-way interactions that began early in the change process, where exchanges were respectful and all stakeholders felt heard and understood. **Conclusions:** This study highlights the commonalities of how stakeholders in a large healthcare system defined engagement—a shared understanding and terminology—to guide and improve stakeholder engagement. Overall, engagement was an active and committed decision-making about a meaningful problem through respectful interactions and dialog where everyone's voice is considered. Our results may be used in conjunction with current implementation models to provide clarity about what engagement means and how to engage various stakeholders.

Nour, M. M., et al. (2018). "Exploring young adult perspectives on the use of gamification and social media in a smartphone platform for improving vegetable intake." *Appetite* 120: 547-556.

Young adults are the poorest consumers of vegetables. Social media and smartphones are frequently used by this demographic and could serve as an engaging medium for nutrition promotion. Five focus groups were conducted to capture participants' perceptions of a theory-based gamified self-monitoring app for improving vegetable intake of young adults. Ranking activities were used to gather feedback on preferences for social media posts. Data arising from group discussion were analysed using NVivo software using a deductive approach to group common ideas into themes. Thirty two participants (14 males) attended (mean age 23.1 (SD 2.7) years). Qualitative analyses of open discussion revealed two major themes regarding preferred features for a smartphone app; (1) the use of visual guides for estimating quantities of vegetables and tracking progress, and (2) a simple interface. Gamification strategies such as earning badges were viewed more positively than the use of a self-reward framework. Social media posts which presented food pictures and recipes were ranked most motivating, while awareness raising posts received lower scores. Participants indicated a preference for viewing but reluctance to post information onto social media. "Just in time" situational cues were ranked highly and the use of an "authoritative" tone was preferred and associated with credibility. Young adults also ranked messages containing "Gen Y" language highly, with a preference for those which were personally relevant. The proposed use of social media and mobile-gaming was seen as an acceptable approach for improving vegetable intake. Materials should be visually appealing, simply designed, credible, and personally relevant to appeal to this population. This feedback may inform future mobile-phone based interventions targeting improved nutrition in young adults. (C) 2017 Elsevier Ltd. All rights reserved.

O'Brien, M. C., et al. (2015). "Let's talk about health: shoppers' discourse regarding health while food shopping." *Public Health Nutrition* 18(6): 1001-1010.

Objective: The present study aimed to examine the role of health in consumers' food purchasing decisions through investigating the nature of people's discourse regarding health while conducting their food shopping. **Design:** The study employed the think-aloud technique as part of an accompanied shop. All mentions of health and terms relating to health were identified from the data set. **Inductive thematic analysis** was conducted to examine how health was talked about in relation to people's food choice decisions. **Setting:** Supermarkets in Dublin, Republic of Ireland and Belfast, Northern Ireland. **Subjects:** Participants (n 50) were aged over 18 years and represented the main household shopper. **Results:** Responsibility for others and the perceived need to illicit strict control to avoid 'unhealthy' food selections played a dominant role in how health was talked about during the accompanied shop. Consequently healthy shopping was viewed as difficult and effort was required to make the healthy choice, with shoppers relating to product-based inferences to support their decisions. **Conclusions:** This qualitative exploration has provided evidence of a number of factors influencing the consideration of health during consumers' food shopping. These results highlight opportunities for stakeholders such as public health bodies and the food industry to explore further ways to help enable consumers make healthy food choices.

O'Connell, S. E., et al. (2015). "Providing NHS staff with height-adjustable workstations and behaviour change strategies to reduce workplace sitting time: protocol for the Stand More AT (SMaRT) Work cluster randomised controlled trial." *Bmc Public Health* 15.

Background: High levels of sedentary behaviour (i.e., sitting) are a risk factor for poor health. With high levels of sitting widespread in desk-based office workers, office workplaces are an appropriate setting for interventions aimed at

reducing sedentary behaviour. This paper describes the development processes and proposed intervention procedures of Stand More AT (SMaRT) Work, a multi-component randomised control (RCT) trial which aims to reduce occupational sitting time in desk-based office workers within the National Health Service (NHS). Methods/Design: SMaRT Work consists of 2 phases: 1) intervention development: The development of the SMaRT Work intervention takes a community-based participatory research approach using the Behaviour Change Wheel. Focus groups will collect detailed information to gain a better understanding of the most appropriate strategies, to sit alongside the provision of height-adjustable workstations, at the environmental, organisational and individual level that support less occupational sitting. 2) intervention delivery and evaluation: The 12 month cluster RCT aims to reduce workplace sitting in the University Hospitals of Leicester NHS Trust. Desk-based office workers ($n = 238$) will be randomised to control or intervention clusters, with the intervention group receiving height-adjustable workstations and supporting techniques based on the feedback received from the development phase. Data will be collected at four time points; baseline, 3, 6 and 12 months. The primary outcome is a reduction in sitting time, measured by the activPAL (TM) micro at 12 months. Secondary outcomes include objectively measured physical activity and a variety of work-related health and psycho-social measures. A process evaluation will also take place. Discussion: This study will be the first long-term, evidence-based, multi-component cluster RCT aimed at reducing occupational sitting within the NHS. This study will help form a better understanding and knowledge base of facilitators and barriers to creating a healthier work environment and contribute to health and wellbeing policy.

O'Connor, C. M., et al. (2019). "The tailored activity program (TAP) to address behavioral disturbances in frontotemporal dementia: a feasibility and pilot study." *Disability and Rehabilitation* 41(3): 299-310.

Purpose: To explore the feasibility of implementing the Tailored Activity Program with a cohort of people with frontotemporal dementia and their carers (dyads). Methods: The Tailored Activity Program is an occupational therapy based intervention that involves working collaboratively with family carers and prescribes personalized activities for behavioral management in people with dementia. Twenty dyads randomized into the study (Tailored Activity Program: $n = 9$; Control: $n = 11$) were assessed at baseline and 4-months. Qualitative analyzes evaluated feasibility and acceptability of the program for the frontotemporal dementia cohort, and quantitative analyzes (linear mixed model analyzes, Spearman's rho correlations) measured the impact of the program on the dyads. Results: The Tailored Activity Program was an acceptable intervention for the frontotemporal dementia dyads. Qualitative analyses identified five themes: "carer perceived benefits", "carer readiness to change", "strategies used by carer to engage person with dementia", "barriers to the Tailored Activity Program uptake/implementation", and "person with dementia engagement". Quantitative outcomes showed an overall reduction of behavioral symptoms ($F_{18,34} = 8.073$, $p = 0.011$) and maintenance of functional performance in the person with dementia ($F_{18,03} = 0.375$, $p = 0.548$). Conclusions: This study demonstrates the potential for using an activity-based intervention such as the Tailored Activity Program in frontotemporal dementia. Service providers should recognize that while people with frontotemporal dementia present with challenging issues, tailored therapies may support their function and reduce their behavioral symptoms.

O'Connor, P., et al. (2016). "A mixed-methods study of the causes and impact of poor teamwork between junior doctors and nurses." *International Journal for Quality in Health Care* 28(3): 339-345.

Objectives: This study aimed to collect and analyse examples of poor teamwork between junior doctors and nurses; identify the teamwork failures contributing to poor team function; and ascertain if particular teamwork failures are associated with higher levels of risk to patients. Design: Critical Incident Technique interviews were carried out with junior doctors and nurses. Setting: Two teaching hospitals in the Republic of Ireland. Participants: Junior doctors ($n = 28$) and nurses ($n = 8$) provided descriptions of scenarios of poor teamwork. The interviews were coded against a theoretical framework of healthcare team function by three psychologists and were also rated for risk to patients by four doctors and three nurses. Results: A total of 33 of the scenarios met the inclusion criteria for analysis. A total of 63.6% (21/33) of the scenarios were attributed to 'poor quality of collaboration', 42.4% (14/33) to 'poor leadership' and 48.5% (16/33) to a 'lack of coordination'. A total of 16 scenarios were classified as high risk and 17 scenarios were classified as medium risk. Significantly more of the high-risk scenarios were associated with a 'lack of a shared mental model' (62.5%, 10/16) and 'poor communication' (50.0%, 8/16) than the medium-risk scenarios (17.6%, 3/17 and 11.8%, 2/17, respectively). Conclusion: Poor teamwork between junior doctors and nurses is common and places patients at considerable risk. Addressing this problem requires a well-designed complex intervention to develop the team skills of doctors and nurses and foster a clinical environment in which teamwork is supported.

O'Doherty, L., et al. (2016). "Receiving care for intimate partner violence in primary care: Barriers and enablers for women participating in the weave randomised controlled trial." *Social Science & Medicine* 160: 35-42.

Background: Interventions in health settings for intimate partner violence (IPV) are being increasingly recognised as part of a response to addressing this global public health problem. However, interventions targeting this sensitive

social phenomenon are complex and highly susceptible to context. This study aimed to elucidate factors involved in women's uptake of a counselling intervention delivered by family doctors in the weave primary care trial (Victoria, Australia). Methods: We analysed associations between women's and doctors' baseline characteristics and uptake of the intervention. We interviewed a random selection of 20 women from an intervention group women to explore cognitions relating to intervention uptake. Interviews were audio-recorded, transcribed, coded in NVivo 10 and analysed using the theory of planned behaviour (TPB). Results: Abuse severity and socio-demographic characteristics (apart from current relationship status) were unrelated to uptake of counselling (67/137 attended sessions). Favourable doctor communication was strongly associated with attendance. Eight themes emerged, including four sets of beliefs that influenced attitudes to uptake: (i) awareness of the abuse and readiness for help; (ii) weave as an avenue to help; (iii) doctor's communication; and (iv) role in providing care for IPV; and four sets of beliefs regarding women's control over uptake: (v) emotional health, (vi) doctors' time, (vii) managing the disclosure process and (viii) viewing primary care as a safe option. Conclusions: This study has identified factors that can promote the implementation and evaluation of primary care-based IPV interventions, which are relevant across health research settings, for example, ensuring fit between implementation strategies and characteristics of the target group (such as range in readiness for intervention). On practice implications, providers' communication remains a key issue for engaging women. A key message arising from this work concerns the critical role of primary care and health services more broadly in reaching victims of domestic violence, and providing immediate and ongoing support (depending on the healthcare context). (C) 2016 Elsevier Ltd. All rights reserved.

O'Donnell, E., et al. (2017). "Participatory simulation modelling to inform public health policy and practice: Rethinking the evidence hierarchies." *Journal of Public Health Policy* 38(2): 203-215.

Drawing on the long tradition of evidence-based medicine that aims to improve the efficiency and effectiveness of clinical practice, the field of public health has sought to apply 'hierarchies of evidence' to appraise and synthesise public health research. Various critiques of this approach led to the development of synthesis methods that include broader evidence typologies and more 'fit for purpose' privileging of methodological designs. While such adaptations offer great utility for evidence-informed public health policy and practice, this paper offers an alternative perspective on the synthesis of evidence that necessitates a yet more egalitarian approach. Dynamic simulation modelling is increasingly recognised as a valuable evidence synthesis tool to inform public health policy and programme planning for complex problems. The development of simulation models draws on and privileges a wide range of evidence typologies, thus challenging the traditional use of 'hierarchies of evidence' to support decisions on complex dynamic problems.

O'Hara, M. C., et al. (2017). "A systematic review of interventions to improve outcomes for young adults with Type 1 diabetes." *Diabetic Medicine* 34(6): 753-769.

Background Many young adults with Type 1 diabetes experience poor outcomes. The aim of this systematic review was to synthesize the evidence regarding the effectiveness of interventions aimed at improving clinical, behavioural or psychosocial outcomes for young adults with Type 1 diabetes. Methods Electronic databases were searched. Any intervention studies related to education, support, behaviour change or health service organizational change for young adults aged between 15-30 years with Type 1 diabetes were included. A narrative synthesis of all studies was undertaken due to the large degree of heterogeneity between studies. Results Eighteen studies (of a possible 1700) were selected and categorized: Health Services Delivery (n = 4), Group Education and Peer Support (n = 6), Digital Platforms (n = 4) and Diabetes Devices (n = 4). Study designs included one randomized controlled trial, three retrospective studies, seven feasibility/acceptability studies and eight studies with a pre/post design. Continuity, support, education and tailoring of interventions to young adults were the most common themes across studies. HbA(1c) was the most frequently measured outcome, but only 5 of 12 studies that measured it showed a significant improvement. Conclusion Based on the heterogeneity among the studies, the effectiveness of interventions on clinical, behavioural and psychosocial outcomes among young adults is inconclusive. This review has highlighted a lack of high-quality, well-designed interventions, aimed at improving health outcomes for young adults with Type 1 diabetes.

O'Kelly, K., et al. (2019). "Why are we misdiagnosing urinary tract infection in older patients? A qualitative inquiry and roadmap for staff behaviour change in the emergency department." *European Geriatric Medicine* 10(4): 585-593.

Key summary points Aim This study sought to determine the psychological and behavioural factors contributing to the incorrect diagnosis of urinary tract infection in older adults and identify potential interventions that can address the incorrect diagnosis of urinary tract infection in older adults? Findings The findings were that the misdiagnosis of UTI, particularly in older people, is driven by complex, interconnected psychological and behavioural factors, such as lack of knowledge on the role of urine dip testing, bias towards older people, automatic testing, time and resource constraints, pressures from peers and patients and legal pressures. Developing interventions that address the disconnect between knowledge and practice by encompassing both psychological and behavioural factors may improve patient safety and

staff satisfaction. Messages Urine dipstick testing in the ED is often misinterpreted, leading to misdiagnosis which may then impact negatively on patient safety; the reasons this knowledge-practice disconnect exists are multi-factorial, but psychological and behavioural factors play a significant role. Systematic approaches incorporating these factors can potentially improve patient safety, efficiency, costs from unnecessary testing and staff satisfaction. Abstract Purpose The aim of this study was to identify the psychological and behavioural factors influencing clinicians managing older people with possible UTI in urgent care settings, and to develop an improvement roadmap. Methods Michie's behaviour change wheel and COM-B (Capability, Opportunity, Motivation, Behaviour Change) models were used as the theoretical basis for this study. Semi-structured interviews were undertaken with 21 purposively selected medical and nursing staff in a large urban emergency department in the East Midlands, United Kingdom. Analysis was informed by the framework approach. A participatory design approach was used to develop an improvement roadmap. Results Key themes emerging from the semi-structured interviews included lack of knowledge on the role of urine dipstick testing, bias towards older people, automatic testing, time and resource constraints, pressures from peers and patients, and fear of the legal consequences of inaction. A thematic networks map indicated complex interactions between psychological and behavioural factors. Among more than 50 different intervention ideas identified by the workshop participants, two interventions were prioritised for implementation: i) controlling the use of dip stick urine tests; ii) providing individualised feedback to staff regarding the outcomes of patients diagnosed and treated for UTI. Conclusions Psychological and behavioural factors play a significant role in the misdiagnosis of UTI in older people. Systematic approaches incorporating these factors might improve patient outcomes. Future studies should focus on implementation and evaluating their effectiveness and sustainability.

O'Malley, G., et al. (2014). "Exploring the Usability of a Mobile App for Adolescent Obesity Management." *Jmir Mhealth and Uhealth* 2(2).

Background: Obesity is a global epidemic. Behavioral change approaches towards improving nutrition, increasing physical activity level, improving sleep, and reducing sitting time are recommended as best practices in adolescent obesity management. However, access to evidence-based treatment is limited and portable technologies such as mobile apps may provide a useful platform to deliver such lifestyle interventions. No evidence-based validated app exists for obesity intervention; therefore, a novel mobile app (Reactivate) was developed for use in the Temple Street W82GO Healthy Lifestyles Program (W82GO). Objective: This study aimed to test the usability (technical effectiveness, efficiency, and user satisfaction) of the Reactivate mobile app in obese adolescents. Methods: Ten adolescents (7 males and 3 females, aged 12-17 years) who had been treated for obesity (> 98th percentile for body mass index) at the Temple Street Children's University Hospital were recruited. Participants were given 8 tasks to complete in order to test the technical effectiveness of the app. A research assistant timed the user while completing each task in order to test the relative user efficiency of the app (time-on-task). The tasks fell into 5 categories and required the user to enter personal settings, find and answer surveys, create a message, use the goal setting feature, and enter details regarding their weight and height. In exploration of user satisfaction, each participant completed the standardized software usability measurement inventory (SUMI), which measures 5 aspects of user satisfaction: efficiency, effect, helpfulness, controllability, and learnability. Descriptive statistics were used to explore the mean relative user efficiency and SUMI scores. Results: Mean age was 14.26 (SD 1.58) years. All adolescents completed each of the tasks successfully. The mean relative user efficiency scores were two to three times that of an expert user. Users responded that they would use Reactivate to monitor their growth over time, for motivation, and for goal setting. All users described Reactivate as an important mobile app. Conclusions: Our study describes the usability of a mobile app used in adolescent obesity management. Adolescents found Reactivate easy to use and their SUMI results indicated that the app scored high on user satisfaction. Usability testing is an important step towards refining the development of the Reactivate app, which can be used in the treatment of obesity. The study on the clinical efficacy of the Reactivate app is currently underway.

O'Sullivan, J. W., et al. (2016). "Written information for patients (or parents of child patients) to reduce the use of antibiotics for acute upper respiratory tract infections in primary care." *Cochrane Database of Systematic Reviews*(11).

Background Acute upper respiratory tract infections (URTIs) are frequently managed in primary care settings. Although many are viral, and there is an increasing problem with antibiotic resistance, antibiotics continue to be prescribed for URTIs. Written patient information may be a simple way to reduce antibiotic use for acute URTIs. Objectives To assess if written information for patients (or parents of child patients) reduces the use of antibiotics for acute URTIs in primary care. Search methods We searched CENTRAL, MEDLINE, Embase, CINAHL, LILACS, Web of Science, clinical trials. gov, and the World Health Organization (WHO) trials registry up to July 2016 without language or publication restrictions. Selection criteria We included randomised controlled trials (RCTs) involving patients (or parents of child patients) with acute URTIs, that compared written patient information delivered immediately before or during prescribing, with no information. RCTs needed to have measured our primary outcome (antibiotic use) to be included. Data collection and analysis Two review authors screened studies, extracted data, and assessed study quality. We could

not meta-analyse included studies due to significant methodological and statistical heterogeneity; we summarised the data narratively. Main results Two RCTs met our inclusion criteria, involving a total of 827 participants. Both studies only recruited children with acute URTIs (adults were not involved in either study): 558 children from 61 general practices in England and Wales; and 269 primary care doctors who provided data on 33,792 patient-doctor consultations in Kentucky, USA. The UK study had a high risk of bias due to lack of blinding and the US cluster-randomised study had a high risk of bias because the methods to allocate participants to treatment groups was not clear, and there was evidence of baseline imbalance. In both studies, clinicians provided written information to parents of child patients during primary care consultations: one trained general practitioners (GPs) to discuss an eight-page booklet with parents; the other conducted a factorial trial with two comparison groups (written information compared to usual care and written information plus prescribing feedback to clinicians compared to prescribing feedback alone). Doctors in the written information arms received 25 copies of two-page government-sponsored pamphlets to distribute to parents. Compared to usual care, we found moderate quality evidence (one study) that written information significantly reduced the number of antibiotics used by patients (RR 0.53, 95% CI 0.35 to 0.80; absolute risk reduction (ARR) 20% (22% versus 42%)) and had no significant effect on reconsultation rates (RR 0.79, 95% CI 0.47 to 1.32), or parent satisfaction with consultation (RR 0.95, 95% CI 0.87 to 1.03). Low quality evidence (two studies) demonstrated that written information also reduced antibiotics prescribed by clinicians (RR 0.47, 95% CI 0.28 to 0.78; ARR 21% (20% versus 41%); and RR 0.84, 95% CI 0.81 to 0.86; 9% ARR (45% versus 54%)). Neither study measured resolution of symptoms, patient knowledge about antibiotics for acute URTIs, or complications for this comparison. Compared to prescribing feedback, we found low quality evidence that written information plus prescribing feedback significantly increased the number of antibiotics prescribed by clinicians (RR 1.13, 95% CI 1.09 to 1.17; absolute risk increase 6% (50% versus 44%)). Neither study measured reconsultation rate, resolution of symptoms, patient knowledge about antibiotics for acute URTIs, patient satisfaction with consultation or complications for this comparison. Authors' conclusions Compared to usual care, moderate quality evidence from one study showed that trained GPs providing written information to parents of children with acute URTIs in primary care can reduce the number of antibiotics used by patients without any negative impact on reconsultation rates or parental satisfaction with consultation. Low quality evidence from two studies shows that, compared to usual care, GPs prescribe fewer antibiotics for acute URTIs but prescribe more antibiotics when written information is provided alongside prescribing feedback (compared to prescribing feedback alone). There was no evidence addressing resolution of patients' symptoms, patient knowledge about antibiotics for acute URTIs, or frequency of complications. To fill evidence gaps, future studies should consider testing written information on antibiotic use for adults with acute URTIs in high and low-income settings provided without clinician training and presented in different formats (such as electronic). Future study designs should endeavour to ensure blinded outcome assessors. Study aims should include measurement of the effect of written information on the number of antibiotics used by patients and prescribed by clinicians, patient satisfaction, reconsultation, patients' knowledge about antibiotics, resolution of symptoms, and complications.

Oberai, T., et al. (2019). "Just another piece of paperwork": perceptions of clinicians on delirium screening following hip fracture repair elicited in focus groups." *International Psychogeriatrics* 31(6): 877-884.

Background: Delirium is a complex clinical syndrome characterized by disturbed consciousness, cognitive function, or perception and associated with serious adverse outcomes such as death, dementia, and the need for long-term care. However, recognition and management of delirium is poorly prioritized even though it is the most frequent complication among patients undergoing surgery following hip fracture. The aim of this study was to understand clinicians' from orthopedic speciality perceptions in relation to recognition, diagnosis, and management of delirium. Methods: This was a qualitative study using in-depth focus groups discussions with clinical staff of one orthopedic unit within a level 1 trauma center, south of Adelaide, South Australia. Results: A total number of 17 individuals (14 nurses, 1 geriatric registrar, 1 nursing manager, and 1 speech therapist) participated in the focus groups. Four major themes were identified: (1) Delirium is important but can be hard to recognize and validate; (2) ambiguity on the use of delirium screening tool; (3) need of designated delirium care pathway; and (4) vital role of the family. Despite the initial lack of agreement on use of the objective tool to screen delirium, nurses did propose a number of ways that formal delirium screening could be included in routine nursing duties and existing nursing documentation. Conclusion: Although orthopedic nurses aim to provide effective care to patients experiencing delirium symptoms following hip fracture, they are doing so in the absence of structured screening, assessment, and multidisciplinary team approach. This study emphasizes the various barriers which need to be considered before attempting to change practice in this important area.

Obling, K. H., et al. (2019). "Effects of a motivational, individual and locally anchored exercise intervention (MILE) on cardiorespiratory fitness: a community-based randomised controlled trial." *Bmc Public Health* 19.

Background: Risk factors for chronic disease, including low cardiorespiratory fitness levels (VO₂max), are often present in middle-aged populations. We aimed to evaluate the efficacy of a motivational, individual, and locally anchored

physical activity intervention on increasing VO₂max in 30-49 year-olds with low VO₂max. Methods: 232 adult volunteers with low VO₂max were randomised to intervention (n = 115) or routine care (n = 117). The intervention included four motivational interviews; six months' free membership to a local sports club; and a GPS-watch/activity monitor for uploading training data to an online platform/community. Routine care was one or two motivational interviews. Inclusion criteria were low VO₂max based on the cut off levels: ≤ 39 and ≤ 35 ml O₂/kg/min. For 30-39 and 40-49 year-old men respectively and ≤ 33 and ≤ 31 ml O₂/kg/min for 30-39 and 40-49 year-old women, respectively. The primary outcome was change in VO₂max from baseline to twelve months estimated with a maximal ergometer bicycle test. Secondary outcomes included physical activity, biochemical and anthropometric measures, and health-related quality of life. The primary analyses were based on all available data and sensitivity- and predefined sex analyses were performed. The between-group differences were estimated using independent t-tests and presented with 95% confidence intervals. Results: No significant between-group differences in primary or secondary outcomes were found at twelve months' follow-up. The mean VO₂max change from baseline in the intervention- and routine care (ml/kg/min) was 3.8 (95% CI: 2.6; 5.0) and 3.4 (95% CI: 1.7; 5.2), respectively. No changes in physical activity were observed. The mean VO₂max (ml/kg/min) changes from baseline in the intervention- and routine care group in men were: 5.0 (95% CI: 3.5; 6.4) and 3.5 (95% CI: 1.5; 5.4); and in women: 1.5 (95% CI: -0.1; 3.1) and 3.4 (95% CI: -0.1; 7.8), respectively. Significant differences in VO₂max between non-completers (44.2%) and completers were observed, 26.3 (95% CI: 25.1; 27.5) vs 28.2 ml/kg/min (95% CI: 27.1; 29.0; p = 0.02). Sensitivity analyses did not change the main result. Conclusion: Offering a multi-component physical activity intervention to 30-49 year-olds with low levels of VO₂max had no effect on the change in VO₂max from baseline to twelve months compared with routine care.

Ogretme, M. S., et al. (2016). "What preventive care do sedated children with caries referred to specialist services need?" *British Dental Journal* 221(12): 777-784.

Introduction Few studies have assessed the preventive needs of children treated under conscious sedation or their parents'/guardians' views regarding oral health education. **Aim** To report on the profile of children who required treatment under conscious sedation. Also to obtain the views of the parents or guardians of these children on their experiences of oral health preventive services and the support they would like in order to improve their child's oral health. **Method** A researcher-administered questionnaire was used to collect quantitative and qualitative responses from a consecutive sample of 123 parents/guardians during their child's sedation appointment at King's College Hospital. **Results** Caries was the main reason for the child's sedation treatment and 77.2% of them were high caries risk. Parents reported that their general dentist had given advice about sugar (80%) and tooth-brushing (74%), but few had prescribed fluoride varnish (15%), fissure sealants (12%) or a fluoride rinse (36%). Parents felt challenged by the ready availability of sugar, and others suggested difficulty in maintaining healthy oral habits in complex families. Overall, the majority of parents thought leaflets, health professionals' advice, and Internet websites could be informative, and they requested school- and hospital-based prevention programmes. **Discussion** The majority of children had high caries risk. They had received advice but not professional preventive treatment such as fluoride varnish and fissure sealants. Their parents requested preventive education using new technologies and media and better access through school-based and hospital prevention programmes.

Ogrin, R., et al. (2018). "Co-design of an evidence-based health education diabetes foot app to prevent serious foot complications: a feasibility study." *Practical Diabetes* 35(6): 203-+.

Diabetes is the most common cause of non-traumatic amputations worldwide, and education is key to prevention. Mobile phones and applications (apps) are increasingly being used. This study co-designed and assessed whether a foot health education app would be feasible and acceptable to support people with diabetes (PWD) to prevent serious foot complications. A diabetes foot app was co-designed with PWD, experts, researchers and biomedical engineers following co-design principles. The app was piloted in a convenience sample of adults with diabetes from one community health service in metropolitan Melbourne for 12 weeks. Baseline quantitative data were collected on foot health, knowledge, self-care behaviours and attitudes. Qualitative data were collected post intervention to capture experiences of using the app, using interviews and focus groups. The co-designed app included information on amputation risk and self-care practices to prevent serious foot complications. The content used images and simple wording, focusing on early help-seeking behaviour. Forty participants with a mean age of 66.917.1 years were included in the pilot. Seven participants withdrew due to personal and health-related issues. Uptake of the app was low, with 18 participants using the app for any period of time. Qualitative interviews or focus groups were undertaken with 31 participants. Overall, the information was perceived as highly useful for newly-diagnosed PWD and worth pursuing. Future work is needed to identify which PWD would most benefit, and incorporate aspects relating to increased opportunity and motivation for behaviour change and a centralised data management system to provide updates. Copyright (c) 2018 John Wiley & Sons.

Ohakim, A., et al. (2015). "Smoking, attitudes to smoking and provision of smoking cessation advice in two teaching hospitals in Ireland: do smoke-free policies matter?" *Health Psychology and Behavioral Medicine* 3(1): 142-153.

Brief cessation advice from health-care professionals in the hospital setting significantly increases the likelihood of patients quitting smoking, yet patients are not routinely provided with this advice. Smoke-free hospital policies aim to protect individuals from the adverse effects of smoking; however, it is unclear if such policies encourage systematic delivery of cessation advice by health-care professionals. The study's aim was to determine the prevalence of smoking and cessation advice received by in-patients in two teaching hospitals in Ireland which have implemented smoke-free hospital policies, and to examine patient attitudes towards smoking cessation. Change in smoking prevalence and delivery of smoking cessation advice prior to and post-policy implementation was also examined in one hospital. This study surveyed 466 in-patients across 2 hospital sites, over a 3-week and 5week period, respectively. Data were also compared to a survey completed prior to the implementation of the smoke-free policy in one of the hospital sites. Smoking prevalence was 17% in Beaumont Hospital and 28% in Connolly Hospital. Overall, nicotine dependence was low (Mean Fagerstrm Test for Nicotine Dependence = 4.21, +/- 2.9). Overall, 62% of smokers did not receive smoking cessation advice from a health professional, although 55% indicated a willingness to engage with this type of service. The before-and-after analysis of Beaumont Hospital showed a reduction in smoking prevalence (17% vs 21%) amongst hospital in-patients, and a 6% increase in reported cessation advice provided following the introduction of the hospital smoke-free policy. Smoke-free hospital policies play a role in decreasing the prevalence of in-patient smokers, but further intervention is needed to increase rates of cessation advice provided. Positive attitudes to smoking cessation, coupled with low average nicotine dependence, suggest that lowintensity interventions would be beneficial for most smokers. A systematic focus on provision of brief smoking cessation advice is needed in hospitals.

Oketch, S. Y., et al. (2019). "Perspectives of women participating in a cervical cancer screening campaign with community-based HPV self-sampling in rural western Kenya: a qualitative study." *Bmc Womens Health* 19.

Background Despite cervical cancer being preventable with effective screening programs, it is the most common cancer and the leading cause of cancer-related death among women in many countries in Africa. Screening involving pelvic examination may not be feasible or acceptable in limited-resource settings. We sought to evaluate women's perspectives on human papillomavirus (HPV) self-sampling as part of a larger trial on cervical cancer prevention implementation strategies in rural western Kenya. **Methods** We invited 120 women participating in a cluster randomized trial of cervical cancer screening implementation strategies in Migori County, Kenya for in-depth interviews. We explored reasons for testing, experience with and ability to complete HPV self-sampling, importance of clinician involvement during screening, factors and people contributing to screening decision-making, and ways to encourage other women to come for screening. We used validated theoretical frameworks to analyze the qualitative data. **Results** Women reported having positive experiences with the HPV self-sampling strategy. The factors facilitating uptake included knowledge and beliefs such as prior awareness of HPV, personal perception of cervical cancer risk, desire for improved health outcomes, and peer and partner encouragement. Logistical and screening facilitators included confidence in the ability to complete HPV self-sampling strategy, proximity to screening sites and feelings of privacy and comfort conducting the HPV self-sampling. The barriers to screening included fear of need for a pelvic exam, fear of disease and death associated with cervical cancer. We classified these findings as capabilities, opportunities and motivations for health behavior using the COM-B framework. **Conclusions** Overall, HPV self-sampling was an acceptable cervical cancer screening strategy that seemed to meet the needs of the women in this community. These findings will further inform aspects of implementation, including outreach messaging, health education, screening sites and emphasis on availability and effectiveness of preventative treatment for women who screen positive.

Olander, E. K., et al. (2016). "Beyond the 'teachable moment' - A conceptual analysis of women's perinatal behaviour change." *Women and Birth* 29(3): E67-E71.

Background: Midwives are increasingly expected to promote healthy behaviour to women and pregnancy is often regarded as a 'teachable moment' for health behaviour change. This view focuses on motivational aspects, when a richer analysis of behaviour change may be achieved by viewing the perinatal period through the lens of the Capability-Opportunity-Motivation Behaviour framework. This framework proposes that behaviour has three necessary determinants: capability, opportunity, and motivation. **Aim:** To outline a broader analysis of perinatal behaviour change than is afforded by the existing conceptualisation of the 'teachable moment' by using the Capability-Opportunity-Motivation Behaviour framework. **Findings:** Research suggests that the perinatal period can be viewed as a time in which capability, opportunity or motivation naturally change such that unhealthy behaviours are disrupted, and healthy behaviours may be adopted. Moving away from a sole focus on motivation, an analysis utilising the Capability-Opportunity-Motivation Behaviour framework suggests that changes in capability and opportunity may also offer opportune points for intervention, and that lack of capability or opportunity may act as barriers to behaviour change that might be expected based solely on changes in motivation. Moreover, the period spanning pregnancy and the postpartum

could be seen as a series of opportune intervention moments, that is, personally meaningful episodes initiated by changes in capability, opportunity or motivation. Discussion: This analysis offers new avenues for research and practice, including identifying discrete events that may trigger shifts in capability, opportunity or motivation, and whether and how interventions might promote initiation and maintenance of perinatal health behaviours. (C) 2015 Australian College of Midwives. Published by Elsevier Ltd. All rights reserved.

Olander, E. K., et al. (2018). "Health behaviour and pregnancy: a time for change." *Journal of Reproductive and Infant Psychology* 36(1): 1-3.

Oliveira, D., et al. (2019). "Factor and reliability analysis of a brief scale to measure motivation to change lifestyle for dementia risk reduction in the UK: the MOCHAD-10." *Health and Quality of Life Outcomes* 17.

Background Modifying lifestyle risk factors for dementia is a public health priority. Motivation for change is integral to the modification of health-related risk behaviours. This study investigates the psychometric properties of the previously validated tool entitled Motivation to Change Lifestyle and Health Behaviours for Dementia Risk Reduction Scale' (MCLHB-DRR) for use in the UK. Methods A sample of 3,948 individuals aged 50 and over completed the 27-item MCLHB-DRR online. The psychometric properties of the scale were explored via Exploratory Principal Axis Factoring (PAF) with Oblimin rotation. Confirmatory Factor Analysis (CFA) was used to confirm the factor structure using chi-square (2), the goodness-of-fit index (GFI), the comparative fit index (CFI), the root mean square error of approximation (RMSEA) and Root Mean Square Residual (RMR) as fit indices to evaluate the model fit. Internal consistency (Cronbach) was measured for the final scale version. Results Exploratory Factor Analysis (EFA) resulted in a parsimonious 10-item, two-factor structure (5 items each, factor loadings >0.3) that explained 52.83% of total variance. Based on the Pattern Matrix, Factor 1 was labelled Positive Cues to Action and Factor 2 was labelled Negative Cues to Action. After addressing some errors in covariances, CFA showed a good fit where all fit indices were larger than 0.90 (GFI=0.968, CFI=0.938) and smaller than 0.08 (RMSEA=0.072, RMR=0.041). The standardized coefficients of Factor 1 and Factor 2 ranged from 0.30 to 0.73 and were all statistically significant ($p < 0.001$). The final scale showed moderate to high reliability scores (Factor 1 =0.809; Factor 2 =0.701; Overall =0.785). Conclusions The new MOCHAD-10 (Motivation to Change Behaviour for Dementia Risk Reduction Scale) is a short, reliable and robust two-factor, 10-item clinical tool for use in preventative health care and research to evaluate motivation to change lifestyle for dementia risk reduction.

Olmedo, A., et al. (2018). "Evaluating the Design of Behavior Change Interventions: A Case Study of Rhino Horn in Vietnam." *Conservation Letters* 11(1).

Behavioral change interventions are increasingly widely used in conservation. Several projects addressing rhino horn consumption were recently launched in Vietnam. We used key informant interviews, document analysis, and marketing theory to explore their strategies for intervention design, implementation, monitoring, and evaluation. We developed a framework to evaluate whether they followed best practice and identify implementation challenges. Interventions could make greater use of key project design steps, including basing interventions on robust research to understand the behavior in question, identifying the target audience whose behavior interventions aim to change, and developing measures that can provide reliable evidence of success or not. Challenges include the need for law enforcement to complement campaigns; improving cooperation between NGOs; and clearly defining aims of demand-reduction initiatives. Using best practice from other fields and considering demand reduction within the wider context of wildlife, trade policy will help address these challenges.

Olson, J. L., et al. (2019). "Inactive lifestyles in peri-urban Australia: A qualitative examination of social and physical environmental determinants." *Health Promotion Journal of Australia* 30(2): 153-162.

Issue addressed Australians living in peri-urban areas are insufficiently active, sedentary and experience poorer health than people in major cities. There are health benefits attributable to active lifestyles that could contribute to the improved health and well-being of this population. To support the adoption of active lifestyles, it is important to understand the unique context in which behaviour occurs. Methods The aim of this study was to identify characteristics of the social and physical peri-urban environment that may impact active lifestyles. Semi-structured interviews were conducted in peri-urban southern Queensland. Data were analysed by thematic analysis. Results The natural environment, weather, distance, accessibility and walkability were features of the physical environment relevant to active lifestyles. Social factors included social capital and crime. Activity-supportive characteristics (eg, community spirit) were identified, in addition to active lifestyle barriers (eg, lack of public transport). Conclusions Despite activity-supportive social and environmental characteristics, most participants reported inactive lifestyles. The barriers to active lifestyles in peri-urban environments may negate these activity-supportive features. Some barriers are difficult to modify (eg, distance and accessibility). However, some may be alleviated through the adoption of activity-supportive policy and urban design (eg, pedestrian mobility infrastructure). So what? Strategies to support active lifestyles in peri-urban

environments must take into account unmodifiable contextual barriers, whilst encouraging utilisation of existing activity-supportive infrastructure and resources. The enhancement of activity-supportive environments through improved neighbourhood walkability and the usability of public transport may encourage some peri-urban residents to undertake more active forms of transport and recreational physical activity.

Ong, B. N., et al. (2014). "Changing policy and practice: Making sense of national guidelines for osteoarthritis." *Social Science & Medicine* 106: 101-109.

Understanding uptake of complex interventions is an increasingly prominent area of research. The interplay of macro (such as changing health policy), meso (re-organisation of professional work) and micro (rationalisation of clinical care) factors upon uptake of complex interventions has rarely been explored. This study focuses on how English General Practitioners and practice nurses make sense of a complex intervention for the management of osteoarthritis, using the macro meso micro contextual approach and Normalisation Process Theory (NPT), specifically the construct of coherence. It is embedded in a cluster RCT comprising four control practices and four intervention practices. In order to study sense-making by professionals introduction and planning meetings (N = 14) between researchers and the practices were observed. Three group interviews were carried out with 10 GPs and 5 practice nurses after they had received training in the intervention. Transcripts were thematically analysed before comparison with NPT constructs. We found that: first, most GPs and all nurses distinguished the intervention from current ways of working. Second, from the introduction meeting to the completion of the training the purpose of the intervention increased in clarity. Third, GPs varied in their understanding of their remit, while the practice nurses felt that the intervention builds on their holistic care approach. Fourth, the intervention was valued by practice nurses as it strengthened their expert status. GPs saw its value as work substitution, but felt that a positive conceptualisation of OA enhanced the consultation. When introducing new interventions in healthcare settings the interaction between macro, meso and micro factors, as well as the means of engaging new clinical practices and their sense-making by clinicians needs to be considered. (C) 2014 The Authors. Published by Elsevier Ltd. All rights reserved.

Ong, B. N., et al. (2014). Behaviour change and social blinkers? The role of sociology in trials of self-management behaviour in chronic conditions.

Ong, B. N., et al. (2014). "Behaviour change and social blinkers? The role of sociology in trials of self-management behaviour in chronic conditions." *Sociology of Health & Illness* 36(2): 226-238.

Individual-focused self-management interventions are one response to both an ageing society and the purported increase in chronic conditions. They tend to draw on psychological theories in self-management interventions, but over-reliance on these theories can reinforce a narrow focus on specified attitudinal and behavioural processes, omitting aspects of living with a chronic condition. While advances have been made in health behaviour change theory and practice, scant attention has been paid to the social, with the question of social context remaining under-theorised and under-explored empirically. This is particularly noticeable in trials of behaviour change interventions for self-management. The common sociological critique is that these ignore context and thus no explanation can be given as to why, for whom and under what circumstances a treatment works. Conversely, sociologists are criticised for offering no positive suggestions as to how context can be taken into account and for over-emphasising context with the risk of inhibiting innovation. This article provides an overview of these issues and provides examples of how context can be incorporated into the rigid method of trials of self-management for chronic conditions. We discuss modifications to both trial interventions and design that make constructive use of the concept of context.

Oosthuizen, S. J., et al. (2019). "Midwife-led obstetric units working 'CLEVER': Improving perinatal outcome indicators in a South African health district." *Samj South African Medical Journal* 109(2): 95-101.

Background. South Africa did not meet its Millennium Development Goals with regard to the reduction in maternal and under-5 mortality. Furthermore, many birthing women do not receive intrapartum care with empathy and endure disrespectful and abusive care. Objectives. To implement a multicomponent, context-specific intervention package to change the complex interplay between preventable maternal and perinatal mortality and morbidity and poor clinical governance and supervision in midwife-led labour units. Methods. A mixed-methods intervention study was conducted in Tshwane District, South Africa, in 10 midwife-led obstetric units (MOUs), from which a purposive sample consisting of five units was selected for the intervention. The intervention took place in three phases: (i) baseline measurement; (ii) implementation of the so-called 'CLEVER' intervention package in the five intervention units, based on the results of the first phase; and (iii) a review of health systems improvements and perinatal outcomes. The intervention had three pillars: (i) feedback of the baseline measurement to the intervention units to raise awareness and solicit participation; (ii) health systems strengthening; and (iii) intensive weekly engagement for 3 months, with further monthly support afterwards. Observation of barriers during baseline activities contributed to the health systems strengthening

and improvement strategies during implementation. Results. Perinatal outcome indicators for the year before the intervention were compared with data for the year in which the intervention took place and the year after the intervention. Significant declines were observed in in-facility fresh stillbirths, meconium aspiration and birth asphyxia in the intervention MOUs from 2015 to 2017. The control group showed some decline during the period owing to support from district clinical specialist team members. Conclusions. CLEVER as a context-specific, multicomponent, clinically focused intervention package may have contributed to improved perinatal morbidity and mortality rates in MOUs.

Orchard, J., et al. (2014). "iPhone ECG screening by practice nurses and receptionists for atrial fibrillation in general practice: the GP-SEARCH qualitative pilot study." *Australian Family Physician* 43(5): 315-319.

Background Atrial fibrillation (AF) is often asymptomatic and substantially increases stroke risk. A single-lead iPhone electrocardiograph (iECG) with a validated AF algorithm could make systematic AF screening feasible in general practice. **Methods** A qualitative screening pilot study was conducted in three practices. Receptionists and practice nurses screened patients aged ≥ 65 years using an iECG (transmitted to a secure website) and general practitioner (GP) review was then provided during the patient's consultation. Fourteen semi-structured interviews with GPs, nurses, receptionists and patients were audio-recorded, transcribed and analysed thematically. **Results** Eighty-eight patients (51% male; mean age 74.8 +/- 8.8 years) were screened: 17 patients (19%) were in AF (all previously diagnosed). The iECG was well accepted by GPs, nurses and patients. Receptionists were reluctant, whereas nurses were confident in using the device, explaining and providing screening. **Discussion** AF screening in general practice is feasible. A promising model is likely to be one delivered by a practice nurse, but depends on relevant contextual factors for each practice.

Osborn, D., et al. (2018). "Clinical and cost-effectiveness of an intervention for reducing cholesterol and cardiovascular risk for people with severe mental illness in English primary care: a cluster randomised controlled trial." *Lancet Psychiatry* 5(2): 145-154.

Background People with severe mental illnesses, including psychosis, have an increased risk of cardiovascular disease. We aimed to evaluate the effects of a primary care intervention on decreasing total cholesterol concentrations and cardiovascular disease risk in people with severe mental illnesses. **Methods** We did this cluster randomised trial in general practices across England, with general practices as the cluster unit. We randomly assigned general practices (1:1) with 40 or more patients with severe mental illnesses using a computer-generated random sequence with a block size of four. Researchers were masked to allocation, but patients and general practice staff were not. We included participants aged 30-75 years with severe mental illnesses (schizophrenia, bipolar disorder, or psychosis), who had raised cholesterol concentrations (5.0 mmol/L) or a total: HDL cholesterol ratio of 4.0 mmol/L or more and one or more modifiable cardiovascular disease risk factors. Eligible participants were recruited within each practice before randomisation. The Primrose intervention consisted of appointments (≤ 12) with a trained primary care professional involving manualised interventions for cardiovascular disease prevention (ie, adhering to statins, improving diet or physical activity levels, reducing alcohol, or quitting smoking). Treatment as usual involved feedback of screening results only. The primary outcome was total cholesterol at 12 months and the primary economic analysis outcome was health-care costs. We used intention-to-treat analysis. The trial is registered with Current Controlled Trials, number ISRCTN13762819. **Findings** Between Dec 10, 2013, and Sept 30, 2015, we recruited general practices and between May 9, 2014, and Feb 10, 2016, we recruited participants and randomly assigned 76 general practices with 327 participants to the Primrose intervention (n=38 with 155 patients) or treatment as usual (n=38 with 172 patients). Total cholesterol concentration data were available at 12 months for 137 (88%) participants in the Primrose intervention group and 152 (88%) participants in the treatment-as-usual group. The mean total cholesterol concentration did not differ at 12 months between the two groups (5.4 mmol/L [SD 1.1] for Primrose vs 5.5 mmol/L [1.1] for treatment as usual; mean difference estimate 0.03, 95% CI -0.22 to 0.29; p=0.788). This result was unchanged by pre-agreed supportive analyses. Mean cholesterol decreased over 12 months (-0.22 mmol/L [1.1] for Primrose vs -0.36 mmol/L [1.1] for treatment as usual). Total health-care costs (1286 pound [SE 178] in the Primrose intervention group vs 2182 pound [328] in the treatment-as-usual group; mean difference -895 pound, 95% CI -1631 to -160; p=0.012) and psychiatric inpatient costs (157 pound [135] vs 956 pound [313]; -799 pound, -1480 to -117; p=0.018) were lower in the Primrose intervention group than the treatment-as-usual group. Six serious adverse events of hospital admission and one death occurred in the Primrose group (n= 7) and 23, including three deaths, occurred in the treatment-as-usual group (n=18). **Interpretation** Total cholesterol concentration at 12 months did not differ between the Primrose and treatment-as-usual groups, possibly because of the cluster design, good care in the treatment-as-usual group, short duration of the intervention, or suboptimal focus on statin prescribing. The association between the Primrose intervention and fewer psychiatric admissions, with potential cost-effectiveness, might be important. Copyright (c) The Author(s). Published by Elsevier Ltd.

Osborn, D., et al. (2016). "Evaluating the clinical and cost effectiveness of a behaviour change intervention for lowering cardiovascular disease risk for people with severe mental illnesses in primary care (PRIMROSE study): study protocol for a cluster randomised controlled trial." *Trials* 17.

Background: People with severe mental illnesses die up to 20 years earlier than the general population, with cardiovascular disease being the leading cause of death. National guidelines recommend that the physical care of people with severe mental illnesses should be the responsibility of primary care; however, little is known about effective interventions to lower cardiovascular disease risk in this population and setting. Following extensive peer review, funding was secured from the United Kingdom National Institute for Health Research (NIHR) to deliver the proposed study. The aim of the trial is to test the effectiveness of a behavioural intervention to lower cardiovascular disease risk in people with severe mental illnesses in United Kingdom General Practices. Methods/Design: The study is a cluster randomised controlled trial in 70 GP practices for people with severe mental illnesses, aged 30 to 75 years old, with elevated cardiovascular disease risk factors. The trial will compare the effectiveness of a behavioural intervention designed to lower cardiovascular disease risk and delivered by a practice nurse or healthcare assistant, with standard care offered in General Practice. A total of 350 people will be recruited and followed up at 6 and 12 months. The primary outcome is total cholesterol level at the 12-month follow-up and secondary outcomes include blood pressure, body mass index, waist circumference, smoking status, quality of life, adherence to treatments and services and behavioural measures for diet, physical activity and alcohol use. An economic evaluation will be carried out to determine the cost effectiveness of the intervention compared with standard care. Discussion: The results of this pragmatic trial will provide evidence on the clinical and cost effectiveness of the intervention on lowering total cholesterol and addressing multiple cardiovascular disease risk factors in people with severe mental illnesses in GP Practices.

Oxford, J., et al. (2013). "Antibiotic resistance - a call to arms for primary healthcare providers." *International Journal of Clinical Practice* 67: 1-3.

Paap, J. V. R., et al. (2015). "Strategies to implement evidence into practice to improve palliative care: recommendations of a nominal group approach with expert opinion leaders." *Bmc Palliative Care* 14.

Background: In the past decades, many new insights and best practices in palliative care, a relatively new field in health care, have been published. However, this knowledge is often not implemented. The aim of this study therefore was to identify strategies to implement improvement activities identified in a research project within daily palliative care practice. Methods: A nominal group technique was used with members of the IMPACT consortium, being international researchers and clinicians in cancer care, dementia care and palliative care. Participants identified and prioritized implementation strategies. Data was analyzed qualitatively using inductive coding. Results: Twenty international clinicians and researchers participated in one of two parallel nominal group sessions. The recommended strategies to implement results from a research project were grouped in five common themes: 1. Dissemination of results e.g. by publishing results tailored to relevant audiences, 2. Identification and dissemination of unique selling points, 3. education e.g. by developing e-learning tools and integrating scientific evidence into core curricula, 4. Stimulation of participation of stakeholders, and 5. consideration of consequences e.g. rewarding services for their implementation successes but not services that fail to implement quality improvement activities. Discussion: The added value of this nominal group study lies in the prioritisation by the experts of strategies to influence the implementation of quality improvement activities in palliative care. Efforts to ensure future use of scientific findings should be built into research projects in order to prevent waste of resources.

Page, B. and R. Tanyi (2015). *Engaging the African Diaspora in the Fight against Malaria*.

Page, D., et al. (2017). "Optimising early neonatal nutrition using translational research methodology." *Nutrition & Dietetics* 74(5): 460-470.

Aim Preterm birth has been described as a nutritional emergency', with these infants often born with minimal nutrition reserves. Failure to provide adequate early nutrition jeopardises growth and neurodevelopment. Consensual nutrition guidelines exist for infants who weigh <1500 g; however, audits have identified shortfalls in their adherence, consequently highlighting an evidence-practice gap. This work aimed to identify the barriers to the delivery of early optimal nutrition in a tertiary-level Neonatal Critical Care Unit to inform an implementation project to ensure best practice care. Methods A total of 19 medical and nursing staff participated in semistructured interviews. Transcripts underwent qualitative content analysis to examine barriers to early infant feeding. Barriers were categorised into domains from the Theoretical Domains Framework (TDF), and potential interventions were identified using evidence-based strategy selection guides that articulates with the TDF. Results Four main themes, with associated sub-themes, emerged, including: (i) Roles and responsibilities, (ii) decision making, (iii) disconnect between beliefs and the application of evidence and (iv) monitoring and awareness. Eight barrier domains' were identified using TDF Knowledge; memory,

attention and decision processes; skills; professional/social role and identity; beliefs about capabilities; beliefs about consequences; environmental context and resources; and social influences. Conclusions Using a systematic approach to analysing barriers to early nutrition and mapping through the TDF and behaviour change wheel, the most effective interventions to modify practice have been identified. These will be monitored in ongoing audits.

Pallan, M., et al. (2019). "Cultural adaptation of a children's weight management programme: Child weight management for Ethnically diverse communities (CHANGE) study." *Bmc Public Health* 19.

Background: Childhood obesity prevalence continues to be at high levels in the United Kingdom (UK). South Asian children (mainly Pakistani and Bangladeshi origin) with excess adiposity are at particular risk from the cardiovascular consequences of obesity. Many community-based children's weight management programmes have been delivered in the UK, but none have been adapted for diverse cultural communities. The aim of the Child weight management for Ethnically diverse communities (CHANGE) study, was to culturally adapt an existing children's weight management programme for children aged 4-11 years so that the programme was more able to meet the needs of families from South Asian communities. Methods: The adaptation process was applied to First Steps, an evidence informed programme being delivered in Birmingham (a large, ethnically diverse city). A qualitative study was undertaken to obtain the views of South Asian parents of children with excess weight, who had fully or partially attended, or who had initially agreed but then declined to attend the First Steps programme. The resulting data were integrated with current research evidence and local programme information as part of a cultural adaptation process that was guided by two theoretical frameworks. Results: Interviews or focus groups with 31 parents in their preferred languages were undertaken. Themes arising from the data included the need for convenient timing of a programme in a close familiar location, support for those who do not speak English, the need to focus on health rather than weight, nutritional content that focuses on traditional and Western diets, more physical activity content, and support with parenting skills. The data were mapped to the Behaviour Change Wheel framework and Typology of Cultural Adaptation to develop an intervention programme outline. The research evidence and local programme information was then used in the detailed planning of the programme sessions. Conclusions: The process of cultural adaptation of an existing children's weight management programme resulted in a theoretically underpinned programme that is culturally adapted at both the surface and deep structural levels.

Pallan, M., et al. (2019). "Cultural adaptation of an existing children's weight management programme: the CHANGE intervention and feasibility RCT." *Health Technology Assessment* 23(33): 1-+.

Palumbo, R. and R. Manna (2018). "What if things go wrong in co-producing health services? Exploring the implementation problems of health care co-production." *Policy and Society* 37(3): 368-385.

Patient-centered care and health services' co-production are the cornerstones of the health care system of the future. These constructs rely on the reconceptualization of the patient as a co-deliverer of care. While studies about the intrinsic value-added of health services' co-production are prominent, the risks of value co-destruction attached to patient involvement have been widely neglected. In an attempt to fill this gap, this paper draws on the health literacy' perspective to conceptually explore the dark side' of health services' co-production. Value co-destruction is understood as a two-way street, where both the health care professionals and the patients are likely to walk, either intentionally or unintentionally. Individual and organizational health literacy are proposed as two essential ingredients of the recipe for effective health services' co-production, reducing the risks of value co-destruction in health services' provision.

Parker, H. M. and K. Mattick (2016). "The determinants of antimicrobial prescribing among hospital doctors in England: a framework to inform tailored stewardship interventions." *British Journal of Clinical Pharmacology* 82(2): 431-440.

AIM Little is known about the determinants of antimicrobial prescribing behaviour (APB), how they vary between hospital prescribers or the mechanism by which interventions are effective. Yet, interventions based on a sound theoretical understanding of APB are more likely to be successful in changing outcomes. This study sought to quantify the potential determinants of APB among hospital doctors in south-west England. METHODS This multicentre, quantitative study employed a closed answer questionnaire to garner hospital doctors' views on factors influencing their APB. Underlying constructs within the data were identified using exploratory factor analysis and subsequent pairwise comparisons assessed for variance between groups of prescribers. RESULTS The questionnaire was completed by 301 doctors across four centres (response rate \geq 74%) and three key factors were identified: autonomy, guidelines adherence and antibiotic awareness. The internal consistency for the questionnaire scale and for each factor subscale was good ($\alpha \geq$ 0.7). Subgroup analysis identified significant differences between groups of prescribers: autonomy scores increased with grade until at the specialist trainee level ($P \leq$ 0.009), foundation doctors scored higher for guidelines adherence than consultants ($P =$ 0.004) and specialist trainees ($P =$ 0.003) and United Kingdom trained doctors scored higher than those trained abroad for antibiotic awareness ($P <$ 0.0005). Scores did not vary significantly between

doctors from different centres. CONCLUSION Autonomy, guidelines adherence and antibiotic awareness were identified as important factors relevant to APB, which vary with experience and training. A theoretical framework is offered to facilitate development of more effective, tailored interventions to change APBs.

Parry, D. A. and D. B. le Roux (2019). "Media multitasking and cognitive control: A systematic review of interventions." *Computers in Human Behavior* 92: 316-327.

Extending from the increasing prevalence of media in personal, social, and work environments, research has indicated that media multitasking (i.e., engaging in more than one media or non-media activity simultaneously) is associated with changes in cognitive control and failures of everyday executive functioning. While more research is required to elucidate these associations, the emergent trend, while small, suggests a negative relationship between high levels of media multitasking and aspects of cognitive control. In response, researchers have called for studies investigating the remedial efficacy of interventions targeting the effects of media multitasking on executive functioning. To provide a foundation for such research this systematic review integrates current findings concerning such interventions. Four databases (Web of Science, Scopus, Academic Search Premier, and PsycINFO) were searched to identify relevant studies, producing 2792 results. 15 studies met the eligibility criteria. At the time of review current interventions fall into three categories: awareness, restriction, and mindfulness. While some interventions have been effective at changing behaviour or cognitive outcomes, no single category contains interventions which, categorically, produced improvements in attention-related performance. Extending from this synthesis key research gaps are identified, with suggestions for future research proposed.

Parry, S. M., et al. (2017). "Factors influencing physical activity and rehabilitation in survivors of critical illness: a systematic review of quantitative and qualitative studies." *Intensive Care Medicine* 43(4): 531-542.

Purpose: To identify, evaluate and synthesise studies examining the barriers and enablers for survivors of critical illness to participate in physical activity in the ICU and post-ICU settings from the perspective of patients, caregivers and healthcare providers. Methods: Systematic review of articles using five electronic databases: MEDLINE, CINAHL, EMBASE, Cochrane Library, Scopus. Quantitative and qualitative studies that were published in English in a peer-reviewed journal and assessed barriers or enablers for survivors of critical illness to perform physical activity were included. Prospero ID: CRD42016035454. Results: Eighty-nine papers were included. Five major themes and 28 sub-themes were identified, encompassing: (1) patient physical and psychological capability to perform physical activity, including delirium, sedation, illness severity, comorbidities, weakness, anxiety, confidence and motivation; (2) safety influences, including physiological stability and concern for lines, e.g. risk of dislodgement; (3) culture and team influences, including leadership, interprofessional communication, administrative buy-in, clinician expertise and knowledge; (4) motivation and beliefs regarding the benefits/risks; and (5) environmental influences, including funding, access to rehabilitation programs, staffing and equipment. Conclusions: The main barriers identified were patient physical and psychological capability to perform physical activity, safety concerns, lack of leadership and ICU culture of mobility, lack of interprofessional communication, expertise and knowledge, and lack of staffing/equipment and funding to provide rehabilitation programs. Barriers and enablers are multidimensional and span diverse factors. The majority of these barriers are modifiable and can be targeted in future clinical practice.

Parry, S. M., et al. (2017). "What factors affect implementation of early rehabilitation into intensive care unit practice? A qualitative study with clinicians." *Journal of Critical Care* 38: 137-143.

Purpose: To identify the barriers and enablers that influence clinicians' implementation of early rehabilitation in critical care. Materials and methods: Qualitative study involving 26 multidisciplinary participants who were recruited using purposive sampling. Four focus groups were conducted using semistructured questions to explore attitudes, beliefs, and experiences. Data were transcribed verbatim and thematic analysis was performed. Results: Six themes emerged, as follows: (1) the clinicians' expectations and knowledge (including rationale for rehabilitation, perceived benefits, and experience), (2) the evidence for and application of rehabilitation (including beliefs regarding when to intervene), (3) patient factors (including prognosis, sedation, delirium, cooperation, motivation, goals, and family), (4) safety considerations (including physiological stability and presence of devices or lines), (5) environmental influences (staffing, resources, equipment, time, and competing priorities), and (6) culture and teamwork. Key strategies identified to facilitate rehabilitation included addressing educational needs for all multidisciplinary team members, supporting junior nursing staff, and potential expansion of physiotherapy staffing hours to closer align with the 24-hour patient care model. Conclusions: Key barriers to implementation of early rehabilitation in critical care are diverse and include both clinician- and health care system-related factors. Research targeted at bridging this evidence-practice gap is required to improve provision of rehabilitation. (C) 2016 Elsevier Inc. All rights reserved.

Partridge, S. R., et al. (2017). "Cardiac Patients' Experiences and Perceptions of Social Media: Mixed-Methods Study." *Journal of Medical Internet Research* 19(9).

Background: Traditional in-person cardiac rehabilitation has substantial benefits for cardiac patients, which are offset by poor attendance. The rapid increase in social media use in older adults provides an opportunity to reach patients who are eligible for cardiac rehabilitation but unable to attend traditional face-to-face groups. However, there is a paucity of research on cardiac patients' experiences and perspectives on using social media to support their health. **Objective:** The aim of this study was to describe cardiac rehabilitation patients' experiences in using social media in general and their perspective on using social media, particularly Facebook, to support their cardiac health and secondary prevention efforts. **Methods:** A mixed-methods study was undertaken among cardiac rehabilitation patients in both urban and rural areas. First, this study included a survey (n=284) on social media use and capability. Second, six focus group interviews were conducted with current Facebook users (n=18) to elucidate Facebook experience and perspectives. **Results:** Social media use was low (28.0%, 79/282) but more common in participants who were under 70 years of age, employed, and had completed high school. Social media users accessed Web-based information on general health issues (65%, 51/79), medications (56%, 44/79), and heart health (43%, 34/79). Participants were motivated to invest time in using Facebook for "keeping in touch" with family and friends and to be informed by expert cardiac health professionals and fellow cardiac participants if given the opportunity. It appeared that participants who had a higher level of Facebook capability (understanding of features and the consequences of their use and efficiency in use) spent more time on Facebook and reported higher levels of "liking," commenting, or sharing posts. Furthermore, higher Facebook capability appeared to increase a participants' willingness to participate in a cardiac Facebook support group. More capable users were more receptive to the use of Facebook for cardiac rehabilitation and more likely to express interest in providing peer support. Recommended features for a cardiac rehabilitation Facebook group included a closed group, expert cardiac professional involvement, provision of cardiac health information, and ensuring trustworthiness of the group. **Conclusions:** Cardiac health professionals have an opportunity to capitalize on cardiac patients' motivations and social media, mostly Facebook, as well as the capability for supporting cardiac rehabilitation and secondary prevention. Participants' favored purposeful time spent on Facebook and their cardiac health provides such a purpose for a Facebook intervention. The study results will inform the development of a Facebook intervention for secondary prevention of cardiovascular disease.

Partridge, S. R., et al. (2017). "Improved confidence in performing nutrition and physical activity behaviours mediates behavioural change in young adults: Mediation results of a randomised controlled mHealth intervention." *Appetite* 108: 425-433.

Background: The burden of weight gain disproportionately affects young adults. Understanding the underlying behavioural mechanisms of change in mHealth nutrition and physical activity interventions designed for young adults is important for enhancing and translating effective interventions. **Purpose:** First, we hypothesised that knowledge, self-efficacy and stage-of-change for nutrition and physical activity behaviours would improve, and second, that self-efficacy changes in nutrition and physical activity behaviours mediate the behaviour changes observed in an mHealth RCT for prevention of weight gain. **Methods:** Young adults, aged 18-35 years at risk of weight gain (n = 250) were randomly assigned to an mHealth-program, TXT2BFiT, consisting of a three-month intensive phase and six-month maintenance phase or to a control group. Self-reported online surveys at baseline, three- and nine-months assessed nutrition and physical activity behaviours, knowledge, self-efficacy and stage-of-change. The mediating effect of self-efficacy was assessed in multiple PROCESS macro-models for three- and nine-month nutrition and physical activity behaviour change. **Results:** Young adults randomised to the intervention increased and maintained knowledge of fruit requirements (P = 0.029) compared to controls. Intervention participants' fruit and takeaway behaviours improved to meet recommendations at nine months, with a greater proportion progressing to action or maintenance stage-of-change (P < 0.001 and P = 0.012 respectively) compared to controls. Intervention participants' vegetable and physical activity behaviours did not meet recommendations, thereby halting progress to action or maintenance stage-of-change. Indirect effects of improved nutrition and physical activity behaviours at three- and nine-months in the intervention group were explained by changes in self-efficacy, accounting for 8%-37% of the total effect. **Conclusions:** This provides insights into how the mHealth intervention achieved part of its effects and the importance of improving self-efficacy to facilitate improved eating and physical activity behaviours in young adults. (C) 2016 Elsevier Ltd. All rights reserved.

Paul, C. L., et al. (2014). "Thrombolysis ImPlementation in Stroke (TIPS): evaluating the effectiveness of a strategy to increase the adoption of best evidence practice - protocol for a cluster randomised controlled trial in acute stroke care." *Implementation Science* 9.

Background: Stroke is a leading cause of death and disability internationally. One of the three effective interventions in the acute phase of stroke care is thrombolytic therapy with tissue plasminogen activator (tPA), if given within 4.5 hours of onset to appropriate cases of ischaemic stroke. **Objectives:** To test the effectiveness of a multi-component multidisciplinary collaborative approach compared to usual care as a strategy for increasing thrombolysis

rates for all stroke patients at intervention hospitals, while maintaining accepted benchmarks for low rates of intracranial haemorrhage and high rates of functional outcomes for both groups at three months. Methods and design: A cluster randomised controlled trial of 20 hospitals across 3 Australian states with 2 groups: multi- component multidisciplinary collaborative intervention as the experimental group and usual care as the control group. The intervention is based on behavioural theory and analysis of the steps, roles and barriers relating to rapid assessment for thrombolysis eligibility; it involves a comprehensive range of strategies addressing individual-level and system-level change at each site. The primary outcome is the difference in tPA rates between the two groups post-intervention. The secondary outcome is the proportion of tPA treated patients in both groups with good functional outcomes (modified Rankin Score (mRS <2) and the proportion with intracranial haemorrhage (mRS \geq 2), compared to international benchmarks. Discussion: TIPS will trial a comprehensive, multi-component and multidisciplinary collaborative approach to improving thrombolysis rates at multiple sites. The trial has the potential to identify methods for optimal care which can be implemented for stroke patients during the acute phase. Study findings will include barriers and solutions to effective thrombolysis implementation and trial outcomes will be published whether significant or not.

Paul, C. L., et al. (2016). "How can we improve stroke thrombolysis rates? A review of health system factors and approaches associated with thrombolysis administration rates in acute stroke care." *Implementation Science* 11.

Background: Thrombolysis using intravenous (IV) tissue plasminogen activator (tPA) is one of few evidence-based acute stroke treatments, yet achieving high rates of IV tPA delivery has been problematic. The 4.5-h treatment window, the complexity of determining eligibility criteria and the availability of expertise and required resources may impact on treatment rates, with barriers encountered at the levels of the individual clinician, the social context and the health system itself. The review aimed to describe health system factors associated with higher rates of IV tPA administration for ischemic stroke and to identify whether system-focussed interventions increased tPA rates for ischemic stroke. Methods: Published original English-language research from four electronic databases spanning 1997-2014 was examined. Observational studies of the association between health system factors and tPA rates were described separately from studies of system-focussed intervention strategies aiming to increase tPA rates. Where study outcomes were sufficiently similar, a pooled meta-analysis of outcomes was conducted. Results: Forty-one articles met the inclusion criteria: 7 were methodologically rigorous interventions that met the Cochrane Collaboration Evidence for Practice and Organization of Care (EPOC) study design guidelines and 34 described observed associations between health system factors and rates of IV tPA. System-related factors generally associated with higher IV tPA rates were as follows: urban location, centralised or hub and spoke models, treatment by a neurologist/ stroke nurse, in a neurology department/stroke unit or teaching hospital, being admitted by ambulance or mobile team and stroke-specific protocols. Results of the intervention studies suggest that telemedicine approaches did not consistently increase IV tPA rates. Quality improvement strategies appear able to provide modest increases in stroke thrombolysis (pooled odds ratio = 2.1, $p = 0.05$). Conclusions: In order to improve IV tPA rates in acute stroke care, specific health system factors need to be targeted. Multi-component quality improvement approaches can improve IV tPA rates for stroke, although more thoughtfully designed and well-reported trials are required to safely increase rates of IV tPA to eligible stroke patients.

Pearse, B. L., et al. (2020). "Bleeding Management Practices of Australian Cardiac Surgeons, Anesthesiologists and Perfusionists: A Cross-Sectional National Survey Incorporating the Theoretical Domains Framework (TDF) and COM-B Model." *Journal of Multidisciplinary Healthcare* 13: 27-41.

Purpose: Excessive bleeding is an acknowledged consequence of cardiac surgery, occurring in up to 10% of adult patients. This clinically important complication leads to poorer patient outcomes. Clinical practice guidelines are available to support best practice however variability in bleeding management practice and related adverse outcomes still exist. This study had two objectives: 1) to gain insight into current bleeding management practice for adult cardiac surgery in Australia and how that compared to guidelines and literature; and 2) to understand perceived difficulties clinicians face implementing improvements in bleeding management. Methods: A national cross-sectional questionnaire survey was utilized. Perspectives were sought from cardiac surgeons, cardiac anesthesiologists and perfusionists. Thirty-nine closed-ended questions focused on routine bleeding management practices to address pre and intra-operative care. One open-ended question was asked; "What would assist you to improve bleeding management with cardiac surgery patients?" Quantitative data were analysed with SPSS. Qualitative data were categorized into the domains of the Theoretical Domains Framework; the domains were then mapped to the COM-B model. Results: Survey responses from 159 Anesthesiologists, 39 cardiac surgeons and 86 perfusionists were included (response rate 37%). Four of the recommendations queried in this survey were reported as routinely adhered to < 50% of the time, 9 queried recommendations were adhered to 51-75% of the time and 4 recommendations were routinely followed >76% of the time. Conclusion: There is a wide variation in peri-operative bleeding management practice among cardiac anaesthesiologists, surgeons and perfusionists in Australian cardiac surgery units. Conceptualizing factors believed necessary to improve practice with the TDF and COM-B model found that bleeding management could be improved with

a standardized approach including; point of care diagnostic assays, a bleeding management algorithm, access to concentrated coagulation factors, cardiac surgery specific bleeding management education, multidisciplinary team agreement and support, and an overarching national approach.

Peden, C. J., et al. (2019). "Effectiveness of a national quality improvement programme to improve survival after emergency abdominal surgery (EPOCH): a stepped-wedge cluster-randomised trial." *Lancet* 393(10187): 2213-2221.

Background Emergency abdominal surgery is associated with poor patient outcomes. We studied the effectiveness of a national quality improvement (QI) programme to implement a care pathway to improve survival for these patients. Methods We did a stepped-wedge cluster-randomised trial of patients aged 40 years or older undergoing emergency open major abdominal surgery. Eligible UK National Health Service (NHS) hospitals (those that had an emergency general surgical service, a substantial volume of emergency abdominal surgery cases, and contributed data to the National Emergency Laparotomy Audit) were organised into 15 geographical clusters and commenced the QI programme in a random order, based on a computer-generated random sequence, over an 85-week period with one geographical cluster commencing the intervention every 5 weeks from the second to the 16th time period. Patients were masked to the study group, but it was not possible to mask hospital staff or investigators. The primary outcome measure was mortality within 90 days of surgery. Analyses were done on an intention-to-treat basis. This study is registered with the ISRCTN registry, number ISRCTN80682973. Findings Treatment took place between March 3, 2014, and Oct 19, 2015. 22 754 patients were assessed for eligibility. Of 15 873 eligible patients from 93 NHS hospitals, primary outcome data were analysed for 8482 patients in the usual care group and 7374 in the QI group. Eight patients in the usual care group and nine patients in the QI group were not included in the analysis because of missing primary outcome data. The primary outcome of 90-day mortality occurred in 1210 (16%) patients in the QI group compared with 1393 (16%) patients in the usual care group (HR 1.11, 0.96-1.28). Interpretation No survival benefit was observed from this QI programme to implement a care pathway for patients undergoing emergency abdominal surgery. Future QI programmes should ensure that teams have both the time and resources needed to improve patient care.

Peiris, D., et al. (2016). "Systematic medical assessment, referral and treatment for diabetes care in China using lay family health promoters: protocol for the SMARTDiabetes cluster randomised controlled trial." *Implementation Science* 11.

Background: Type 2 diabetes (T2DM) affects 113.9 million people in China, the largest number of any country in the world (*JAMA* 310: 948-59, 2013). T2DM prevalence has risen dramatically from around 1 % in the 1980s to now over 10 % and is expected to continue rising. Despite the growing disease burden, few people with T2DM are achieving adequate management targets to prevent complications. Health system infrastructure in China is struggling to meet these gaps in care, and innovative, cost-effective and affordable solutions are needed. One promising strategy that may be particularly relevant to the Chinese context is improving support for lay family members to care for their relatives with T2DM. Methods: We hypothesise that an interactive mobile health management system can support lay family health promoters (FHP) and healthcare staff to improve clinical outcomes for family members with T2DM through medical assessment, regular monitoring, lifestyle advice and the prescribing of guidelines recommended medications. This intervention will be implemented as a cluster randomised controlled trial involving 80 communities (40 communities in Beijing and 40 rural villages in Hebei province) and 2000 people with T2DM. Outcome analyses will be conducted blinded to intervention allocation. The primary outcome is the proportion of patients achieving ≥ 2 "ABC" goals (HbA1c < 7.0 %, blood pressure (BP) $< 140/80$ mmHg and LDL cholesterol < 100 mg/dl or 2.6 mmol/L) at the end of follow-up (*Diabetes Care* 36(Supplement 1): S11-S66, 2013). Secondary outcomes include the proportion of patients achieving individual ABC targets; mean changes in HbA1c, BP, LDL, renal function (serum creatinine and urinary albumin), body mass index, quality of life (QOL, EQ-5D), and healthcare utilisation from baseline; and cost-effectiveness/ utility of intervention. Trial outcomes will be accompanied by detailed process and economic evaluations. Discussion: The Chinese government has prioritised prevention and treatment of diabetes as 1 of 11 National Basic Public Health Services. Despite great promise for mHealth interventions to improve access to effective health care, there remains uncertainty about how this can be successfully achieved. The findings are likely to inform policy on a scalable strategy to overcome sub-optimal access to effective health care in China.

Peiris, D., et al. (2015). "Behaviour change strategies for reducing blood pressure-related disease burden: findings from a global implementation research programme." *Implementation Science* 10.

Background: The Global Alliance for Chronic Diseases comprises the majority of the world's public research funding agencies. It is focussed on implementation research to tackle the burden of chronic diseases in low- and middle-income countries and amongst vulnerable populations in high-income countries. In its inaugural research call, 15 projects were funded, focussing on lowering blood pressure-related disease burden. In this study, we describe a reflexive mapping exercise to identify the behaviour change strategies undertaken in each of these projects. Methods: Using the Behaviour Change Wheel framework, each team rated the capability, opportunity and motivation of the various actors who were

integral to each project (e.g. community members, non-physician health workers and doctors in projects focussed on service delivery). Teams then mapped the interventions they were implementing and determined the principal policy categories in which those interventions were operating. Guidance was provided on the use of Behaviour Change Wheel to support consistency in responses across teams. Ratings were iteratively discussed and refined at several group meetings. Results: There was marked variation in the perceived capabilities, opportunities and motivation of the various actors who were being targeted for behaviour change strategies. Despite this variation, there was a high degree of synergy in interventions functions with most teams utilising complex interventions involving education, training, enablement, environmental restructuring and persuasion oriented strategies. Similar policy categories were also targeted across teams particularly in the areas of guidelines, communication/marketing and service provision with few teams focussing on fiscal measures, regulation and legislation. Conclusions: The large variation in preparedness to change behaviour amongst the principal actors across these projects suggests that the interventions themselves will be variably taken up, despite the similarity in approaches taken. The findings highlight the importance of contextual factors in driving success and failure of research programmes. Forthcoming outcome and process evaluations from each project will build on this exploratory work and provide a greater understanding of factors that might influence scale-up of intervention strategies.

Pemu, P., et al. (2019). "ACHIEVING HEALTH EQUITY WITH E-HEALTHYSTRIDES (c): PATIENT PERSPECTIVES OF A CONSUMER HEALTH INFORMATION TECHNOLOGY APPLICATION." *Ethnicity & Disease* 29: 393-404.

Objective: We describe the implementation, clinical outcomes and participant perspectives for e-Healthystrides(C). Setting: Three independent ambulatory clinics and an historic African American (AA) church. Participants: Adults with diagnosed diabetes mellitus type 2. Interventions: e-Healthystrides(C) health coach facilitated intervention Primary outcome: Acquisition of three new self-management behaviors. Secondary outcomes: Blood pressure, blood glucose, A1c, attrition rate and participant perspectives of e-Healthystrides(C). Methods: A convergent parallel mixed method design was used in both pilot studies. Results: Two hundred and sixty-four participants, aged similar to 62 +/- 16 years, enrolled. Attrition at 52 weeks varied 50%-90% by site. Low engagement users were defined mainly by anxiety with putting health information online. The primary outcome was achieved in 36% of our participants, with the top 3 self-management behaviors acquired being: reducing risk (24.5%); healthy eating (23.7%); and monitoring (16.4%). Problem solving had the lowest rate of achievement (.91%). Blood pressure improved significantly at all sites at 12 weeks and at clinics A,B,C at 52 weeks. Blood glucose improved at 12 weeks: clinic A (P=.0001), B (P=.003), C (P=.001) and D (P=.03); but, at 52 weeks, only clinics A (P < .0001) and B (P= .0001). Participants felt empowered by features of e-Healthystrides(C). Engagement with health coaches and peers was highly valued. Conclusions: e-Healthystrides(C) is effective for self-management behavior change. Participants showed the best success with healthy coping, healthy eating, and monitoring behaviors. They felt empowered by access to health information and valued interaction with coaches and peers. Our findings support strong relational/social network strategy with a role for coaches as guides (apomediaries) who facilitate skill acquisition using technology.

Peters, S., et al. (2017). "SAMBA project: Systematic coverage of relevant participants, professional groups and future multipliers in the promotion of physical activity for the analysis and development of an interdisciplinary network for sustainable physical activity promotion." *Bewegungstherapie Und Gesundheitssport* 33(3): 114-118.

Lack of physical activity is a widespread risk factor for chronic diseases and physical activity as well as exercise are effective therapeutic interventions with regard to a multitude of existing conditions. Nevertheless, physical inactivity is highly prevalent in the German population. Thus physical activity promotion is needed and is indeed effective in various forms (approaches targeting individuals and policy and environmental approaches). For example, national recommendations for physical activity and physical activity promotion (NEBB) have existed in Germany since September 2016. NEBB provides information concerning the amount of physical activity that persons of different population groups (e.g. children, adolescents and adults) should perform as well as the various interventions of physical activity promotion based on scientific evidence. For the future dissemination of the NEBB, it is therefore necessary to have knowledge about the relevant players contributing directly or indirectly to physical activity promotion. Project SAMBA was initiated with the objective of enabling this systematic overview. In the study, a multi-stage procedure is being used. On the one hand it comprises qualitative expert interviews, subsequent network visualization as well as analysis for network formation and on the other hand, a questionnaire survey of relevant and potential players in physical activity promotion.

Phillips, J. L., et al. (2014). "Impact of a novel online learning module on specialist palliative care nurses' pain assessment competencies and patients' reports of pain: Results from a quasi-experimental pilot study." *Palliative Medicine* 28(6): 521-529.

Background: Pain is a complex multidimensional phenomenon moderated by consumer, provider and health system factors. Effective pain management cuts across professional boundaries, with failure to screen and assess contributing to the burden of unrelieved pain. Aim: To test the impact of an online pain assessment learning module on specialist palliative care nurses' pain assessment competencies, and to determine whether this education impacted positively on palliative care patients' reported pain ratings. Design: A quasi-experimental pain assessment education pilot study utilising 'Qstream (c)', an online methodology to deliver 11 case-based pain assessment learning scenarios, developed by an interdisciplinary expert panel and delivered to participants' work emails over a 28-day period in mid-2012. The 'Self-Perceived Pain Assessment Competencies' survey and chart audit data, including patient-reported pain intensity ratings, were collected pre-intervention (T1) and post-intervention (T2) and analysed using inferential statistics to determine key outcomes. Setting/participants: Nurses working at two Australian inpatient specialist palliative care services in 2012. Results: The results reported conform to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Guidelines. Participants who completed the education intervention (n = 34) increased their pain assessment knowledge, assessment tool knowledge and confidence to undertake a pain assessment ($p < 0.001$). Participants were more likely to document pain intensity scores in patients' medical records than non-participants (95% confidence interval = 7.3%-22.7%, $p = 0.021$). There was also a significant reduction in the mean patient-reported pain ratings between the admission and audit date at post-test of 1.5 (95% confidence interval = 0.7-2.3) units in pain score. Conclusion: This pilot confers confidence of the education interventions capacity to improve specialist palliative care nurses' pain assessment practices and to reduce patient-rated pain intensity scores.

Phillips, J. L., et al. (2017). "Can A Complex Online Intervention Improve Cancer Nurses' Pain Screening and Assessment Practices? Results from a Multicenter, Pre-post Test Pilot Study." *Pain Management Nursing* 18(2): 75-89.

Unrelieved cancer pain has an adverse impact on quality of life. While routine screening and assessment forms the basis of effective cancer pain management, it is often poorly done, thus contributing to the burden of unrelieved cancer pain. The aim of this study was to test the impact of an online, complex, evidence-based educational intervention on cancer nurses' pain assessment capabilities and adherence to cancer pain screening and assessment guidelines. Specialist inpatient cancer nurses in five Australian acute care settings participated in an intervention combining an online spaced learning cancer pain assessment module with audit and feedback of pain assessment practices. Participants' self-perceived pain assessment competencies were measured at three time points. Prospective, consecutive chart audits were undertaken to appraise nurses' adherence with pain screening and assessment guidelines. The differences in documented pre-post pain assessment practices were benchmarked and fed back to all sites post intervention. Data were analyzed using inferential statistics. Participants who completed the intervention (n = 44) increased their pain assessment knowledge, assessment tool knowledge, and confidence undertaking a pain assessment ($p < .001$). The positive changes in nurses' pain assessment capabilities translated into a significant increasing linear trend in the proportion of documented pain assessments in patients' charts at the three time points (χ^2 trend = 18.28, $df = 1$, $p < .001$). There is evidence that learning content delivered using a spaced learning format, augmented with pain assessment audit and feedback data, improves inpatient cancer nurses' self perceived pain screening and assessment capabilities and strengthens cancer pain guideline adherence. (C) 2017 by the American Society for Pain Management Nursing.

Phillips, J. L., et al. (2019). "A phase III wait-listed randomised controlled trial of novel targeted inter-professional clinical education intervention to improve cancer patients' reported pain outcomes (The Cancer Pain Assessment (CPAS) Trial): study protocol." *Trials* 20.

Background Variations in care models contribute to cancer pain being under-recognised and under-treated in half of all patients with cancer. International and national cancer pain management guidelines are achievable with minimal investment but require practice changes. While much of the cancer pain research over the preceding decades has focused on management interventions, little attention has been given to achieving better adherence to recommended cancer pain guideline screening and assessment practices. This trial aims to reduce unrelieved cancer pain by improving cancer and palliative doctors' and nurses' (clinicians') pain assessment capabilities through a targeted inter-professional clinical education intervention delivered to participants' mobile devices (mHealth'). Methods A wait-listed, randomised control trial design. Cancer and/or palliative care physicians and nurses employed at one of the six participating sites across Australia will be eligible to participate in this trial and, on enrolment, will be allocated to the active or wait-listed arm. Participants allocated to the active arm will be invited to complete the mHealth cancer pain assessment intervention. In this trial, mHealth is defined as medical or public health practice supported by mobile devices (i.e. phones, patient monitoring devices, personal digital assistants and other wireless devices). This mHealth intervention integrates three evidence-based elements, namely: the COM-B theoretical framework; spaced learning pedagogy; and audit and feedback. This intervention will be delivered via the QStream online platform to participants' mobile devices over four weeks. The trial will determine if a tailored mHealth intervention, targeting clinicians' cancer pain assessment capabilities, is effective in reducing self-reported cancer pain scores, as measured by a Numerical Rating Scale

(NRS). Discussion If this mHealth intervention is found to be effective, in addition to improving cancer pain assessment practices, it will provide a readily transferable evidence-based framework that could readily be applied to other evidence practice gaps and a scalable intervention that could be administered simultaneously to multiple clinicians across diverse geographical locations. Moreover, if found to be cost-effective, it will help transform clinical continuing professional development. In summary, this mHealth intervention will provide health services with an opportunity to offer an evidence-based, pedagogically robust, cost-effective, scalable training alternative. Trial registration Australian New Zealand Clinical Trials Registry (ANZCTR), ACTRN12618001103257. Registered on 3 July 2018.

Piernas, C., et al. (2019). "Primary Care SHOPping intervention for cardiovascular disease prevention (PC-SHOP): protocol for a randomised controlled trial to reduce saturated fat intake." *Bmj Open* 9(4).

Introduction A diet high in saturated fat (SFA) increases the risk of cardiovascular disease (CVD) and intakes in the UK exceed dietary recommendations. The Primary Care Shopping Intervention for Cardiovascular Disease Prevention (PC-SHOP) study aims to test the effect of an intervention for people with raised low-density lipoprotein (LDL) cholesterol involving health professional (HP) advice alone, or in combination with personalised feedback based on nutritional analysis of grocery store loyalty card data, on SFA intake and blood lipids in comparison with no intervention. Methods and analysis PC-SHOP is a three-arm parallel randomised controlled trial with an allocation ratio of 1: 3: 3 ('no intervention': n= 16, 'brief support': n= 48, 'brief support plus shopping feedback': n= 48, respectively). Participants with raised LDL will be recruited from general practitioner (GP) practices for a 3-month intervention period. In brief support, an HP will deliver a behaviourally informed 10 min consultation and provide a written self-help guide to inform and motivate people to reduce their SFA intake. In brief support plus shopping feedback, the participants will receive the same HP-led behavioural support and, based on data from their grocery store loyalty card, personalised feedback on the SFA content of their grocery shopping, identifying high SFA purchases and suggesting swaps to similar but lower SFA items. Measurements for the primary and secondary outcomes will be collected at baseline and at follow-up (3 months). The primary outcome measure will be the between group difference in the reduction of SFA intake between baseline and follow-up. Secondary outcomes include changes in blood lipids and SFA content of food purchases, with process measures to consider the feasibility and acceptability of the intervention. Ethics and dissemination This study has been reviewed and approved by the National Health Service Health Research Authority Research Ethics Committee (Ref: 17/SC/0168). The trial findings will be disseminated to academic and HPs through presentations at meetings and peer-reviewed journals and to the public through the media. If the intervention is effective, the results will be communicated to relevant stakeholders, including policymakers and retailers.

Pinder, C., et al. (2018). "Digital Behaviour Change Interventions to Break and Form Habits." *Acm Transactions on Computer-Human Interaction* 25(3).

Digital behaviour change interventions, particularly those using pervasive computing technology, hold great promise in supporting users to change their behaviour. However, most interventions fail to take habitual behaviour into account, limiting their potential impact. This failure is partly driven by a plethora of overlapping behaviour change theories and related strategies that do not consider the role of habits. We critically review the main theories and models used in the research to analyse their application to designing effective habitual behaviour change interventions. We highlight the potential for Dual Process Theory, modern habit theory, and Goal Setting Theory, which together model how users form and break habits, to drive effective digital interventions. We synthesise these theories into an explanatory framework, the Habit Alteration Model, and use it to outline the state of the art. We identify the opportunities and challenges of habit-focused interventions.

Pittman, S. J., et al. (2019). "Marine parks for coastal cities: A concept for enhanced community well-being, prosperity and sustainable city living." *Marine Policy* 103: 160-171.

Coastal cities continue to experience rapid urbanisation and population growth worldwide, linked to the diverse economic and social benefits flowing from proximity to the sea. Growing concern over human impacts upon coastal waters and global strategic goals for healthier cities requires that coastal cities develop innovative ways to inspire and empower communities to embrace and cherish city seascapes. Coastal city communities have much to gain from a healthier relationship with the sea. This paper proposes a collaborative community-led marine park concept that celebrates a city's connection to the marine environment, enhances sustainable economic prosperity and enables communities to participate in activities that deepen understanding, value, care and enjoyment of the city seascape. A city marine park (CMP) is not a marine protected area because it does not have biodiversity and heritage protection or ecosystem governance as a primary goal and does not aim to restrict human activities. A CMP enables city communities to collaborate towards a shared vision of elevated status and value for the city seascape. A CMP considers socio-economic and geographical context, including land-sea connectivity, and is integrated within a coastal city's strategic urban planning. This paper highlights core themes of a CMP and the diverse and wide-ranging benefits from coordinated

activities that better connect the city community with its seascape. If co-created by the coastal city community and civic leaders, a CMP will form an enduring spatial nexus for progress toward healthy cities addressing multiple interlinked global sustainable development goals.

Pokhrel, S., et al. (2015). "Behaviour Change in Public Health: Evidence and Implications." *Biomed Research International*.

Pollmann, A. S., et al. (2015). "Deprescribing benzodiazepines and Z-drugs in community-dwelling adults: a scoping review." *Bmc Pharmacology & Toxicology* 16.

Background: Long-term sedative use is prevalent and associated with significant morbidity, including adverse events such as falls, cognitive impairment, and sedation. The development of dependence can pose significant challenges when discontinuation is attempted as withdrawal symptoms often develop. We conducted a scoping review to map and characterize the literature and determine opportunities for future research regarding deprescribing strategies for long-term benzodiazepine and Z-drug (zopiclone, zolpidem, and zaleplon) use in community-dwelling adults. Methods: We searched PubMed, Cochrane Central Register of Controlled Trials, EMBASE, PsycINFO, CINAHL, TRIP, and JBI Ovid databases and conducted a grey literature search. Articles discussing methods for deprescribing benzodiazepines or Z-drugs in community-dwelling adults were selected. Results: Following removal of duplicates, 2797 articles were reviewed for eligibility. Of these, 367 were retrieved for full-text assessment and 139 were subsequently included for review. Seventy-four (53 %) articles were original research, predominantly randomized controlled trials (n = 52 [37 %]), whereas 58 (42 %) were narrative reviews and seven (5 %) were guidelines. Amongst original studies, pharmacologic strategies were the most commonly studied intervention (n = 42 [57 %]). Additional deprescribing strategies included psychological therapies (n = 10 [14 %]), mixed interventions (n = 12 [16 %]), and others (n = 10 [14 %]). Behaviour change interventions were commonly combined and included enablement (n = 56 [76 %]), education (n = 36 [47 %]), and training (n = 29 [39 %]). Gradual dose reduction was frequently a component of studies, reviews, and guidelines, but methods varied widely. Conclusions: Approaches proposed for deprescribing benzodiazepines and Z-drugs are numerous and heterogeneous. Current research in this area using methods such as randomized trials and meta-analyses may too narrowly encompass potential strategies available to target this phenomenon. Realist synthesis methods would be well suited to understand the mechanisms by which deprescribing interventions work and why they fail.

Porcheret, M., et al. (2014). "Development of a behaviour change intervention: a case study on the practical application of theory." *Implementation Science* 9.

Background: Use of theory in implementation of complex interventions is widely recommended. A complex trial intervention, to enhance self-management support for people with osteoarthritis (OA) in primary care, needed to be implemented in the Managing Osteoarthritis in Consultations (MOSAICS) trial. One component of the trial intervention was delivery by general practitioners (GPs) of an enhanced consultation for patients with OA. The aim of our case study is to describe the systematic selection and use of theory to develop a behaviour change intervention to implement GP delivery of the enhanced consultation. Methods: The development of the behaviour change intervention was guided by four theoretical models/frameworks: i) an implementation of change model to guide overall approach, ii) the Theoretical Domains Framework (TDF) to identify relevant determinants of change, iii) a model for the selection of behaviour change techniques to address identified determinants of behaviour change, and iv) the principles of adult learning. Methods and measures to evaluate impact of the behaviour change intervention were identified. Results: The behaviour change intervention presented the GPs with a well-defined proposal for change; addressed seven of the TDF domains (e. g., knowledge, skills, motivation and goals); incorporated ten behaviour change techniques (e. g., information provision, skills rehearsal, persuasive communication); and was delivered in workshops that valued the expertise and professional values of GPs. The workshops used a mixture of interactive and didactic sessions, were facilitated by opinion leaders, and utilised 'context-bound communication skills training.' Methods and measures selected to evaluate the behaviour change intervention included: appraisal of satisfaction with workshops, GP report of intention to practise and an assessment of video-recorded consultations of GPs with patients with OA. Conclusions: A stepped approach to the development of a behaviour change intervention, with the utilisation of theoretical frameworks to identify determinants of change matched with behaviour change techniques, has enabled a systematic and theory-driven development of an intervention designed to enhance consultations by GPs for patients with OA. The success of the behaviour change intervention in practice will be evaluated in the context of the MOSAICS trial as a whole, and will inform understanding of practice level and patient outcomes in the trial.

Porter, J., et al. (2016). "Implementation of protected mealtimes in the subacute setting: stepped wedge cluster trial protocol." *Journal of Advanced Nursing* 72(6): 1347-1356.

Aim. This protocol paper describes a study that aims to determine if protected mealtimes implementation closes the energy deficit of 1900 kJ between estimated requirements and actual energy intake of hospitalized adults in the

subacute setting. **Background.** Protected mealtimes, a strategy developed to address the prevalence of malnourished hospitalized adults, aims to minimize unavoidable and unnecessary interruptions at mealtimes. It has been implemented widely with limited high-quality studies as to its effect. **Design.** A pragmatic stepped wedge cluster trial. Primary outcomes are daily energy and protein intake. **Methods.** Funding was awarded in October 2014. In this study, protected mealtimes implementation will occur across each cluster (ward) chosen at random. A waiver of consent has been endorsed, enabling all patients to receive the intervention. Patients excluded from outcome evaluation will be those receiving end of life care and patients who are nil by mouth. The selection of patients for outcome evaluation will also occur randomly. Sample size, randomization, statistical analysis and contamination issues consider the reporting guidelines of the CONSORT statement: extension to cluster randomized trials. **Conclusions.** The methods selected will ensure that the research is of high quality with conclusions useful and relevant for translation into practice settings. The study does not aim to assess whether the intervention is sustainable beyond the study period, rather it will establish whether the removal of known barriers to intervention uptake enables high fidelity with the intervention. As a result we will have a greater understanding of the nutritional consequences of protected mealtimes in subacute care.

Porter, J., et al. (2017). "The efficacy of Protected Mealtimes in hospitalised patients: a stepped wedge cluster randomised controlled trial." *Bmc Medicine* 15.

Background: Protected Mealtimes is an intervention developed to address the problem of malnutrition in hospitalised patients through increasing positive interruptions (such as feeding assistance) whilst minimising unnecessary interruptions (including ward rounds and diagnostic procedures) during mealtimes. This clinical trial aimed to measure the effect of implementing Protected Mealtimes on the energy and protein intake of patients admitted to the subacute setting. **Methods:** A prospective, stepped wedge cluster randomised controlled trial was undertaken across three hospital sites at one health network in Melbourne, Australia. All patients, except those receiving end-of-life care or not receiving oral nutrition, admitted to these wards during the study period participated. The intervention was guided by the British Hospital Caterers Association reference policy on Protected Mealtimes and by principles of implementation science. Primary outcome measures were daily energy and protein intake. The study was powered to determine whether the intervention closed the daily energy deficit between estimated intake and energy requirements measured as 1900 kJ/day in the pilot study for this trial. **Results:** There were 149 unique participants, including 38 who crossed over from the control to intervention period as the Protected Mealtimes intervention was implemented. In total, 416 observations of 24-hour food intake were obtained. Energy intake was not significantly different between the intervention ([mean +/- SD] 6479 +/- 2486 kJ/day) and control (6532 +/- 2328 kJ/day) conditions ($p = 0.88$). Daily protein intake was also not significantly different between the intervention (68.6 +/- 26.0 g/day) and control (67.0 +/- 25.2 g/day) conditions ($p = 0.86$). The differences between estimated energy/protein requirements and estimated energy/protein intakes were also limited between groups. The adjusted analysis yielded significant findings for energy deficit: (coefficient [robust 95% CI], p value) of 1405 (-2354 to -457), $p = 0.004$. Variability in implementation across aspects of Protected Mealtimes policy components was noted. **Conclusions:** The findings of this trial mirror the findings of other observational studies of Protected Mealtimes implementation where nutritional intakes were observed. Very few positive improvements to nutritional intake have been identified as a result of Protected Mealtimes implementation. Instead of this intervention, approaches with a greater level of evidence for improving nutritional outcomes, such as mealtime assistance, other food-based approaches and the use of oral nutrition support products to supplement oral diet, should be considered in the quest to reduce hospital malnutrition.

Powell, L., et al. (2019). "Guideline Development for Technological Interventions for Children and Young People to Self-Manage Attention Deficit Hyperactivity Disorder: Realist Evaluation." *Journal of Medical Internet Research* 21(4).

Background: Attention deficit hyperactivity disorder (ADHD) is a complex neurodevelopmental disorder characterized by inattention, hyperactivity, and impulsivity. ADHD can affect the individual, the individual's family, and the community ADHD is managed using pharmacological and nonpharmacological treatments, which principally involves others helping children and young people (CAYP) manage their ADHD rather than learning self-management strategies themselves. Over recent years, technological developments have meant that technology has been harnessed to create interventions to facilitate the self-management of ADHD in CAYP. Despite a clear potential to improve the effectiveness and personalization of interventions, there are currently no guidelines based on existing evidence or theories to underpin the development of technologies that aim to help CAYP self-manage their ADHD. **Objective:** The aim of this study was to create evidence-based guidelines with key stakeholders who will provide recommendations for the future development of technological interventions, which aim to specifically facilitate the self-management of ADHD. **Methods:** A realist evaluation (RE) approach was adopted over 5 phases. Phase 1 involved identifying propositions (or hypotheses) outlining what could work for such an intervention. Phase 2 involved the identification of existing middle-range theories of behavior change to underpin the propositions. Phase 3 involved the identification and development of context mechanism outcome configurations (CMOCs), which essentially state which elements of the intervention could be

affected by which contexts and what the outcome of these could be. Phase 4 involved the validation and refinement of the propositions from phase 1 via interviews with key stakeholders (CAYP with ADHD, their parents and specialist clinicians). Phase 5 involved using information gathered during phases 1 to 4 to develop the guidelines. Results: A total of 6 specialist clinicians, 8 parents, and 7 CAYP were recruited to this study. Overall, 7 key themes were identified: (1) positive rewarding feedback, (2) downloadable gaming resources, (3) personalizable and adaptable components, (4) psychoeducation component, (5) integration of self-management strategies, (6) goal setting, and (7) context (environmental and personal). The identified mechanisms interacted with the variable contexts in which a complex technological intervention of this nature could be delivered. Conclusions: Complex intervention development for complex populations such as CAYP with ADHD should adopt methods such as RE, to account for the context it is delivered in, and co-design, which involves developing the intervention in partnership with key stakeholders to increase the likelihood that the intervention will succeed. The development of the guidelines outlined in this paper could be used for the future development of technologies that aim to facilitate self-management in CAYP with ADHD.

Praveen, D., et al. (2013). "A multifaceted strategy using mobile technology to assist rural primary healthcare doctors and frontline health workers in cardiovascular disease risk management: protocol for the SMARTHealth India cluster randomised controlled trial." *Implementation Science* 8.

Background: Blood Pressure related disease affected 118 million people in India in the year 2000; this figure will double by 2025. Around one in four adults in rural India have hypertension, and of those, only a minority are accessing appropriate care. Health systems in India face substantial challenges to meet these gaps in care, and innovative solutions are needed. Methods: We hypothesise that a multifaceted intervention involving capacity strengthening of primary healthcare doctors and non-physician healthcare workers through use of a mobile device-based clinical decision support system will result in improved blood pressure control for individuals at high risk of a cardiovascular disease event when compared with usual healthcare. This intervention will be implemented as a stepped wedge, cluster randomised controlled trial in 18 primary health centres and 54 villages in rural Andhra Pradesh involving adults aged ≥ 40 years at high cardiovascular disease event risk (approximately 15,000 people). Cardiovascular disease event risk will be calculated based on World Health Organisation/ International Society of Hypertension's region-specific risk charts. Cluster randomisation will occur at the level of the primary health centres. Outcome analyses will be conducted blinded to intervention allocation. Expected outcomes: The primary study outcome is the difference in the proportion of people meeting guideline-recommended blood pressure targets in the intervention period vs. the control period. Secondary outcomes include mean reduction in blood pressure levels; change in other cardiovascular disease risk factors, including body mass index, current smoking, reported healthy eating habits, and reported physical activity levels; self-reported use of blood pressure and other cardiovascular medicines; quality of life (using the EQ-5D); and cardiovascular disease events (using hospitalisation data). Trial outcomes will be accompanied by detailed process and economic evaluations. Significance: The findings are likely to inform policy on a scalable strategy to overcome entrenched inequities in access to effective healthcare for under-served populations in low and middle income country settings. Trial registration: Clinical Trial Registry India CTRI/ 2013/ 06/ 003753.

Praveen, D., et al. (2014). "SMARTHealth India: Development and Field Evaluation of a Mobile Clinical Decision Support System for Cardiovascular Diseases in Rural India." *Jmir Mhealth and Uhealth* 2(4).

Background: Cardiovascular disease (CVD) is the major cause of premature death and disability in India and yet few people at risk of CVD are able to access best practice health care. Mobile health (mHealth) is a promising solution, but very few mHealth interventions have been subjected to robust evaluation in India. Objective: The objectives were to develop a multifaceted, mobile clinical decision support system (CDSS) for CVD management and evaluate it for use by public nonphysician health care workers (NPHWs) and physicians in a rural Indian setting. Methods: Plain language clinical rules were developed based on standard guidelines and programmed into a computer tablet app. The algorithm was validated and field-tested in 11 villages in Andhra Pradesh, involving 11 NPHWs and 3 primary health center (PHC) physicians. A mixed method evaluation was conducted comprising clinical and survey data and in-depth patient and staff interviews to understand barriers and enablers to the use of the system. Then this was thematically analyzed using NVivo 10. Results: During validation of the algorithm, there was an initial agreement for 70% of the 42 calculated variables between the CDSS and SPSS software outputs. Discrepancies were identified and amendments were made until perfect agreement was achieved. During field testing, NPHWs and PHC physicians used the CDSS to screen 227 and 65 adults, respectively. The NPHWs identified 39% (88/227) of patients for referral with 78% (69/88) of these having a definite indication for blood pressure (BP)-lowering medication. However, only 35% (24/69) attended a clinic within 1 month of referral, with 42% (10/24) of these reporting continuing medications at 3-month follow-up. Physicians identified and recommended 17% (11/65) of patients for BP-lowering medications. Qualitative interviews identified 3 interrelated interview themes: (1) the CDSS had potential to change prevailing health care models, (2) task-shifting to NPHWs was the central driver of change, and (3) despite high acceptability by end users, actual transformation was substantially

limited by system-level barriers such as patient access to doctors and medicines. Conclusions: A tablet-based CDSS implemented within primary health care systems has the potential to help improve CVD outcomes in India. However, system-level barriers to accessing medical care limit its full impact. These barriers need to be actively addressed for clinical innovations to be successful.

Preston, C., et al. "Facilitating Positive Youth Development in Elite Youth Hockey: Exploring Coaches' Capabilities, Opportunities, and Motivations." *Journal of Applied Sport Psychology*.

Youth sport has been identified as a viable means to facilitate positive youth development (PYD) and nurture fully prepared and contributing adults. However, questions have arisen regarding elite youth sport as a context to effectively foster PYD, and specifically the role of the coach in this process. To explore how coaches facilitate PYD in elite youth sport, the first author immersed himself in the elite youth hockey setting as an assistant coach. Using an ethnographic research design, he observed four AAA minor hockey head coaches of four teams in a large urban center in Ontario over the course of one season. In addition, each coach participated in two semistructured interviews. Framed within the COM-B model, we examined how coaches' capabilities, opportunities, and motivations influenced their behaviors related to facilitating PYD. The coaches discussed and demonstrated several behaviors (e.g., setting high standards, providing leadership opportunities, communicating with the athletes) with the potential to facilitate PYD; however, the sport structure (i.e., professional sports model that focuses on competition and performance from early childhood) often restricted their ability to do so. Further, coaches' own motivations to achieve performance success presented a challenge to fostering PYD on some occasions. The results are situated within PYD literature and may evoke practical considerations for elite youth sport coaches aiming to foster PYD more effectively. Lay summary: Four AAA minor hockey coaches were interviewed and observed over the course of a season. Although the coaches were capable and motivated when it came to fostering the personal development of their players, the performance-oriented structure of the minor hockey system meant that coaches often prioritized winning over player development.

Pritchard, J., et al. (2018). "Improving working equine welfare in 'hardwin' situations, where gains are difficult, expensive or marginal." *Plos One* 13(2).

Purpose Brooke is a non-government organisation with working equine welfare programmes across Africa, Asia and Latin America. In 2014, staff from ten country programmes were asked to identify 'no-win' situations (subsequently reframed as 'hard-wins') where improving equine welfare is proving difficult, expensive and/or marginal in order to inform strategic decisions on how to approach, manage and mitigate for such situations. Methods The Delphi-type consultation process had three phases. Round 1 posed five questions in the form of a workshop, survey and semi-structured interviews. Round 2 re-presented key themes and sense-checked initial conclusions. Round 3 reviewed the nature and prevalence of hard-win situations at an international meeting of all participants. Results Reasons given for hard-win situations included: no economic or social benefit from caring for working animals; poor resource availability; lack of empathy for working equids or their owners among wider stakeholders; deep-seated social issues, such as addiction or illegal working; areas with a high animal turnover or migratory human population; lack of community cooperation or cohesion; unsafe areas where welfare interventions cannot be adequately supported. Participants estimated the prevalence of hard-win situations as 40-70% of their work. They suggested some current ways of working that may be contributing to the problem, and opportunities to tackle hard-wins more effectively. Conclusion and animal welfare implications Respondents agreed that if equine welfare improvements are to span generations of animals, interventions cannot rely on relatively simple, technical knowledge-transfer strategies and quick-wins alone. Programmes need to be more flexible and iterative and less risk-averse in their approaches to embedding good equine welfare practices in all relevant actors. Consultation recommendations informed development of Brooke's new global strategy, a revised organisational structure and redefinition of roles and responsibilities to streamline ways to approach hard-wins in the complex environments and socio-economic contexts in which working equids are found.

Proctor, E. K., et al. (2012). "Writing implementation research grant proposals: ten key ingredients." *Implementation Science* 7.

Background: All investigators seeking funding to conduct implementation research face the challenges of preparing a high-quality proposal and demonstrating their capacity to conduct the proposed study. Applicants need to demonstrate the progressive nature of their research agenda and their ability to build cumulatively upon the literature and their own preliminary studies. Because implementation science is an emerging field involving complex and multilevel processes, many investigators may not feel equipped to write competitive proposals, and this concern is pronounced among early stage implementation researchers. Discussion: This article addresses the challenges of preparing grant applications that succeed in the emerging field of dissemination and implementation. We summarize ten ingredients that are important in implementation research grants. For each, we provide examples of how preliminary data, background literature, and narrative detail in the application can strengthen the application. Summary: Every investigator struggles

with the challenge of fitting into a page-limited application the research background, methodological detail, and information that can convey the project's feasibility and likelihood of success. While no application can include a high level of detail about every ingredient, addressing the ten ingredients summarized in this article can help assure reviewers of the significance, feasibility, and impact of the proposed research.

Proctor, E. K., et al. (2013). "Implementation strategies: recommendations for specifying and reporting." *Implementation Science* 8.

Implementation strategies have unparalleled importance in implementation science, as they constitute the 'how to' component of changing healthcare practice. Yet, implementation researchers and other stakeholders are not able to fully utilize the findings of studies focusing on implementation strategies because they are often inconsistently labelled and poorly described, are rarely justified theoretically, lack operational definitions or manuals to guide their use, and are part of 'packaged' approaches whose specific elements are poorly understood. We address the challenges of specifying and reporting implementation strategies encountered by researchers who design, conduct, and report research on implementation strategies. Specifically, we propose guidelines for naming, defining, and operationalizing implementation strategies in terms of seven dimensions: actor, the action, action targets, temporality, dose, implementation outcomes addressed, and theoretical justification. Ultimately, implementation strategies cannot be used in practice or tested in research without a full description of their components and how they should be used. As with all intervention research, their descriptions must be precise enough to enable measurement and 'reproducibility.' We propose these recommendations to improve the reporting of implementation strategies in research studies and to stimulate further identification of elements pertinent to implementation strategies that should be included in reporting guidelines for implementation strategies.

Pugh, G., et al. (2018). "The Lifestyle Information and Intervention Preferences of Teenage and Young Adult Cancer Survivors: A Qualitative Study." *Cancer Nursing* 41(5): 389-398.

Background: Little is currently known about how best to promote healthy lifestyle choices among teenage and young adult (TYA) cancer survivors. Such data gathered from a patient-centered perspective are instrumental for the development of health behavior change interventions for young people with cancer. Objective: This study aimed to explore the lifestyle information needs of TYA cancer survivors and their preferences regarding lifestyle information and intervention delivery. Lifestyle behaviors of interest were physical activity, diet, smoking, alcohol consumption, and sun safety. Methods: A total of 13 TYA cancer survivors (mean age, 22.9 years) participated in 10 individual interviews and 1 focus group (n = 3). Each interview and focus group followed the same semistructured interview guide, which was designed to explore young peoples' motivation behind leading a healthy lifestyle, their past experience of searching for lifestyle information, and their preferences relating to lifestyle information delivery. Results: Three core themes emerged: cancer as a catalyst to lifestyle behavior change, factors influencing health behavior change, and health behavior information preferences. Social support emerged as facilitator of both health behavior change and self-efficacy. Conclusion: Young people with cancer want age-appropriate lifestyle information on a range of topics delivered in multiple formats at various time points. Implications for Practice: Health professionals working with TYA cancer survivors should address young peoples' lifestyle information needs throughout the cancer care pathway and support young people to foster the confidence to make, and sustain, positive lifestyle behavior changes.

Qiu, C., et al. "Acceptance of illness mediate the effects of health literacy on self-management behaviour." *European Journal of Cardiovascular Nursing*.

Background: Self-management is crucial for blood pressure control and subsequent disease prevention. Health literacy and acceptance of illness may contribute to self-management behaviour; in addition, acceptance of illness may mediate the effects of health literacy on self-management behaviour among patients with hypertension. Objective: The aims of the research were to examine whether health literacy and acceptance of illness were associated with both pharmacological and non-pharmacological management behaviour and examine the possible mediating effects of the acceptance of illness in patients with hypertension. Methods: Hierarchical regression analysis was conducted to analyse the relationships between health literacy, acceptance of illness, pharmacological and non-pharmacological management behaviours. Mediation effects were examined by the PROCESS macro. Results: This was a cross-sectional study. A total of 478 hypertensive patients completed measures of health literacy, acceptance of illness, self-management, social support, depression, physical function and demographic and clinical characteristics. Functional, communicative, critical health literacy and acceptance of illness showed positive associations to pharmacological and non-pharmacological management behaviour. Acceptance of illness mediated the relationships between three types of health literacy, pharmacological and non-pharmacological management but the effects size and pathway differed. In detail, functional health literacy influenced pharmacological and non-pharmacological management behaviour mainly by indirect effects mediated by the acceptance of illness, but communicative and critical health literacy influenced pharmacological and

non-pharmacological management behaviour mainly by direct effects. Conclusions: Acceptance of illness mediated the relationships between three types of health literacy and self-management. Health literacy and acceptance of illness should be addressed when taking measures to improve patients' self-management behaviour.

Quested, E., et al. (2017). "Evaluating quality of implementation in physical activity interventions based on theories of motivation: current challenges and future directions." *International Review of Sport and Exercise Psychology* 10(1): 252-269.

The evidence base pointing towards the maladaptive health consequences of an inactive lifestyle highlights the need for interventions that are effective in changing and maintaining physical activity behaviours. Theories of motivation are frequently applied to inform the content and delivery of such interventions. Systematic monitoring and evaluation of the quality of intervention implementation is therefore an important step in understanding if and how theories of motivation can be adopted and effectively applied to promote and/or sustain physical activity behaviours. However, intervention implementation quality in studies that aim to apply motivation theory to promote physical activity is often under-reported. The purpose of this article is, first, to review contemporary approaches used to monitor and evaluate intervention implementation; we outline the degree to which these methods have been used effectively in research concerned with applying theories of motivation to impact physical activity behaviours. Second, we identify and discuss specific challenges in effectively measuring quality of implementation faced by researchers who adopt a motivation theory basis to their work. Finally, recommendations for methods to monitor and evaluate intervention implementation in future trials aiming to promote physical activity based on theories of motivation are also proposed.

Quinn, C., et al. (2018). "The feasibility of following up prisoners, with mental health problems, after release: a pilot trial employing an innovative system, for engagement and retention in research, with a harder-to-engage population." *Trials* 19.

Background: Following up released prisoners is demanding, particularly for those prisoners with mental health problems, for whom stigma and chaotic lifestyles are problematic. Measurement of mental health outcomes after release is challenging. To evaluate mental healthcare for offender populations, using high-quality randomised controlled trials, evidenced-based methods must be developed to engage them while in custody, to locate and re-interview them after release, and to collect potentially stigmatising mental health outcomes data. Methods: We developed an initial theoretical model and operational procedures for collecting baseline and follow-up data informed by a literature search, focus groups, and case studies. Male prisoners from five prisons in two sites were invited to participate. The inclusion criteria included individuals who were above threshold on nine-item Patient Health Questionnaire, seven-item Generalized Anxiety Disorder, or post-traumatic stress disorder scales, or who had reported mental health problems in the past 2 years or had been assessed with a likely personality disorder. Potential participants were interviewed to generate baseline data and were re-contacted before their release. We then contacted them for a follow-up interview, which included repeating the earlier data collection measures 2-8 weeks after release. A qualitative formative process evaluation produced and refined a model procedure for the recruitment and retention of male prison leavers in trials, identified the mechanisms which promoted engagement and retention, and mapped these against a theoretical behaviour change model. Results: We developed a flexible procedure which was successful in recruiting male prison leavers to a pilot trial: 185/243 (76%, 95% confidence interval (CI) 70-81%) of those approached agreed to participate. We also retained 63% (95% CI 54-71%) of those eligible to participate in a follow-up interview 2-8 weeks after release. Mental health outcomes data was collected at both these time points. Conclusions: It is possible to design acceptable procedures to achieve sustained engagement critical for delivering and evaluating interventions in prison and in the community and to collect mental health outcomes data. These procedures may reduce attrition bias in future randomised controlled trials of mental health interventions for prison leavers. This procedure has been replicated and successfully delivered in a subsequent pilot trial and a definitive randomised controlled trial.

Ramsey, A. T., et al. (2015). "Using segmented regression analysis of interrupted time series data to assess colonoscopy quality outcomes of a web-enhanced implementation toolkit to support evidence-based practices for bowel preparation: a study protocol." *Implementation Science* 10.

Background: While there is convincing evidence on interventions to improve bowel preparation for patients, the evidence on how to implement these evidence-based practices (EBPs) in outpatient colonoscopy settings is less certain. The Strategies to Improve Colonoscopy (STIC) study compares the effect of two implementation strategies, physician education alone versus physician education plus an implementation toolkit for staff, on adoption of three EBPs (split-dosing of bowel preparation, low-literacy education, teach-back) to improve pre-procedure and intra-procedure quality measures. The implementation toolkit contains a staff education module, website containing tools to support staff in delivering EBPs, tailored patient education materials, and brief consultation with staff to determine how the EBPs can be integrated into the existing workflow. Given adaptations to the implementation plan and intentional flexibility in the

delivery of the EBPs, we utilize a pragmatic study to balance external validity with demonstrating effectiveness of the implementation strategies. Methods/Design: Participants will include all outpatient colonoscopy physicians, staff, and patients from a convenience sample of six endoscopy settings. Aim #1 will explore the relative effect of two strategies to implement patient-level EBPs on adoption and clinical quality outcomes. We will assess the change in level and trends of clinical quality outcomes (i.e., adequacy of bowel preparation, adenoma detection) using segmented regression analysis of interrupted time series data with two groups (intervention and delayed start). Aim #2 will examine the influence of organizational readiness to change on EBP implementation. We use a PRECIS diagram to reflect the extent to which each indicator of the study was pragmatic versus explanatory, revealing a largely pragmatic study. Discussion: Implementation challenges have already motivated several adaptations to the original plan, reflecting the nature of implementation in real-world healthcare settings. The pragmatic study responds to the evolving needs of its healthcare partners and allows for flexibility in intervention delivery, thereby informing clinical decision-making in real-world settings. The current study will provide information about what works (intervention effectiveness), for whom it works (influence of Medicaid versus other insurance), in which contexts it works (setting characteristics that influence implementation), and how it works best (comparison of implementation strategies).

Rantanen, T., et al. (2019). "Individualized counselling for active aging: protocol of a single-blinded, randomized controlled trial among older people (the AGNES intervention study)." *Bmc Geriatrics* 19.

BackgroundActive aging has been established as a policy goal for aging societies. We define active aging at the individual level as striving for elements of well-being through activities in relation to a person's goals, functional capacities and opportunities. Increasing evidence suggests that any meaningful activity is beneficial for different aspects of well-being in older people. The aim of the present randomized controlled trial is to test the feasibility and effectiveness of a one-year community-based intervention on active aging. The AGNES intervention aims at increasing older peoples' participation in self-selected valued activities.**Methods**The proposed study is a two-arm single-blinded randomized controlled trial. The intervention group receives individually tailored counselling for an active life (one face-to-face session, four phone calls and supportive written material) and the control group written general health information only. Two hundred older adults aged 75- and 80- year old, with intermediate mobility function and without cognitive impairment, living independently in the municipality of Jyväskylä, Finland, are recruited and randomized with a 1:1 allocation to the intervention and control group. Randomization is computer-generated stratified by sex and age. The primary outcome is active aging and secondary outcomes are well-being, depressive symptoms, quality of life, personal goals, mobility and physical activity. Measures are administered at pre-trial, mid-trial (at 6 months) and post-trial (12 months after baseline).**Discussion**The AGNES intervention study will provide new knowledge on the effects of individualized counselling on active aging and the potential of older people to promote their own well-being.**Trial registration**The trial is registered at ISRCTN - ISRCTN16172390: Promoting well-being through active aging.

Rapport, F., et al. (2019). "Determinants of health and wellbeing in refractory epilepsy and surgery: The Patient Reported, Implementation science (PRIME) model." *Epilepsy & Behavior* 92: 79-89.

This paper offers a new way of understanding the course of a chronic, neurological condition through a comprehensive model of patient-reported determinants of health and wellbeing: The Patient Reported Implementation science (PRIME) model is the first model of its kind to be based on patient-driven insights for the design and implementation of initiatives that could improve tertiary, primary, and community healthcare services for patients with refractory epilepsy, and has broad implications for other disorders; PRIME focuses on: patient-reported determinants of health and wellbeing, pathways through care, gaps in treatment and other system delays, patient need and expectation, and barriers and facilitators to high-quality care provision; PRIME highlights that in the context of refractory epilepsy, patients value appropriate, clear, and speedy referrals from primary care practitioners and community neurologists to specialist healthcare professionals based in tertiary epilepsy centers. Many patients also want to share in decisions around treatment and care, and gain a greater understanding of their debilitating disease, so as to find ways to self-manage their illness more effectively and plan for the future. Here, PRIME is presented using refractory epilepsy as the exemplar case, while the model remains flexible, suitable for adaptation to other settings, patient populations, and conditions; PRIME comprises six critical levels; 1) The Individual Patient Model; 2) The Patient Relationships Model; 3) The Patient Care Pathways Model; 4) The Patient Transitions Model; 5) The Pre- and Postintervention Model; and 6) The Comprehensive Patient Model. Each level is dealt with in detail, while Levels 5 and 6 are presented in terms of where the gaps lie in our current knowledge, in particular in relation to patients' journeys through healthcare, system intersections, and individuals adaptive behavior following resective surgery, as well as others' views of the disease, such as family members. (C) 2018 The Authors. Published by Elsevier Inc.

Ratray, M., et al. (2019). "A qualitative exploration of factors influencing medical staffs' decision-making around nutrition prescription after colorectal surgery." *Bmc Health Services Research* 19.

Background Enhanced Recovery After Surgery (ERAS) guidelines recommend early oral feeding with nutritionally adequate diets after surgery. However, studies have demonstrated variations in practice and poor adherence to these recommendations among patients who have undergone colorectal surgery. Given doctors are responsible for prescribing patients' diets after surgery, this study explored factors which influenced medical staffs' decision-making regarding postoperative nutrition prescription to identify potential behaviour change interventions. **Methods** This qualitative study involved one-on-one, semi-structured interviews with medical staff involved in prescribing nutrition for patients following colorectal surgery across two tertiary teaching hospitals. Purposive sampling was used to recruit participants with varying years of clinical experience. The Theoretical Domains Framework (TDF) underpinned the development of a semi-structured interview guide. Interviews were audio recorded, with data transcribed verbatim before being thematically analysed. Emergent themes and sub-themes were discussed by all investigators to ensure consensus of interpretation. **Results** Twenty-one medical staff were interviewed, including nine consultants, three fellows, four surgical trainees and five junior medical doctors. Three overarching themes emerged from the data: (i) Prescription preferences are influenced by perceptions, experience and training; (ii) Modifying prescription practices to align with patient-related factors; and (iii) Peers influence prescription behaviours and attitudes towards nutrition. **Conclusions** Individual beliefs, patient-related factors and the social influence of peers (particularly seniors) appeared to strongly influence medical staffs' decision-making regarding postoperative nutrition prescription. As such, a multi-faceted approach to behaviour change is required to target individual and organisational barriers to enacting evidence-based feeding recommendations.

Ratz, T., et al. "Effects of Two Web-Based Interventions and Mediating Mechanisms on Stage of Change Regarding Physical Activity in Older Adults." *Applied Psychology-Health and Well Being*.

Background Web-based, theory-driven interventions effectively promote older adults' physical activity. Social-cognitive mechanisms of their effect on stage of change need to be further researched. **Methods** Older adults were randomly allocated to intervention group 1 (10-week online physical activity program), intervention group 2 (same program plus activity tracker), or delayed intervention control group; n = 351 were analyzed (59.6% of originally allocated individuals). Stages of change for recommended endurance and strength training and social-cognitive predictors of physical activity were assessed using questionnaires at baseline and follow-up. Intervention effects and mediation were investigated using mixed-effects ANOVA and ordinal least squares regression. **Results** Direct effects on stage of change were found for intervention group 1 regarding endurance training ($b(\text{intervention group 1}) = 0.44$, 95% confidence interval [0.15, 0.73]), and both groups regarding strength training ($b(\text{intervention group 1}) = 1.02$, [0.71, 1.33], $b(\text{intervention group 2}) = 1.24$, [0.92, 1.56]). Social-cognitive predictor changes in task self-efficacy, intention, and action planning explained intervention effect on stage of change, but not to the full extent. **Conclusions** The results indicate significant web-based intervention effects on physical activity stage, partly mediated by changes in task self-efficacy, intention, and action planning.

Raupach, T., et al. (2014). "Structured smoking cessation training for health professionals on cardiology wards: a prospective study." *European Journal of Preventive Cardiology* 21(7): 915-922.

Background: Smoking is a major cardiovascular risk factor, and smoking cessation is imperative for patients hospitalized with a cardiovascular event. This study aimed to evaluate a systems-based approach to helping hospitalized smokers quit and to identify implementation barriers. **Design:** Prospective intervention study followed by qualitative analysis of staff interviews. **Methods:** The prospective intervention study assessed the effects of implementing standard operating procedures (SOPs) for the provision of counselling and pharmacotherapy to smokers admitted to cardiology wards on counselling frequency. In addition, a qualitative analysis of staff interviews was undertaken to examine determinants of physician and nurse behaviour; this sought to understand barriers in terms of motivation, capability, and/or opportunity. **Results:** A total of 150 smoking patients were included in the study (75 before and 75 after SOP implementation). Before the implementation of SOPs, the proportion of patients reporting to have received cessation counselling from physicians and nurses was 6.7% and 1.3%, respectively. Following SOP implementation, these proportions increased to 38.7% ($p < 0.001$) and 2.7% ($p = 0.56$), respectively. Qualitative analysis revealed that lack of motivation, e. g. role incongruence, appeared to be a major barrier. **Conclusions:** Introduction of a set of standard operating procedures for smoking cessation advice was effective with physicians but not nurses. Analysis of barriers to implementation highlighted lack of motivation rather than capability or opportunity as a major factor that would need to be addressed.

Rawson, T. M., et al. (2017). "Behaviour change interventions to influence antimicrobial prescribing: a cross-sectional analysis of reports from UK state-of-the-art scientific conferences." *Antimicrobial Resistance and Infection Control* 6.

Background: To improve the quality of antimicrobial stewardship (AMS) interventions the application of behavioural sciences supported by multidisciplinary collaboration has been recommended. We analysed major UK scientific research conferences to investigate AMS behaviour change intervention reporting. **Methods:** Leading UK 2015

scientific conference abstracts for 30 clinical specialties were identified and interrogated. All AMS and/or antimicrobial resistance (AMR) abstracts were identified using validated search criteria. Abstracts were independently reviewed by four researchers with reported behavioural interventions classified using a behaviour change taxonomy. Results: Conferences ran for 110 days with >57,000 delegates. 311/12,313 (2.5%) AMS-AMR abstracts (oral and poster) were identified. 118/311 (40%) were presented at the UK's infectious diseases/microbiology conference. 56/311 (18%) AMS-AMR abstracts described behaviour change interventions. These were identified across 12/30 (40%) conferences. The commonest abstract reporting behaviour change interventions were quality improvement projects [44/56 (79%)]. In total 71 unique behaviour change functions were identified. Policy categories; "guidelines" (16/71) and "service provision" (11/71) were the most frequently reported. Intervention functions; "education" (6/71), "persuasion" (7/71), and "enablement" (9/71) were also common. Only infection and primary care conferences reported studies that contained multiple behaviour change interventions. The remaining 10 specialties tended to report a narrow range of interventions focusing on "guidelines" and "enablement". Conclusion: Despite the benefits of behaviour change interventions on antimicrobial prescribing, very few AMS-AMR studies reported implementing them in 2015. AMS interventions must focus on promoting behaviour change towards antimicrobial prescribing. Greater focus must be placed on non-infection specialties to engage with the issue of behaviour change towards antimicrobial use.

Rayner, J. and D. Morgan (2018). "An empirical study of 'green' workplace behaviours: ability, motivation and opportunity." *Asia Pacific Journal of Human Resources* 56(1): 56-78.

Green human resource management contributes to an understanding of the role of human resource management (HRM) towards sustainability and environmental outcomes. This paper assesses employees' environmental knowledge as well as self-perceptions of ability, motivation and opportunity (AMO) to practise green behaviours by operationalising the AMO framework towards a pro-environmental agenda. The study draws on a survey sample of 394 employees from five organisations in regional Australia. Key findings show that pro-environmental AMO are positively associated with green behaviours and that these are more prevalent at home than in the workplace. Further, line managers moderate the relationship between pro-environmental AMO and green behaviour although not the relationship between environmental knowledge and green behaviour. Such benchmark measurement informs HRM policies, practices and interventions and contributes to environmental management. Key points Promoting a green culture and behaviours that eliminate or reduce harm to the environment have been shown to benefit organisations in a multitude of ways. Pro-environmental AMO predicts green behaviours and these behaviours are more prevalent at home than in the workplace. Line managers moderate the relationship between pro-environmental AMO and green behaviour although not the relationship between environmental knowledge and green behaviour. Benchmark measurement using such an AMO tool can inform future HRM policies, practices and interventions that can contribute to environmental management.

Regan, J., et al. (2017). "Improving hearing and vision in dementia: protocol for a field trial of a new intervention." *Bmj Open* 7(11).

Introduction Quality of life and other key outcomes may be improved by optimising hearing and vision function in people living with dementia. To date, there is limited research assessing the efficacy of interventions aimed at improving hearing and vision in people with dementia. Here, we outline a protocol to field test a newly developed home-based intervention, designed to optimise sensory functioning in people with dementia in three European sites. The results of this study will inform the design and conduct of a full-scale randomised controlled trial (RCT) in five European sites. Methods and analysis In this multisite, single arm, open label, feasibility study, participants with dementia (n=24) will be assessed for hearing and vision impairments and be prescribed a hearing aid and/or glasses. Each participant will have a study partner ('dyads'). A subset of dyads will receive 'sensory support' from a 'sensory support therapist', comprising home visits over 12 weeks. The therapist will offer the following intervention: adherence support for corrective devices; adaptations to the home environment to facilitate sensory function; communication training; and referral to community-based support services. The primary outcomes will be process measures assessing the feasibility, tolerability and acceptability of: (1) the intervention components; (2) the method of implementation of the intervention and (3) the study procedures, including outcome assessment measures. Quantitative data will be collected at baseline and follow-up. Qualitative data using semistructured interviews will be collected postintervention and weekly, using participant diaries. Finally, we will explore a model of cost-effectiveness to apply in the subsequent full-scale trial. This feasibility study is a necessary step in the development of a complex, individualised, psychosocial intervention. The data gathered will allow logistical and theoretical processes to be refined in preparation for a full-scale RCT. Ethics and dissemination Ethical approval was obtained in all three participating countries. Results of the field trial will be submitted for publication in a peer-reviewed journal.

Reid, W. D. and A. Hoens (2012). "Physiotherapists' Perceptions of Their Role in the Rehabilitation Management of Individuals with Obesity Commentary." *Physiotherapy Canada* 64(2): 176-177.

Rhind, C., et al. (2014). "Experienced Carers Helping Others (ECHO): Protocol for a Pilot Randomised Controlled Trial to Examine a Psycho-educational Intervention for Adolescents with Anorexia Nervosa and Their Carers." *European Eating Disorders Review* 22(4): 267-277.

Experienced Carers Helping Others (ECHO) is an intervention for carers of people with eating disorders. This paper describes the theoretical background and protocol of a pilot multicentre randomised controlled trial that will explore the use of two variants of ECHO for improving outcomes for adolescents with anorexia nervosa (AN) referred for outpatient care. Adolescent patients and their carers (typically parents and close others in a supportive role) will be recruited from 38 eating disorder outpatient services across the UK. Carers will be randomly allocated to receive ECHOc' guided self-help (in addition to treatment as usual), ECHO' self-help only (in addition to treatment as usual) or treatment as usual only. Primary outcomes are a summary measure of the Short Evaluation of Eating Disorders at 6- and 12-month follow-ups. Secondary outcomes are general psychiatric morbidity of AN patients and carer, carers' coping and behaviour, and change in healthcare use and costs at 6- and 12-month follow-ups. Therapist effects will be examined, and process evaluation of ECHOc will be completed. The findings from this pilot trial will be used in preparation for executing a definitive trial to determine the impact of the preferred variant of ECHO to improve treatment outcomes for AN. Copyright (c) 2014 John Wiley & Sons, Ltd and Eating Disorders Association.

Rhodes, R. E. (2017). n The Evolving Understanding of Physical Activity Behavior: A Multi-Process Action Control Approach. *Advances in Motivation Science*, Vol 4. A. J. Elliot. 4: 171-205.

The health benefits of regular, moderate-intensity physical activity have enormous scope and evidence, yet few people engage in the behavior. As a response, physical activity behavior science has seen considerable research attention over the last 30 years, dominated mainly by work in the social cognitive tradition. The purpose of this paper is to overview the extensions and challenges to this approach, including the gap between good intentions and behavior, the disparity between affective judgments and instrumental attitudes, differences in perceived capability and perceived opportunity, augmentation of expectations with volitional regulatory behaviors, and the relative contributions of implicit/reflexive and reflective factors that explain physical activity. The paper concludes with a proposed schematic, called multi-process action control, that represents an attempt to bridge the social cognitive tradition with contemporary theorizing and evidence in physical activity behavior change science.

Rhodes, R. E., et al. (2019). "Theories of physical activity behaviour change: A history and synthesis of approaches." *Psychology of Sport and Exercise* 42: 100-109.

Background: Most people in developed countries are not physically active enough to reap optimal health benefits so effective promotion strategies are warranted. Theories of behaviour change are essential to understand physical activity and provide an organizing framework for effective intervention. The purpose of this paper was to provide a narrative historical overview of four key theoretical frameworks (social cognitive, humanistic, dual process, socioecological) that have been applied to understand and change physical activity over the last three decades. Methods: Our synthesis of research included the brief history, basic efficacy, strengths, and potential weaknesses of these approaches when applied to physical activity. Results: The dominant framework for understanding physical activity has been in the social cognitive tradition, and it has provided valuable information on key constructs linked to physical activity. The humanistic framework for understanding physical activity has seen a surge in research in the last decade and has demonstrated initial effectiveness in both explaining and intervening on behaviour. The most recent and understudied framework for understanding physical activity is dual process models, which may have promise to provide a broader perspective of motivation by considering non-conscious and hedonic determinants of physical activity. Finally, the individual-level focus of all three of these approaches is contrasted by the socioecological framework, which has seen considerable research attention in the last 15 years and has been instrumental in understanding the role of the built environment in physical activity behaviour and critical to shaping public health policy in government. Conclusions: Despite the strengths of all four frameworks, we noted several weaknesses of each approach at present and highlight several newer applications of integrated models and dynamic models that may serve to improve our understanding and promotion of physical activity over the next decade.

Rich, A., et al. (2015). "Theory of planned behavior and adherence in chronic illness: a meta-analysis." *Journal of Behavioral Medicine* 38(4): 673-688.

Social-cognitive models such as the theory of planned behavior have demonstrated efficacy in predicting behavior, but few studies have examined the theory as a predictor of treatment adherence in chronic illness. We tested the efficacy of the theory for predicting adherence to treatment in chronic illness across multiple studies. A database

search identified 27 studies, meeting inclusion criteria. Averaged intercorrelations among theory variables were computed corrected for sampling error using random-effects meta-analysis. Path-analysis using the meta-analytically derived correlations was used to test theory hypotheses and effects of moderators. The theory explained 33 and 9 % of the variance in intention and adherence behavior respectively. Theoretically consistent patterns of effects among the attitude, subjective norm, perceived behavioral control, intention and behavior constructs were found with small-to-medium effect sizes. Effect sizes were invariant across behavior and measurement type. Although results support theory predictions, effect sizes were small, particularly for the intention-behavior relationship.

Richmond, H., et al. (2018). "Exploring physiotherapists' experiences of implementing a cognitive behavioural approach for managing low back pain and identifying barriers to long-term implementation." *Physiotherapy* 104(1): 107-115.

Objectives Our objectives were two-fold: (i) to describe physiotherapists' experiences of implementing a cognitive behavioural approach (CBA) for managing low back pain (LBP) after completing an extensive online training course (iBeST), and (ii) to identify how iBeST could be enhanced to support long-term implementation before scale up for widespread use. **Design** We conducted semi-structured interviews with 11 physiotherapists from six National Health Service departments in the Midlands, Oxfordshire and Derbyshire. Questions centred on (i) using iBeST to support implementation, (ii) what barriers they encountered to implementation and (iii) what of information or resources they required to support sustained implementation. Interviews were transcribed and thematically analysed using NVivo. Themes were categorised using the Theoretical Domains Framework (TDF). Evidence-based techniques were identified using the behaviour change technique taxonomy to target relevant TDF domains. **Results** Three themes emerged from interviews: anxieties about using a CBA, experiences of implementing a CBA, and sustainability for future implementation of a CBA. Themes crossed multiple TDF domains and indicated concerns with knowledge, beliefs about capabilities and consequences, social and professional roles, social influences, emotion, and environmental context and resources. We identified evidence-based strategies that may support sustainable implementation of a CBA for LBP in a physiotherapy setting. **Conclusions** This study highlighted potential challenges for physiotherapists in the provision of evidence-based LBP care within the current UK NHS. Using the TDF provided the foundation to develop a tailored, evidence-based, implementation intervention to support long term use of a CBA by physiotherapists managing LBP within UK NHS outpatient departments. (C) 2017 Chartered Society of Physiotherapy. Published by Elsevier Ltd. All rights reserved.

Riddell, M. A., et al. (2017). "Developing consensus measures for global programs: lessons from the Global Alliance for Chronic Diseases Hypertension research program." *Globalization and Health* 13.

Background: The imperative to improve global health has prompted transnational research partnerships to investigate common health issues on a larger scale. The Global Alliance for Chronic Diseases (GACD) is an alliance of national research funding agencies. To enhance research funded by GACD members, this study aimed to standardise data collection methods across the 15 GACD hypertension research teams and evaluate the uptake of these standardised measurements. Furthermore we describe concerns and difficulties associated with the data harmonisation process highlighted and debated during annual meetings of the GACD funded investigators. With these concerns and issues in mind, a working group comprising representatives from the 15 studies iteratively identified and proposed a set of common measures for inclusion in each of the teams' data collection plans. One year later all teams were asked which consensus measures had been implemented. **Results:** Important issues were identified during the data harmonisation process relating to data ownership, sharing methodologies and ethical concerns. Measures were assessed across eight domains; demographic; dietary; clinical and anthropometric; medical history; hypertension knowledge; physical activity; behavioural (smoking and alcohol); and biochemical domains. Identifying validated measures relevant across a variety of settings presented some difficulties. The resulting GACD hypertension data dictionary comprises 67 consensus measures. Of the 14 responding teams, only two teams were including more than 50 consensus variables, five teams were including between 25 and 50 consensus variables and four teams were including between 6 and 24 consensus variables, one team did not provide details of the variables collected and two teams did not include any of the consensus variables as the project had already commenced or the measures were not relevant to their study. **Conclusions:** Deriving consensus measures across diverse research projects and contexts was challenging. The major barrier to their implementation was related to the time taken to develop and present these measures. Inclusion of consensus measures into future funding announcements would facilitate researchers integrating these measures within application protocols. We suggest that adoption of consensus measures developed here, across the field of hypertension, would help advance the science in this area, allowing for more comparable data sets and generalizable inferences.

Riis, A., et al. (2013). "Enhanced implementation of low back pain guidelines in general practice: study protocol of a cluster randomised controlled trial." *Implementation Science* 8.

Background: Evidence-based clinical practice guidelines may improve treatment quality, but the uptake of guideline recommendations is often incomplete and slow. Recently new low back pain guidelines are being launched in

Denmark. The guidelines are considered to reduce personal and public costs. The aim of this study is to evaluate whether a complex, multifaceted implementation strategy of the low back pain guidelines will reduce secondary care referral and improve patient outcomes compared to the usual simple implementation strategy. **Methods/design:** In a two-armed cluster randomised trial, 100 general practices (clusters) and 2,700 patients aged 18 to 65 years from the North Denmark region will be included. Practices are randomly allocated 1:1 to a simple or a complex implementation strategy. Intervention practices will receive a complex implementation strategy, including guideline facilitator visits, stratification tools, and quality reports on low back pain treatment. Primary outcome is referral to secondary care. Secondary outcomes are pain, physical function, health-related quality of life, patient satisfaction with care and treatment outcome, employment status, and sick leave. Primary and secondary outcomes pertain to the patient level. Assessments of outcomes are blinded and follow the intention-to-treat principle. Additionally, a process assessment will evaluate the degree to which the intervention elements will be delivered as planned, as well as measure changes in beliefs and behaviours among general practitioners and patients. **Discussion:** This study provides knowledge concerning the process and effect of an intervention to implement low back pain guidelines in general practice, and will provide insight on essential elements to include in future implementation strategies in general practice.

Riley, I. L., et al. (2019). "A Systematic Review of Patient- and Family-Level Inhaled Corticosteroid Adherence Interventions in Black/African Americans." *Journal of Allergy and Clinical Immunology-in Practice* 7(4): 1184-+.

BACKGROUND: Inhaled corticosteroid (ICS) adherence rates are suboptimal among adult black/African Americans. Comprehensive studies characterizing the effectiveness and the methodological approaches to the development of interventions to improve ICS adherence in adult black/African Americans have not been performed. **OBJECTIVES:** Conduct a systematic review of patient/family-level interventions to improve ICS adherence in adult black/African Americans. **METHODS:** We searched MEDLINE, EMBASE, Web of Science, and CINAHL from inception to August 2017 for English-language US studies enrolling at least 30% black/African Americans comparing patient/family-level ICS adherence interventions with any comparator. Two investigators independently selected, extracted data from, and rated risk of bias. We collected information on intervention characteristics and outcomes, and assessed whether studies were informed by behavior theory, stakeholder engagement, or both. **RESULTS:** Among 1661 abstracts identified, we reviewed 230 full-text articles and identified 4 randomized controlled trials (RCTs) and 1 quasi-experimental (pre-post design) study meeting criteria. Study participants (N range, 17-333) varied in mean age (22-47 years), proportion black/African Americans studied (71%-93%), and sex (69%-82% females). RCTs evaluated problem-solving classes, self-efficacy training, technology-based motivational interviewing program, and the use of patient advocates. The RCT testing self-efficacy training was the only intervention informed by both behavior theory and stakeholder engagement. All 4 RCTs compared interventions with active control and rated as medium risk of bias. No RCTs found a statistically significant improvement in adherence. **CONCLUSIONS:** Few studies assessing asthma adherence interventions focused on adult black/African-American populations. No RCTs demonstrated improved ICS adherence in participants. Future studies that are informed by behavior change theory and stakeholder engagement are needed. (C) 2018 American Academy of Allergy, Asthma & Immunology

Ritschl, V., et al. (2018). "I do not want to suppress the natural process of inflammation: new insights on factors associated with non-adherence in rheumatoid arthritis." *Arthritis Research & Therapy* 20.

Background It is estimated that 50-70% of patients with rheumatoid arthritis (RA) are non-adherent to their recommended treatment. Non-adherent patients have a higher risk of not reaching an optimal clinical outcome. We explored factors associated with nonadherence from the patient's perspective. **Methods** Four hundred and fifty-nine RA patients (346 (75.4%) females; mean age 63.0 14.8 years) who failed to attend follow-up visits in two rheumatology centres were eligible to participate in a qualitative interview study. We used this strategy to identify patients who were potentially non-adherent to medicines and/or non-pharmacological interventions. By means of meaning condensation analysis, we identified new and some already well known insights to factors associated with non-adherence. We used the capability, opportunity, and motivation model of behaviour (COM-B) model as a frame of reference to classify the factors. **Results** Forty-three of 131 patients (32.8%) who agreed to participate in the qualitative interviews were found to be non-adherent. New insights on factors associated with non-adherence included strong opinions of patients, such as pain being considered as an indicator of hard work and something to be proud of, or inflammation being a natural process that should not be suppressed; feeling not to be in expert's hands when being treated by a physician/health professional; the experience of excessive self-control over the treatment; and rheumatologists addressing only drugs and omitting non-pharmacological aspects. The COM-B model comprehensively covered the range of our findings. **Conclusions** The new insights on factors associated with non-adherence allow a better understanding of this phenomenon and can substantially enhance patient care by helping to develop targeted interventions.

Rivera, Y. M. and K. C. Smith (2018). Energy Balance-Based Strategies to Reduce Consequences of Prostate Cancer: How to Communicate with Men.

As outlined in previous chapters, men with a history of prostate cancer face increased rates of morbidity associated with both their cancer and the side effects of its treatment. Prostate cancer and its treatment can result in altered body composition, increased fatigue, reduced physical activity, fitness and performance, which in turn create considerable and complex health risks. Moreover, obesity has been linked to cancer-related mortality and aggressive prostate cancer and poor prognosis, specifically. The benefits of energy balance among prostate cancer survivors include reduced fatigue, improved quality of life scores, and greater muscular strength.

Robinson, E., et al. (2013). "Eating attentively: a systematic review and meta-analysis of the effect of food intake memory and awareness on eating." *American Journal of Clinical Nutrition* 97(4): 728-742.

Background: Cognitive processes such as attention and memory may influence food intake, but the degree to which they do is unclear. Objective: The objective was to examine whether such cognitive processes influence the amount of food eaten either immediately or in subsequent meals. Design: We systematically reviewed studies that examined experimentally the effect that manipulating memory, distraction, awareness, or attention has on food intake. We combined studies by using inverse variance meta-analysis, calculating the standardized mean difference (SMD) in food intake between experimental and control groups and assessing heterogeneity with the I² statistic. Results: Twenty-four studies were reviewed. Evidence indicated that eating when distracted produced a moderate increase in immediate intake (SMD: 0.39; 95% CI: 0.25, 0.53) but increased later intake to a greater extent (SMD: 0.76; 95% CI: 0.45, 1.07). The effect of distraction on immediate intake appeared to be independent of dietary restraint. Enhancing memory of food consumed reduced later intake (SMD: 0.40; 95% CI: 0.12, 0.68), but this effect may depend on the degree of the participants' tendencies toward disinhibited eating. Removing visual information about the amount of food eaten during a meal increased immediate intake (SMD: 0.48; 95% CI: 0.27, 0.68). Enhancing awareness of food being eaten may not affect immediate intake (SMD: 0.09; 95% CI: -0.42, 0.35). Conclusions: Evidence indicates that attentive eating is likely to influence food intake, and incorporation of attentive-eating principles into interventions provides a novel approach to aid weight loss and maintenance without the need for conscious calorie counting. *Am J Clin Nutr* 2013;97:728-42.

Robinson, E., et al. (2013). "Development and feasibility testing of a smart phone based attentive eating intervention." *Bmc Public Health* 13.

Background: Attentive eating means eating devoid of distraction and increasing awareness and memory for food being consumed. Encouraging individuals to eat more attentively could help reduce calorie intake, as a strong evidence base suggests that memory and awareness of food being consumed substantially influence energy intake. Methods: The development and feasibility testing of a smartphone based attentive eating intervention is reported. Informed by models of behavioral change, a smartphone application was developed. Feasibility was tested in twelve overweight and obese volunteers, sampled from university staff. Participants used the application during a four week trial and semi-structured interviews were conducted to assess acceptability and to identify barriers to usage. We also recorded adherence by downloading application usage data from participants' phones at the end of the trial. Results: Adherence data indicated that participants used the application regularly. Participants also felt the application was easy to use and lost weight during the trial. Thematic analysis indicated that participants felt that the application raised their awareness of what they were eating. Analysis also indicated barriers to using a smartphone application to change dietary behavior. Conclusions: An attentive eating based intervention using smartphone technology is feasible and testing of its effectiveness for dietary change and weight loss is warranted.

Robson, J., et al. (2015). "Reduction in self-monitoring of blood glucose in type 2 diabetes: an observational controlled study in east London." *British Journal of General Practice* 65(633): E256-E263.

Background Self-monitoring of blood glucose (SMBG) confers no benefit for many people with type 2 diabetes not being treated with insulin. It accounts for 21% of diabetes prescribing costs. Aim To improve care quality at reduced cost for type 2 diabetes by reducing unnecessary SMBG. Design and setting Non-randomised, observational controlled study in two intervention clinical commissioning groups (CCGs) and one control CCG in east London. Method In total, 19 602 people with type 2 diabetes not being treated with insulin were recruited from two intervention CCGs; 16 033 were recruited from a control CCG. The intervention (from 2010 to 2013) comprised implementation of a locally developed guideline, including IT support and peer feedback of performance. Data on practice prescribing SMBG testing strips were gathered using GP electronic health records. Information on costs were obtained via the ePACT electronic database. Results Over 4 years, in all non-insulin type 2 diabetes treatment groups, use of SMBG was reduced in the two intervention CCGs from 42.8% to 16.5%, and in the control CCG from 56.4% to 47.2%. In people on metformin alone or no treatment, intervention CCGs reduced SMBG use from 29.6% to 6.0%, and in the control CCG use dropped from 47.1% to 38.7% (P<0.001). From 2009 to 2012 the total cost of all SMBG prescribing (type 1 and type 2 diabetes, including users

of insulin) was reduced by 4.9% (62 pound 476) in the two intervention CCGs and increased in the control CCG by 5.0% (42 pound 607); in England, the total cost increased by 13.5% (19.4 pound million). In total, 20% (3865 of 19 602) fewer patients used SMBG in the intervention CCGs. Conclusion This low-cost programme demonstrated a major reduction in unnecessary prescribing of SMBG, along with cost savings. If replicated nationally, this would avoid unnecessary testing in 340 000 people and prescribing costs that total 21.8 pound million.

Roe, B., et al. (2015). "Systematic review of systematic reviews for the management of urinary incontinence and promotion of continence using conservative behavioural approaches in older people in care homes." *Journal of Advanced Nursing* 71(7): 1464-1483.

AimTo synthesize evidence from systematic reviews on the management of urinary incontinence and promotion of continence using conservative/behavioural approaches in older people in care homes to inform clinical practice, guidelines and research. **Background**Incontinence is highly prevalent in older people in care home populations. **Design**Systematic review of systematic reviews with narrative synthesis. **Data sources**Electronic searches of published systematic reviews in English using MEDLINE and CINAHL with no date restrictions up to September 2013. Searches supplemented by hand searching and electronic searching of Cochrane Library and PROSPERO. **Review methods**PRISMA statement was followed, as were established methods for systematic review of systematic reviews. **Results**Five systematic reviews of high quality were included, three specific to intervention studies and two reviewed descriptive studies. Urinary incontinence was the primary outcome in three reviews with factors associated with the management of urinary incontinence the primary outcome for the other reviews. **Conclusion**Toileting programmes, in particular prompted voiding, with use of incontinence pads are the main conservative behavioural approach for the management of incontinence and promotion of continence in this population with evidence of effectiveness in the short term. Evidence from associated factors; exercise, mobility, comorbidities, hydration, skin care, staff perspectives, policies and older people's experiences and preference are limited. The majority of evidence of effectiveness are from studies from one country which may or may not be transferable to other care home populations. Future international studies are warranted of complex combined interventions using mixed methods to provide evidence of effectiveness, context of implementation and economic evaluation.

Rogers, P. J. (2016). UNDERSTANDING AND SUPPORTING EQUITY Implications of Methodological and Procedural Choices in Equity-Focused Evaluations.

Rolfe, C. and B. Gardner (2016). "Experiences of hearing loss and views towards interventions to promote uptake of rehabilitation support among UK adults." *International Journal of Audiology* 55(11): 666-673.

Objective: Effective hearing loss rehabilitation support options are available. Yet, people often experience delays in receiving rehabilitation support. This study aimed to document support-seeking experiences among a sample of UK adults with hearing loss, and views towards potential strategies to increase rehabilitation support uptake. People with hearing loss were interviewed about their experiences of seeking support, and responses to hypothetical intervention strategies, including public awareness campaigns, a training programme for health professionals, and a national hearing screening programme. **Design:** Semi-structured qualitative interview design with thematic analysis. **Study sample:** Twenty-two people with hearing loss, aged 66-88. **Results:** Three themes, representing barriers to receiving rehabilitation support and potential areas for intervention, were identified: making the journey from realization to readiness, combatting social stigma, and accessing appropriate services. Barriers to receiving support mostly focused on appraisal of hearing loss symptoms. Interventions enabling symptom appraisal, such as routine screening, or demonstrating how to raise the topic effectively with a loved one, were welcomed. **Conclusions:** Interventions to facilitate realization of hearing loss should be prioritized. Raising awareness of the symptoms and prevalence of hearing loss may help people to identify hearing problems and reduce stigma, in turn increasing hearing loss acceptance.

Room, J., et al. (2017). "What interventions are used to improve exercise adherence in older people and what behavioural techniques are they based on? A systematic review." *Bmj Open* 7(12).

Objectives To conduct a systematic review of interventions used to improve exercise adherence in older people, to assess the effectiveness of these interventions and to evaluate the behavioural change techniques underpinning them using the Behaviour Change Technique Taxonomy (BCTT). **Design** Systematic review. **Methods** A search was conducted on AMED, BNI, CINAHL, EMBASE, MEDLINE and PsychINFO databases. Randomised controlled trials that used an intervention to aid exercise adherence and an exercise adherence outcome for older people were included. Data were extracted with the use of a preprepared standardised form. Risk of bias was assessed with the Cochrane Collaboration's tool for assessing risk of bias. Interventions were classified according to the BCTT. **Results** Eleven studies were included in the review. Risk of bias was moderate to high. Interventions were classified into the following categories: comparison

of behaviour, feedback and monitoring, social support, natural consequences, identity and goals and planning. Four studies reported a positive adherence outcome following their intervention. Three of these interventions were categorised in the feedback and monitoring category. Four studies used behavioural approaches within their study. These were social learning theory, socioemotional selectivity theory, cognitive behavioural therapy and self-efficacy. Seven studies did not report a behavioural approach. Conclusions Interventions in the feedback and monitoring category showed positive outcomes, although there is insufficient evidence to recommend their use currently. There is need for better reporting, use and the development of theoretically derived interventions in the field of exercise adherence for older people. Robust measures of adherence, in order to adequately test these interventions would also be of use. PROSPERO registration number CRD42015020884.

Rose, S., et al. (2016). "Relationships between nutritional knowledge, obesity, and sleep disorder severity." *Journal of Sleep Research* 25(3): 350-355.

Obstructive sleep apnea affects 20% of the adult population. Weight control is considered the best non- medical means of managing the condition, therefore improving nutritional knowledge in individuals may be an appropriate strategy. This study aimed to describe the relationship between nutritional knowledge and: (i) sleep disorder severity; (ii) body mass index; and (iii) demographic characteristics in persons suspected of obstructive sleep apnea. Nutrition knowledge scores were also compared with the general population. Consecutive newly- referred patients attending the sleep laboratory for diagnostic polysomnography were invited to participate. Those who consented (n = 97) were asked to complete a touchscreen survey. Apnea- hypopnea index to measure sleep disorder severity and anthropometric measurements were obtained from the clinic. A quarter of participants were diagnosed with severe obstructive sleep apnea; and a majority (88%) were classed as being overweight or obese. The overall mean nutrition knowledge score was 58.4 +/- 11.6 (out of 93). Nutrition knowledge was not associated with sleep disorder severity, body mass index or gender. The only significant difference detected was in relation to age, with older (= 35 years) participants demonstrating greater knowledge in the 'food choices' domain compared with their younger counterparts (1834 years; P < 0.030). Knowledge scores were similar to the general population. The findings suggest that nutrition knowledge alone is not an important target for weight control interventions for people with obstructive sleep apnea. However, given the complexities of sleep disorders, it may complement other strategies.

Ross, A., et al. (2018). "A systems approach using the functional resonance analysis method to support fluoride varnish application for children attending general dental practice." *Applied Ergonomics* 68: 294-303.

Background: All children attending General Dental Practice in Scotland are recommended to receive twice-yearly applications of sodium fluoride varnish to prevent childhood caries, yet application is variable. Development of complex interventions requires theorizing and modelling to understand context. This study applies the Functional Resonance Analysis Method (FRAM) to produce a sociotechnical systems model and identify opportunities for intervention to support application. Methods: The FRAM was used to synthesise data which were: routine monitoring of fluoride varnish application in 2015/16; a longitudinal survey with practitioners (n = 1090); in-depth practitioner and key informant interviews (n = 43); and a 'world cafe' workshop (n = 56). Results: We describe a detailed model of functions linked to application, and use this to make recommendations for system-wide intervention. Conclusions: Rigorous research is required to produce accessible models of complex systems in healthcare. This novel paper shows how careful articulation of the functions associated with fluoride varnish application can support future improvement efforts.

Ross, A. J., et al. (2015). "Evaluating multisite multiprofessional simulation training for a hyperacute stroke service using the Behaviour Change Wheel." *Bmc Medical Education* 15.

Background: Stroke is a clinical priority requiring early specialist assessment and treatment. A London (UK) stroke strategy was introduced in 2010, with Hyper Acute Stroke Units (HASUs) providing specialist and high dependency care. To support increased numbers of specialist staff, innovative multisite multiprofessional simulation training under a standard protocol-based curriculum took place across London. This paper reports on an independent evaluation of the HASU training programme. The main aim was to evaluate mechanisms for behaviour change within the training design and delivery, and impact upon learners including potential transferability to the clinical environment. Methods: The evaluation utilised the Behaviour Change Wheel framework. Procedures included: mapping training via the framework; examination of course material; direct and video-recorded observations of courses; pre-post course survey sheet; and follow up in-depth interviews with candidates and faculty. Results: Patient management skills and trainee confidence were reportedly increased post-course (post-course median 6 [IQ range 5-6.33]; pre-course median 5 [IQ range 4.67-5.83]; z = 6.42, P < .001). Thematic analysis showed that facilitated 'debrief' was the key agent in supporting both clinical and non-clinical skills. Follow up interviews in practice showed some sustained effects such as enthusiasm for role, and a focus on situational awareness, prioritization and verbalising thoughts. Challenges in standardising a multi-centre course included provision for local context/identity. Conclusions: Pan-London simulation training under the London Stroke

Model had positive outcomes in terms of self-reported skills and motivation. These effects persisted to an extent in practice, where staff could recount applications of learning. The evaluation demonstrated that a multiple centre simulation programme congruent with clinical practice can provide valuable standard training opportunities that support patient care.

Rottman, B. M., et al. (2017). "Medication adherence as a learning process: insights from cognitive psychology." *Health Psychology Review* 11(1): 17-32.

Non-adherence to medications is one of the largest contributors to sub-optimal health outcomes. Many theories of adherence include a value-expectancy' component in which a patient decides to take a medication partly based on expectations about whether it is effective, necessary, and tolerable. We propose reconceptualising this common theme as a kind of causal learning' - the patient learns whether a medication is effective, necessary, and tolerable, from experience with the medication. We apply cognitive psychology theories of how people learn cause-effect relations to elaborate this causal-learning challenge. First, expectations and impressions about a medication and beliefs about how a medication works, such as delay of onset, can shape a patient's perceived experience with the medication. Second, beliefs about medications propagate both top-down' and bottom-up', from experiences with specific medications to general beliefs about medications and vice versa. Third, non-adherence can interfere with learning about a medication, because beliefs, adherence, and experience with a medication are connected in a cyclic learning problem. We propose that by conceptualising non-adherence as a causal-learning process, clinicians can more effectively address a patient's misconceptions and biases, helping the patient develop more accurate impressions of the medication.

Rouf, A., et al. (2019). "The barriers and enablers to achieving adequate calcium intake in young adults: a qualitative study using focus groups." *Journal of Human Nutrition and Dietetics* 32(4): 443-454.

Background Despite the established benefits of calcium consumption, many young Australians are not meeting the recommendations for calcium intake. This is concerning because an adequate calcium consumption is important throughout young adulthood to reach peak bone mass and for the prevention of osteoporosis. Therefore, the present study aimed to explore the barriers and enablers to consuming calcium-rich foods with young adults. Methods Using a semi-structured question guide, five focus group discussions were conducted with 39 participants [mean (SD) age 22.5 (1.8) years]. Participants were mostly females (n = 29) and enrolled in tertiary education (n = 31). A deductive approach was used to group common ideas into themes. The findings from the focus groups were analysed using the COM-B framework, which examines the interactions between three key components (i.e. capability, opportunity and motivation). Results On examining the young adults' capability to consume a diet adequate in calcium, it was found that young adults had limited knowledge of sources, prevention of disease and recommended amounts. Some participants voiced physical barriers to consumption (lactose intolerance). Opportunity was reported as a physical (availability of calcium-rich foods), financial and social opportunity. Some participants reported motivation to include dairy as a result of the habit becoming engrained during their childhood under parental influence (automatic motivation), whereas others reflected on a lack of awareness relating to inadequacy and health consequences (reflective motivation). Conclusions Although social media was seen to be an acceptable mode of intervention, concerns were raised about the source and credibility of the information. The findings may inform the development of future interventions targeting eating habits of young adults.

Rowan, W., et al. (2017). Exploring User Behaviours when Providing Electronic Consent on Health Social Networks: A 'JustTick Agree' Approach. Centeris 2017 - International Conference on Enterprise Information Systems / Projman 2017 - International Conference on Project Management / Hcist 2017 - International Conference on Health and Social Care Information Systems and Technologies, Centeri. M. M. CruzCunha, J. E. Q. Varajao, R. Rijo et al. 121: 968-975.

In an online world, the distinction between public and private is becoming increasingly blurred with rising concerns about the privacy and security of personal health information. The aim of this study is to explore electronic consent (eConsent) on a Health Social Network (HSN) PatientsLikeMe- to improve both the form and accessibility of contractual information presented to HSN users. Participants registered on this HSN and their interaction/behaviours was observed when agreeing to the site's Terms and Conditions (T&C's) and Privacy Policy (PP) documents. Focus group discussions were used to help us understand how and why certain events occurred. Several themes emerged from this data- 'Just Tick Agree' phenomenon, perceived societal benefits for the public good, data privacy concerns and emotional drivers towards eConsent. By achieving a deeper understanding of the eConsent process to an HSN, contributions are presented for both theory and practice. We argue that the complex language used for T&C's and PP statements when simplified would increase user knowledge, awareness and understanding. Furthermore, HSN user behaviours (i.e. 'Just Tick Agree') must change when registering on HSNs and, developers of HSNs should enable user choice on registration by changing how users' control their personal health-related data. (C) 2017 The Authors. Published by Elsevier B.V.

Rubin, S. E., et al. (2013). "New York City Physicians' Views of Providing Long-Acting Reversible Contraception to Adolescents." *Annals of Family Medicine* 11(2): 130-136.

PURPOSE Although the US adolescent pregnancy rate is high, use of the most effective reversible contraceptives-intrauterine devices (IUDs) and implantable contraception-is low. Increasing use of long-acting reversible contraception (LARC) could decrease adolescent pregnancy rates. We explored New York City primary care physicians' experiences, attitudes, and beliefs about counseling and provision of LARC to adolescents. **METHODS** We conducted in-depth telephone interviews with 28 family physicians, pediatricians, and obstetrician-gynecologists using an interview guide based on an implementation science theoretical framework. After an iterative coding and analytic process, findings were interpreted using the capability (knowledge and skills), opportunity (environmental factors), and motivation (attitudes and beliefs) conceptual model of behavior change. **RESULTS** Enablers to IUD counseling and provision include knowledge that nulliparous adolescents are appropriate IUD candidates (capability) and opportunity factors, such as (1) a clinical environment supportive of adolescent contraception, (2) IUD availability in clinic, and (3) the ability to insert IUDs or easy access to an someone who can. Factors enabling motivation include belief in the overall positive consequences of IUD use; this is particularly influenced by a physicians' perception of adolescents' risk of pregnancy and sexually transmitted disease. Physicians rarely counsel about implantable contraception because of knowledge gaps (capability) and limited access to the device (opportunity). **CONCLUSION** Knowledge, skills, clinical environment, and physician attitudes, all influence the likelihood a physician will counsel or insert LARC for adolescents. Interventions to increase adolescents' access to LARC in primary care must be tailored to individual clinical practice sites and practicing physicians, the methods must be made more affordable, and residency programs should offer up-to-date, evidence-based teaching.

Rubinstein, H., et al. (2015). "Public preferences for vaccination and antiviral medicines under different pandemic flu outbreak scenarios." *Bmc Public Health* 15.

Background: During the 2009-2010 A(H1N1) pandemic, many people did not seek care quickly enough, failed to take a full course of antivirals despite being authorised to receive them, and were not vaccinated. Understanding facilitators and barriers to the uptake of vaccination and antiviral medicines will help inform campaigns in future pandemic influenza outbreaks. Increasing uptake of vaccines and antiviral medicines may need to address a range of drivers of behaviour. The aim was to identify facilitators of and barriers to being vaccinated and taking antiviral medicines in uncertain and severe pandemic influenza scenarios using a theoretical model of behaviour change, COM-B. **Methods:** Focus groups and interviews with 71 members of the public in England who varied in their at-risk status. Participants responded to uncertain and severe scenarios, and to messages giving advice on vaccination and antiviral medicines. Data were thematically analysed using the theoretical framework provided by the COM-B model. **Results:** Influences on uptake of vaccines and antiviral medicines -capabilities, motivations and opportunities -are part of an inter-related behavioural system and different components influenced each other. An identity of being healthy and immune from infection was invoked to explain feelings of invulnerability and hence a reduced need to be vaccinated, especially during an uncertain scenario. The identity of being a 'healthy person' also included beliefs about avoiding medicine and allowing the body to fight disease 'naturally'. This was given as a reason for using alternative precautionary behaviours to vaccination. This identity could be held by those not at-risk and by those who were clinically at-risk. **Conclusions:** Promoters and barriers to being vaccinated and taking antiviral medicines are multi-dimensional and communications to promote uptake are likely to be most effective if they address several components of behaviour. The benefit of using the COM-B model is that it is at the core of an approach that can identify effective strategies for behaviour change and communications for the future. Identity beliefs were salient for decisions about vaccination. Communications should confront identity beliefs about being a 'healthy person' who is immune from infection by addressing how vaccination can boost wellbeing and immunity.

Rushforth, B., et al. (2016). "Barriers to effective management of type 2 diabetes in primary care: qualitative systematic review." *British Journal of General Practice* 66(643): E114-E127.

Background Despite the availability of evidence-based guidance, many patients with type 2 diabetes do not achieve treatment goals. **Aim** To guide quality improvement strategies for type 2 diabetes by synthesising qualitative evidence on primary care physicians' and nurses' perceived influences on care. **Design and setting** Systematic review of qualitative studies with findings organised using the Theoretical Domains Framework. **Method** Databases searched were MEDLINE, Embase, CINAHL, PsycInfo, and ASSIA from 1980 until March 2014. Studies included were Englishlanguage qualitative studies in primary care of physicians' or nurses' perceived influences on treatment goals for type 2 diabetes. **Results** A total of 32 studies were included: 17 address general diabetes care, 11 glycaemic control, three blood pressure, and one cholesterol control. Clinicians struggle to meet evolving treatment targets within limited time and resources, and are frustrated with resulting compromises. They lack confidence in knowledge of guidelines and skills, notably initiating insulin and facilitating patient behaviour change. Changing professional boundaries have resulted in uncertainty about where clinical responsibility resides. Accounts are often couched in emotional terms, especially frustrations over

patient compliance and anxieties about treatment intensification. Conclusion Although resources are important, many barriers to improving care are amenable to behaviour change strategies. Improvement strategies need to account for differences between clinical targets and consider tailored rather than 'one size fits all' approaches. Training targeting knowledge is necessary but insufficient to bring about major change; approaches to improve diabetes care need to delineate roles and responsibilities, and address clinicians' skills and emotions around treatment intensification and facilitation of patient behaviour change.

Russell, C. G., et al. (2018). "Impact of the Growing Healthy mHealth Program on Maternal Feeding Practices, Infant Food Preferences, and Satiety Responsiveness: Quasi-Experimental Study." *Jmir Mhealth and Uhealth* 6(4).

Background: Infancy is an important life stage for obesity prevention efforts. Parents' infant feeding practices influence the development of infants' food preferences and eating behaviors and subsequently diet and weight. Mobile health (mHealth) may provide a feasible medium through which to deliver programs to promote healthy infant feeding as it allows low cost and easy access to tailored content. Objective: The objective of this study was to describe the effects of an mHealth intervention on parental feeding practices, infant food preferences, and infant satiety responsiveness. Methods: A quasi-experimental study was conducted with an mHealth intervention group (Growing Healthy) and a nonrandomized comparison group ("Baby's First Food"). The intervention group received access to a free app with age-appropriate push notifications, a website, and an online forum that provided them with evidence-based advice on infant feeding for healthy growth from birth until 9 months of age. Behavior change techniques were selected using the Behaviour Change Wheel framework. Participants in both groups completed three Web-based surveys, first when their infants were less than 3 months old (baseline, T1), then at 6 months (time 2, T2), and 9 months of age (time 3, T3). Surveys included questions on infant feeding practices and beliefs (Infant Feeding Questionnaire, IFQ), satiety responsiveness (Baby Eating Behaviour Questionnaire), and infant's food exposure and liking. Multivariate linear regression models, estimated using maximum likelihood with bootstrapped standard errors, were fitted to compare continuous outcomes between the intervention groups, with adjustment for relevant covariates. Multivariate logistic regression adjusting for the same covariates was performed for categorical outcomes. Results: A total of 645 parents (Growing Healthy: n=301, Baby's First Food: n=344) met the eligibility criteria and were included in the study, reducing to a sample size of 546 (Growing Healthy: n=234, Baby's First Food: n=312) at T2 and a sample size of 518 (Growing Healthy: n=225, Baby's First Food: n=293) at T3. There were approximately equal numbers of boy and girl infants, and infants were aged less than 3 months at baseline (Growing Healthy: mean 7.0, SD 3.7 weeks; Baby's First Food: mean 7.9, SD 3.8 weeks), with Growing Healthy infants being slightly younger than Baby's First Food infants ($P=.001$). All but one (IFQ subscale "concerns about infant overeating or becoming overweight" at T2) of the measured outcomes did not differ between Growing Healthy and Baby's First Food. Conclusions: Although mHealth can be effective in promoting some health behaviors and offers many advantages in health promotion, the results of this study suggest that design and delivery characteristics needed to maximize the impact of mHealth interventions on infant feeding are uncertain. The sensitivity of available measurement tools and differences in baseline characteristics of participants may have also affected the results.

Russell, C. G., et al. (2016). "A qualitative study of the infant feeding beliefs and behaviours of mothers with low educational attainment." *Bmc Pediatrics* 16.

Background: Infancy is an important period for the promotion of healthy eating, diet and weight. However little is known about how best to engage caregivers of infants in healthy eating programs. This is particularly true for caregivers, infants and children from socioeconomically disadvantaged backgrounds who experience greater rates of overweight and obesity yet are more challenging to reach in health programs. Behaviour change interventions targeting parent-infant feeding interactions are more likely to be effective if assumptions about what needs to change for the target behaviours to occur are identified. As such we explored the precursors of key obesity promoting infant feeding practices in mothers with low educational attainment. Methods: One-on-one semi-structured telephone interviews were developed around the Capability Opportunity Motivation Behaviour (COM-B) framework and applied to parental feeding practices associated with infant excess or healthy weight gain. The target behaviours and their competing alternatives were (a) initiating breastfeeding/formula feeding, (b) prolonging breastfeeding/replacing breast milk with formula, (c) best practice formula preparation/sub-optimal formula preparation, (d) delaying the introduction of solid foods until around six months of age/introducing solids earlier than four months of age, and (e) introducing healthy first foods/introducing unhealthy first foods, and (f) feeding to appetite/use of non-nutritive (i.e., feeding for reasons other than hunger) feeding. The participants' education level was used as the indicator of socioeconomic disadvantage. Two researchers independently undertook thematic analysis. Results: Participants were 29 mothers of infants aged 2-11 months. The COM-B elements of Social and Environmental Opportunity, Psychological Capability, and Reflective Motivation were the key elements identified as determinants of a mother's likelihood to adopt the healthy target behaviours although the relative importance of each of the COM-B factors varied with each of the target feeding behaviours. Conclusions:

Interventions targeting healthy infant feeding practices should be tailored to the unique factors that may influence mothers' various feeding practices, taking into account motivational and social influences.

Russell, D., et al. (2018). "'Exercise to me is a scary word': perceptions of fatigue, sleep dysfunction, and exercise in people with fibromyalgia syndrome-a focus group study." *Rheumatology International* 38(3): 507-515.

Fibromyalgia syndrome (FMS) is a common and complex chronic pain condition. Exercise is recommended in the management of the FMS; however, people with FMS often find exercise exacerbates their condition and causes overwhelming fatigue. The objective of this study was to explore the perceptions of fatigue and sleep dysfunction, and exercise in people with FMS. Three, 60-90 min focus groups were conducted with people with FMS (n = 14). Participants were recruited from patient support groups who had experienced therapeutic exercise in the management of their condition. Focus groups were video and audio recorded and transcriptions analysed for thematic content by three independent evaluators. Fatigue, sleep dysfunction, and pain were universally reported by participants. The over-arching theme to emerge was a lack of understanding of the condition by others. A huge sense of loss was a major sub-theme and participants felt that they had fundamentally changed since the onset of FMS. Participants reported that they were unable to carry out their normal activities, including physical activity and exercise. The invisibility of FMS was associated with the lack of understanding by others, the sense of loss, and the impact of FMS. People with FMS perceive that there is a lack of understanding of the condition among health care professionals and the wider society. Those with FMS expressed a profound sense of loss of their former 'self'; part of this loss was the ability to engage in normal physical activity and exercise.

Ryan, J. M., et al. (2017). "Changing physical activity behaviour for people with multiple sclerosis: protocol of a randomised controlled feasibility trial (iStep-MS)." *Bmj Open* 7(11).

Introduction Although physical activity may reduce disease burden, fatigue and disability, and improve quality of life among people with multiple sclerosis (MS), many people with MS are physically inactive and spend significant time in sedentary behaviour. Behaviour change interventions may assist people with MS to increase physical activity and reduce sedentary behaviour. However, few studies have investigated their effectiveness using objective measures of physical activity, particularly in the long term. Further, interventions that have proven effective in the short term may not be feasible in clinical practice because of the large amount of support provided. The iStep-MS trial aims to determine the safety, feasibility and acceptability of a behaviour change intervention to increase physical activity and reduce sedentary behaviour among people with MS. Methods and analysis Sixty people with MS will be randomised (1: 1 ratio) to receive a 12-week intervention or usual care only. The intervention consists of four physical activity consultations with a physiotherapist supported by a handbook and pedometer. Outcomes assessed at baseline, 12 weeks and 9 months are physical activity (ActiGraph wGT3X-BT accelerometer), sedentary behaviour (activPAL3 mu), self-reported activity and sitting time, walking capability, fatigue, self-efficacy, participation, quality of life and health service use. The safety of the intervention will be determined by assessing change in pain and fatigue and the incidence of adverse events during the follow-up period. A parallel process evaluation will assess the feasibility and acceptability of the intervention through assessment of fidelity to the programme and semistructured interviews exploring participants' and therapists' experiences of the intervention. The feasibility of conducting an economic evaluation will be determined by collecting data on quality of life and resource use. Ethics and dissemination Research ethics committee approval has been granted from Brunel University London. Results of the trial will be submitted for publication in journals and distributed to people with MS and physiotherapists.

Rycroft-Malone, J., et al. (2013). "The role of evidence, context, and facilitation in an implementation trial: implications for the development of the PARIHS framework." *Implementation Science* 8.

Background: The case has been made for more and better theory-informed process evaluations within trials in an effort to facilitate insightful understandings of how interventions work. In this paper, we provide an explanation of implementation processes from one of the first national implementation research randomized controlled trials with embedded process evaluation conducted within acute care, and a proposed extension to the Promoting Action on Research Implementation in Health Services (PARIHS) framework. Methods: The PARIHS framework was prospectively applied to guide decisions about intervention design, data collection, and analysis processes in a trial focussed on reducing peri-operative fasting times. In order to capture a holistic picture of implementation processes, the same data were collected across 19 participating hospitals irrespective of allocation to intervention. This paper reports on findings from data collected from a purposive sample of 151 staff and patients pre- and post-intervention. Data were analysed using content analysis within, and then across data sets. Results: A robust and uncontested evidence base was a necessary, but not sufficient condition for practice change, in that individual staff and patient responses such as caution influenced decision making. The implementation context was challenging, in which individuals and teams were bounded by professional issues, communication challenges, power and a lack of clarity for the authority and responsibility for

practice change. Progress was made in sites where processes were aligned with existing initiatives. Additionally, facilitators reported engaging in many intervention implementation activities, some of which result in practice changes, but not significant improvements to outcomes. Conclusions: This study provided an opportunity for reflection on the comprehensiveness of the PARIHS framework. Consistent with the underlying tenant of PARIHS, a multi-faceted and dynamic story of implementation was evident. However, the prominent role that individuals played as part of the interaction between evidence and context is not currently explicit within the framework. We propose that successful implementation of evidence into practice is a planned facilitated process involving an interplay between individuals, evidence, and context to promote evidence-informed practice. This proposal will enhance the potential of the PARIHS framework for explanation, and ensure theoretical development both informs and responds to the evidence base for implementation.

Sabater-Hernandez, D., et al. (2016). "Intervention mapping for developing pharmacy-based services and health programs: A theoretical approach." *American Journal of Health-System Pharmacy* 73(3): 156-164.

Sabater-Hernandez, D., et al. (2018). "A stakeholder co-design approach for developing a community pharmacy service to enhance screening and management of atrial fibrillation." *Bmc Health Services Research* 18.

Background: Community pharmacies provide a suitable setting to promote self-screening programs aimed at enhancing the early detection of atrial fibrillation (AF). Developing and implementing novel community pharmacy services (CPSs) is a complex and acknowledged challenge, which requires comprehensive planning and the participation of relevant stakeholders. Co-design processes are participatory research approaches that can enhance the development, evaluation and implementation of health services. The aim of this study was to co-design a pharmacist-led CPS aimed at enhancing self-monitoring/screening of AF. Methods: A 3-step co-design process was conducted using qualitative methods: (1) interviews and focus group with potential service users (n = 8) to identify key needs and concerns; (2) focus group with a mixed group of stakeholders (n = 8) to generate a preliminary model of the service; and (3) focus group with community pharmacy owners and managers (n = 4) to explore the feasibility and appropriateness of the model. Data were analysed qualitatively to identify themes and intersections between themes. The JeMa2 model to conceptualize pharmacy-based health programs was used to build a theoretical model of the service. Results: Stakeholders delineated: a clear target population (i.e., individuals \geq 65 years old, with hypertension, with or without previous AF or stroke); the components of the service (i.e., patient education; self-monitoring at home; results evaluation, referral and follow-up); and a set of circumstances that may influence the implementation of the service (e.g., quality of the service, competency of the pharmacist, inter-professional relationships, etc.). A number of strategies were recommended to enable implementation (e.g., endorsement by leading cardiovascular organizations, appropriate communication methods and channels between the pharmacy and the general medical practice settings, etc.). Conclusion: A novel and preliminary model of a CPS aimed at enhancing the management of AF was generated from this participatory process. This model can be used to inform decision making processes aimed at adopting and piloting of the service. It is expected the co-designed service has been adapted to suit existing needs of patients and current care practices, which, in turn, may increase the feasibility and acceptance of the service when it is implemented into a real setting.

Sakakibara, B. M., et al. (2017). "Development of a Chronic Disease Management Program for Stroke Survivors Using Intervention Mapping: The Stroke Coach." *Archives of Physical Medicine and Rehabilitation* 98(6): 1195-1202.

Objective: To describe the systematic development of the Stroke Coach, a theory- and evidence-based intervention to improve control of lifestyle behavior risk factors in patients with stroke. Design: Intervention development. Setting: Community. Participants: Individuals who have had a stroke. Interventions: We used intervention mapping to guide the development of the Stroke Coach. Intervention mapping is a systematic process used for intervention development and composed of steps that progress from the integration of theory and evidence to the organization of realistic strategies to facilitate the development of a practical intervention supported by empirical evidence. Social cognitive theory was the underlying premise for behavior change, whereas control theory methods were directed toward sustaining the changes to ensure long-term health benefits. Practical evidence-based strategies were linked to behavioral determinants to improve stroke risk factor control. Main Outcome Measures: Not applicable. Results: The Stroke Coach is a patient-centered, community-based, telehealth intervention to promote healthy lifestyles after stroke. Over 6 months, participants receive seven 30- to 60-minute telephone sessions with a lifestyle coach who provides education, facilitates motivation for lifestyle modification, and empowers participants to self-management their stroke risk factors. Participants also receive a self-management manual and a self-monitoring kit. Conclusions: Through the use of intervention mapping, we developed a theoretically sound and evidence-grounded intervention to improve risk factor control in patients with stroke. If empirical evaluation of the Stroke Coach produces positive results, the next step will be to develop an implementation intervention to ensure successful uptake and delivery of the program in community and outpatient settings. (C) 2017 by the American Congress of Rehabilitation Medicine

Sakzewski, L., et al. (2016). "Translating Evidence to Increase Quality and Dose of Upper Limb Therapy for Children with Unilateral Cerebral Palsy: A Pilot Study." *Physical & Occupational Therapy in Pediatrics* 36(3): 305-329.

Aims: To pilot efficacy of a tailored multifaceted implementation program to change clinical practice of occupational therapists (OTs) providing upper limb (UL) therapy for children with unilateral cerebral palsy (UCP). **Methods:** This before and after study piloted a multifaceted implementation program comprising audit/feedback, barrier identification, and education. Medical chart audits were conducted prior to and 12 months after the intervention. Primary process outcomes included proportion of children with UCP with (1) goals set; (2) goals measured; (3) received contemporary motor learning approach; (4) an adequate dose (30-40 hours); and (5) measured UL outcomes. **Results:** Three teams of OTs (n = 9) participated. Forty-three audits at baseline and 53 at 12 months post-implementation program were conducted. Average time to complete audits was 10 min and four out of the five evidence criteria had complete data extracted from files. Changes in clinical behavior included greater measurement of goals before (+17%) and after (+22%) therapy; use of constraint therapy (+38%), bimanual therapy (+26%), home programs (+14%); measurement of UL outcomes before (+29%) and after (+23%) therapy. Children receiving the target dose increased from 0 to 10%. **Conclusions:** A tailored multifaceted implementation program was feasible to implement and led to meaningful changes in clinical practice behavior.

Salerno, L., et al. (2016). "A longitudinal examination of dyadic distress patterns following a skills intervention for carers of adolescents with anorexia nervosa." *European Child & Adolescent Psychiatry* 25(12): 1337-1347.

Family interventions in anorexia nervosa (AN) have been developed to ameliorate maladaptive patterns of patient-carer interaction that can play a role in illness maintenance. The primary aim of this study is to examine the inter-relationship between baseline and post-treatment distress in dyads of carers and patients with AN to examine the interdependence between carers and patients. The secondary aim is to examine whether a carer skills intervention [Experienced Carer Helping Others (ECHO)] impacts on this inter-relationship. Dyads consisting of treatment-seeking adolescents with AN and their primary carer (n = 149; mostly mothers) were randomised to receive a carer skills intervention (ECHO) in addition to treatment as usual (TAU), or TAU alone, as part of a larger clinical trial. Carers and patients completed a standardised measure of psychological distress (The Depression, Anxiety, and Stress Scale) at baseline and 12 months post-treatment. The Actor Partner Interdependence Model was used to examine longitudinal changes in interdependence by treatment group. As expected, post-treatment levels of distress were related to baseline levels in both groups (actor effects). Moreover, carer distress at 12 months was related to patient distress at baseline for the TAU (partner effects), but not for the ECHO group. Finally, carers' distress change was not a significant predictor of patients' body mass index (BMI) change in the two treatment conditions. These findings are limited to predominantly mother-offspring dyads and may not generalise to other relationships. The ECHO intervention which is designed to teach carers skills in illness management and emotion regulation may be an effective addition to TAU for ameliorating interdependence of distress in patients and their primary carers over time.

Salisbury, C., et al. (2015). "TElehealth in CHronic disease: mixed-methods study to develop the TECH conceptual model for intervention design and evaluation." *Bmj Open* 5(2).

Objective: To develop a conceptual model for effective use of telehealth in the management of chronic health conditions, and to use this to develop and evaluate an intervention for people with two exemplar conditions: raised cardiovascular disease risk and depression. **Design:** The model was based on several strands of evidence: a metareview and realist synthesis of quantitative and qualitative evidence on telehealth for chronic conditions; a qualitative study of patients' and health professionals' experience of telehealth; a quantitative survey of patients' interest in using telehealth; and review of existing models of chronic condition management and evidence-based treatment guidelines. Based on these evidence strands, a model was developed and then refined at a stakeholder workshop. Then a telehealth intervention ('Healthlines') was designed by incorporating strategies to address each of the model components. The model also provided a framework for evaluation of this intervention within parallel randomised controlled trials in the two exemplar conditions, and the accompanying process evaluations and economic evaluations. **Setting:** Primary care. **Results:** The TElehealth in CHronic Disease (TECH) model proposes that attention to four components will offer interventions the best chance of success: (1) engagement of patients and health professionals, (2) effective chronic disease management (including subcomponents of self-management, optimisation of treatment, care coordination), (3) partnership between providers and (4) patient, social and health system context. Key intended outcomes are improved health, access to care, patient experience and cost-effective care. **Conclusions:** A conceptual model has been developed based on multiple sources of evidence which articulates how telehealth may best provide benefits for patients with chronic health conditions. It can be used to structure the design and evaluation of telehealth programmes which aim to be acceptable to patients and providers, and cost-effective.

Salmon, V. E., et al. (2017). "Opportunities, challenges and concerns for the implementation and uptake of pelvic floor muscle assessment and exercises during the childbearing years: protocol for a critical interpretive synthesis." *Systematic Reviews* 6.

Background: Pregnancy and childbirth are important risk factors for urinary incontinence (UI) in women. Pelvic floor muscle exercises (PFME) are effective for prevention of UI. Guidelines for the management of UI recommend offering pelvic floor muscle training (PFMT) to women during their first pregnancy as a preventive strategy. The objective of this review is to understand the relationships between individual, professional, inter-professional and organisational opportunities, challenges and concerns that could be essential to maximise the impact of PFMT during childbearing years and to effect the required behaviour change. **Methods:** Following systematic searches to identify sources for inclusion, we shall use a critical interpretive synthesis (CIS) approach to produce a conceptual model, mapping the relationships between individual, professional, inter-professional and organisational factors and the implementation, acceptability and uptake of PFME education, assessment and training during the childbearing years. Purposive sampling will be used to identify potentially relevant material relating to topics or areas of interest which emerge as the review progresses. A wide range of empirical and non-empirical sources will be eligible for inclusion to encompass the breadth of relevant individual, professional, inter-professional and organisational issues relating to PFME during childbearing years. Data analysis and synthesis will identify key themes, concepts, connections and relationships between these themes. Findings will be interpreted in relation to existing frameworks of implementation, attitudes and beliefs of individuals and behaviour change. We will collate examples to illustrate relationships expressed in the conceptual model and identify potential links between the model and drivers for change. **Discussion:** The CIS review findings and resulting conceptual model will illustrate relationships between factors that might affect the implementation, acceptability and uptake of PFME education, assessment and training during the childbearing years. The model will inform the development and evaluation of a training package to support midwives with implementation and delivery of effective PFME during the antenatal period. The review forms part of the first phase of the United Kingdom National Institute for Health Research funded 'Antenatal Preventative Pelvic floor Exercises And Localisation (APPEAL)' programme (grant number: RP-PG-0514-20002) to prevent poor health linked to pregnancy and childbirth-related UI.

Salzer, S., et al. (2017). "Socio-behavioural aspects in the prevention and control of dental caries and periodontal diseases at an individual and population level." *Journal of Clinical Periodontology* 44: S106-S115.

Aim: Aim was to systematically review behavioural aspects in the prevention and control of dental caries and periodontal diseases at individual and population level. **Material & Methods:** With regard to caries, MEDLINE/PubMed was searched on three subheadings focusing on early childhood, proximal and root caries. For periodontal diseases, a meta-review on systematic reviews was performed; thus, the search strategy included specific interventions to change behaviour in order to perform a meta-review on systematic reviews. After extraction of data and conclusions, the potential risk of bias was estimated and the emerging evidence was graded. **Results:** Regarding early childhood, proximal and root caries, 28, 6 and 0 papers, respectively, could be included, which predominantly reported on cohort studies. Regarding periodontal diseases, five systematic reviews were included. High evidence of mostly high magnitude was retrieved for behavioural interventions in early childhood caries (ECC), weak evidence for a small effect in proximal caries and an unclear effect of specific informational/motivational programmes on prevention of periodontal diseases and no evidence of root caries. **Conclusion:** Early childhood caries can be successfully prevented by populationbased preventive programmes via aiming at the change in behaviour. The effect of individual specific motivational/informational interventions has not yet been clearly demonstrated neither for the prevention of caries nor for periodontal diseases.

Sanchez, A., et al. (2018). "Engaging primary care professionals in collaborative processes for optimising type 2 diabetes prevention practice: the PREDIAPS cluster randomised type II hybrid implementation trial." *Implementation Science* 13.

Background: There is a lack of evidence concerning the effectiveness of different strategies to engage healthcare professionals in collaborative processes that seek to optimise clinical practice. The PREDIAPS project aims to assess the effect of different primary health care (PHC) providers' engagement procedures in the creation and execution of a facilitated interprofessional collaborative process to optimise the integration of the recommended clinical practice for the prevention of type-2 diabetes (T2D) in routine PHC. **Methods:** This will be a randomised cluster type II hybrid implementation trial. Nine PHC centres from the Basque Health Service (Osakidetza) will be allocated to two different procedures to engage family doctors and nurses and create an interprofessional collaborative practice to optimise the integration of a T2D primary prevention programme. All centres and PHC professionals will receive training on current guidelines in primary prevention of T2D and effective interventions to promote healthy lifestyles. Headed by a local leader and an external facilitator, centres will conduct a collaborative structured process to model and adapt the intervention and its implementation to the specific context of professionals and centres. One of the groups will apply this strategy globally, promoting the cooperation of all health professionals from the beginning. The other will perform it sequentially, centred first on nurses, who will then seek the pragmatic cooperation of doctors. All patients without diabetes aged >=

30 years old who attend collaborating centres at least once during the study period and found to be at high risk of developing T2D will be eligible for programme inclusion. The main outcome measures focus on changes observed in indicators of T2D prevention clinical practice at centre level after 12 and 24 months, associated with the application of one or other engagement procedure. Secondary outcomes will compare their clinical effectiveness in changing eligible exposed patients' main lifestyle behaviours and risk factors (physical activity and diet, weight, etc.) after 12 months. Discussion: The PREDIAPS project will generate scientific knowledge on procedures for engaging PHC professional to facilitate feasible and effective adoption of proven interventions for the prevention of T2D in routine clinical practice through the application of implementation strategies.

Sandhu, H., et al. (2016). "Combined cognitive-behavioural and mindfulness programme for people living with dystonia: a proof-of-concept study." *Bmj Open* 6(8).

Objectives: To design and test the delivery of an intervention targeting the non-motor symptoms of dystonia and pilot key health and well-being questionnaires in this population. Design: A proof-of-concept study to test the delivery, acceptability, relevance, structure and content for a 3-day group residential programme for the management of dystonia. Setting: Participants were recruited from a single botulinum toxin clinic. The intervention was delivered in the community. Participants: 14 participants consented to take part (2 withdrew prior to the starting of intervention). The average age was 60 years (range 44-77), 8 of whom were female. After drop-out, 9 participants completed the 3-day programme. Intervention: A 3-day group residential programme. Primary and secondary outcome measures: Process evaluation and interviews were carried out before and after the intervention to explore participant's views and expectations, as well as experiences of the intervention. Select questionnaires were completed at baseline, 1-month and 3-month follow-up. Results: Although participants were not sure what to expect from the programme, they found it informative and for many this together with being in a group with other people with dystonia legitimised their condition. Mindfulness was accepted and adopted as a coping strategy. This was reflected in the 1-month follow-up. Conclusions: We successfully delivered a 3-day residential programme to help those living with dystonia manage their condition. Further improvements are suggested. The quantitative outcome measures were acceptable to this group of patients with dystonia.

Sandstrom, B., et al. (2015). "Perceptions of national guidelines and their (non) implementation in mental healthcare: a deductive and inductive content analysis." *Implementation Science* 10.

Background: National guidelines are being produced at an increasing rate, and politicians and managers are expected to promote these guidelines and their implementation in clinical work. However, research seldom deals with how decision-makers can perceive these guidelines or their challenges in a cultural context. Therefore, the aim of this study was twofold: to investigate how well Promoting Action on Research Implementation in Health Services (PARIHS) reflected the empirical reality of mental healthcare and to gain an extended understanding of the perceptions of decision-makers operating within this context, in regard to the implementation of evidence-based guidelines. Methods: The study took place in the southeast of Sweden and employed a qualitative design. The data were collected through 23 interviews with politicians and managers working either in the county council or in the municipalities. The transcribed text was analysed iteratively and in two distinct phases, first deductively and second inductively by means of qualitative content analysis. Results: Our deductive analysis showed that the text strongly reflected two out of three categorisation matrices, i.e. evidence and context representing the PARIHS framework. However, the key element of facilitation was poorly mirrored in the text. Results from the inductive analysis can be seen in light of the main category sitting on the fence; thus, the informants' perceptions reflected ambivalence and contradiction. This was illustrated by conflicting views and differences in culture and ideology, a feeling of security in tradition, a certain amount of resistance to change and a lack of role clarity and clear directions. Together, our two analyses provide a rich description of an organisational culture that is highly unlikely to facilitate the implementation of the national guidelines, together with a distrust of the source behind such guidelines, which stands in stark contrast to the high confidence in the knowledge of experienced people in authority within the organisational context. Conclusions: Our findings have highlighted that, regardless of by whom guidelines are released, they are not likely to be utilised or implemented if those who are responsible for implementing them do not trust the source. This aspect (i.e. contextual trust) is not covered by PARIHS.

Sanson-Fisher, R. W., et al. (2014). Evaluation of Systems-Oriented Public Health Interventions: Alternative Research Designs. *Annual Review of Public Health*, Vol 35. J. E. Fielding. 35: 9-27.

The need to provide sound evidence of the costs and benefits of real-world public health interventions has driven advances in the development and analysis of designs other than the controlled trial in which individuals are randomized to an experimental condition. Attention to methodological quality is of critical importance to ensure that any evaluation can accurately answer three fundamental questions: (a) Has a change occurred, (b) did the change occur as a result of the intervention, and (c) is the degree of change significant? A range of alternatives to the individual

randomized controlled trial (RCT) can be used for evaluating such interventions, including the cluster RCT, stepped wedge design, interrupted time series, multiple baseline, and controlled prepost designs. The key features and complexities associated with each of these designs are explored.

Sargeant, J., et al. (2018). "CPD of the future: a partnership between quality improvement and competency-based education." *Medical Education* 52(1): 125-135.

Context Many of those involved in continuing professional development (CPD) over the past 10 years have engaged in discussions about its goals and activities. Whereas in the past CPD was viewed as an education intervention directed towards the medical expert role, recent research highlights the need to expand the scope of CPD and to promote its more explicit role in improving patient care and health outcomes. Recent developments in quality improvement (QI) and competency-based medical education (CBME), guided by appropriate theories of learning and change, can shed light on how the field might best advance. This paper describes principles of QI and CBME and how they might contribute to CPD, explores theoretical perspectives that inform such an integration and suggests a future model of CPD. Discussion Continuing professional development seeks to improve patient outcomes by increasing physician knowledge and skills and changing behaviours, whereas QI takes the approach of system and process change. Combining the strengths of a CPD approach with strategies known to be effective from the field of QI has the potential to harmonise the contributions of each, and thereby to lead to better patient outcomes. Similarly, competency-based CPD is envisioned to place health needs and patient outcomes at the centre of a CPD system that will be guided by a set of competencies to enhance the quality of practice and the safety of the health system. Conclusions We propose that the future CPD system should adhere to the following principles: it should be grounded in the everyday workplace, integrated into the health care system, oriented to patient outcomes, guided by multiple sources of performance and outcome data, and team-based; it should employ the principles and strategies of QI, and should be taken on as a collective responsibility by physicians, CPD provider organisations, regulators and the health system. Continuing professional development of the future will draw upon the principles and strategies of quality improvement and competency-based education, and be grounded in the workplace and health care system

Sarkies, M. N., et al. (2019). "A novel counterbalanced implementation study design: methodological description and application to implementation research." *Implementation Science* 14.

Background Implementation research is increasingly being recognised for optimising the outcomes of clinical practice. Frequently, the benefits of new evidence are not implemented due to the difficulties applying traditional research methodologies to implementation settings. Randomised controlled trials are not always practical for the implementation phase of knowledge transfer, as differences between individual and organisational readiness for change combined with small sample sizes can lead to imbalances in factors that impede or facilitate change between intervention and control groups. Within-cluster repeated measure designs could control for variance between intervention and control groups by allowing the same clusters to receive a sequence of conditions. Although in implementation settings, they can contaminate the intervention and control groups after the initial exposure to interventions. We propose the novel application of counterbalanced design to implementation research where repeated measures are employed through crossover, but contamination is averted by counterbalancing different health contexts in which to test the implementation strategy. Methods In a counterbalanced implementation study, the implementation strategy (independent variable) has two or more levels evaluated across an equivalent number of health contexts (e.g. community-acquired pneumonia and nutrition for critically ill patients) using the same outcome (dependent variable). This design limits each cluster to one distinct strategy related to one specific context, and therefore does not overburden any cluster to more than one focussed implementation strategy for a particular outcome, and provides a ready-made control comparison, holding fixed. The different levels of the independent variable can be delivered concurrently because each level uses a different health context within each cluster to avoid the effect of treatment contamination from exposure to the intervention or control condition. Results An example application of the counterbalanced implementation design is presented in a hypothetical study to demonstrate the comparison of video-based' and written-based' evidence summary research implementation strategies for changing clinical practice in community-acquired pneumonia and nutrition in critically ill patient health contexts. Conclusion A counterbalanced implementation study design provides a promising model for concurrently investigating the success of research implementation strategies across multiple health context areas such as community-acquired pneumonia and nutrition for critically ill patients.

Sarrassat, S., et al. (2015). "Behavior Change After 20 Months of a Radio Campaign Addressing Key Lifesaving Family Behaviors for Child Survival: Midline Results From a Cluster Randomized Trial in Rural Burkina Faso." *Global Health-Science and Practice* 3(4): 557-576.

Background: In Burkina Faso, a comprehensive 35-month radio campaign addressed key, multiple family behaviors for improving under-5 child survival and was evaluated using a repeated cross-sectional, cluster randomized

design. The primary outcome of the trial was postneonatal under-5 child mortality. This paper reports on behavior change achieved at midline. Method: Fourteen community radio stations in 14 geographic areas were selected based on their high listenership. Seven areas were randomly allocated to receive the intervention while the other 7 areas served as controls. The campaign was launched in March 2012. Cross-sectional surveys of about 5,000 mothers of under-5 children, living in villages close to the radio stations, were conducted at baseline (from December 2011 to February 2012) and at midline (in November 2013), after 20 months of campaigning. Statistical analyses were based on cluster-level summaries using a difference-in-difference (DiD) approach and adjusted for imbalances between arms at baseline. In addition, routine health facility data were analyzed for evidence of changes in health facility utilization. Results: At midline, 75% of women in the intervention arm reported recognizing radio spots from the campaign. There was some evidence of the campaign having positive effects on care seeking for diarrhea (adjusted DiD, 17.5 percentage points; 95% confidence interval [CI], 2.5 to 32.5; $P = .03$), antibiotic treatment for fast/difficult breathing (adjusted DiD, 29.6 percentage points; 95% CI, 3.5 to 55.7; $P = .03$), and saving money during pregnancy (adjusted DiD, 12.8 percentage points; 95% CI, 1.4 to 24.2; $P = .03$). For other target behaviors, there was little or no evidence of an impact of the campaign after adjustment for baseline imbalances and confounding factors. There was weak evidence of a positive correlation between the intensity of broadcasting of messages and reported changes in target behaviors. Routine health facility data were consistent with a greater increase in the intervention arm than in the control arm in all-cause under-5 consultations (33% versus 17%, respectively), but the difference was not statistically significant ($P = .40$). Conclusion: The radio campaign reached a high proportion of the primary target population, but the evidence for an impact on key child survival-related behaviors at midline was mixed.

Sauro, K. M., et al. (2019). "Improving knowledge translation of clinical practice guidelines for epilepsy." *Epilepsy & Behavior* 92: 265-268.

Background: Clinical practice guidelines (CPGs) have the potential to improve quality of care. However, implementation of CPGs into the clinical care of people with epilepsy is less than optimal. This study aimed to examine barriers and facilitators to the use of CPGs for the care of people with epilepsy. Methods: A cross-sectional survey of Canadian neurologists was conducted to evaluate CPG use, barriers and facilitators of CPG use, and factors associated with CPG use among neurologists. The barriers and facilitators of CPG use among neurologists that manage people with epilepsy were compared with those who do not. Results: Of 311 responders (response rate = 38.7%), 78.7% indicated that they manage people with epilepsy. Neurologists that manage people with epilepsy did not differ from those who do not with regard to demographic characteristics nor in the proportion that report using CPGs in their clinical practice. The barriers and facilitators of CPG use were largely similar between neurologist that do and do not manage people with epilepsy: except applicability of CPGs tended to be less commonly endorsed as a barrier to CPG use by those who manage people with epilepsy compared with those who do not. Conclusions: This study suggests that knowledge, applicability, motivation, resources, and targeting of CPGs to appropriate audience are barriers and facilitators of CPG use among neurologists who manage people with epilepsy. The similarity between barriers and facilitators of CPG use among neurologists who manage people with epilepsy compared with those who do not provides support for the use of a knowledge translation (KT) strategy tailored to these barriers and facilitators of CPG use, and targeted towards neurologists. Implementation of epilepsy CPGs has the potential to improve the quality of care for people with epilepsy. (C) 2019 Elsevier Inc. All rights reserved.

Sauro, K. M., et al. (2018). "Knowledge translation of clinical practice guidelines among neurologists: A mixed-methods study." *Plos One* 13(10).

Objectives Clinical practice guidelines have the potential to improve care, but are often not optimally implemented. Improving guideline use in clinical practice may improve care. The objective of this study was to identify the barriers and facilitators (determinants) of guidelines use among neurologists and to propose a strategy to improve guideline implementation. Methods This was a mixed-methods study design. A quantitative, population-based, cross-sectional survey of Canadian neurologists was conducted. Associations between guidelines use and determinants of guidelines use were examined. Focus groups and interviews were conducted using purposeful sampling of the population. Determinants of guideline use were mapped to interventions to establish a strategy for guideline implementation among neurologists. Results 38.7% ($n = 311$) of neurologists responded to the survey. Typically, respondents had been practicing for 16.6 years and worked in an academic institution in an urban setting. Being male and having an academic affiliation was associated with guideline use. Determinants of guideline use differed between guideline users and non-users; non-users consistently rating determinants lower than users, especially applicability. Two focus groups and one interview ($n = 11$) identified six main themes of determinants of guideline use: Credibility, knowledge, applicability, resources, motivation, and target audience; which was congruent with the quantitative data. The proposed knowledge translation strategy contains three pillars: guidelines development, dissemination, and interventions. Conclusions Several determinants of guideline use not commonly discussed in the literature were identified (applicability, target audience,

credibility). The proposed implementation strategy is a valuable resource for guideline developers and policy/decision-makers to improve knowledge translation of guidelines among neurologists.

Sauro, K. M., et al. (2015). "Developing clinical practice guidelines for epilepsy: A report from the ILAE Epilepsy Guidelines Working Group." *Epilepsia* 56(12): 1859-1869.

Clinical practice guidelines (CPGs) contain evidence-based recommendations to guide clinical care, policy development, and quality of care improvement. A recent systematic review of epilepsy guidelines identified considerable variability in the quality of available guidelines. Although excellent frameworks for CPG development exist, processes are not followed uniformly internationally, and resources to develop CPGs may be limited in certain settings. An International League Against Epilepsy (ILAE) working group was charged with proposing methodology to guide the development of future epilepsy-specific CPGs. A comprehensive literature search (1985-2014) identified articles related to CPG development and handbooks. Guideline handbooks were included if they were publicly available, and if their methodology had been used to develop CPGs. The working group's expertise also informed the creation of methodologies and processes to develop future CPGs for the ILAE. Five handbooks from North America (American Academy of Neurology), Europe (Scottish Intercollegiate Guidelines Network & National Institute for Health and Care Excellence), Australia (National Health and Medical Research Council), World Health Organization (WHO), and additional references were identified to produce evidence-based, consensus-driven methodology for development of epilepsy-specific CPGs. Key components of CPG development include the following: identifying the topic and defining the scope; establishing a working group; identifying and evaluating the evidence; formulating recommendations and determining strength of recommendations; obtaining peer reviews; dissemination, implementation, and auditing; and updating and retiring the CPG. A practical handbook and toolkit was developed. The resulting CPG development toolkit should facilitate the development of high-quality ILAE CPGs to improve the care of persons with epilepsy.

Schaefer, R., et al. (2019). "HIV prevention cascades: a unifying framework to replicate the successes of treatment cascades." *Lancet HIV* 6(1): E60-E66.

Many countries are off track to meet targets for reduction of new HIV infections. HIV prevention cascades have been proposed to assist in the implementation and monitoring of HIV prevention programmes by identifying gaps in the steps required for effective use of prevention methods, similar to HIV treatment cascades. However, absence of a unifying framework impedes widespread use of prevention cascades. Building on a series of consultations, we propose an HIV prevention cascade that consists of three key domains of motivation, access, and effective use in a priority population. This three step cascade can be used for routine monitoring and advocacy, particularly by attaching 90-90-90-style targets. Further characterisation of reasons for gaps across motivation, access, or effective use allows for a comprehensive framework that guides identification of relevant responses and platforms for interventions. Linkage of the prevention cascade, reasons for gaps, and interventions reconciles the different requirements of prevention cascades, providing a unifying framework.

Schiekirka-Schwake, S., et al. (2017). "Facilitators of high-quality teaching in medical school: findings from a nation-wide survey among clinical teachers." *Bmc Medical Education* 17.

Background: Clinical teachers in medical schools are faced with the challenging task of delivering high-quality patient care, producing high-impact research and contributing to undergraduate medical education all at the same time. Little is known on the gap between an 'ideal' environment supporting clinical teachers to provide high quality teaching for their students and the reality of clinical teaching during worktime in the clinical environment. Most quantitative research published so far was done in a wide range of medical educators and did not consider individual academic qualifications. In this study, we wanted to survey clinical teachers in particular and assess the potential impact of individual academic qualification on their perceptions. Methods: Based on qualitative data of focus group discussions, we developed a questionnaire which was piloted among 189 clinical teachers. The final web-based questionnaire was completed by clinical teachers at nine German medical schools. Results: A total of 833 clinical teachers (569 junior physicians, 264 assistant professors) participated in the online survey. According to participants, the most important indicator of high quality teaching was "sustained student learning outcome" followed by "stimulation of interest in the subject matter". Lack of time was the main factor impeding effective teaching (78%). Among the factors facilitating high-quality teaching, protected preparation time during working hours (48%) and more recognition of high-quality teaching within medical schools (21%) were perceived as most helpful. Three out of four teachers (76%) were interested in faculty development programmes directed at teaching skills, but 60% stated they had no time to engage in such activities. With regard to evaluation, teachers preferred individual feedback (75%) over global ratings (21%). Differences between assistant professors and junior physicians were found in that the latter group perceived their teaching conditions as more difficult. Conclusions: Lack of time is a major barrier against planning and delivering good clinical teaching in medical schools. According to our findings, the situation at German medical schools is particularly challenging for junior

physicians. Creating an institutional culture in which teaching is regarded as highly as patient care and research is a prerequisite for overcoming the barriers identified in this study.

Schmidt, D. D. (2016). "What a great idea! Someone should evaluate that." *Australian Health Review* 40(3): 270-272.

How often, as clinicians, do we see a really clever idea implemented in the workplace? In rural health in particular, creative work-around solutions are relatively commonplace. However, the evaluation and promotion of these ideas is less so, and this leads to lost opportunities for perpetuating these clever ideas. This paper explores one rural clinician's experience of what can happen if, instead of appreciating and complementing a great idea, that step of evaluating the great idea is taken. A reflective narrative was created, beginning with a corridor conversation ('What a great idea! Someone should evaluate that...'), continuing through a formal research project and ending with the impact of that project and the way its findings were communicated and implemented. The narrative outlines the effect of evaluating one great idea at the individual, workplace, organisational, state and national levels. Clinicians are well placed to identify great ideas in practice. Making the decision to evaluate these ideas can lead to personal growth, professional discovery and organisational benefits. With motivation and organisational support, who knows where evaluation may lead?

Schneider, A., et al. (2019). "Reducing Primary Care Attendance Intentions for Pediatric Respiratory Tract Infections." *Annals of Family Medicine* 17(3): 239-249.

PURPOSE The aim of this study was to evaluate a theory and evidence-based, parent-targeted online intervention, combining microbiological local syndromic surveillance data, symptom information, and home-care advice, to reduce primary care attendance for self-limiting, low-risk pediatric respiratory tract infections (RTIs). **METHODS** The effect of this novel intervention on primary care attendance intentions was evaluated in an online experimental study. A representative sample of mothers (n = 806) was randomly assigned to receive the intervention material before (intervention) or after (control) answering questions concerning attendance intentions for an RTI illness scenario and mediating factors. Both groups provided feedback on the material. Group comparisons, linear regression, and path analyses were conducted. **RESULTS** Intervention participants reported lower attendance intentions compared with control participants (d = 0.69, 95% CI, 0.55-0.83), an effect that remained when controlling for demographic and clinical characteristics (B = -1.62, 95% CI, -1.97 to -1.30). The path model highlighted that the intervention effect (B = -0.33, 95% CI, -0.40 to -0.26) was mostly indirect and mediated by infection and antibiotic knowledge, symptom severity concerns, and social norm perceptions concerning attendance. Information on when to attend was rated as the most important intervention component 227 times, followed by symptoms rated 186 times. Information on circulating viruses was rated as least important 274 times. **CONCLUSIONS** The intervention was effective in reducing primary care attendance intentions by increasing knowledge, lowering attendance motivation, and reducing the need for additional resources. The contribution of individual intervention components and effects on behavioral outcomes requires further testing.

Schneider, M., et al. (2016). "The effectiveness and feasibility of an online educational program for improving evidence-based practice literacy: an exploratory randomized study of US chiropractors." *Chiropractic & Manual Therapies* 24.

Background: Online education programs are becoming a popular means to disseminate knowledge about evidence-based practice (EBP) among healthcare practitioners. This mode of delivery also offers a viable and potentially sustainable solution for teaching consistent EBP content to learners over time and across multiple geographical locations. We conducted a study with 3 main aims: 1) develop an online distance-learning program about the principles of evidence-based practice (EBP) for chiropractic providers; 2) test the effectiveness of the online program on the attitudes, skills, and use of EBP in a sample of chiropractors; and 3) determine the feasibility of expanding the program for broader-scale implementation. This study was conducted from January 2013 to September 2014. **Methods:** This was an exploratory randomized trial in which 293 chiropractors were allocated to either an online EBP education intervention or a waitlist control. The online EBP program consisted of 3 courses and 4 booster lessons, and was developed using educational resources created in previous EBP educational programs at 4 chiropractic institutions. Participants were surveyed using a validated EBP instrument (EBASE) with 3 rescaled (0 to 100) subscores: Attitudes, Skills, and Use of EBP. Multiple regression was used to compare groups, adjusting for personal and practice characteristics. Satisfaction and compliance with the program was evaluated to assess feasibility. **Results:** The Training Group showed modest improvement compared to the Waitlist Group in attitudes (Delta = 6.2, p < .001) and skills (Delta = 10.0, p < .001) subscores, but not the use subscore (Delta = -2.3, p = .470). The majority of participants agreed that the educational program was 'relevant to their profession' (84%) and 'was worthwhile' (82%). Overall, engagement in the online program was less than optimal, with 48% of the Training Group, and 42% of the Waitlist Group completing all 3 of the program courses. **Conclusions:** Online EBP training leads to modest improvements in chiropractors' EBP attitudes and skill, but not their use of EBP. This online program can be delivered to a wide national audience, but requires modification to enable greater individualization and peer-to-peer interaction. Our results indicate that it is feasible to deliver an online EBP education

on a broad scale, but that this mode of education alone is not sufficient for making large changes in chiropractors' use of EBP.

Schoen, D. E., et al. (2016). "Improving rural and remote practitioners' knowledge of the diabetic foot: findings from an educational intervention." *Journal of Foot and Ankle Research* 9.

Background: This study aimed to determine knowledge of national guidelines for diabetic foot assessment and risk stratification by rural and remote healthcare professionals in Western Australia and their implementation in practice. Assessment of diabetic foot knowledge, availability of equipment and delivery of foot care education in a primary healthcare setting at baseline enabled evaluation of the effectiveness of a diabetic foot education and training program for generalist healthcare professionals. **Methods:** This study employed a quasi-experimental pre-test/post-test study design. Healthcare practitioners' knowledge, attitudes and practice of diabetic foot assessment, diabetic foot risks, risk stratification, and use of the 2011 National Health and Medical Research Council Guidelines were investigated with an electronic pre-test survey. Healthcare professionals then undertook a 3-h education and training workshop before completing the electronic post-test knowledge, attitudes and practice survey. Comparison of pre-test/post-test survey findings was used to assess the change in knowledge, attitudes and intended practice due to the workshops. **Results:** Two hundred and forty-six healthcare professionals from two rural and remote health regions of Western Australia participated in training workshops. Monofilaments and diabetes foot care education brochures, particularly brochures for Aboriginal people, were reported as not readily available in rural and remote health services. For most participants (58 %), their post-test knowledge score increased significantly from the pre-test score. Use of the Guidelines in clinical settings was low (19 %). The healthcare professionals' baseline diabetic foot knowledge was adequate to correctly identify the high risk category. However, stratification of the intermediate risk category was poor, even after training. **Conclusion:** This study reports the first assessment of Western Australia's rural and remote health professionals' knowledge, attitudes and practices regarding the diabetic foot. It shows that without training, generalists' levels of knowledge concerning the diabetic foot was low and they were unlikely to assess foot risk. The findings from this study in a rural and remote setting cast doubt on the ability of generalist healthcare professionals to stratify risk appropriately, especially for those at intermediate risk, without clinical decision support tools.

Scholl, I. and P. J. Barr (2017). "Incorporating shared decision making in mental health care requires translating knowledge from implementation science." *World Psychiatry* 16(2): 160-161.

Scholten, M. R., et al. (2017). "Self-Guided Web-Based Interventions: Scoping Review on User Needs and the Potential of Embodied Conversational Agents to Address Them." *Journal of Medical Internet Research* 19(11).

Background: Web-based mental health interventions have evolved from innovative prototypes to evidence-based and clinically applied solutions for mental diseases such as depression and anxiety. Open-access, self-guided types of these solutions hold the promise of reaching and treating a large population at a reasonable cost. However, a considerable factor that currently hinders the effectiveness of these self-guided Web-based interventions is the high level of nonadherence. The absence of a human caregiver apparently has a negative effect on user adherence. It is unknown to what extent this human support can be handed over to the technology of the intervention to mitigate this negative effect. **Objective:** The first objective of this paper was to explore what is known in literature about what support a user needs to stay motivated and engaged in an electronic health (eHealth) intervention that requires repeated use. The second objective was to explore the current potential of embodied conversational agents (ECAs) to provide this support. **Methods:** This study reviews and interprets the available literature on (1) support within eHealth interventions that require repeated use and (2) the potential of ECAs by means of a scoping review. The rationale for choosing a scoping review is that the subject is broad, diverse, and largely unexplored. Themes for (1) and (2) were proposed based on grounded theory and mapped on each other to find relationships. **Results:** The results of the first part of this study suggest the presence of user needs that largely remain implicit and unaddressed. These support needs can be categorized as task-related support and emotion-related support. The results of the second part of this study suggest that ECAs are capable of engaging and motivating users of information technology applications in the domains of learning and behavioral change. Longitudinal studies must be conducted to determine under what circumstances ECAs can create and maintain a productive user relationship. Mapping the user needs on the ECAs' capabilities suggests that different kinds of ECAs may provide different solutions for improving the adherence levels. **Conclusions:** Autonomous ECAs that do not respond to a user's expressed emotion in real time but take on empathic roles may be sufficient to motivate users to some extent. It is unclear whether those types of ECAs are competent enough and create sufficient believability among users to address the user's deeper needs for support and empathy. Responsive ECAs may offer a better solution. However, at present, most of these ECAs have difficulties to assess a user's emotional state in real time during an open dialogue. By conducting future research with relationship theory-based ECAs, the added value of ECAs toward user needs can be better understood.

Schroek, F. R., et al. (2018). "Implementing risk-aligned bladder cancer surveillance care." *Urologic Oncology-Seminars and Original Investigations* 36(5): 257-264.

Implementation science is a rapidly developing field dedicated to the scientific investigation of strategies to facilitate improvements in healthcare delivery. These strategies have been shown in several settings to lead to more complete and sustained change. In this essay, we discuss how refined surveillance recommendations for non muscle-invasive bladder cancer, which involve a complex interplay between providers, healthcare facilities, and patients, could benefit from use of implementation strategies derived from the growing literature of implementation science. These surveillance recommendations are based on international consensus and indicate that the frequency of surveillance cystoscopy should be aligned with each patient's risk for recurrence and progression of disease. Risk-aligned surveillance entails cystoscopy at 3 and 12 months followed by annual surveillance for low-risk cancers, with surveillance every 3 months reserved for high-risk cancers. However, risk-aligned care is not the norm. Implementing risk-aligned surveillance could curtail overuse among low-risk patients, while curbing underuse among high-risk patients. Despite clear direction from respected and readily available clinical guidelines, there are multiple challenges to implementing risk-aligned surveillance in a busy clinical setting. Here, we describe how implementation science methods can be systematically used to understand determinants of care and to develop strategies to improve care. We discuss how the tailored implementation for chronic diseases framework can facilitate systematic assessment and how intervention mapping can be used to develop implementation strategies to improve care. Taken together, these implementation science methods can help facilitate practice transformation to improve risk-aligned surveillance for bladder cancer. (C) 2018 Published by Elsevier Inc.

Schueller, S. M., et al. (2017). "Integrating Human Support Into Behavioral Intervention Technologies: The Efficiency Model of Support." *Clinical Psychology-Science and Practice* 24(1): 27-45.

A growing number of interventions use websites, mobile applications, and wearable devices to deliver and enhance mental health treatments. These technologies are used more often and are more effective when provided along with human support. Integrating human support, however, requires developed models for providing this support. This article presents the Efficiency Model of Support, a new model for understanding the provision of human support in the context of behavioral intervention technologies. The Efficiency Model of Support defines the ratio of benefit accrued from an intervention to resources devoted to it as a critical consideration in support provision. The Efficiency Model of Support serves to consolidate the current findings and guide future research and practice with regard to human support and technology.

Schulz, C., et al. (2019). "Spinal manipulative therapy and exercise for older adults with chronic low back pain: a randomized clinical trial." *Chiropractic & Manual Therapies* 27.

BackgroundLow back pain (LBP) is a common disabling condition in older adults which often limits physical function and diminishes quality of life. Two clinical trials in older adults have shown spinal manipulative therapy (SMT) results in similar or small improvements relative to medical care; however, the effectiveness of adding SMT or rehabilitative exercise to home exercise is unclear.**Methods**We conducted a randomized clinical trial assessing the comparative effectiveness of adding SMT or supervised rehabilitative exercise to home exercise in adults 65 or older with sub-acute or chronic LBP. Treatments were provided over 12-weeks and self-report outcomes were collected at 4, 12, 26, and 52weeks. The primary outcome was pain severity. Secondary outcomes included back disability, health status, medication use, satisfaction with care, and global improvement. Linear mixed models were used to analyze outcomes. The primary analysis included longitudinal outcomes in the short (week 4-12) and long-term (week 4-52). An omnibus test assessing differences across all groups over the year was used to control for multiplicity. Secondary analyses included outcomes at each time point and responder analyses. This study was funded by the US Department of Health and Human Services, Health Resources and Services Administration.**Results**241 participants were randomized and 230 (95%) provided complete primary outcome data. The primary analysis showed group differences in pain over the one-year were small and not statistically significant. Pain severity was reduced by 30 to 40% after treatment in all 3 groups with the largest difference (eight percentage points) favoring SMT and home exercise over home exercise alone. Group differences at other time points ranged from 0 to 6 percentage points with no consistent pattern favoring one treatment. One-year post-treatment pain reductions diminished in all three groups. Secondary self-report outcomes followed a similar pattern with no important group differences, except satisfaction with care, where the two combination groups were consistently superior to home exercise alone.**Conclusions**Adding spinal manipulation or supervised rehabilitative exercise to home exercise alone does not appear to improve pain or disability in the short- or long-term for older adults with chronic low back pain, but did enhance satisfaction with care.**Trial registration**NCT00269321.

Schumacher, J. R., et al. (2017). "Socioeconomic Factors Associated with Post-Mastectomy Immediate Reconstruction in a Contemporary Cohort of Breast Cancer Survivors." *Annals of Surgical Oncology* 24(10): 3017-3023.

Background. Post-mastectomy reconstruction is a critical component of high-quality breast cancer care. Prior studies demonstrate socioeconomic disparity in receipt of reconstruction. Our objective was to evaluate trends in receipt of immediate reconstruction and examine socioeconomic factors associated with reconstruction in a contemporary cohort. **Methods.** Using the National Cancer Database, we identified women < 75 years of age with stage 0-1 breast cancer treated with mastectomy (n = 297,121). Trends in immediate reconstruction rates (2004-2013) for the overall cohort and stratified by socioeconomic factors were examined using Join-point regression analysis, and annual percentage change (APC) was calculated. We then restricted our sample to a contemporary cohort (2010-2013, n = 145,577). Multivariable logistic regression identified socioeconomic factors associated with immediate reconstruction. Average adjusted predicted probabilities of receiving reconstruction were calculated. **Results.** Immediate reconstruction rates increased from 27 to 48%. Although absolute rates of reconstruction for each stratification group increased, similar APCs across strata led to persistent gaps in receipt of reconstruction. On multivariable logistic regression using our contemporary cohort, race, income, education, and insurance type were all strongly associated with immediate reconstruction. Patients with the lowest predicted probability of receiving reconstruction were patients with Medicaid who lived in areas with the lowest rates of high-school graduation (Black 42.4% [95% CI 40.5-44.3], White 45.7% [95% CI 43.9-47.4]). **Conclusions.** Although reconstruction rates have increased dramatically over the past decade, lower rates persist for disadvantaged patients. Understanding how socioeconomic factors influence receipt of reconstruction, and identifying modifiable factors, are critical next steps towards identifying interventions to reduce disparities in breast cancer surgical care.

Schwendicke, F. and G. Gostemeyer (2016). "Understanding dentists' management of deep carious lesions in permanent teeth: a systematic review and meta-analysis." *Implementation Science* 11.

Background: Increasing evidence supports selective/incomplete (SE) or stepwise (SW) instead of non-selective/complete tissue removal for deep carious lesions in vital teeth, mainly as pulpal risks are significantly reduced. Our aims were to analyze the proportion of dentists who utilize SE/SW for deep lesions in permanent teeth and to identify barriers and facilitators of utilizing SE/SW. **Methods:** We included studies that were original, and reported on the proportion of dentists utilizing SE/SW (quantitative studies), or reported on barriers or facilitators of such utilization (qualitative studies). Electronic databases (PubMed, CENTRAL, Embase, PsycINFO) were searched and screening and data extraction performed by two reviewers. Random-effects meta-analysis and meta-regression were used for quantitative synthesis of the proportion of dentists utilizing SE/SW. Thematic analysis was performed to assess barriers and facilitators on SE/SW utilization. Identified themes were translated into the constructs of the theoretical domains framework. **Results:** From 1728 articles, nine studies were included, all using quantitative methods. Four thousand one hundred ninety-nine dentists had been surveyed. The mean (95% CI) proportion of dentists using SE/SW for deep lesions was 53 % (44/62 %). More recent studies reported significantly higher proportions (p < 0.05). Reported estimates and thematic analysis found dentists' age and an understanding of the disease caries and the scientific rationale behind different removal strategies to affect dentists' behavior. Guidelines, peers, and the social and professional identity were further associated with the motivation of utilizing SE/SW. Environmental incentives, sanctions, or restrictions, mainly of financial but also regulatory character, impacted on decision-making, as did the specific indication (the patient, the tooth) and the beliefs on how well different treatments perform. **Conclusions:** Around half of all dentists rejected evidence-based carious tissue removal strategies. A range of factors can be addressed for improving implementation. Future studies should use mixed qualitative-quantitative methods to yield a deeper understanding of dentists' decision-making.

Scott, A., et al. (2013). "Sports and exercise-related tendinopathies: a review of selected topical issues by participants of the second International Scientific Tendinopathy Symposium (ISTS) Vancouver 2012." *British Journal of Sports Medicine* 47(9): 536-+.

In September 2010, the first International Scientific Tendinopathy Symposium (ISTS) was held in Umea, Sweden, to establish a forum for original scientific and clinical insights in this growing field of clinical research and practice. The second ISTS was organised by the same group and held in Vancouver, Canada, in September 2012. This symposium was preceded by a round-table meeting in which the participants engaged in focused discussions, resulting in the following overview of tendinopathy clinical and research issues. This paper is a narrative review and summary developed during and after the second ISTS. The document is designed to highlight some key issues raised at ISTS 2012, and to integrate them into a shared conceptual framework. It should be considered an update and a signposting document rather than a comprehensive review. The document is developed for use by physiotherapists, physicians, athletic trainers, massage therapists and other health professionals as well as team coaches and strength/conditioning managers involved in care of sportspeople or workers with tendinopathy.

Scott, S. D., et al. (2012). "Systematic review of knowledge translation strategies in the allied health professions." *Implementation Science* 7.

Background: Knowledge translation (KT) aims to close the research-practice gap in order to realize and maximize the benefits of research within the practice setting. Previous studies have investigated KT strategies in nursing and medicine; however, the present study is the first systematic review of the effectiveness of a variety of KT interventions in five allied health disciplines: dietetics, occupational therapy, pharmacy, physiotherapy, and speech-language pathology. **Methods:** A health research librarian developed and implemented search strategies in eight electronic databases (MEDLINE, CINAHL, ERIC, PASCAL, EMBASE, IPA, Scopus, CENTRAL) using language (English) and date restrictions (1985 to March 2010). Other relevant sources were manually searched. Two reviewers independently screened the titles and abstracts, reviewed full-text articles, performed data extraction, and performed quality assessment. Within each profession, evidence tables were created, grouping and analyzing data by research design, KT strategy, targeted behaviour, and primary outcome. The published descriptions of the KT interventions were compared to the Workgroup for Intervention Development and Evaluation Research (WIDER) Recommendations to Improve the Reporting of the Content of Behaviour Change Interventions. **Results:** A total of 2,638 articles were located and the titles and abstracts were screened. Of those, 1,172 full-text articles were reviewed and subsequently 32 studies were included in the systematic review. A variety of single ($n = 15$) and multiple ($n = 17$) KT interventions were identified, with educational meetings being the predominant KT strategy ($n = 11$). The majority of primary outcomes were identified as professional/process outcomes ($n = 25$); however, patient outcomes ($n = 4$), economic outcomes ($n = 2$), and multiple primary outcomes ($n = 1$) were also represented. Generally, the studies were of low methodological quality. Outcome reporting bias was common and precluded clear determination of intervention effectiveness. In the majority of studies, the interventions demonstrated mixed effects on primary outcomes, and only four studies demonstrated statistically significant, positive effects on primary outcomes. None of the studies satisfied the four WIDER Recommendations. **Conclusions:** Across five allied health professions, equivocal results, low methodological quality, and outcome reporting bias limited our ability to recommend one KT strategy over another. Further research employing the WIDER Recommendations is needed to inform the development and implementation of effective KT interventions in allied health.

Seguin, M., et al. (2018). "Self-sampling kits to increase HIV testing among black Africans in the UK: the HAUS mixed-methods study." *Health Technology Assessment* 22(22): VII+.

Background: Timely diagnosis of human immunodeficiency virus (HIV) enables access to antiretroviral treatment, which reduces mortality, morbidity and further transmission in people living with HIV. In the UK, late diagnosis among black African people persists. Novel methods to enhance HIV testing in this population are needed. **Objectives:** To develop a self-sampling kit (SSK) intervention to increase HIV testing among black Africans, using existing community and health-care settings (stage 1) and to assess the feasibility for a Phase III evaluation (stage 2). **Design:** A two-stage, mixed-methods design. Stage 1 involved a systematic literature review, focus groups and interviews with key stakeholders and black Africans. Data obtained provided the theoretical base for intervention development and operationalisation. Stage 2 was a prospective, non-randomised study of a provider-initiated, HIV SSK distribution intervention targeted at black Africans. The intervention was assessed for cost-effectiveness. A process evaluation explored feasibility, acceptability and fidelity. **Setting:** Twelve general practices and three community settings in London. **Main outcome measure:** HIV SSK return rate. **Results:** Stage 1 - the systematic review revealed support for HIV SSKs, but with scant evidence on their use and clinical effectiveness among black Africans. Although the qualitative findings supported SSK distribution in settings already used by black Africans, concerns were raised about the complexity of the SSK and the acceptability of targeting. These findings were used to develop a theoretically informed intervention. Stage 2 - of the 349 eligible people approached, 125 (35.8%) agreed to participate. Data from 119 were included in the analysis; 54.5% (65/119) of those who took a kit returned a sample; 83.1% of tests returned were HIV negative; and 16.9% were not processed, because of insufficient samples. Process evaluation showed the time pressures of the research process to be a significant barrier to feasibility. Other major barriers were difficulties with the SSK itself and ethnic targeting in general practice settings. The convenience and privacy associated with the SSK were described as beneficial aspects, and those who used the kit mostly found the intervention to be acceptable. Research governance delays prevented implementation in Glasgow. **Limitations:** Owing to the study failing to recruit adequate numbers (the intended sample was 1200 participants), we were unable to evaluate the clinical effectiveness of SSKs in increasing HIV testing in black African people. No samples were reactive, so we were unable to assess pathways to confirmatory testing and linkage to care. **Conclusions:** Our findings indicate that, although aspects of the intervention were acceptable, ethnic targeting and the SSK itself were problematic, and scale-up of the intervention to a Phase III trial was not feasible. The preliminary economic model suggests that, for the acceptance rate and test return seen in the trial, the SSK is potentially a cost-effective way to identify new infections of HIV. **Future work:** Sexual and public health services are increasingly utilising self-sampling technologies. However, alternative, user-friendly SSKs that meet user and provider preferences and UK

regulatory requirements are needed, and additional research is required to understand clinical effectiveness and cost-effectiveness for black African communities.

Seppala, T., et al. (2017). "National policies for the promotion of physical activity and healthy nutrition in the workplace context: a behaviour change wheel guided content analysis of policy papers in Finland." *Bmc Public Health* 18.

Background: Health policy papers disseminate recommendations and guidelines for the development and implementation of health promotion interventions. Such documents have rarely been investigated with regard to their assumed mechanisms of action for changing behaviour. The Theoretical Domains Framework (TDF) and Behaviour Change Techniques (BCT) Taxonomy have been used to code behaviour change intervention descriptions, but to our knowledge such "retrofitting" of policy papers has not previously been reported. This study aims first to identify targets, mediators, and change strategies for physical activity (PA) and nutrition behaviour change in Finnish policy papers on workplace health promotion, and second to assess the suitability of the Behaviour Change Wheel (BCW) approach for this purpose. Method: We searched all national-level health policy papers effectual in Finland in August 2016 focusing on the promotion of PA and/or healthy nutrition in the workplace context (n = 6). Policy recommendations targeting employees' nutrition and PA including sedentary behaviour (SB) were coded using BCW, TDF, and BCT Taxonomy. Results: A total of 125 recommendations were coded in the six policy papers, and in two additional documents referenced by them. Psychological capability, physical opportunity, and social opportunity were frequently identified (22%, 31%, and 24%, respectively), whereas physical capability was almost completely absent (1%). Three TDF domains (knowledge, skills, and social influence) were observed in all papers. Multiple intervention functions and BCTs were identified in all papers but several recommendations were too vague to be coded reliably. Influencing individuals (46%) and changing the physical environment (44%) were recommended more frequently than influencing the social environment (10%). Conclusions: The BCW approach appeared to be useful for analysing the content of health policy papers. Paying more attention to underlying assumptions regarding behavioural change processes may help to identify neglected aspects in current policy, and to develop interventions based on recommendations, thus helping to increase the impact of policy papers.

Seubert, L. J., et al. (2019). "A Theory Based Intervention to Enhance Information Exchange during Over-The-Counter Consultations in Community Pharmacy: A Feasibility Study." *Pharmacy* 7(2).

Background: Management of minor ailments through self-care and self-medication brings both benefits and risks that can be mitigated if consumers and pharmacy personnel engage in information exchange during over-the-counter (OTC) consultations. Objective: Explore the feasibility of interventions using situational cues to promote information exchange between pharmacy personnel and consumers, during OTC consultations. Methods: Intervention tools were developed prior to conducting the study, in two community pharmacies in Perth, Western Australia. The situational cues included two posters and individual position badges. Data were collected from audio-recording OTC consultations, consumer questionnaires and interviews, and pharmacy personnel interviews. Results: Space required for posters and for researchers conducting interviews was challenging in the retail environment. Pharmacy personnel perceived that the badges positively impacted -consumers' ability to identify the position of personnel they engaged with. Data collection methods were deemed practical and acceptable. Conclusions: The proposed interventions and evaluation methods were feasible. The use of posters and badges as situational cues to address the barriers to information exchange during OTC consultations was found to be practical, in a community pharmacy setting. There is potential to use situational cues to address other barriers identified to information exchange, to add to the effectiveness of the intervention. With growing emphasis on self-care and self-medication, effective interventions are necessary to promote information exchange to enhance appropriate management in community pharmacies.

Seubert, L. J., et al. (2017). "Barriers and Facilitators for Information Exchange during Over-The-Counter Consultations in Community Pharmacy: A Focus Group Study." *Pharmacy* 5(4).

Consumers are confident managing minor ailments through self-care, often self-medicating from a range of over-the-counter (OTC) medicines available from community pharmacies. To minimise risks, pharmacy personnel endeavour to engage in a consultation when consumers present with OTC enquiries however they find consumers resistant. The aim was to determine stakeholder perspectives regarding barriers and facilitators for information exchange during OTC consultations in community pharmacies and to understand the elicited themes in behavioural terms. Focus groups were undertaken with community pharmacist, pharmacy assistant and consumer participants. Independent duplicate analysis of transcription data was conducted using inductive and framework methods. Eight focus groups involving 60 participants were conducted. Themes that emerged indicated consumers did not understand pharmacists' professional role, they were less likely to exchange information if asking for a specific product than if asking about symptom treatment, and they wanted privacy. Consumers were confident to self-diagnose and did not understand OTC medicine risks. Pharmacy personnel felt a duty of care to ensure consumer safety, and that with experience

communication skills developed to better engage consumers in consultations. They also identified the need for privacy. Consumers need education about community pharmacists' role and responsibilities to motivate them to engage in OTC consultations. They also require privacy when doing so.

Seubert, L. J., et al. (2018). "Development of a Theory-Based Intervention to Enhance Information Exchange during Over-The-Counter Consultations in Community Pharmacy." *Pharmacy* 6(4).

(1) Background: Community pharmacy personnel help mitigate risks of self-care by consumers who seek over-the-counter (OTC) medicines or treatment of symptoms and/or conditions. Exchange of information facilitates the OTC consultation, but pharmacy personnel often report difficulties in engaging consumers in a dialogue. The aim of this study was to describe the development of a behaviour change intervention to enhance information exchange between pharmacy personnel and consumers during OTC consultations in community pharmacies. (2) Methods: The Behaviour Change Wheel methodological framework was used to link factors that influence consumer engagement with information exchange during OTC consultations with intervention functions to change behaviour. Options generated were rationalized and the final intervention strategy was derived. (3) Results: Education, persuasion, environmental restructuring, and modelling were determined to be potential intervention functions. The intervention incorporated placing situational cues in the form of posters in the community pharmacy modelling information exchange behaviour, persuading through highlighting the benefits of exchanging information and educating about its importance. (4) Conclusions: A systematic, theoretically underpinned approach was applied to develop candidate interventions to promote information exchange in OTC consultations. The feasibility and efficacy of the intervention strategy has since been tested and will be reported elsewhere.

Sevdalis, N. and S. Arora (2016). "Safety standards for invasive procedures." *Bmj-British Medical Journal* 352.

Sevenhuysen, S., et al. (2016). "Implementing collaborative and peer-assisted learning." *Clinical Teacher* 13(5): 325-331.

Shah, N., et al. (2015). "Towards changing healthcare workers' behaviour: a qualitative study exploring non-compliance through appraisals of infection prevention and control practices." *Journal of Hospital Infection* 90(2): 126-134.

Background: Improving behaviour in infection prevention and control (IPC) practice remains a challenge, and understanding the determinants of healthcare workers' (HCWs) behaviour is fundamental to develop effective and sustained behaviour change interventions. Aim: To identify behaviours of HCWs that facilitated non-compliance with IPC practices, focusing on how appraisals of IPC duties and social and environmental circumstances shaped and influenced non-compliant behaviour. This study aimed to: (1) identify how HCWs rationalized their own behaviour and the behaviour of others; (2) highlight challenging areas of IPC compliance; and (3) describe the context of the working environment that may explain inconsistencies in IPC practices. Methods: Clinical staff at a National Health Service hospital group in London, UK were interviewed between December 2010 and July 2011 using qualitative methods. Responses were analysed using a thematic framework. Findings: Three ways in which HCWs appraised their behaviour were identified through accounts of IPC policies and practices: (1) attribution of responsibilities, with ambiguity about responsibility for certain IPC practices; (2) prioritization and risk appraisal, which demonstrated a divergence in values attached to some IPC policies and practices; and (3) hierarchy of influence highlighted that traditional clinical roles challenged work relationships. Conclusions: Overall, behaviours are not entirely independent of policy rules, but often an amalgamation of local normative practices, individual preferences and a degree of professional isolation. (C) 2015 The Authors. Published by Elsevier Ltd on behalf of the Healthcare Infection Society.

Shaw, B. R., et al. (2018). "Advanced musculoskeletal physiotherapy: Barriers and enablers to multi-site implementation." *Musculoskeletal Care* 16(4): 440-449.

Objectives Advanced musculoskeletal physiotherapy (AMP) services are a safe, effective model of care, but without broad-scale healthcare implementation to date. The aim of the present study was to identify the barriers and enablers to implementation of 12 AMP services from the perspective of clinical staff. Methods In a qualitative study, 12 participants (physiotherapists), from 12 different healthcare networks (seven metropolitan, three regional, two rural), were included. Their departments implemented AMP services (orthopaedic postoperative joint replacement review, n = 10; general orthopaedic, n = 1; emergency, n = 1; and neurosurgery n = 1) over a 12-month period. Participants completed a structured survey specifically designed for the study. Thematic analysis was used, with themes mapped to the validated Theoretical Domains Framework. Results Nine major themes emerged from the data regarding barriers and enablers to the implementation of the AMP services from the perspective of clinical staff. These were: demand/capacity; model of care; the organization; stakeholders; communication; planning and processes; evaluation; workforce; and learning and assessment framework. Important enablers included engagement and buy-in from key stakeholders and medical staff, and well-established AMP learning frameworks for training and operational frameworks. Barriers included competitive

funding environment, and issues that hindered effective communication. The knowledge, skills, availability, motivation and experience of the advanced musculoskeletal physiotherapists had a large impact on the implementation. Conclusions The study identified a number of factors that should be considered for successful implementation of AMP services across healthcare services or wider healthcare networks.

Shaw, J., et al. (2018). "Mechanisms, contexts and points of contention: operationalizing realist-informed research for complex health interventions." *Bmc Medical Research Methodology* 18.

BackgroundThe concept of mechanism is central to realist approaches to research, yet research teams struggle to operationalize and apply the concept in empirical research. Our large, interdisciplinary research team has also experienced challenges in making the concept useful in our study of the implementation of models of integrated community-based primary health care (ICBPHC) in three international jurisdictions (Ontario and Quebec in Canada, and in New Zealand). **Methods**In this paper we summarize definitions of mechanism found in realist methodological literature, and report an empirical example of a realist analysis of the implementation ICBPHC. **Results**We use our empirical example to illustrate two points. First, the distinction between contexts and mechanisms might ultimately be arbitrary, with more distally located mechanisms becoming contexts as research teams focus their analytic attention more proximally to the outcome of interest. Second, the relationships between mechanisms, human reasoning, and human agency need to be considered in greater detail to inform realist-informed analysis; understanding these relationships is fundamental to understanding the ways in which mechanisms operate through individuals and groups to effect the outcomes of complex health interventions. **Conclusions**We conclude our paper with reflections on human agency and outline the implications of our analysis for realist research and realist evaluation.

Shaw, V., et al. (2019). "A collaborative approach to facilitate professionals to support the breathless patient." *Bmj Supportive & Palliative Care* 9(1).

Objectives Breathlessness is a major problem for people in their last weeks of life. Breathlessness is considered to be multidimensional with physical, psychological, emotional, social and spiritual factors all playing a part. It has been recognised that specific training to health professionals is beneficial in order to improve the care for patients with breathlessness. Breathlessness courses have tended to focus on senior nurses. A new flexible and collaborative training course was designed to include a wider range of nurses and other health professionals in hospital, hospice, primary care and community settings. The aim of the 'Practical Skills to Support the Breathless Patient' programme was to make patients and carers feel better supported in their breathlessness, for health professionals to develop confidence and skills in using proven interventions, and to adopt a flexible educational design that could be adapted to different contexts. **Methods** The course is learner-centred and teaching methods encourage interaction and participation via a mix of lectures and discussions with practical skills-focused, experiential workshops in smaller groups. Case study work was included to integrate learning with participants' practice environment. Evaluation is built in during the course, so adaptations can be made throughout to respond to changing learner needs. **Results** Participants reported increased confidence in terms of knowledge and applying this within everyday practice. The theory-practice dynamic worked well within each participant' specific work context in particular through the case study approach. **Conclusions** The course developed a number of innovative approaches, such as multi-disciplinary learning groups, regular feedback loops, reflexive learning about putting theory into practice and long-term follow-up. Combining these elements increases professionals' confidence and sustains new clinical practice.

Sheard, L., et al. (2017). "How is success achieved by individuals innovating for patient safety and quality in the NHS?" *Bmc Health Services Research* 17.

Background: Innovation in healthcare is said to be notoriously difficult to achieve and sustain yet simultaneously the health service is under intense pressure to innovate given the ever increasing demands placed upon it. Whilst many studies have looked at diffusion of innovation from an organisational perspective, few have sought to understand how individuals working in healthcare innovate successfully. We took a positive deviance approach to understand how innovations are achieved by individuals working in the NHS. **Method:** We conducted in depth interviews in 2015 with 15 individuals who had received a national award for being a successful UK innovator in healthcare. We invited only those people who were currently (or had recently) worked in the NHS and whose innovation focused on improving patient safety or quality. Thematic analysis was used. **Findings:** Four themes emerged from the data: personal determination, the ability to broker relationships and make connections, the ways in which innovators were able to navigate organisational culture to their advantage and their ability to use evidence to influence others. Determination, focus and persistence were important personal characteristics of innovators as were skills in being able to challenge the status quo. Innovators were able to connect sometimes disparate teams and people, being the broker between them in negotiating collaborative working. The culture of the organisation these participants resided in was important with some being able to use this (and the current patient safety agenda) to their advantage. Gathering robust data to demonstrate their

innovation had a positive impact and was seen as essential to its progression. Conclusions: This paper reveals a number of factors which are important to the success of innovators in healthcare. We have uncovered that innovators have particular personal traits which encourage a propensity towards change and action. Yet, for fruitful innovation to take place, it is important for relational networks and organisational culture to be receptive to change.

Shearn, K., et al. (2017). "Building Realist Program Theory for Large Complex and Messy Interventions." *International Journal of Qualitative Methods* 16(1).

Program theory, that is, the specific idea about how a program causes the intended or observed outcomes, should be the central aspect of any realist evaluation or synthesis. The methods used for explicating or building initial rough program theories (IRPTs) in realist research are varied and arguably often underreported. In addition, preexisting psychological and sociological theories, at a higher level of abstraction, could be used to a greater extent to inform their development. This article illustrates a method for building IRPTs for use in realist research evaluation and synthesis. This illustration involves showing how the IRPTs were developed in a realist evaluation concerning sexual health services for young people. In this evaluation, a broad framework of abstract theories was constructed early in the process to support IRPT building and frame more specific program theories as they were developed. These abstract theories were selected to support theorizing at macro-, meso-, and microlevels of social structure. This article discusses the benefits of using this method to build initial theories for particular types of interventions that are large, complex, and messy. It also addresses challenges relating to the selection of suitable theories.

Shearn, K., et al. (2019). "Clarity, conviction and coherence supports buy-in to positive youth sexual health services: focused results from a realist evaluation." *Bmc Health Services Research* 19.

Background: There is a call for sexual health services to support young people achieve sexual wellbeing in addition to treating or preventing sexual ill-health. Progress towards realising this ambition is limited. This study aimed to contribute theory and evidence explaining key processes to support local delivery of positive youth sexual health services. Methods: A realist evaluation was conducted, comprising four research cycles, with a total of 161 data sources, primarily from the UK. Theory was refined iteratively using existing substantive theories, secondary and primary research data (including interviews, documentary analysis, feedback workshops and a literature search of secondary case studies). A novel explanatory framework for articulating the theories was utilised. Results: The results focused on local level buy-in to positive services. Positive services were initiated when influential teams had clarity that positive services should acknowledge youth sexuality, support young people's holistic sexual wellbeing and involve users in design and delivery of services, and conviction that this was the best or right way to proceed. How positive services were operationalised differed according to whether the emphasis was placed on meeting service objectives or supporting young people to flourish. Teams were able to effect change in local services by improving coherence between a positive approach and existing processes and practices. For example, that a) users were involved in decision making, b) multi-disciplinary professional working was genuinely integrated, and c) evidence of positive services' impact was gathered from a breadth of sources. New services were fragile. Progress was frequently stymied due to a lack of shared understanding and limited compatibility between characteristics of a positive approach and the wider cultural and structural systems including medical hegemony and narrow accountability frameworks. These challenges were exacerbated by funding cuts. Conclusions: This study offers clarity on how positive youth sexual health services may be defined. It also articulates theory explaining how dissonance, at various levels, between positive models of sexual health service delivery and established cultural and structural systems may restrict their successful inception. Future policy and practice initiatives should be theoretically informed and address barriers at societal, organisational and interpersonal levels to stimulate change.

Shoebridge, A., et al. (2017). "Minding the Body: An interdisciplinary theory of optimal posture for musicians." *Psychology of Music* 45(6): 821-838.

Posture influences music technique, and poor posture is associated with performance-related problems in musicians. Student musicians rely on music teachers, physiotherapists, and Alexander Technique teachers for advice about posture and performance-related problems. However, it is unknown whether these professional groups share a common understanding of optimal posture, or if posture management strategies align with performance goals. The aim of this study was to develop an interdisciplinary theory of posture to support musicians' health and performance. This qualitative study used constructivist grounded theory as its methodological framework. Purposive sampling recruited four heads of university instrumental departments, three university physiotherapy lecturers and three heads of Alexander Technique teacher training schools to participate in semi-structured interviews. Interview transcripts were analyzed using grounded theory, and results were discussed applying the Theory of Planned Behaviour. The overarching theory of posture for musicians was *Minding the Body*, suggesting mind-body coordination. Subprocesses included rebalancing the self with the instrument and performance environment (*Finding balance*); minimizing effort (*Maintaining*

ease); addressing adverse habits (Challenging habits); overcoming traditional perspectives to optimize performance (Expanding the framework), and addressing barriers to optimal posture (Barriers to change). This interdisciplinary theory presents posture as dynamic mind-body coordination to facilitate health and performance.

Shortall, O., et al. (2016). "Broken biosecurity? Veterinarians' framing of biosecurity on dairy farms in England." *Preventive Veterinary Medicine* 132: 20-31.

There is seen to be a need for better biosecurity - the control of disease spread on and off farm - in the dairy sector. Veterinarians play a key role in communicating and implementing biosecurity measures on farm, and little research has been carried out on how veterinarians see their own and farmers' roles in improving biosecurity. In order to help address this gap, qualitative interviews were carried out with 28 veterinarians from Royal College of Veterinary Surgeon farm accredited practices in England. The results were analysed using a social ecology framework and frame analysis to explore not only what barriers vets identified, but also how vets saw the problem of inadequate biosecurity as being located. Veterinarians' frames of biosecurity were analysed at the individual, interpersonal and contextual scales, following the social ecology framework, which see the problem in different ways with different solutions. Farmers and veterinarians were both framed by veterinarians as individualised groups lacking consistency. This means that best practice is not spread and veterinarians are finding it difficult to work as a group to move towards a "predict and prevent" model of veterinary intervention. But diversity and individualism were also framed as positive and necessary among veterinarians to the extent that they can tailor advice to individual farmers. Veterinarians saw their role in educating the farmer as not only being about giving advice to farmers, but trying to convince the farmer of their perspective and values on disease problems. Vets felt they were meeting with limited success because vets and farmers may be emphasising different framings of biosecurity. Vets emphasise the individual and interpersonal frames that disease problems are a problem on farm that can and should be controlled by individual farmers working with vets. According to vets, farmers may emphasise the contextual frame that biosecurity is largely outside of their control on dairy farms because of logistical, economic and geographical factors, and so some level of disease on dairy farms is not entirely unexpected or controllable. There needs to be a step back within the vet-farmer relationship to realise that there may be different perspectives at play, and within the wider debate to explore the question of what a biosecure dairy sector would look like within a rapidly changing agricultural landscape. (C) 2016 Elsevier B.V. All rights reserved.

Shrubsole, K., et al. (2019). "Closing the evidence-practice gaps in aphasia management: are we there yet? Where has a decade of implementation research taken us? A review and guide for clinicians." *Aphasiology* 33(8): 970-995.

Background: There are evidence-practice gaps in all areas of aphasia management across the continuum of care. Despite the recognition that effective implementation strategies are needed to improve the consistency of speech pathologists' aphasia management practices, there have been few studies investigating this important issue. Therefore, little is known about the effectiveness of implementation strategies in the field of aphasiology. In light of the developing field of knowledge translation, it is important to review the aphasia implementation literature to highlight current trends, draw together findings, and determine future implementation research needs. Aims: To critically review, summarise, and discuss the implementation literature in the field of aphasiology to date, in order to guide clinical aphasiologists to work towards closing the evidence-practice gaps in aphasia management. Main contribution: A review of the literature in this developing area of expertise in the field of aphasiology, with examples of practical applications. Conclusions: Only six implementation studies have been published in aphasia (related to conversation partner training, discourse analysis, information provision, and collaborative goal-setting practices), showing there is a need for capacity building in this area. Therefore, we are not yet able to state what interventions are effective in which context, nor fully understand how behaviour change occurs for clinicians providing aphasia management. Implications for speech-language pathologists are discussed. An overarching call to action is the need for clinicians and researchers to work together to drive future implementation efforts that can succeed in closing the aphasia management evidence-practice gaps.

Shrubsole, K., et al. (2018). "The Acute Aphasia IMplementation Study (AAIMS): a pilot cluster randomized controlled trial." *International Journal of Language & Communication Disorders* 53(5): 1021-1056.

Background: Effective implementation strategies to improve speech and language therapists' (SLTs) aphasia management practices are needed. Australian SLTs working in the acute setting have reported inconsistent implementation of post-stroke aphasia guideline recommendations. Therefore, implementation efforts to address these gaps are necessary. However, little is known about the effectiveness of behaviour-change strategies in SLTs providing acute aphasia management. Aims: This study designed and tested the feasibility, acceptability and potential effectiveness of a tailored implementation strategy to improve acute SLTs' uptake of evidence in two areas of practice: aphasia-friendly information provision; and collaborative goal setting. Methods & Procedures: A pilot cluster randomized controlled trial design was used (retrospective trial registration number ACTRN12618000170224). Four acute SLT teams were randomly assigned to receive either Intervention A (targeted at improving information provision) or Intervention B (targeted at

improving collaborative goal setting), and were blinded to their allocation. Interventions were tailored to address known barriers and included a face-to-face workshop incorporating behaviour-change techniques. Outcomes addressed the research questions of feasibility (e.g., treatment fidelity and retention of participants), acceptability (e.g., post-study focus groups) and potential effectiveness (e.g., medical record audits and behaviour construct surveys). The quantitative data were recorded at baseline and 3-6-month follow-up, allowing for change scores to be calculated. Outcomes & Results: All four clusters completed the study, with 37 SLTs participating. The majority of participants were female (36/37 = 97.3%), entry-level clinicians (15/37 = 40.5%), with a mean age of 30 years. Medical record data from 107 patients were included (post-intervention n = 61; information provision intervention n = 36, goal-setting intervention n = 25). Overall, there was a significant improvement in the target behaviour for Intervention A (mean improvement 52.78%, $p = 0.001$), but a small non-significant change in the target behaviour for Intervention B (8.46%, $p = 0.406$). There were potentially significant changes seen in several, but not all, of the domains targeted by the interventions (e.g., Knowledge ($p = 0.014$), Beliefs about Capabilities = 0.032), and Environmental Context and Resources ($p = 0.000$) for Intervention A). Conclusions & Implications: This study showed that a tailored implementation intervention targeting acute SLTs' aphasia management practices was feasible to deliver and acceptable for most participants. In addition, the interventions were potentially effective, particularly for the information provision behaviour targeted by Intervention A. It was possible partially to explain the mechanisms of behaviour change that occurred during the study.

Siddharthan, T., et al. (2018). "Effectiveness-implementation of COPD case finding and self-management action plans in low- and middle-income countries: global excellence in COPD outcomes (GECO) study protocol." *Trials* 19.

BackgroundChronic obstructive pulmonary disease (COPD) is the end result of a susceptible individual being exposed to sufficiently deleterious environmental stimuli. More than 90% of COPD-related deaths occur in low- and middle-income countries (LMICs). LMICs face unique challenges in managing COPD; for example, deficient primary care systems present challenges for proper diagnosis and management. Formal diagnosis of COPD requires quality-assured spirometry, which is often limited to urban health centres. Similarly, standard treatment options for COPD remain limited where few providers are trained to manage COPD. The Global Excellence in COPD Outcomes (GECO) studies aim to assess the performance of a COPD case-finding questionnaire with and without peak expiratory flow (PEF) to diagnose COPD, and inform the effectiveness and implementation of COPD self-management Action Plans in LMIC settings. The ultimate goal is to develop simple, low-cost models of care that can be implemented in LMICs. This study will be carried out in Nepal, Peru and Uganda, three distinct LMIC settings.**Methods/design**We aim to assess the diagnostic accuracy of a simple questionnaire with and without PEF to case-find COPD (GECO1), and examine the effectiveness, cost-effectiveness and implementation of a community-health-worker-supported self-management Action Plan strategy for managing exacerbations of COPD (GECO2). To achieve the first aim, we will enrol a randomly selected sample of up to 10,500 adults aged 40years across our three sites, with the goal to enrol 240 participants with moderate-to-severe COPDin to GECO2. We will apply two case-finding questionnaires (Lung Function Questionnaire and CAPTURE) with and without PEF and compare performance against spirometry. We will report ROC areas, sensitivity and specificity. Individuals who are identified as having COPD grades B-D will be invited to enrol in an effectiveness-implementation hybrid randomised trial of a multi-faceted COPD self-management Action Plan intervention delivered by CHWs. The intervention group will receive (1) COPD education, (2) facilitated-self management Action Plans for COPD exacerbations and (3) monthly visits by community health workers. The control group will receive COPD education andstandard of care treatment provided by local health providers. Beginning at baseline, we will measure quality of life with the EuroQol-5D (EQ-5D) and St. George's Respiratory Questionnaire (SGRQ) every 3months over a period of 1 year. The primary endpoint is SGRQ at 12months. Quality-adjusted life years (QALYs) using the Short-Form 36 version 2 will also be calculated. We will additionally assess the acceptability and feasibility of implementing COPD Action Plans in each setting among providers and individuals with COPD.**Discussion**This study should provide evidence to inform the use of pragmatic models of COPD diagnosis and management in LMIC settings.**Trial registration**NCT03359915 (GECO1). Registered on 2 December 2017 and NCT03365713 (GECO2). Registered on 7 December 2017. Trial acronym: Global Excellence in COPD Outcomes (GECO1; GECO2).

Simoës, C., et al. (2018). "Motives to use alcohol among adolescents according to their neighbourhood characteristics, gender, age, and drinking patterns." *Journal of Substance Use* 23(1): 43-48.

The aim of this study is to understand if motives to drink are associated to certain patterns of drinking and specific socio-demographic drinkers' characteristics. As part of the Portugal Health Behaviour in School-aged Children survey, developed with 5050 pupils (47.7% of boys), attending the 6th, 8th, and 10th grade levels and with a mean age of 13.98 years ($SD = 1.85$), the present study was carried out using the "Drinking Motive Questionnaire Revised Short Form" (Kuntsche & Kuntsche, 2009) in order to investigate the drinking motives among young people and its relationship with neighborhood characteristics, gender, age, and drinking patterns. Results showed that social motives are the most frequent, followed by enhancement, coping, and conformity motives. Statistically significant differences were found

between gender and grade (a proxy for age), being essentially the boys who consume more socially and the boys of the 8th grade that reported to consume for enhancement motives, cope with negative emotions, or to affirm themselves within peers group. Differences between the place of residence and consumption patterns are also found, showing that pupils who live in a neighborhood marked by many night entertainment venues, violence and theft, along with its location in an isolated area, have a significantly higher average in the four motives. Considering the drinking pattern, drinking to cope or for conformity motives are more common during the week and during the day, while drinking for social motives is more frequent during the day. Implications of the results for health and educational public policies are discussed.

Simon, R. and R. West (2015). "Models of addiction and types of interventions: An integrative look." *International Journal of Alcohol and Drug Research* 4(1): 13-20.

Background: Use of psychoactive substances and problem gambling create serious harm to individuals who engage in these practices and to society as a whole (World Health Organization, 2002). The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) regularly monitors drug-related problems and interventions, as well as the efficiency of interventions. The scope and methodology of monitoring, however, depends on the conceptualization of "addiction." Methods: The relevant literature was screened for models and theories relating to "addiction," resulting in a systematic overview of the concepts and related approaches (EMCDDA, 2013). Using this as a background, different approaches for interventions and their theoretical bases are discussed. Results: Models of addiction follow two approaches. Most of these focus on the individual addict, involving constructs such as emotions, drive states, habits, choice, and goal-oriented processes, or else taking a more integrative or change-oriented view. Others are population-based models, including social network, economic, communication, and organizational system models. While substance- and non-substance-related addictions differ in a number of respects, they share key elements: a repeated powerful motivation to engage in a particular behavior, acquired through enacting the behavior, despite the experience or risk of significant harm. Nine different types of intervention to combat addiction found in the literature involve attempts to change one or more of three factors that interact to underpin behavior: capability, opportunity, and motivation (the "COM-B" model). The models of addiction reviewed may serve as a basis for such interventions.

Simpson, S. A., et al. (2015). "A feasibility randomised controlled trial of a motivational interviewing-based intervention for weight loss maintenance in adults." *Health Technology Assessment* 19(50): 1-+.

Background: Obesity has significant health and NHS cost implications. Relatively small reductions in weight have clinically important benefits, but long-term weight loss maintenance (WLM) is challenging. Behaviour change interventions have been identified as key for WLM. Motivation is crucial to supporting behaviour change, and motivational interviewing (MI) has been identified as a successful approach to changing health behaviours. The study was designed as an adequately powered, pragmatic randomised controlled trial (RCT); however, owing to recruitment issues, the study became a feasibility trial. Objectives: To assess recruitment, retention, feasibility, acceptability, compliance and delivery of a 12-month intervention to support WLM. Secondary objectives were to assess the impact of the intervention on body mass index (BMI) and other secondary outcomes. Design: Three-arm individually randomised controlled trial comprising an intensive arm, a less intensive arm and a control arm. Setting: Community setting in South Wales and the East Midlands. Participants: Individuals aged 18-70 years with a current or previous BMI of ≥ 30 kg/m² who could provide evidence of at least 5% weight loss during the previous 12 months. Intervention: Participants received individually tailored MI, which included planning and self-monitoring. The intensive arm received six face-to-face sessions followed by nine telephone sessions. The less intensive arm received two face-to-face sessions followed by two telephone sessions. The control arm received a leaflet advising them on healthy lifestyle. Main outcome measures: Feasibility outcomes included numbers recruited, retention and adherence. The primary effectiveness outcome was BMI at 12 months post randomisation. Secondary outcomes included waist circumference, waist-to-hip ratio, physical activity, proportion maintaining weight loss, diet, quality of life, health service resource usage, binge eating and well-being. A process evaluation assessed intervention delivery, adherence, and participants' and practitioners' views. Economic analysis aimed to assess cost-effectiveness in terms of quality-adjusted life-years (QALYs). Results: A total of 170 participants were randomised. Retention was good (84%) and adherence was excellent (intensive, 83%; less intensive, 91%). The between-group difference in mean BMI indicated the intensive arm had BMIs 1.0 kg/m² lower than the controls [95% confidence interval (CI) -2.2 kg/m² to 0.2 kg/m²]. Similarly, a potential difference was found in weight (average difference of 2.8 kg, 95% CI -6.1 kg to 0.5 kg). The intensive arm had odds of maintaining on average 43% [odds ratio (OR) 1.4, 95% CI 0.6 to 3.5] higher than controls. None of these findings were statistically significant. Further analyses controlling for level of adherence indicated that average BMI was 1.2 kg/m² lower in the intensive arm than the control arm (95% CI -2.5 kg/m² to 0.0 kg/m²). The intensive intervention led to a statistically significant difference in weight (mean -3.7 kg, 95% CI -7.1 kg to -0.3 kg). The other secondary outcomes showed limited evidence of differences between groups. The intervention was delivered as planned, and both practitioners and participants were positive about the intervention and its impact. Although not powered to assess cost-effectiveness, results of this feasibility study suggest

that neither intervention as currently delivered is likely to be cost-effective in routine practice. Conclusion: This is the first trial of an intervention for WLM in the UK, the intervention is feasible and acceptable, and retention and adherence were high. The main effectiveness outcome showed a promising mean difference in the intensive arm. Owing to the small sample size, we are limited in the conclusions we can draw. However, findings suggest that the intensive intervention may facilitate long-term weight maintenance and, therefore, further testing in an effectiveness trial may be indicated. Research examining WLM is in its infancy, further research is needed to develop our understanding of WLM and to expand theory to inform the development of interventions to be tested in rigorously designed RCTs with cost-effectiveness assessed.

Sinnott, C., et al. (2015). "What to give the patient who has everything? A qualitative study of prescribing for multimorbidity in primary care." *British Journal of General Practice* 65(632): E184-E191.

Background Using clinical guidelines in the management of patients with multimorbidity can lead to the prescription of multiple and sometimes conflicting medications. Aim To explore how GPs make decisions when prescribing for multimorbid patients, with a view to informing intervention design. Design and setting In-depth qualitative interviews incorporating chart-stimulated recall with purposively sampled GPs in the Republic of Ireland. Method Grounded theory analysis with iterative theory development. Results Twenty GPs were interviewed about 51 multimorbid cases. In these cases, GPs integrated information from multiple sources including the patient, specialists, and evidencebased medicine. Difficulties arose when recommendations or preferences conflicted, to which GPs responded by 'satisficing': accepting care that they deemed satisfactory and sufficient for a particular patient. Satisficing was manifest as relaxing targets for disease control, negotiating compromise with the patient, or making 'best guesses' about the most appropriate course of action to take. In multimorbid patients perceived as stable, GPs preferred to 'maintain the status quo' rather than rationalise medications, even in cases with significant polypharmacy. Proactive changes in medications were facilitated by continuity of care, sufficient consultation time, and open lines of communication with the patient, other healthcare professionals, and other GPs. Conclusion GPs respond to conflicts in the management of multimorbid patients by making compromises between patient-centred and evidence-based care. These findings will be used to inform interventions that aim to care in multimorbidity.

Sinnott, C., et al. (2015). "Improving medication management in multimorbidity: development of the Multimorbidity Collaborative Medication Review And DEcision Making (MY COMRADE) intervention using the Behaviour Change Wheel." *Implementation Science* 10.

Background: Multimorbidity, the presence of two or more chronic conditions, affects over 60 % of patients in primary care. Due to its association with polypharmacy, the development of interventions to optimise medication management in patients with multimorbidity is a priority. The Behaviour Change Wheel is a new approach for applying behavioural theory to intervention development. Here, we describe how we have used results from a review of previous research, original research of our own and the Behaviour Change Wheel to develop an intervention to improve medication management in multimorbidity by general practitioners (GPs), within the overarching UK Medical Research Council guidance on complex interventions. Methods: Following the steps of the Behaviour Change Wheel, we sought behaviours associated with medication management in multimorbidity by conducting a systematic review and qualitative study with GPs. From the modifiable GP behaviours identified, we selected one and conducted a focused behavioural analysis to explain why GPs were or were not engaging in this behaviour. We used the behavioural analysis to determine the intervention functions, behavioural change techniques and implementation plan most likely to effect behavioural change. Results: We identified numerous modifiable GP behaviours in the systematic review and qualitative study, from which active medication review (rather than passive maintaining the status quo) was chosen as the target behaviour. Behavioural analysis revealed GPs' capabilities, opportunities and motivations relating to active medication review. We combined the three intervention functions deemed most likely to effect behavioural change (enablement, environmental restructuring and incentivisation) to form the Multimorbidity Collaborative Medication Review And DEcision Making (MY COMRADE) intervention. MY COMRADE primarily involves the technique of social support: two GPs review the medications prescribed to a complex multimorbid patient together. Four other behavioural change techniques are incorporated: restructuring the social environment, prompts/cues, action planning and self-incentives. Conclusions: This study is the first to use the Behaviour Change Wheel to develop an intervention targeting multimorbidity and confirms the usability and usefulness of the approach in a complex area of clinical care. The systematic development of the MY COMRADE intervention will facilitate a thorough evaluation of its effectiveness in the next phase of this work.

Slaughter, S. E., et al. (2017). "Classification schemes for knowledge translation interventions: a practical resource for researchers." *Bmc Medical Research Methodology* 17.

Background: As implementation science advances, the number of interventions to promote the translation of evidence into healthcare, health systems, or health policy is growing. Accordingly, classification schemes for these

knowledge translation (KT) interventions have emerged. A recent scoping review identified 51 classification schemes of KT interventions to integrate evidence into healthcare practice; however, the review did not evaluate the quality of the classification schemes or provide detailed information to assist researchers in selecting a scheme for their context and purpose. This study aimed to further examine and assess the quality of these classification schemes of KT interventions, and provide information to aid researchers when selecting a classification scheme. Methods: We abstracted the following information from each of the original 51 classification scheme articles: authors' objectives; purpose of the scheme and field of application; socioecologic level (individual, organizational, community, system); adaptability (broad versus specific); target group (patients, providers, policy-makers), intent (policy, education, practice), and purpose (dissemination versus implementation). Two reviewers independently evaluated the methodological quality of the development of each classification scheme using an adapted version of the AGREE II tool. Based on these assessments, two independent reviewers reached consensus about whether to recommend each scheme for researcher use, or not. Results: Of the 51 original classification schemes, we excluded seven that were not specific classification schemes, not accessible or duplicates. Of the remaining 44 classification schemes, nine were not recommended. Of the 35 recommended classification schemes, ten focused on behaviour change and six focused on population health. Many schemes (n = 29) addressed practice considerations. Fewer schemes addressed educational or policy objectives. Twenty-five classification schemes had broad applicability, six were specific, and four had elements of both. Twenty-three schemes targeted health providers, nine targeted both patients and providers and one targeted policy-makers. Most classification schemes were intended for implementation rather than dissemination. Conclusions: Thirty-five classification schemes of KT interventions were developed and reported with sufficient rigour to be recommended for use by researchers interested in KT in healthcare. Our additional categorization and quality analysis will aid in selecting suitable classification schemes for research initiatives in the field of implementation science.

Smith, C., et al. (2017). "Women's views and experiences of a mobile phone-based intervention to support post-abortion contraception in Cambodia." *Reproductive Health* 14.

Background: The MOBILE Technology for Improved Family Planning (MOTIF) trial assessed a mobile phone-based intervention comprising voice messages and counsellor support to increase post-abortion contraception at four Marie Stopes International clinics in Cambodia. The aim of this process evaluation was to assess women's views and experiences of receiving the MOTIF intervention, gain insights into the mechanism of action of the intervention and seek recommendations for improvements. Methods: We conducted a qualitative study comprising 15 semi-structured interviews with women who had received the intervention and undertook a simple thematic analysis. Results: We identified themes relating to communication via mobile phone, supporting contraception use, broader post-abortion care, interaction with family and friends and suggestions for improvement. The majority of women were positive about the mobile phone-based intervention to support contraception use and reported it to be a convenient way to ask questions or get advice without going to a health centre, although a few women found the voice messages intrusive. The intervention supported contraception use by provision of information, encouragement, reminders to return to clinic, reassurance and advice for problems and had a positive effect on contraceptive uptake and continuation. Women reported a sense of being cared for and received support for additional physical and emotional issues. Most women thought that the duration of the intervention and frequency of messages were acceptable. Conclusions: The majority of women were positive about the mobile phone-based intervention which provided support for contraception use as well as additional physical and emotional issues. The study provides some insights into how the intervention might have worked and considers how the intervention could be improved.

Smith, C., et al. (2016). "Mobile Technology for Improved Family Planning (MOTIF): the development of a mobile phone-based (mHealth) intervention to support post-abortion family planning (PAFP) in Cambodia." *Reproductive Health* 13.

Background: The objective of this paper is to outline the formative research process used to develop the MOTIF mobile phone-based (mHealth) intervention to support post-abortion family planning in Cambodia. Methods: The formative research process involved literature reviews, interviews and focus group discussions with clients, and consultation with clinicians and organisations implementing mHealth activities in Cambodia. This process led to the development of a conceptual framework and the intervention. Results: Key findings from the formative research included identification of the main reasons for non-use of contraception and patterns of mobile phone use in Cambodia. We drew on components of existing interventions and behaviour change theory to develop a conceptual framework. A multi-faceted voice-based intervention was designed to address health concerns and other key determinants of contraception use. Conclusions: Formative research was essential in order to develop an appropriate mHealth intervention to support post-abortion contraception in Cambodia. Each component of the formative research contributed to the final intervention design.

Smith, C. A., et al. (2019). "Exploring mental health professionals' practice in relation to smoke-free policy within a mental health trust: a qualitative study using the COM-B model of behaviour." *Bmc Psychiatry* 19.

Background Smoking has played a significant role in the historical culture of mental healthcare settings. Mental health professionals (MHPs) often hold dismissive attitudes regarding the importance of smoking cessation in the context of mental healthcare. In 2007, English mental health inpatient buildings were required by law to become smoke-free, and healthcare trusts have more recently begun to implement comprehensive policies (i.e. smoke-free grounds and buildings) and staff training in response to national guidance. It is therefore important to explore MHPs practice around smoking, smoking cessation, and smoke-free policy adherence. This study aimed to explore these issues by using the COM-B (capability, opportunity, motivation, behaviour) model to systematically identify barriers to, and facilitators for, MHPs addressing smoking with their patients. Methods Five focus groups with a total of 36 MHPs were conducted between March and August 2017. MHPs were recruited from one of the largest mental health trusts in Europe. Discussions were guided by a semi-structured guide. Responses were audio recorded, transcribed and coded using thematic analysis and the COM-B framework. Results Addressing smoking with patients was undermined by MHPs' 1) psychological capability to recall training content, misunderstand the potential benefits of addressing patient smoking and harm reduction approaches; 2) physical opportunity in terms of time constraints, and easy accessibility of tobacco in the community; 3) social opportunity in terms of increased cultural value of tobacco following inpatient smoke-free policy implementation, and lack of support from colleagues to enforce the smoke-free policy; 4) automatic motivation, including intrinsic biases regarding patients abilities and motivations to quit, and 5) reflective motivation, including perceived job role and decision making processes related to addressing behaviours deemed more important than smoking. The main facilitating factors identified were MHPs' having opportunity in the form of patients asking directly for support, and MHPs having access to resources such as stop smoking services and spirometers. Conclusion Multiple barriers were identified across all key domains of the COM-B framework that undermine MHPs' practice regarding smoking cessation. Few facilitators were identified which may have implications for future smoke-free policy and clinical practice.

Smith, C. M., et al. (2019). "Symptom reporting, healthcare-seeking behaviour and antibiotic use for common infections: protocol for Bug Watch, a prospective community cohort study." *Bmj Open* 9(5).

Introduction Antimicrobial resistance is a significant worldwide problem largely driven by selective pressure exerted through antibiotic use. Preserving antibiotics requires identification of opportunities to safely reduce prescriptions, for example in the management of mild common infections in the community. However, more information is needed on how infections are usually managed and what proportion lead to consultation and antibiotic use. The aim of this study is to quantify consultation and prescribing patterns in the community for a range of common acute infection syndromes (respiratory, gastrointestinal, skin/soft tissue, mouth/dental, eye and urinary tract). This will inform development of interventions to improve antibiotic stewardship as part of a larger programme of work, Preserving Antibiotics through Safe Stewardship. Methods and analysis This will be an online prospective community cohort study in England. We will invite 19 510 adults who previously took part in a nationally representative survey (the Health Survey for England) and consented to be contacted about future studies. Adults will also be asked to register their children. Data collection will consist of a baseline registration survey followed by weekly surveys sent by email for 6 months. Weekly surveys will collect information on symptoms of common infections, healthcare-seeking behaviour and use of treatments including antibiotics. We will calculate the proportions of infection syndromes that lead to General Practitioner consultation and antibiotic prescription. We will investigate how healthcare-seeking and treatment behaviours vary by demographics, social deprivation, infection profiles and knowledge and attitudes towards antibiotics, and will apply behavioural theory to investigate barriers and enablers to these behaviours. Ethics and dissemination This study has been given ethical approval by the University College London Research Ethics Committee (ID 11813/001). Each participant will provide informed consent upon registration. We will disseminate our work through publication in peer-reviewed academic journals. Anonymised data will be made available through the UK Data Service (<https://www.ukdataservice.ac.uk/>).

Smith, L. E., et al. (2016). "A systematic review of factors affecting intended and actual adherence with antiviral medication as treatment or prophylaxis in seasonal and pandemic flu." *Influenza and Other Respiratory Viruses* 10(6): 462-478.

The aim of this review was to identify factors predicting actual or intended adherence to antivirals as treatment or prophylaxis for influenza. Literature from inception to March 2015 was systematically reviewed to find studies reporting predictors of adherence to antivirals and self-reported reasons for non-adherence to antivirals. Twenty-six studies were included in the review; twenty identified through the literature search and six through other means. Of these studies, 18 assessed predictors of actual adherence to antivirals, whereas eight assessed predictors of intended adherence. The most commonly found predictor of, and self-reported reason for, non-adherence was the occurrence of side effects. Other predictors include perceptions surrounding self-efficacy, response efficacy and perceived personal

consequences as well as social influences of others' experiences of taking antivirals. Predictors identified in this review can be used to help inform communications to increase adherence to antivirals in both seasonal and pandemic influenza.

Smits, S., et al. (2018). "Development of a Behavior Change Intervention to Encourage Timely Cancer Symptom Presentation Among People Living in Deprived Communities Using the Behavior Change Wheel." *Annals of Behavioral Medicine* 52(6): 474-488.

Background Targeted public awareness interventions are needed to improve earlier cancer diagnosis and reduce socioeconomic inequalities in cancer outcomes. The health check (intervention) is a touchscreen questionnaire delivered by trained lay advisors that aims to raise awareness of cancer symptoms and risk factors and encourage timely help seeking. **Purpose** This study aimed to apply the Behavior Change Wheel to intervention refinement by identifying barriers and facilitators to timely symptom presentation among people living in socioeconomically deprived communities. **Methods** Primary data (six focus groups with health professionals, community partners and public) and secondary data (systematic review of barriers and facilitators to cancer symptom presentation) were mapped iteratively to the Behavior Change Wheel. **Results** Barriers and facilitators were identified from the systematic review and focus groups comprising 14 members of the public aged over 40, 14 community partners, and 14 healthcare professionals. Barriers included poor symptom knowledge and lack of motivation to engage in preventive or proactive behaviors. Facilitators included cues/prompts to action, general practitioner preparedness to listen, and social networks. The following behavior change techniques were selected to address identified barriers and facilitators: information about health consequences, prompts/cues, credible sources, restricting physical and social environment, social support, goal setting, and action planning. **Conclusions** The Behavior Change Wheel triangulated findings from primary and secondary data sources. An intervention combining education and enablement could encourage timely symptom presentation to primary care among people living in socioeconomically deprived communities. Social encouragement and support is needed to increase symptom knowledge, challenge negative cancer beliefs, and prompt decisions to engage with the healthcare system.

Sohanpal, R., et al. (2019). "Evaluating the effectiveness and cost-effectiveness of the Smoking Treatment Optimisation in Pharmacies (STOP) intervention: protocol for a cluster randomised controlled trial." *Trials* 20.

Background NHS community pharmacies provide effective smoking cessation services; however, there is scope for increasing throughput and improving quit rates. This trial examines whether the Smoking Treatment Optimisation in Pharmacies (STOP) intervention can improve smoker engagement to increase service throughput, retention and quitting. **Methods** This study is a pragmatic, cluster randomised controlled trial in 60 pharmacies in England and Wales. All workers in intervention pharmacies are offered STOP training while control pharmacies provide usual care. The STOP intervention, based on behavioural and organisational theories, comprises educational sessions for staff and environmental prompts in the pharmacy. Intervention fidelity is assessed by actors visiting pharmacies posing as smokers. The primary outcome is throughput, defined as the number of smokers who join the programme, set a firm quit date and undergo at least one stop smoking treatment session, and is measured using routinely collected data. Secondary outcomes include retention and quit rates at 4 weeks and continuous abstinence at 6 months verified by salivary cotinine. Cost-effectiveness is estimated using quality-adjusted life years and the probability that the intervention is effective at different levels of willingness to pay is calculated. **Discussion** The trial will generate evidence to inform the public health smoking cessation strategy in England and Wales, and may help to shape service commissioning decisions. The STOP intervention model may help inform the undertaking of a range of health behaviour change tasks in community pharmacies. **Trial registration** [ClinicalTrials.gov](https://clinicaltrials.gov), ISRCTN16351033. Retrospectively registered on 21 March 2017.

Sohanpal, R., et al. (2016). "Understanding recruitment and retention in the NHS community pharmacy stop smoking service: perceptions of smoking cessation advisers." *Bmj Open* 6(7).

Objectives: To understand views of pharmacy advisers about smoker recruitment and retention in the National Health Service community pharmacy stop smoking programme. **Design:** Thematic framework analysis of semistructured, in-depth interviews applying the Theoretical Domains Framework and COM-B behaviour change model. We aimed to identify aspects of adviser behaviour that might be modified to increase numbers joining and completing the programme. **Participants:** 25 stop smoking advisers (13 pharmacists and 12 support staff). **Setting:** 29 community pharmacies in 3 inner east London boroughs. **Results:** Advisers had preconceived ideas about smokers likely to join or drop out and made judgements about smokers' readiness to quit. Actively recruiting smokers was accorded low priority due in part to perceived insufficient remuneration to the pharmacy and anticipated challenging interactions with smokers. Suggestions to improve smoker recruitment and retention included developing a more holistic and supportive approach using patient-centred communication. Training counter assistants were seen to be important as was flexibility to extend the programme duration to fit better with smokers' needs. **Conclusions:** Cessation advisers feel they lack the interpersonal skills necessary to engage well with smokers and help them to quit. Addressing advisers' behaviours about active

engagement and follow-up of clients, together with regular skills training including staff not formally trained as cessation advisers, could potentially boost numbers recruited and retained in the stop smoking programme. Adjustments to the pharmacy remuneration structure to incentivise recruitment and to allow personalisation of the programme for individual smokers should also be considered.

Solbrig, L., et al. (2017). "People trying to lose weight dislike calorie counting apps and want motivational support to help them achieve their goals." *Internet Interventions-the Application of Information Technology in Mental and Behavioural Health* 7: 23-31.

Background: Two thirds of UK adults are overweight or obese and at increased risk of chronic conditions such as heart disease, diabetes and certain cancers. Basic public health support for weight loss comprises information about healthy eating and lifestyle, but internet and mobile applications (apps) create possibilities for providing long-term motivational support. Aims: To explore among people currently trying to lose weight, or maintaining weight loss, (i) problems, experiences and wishes in regards to weight management and weight loss support including e-health support; (ii) reactions to Functional Imagery Training (FIT) as a possible intervention. Method: Six focus groups (N = 24 in total) were recruited from a public pool of people who had expressed an interest in helping with research. The topics considered were barriers to weight loss, desired support for weight loss and acceptability of FIT including the FIT app. The focus group discussions were transcribed and thematically analysed. Results: All groups spontaneously raised the issue of waning motivation and expressed the desire for motivational app support for losing weight and increasing physical activity. They disliked calorie counting apps and those that required lots of user input. All groups wanted behavioural elements such as setting and reviewing goals to be included, with the ability to personalise the app by adding picture reminders and choosing times for goal reminders. Participants were positive about FIT and FIT support materials. Conclusion: There is a mismatch between the help provided via public health information campaigns and commercially available weight-loss self-help (lifestyle information, self-monitoring), and the help that individuals actually desire (motivational and autonomous e-support), posing an opportunity to develop more effective electronic, theory-driven, motivational, self-help interventions. (C) 2017 The Authors. Published by Elsevier B.V.

Spence, J. C., et al. (2017). "Challenging the Dual-Hinge Approach to Intervening on Sedentary Behavior." *American Journal of Preventive Medicine* 52(3): 403-406.

Splendiani, B. and M. Ribera (2015). A proposal for the inclusion of accessibility criteria in the publishing workflow of images in biomedical academic articles. *Proceedings of the 6th International Conference on Software Development and Technologies for Enhancing Accessibility and Fighting Info-Exclusion*. C. Velasco, G. Weber, J. Barroso, Y. Mohamad and H. Paredes. 67: 67-76.

In spite of the importance of visual content in academic publishing, biomedical articles do not offer accessible images, mainly because of the lack of text alternatives. According to a process-oriented accessibility philosophy, this article proposes the use of image-related texts, such as captions or mentions, as text alternatives of images, since they are solutions based on the current practices of authors of biomedical images. We also present two tools created to guide authors in writing comprehensive text alternatives. The aim of this proposal is to increase the opportunities of an actual application of accessibility principles within the biomedical academic publishing. (C) 2015 The Authors. Published by Elsevier B.V.

Spooner, A. J., et al. (2018). "Implementation of an Evidence-Based Practice Nursing Handover Tool in Intensive Care Using the Knowledge-to-Action Framework." *Worldviews on Evidence-Based Nursing* 15(2): 88-96.

Background: Miscommunication during handover has been linked to adverse patient events and is an international patient safety priority. Despite the development of handover resources, standardized handover tools for nursing team leaders (TLs) in intensive care are limited. Aims: The study aim was to implement and evaluate an evidence-based electronic minimum data set for nursing TL shift-to-shift handover in the intensive care unit using the knowledge-to-action (KTA) framework. Methods: This study was conducted in a 21-bed medical-surgical intensive care unit in Queensland, Australia. Senior registered nurses involved in TL handover were recruited. Three phases of the KTA framework (select, tailor, and implement interventions; monitor knowledge use; and evaluate outcomes) guided the implementation and evaluation process. A postimplementation practice audit and survey were carried out to determine nursing TL use and perceptions of the electronic minimum data set 3 months after implementation. Results: Results are presented using descriptive statistics (median, IQR, frequency, and percentage). Overall (86%, n = 49), TLs' use of the electronic minimum data set for handover and communication regarding patient plan increased. Key content items, however, were absent from handovers and additional documentation was required alongside the minimum data set to conduct handover. Of the TLs surveyed (n = 35), those receiving handover perceived the electronic minimum data set more positively than TLs giving handover (n = 35). Benefits to using the electronic minimum data set included the patient

content (48%), suitability for short-stay patients (16%), decreased time updating (12%), and printing the tool (12%). Almost half of the participants, however, found the minimum data set contained irrelevant information, reported difficulties navigating and locating relevant information, and pertinent information was missing. Suggestions for improvement focused on modifications to the electronic handover interface. Linking Evidence to Action Prior to developing and implementing electronic handover tools, adequate infrastructure is required to support knowledge translation and ensure clinician and organizational needs are met.

Springer, A. E., et al. (2017). "Health by Design: Interweaving Health Promotion into Environments and Settings." *Frontiers in Public Health* 5.

The important influence of the environmental context on health and health behavior—which includes place, settings, and the multiple environments within place and settings—has directed health promotion planners from a focus solely on changing individuals, toward a focus on harnessing and changing context for individual and community health promotion. Health promotion planning frameworks such as Intervention Mapping provide helpful guidance in addressing various facets of the environmental context in health intervention design, including the environmental factors that influence a given health condition or behavior, environmental agents that can influence a population's health, and environmental change methods. In further exploring how to harness the environmental context for health promotion, we examine in this paper the concept of interweaving of health promotion into context, defined as weaving or blending together health promotion strategies, practices, programs, and policies to fit within, complement, and build from existing settings and environments. Health promotion interweaving stems from current perspectives in health intervention planning, improvement science and complex systems thinking by guiding practitioners from a conceptualization of context as a backdrop to intervention, to one that recognizes context as integral to the intervention design and to the potential to directly influence health outcomes. In exploring the general approach of health promotion interweaving, we examine selected theoretical and practice-based interweaving concepts in relation to four key environments (the policy environment, the information environment, the social/cultural/organizational environment, and the physical environment), followed by evidence-based and practice-based examples of health promotion interweaving from the literature. Interweaving of health promotion into context is a common practice for health planners in designing health promotion interventions, yet one which merits further intentionality as a specific health promotion planning design approach.

Spruijt-Metz, D., et al. (2015). "Building new computational models to support health behavior change and maintenance: new opportunities in behavioral research." *Translational Behavioral Medicine* 5(3): 335-346.

Adverse and suboptimal health behaviors and habits are responsible for approximately 40 % of preventable deaths, in addition to their unfavorable effects on quality of life and economics. Our current understanding of human behavior is largely based on static "snapshots" of human behavior, rather than ongoing, dynamic feedback loops of behavior in response to ever-changing biological, social, personal, and environmental states. This paper first discusses how new technologies (i.e., mobile sensors, smartphones, ubiquitous computing, and cloud-enabled processing/computing) and emerging systems modeling techniques enable the development of new, dynamic, and empirical models of human behavior that could facilitate just-in-time adaptive, scalable interventions. The paper then describes concrete steps to the creation of robust dynamic mathematical models of behavior including: (1) establishing "gold standard" measures, (2) the creation of a behavioral ontology for shared language and understanding tools that both enable dynamic theorizing across disciplines, (3) the development of data sharing resources, and (4) facilitating improved sharing of mathematical models and tools to support rapid aggregation of the models. We conclude with the discussion of what might be incorporated into a "knowledge commons," which could help to bring together these disparate activities into a unified system and structure for organizing knowledge about behavior.

Spruijt-Metz, D., et al. (2015). *mHealth for Behavior Change and Monitoring*.

Spruijt-Metz, D., et al. (2014). "Behavioral Contributions to the Pathogenesis of Type 2 Diabetes." *Current Diabetes Reports* 14(4).

Behavioral contributions to the pathogenesis of prediabetes and Type 2 diabetes (T2D) include lifestyle behaviors including dietary intake, exercise, sedentariness, sleep, and stress. The purpose of this paper is to review evidence for the metabolic pathways by which the behavior is linked to T2D. Evidence for interventions, which change each of the lifestyle behaviors, is discussed. The article will close with a brief discussion on how new technologies may provide opportunities to better understand relationships between moment-to-moment fluctuations in behaviors and diabetes pathogenesis, as well as provide opportunities to personalize and adapt interventions to achieve successful behavior change and maintenance of that change. Especially promising are new technologies, which assist in tracking lifestyle behaviors along with clinical and metabolic outcomes.

Srikesavan, C., et al. (2019). "Web-based rehabilitation interventions for people with rheumatoid arthritis: A systematic review." *Journal of Telemedicine and Telecare* 25(5): 263-275.

Background Rehabilitation approaches for people with rheumatoid arthritis include joint protection, exercises and self-management strategies. Health interventions delivered via the web have the potential to improve access to health services overcoming time constraints, physical limitations, and socioeconomic and geographic barriers. The objective of this review is to determine the effects of web-based rehabilitation interventions in adults with rheumatoid arthritis. Methods Randomised controlled trials that compared web-based rehabilitation interventions with usual care, waiting list, no treatment or another web-based intervention in adults with rheumatoid arthritis were included. The outcomes were pain, function, quality of life, self-efficacy, rheumatoid arthritis knowledge, physical activity and adverse effects. Methodological quality was assessed using the Cochrane Risk of Bias tool and quality of evidence with the Grading of Recommendations Assessment, Development and Evaluation approach. Results Six source documents from four trials (n = 567) focusing on self-management, health information or physical activity were identified. The effects of web-based rehabilitation interventions on pain, function, quality of life, self-efficacy, rheumatoid arthritis knowledge and physical activity are uncertain because of the very low quality of evidence mostly from small single trials. Adverse effects were not reported. Conclusion Large, well-designed trials are needed to evaluate the clinical and cost-effectiveness of web-based rehabilitation interventions in rheumatoid arthritis.

Staddon, S. C., et al. (2016). "Intervening to change behaviour and save energy in the workplace: A systematic review of available evidence." *Energy Research & Social Science* 17: 30-51.

Workplaces worldwide are a major source of carbon emissions and changing energy use behaviour in these environments has the capacity for large carbon savings. This paper reviews and synthesises empirical evidence to identify what types of behaviour change intervention are most successful at saving energy in an office-type workplace. We draw on the field of health-related behaviour change interventions and adopt the Behaviour Change Wheel (Michie et al., 2014) as a framework through which to assess the success of the interventions reviewed here (n = 22 studies). We find that interventions creating social and physical opportunities for employees to save energy are the most successful i.e. which constitute Enablement (including direct support and greater control to employees), Environmental Restructuring (particularly automated and retrofitted technologies) and Modelling (various forms of social influence). The communal nature of most workplaces demands scrutiny to understand the effect of social influences. We provide recommendations for future research, including the need to consider forms of intervention not yet researched; Coercion, Restriction, and Training. We conclude by calling for further, well evaluated, energy saving behavioural interventions in a variety of workplaces to identify those techniques which offer the greatest success in saving energy and thus reducing carbon emissions. (C) 2016 The Authors. Published by Elsevier Ltd.

Stansfield, J. and R. Bell (2019). "Applying a psychosocial pathways model to improving mental health and reducing health inequalities: Practical approaches." *International Journal of Social Psychiatry* 65(2): 107-113.

Background: Mental health can help explain how social inequalities impact on health. Many current public health challenges are shaped by social, economic and environmental conditions that take a mental toll on society. Purpose: This article describes a conceptual framework illustrating the psychosocial pathways that link the wider conditions to health behaviours and outcomes. It draws out implications of this framework for mental health practice that aim to support policy and decision-making on future action to reduce health inequalities and presents practical examples of what can be done. Methods: This article expands on a report commissioned by Public Health England. A narrative review and synthesis of relevant evidence built on existing research by the Institute of Health Equity. A conceptual framework was developed and a consultation exercise with stakeholders helped to revise and illustrate it with practice examples. Conclusions: The field of mental health has much to contribute to prevention, not just of mental illness but also of physical health conditions and reduction of inequalities in life expectancy and healthy life expectancy, especially through collaborative public health action.

Stansfield, J. and J. South (2018). "A knowledge translation project on community-centred approaches in public health." *Journal of Public Health* 40: 157-163.

This article examines the development and impact of a national knowledge translation project aimed at improving access to evidence and learning on community-centred approaches for health and wellbeing. Structural changes in the English health system meant that knowledge on community engagement was becoming lost and a fragmented evidence base was seen to impact negatively on policy and practice. A partnership started between Public Health England, NHS England and Leeds Beckett University in 2014 to address these issues. Following a literature review and stakeholder consultation, evidence was published in a national guide to community-centred approaches. This was followed by a programme of work to translate the evidence into national strategy and local practice. The article outlines

the key features of the knowledge translation framework developed. Results include positive impacts on local practice and national policy, for example adoption within National Institute for Health and Care Evidence (NICE) guidance and Local Authority public health plans and utilization as a tool for local audit of practice and commissioning. The framework was successful in its non-linear approach to knowledge translation across a range of inter-connected activity, built on national leadership, knowledge brokerage, coalition building and a strong collaboration between research institute and government agency.

Steinmo, S., et al. (2015). "Characterising an implementation intervention in terms of behaviour change techniques and theory: the 'Sepsis Six' clinical care bundle." *Implementation Science* 10.

Background: Sepsis is a major cause of death from infection, with a mortality rate of 36 %. This can be halved by implementing the 'Sepsis Six' evidence-based care bundle within 1 h of presentation. A UK audit has shown that median implementation rates are 27-47 % and interventions to improve this have demonstrated minimal effects. In order to develop more effective implementation interventions, it is helpful to obtain detailed characterisations of current interventions and to draw on behavioural theory to identify mechanisms of change. The aim of this study was to illustrate this process by using the Behaviour Change Wheel; Behaviour Change Technique (BCT) Taxonomy; Capability, Opportunity, Motivation model of behaviour; and Theoretical Domains Framework to characterise the content and theoretical mechanisms of action of an existing intervention to implement Sepsis Six. Methods: Data came from documentary, interview and observational analyses of intervention delivery in several wards of a UK hospital. A broad description of the intervention was created using the Template for Intervention Description and Replication framework. Content was specified in terms of (i) component BCTs using the BCT Taxonomy and (ii) intervention functions using the Behaviour Change Wheel. Mechanisms of action were specified using the Capability, Opportunity, Motivation model and the Theoretical Domains Framework. Results: The intervention consisted of 19 BCTs, with eight identified using all three data sources. The BCTs were delivered via seven functions of the Behaviour Change Wheel, with four ("education", "enablement", 'training' and 'environmental restructuring') supported by the three data sources. The most frequent mechanisms of action were reflective motivation (especially 'beliefs about consequences' and 'beliefs about capabilities') and psychological capability (especially 'knowledge'). Conclusions: The intervention consisted of a wide range of BCTs targeting a wide range of mechanisms of action. This study demonstrates the utility of the Behaviour Change Wheel, the BCT Taxonomy and the Theoretical Domains Framework, tools recognised for providing guidance for intervention design, for characterising an existing intervention to implement evidence-based care.

Stenov, V., et al. (2019). "Group-based, person-centered diabetes self-management education: healthcare professionals' implementation of new approaches." *Bmc Health Services Research* 19.

Background Healthcare professionals' person-centered communication skills are pivotal for delivering successful diabetes education. Many healthcare professionals favor person-centeredness as a concept, but implementation in practice remains challenging. Today, programs have often a fixed curriculum dominated by biomedical issues. Most person-centered methods are developed targeting individual consultations, although group-based programs are a widespread and efficient method of support. Person-centeredness in group-based programs requires a change in practice towards addressing biopsychosocial issues and facilitating group processes. The objective of this study was to explore how healthcare professionals implement new approaches to facilitate group-based, person-centered diabetes education targeting people with type 2 diabetes. Methods The study was guided by action research and divided into three studies: investigation, development, and pilot using a variety of qualitative methods. In the first study; observations across five settings were conducted. Forty-nine group participants and 13 professionals took part; the focus was to investigate approaches that supported or hindered person-centeredness in groups. Observations were supplemented by interviews (n=12) and two focus groups (n=16) with group participants, as well as interviews (n=5) with professionals. In the second study; 14 professionals collaborated in two workshops to develop new approaches. In the third study, new approaches were pilot-tested using observations in three settings. Twenty-five group participants and five professionals took part. The analysis of the pilot test led to the final workshop where six professionals took part. Results Implementation was characterized by three categories. Some professionals chose not to implement the methods because they conflicted with their practice relying on the biomedical model. Other incorporated some approaches but was unable to structure the process, leaving participants uncertain about the aim. Finally, one setting succeeded with implementation, tailoring content and processes to group participants' needs. Conclusion The use of action research created context-sensitive approaches and increased professionals' readiness to implement. More attention should be paid to systematic training of professionals. Training should be structured stepwise incorporating techniques directed towards existing skills including ample time to train and reiterate skills.

Stephan, A. J., et al. (2018). "Barriers and facilitators for the management of vertigo: a qualitative study with primary care providers." *Implementation Science* 13.

Background: Although the management of patients presenting with vertigo and dizziness in primary care has been reported to be inefficient, little is known about the primary care providers' (PCPs) perspectives, needs, and attitudes regarding vertigo management. The objective of this study was to understand which challenges and barriers PCPs see when diagnosing and treating patients presenting with vertigo or dizziness. Specifically, we wanted to identify facilitators and barriers of successful guideline implementation in order to inform the development of targeted interventions. **Methods:** A theory-based interview structure was developed based on the implementation theory of capability, opportunity, and motivation for behaviour change (COM-B) using questions based on constructs from the Theoretical Domains Framework (TDF) and the Consolidated Framework for Implementation Research (CFIR). Transcripts of the semi-structured interviews were analysed using directed content analysis. The pathways through which guideline characteristics and supportive interventions affect the relationship between the PCPs' perceived capability, opportunity, and motivation as well as their practice of managing vertigo patients were graphically presented using the COM-B model structure. **Results:** Twelve PCPs from Bavaria in Southern Germany participated in semi-structured interviews. Diagnostics posed the biggest challenge in vertigo management to the PCPs. Requirements for an acceptable guideline were stakeholder involvement in the development process, clarity of presentation, and high applicability. Guideline implementation might be effectively supported through educational meetings and sustained by organisational interventions. **Conclusions:** From the PCPs' perspective, both guideline characteristics and interventions supporting guideline implementation may help resolve challenges in vertigo management in primary care. These results should be used to guide future interventions in the primary care setting to ensure successful and targeted patient management.

Stephan, U., et al. (2016). "Organizations Driving Positive Social Change: A Review and an Integrative Framework of Change Processes." *Journal of Management* 42(5): 1250-1281.

Academic and practitioner interest in how market-based organizations can drive positive social change (PSC) is steadily growing. This paper helps to recast how organizations relate to society. It integrates research on projects stimulating PSC the transformational processes to advance societal well-being that is fragmented across different streams of research in management and related disciplines. Focusing on the mechanisms at play in how organizations and their projects affect change in targets outside of organizational boundaries, we (1) clarify the nature of PSC as a process, (2) develop an integrative framework that specifies two distinct PSC strategies, (3) take stock of and offer a categorization scheme for change mechanisms and enabling organizational practices, and (4) outline opportunities for future research. Our conceptual framework differentiates between surface- and deep-level PSC strategies understood as distinct combinations of change mechanisms and enabling organizational practices. These strategies differ in the nature and speed of transformation experienced by the targets of change projects and the resulting quality (pervasiveness and durability), timing, and reach of social impact. Our findings provide a solid base for integrating and advancing knowledge across the largely disparate streams of management research on corporate social responsibility, social entrepreneurship, and base of the pyramid and open up important new avenues for future research on organizing for PSC and on unpacking PSC processes.

Stevly, A. K., et al. (2018). "Exposure to revised drinking guidelines and 'COM-B' determinants of behaviour change: descriptive analysis of a monthly cross-sectional survey in England." *Bmc Public Health* 18.

Background: January 2016 saw the publication of proposed revisions to the UK's lower risk drinking guidelines but no sustained promotional activity. This paper aims to explore the impact of publishing guidelines without sustained promotional activity on reported guideline exposure and determinants of behaviour (capability, opportunity and motivation) proposed by the COM-B model. **Methods:** Data were collected by a monthly repeat cross-sectional survey of adults (18+) resident in England over 15 months between November 2015 and January 2017 from a total of 16,779 drinkers, as part of the Alcohol Toolkit Study. Trends and associated 95% confidence intervals were described in the proportion of reported exposure to guidelines in the past month and measures of the capability, opportunity and motivation to consume alcohol within drinking guidelines. **Results:** There was a rise in reported exposure to drinking guidelines in January 2016 (57.6-80.6%) which did not reoccur in January 2017. Following the increase in January 2016, reported exposure reduced slowly but remained significantly higher than in December 2015. In February 2016, there was an increase in measures of capability (31.1% reported tracking units of alcohol consumption and 87.8% considered it easier to drink safely) and opportunity (84.0% perceived their lifestyle as conducive to drinking within guidelines). This change was not maintained in subsequent months. Other measures showed marginal changes between January and February 2016 with no evidence of change in subsequent months. **Conclusions:** Following the publication of revised drinking guideline in January 2016, there was a transient increase in exposure to guidelines, and capability and opportunity to drink within the guidelines that diminished over time. The transience and size of the changes indicate that behaviour change is unlikely. Well-designed, theory-based promotional campaigns may be required for drinking guidelines to be an effective public health intervention.

Stevens, J., et al. (2017). "Multilevel Interventions Targeting Obesity: Research Recommendations for Vulnerable Populations." *American Journal of Preventive Medicine* 52(1): 115-124.

Introduction: The origins of obesity are complex and multifaceted. To be successful, an intervention aiming to prevent or treat obesity may need to address multiple layers of biological, social, and environmental influences. **Methods:** NIH recognizes the importance of identifying effective strategies to combat obesity, particularly in high-risk and disadvantaged populations with heightened susceptibility to obesity and subsequent metabolic sequelae. To move this work forward, the National Heart, Lung, and Blood Institute, in collaboration with the NIH Office of Behavioral and Social Science Research and NIH Office of Disease Prevention convened a working group to inform research on multilevel obesity interventions in vulnerable populations. The working group reviewed relevant aspects of intervention planning, recruitment, retention, implementation, evaluation, and analysis, and then made recommendations. **Results:** Recruitment and retention techniques used in multilevel research must be culturally appropriate and suited to both individuals and organizations. Adequate time and resources for preliminary work are essential. Collaborative projects can benefit from complementary areas of expertise and shared investigations rigorously pretesting specific aspects of approaches. Study designs need to accommodate the social and environmental levels under study, and include appropriate attention given to statistical power. Projects should monitor implementation in the multiple venues and include a priori estimation of the magnitude of change expected within and across levels. **Conclusions:** The complexity and challenges of delivering interventions at several levels of the social - ecologic model require careful planning and implementation, but hold promise for successful reduction of obesity in vulnerable populations. (C) 2016 Published by Elsevier Inc. on behalf of American Journal of Preventive Medicine

Stewart, C., et al. "Development of a participatory, tailored behaviour change intervention to increase active practice during inpatient stroke rehabilitation." *Disability and Rehabilitation*.

Purpose: An evidence-practice gap exists between the amount of active practice recommended and the amount completed by stroke inpatients. The aim of this paper is to describe steps in the design of a participatory, theoretically tailored staff behaviour change intervention to help staff use strategies to increase active practice by stroke inpatients. **Methods:** A staff behaviour change intervention was developed in one rehabilitation unit in Queensland, Australia using a six-step process guided by the Behaviour Change Wheel framework. Mixed methods were used including direct observation (behavioural mapping), and focus groups to identify barriers and facilitators to implementation. Barriers and facilitators were mapped to the behaviour change techniques, and a behaviour change intervention developed in participation with rehabilitation staff. **Results:** Staff chose to implement ward-based practice books. Barriers included patient factors (including low motivation and severity of stroke), environmental segregation and limited skills for motivating patients. Staff belief in increasing active practice was a facilitator to implementation. The staff intervention included a training programme about motivation, environmental restructuring, audit, and feedback. **Conclusions:** This example of collaborative implementation research can be used and adapted by clinicians and researchers in other rehabilitation services.

Stewart, D., et al. (2018). "Perspectives of healthcare professionals in Qatar on causes of medication errors: A mixed methods study of safety culture." *Plos One* 13(9).

Background There is a lack of robust, rigorous mixed methods studies of patient safety culture generally and notably those which incorporate behavioural theories of change. The study aimed to quantify and explain key aspects of patient safety culture which were of most concern to healthcare professionals in Qatar. **Methods** A sequential explanatory mixed methods design of a cross-sectional survey followed by focus groups in Hamad Medical Corporation, Qatar. All doctors, nurses and pharmacists were invited to complete the Hospital Survey on Patient Safety Culture (HSOPS). Respondents expressing interest in focus group participation were sampled purposively, and discussions based on survey findings using the Theoretical Domains Framework (TDF) to explain behavioural determinants. **Results** One thousand, six hundred and four questionnaires were received (67.9% nurses, 13.3% doctors, 12.9% pharmacists). HSOPS composites with the lowest levels of positive responses were non-punitive response to errors (24.0% positive) and staffing (36.2%). Specific TDF determinants potentially associated with these composites were social/professional role and identity, emotions, and environmental context and resources. Thematic analysis identified issues of doctors relying on pharmacists to correct their errors and being reluctant to alter the prescribing of fellow doctors. There was a lack of recognition of nurses' roles and frequent policy non-adherence. Stress, workload and lack of staff at key times were perceived to be major contributors to errors. **Conclusions** This study has quantified areas of concern relating to patient safety culture in Qatar and suggested important behavioural determinants. Rather than focusing on changing behaviour at the individual practitioner level, action may be required at the organisational strategic level to review policies, structures (including resource allocation and distribution) and processes which aim to promote patient safety culture.

Stewart, R. (2015). "A theory of change for capacity building for the use of research evidence by decision makers in southern Africa." *Evidence & Policy* 11(4): 547-557.

The effective use of public policy to reduce poverty and inequality in southern Africa requires an increased use of research evidence to inform decision making. There is an absence of clear evidence as to how best to encourage evidence-informed decision making, and how to build capacity among decision makers in the use of research. This paper proposes a demand-focused approach for increasing the use of evidence in policy, presenting strategies supporting 'pull' activities and closer linkages and exchanges between producers and users. The paper shares for discussion a people-focused theory of change for building capacity to use research evidence amongst policy makers in southern Africa.

Stewart, R., et al. (2018). "Building capacity for evidence-informed decision making: an example from South Africa." *Evidence & Policy* 14(2): 241-258.

To maximise the potential impact and acceptability of EIDM capacity building, there is a need for programmes to coordinate their remits within existing systems, playing both 'insider' and 'outsider' roles. Through a review of the South African evidence-policy landscape and analysis of a stakeholder event that brought together EIDM role players, this paper illustrates how one capacity-building programme navigated its position within the national evidence-policy interface. It identifies strategies for improving the acceptability and potential effectiveness of donor-funded EIDM capacity-building activities: understanding the evidence-policy interface, incorporating programmes into the decision-making infrastructure (being an 'insider'), whilst retaining an element of neutrality (being an 'outsider').

Stiles-Shields, C., et al. (2016). "A review of design characteristics of cognitive behavioral therapy-informed behavioral intervention technologies for youth with depression and anxiety." *Digital Health* 2.

Objective: Cognitive behavioral therapy (CBT) has the strongest evidence base for the prevention and treatment of depression and anxiety in youth. Behavioral intervention technologies (BITs) provide an opportunity to overcome access barriers to traditional delivery of CBT. The present review evaluates the design characteristics of CBT-informed BITs for depression and anxiety designed for and tested with youth. Methods: A state-of-the-art review of three library databases (PubMed, Scopus, and Web of Science) was conducted to identify papers that evaluated the use of CBT-informed BITs for the prevention and/or treatment of depression and anxiety among youth. Narrative results of design characteristics were organized using the BIT model, which provides a framework for design and evaluation. Results: 219 unique results were retrieved through the search. After review, 14 papers (4 prevention and 10 treatment) met the selection criteria. A broad diversity occurred in reporting the design and methodology of CBT delivered to youth through BITs. Psychoeducation was overwhelmingly utilized as the primary change strategy throughout the interventions, with a heavy use of content delivery elements and linear workflows. The reporting of sample characteristics was minimal and varied. Conclusions: Providing psychoeducation via content delivery was the most utilized BIT change strategy in the interventions, likely limiting the use of multiple BIT elements or flexible workflows. While characterizations could be inferred from the current reports, the high level of variability in reporting is problematic. Generalizability becomes increasingly more difficult to carry out effectively without clear descriptions of the design for evaluated BITs.

Stoner, C. R. (2019). "Positive psychiatry/psychology for older adults: a new and important movement but robust methodology is essential." *International Psychogeriatrics* 31(2): 163-165.

Positive psychiatry and the related positive psychology are offering a much needed alternative framework through which to view the psychology of old age (Jeste et al., 2015). Traditional models of old age tend to approach the subject from a negative view point where themes of dependency and decline can be common (Cumming and Henry, 1961). In contrast, positive psychiatry and psychology refer to the scientific study of strengths and capabilities that contribute to well-being (Seligman, 1998). Some of these can be thought of as character strengths and evidence suggests that concepts such as hope, humour, integrity, and gratitude are universal, with examples documented in at least 54 nations across the world (Park et al., 2006). Researchers aligned to these theoretical models seek to explore complex approaches to measuring and improving mental health, recognizing that well-being is often a dynamic interplay between positive and negative psychological processes and outcomes (Lomas and Ivtzan, 2016).

Stott-Eveneshen, S., et al. (2017). "Reflections on Hip Fracture Recovery From Older Adults Enrolled in a Clinical Trial." *Gerontology and Geriatric Medicine* 3.

This study describes patients' perspectives on recovery during participation in a randomized controlled trial that tested a postoperative hip fracture management program (B4 Clinic), compared with usual care, on mobility. Semistructured qualitative interviews were conducted with 50 older adults with hip fracture (from both groups) twice over 12 months. A total of 32 women (64%) and 18 men (36%) participated in the study with a mean age at baseline of 82 (range = 65-98) years. A total of 40 participants reported recovery goals at some point during their recovery from hip fracture but only 18 participants realized their goals within 12 months. Recovering mobility, returning to prefracture

activities, and obtaining stable health were the most commonly reported goals. Participants described good social support, access to physiotherapy, and positive perspective as most important to recovery. These factors were influenced by participants' knowledge, resources, and monthly contact with study staff (perceived as a form of social support). The most frequently reported barriers to participants' recovery were the onset of complications, pain, and limited access to physiotherapy. Potential implications of these findings include design and modification of new or preexisting fracture programs, prioritizing patient engagement and enhanced knowledge for future clinical research in hip fracture recovery.

Street, T. D. and S. J. Lacey (2018). "Employee Perceptions of Workplace Health Promotion Programs: Comparison of a Tailored, Semi-Tailored, and Standardized Approach." *International Journal of Environmental Research and Public Health* 15(5).

In the design of workplace health promotion programs (WHPPs), employee perceptions represent an integral variable which is predicted to translate into rate of user engagement (i.e., participation) and program loyalty. This study evaluated employee perceptions of three workplace health programs promoting nutritional consumption and physical activity. Programs included: (1) an individually tailored consultation with an exercise physiologist and dietitian; (2) a semi-tailored 12-week SMS health message program; and (3) a standardized group workshop delivered by an expert. Participating employees from a transport company completed program evaluation surveys rating the overall program, affect, and utility of: consultations (n = 19); SMS program (n = 234); and workshops (n = 86). Overall, participants' affect and utility evaluations were positive for all programs, with the greatest satisfaction being reported in the tailored individual consultation and standardized group workshop conditions. Furthermore, mode of delivery and the physical presence of an expert health practitioner was more influential than the degree to which the information was tailored to the individual. Thus, the synergy in ratings between individually tailored consultations and standardized group workshops indicates that low-cost delivery health programs may be as appealing to employees as tailored, and comparatively high-cost, program options.

Sugiyama, T., et al. (2018). "Advantages of public green spaces in enhancing population health." *Landscape and Urban Planning* 178: 12-17.

Since the burden of chronic diseases is rising globally, there is an urgent need to develop population-level approaches to reducing the risk of chronic diseases. Neighborhood environments, where people spend much of their time, are relevant in this context because they can influence residents' daily behaviors related to health. In particular, public green spaces (PGS) can confer health benefits through facilitating physical activity, contact with nature, and social interaction. PGS may also mitigate socio-economic inequalities in health. However, despite growing evidence, PGS are generally not fully utilized as a resource for physical activity. Thus, there is substantial scope for enhancing population health through increased visits and active use of PGS. This essay argues that PGS are not only health-enhancing but also practical and workable environmental resources to promote population health. We discuss three "advantages" of using PGS as health promotion initiatives: PGS are easier to modify (than are other structural environmental features); PGS can involve programs to help residents initiate physical activity; and PGS are valued by residents. The essay concludes with a discussion of future research topics, the result of which can be used to convince and assist local authorities and other key stakeholders to use PGS as readily available resources for health promotion.

Sulaiman, I., et al. (2018). "A randomised clinical trial of feedback on inhaler adherence and technique in patients with severe uncontrolled asthma." *European Respiratory Journal* 51(1).

In severe asthma, poor control could reflect issues of medication adherence or inhaler technique, or that the condition is refractory. This study aimed to determine if an intervention with (bio) feedback on the features of inhaler use would identify refractory asthma and enhance inhaler technique and adherence. Patients with severe uncontrolled asthma were subjected to a stratified-by-site random block design. The intensive education group received repeated training in inhaler use, adherence and disease management. The intervention group received the same intervention, enhanced by (bio) feedback-guided training. The primary outcome was rate of actual inhaler adherence. Secondary outcomes included a pre-defined assessment of clinical outcome. Outcome assessors were blinded to group allocation. Data were analysed on an intention-to-treat and per-protocol basis. The mean rate of adherence during the third month in the (bio) feedback group (n=111) was higher than that in the enhanced education group (intention-to-treat, n=107; 73% versus 63%; 95% CI 2.8%-17.6%; p=0.02). By the end of the study, asthma was either stable or improved in 54 patients (38%); uncontrolled, but poorly adherent in 52 (35%); and uncontrolled, but adherent in 40 (27%). Repeated feedback significantly improved inhaler adherence. After a programme of adherence and inhaler technique assessment, only 40 patients (27%) were refractory and adherent, and might therefore need add-on therapy.

Sullivan, L., et al. (2018). "Evaluation of a theory-based concussion education program for secondary school student-athletes in Ireland." *Health Education Research* 33(6): 492-504.

Concussion education is an important aspect of concussion prevention. The purpose of this study was to investigate the effect of a novel, theory of planned behavior (TPB)-driven concussion education program on secondary school athletes' concussion-reporting relevant cognitions immediately post-intervention and at 3 months follow-up. Data were collected from 428 secondary school athletes during the 2016-2017 academic year: 229 were assigned to an intervention group of which 59 (25.76%) completed assessments at all timepoints; 199 were assigned to a control group of which 153 (76.88%) completed assessments at all timepoints. Using repeated measures ANOVAs, we examined differences in athletes' concussion-reporting cognitions, by group and gender. The program had a significant positive effect on athletes' knowledge ($P < 0.01$), perceived behavioral control over concussion recognition and reporting ($P < 0.01$), and reporting intention ($P < 0.01$). These results were maintained at 3 months follow-up, with the exception of perceived behavioral control. The program did not have a significant effect on athletes' attitudes toward concussion reporting and subjective reporting norms. Results suggest that the TPB may be a useful framework to inform the development of more effective educational programs. There is a need for multi-layered interventions that aim to create sporting environments that encourage positive concussion care seeking behaviors.

Sung, K., et al. (2019). "Developing Interventions for Scaling Up UK Upcycling." *Energies* 12(14).

Upcycling presents one of many opportunities for reducing consumption of materials and energy. Despite recent growth evidenced by increasing numbers of practitioners and businesses based on upcycling, it remains a niche activity and requires scaling up to realise its potential benefits. This paper investigates UK household upcycling in order to develop interventions for scaling up upcycling in the UK. Mixed methods were used in four stages: (a) Interviews to gain insights into UK upcycling; (b) a survey to discover key factors influencing UK upcycling; (c) intervention development based on the synthesis of interviews and survey; and (d) use of a semi-Delphi technique to evaluate and develop initial interventions. The results showed approaches to upcycling (e.g., wood, metal and fabric as frequently used materials, online platforms as frequently used source of materials), context for upcycling (e.g., predominant use of home for upcycling), factors influencing UK upcycling with key determinants (i.e., intention, attitude and subjective norm), important demographic characteristics considering a target audience for interventions (i.e., 30+ females) and prioritised interventions for scaling up (e.g., TV and inspirational media and community workshops as short-term high priority interventions). The paper further discusses implications of the study in terms of development of theory and practice of upcycling.

Suntornsut, P., et al. (2018). "Feasibility and initial outcomes of a multifaceted prevention programme of melioidosis in diabetic patients in Ubon Ratchathani, northeast Thailand." *Plos Neglected Tropical Diseases* 12(9).

Background Melioidosis is an infection caused by *Burkholderia pseudomallei*, a Gram-negative bacillus found in soil and water. Diabetes mellitus is the most important risk factor for melioidosis. The recommendations for disease prevention include avoiding direct contact with soil and water, and drinking only boiled or bottled water. Methods A prospective intervention study was conducted to evaluate the feasibility and behavioural outcomes of a multifaceted prevention programme for melioidosis. Participants were diabetic adults in Ubon Ratchathani, northeast Thailand. Ten behavioural support groups consisting of 6 to 10 participants per group were conducted. Twelve behaviour change techniques were used: information about health consequences, credible source, adding objects to the environment, reconstructing the physical environment, instruction on how to perform a behaviour, demonstration of the behaviour, commitment, prompts/cues, self-monitoring of behaviour, goal setting, feedback on behaviour, and social support, and their feasibilities evaluated. Results There were 70 participants, of median age 59 years and 52 (74%) were female. Participants found the intervention beneficial, interesting and engaging. Participants indicated that they liked to watch videos with information about melioidosis delivered by local doctors and patients who survived melioidosis, and videos showing use of over-the-knee boots by local farmers. Participants felt engaged in the sessions that trialed protective gear and that made calendars with individual photographs and self-pledges as a reminder tool. The proportions of participants reporting that they always wore boots while working in rice fields increased from 30% (10/33) to 77% (28/37, $p = 0.04$), and that they drank only boiled or bottle water increased from 43% (30/70) to 86% (59/69, $p < 0.001$) at 6 months post intervention. Conclusion The programme is highly acceptable to participants, and can support behaviour change. Policy makers should consider implementing the programme in areas where melioidosis is endemic. Making calendars with individual photographs and self-pledges as a reminder tool could be powerful in behaviour change interventions, and further research on this component is needed.

Suntornsut, P., et al. (2016). "Barriers and Recommended Interventions to Prevent Melioidosis in Northeast Thailand: A Focus Group Study Using the Behaviour Change Wheel." *Plos Neglected Tropical Diseases* 10(7).

Background Melioidosis, an often fatal infectious disease in Northeast Thailand, is caused by skin inoculation, inhalation or ingestion of the environmental bacterium, *Burkholderia pseudomallei*. The major underlying risk factor for melioidosis is diabetes mellitus. Recommendations for melioidosis prevention include using protective gear such as

rubber boots and gloves when in direct contact with soil and environmental water, and consuming bottled or boiled water. Only a small proportion of people follow such recommendations. Methods Nine focus group discussions were conducted to evaluate barriers to adopting recommended preventive behaviours. A total of 76 diabetic patients from northeast Thailand participated in focus group sessions. Barriers to adopting the recommended preventive behaviours and future intervention strategies were identified using two frameworks: the Theoretical Domains Framework and the Behaviour Change Wheel. Results Barriers were identified in the following five domains: (i) knowledge, (ii) beliefs about consequences, (iii) intention and goals, (iv) environmental context and resources, and (v) social influence. Of 76 participants, 72 (95%) had never heard of melioidosis. Most participants saw no harm in not adopting recommended preventive behaviours, and perceived rubber boots and gloves to be hot and uncomfortable while working in muddy rice fields. Participants reported that they normally followed the behaviour of friends, family and their community, the majority of whom did not wear boots while working in rice fields and did not boil water before drinking. Eight intervention functions were identified as relevant for the intervention: (i) education, (ii) persuasion, (iii) incentivisation, (iv) coercion, (v) modeling, (vi) environmental restructuring, (vii) training, and (viii) enablement. Participants noted that input from role models in the form of physicians, diabetic clinics, friends and families, and from the government via mass media would be required for them to change their behaviours. Conclusion There are numerous barriers to the adoption of behaviours recommended for melioidosis prevention. We recommend that a multifaceted intervention at community and government level is required to achieve the desired behaviour changes.

Sutherland, R., et al. (2019). "A randomized controlled trial to assess the potential efficacy, feasibility and acceptability of an m-health intervention targeting parents of school aged children to improve the nutritional quality of foods packed in the lunchbox "SWAP IT'." *International Journal of Behavioral Nutrition and Physical Activity* 16.

Background Scalable interventions that improve the nutritional quality of foods in children's lunchboxes have considerable potential to improve child public health nutrition. This study assessed the potential efficacy, feasibility and acceptability of an m-health intervention, SWAP IT', to improve the energy and nutritional quality of foods packed in children's lunchboxes. Methods The study employed a 2X2 factorial cluster randomized-controlled trial design. Twelve primary schools in New South Wales, Australia were randomly allocated to one of four groups: (i) no intervention; (ii) physical activity intervention only; (iii) lunchbox intervention only; or (iv) physical activity and lunchbox intervention combined. The two intervention strategies were evaluated separately. This paper focuses on the effects of the lunchbox intervention only. The lunchbox intervention comprised four strategies: 1) school nutrition guidelines; 2) lunchbox lessons; 3) information pushed to parents via a school-communication app and 4) parent resources addressing barriers to packing healthy lunchboxes. Outcome measures were taken at baseline and immediately post-intervention (10 weeks) and included measures of effectiveness (mean energy (kJ) packed in lunchboxes, total energy and percentage energy from recommended foods consistent with Australian Dietary Guidelines), feasibility (of delivering intervention to schools, parent app engagement and behaviour change) and acceptability to school staff and parents. Linear mixed models were used to assess intervention efficacy. Results Of the 1915 lunchbox observations, at follow-up there was no significant differences between intervention and control group in mean energy of foods packed within lunchboxes (-118.39 kJ, CI=-307.08, 70.30, p=0.22). There was a significant increase favouring the intervention in the secondary outcome of mean lunchbox energy from recommended foods (79.21 kJ, CI=1.99, 156.43, p=0.04), and a non-significant increase in percentage of lunchbox energy from recommended foods in intervention schools (4.57%, CI=-0.52, 9.66, p=0.08). The views of the messages pushed via the app ranged from 387 to 1550 views per week (mean views =1025 per week). A large proportion (71%) of parents reported awareness of the intervention, making healthier swaps in the lunchbox (55%), and pushed content was helpful (84%). Conclusion The study is the first RCT to assess the potential of a multi-component m-health lunchbox intervention. The intervention was feasible, acceptable and potentially effective in improving the nutritional quality of foods packed within children's lunchboxes. Trial registration Australian Clinical Trials Registry ACTRN: ACTRN12616001228471.

Syrowatka, A., et al. (2016). "Features of Computer-Based Decision Aids: Systematic Review, Thematic Synthesis, and Meta-Analyses." *Journal of Medical Internet Research* 18(1).

Background: Patient information and education, such as decision aids, are gradually moving toward online, computer-based environments. Considerable research has been conducted to guide content and presentation of decision aids. However, given the relatively new shift to computer-based support, little attention has been given to how multimedia and interactivity can improve upon paper-based decision aids. Objective: The first objective of this review was to summarize published literature into a proposed classification of features that have been integrated into computer-based decision aids. Building on this classification, the second objective was to assess whether integration of specific features was associated with higher-quality decision making. Methods: Relevant studies were located by searching MEDLINE, Embase, CINAHL, and CENTRAL databases. The review identified studies that evaluated computer-based decision aids for adults faced with preference-sensitive medical decisions and reported quality of decision-making

outcomes. A thematic synthesis was conducted to develop the classification of features. Subsequently, meta-analyses were conducted based on standardized mean differences (SMD) from randomized controlled trials (RCTs) that reported knowledge or decisional conflict. Further subgroup analyses compared pooled SMDs for decision aids that incorporated a specific feature to other computer-based decision aids that did not incorporate the feature, to assess whether specific features improved quality of decision making. Results: Of 3541 unique publications, 58 studies met the target criteria and were included in the thematic synthesis. The synthesis identified six features: content control, tailoring, patient narratives, explicit values clarification, feedback, and social support. A subset of 26 RCTs from the thematic synthesis was used to conduct the meta-analyses. As expected, computer-based decision aids performed better than usual care or alternative aids; however, some features performed better than others. Integration of content control improved quality of decision making (SMD 0.59 vs 0.23 for knowledge; SMD 0.39 vs 0.29 for decisional conflict). In contrast, tailoring reduced quality of decision making (SMD 0.40 vs 0.71 for knowledge; SMD 0.25 vs 0.52 for decisional conflict). Similarly, patient narratives also reduced quality of decision making (SMD 0.43 vs 0.65 for knowledge; SMD 0.17 vs 0.46 for decisional conflict). Results were varied for different types of explicit values clarification, feedback, and social support. Conclusions: Integration of media rich or interactive features into computer-based decision aids can improve quality of preference-sensitive decision making. However, this is an emerging field with limited evidence to guide use. The systematic review and thematic synthesis identified features that have been integrated into available computer-based decision aids, in an effort to facilitate reporting of these features and to promote integration of such features into decision aids. The meta-analyses and associated subgroup analyses provide preliminary evidence to support integration of specific features into future decision aids. Further research can focus on clarifying independent contributions of specific features through experimental designs and refining the designs of features to improve effectiveness.

Tam-Tham, H., et al. (2016). "Prevalence of Barriers and Facilitators to Enhancing Conservative Kidney Management for Older Adults in the Primary Care Setting." *Clinical Journal of the American Society of Nephrology* 11(11): 2012-2021.

Background and objectives Conservative management of adults with stage 5 CKD (eGFR<15 ml/min per 1.73 m²) is increasingly being provided in the primary care setting. We aimed to examine perceived barriers and facilitators for conservative management of older adults by primary care physicians. Design, setting, participants, & measurements In 2015, we conducted a cross sectional, population based survey of all primary care physicians in Alberta, Canada. Eligible participants had experience caring for adults ages years old with stage 5 CKD not planning on initiating dialysis. Questionnaire items were on the basis of a qualitative descriptive study informed by the Behavior Change Wheel and tested for face and content validity. Physicians were contacted via postal mail and/or fax on the basis of a modified Dillman method. Results Four hundred nine eligible primary care physicians completed the questionnaire (9.6% response rate). The majority of respondents were men (61.6%), were ages 40-60 years old (62.6%), and practiced in a large/medium population center (68.0%). The most common barrier to providing conservative care in the primary care setting was the inability to access support to maintain patients in the home setting (39.1% of respondents; 95% confidence interval, 34.6% to 43.6%). The second most common barrier was working with nonphysician providers with limited kidney specific clinical expertise (32.3%; 95% confidence interval, 28.0% to 36.7%). Primary care physicians indicated that the two most common strategies that would enhance their ability to provide conservative management would be the ability to use the telephone to contact a nephrologist or clinical staff from the conservative care clinic (86.9%; 95% confidence interval, 83.7% to 90.0% and 85.6%; 95% confidence interval, 82.4% to 88.9%, respectively). Conclusions We identified important areas to inform clinical programs to reduce barriers and enhance facilitators to improve primary care physicians' provision of conservative kidney care. In particular, primary care physicians require additional resources for maintaining patients in their home and telephone access to nephrologists and conservative care specialists.

Tan, X. L., et al. (2019). "Factors associated with physical activity engagement among adults with rheumatoid arthritis: A cross-sectional study." *Musculoskeletal Care* 17(2): 163-173.

Objectives Physical activity (PA) has a number of benefits for rheumatoid arthritis (RA) patients. However, these patients are more physically inactive than the general population. The primary aim of this study was to investigate factors associated with PA engagement among RA patients. The secondary aim was to identify their preference for PA support. Methods There were 96 participants, 76 of whom were female, with a mean age of 56.9 years (range = 34-72 years) and a median RA disease duration of 5 years (interquartile range = 2-12). All patients completed questionnaires assessing demographic status, health status (including cardiovascular disease [CVD] risk and RA disease profile), PA levels and preferences, alongside the perceived benefits of-and barriers to-PA. Hierarchical regressions were carried out to assess the relationship between reported PA levels and both engagement determinants and disease features. Results Forty-five per cent (n = 44) had low levels (<600 metabolic equivalent-min/week) of PA. Low level of PA was significantly associated with: CVD risk profile ($\eta^2(p) = 0.118, p < 0.002$); functional disability ($\eta^2(p) = 0.206, p < 0.032$); pain ($\eta^2(p) = 0.154, p < 0.028$); general personal ($\eta^2(p) = 0.190, p < 0.001$) and arthritis-specific personal ($\eta^2(p) = 0.170, p < 0.001$) barriers to PA; age ($\eta^2(p) = 0.076, p < 0.026$); and sedentary behaviour ($\eta^2(p) = 0.275, p < 0.001$).

Participants displayed a preference for unsupervised (n = 37, 38.5%), low-intensity (n = 45, 46.9%), indoor home (n = 50, 52.1%) exercises, with no preferences for the diversity of the exercise prescribed (n = 39, 40.6%) or for who provided the exercise counselling (n = 34, 35.4%). Conclusions These results suggest that CVD profile, disability, pain, and general and arthritis-specific personal barriers are associated with PA levels among RA patients. Intervention development should address these factors to facilitate an increase in PA uptake.

Tang, C. Y., et al. (2019). "A Standard Form of Cardiac Rehabilitation Can Improve Self-Reported Positive Behavior Changes in the Short- to Medium-Term." *Journal of Cardiopulmonary Rehabilitation and Prevention* 39(3): 175-180.

Purpose: Little is known about the impact of standard cardiac rehabilitation (CR), consisting of health education and exercise, on self-reported behavior change among people who have completed rehabilitation. This qualitative study aimed to explore the lived experiences of participants' behaviors toward exercise and diet in the short- to medium-term after CR program completion. Methods: Using a phenomenological framework, we interviewed participants who had completed a 4-wk CR program and then 6 mo later. The program included education and exercise in a private outpatient facility. A thematic analysis was conducted to explore changes in self-reported behavior. These themes were triangulated with Bandura's self-efficacy scales and Stages of Readiness for Change questionnaires to identify any convergence of themes. Results: A total of 21 participants were recruited to the study. One main theme and 4 subthemes emerged from analysis of the data. Most participants reported that they had either maintained or initiated positive lifestyle changes in both exercise and diet in the short- and medium-term. Fear of having another myocardial infarction, seeing the benefits of adhering with recommendations, and family involvements were motivating factors along with the involvement of the multidisciplinary staff in the program. The themes converged with the results from the questionnaires. Conclusions: A standard form of CR can result in positive self-reported behavior change in the short- to medium-term. Further trials are needed to determine whether a standard form of rehabilitation is sufficient to change health behaviors at sufficient levels to result in long-term health benefits.

Tannenbaum, C., et al. (2017). "An Ecological Approach to Reducing Potentially Inappropriate Medication Use: Canadian Deprescribing Network." *Canadian Journal on Aging-Revue Canadienne Du Vieillissement* 36(1): 97-107.

Polypharmacy is growing in Canada, along with adverse drug events and drug-related costs. Part of the solution may be deprescribing, the planned and supervised process of dose reduction or stopping of medications that may be causing harm or are no longer providing benefit. Deprescribing can be a complex process, involving the intersection of patients, health care providers, and organizational and policy factors serving as enablers or barriers. This article describes the justification, theoretical foundation, and process for developing a Canadian Deprescribing Network (CaDeN), a network of individuals, organizations, and decision-makers committed to promoting the appropriate use of medications and non-pharmacological approaches to care, especially among older people in Canada. CaDeN will deploy multiple levels of action across multiple stakeholder groups simultaneously in an ecological approach to health system change. CaDeN proposes a unique model that might be applied both in national settings and for different transformational challenges in health care.

Tansey, R. and H. Donald (2016). "The timing of energy intake and its link to obesity." *Proceedings of the Nutrition Society* 75(OCE1): E12-E12.

Tarzia, L., et al. (2017). ""Technology Doesn't Judge You": Young Australian Women's Views on Using the Internet and Smartphones to Address Intimate Partner Violence." *Journal of Technology in Human Services* 35(3): 199-218.

Intimate partner violence (IPV) is a pervasive social issue. Younger women tend to experience the highest rates of violence, associated with a range of negative health outcomes. Although interventions in health settings have shown promise, younger women may be reluctant to access services or discuss relationships with a health professional. Delivering an IPV intervention online or via a smartphone has the potential to overcome some of these barriers. Little is known, however, about how young women might perceive such an intervention, or what factors might influence its uptake. Drawing on focus groups interviews, we explore the views of young Australian women on using a website or application to address IPV. Azjen's Theory of Planned Behavior is used to help understand the beliefs and norms around technology and help-seeking for IPV. Findings highlight the potential for technological interventions to become a valuable addition to the resources available to young women.

Tavender, E. J., et al. (2015). "Developing a targeted, theory-informed implementation intervention using two theoretical frameworks to address health professional and organisational factors: a case study to improve the management of mild traumatic brain injury in the emergency department." *Implementation Science* 10.

Background: Despite the availability of evidence-based guidelines for the management of mild traumatic brain injury in the emergency department (ED), variations in practice exist. Interventions designed to implement recommended

behaviours can reduce this variation. Using theory to inform intervention development is advocated; however, there is no consensus on how to select or apply theory. Integrative theoretical frameworks, based on syntheses of theories and theoretical constructs relevant to implementation, have the potential to assist in the intervention development process. This paper describes the process of applying two theoretical frameworks to investigate the factors influencing recommended behaviours and the choice of behaviour change techniques and modes of delivery for an implementation intervention. Methods: A stepped approach was followed: (i) identification of locally applicable and actionable evidence-based recommendations as targets for change, (ii) selection and use of two theoretical frameworks for identifying barriers to and enablers of change (Theoretical Domains Framework and Model of Diffusion of Innovations in Service Organisations) and (iii) identification and operationalisation of intervention components (behaviour change techniques and modes of delivery) to address the barriers and enhance the enablers, informed by theory, evidence and feasibility/acceptability considerations. We illustrate this process in relation to one recommendation, prospective assessment of post-traumatic amnesia (PTA) by ED staff using a validated tool. Results: Four recommendations for managing mild traumatic brain injury were targeted with the intervention. The intervention targeting the PTA recommendation consisted of 14 behaviour change techniques and addressed 6 theoretical domains and 5 organisational domains. The mode of delivery was informed by six Cochrane reviews. It was delivered via five intervention components : (i) local stakeholder meetings, (ii) identification of local opinion leader teams, (iii) a train-the-trainer workshop for appointed local opinion leaders, (iv) local training workshops for delivery by trained local opinion leaders and (v) provision of tools and materials to prompt recommended behaviours. Conclusions: Two theoretical frameworks were used in a complementary manner to inform intervention development in managing mild traumatic brain injury in the ED. The effectiveness and cost-effectiveness of the developed intervention is being evaluated in a cluster randomised trial, part of the Neurotrauma Evidence Translation (NET) program.

Taylor, B., et al. (2019). "A conceptual framework for understanding the mechanism of action of community health workers services: the centrality of social support." *Journal of Public Health* 41(1): 138-148.

Objective To propose an empirically derived and theoretically-informed mechanism to explain how Community Health Workers (CHWs) bring about health gain in clients in England. Methods We undertook in-depth interviews (n = 43) with CHWs and service staff working in four case studies selected using maximum variation sampling. Interviewees were encouraged to talk about the service, how they had become involved with the service, the CHW role and relationship with clients. Findings We identified the provision of social support to be central to the mechanism of CHW-mediated health gain. Appropriate social support provision comprised three inter-related elements; needs assessment, social support delivery and client engagement. This mechanism is dependent on the personal characteristics of CHWs and of the roles they are employed or volunteer to carry out. Conclusion A range of CHW characteristics can influence the social support process, but these are context-dependent and move beyond simple notions of CHW similarity to the client. This finding has important policy implications for the development and implementation of CHW services in high income countries with super-diverse populations.

Taylor, J. (2014). "Motivation and prevention of cardiovascular disease." *European Heart Journal* 35(21): 1356-1357.

Taylor, M. J., et al. (2016). "Measuring perceived exercise capability and investigating its relationship with childhood obesity: a feasibility study." *International Journal of Obesity* 40(1): 34-38.

BACKGROUND/OBJECTIVES: According to the COM-B ('Capability', 'Opportunity', 'Motivation' and 'Behaviour') model of behaviour, three factors are essential for behaviour to occur: capability, opportunity and motivation. Obese children are less likely to feel capable of exercising. The implementation of a new methodological approach to investigate the relationship between perceived exercise capability (PEC) and childhood obesity was conducted, which involved creating a new instrument, and demonstrating how it can be used to measure obesity intervention outcomes. SUBJECTS/METHODS: A questionnaire aiming to measure perceived exercise capability, opportunity and motivation was systematically constructed using the COM-B model and administered to 71 obese children (aged 9-17 years (12.24 +/- 0.2.01), body mass index (BMI) standard deviation scores (SDS) 2.80 +/- 0.660) at a weight-management camp in northern England. Scale validity and reliability was assessed. Relationships between PEC, as measured by the questionnaire, and BMI SDS were investigated for the children at the weight-management camp, and for 45 Spanish schoolchildren (aged 9-13 years, (10.52 +/- 1.23), BMI SDS 0.80 +/- 0.99). A pilot study, demonstrating how the questionnaire can be used to measure the effectiveness of an intervention aiming to bring about improved PEC for weight-management camp attendees, was conducted. No participants withdrew from these studies. RESULTS: The questionnaire domain (exercise capability, opportunity and motivation) composite scales were found to have adequate internal consistency ($\alpha = 0.712-0.796$) and construct validity ($\chi^2/\text{degrees of freedom} = 1.55$, root mean square error of approximation = 0.072, comparative fit index = 0.92). Linear regression revealed that low PEC was associated with higher baseline BMI SDS for both UK ($b = -0.289$, $P = 0.010$) and Spanish ($b = -0.446$, $P = 0.047$) participants. Pilot study findings provide preliminary

evidence for PEC improvements through intervention being achievable, and measurable using the questionnaire. CONCLUSIONS: Evidence is presented for reliability and validity of the questionnaire, and for feasibility of its use in the context of a childhood obesity intervention. Future research could investigate the link between PEC and childhood obesity further.

Taylor, N., et al. (2019). "A transformative translational change programme to introduce genomics into healthcare: a complexity and implementation science study protocol." *Bmj Open* 9(3).

Introduction Translating scientific advances in genomic medicine into evidence-based clinical practice is challenging. Studying the natural translation of genomics into 'early-adopting' health system sectors is essential. We will (a) examine 29 health systems (Australian and Melbourne Genomics Health Alliance flagships) integrating genomics into practice and (b) combine this learning to co-design and test an evidence-based generalisable toolkit for translating genomics into healthcare. Methods and analysis Twenty-nine flagships integrating genomics into clinical settings are studied as complex adaptive systems to understand emergent and self-organising behaviours among inter-related actors and processes. The Effectiveness-Implementation Hybrid approach is applied to gather information on the delivery and potential for real-world implementation. Stages '1' and '2a' (representing hybrid model 1) are the focus of this protocol. The Translation Science to Population Impact (TSci Impact) framework is used to study policy decisions and service provision, and the Theoretical Domains Framework (TDF) is used to understand individual level behavioural change; both frameworks are applied across stages 1 and 2a. Stage 1 synthesises interview data from 32 participants involved in developing the genomics clinical practice systems and approaches across five 'demonstration-phase' (early adopter) flagships. In stage 2a, stakeholders are providing quantitative and qualitative data on process mapping, clinical audits, uptake and sustainability (TSci Impact), and psychosocial and environmental determinants of change (TDF). Findings will be synthesised before codesigning an intervention toolkit to facilitate implementation of genomic testing. Study methods to simultaneously test the comparative effectiveness of genomic testing and the implementation toolkit (stage 2b), and the refined implementation toolkit while simply observing the genomics intervention (stage 3) are summarised. Ethics and dissemination Ethical approval has been granted. The results will be disseminated in academic forums and used to refine interventions to translate genomics evidence into healthcare. Non-traditional academic dissemination methods (eg, change in guidelines or government policy) will also be employed.

Teixeira, P. J. and M. M. Marques (2017). "Health Behavior Change for Obesity Management." *Obesity Facts* 10(6): 666-673.

Health behavior change is central in obesity management. Due to its complexity, there has been a growing body of research on: i) the factors that predict the adoption and maintenance of health behaviors, ii) the development and testing of theories that conceptualize relationships among these factors and with health behaviors, and iii) how these factors can be implemented in effective behavior change interventions, considering characteristics of the content (techniques) and delivery. This short review provides an overview of advances in behavior change science theories and methods, focusing on obesity management, and includes a discussion of the main challenges imposed by this research field. (c) 2017 The Author(s) Published by S. Karger GmbH, Freiburg

Thogersen, J. (2018). "Frugal or green? Basic drivers of energy saving in European households." *Journal of Cleaner Production* 197: 1521-1530.

This paper examines how energy-saving at home relates to two of people's multiple self-identities as an environmentally friendly and a frugal person. It also investigates whether the impact of these self identities on energy saving at home is shared or different across countries in Europe. Data comes from a survey of a representative sample of adults from 10 European countries (N approximate to 320 from each country). Energy saving was measured with five items representing the array of energy-saving tips that European households are offered in campaign material and on websites. Psychological constructs were also measured with multiple items taken or adapted from previous research. The multiple-item measurement instruments possess acceptable construct and discriminant validity as well as partial metric invariance across the 10 countries, which is sufficient for the country comparisons. Structural equation modelling reveals that (a) both environmental and frugal self-identities are strongly linked to attitudes towards energy saving, but (b) more weakly related to behaviour, and (c) the latter effect is completely mediated through the attitude in most countries and partly mediated in the remaining countries. Implications for the understanding of energy-saving behaviour and policies are discussed. (C) 2018 Elsevier Ltd. All rights reserved.

Thomas, C. E. L., et al. (2017). "EXPLORING THE INFLUENCE OF BEHAVIOURAL DRIVERS ON PROCEDURAL VIOLATIONS IN COMMUNITY PHARMACIES." *International Journal for Quality in Health Care* 29: 33-33.

Thomas, K., et al. (2014). "Implementation of healthy lifestyle promotion in primary care: Patients as coproducers." *Patient Education and Counseling* 97(2): 283-290.

Objectives: To explore and theorize how patients perceive, interpret, and react in healthy lifestyle promotion situations in primary care and to investigate patients' role in implementation of lifestyle promotion illustrated by typologies. Methods: Grounded theory was used to assess qualitative interview data from 22 patients with varied experience of healthy lifestyle promotion. Data were analyzed by constant comparative analysis. Results: A substantive theory of being healthy emerged from the data. The theory highlights the processes that are important for implementation before, during, and after lifestyle promotion. Three interconnected categories emerged from the data: conditions for being healthy, managing being healthy, and interactions about being healthy; these formed the core category: being healthy. A typology proposed four patient trajectories on being healthy: resigned, receivers, coworkers, and leaders. Conclusion: Patients coproduced the implementation of lifestyle promotion through the degree of transparency, which was a result of patients' expectations and situation appraisals. Practice implications: Different approaches are needed during lifestyle promotion depending on a variety of patient-related factors. The typology could guide practitioners in their lifestyle promotion practice. (C) 2014 Elsevier Ireland Ltd. All rights reserved.

Thomas, S. and S. Mackintosh (2014). "Use of the Theoretical Domains Framework to Develop an Intervention to Improve Physical Therapist Management of the Risk of Falls After Discharge." *Physical Therapy* 94(11): 1660-1675.

Background and Purpose. Older adults have an increased risk of falls after discharge from the hospital. Guidelines to manage this risk of falls are well documented but are not commonly implemented. The aim of this case report is to describe the novel approach of using the Theoretical Domains Framework (TDF) to develop an intervention to change the clinical behavior of physical therapists. Case Description. This project had 4 phases: identifying the evidence-practice gap, identifying barriers and enablers that needed to be addressed, identifying behavior change techniques to overcome the barriers, and determining outcome measures for evaluating behavior change. Outcomes. The evidence-practice gap was represented by the outcome that few patients who had undergone surgery for hip fracture were recognized as having a risk of falls or had a documented referral to a community agency for follow-up regarding the prevention of falls. Project aims aligned with best practice guidelines were established; 12 of the 14 TDF domains were considered to be relevant to behaviors in the project, and 6 behavior change strategies were implemented. Primary outcome measures included the proportion of patients who had documentation of the risk of falls and were referred for a comprehensive assessment of the risk of falls after discharge from the hospital. Discussion. A systematic approach involving the TDF was useful for designing a multifaceted intervention to improve physical therapist management of the risk of falls after discharge of patients from an acute care setting in South Australia, Australia. This framework enabled the identification of targeted intervention strategies that were likely to influence health care professional behavior. Early case note audit results indicated that positive changes were being made to reduce the evidence-practice gap.

Thompson, L. M., et al. (2018). "Designing a behavioral intervention using the COM-B model and the theoretical domains framework to promote gas stove use in rural Guatemala: a formative research study." *Bmc Public Health* 18.

Background: Three billion people use solid cooking fuels, and 4 million people die from household air pollution annually. Shifting households to clean fuels, like liquefied petroleum gas (LPG), may protect health only if stoves are consistently used. Few studies have used an implementation science framework to systematically assess "de-implementation" of traditional stoves, and none have done so with pregnant women who are more likely to adopt new behaviors. We evaluated an introduced LPG stove coupled with a phased behavioral intervention to encourage exclusive gas stove use among pregnant women in rural Guatemala. Methods: We enrolled 50 women at < 20 weeks gestation in this prospective cohort study. All women received a free 3-burner LPG stove and ten tank refills. We conducted formative research using COM-B Model and Theoretical Domains Framework (TDF). This included thematic analysis of focus group findings and classes delivered to 25 pregnant women (Phase 1). In Phase 2, we complemented classes with a home-based tailored behavioral intervention with a different group of 25 pregnant women. We mapped 35 TDF constructs onto survey questions. To evaluate stove use, we placed temperature sensors on wood and gas stoves and estimated fraction of stove use three times during pregnancy and twice during the first month after infant birth. Results: Class attendance rates were above 92%. We discussed feasible ways to reduce HAP exposure, proper stove use, maintenance and safety. We addressed food preferences, ease of cooking and time savings through cooking demonstrations. In Phase 2, the COM-B framework revealed that other household members needed to be involved if the gas stove was to be consistently used. Social identity and empowerment were key in decisions about stove repairs and LPG tank refills. The seven intervention functions included training, education, persuasion, incentivization, modelling, enablement and environmental restructuring. Wood stove use dropped upon introduction of the gas stove from 6.4 h to 1.9 h. Conclusions: This is the first study using the COM-B Model to develop a behavioral intervention that promotes household-level sustained use of LPG stoves. This study lays the groundwork for a future LPG stove intervention trial coupled with a behavioral change intervention.

Thornton, L. E., et al. (2015). "Does food store access modify associations between intrapersonal factors and fruit and vegetable consumption?" *European Journal of Clinical Nutrition* 69(8): 902-906.

BACKGROUND/OBJECTIVES: Existing theoretical frameworks suggest that healthy eating is facilitated by an individual's ability, motivation and environmental opportunities. It is plausible, although largely untested, that the importance of factors related to ability and motivation differ under varied environmental conditions. This study aimed to determine whether the magnitude of associations between fruit and vegetable consumption and intrapersonal factors (ability and motivation) were modified by differences in access to stores selling these items (environmental opportunities). **SUBJECTS/METHODS:** Cross-sectional analysis of 4335 women from socioeconomically disadvantaged neighbourhoods in the state of Victoria, Australia. Self-reported fruit and vegetable consumption was assessed against a number of ability- and motivation-related factors. To examine whether associations were modified by store access, interactions with access to supermarkets and greengrocers within 2 km of participants' households were tested. **RESULTS:** Of the two factors related to ability and seven factors related to motivation, almost all were associated with fruit and vegetable consumption. In general, associations were not modified by store access suggesting that these factors were not tempered by environmental opportunities. **CONCLUSIONS:** This study provides little support for the hypothesis that the importance of intra-personal factors to fruit and vegetable consumption is modified by food store access. Further research on this topic is required to inform behaviour change interventions.

Tielman, M. L., et al. (2019). "Design and Evaluation of Personalized Motivational Messages by a Virtual Agent that Assists in Post-Traumatic Stress Disorder Therapy." *Journal of Medical Internet Research* 21(3).

Background: Systems incorporating virtual agents can play a major role in electronic-mental (e-mental) health care, as barriers to care still prevent some patients from receiving the help they need. To properly assist the users of these systems, a virtual agent needs to promote motivation. This can be done by offering motivational messages. **Objective:** The objective of this study was two-fold. The first was to build a motivational message system for a virtual agent assisting in post-traumatic stress disorder (PTSD) therapy based on domain knowledge from experts. The second was to test the hypotheses that (1) computer-generated motivating messages influence users' motivation to continue with therapy, trust in a good therapy outcome, and the feeling of being heard by the agent and (2) personalized messages outperform generic messages on these factors. **Methods:** A system capable of generating motivational messages was built by analyzing expert (N=13) knowledge on what types of motivational statements to use in what situation. To test the 2 hypotheses, a Web-based study was performed (N=207). Participants were asked to imagine they were in a certain situation, specified by the progression of their symptoms and initial trust in a good therapy outcome. After this, they received a message from a virtual agent containing either personalized motivation as generated by the system, general motivation, or no motivational content. They were asked how this message changed their motivation to continue and trust in a good outcome as well as how much they felt they were being heard by the agent. **Results:** Overall, findings confirmed the first hypothesis, as well as the second hypothesis for the measure of being heard by the agent. Personalization of the messages was also shown to be important in those situations where the symptoms were getting worse. In these situations, personalized messages outperformed general messages both in terms of motivation to continue and trust in a good therapy outcome. **Conclusions:** Expert input can successfully be used to develop a personalized motivational message system. Messages generated by such a system seem to improve people's motivation and trust in PTSD therapy as well as the user's feeling of being heard by a virtual agent. Given the importance of motivation, trust, and therapeutic alliance for successful therapy, we anticipate that the proposed system can improve adherence in e-mental therapy for PTSD and that it can provide a blueprint for the development of an adaptive system for persuasive messages based on expert input.

Tielman, M. L., et al. (2019). "Considering patient safety in autonomous e-mental health systems - detecting risk situations and referring patients back to human care." *Bmc Medical Informatics and Decision Making* 19.

Background: Digital health interventions can fill gaps in mental healthcare provision. However, autonomous e-mental health (AEMH) systems also present challenges for effective risk management. To balance autonomy and safety, AEMH systems need to detect risk situations and act on these appropriately. One option is sending automatic alerts to carers, but such 'auto-referral' could lead to missed cases or false alerts. Requiring users to actively self-refer offers an alternative, but this can also be risky as it relies on their motivation to do so. This study set out with two objectives. Firstly, to develop guidelines for risk detection and auto-referral systems. Secondly, to understand how persuasive techniques, mediated by a virtual agent, can facilitate self-referral. **Methods:** In a formative phase, interviews with experts, alongside a literature review, were used to develop a risk detection protocol. Two referral protocols were developed - one involving auto-referral, the other motivating users to self-refer. This latter was tested via crowd-sourcing (n = 160). Participants were asked to imagine they had sleeping problems with differing severity and user stance on seeking help. They then chatted with a virtual agent, who either directly facilitated referral, tried to persuade the user,

or accepted that they did not want help. After the conversation, participants rated their intention to self-refer, to chat with the agent again, and their feeling of being heard by the agent. Results: Whether the virtual agent facilitated, persuaded or accepted, influenced all of these measures. Users who were initially negative or doubtful about self-referral could be persuaded. For users who were initially positive about seeking human care, this persuasion did not affect their intentions, indicating that a simply facilitating referral without persuasion was sufficient. Conclusion: This paper presents a protocol that elucidates the steps and decisions involved in risk detection, something that is relevant for all types of AEMH systems. In the case of self-referral, our study shows that a virtual agent can increase users' intention to self-refer. Moreover, the strategy of the agent influenced the intentions of the user afterwards. This highlights the importance of a personalised approach to promote the user's access to appropriate care.

Tilson, J. K., et al. (2016). "Promoting physical therapists' use of research evidence to inform clinical practice: part 3-long term feasibility assessment of the PEAK program." *Bmc Medical Education* 16.

Background: Evidence is needed to develop effective educational programs for promoting evidence based practice (EBP) and knowledge translation (KT) in physical therapy. This study reports long-term outcomes from a feasibility assessment of an educational program designed to promote the integration of research evidence into physical therapist practice. Methods: Eighteen physical therapists participated in the 6-month Physical therapist-driven Education for Actionable Knowledge translation (PEAK) program. The participant-driven active learning program consisted of four consecutive, interdependent components: 1) acquiring managerial leadership support and electronic resources in three clinical practices, 2) a 2-day learner-centered EBP training workshop, 3) 5 months of guided small group work synthesizing research evidence into a locally relevant list of, actionable, evidence-based clinical behaviors for therapists treating persons with musculoskeletal lumbar conditions-the Best Practices List, and 4) review and revision of the Best Practices List, culminating in participant agreement to implement the behaviors in practice. Therapists' EBP learning was assessed with standardized measures of EBP-related attitudes, self-efficacy, knowledge and skills, and self-reported behavior at baseline, immediately-post, and 6 months following conclusion of the program (long-term follow-up). Therapist adherence to the Best Practice List before and after the PEAK program was assessed through chart review. Results: Sixteen therapists completed the long-term follow-up assessment. EBP self-efficacy and self-reported behaviors increased from baseline to long-term follow-up ($p < 0.001$ and $p = 0.002$, respectively). EBP-related knowledge and skills showed a trend for improvement from baseline to long-term follow-up ($p = 0.05$) and a significant increase from immediate-post to long-term follow-up ($p = 0.02$). Positive attitudes at baseline were sustained throughout ($p = 0.208$). Eighty-nine charts were analyzed for therapist adherence to the Best Practices List. Six clinical behaviors had sufficient pre- and post-PEAK charts to justify analysis. Of those, one behavior showed a statistically significant increase in adherence, one had high pre-and post-PEAK adherence, and four were change resistant, starting with low adherence and showing no meaningful improvement. Conclusions: This study supports the feasibility of the PEAK program to produce long-term improvements in physical therapists' EBP-related self-efficacy and self-reported behavior. EBP knowledge and skills showed improvement from post-intervention to long-term follow-up and a trend toward long-term improvements. However, chart review of therapists' adherence to the participant generated Best Practices List in day-to-day patient care indicates a need for additional support to facilitate behavior change. Future versions of the PEAK program and comparable multi-faceted EBP and KT educational programs should provide ongoing monitoring, feedback, and problem-solving to successfully promote behavior change for knowledge translation.

Timmerman, L., et al. (2017). "The design of a theory-based intervention to improve medication adherence in chronic pain patients." *Current Medical Research and Opinion* 33(7): 1293-1301.

Objective: Non-adherence to pain medication is common in chronic pain patients and may result in unfavorable treatment outcomes. Interventions to improve adherence behavior often fail to significantly change medication use. In this report, we describe the application of a theoretical psychological model of behavior change in order to design an intervention to improve medication adherence in chronic pain patients. Methods: This study applies the Behavior Change Wheel framework and the Behavior Change Techniques Taxonomy to design a theory-based intervention to improve pain medication use. Available literature was used to extract determinants of adherence in chronic pain patients. Results: Selected target behaviors to improve medication adherence are: share agreement on follow up policy, monitor medication adherence, provide patient education routinely, discuss attitudes and concerns towards pain medication, develop medication taking habits and use medication reminders. The intervention consists of three components in which relevant behavior change techniques are applied: (1) changes in the electronic patient data management systems to enable medical staff to apply target behaviors; (2) bi-annual education of medical staff to commit the team to the proposed intervention and provide feedback; (3) routine and mandatory education of chronic pain patients following prescription of pain medication. Conclusions: To improve medication adherence in chronic pain patients, most interventions should be focused on providers of pain therapy. Prescribing chronic pain medication should be seen as part

of a larger treatment regimen including adequate follow-up, adherence monitoring and patient education during the course of treatment.

Timmings, C., et al. (2016). "Ready, Set, Change! Development and usability testing of an online readiness for change decision support tool for healthcare organizations." *Bmc Medical Informatics and Decision Making* 16.

Background: To address challenges related to selecting a valid, reliable, and appropriate readiness assessment measure in practice, we developed an online decision support tool to aid frontline implementers in healthcare settings in this process. The focus of this paper is to describe a multi-step, end-user driven approach to developing this tool for use during the planning stages of implementation. Methods: A multi-phase, end-user driven approach was used to develop and test the usability of a readiness decision support tool. First, readiness assessment measures that are valid, reliable, and appropriate for healthcare settings were identified from a systematic review. Second, a mapping exercise was performed to categorize individual items of included measures according to key readiness constructs from an existing framework. Third, a modified Delphi process was used to collect stakeholder ratings of the included measures on domains of feasibility, relevance, and likelihood to recommend. Fourth, two versions of a decision support tool prototype were developed and evaluated for usability. Results: Nine valid and reliable readiness assessment measures were included in the decision support tool. The mapping exercise revealed that of the nine measures, most measures (78 %) focused on assessing readiness for change at the organizational versus the individual level, and that four measures (44 %) represented all constructs of organizational readiness. During the modified Delphi process, stakeholders rated most measures as feasible and relevant for use in practice, and reported that they would be likely to recommend use of most measures. Using data from the mapping exercise and stakeholder panel, an algorithm was developed to link users to a measure based on characteristics of their organizational setting and their readiness for change assessment priorities. Usability testing yielded recommendations that were used to refine the Ready, Set, Change! decision support tool. Conclusions: Ready, Set, Change! decision support tool is an implementation support that is designed to facilitate the routine incorporation of a readiness assessment as an early step in implementation. Use of this tool in practice may offer time and resource-saving implications for implementation.

Toftgaard, B. S., et al. (2016). "Impact of continuing medical education in cancer diagnosis on GP knowledge, attitude and readiness to investigate - a before-after study." *Bmc Family Practice* 17.

Background: Continuing medical education (CME) in earlier cancer diagnosis was launched in Denmark in 2012 as part of the Danish National Cancer Plan. The CME programme was introduced to improve the recognition among general practitioners (GPs) of symptoms suggestive of cancer and improve the selection of patients requiring urgent investigation. This study aims to explore the effect of CME on GP knowledge about cancer diagnosis, attitude towards own role in cancer detection, self-assessed readiness to investigate and cancer risk assessment of urgently referred patients. Methods: We conducted a before-after study in the Central Denmark Region including 831 GPs assigned to one of eight geographical clusters. All GPs were invited to participate in the CME at three-week intervals between clusters. A questionnaire focusing on knowledge, attitude and clinical vignettes was sent to each GP one month before and seven months after the CME. The GPs were also asked to assess the risk of cancer in patients urgently referred to a fast-track cancer pathway during an eight-month period. CME-participating GPs were compared with reference (non participating) GPs by analysing before-after differences. Results: One quarter of all GPs participated in the CME. 202 GPs (24.3 %) completed both the baseline and the follow-up questionnaires. 532 GPs (64.0 %) assessed the risk of cancer before the CME and 524 GPs (63.1 %) assessed the risk of cancer after the CME in urgently referred consecutive patients. Compared to the reference group, CME-participating GPs statistically significantly improved their understanding of a rational probability of diagnosing cancer among patients urgently referred for suspected cancer, increased their knowledge of cancer likelihood in a 50 year old referred patient and lowered the assessed risk of cancer in urgently referred patients. Conclusions: The standardised CME lowered the GP-assessed cancer risk of urgently referred patients, whereas the effect on knowledge about cancer diagnosis and attitude towards own role in cancer detection was limited. No effect was found on the GPs' readiness to investigate. CME may be effective for optimising the interpretation of cancer symptoms and thereby improve the selection of patients for urgent cancer referral.

Toftgaard, B. S., et al. (2014). "A geographical cluster randomised stepped wedge study of continuing medical education and cancer diagnosis in general practice." *Implementation Science* 9.

Background: Denmark has inferior cancer survival rates compared with many European countries. The main reason for this is suggested to be late diagnosis at advanced cancer stages. Cancer diagnostic work-up begins in general practice in 85% of all cancer cases. Thus, general practitioners (GPs) play a key role in the diagnostic process. The latest Danish Cancer Plan included continuing medical education (CME) on early cancer diagnosis in general practice to improve early diagnosis. This dual aims of this protocol are, first, to describe the conceptualisation, operationalisation and implementation of the CME and, second, to describe the study design and outcomes chosen to evaluate the effects of

the CME. Methods/Design: The intervention is a CME in early cancer diagnosis targeting individual GPs. It was developed by a step-wise approach. Barriers for early cancer diagnosis at GP level were identified systematically and analysed using the behaviour system involving capability, opportunity and motivation described by Michie et al. The study will be designed as a geographical cluster randomised stepped wedge study. The study population counts 836 GPs from 417 general practices in the Central Denmark Region, geographically divided into eight clusters. GPs from each cluster will be invited to a CME meeting at a certain date three weeks apart. The primary outcomes will be primary care interval and GP referral rate on cancer suspicion. Data will be obtained from national registries, GP-completed forms on patients referred to cancer fast-track pathways and GP-completed online questionnaires before and after the intervention. Discussion: To our knowledge, this will be the first study to measure the effect of a theory-based CME in early cancer diagnosis at three levels: GP knowledge and attitude, GP activity and patient outcomes. The achieved knowledge will contribute to the understanding of whether and how general practice's ability to perform cancer diagnosis may be improved.

Tombor, I., et al. (2016). "Development of SmokeFree Baby: a smoking cessation smartphone app for pregnant smokers." *Translational Behavioral Medicine* 6(4): 533-545.

Pregnant smokers may benefit from digital smoking cessation interventions, but few have been designed for this population. The aim was to transparently report the development of a smartphone app designed to aid smoking cessation during pregnancy. The development of a smartphone app ('SmokeFree Baby') to help pregnant women stop smoking was guided by frameworks for developing complex interventions, including the Medical Research Council (MRC), Multiphase Optimization Strategy (MOST) and Behaviour Change Wheel (BCW). Two integrative behaviour change theories provided the theoretical base. Evidence from the scientific literature and behaviour change techniques (BCTs) from the BCT Taxonomy v1 informed the intervention content. The app was developed around five core modules, each with a distinct intervention target (identity change, stress management, health information, promoting use of face-to-face support and behavioural substitution) and available in a 'control' or 'full' version. SmokeFree Baby has been developed as part of a multiphase intervention optimization to identify the optimum combination of intervention components to include in smartphone apps to help pregnant smokers stop smoking.

Tong, H. L., et al. (2018). "Using a Mobile Social Networking App to Promote Physical Activity: A Qualitative Study of Users' Perspectives." *Journal of Medical Internet Research* 20(12).

Background: Despite many health benefits of physical activity, nearly a third of the world's adult population is insufficiently active. Technological interventions, such as mobile apps, wearable trackers, and Web-based social networks, offer great promise in promoting physical activity, but little is known about users' acceptability and long-term engagement with these interventions. Objective: The aim of this study was to understand users' perspectives regarding a mobile social networking intervention to promote physical activity. Methods: Participants, mostly university students and staff, were recruited using purposive sampling techniques. Participants were enrolled in a 6-month feasibility study where they were provided with a wearable physical activity tracker (Fitbit Flex 2) and a wireless scale (Fitbit Aria) integrated with a social networking mobile app (named "fit.healthy.me"). We conducted semistructured, in-depth qualitative interviews and focus groups pre- and postintervention, which were recorded and transcribed verbatim. The data were analyzed in Nvivo 11 using thematic analysis techniques. Results: In this study, 55 participants were enrolled; 51% (28/55) were females, and the mean age was 23.6 (SD 4.6) years. The following 3 types of factors emerged from the data as influencing engagement with the intervention and physical activity: individual (self-monitoring of behavior, goal setting, and feedback on behavior), social (social comparison, similarity and familiarity between users, and participation from other users in the network), and technological. In addition, automation and personalization were observed as enhancing the delivery of both individual and social aspects. Technological limitations were mentioned as potential barriers to long-term usage. Conclusions: Self-regulatory techniques and social factors are important to consider when designing a physical activity intervention, but a one-size-fits-all approach is unlikely to satisfy different users' preferences. Future research should adopt innovative research designs to test interventions that can adapt and respond to users' needs and preferences throughout time.

Tong, H. L., et al. (2019). "Efficacy of a Mobile Social Networking Intervention in Promoting Physical Activity: Quasi-Experimental Study." *Jmir Mhealth and Uhealth* 7(3).

Background: Technological interventions such as mobile apps, Web-based social networks, and wearable trackers have the potential to influence physical activity; yet, only a few studies have examined the efficacy of an intervention bundle combining these different technologies. Objective: This study aimed to pilot test an intervention composed of a social networking mobile app, connected with a wearable tracker, and investigate its efficacy in improving physical activity, as well as explore participant engagement and the usability of the app. Methods: This was a pre-post quasi-experimental study with 1 arm, where participants were subjected to the intervention for a 6-month period. The primary outcome measure was the difference in daily step count between baseline and 6 months Secondary outcome

measures included engagement with the intervention and system usability. Descriptive and inferential statistical tests were conducted; posthoc subgroup analyses were carried out for participants with different levels of steps at baseline, app usage, and social features usage. Results: A total of 55 participants were enrolled in the study; the mean age was 23.6 years and 28 (51%) were female. There was a nonstatistically significant increase in the average daily step count between baseline and 6 months (mean change=14.5 steps/day, $P=.98$, 95% CI -1136.5 to 1107.5). Subgroup analysis comparing the higher and lower physical activity groups at baseline showed that the latter had a statistically significantly higher increase in their daily step count (group difference in mean change from baseline to 6 months=3025 steps per day, $P=.008$, 95% CI 837.9-5211.8). At 6 months, the retention rate was 82% (45/55); app usage decreased over time. The mean system usability score was 60.1 (SD 19.2). Conclusions: This study showed the preliminary efficacy of a mobile social networking intervention, integrated with a wearable tracker to promote physical activity, particularly for less physically active subgroups of the population. Future research should explore how to address challenges faced by physically inactive people to provide tailored advices. In addition, users' perspectives should be explored to shed light on factors that might influence their engagement with the intervention.

Tonkin, E., et al. (2017). "Characteristics of Smartphone Applications for Nutrition Improvement in Community Settings: A Scoping Review." *Advances in Nutrition* 8(2): 308-322.

Smartphone applications are increasingly being used to support nutrition improvement in community settings. However, there is a scarcity of practical literature to support researchers and practitioners in choosing or developing health applications. This work maps the features, key content, theoretical approaches, and methods of consumer testing of applications intended for nutrition improvement in community settings. A systematic, scoping review methodology was used to map published, peer-reviewed literature reporting on applications with a specific nutrition-improvement focus intended for use in the community setting. After screening, articles were grouped into 4 categories: dietary selfmonitoring trials, nutrition improvement trials, application description articles, and qualitative application development studies. For mapping, studies were also grouped into categories based on the target population and aim of the application or program. Of the 4818 titles identified from the database search, 64 articles were included. The broad categories of features found to be included in applications generally corresponded to different behavior change support strategies common to many classic behavioral change models. Key content of applications generally focused on food composition, with tailored feedback most commonly used to deliver educational content. Consumer testing before application deployment was reported in just over half of the studies. Collaboration between practitioners and application developers promotes an appropriate balance of evidence-based content and functionality. This work provides a unique resource for program development teams and practitioners seeking to use an application for nutrition improvement in community settings.

Totura, C. M. W., et al. (2019). "The Role of Youth Trainee-Trainer Alliance and Involvement in School-Based Prevention: A Moderated-Mediation Model of Student Gatekeeper Suicide Prevention Training." *Administration and Policy in Mental Health and Mental Health Services Research* 46(2): 209-219.

This study examined the roles that youth involvement and youth trainee-trainer alliance play in school mental health prevention within the context of youth suicide gatekeeper training. Measures included youth involvement in programming, trainee-trainer alliance, and intentions to refer at-risk youth at pre- and post-training. A moderated-mediation design was used to examine associations among these factors. Results show alliance mediating pre- and post-training referral intentions, and involvement moderating the relationship between alliance and post-training intentions. On average, trainee intentions improved from pre- to post-training, but trainees reporting high alliance endorsed higher post-training referral intentions regardless of involvement level. Low alliance resulted in lower than average post-training referral intentions, even with active involvement in programming, and those with both low alliance and involvement showed the lowest post-training referral intentions. Given these findings, fostering the youth trainee-trainer relationship may be an avenue to optimize prevention program effectiveness.

Toye, C., et al. (2015). "Can a community of practice enhance a palliative approach for people drawing close to death with dementia?" *International Journal of Palliative Nursing* 21(11): 548-556.

This action research study was conducted to trial a strategy intended to support a consistent, high-quality, palliative approach for people with dementia drawing close to death-the implementation of a community of practice. Professionals from community/residential care and hospitals formed this community of practice, which took on the role of an action research group. The group was supported to identify and address practice problems. Four action plans were implemented; outcomes from two are reported. When actioning the plan 'providing education and information for the staff', the staff's ratings of sessions and resources were positive but impacts upon knowledge, views, or confidence were small. When actioning 'supporting families', families providing care in non-hospital settings received information about severe dementia from suitably prepared staff, plus contact details to access support. Family feedback was primarily

positive. Reference to additional practice change frameworks and inclusion of specialist palliative care professionals are recommendations for future initiatives; also focusing on targeted, achievable goals over longer timeframes.

Toye, C., et al. (2019). "Obtaining information from family caregivers to inform hospital care for people with dementia: A pilot study." *International Journal of Older People Nursing* 14(1).

Aim We aimed to implement a systematic nurse-caregiver conversation, examining fidelity, dose and reach of implementation; how implementation strategies worked; and feasibility and mechanisms of the practice change. **Background** Appropriate hospital care for people living with dementia may draw upon: information from the patient and family caregiver about the patient's perspective, preferences and usual support needs; nursing expertise; and opportunities the nurse has to share information with the care team. Within this context, planned nurse-caregiver communication merits further investigation. **Methods** In Phase I, we established the ward staff's knowledge of dementia and Alzheimer's disease, prepared seven nurse change leaders, finalised the planned practice change and developed implementation plans. In Phase II, we prepared the ward staff during education sessions and leaders supported implementation. In Phase III, evaluations were informed by interviews with change leaders, follow-up measures of staff knowledge and a nurse focus group. Qualitative data were thematically analysed. Statistical analyses compared nurses' knowledge over time. **Results** Planned practice change included nurses providing information packs to caregivers, then engaging in, and documenting, a systematic conversation. From 32 caregivers, 15 received information packs, five conversations were initiated, and one was completed. Knowledge of dementia and Alzheimer's disease improved significantly in change leaders (n = 7) and other nurses (n = 17). Three change leaders were interviewed, and six other nurses contributed focus group data. These leaders reported feeling motivated and suitably prepared. Both nurses and leaders recognised potential benefits from the planned conversation but viewed it as too time-consuming to be feasible. **Conclusions** The communication initiative and implementation strategies require further tailoring to the clinical setting. A caregiver communication tool may be a helpful adjunct to the conversation. Implementation may be enhanced by more robust stakeholder engagement, change leader inclusion in the reference group and an overarching supportive framework within which change leaders can operate more effectively

Trevena, H., et al. (2016). "Protocol for a cluster-randomised trial to determine the effects of advocacy actions on the salt content of processed foods." *Bmc Public Health* 16.

Background: Corporate decisions affecting the composition of processed foods are a potent factor shaping the nutritional quality of the food supply. The addition of large quantities of salt to foods is incompatible with Australian Dietary Guidelines and the reformulation of processed foods to have less salt is a focus of non-governmental organisations (NGOs). There is evidence that advocacy can influence corporate behaviour but there are few data to define the effects of NGOs working in the food space. The aim of this study is to quantify the effects of advocacy delivered by a local NGO on the salt content of food products produced or marketed by companies in Australia. **Methods/Design:** This is a cluster-randomised controlled trial that will be done in Australia from 2013 to 2015 which includes 45 food companies. The 23 companies in the control group will receive no specific intervention whilst the 22 companies in the intervention group will receive an advocacy program based upon an established theory of change model. The primary outcome will be the mean change in sodium content (mg/100 g) of processed foods produced or marketed by intervention compared to control companies assessed at 24 months. Interim outcomes (statements of support, published nutrition policies, level of engagement, knowledge and use of technology to reduce salt, salt reduction plans, and support for national initiatives) will also be assessed and a qualitative evaluation will provide more detailed insight. **Discussion:** This novel study will provide robust randomised evidence about the effects of advocacy on food company behaviour and the quality of the processed food supply. A finding of improved food company behaviour will highlight the potential for greater investment in advocacy whilst the opposite result will reinforce the importance of government-led initiatives for the improvement of the food supply.

Triantafyllidis, A., et al. (2018). "Computerized decision support for beneficial home-based exercise rehabilitation in patients with cardiovascular disease." *Computer Methods and Programs in Biomedicine* 162: 1-10.

Background: Exercise-based rehabilitation plays a key role in improving the health and quality of life of patients with Cardiovascular Disease (CVD). Home-based computer-assisted rehabilitation programs have the potential to facilitate and support physical activity interventions and improve health outcomes. **Objectives:** We present the development and evaluation of a computerized Decision Support System (DSS) for unsupervised exercise rehabilitation at home, aiming to show the feasibility and potential of such systems toward maximizing the benefits of rehabilitation programs. **Methods:** The development of the DSS was based on rules encapsulating the logic according to which an exercise program can be executed beneficially according to international guidelines and expert knowledge. The DSS considered data from a prescribed exercise program, heart rate from a wristband device, and motion accuracy from a depth camera, and subsequently generated personalized, performance-driven adaptations to the exercise program.

Communication interfaces in the form of RESTful web service operations were developed enabling interoperability with other computer systems. Results: The DSS was deployed in a computer-assisted platform for exercise-based cardiac rehabilitation at home, and it was evaluated in simulation and real-world studies with CVD patients. The simulation study based on data provided from 10 CVD patients performing 45 exercise sessions in total, showed that patients can be trained within or above their beneficial HR zones for 67.1 +/- 22.1% of the exercise duration in the main phase, when they are guided with the DSS. The real-world study with 3 CVD patients performing 43 exercise sessions through the computer-assisted platform, showed that patients can be trained within or above their beneficial heart rate zones for 87.9 +/- 8.0% of the exercise duration in the main phase, with DSS guidance. Conclusions: Computerized decision support systems can guide patients to the beneficial execution of their exercise-based rehabilitation program, and they are feasible. (C) 2018 Elsevier B.V. All rights reserved.

Trickey, H., et al. (2018). "A realist review of one-to-one breastfeeding peer support experiments conducted in developed country settings." *Maternal and Child Nutrition* 14(1).

The World Health Organisation guidance recommends breastfeeding peer support (BFPS) as part of a strategy to improve breastfeeding rates. In the UK, BFPS is supported by National Institute for Health and Care Excellence guidance and a variety of models are in use. The experimental evidence for BFPS in developed countries is mixed and traditional methods of systematic review are ill-equipped to explore heterogeneity, complexity, and context influences on effectiveness. This review aimed to enhance learning from the experimental evidence base for one-to-one BFPS intervention. Principles of realist review were applied to intervention case studies associated with published experimental studies. The review aimed (a) to explore heterogeneity in theoretical underpinnings and intervention design for one-to-one BFPS intervention; (b) inform design decisions by identifying transferable lessons developed from cross-case comparison of context-mechanism-outcome relationships; and (c) inform evaluation design by identifying context-mechanism-outcome relationships associated with experimental conditions. Findings highlighted poor attention to intervention theory and considerable heterogeneity in BFPS intervention design. Transferable mid-range theories to inform design emerged, which could be grouped into seven categories: (a) congruence with local infant feeding norms, (b) integration with the existing system of health care, (c) overcoming practical and emotional barriers to access, (d) ensuring friendly, competent, and proactive peers, (e) facilitating authentic peer-mother interactions, (f) motivating peers to ensure positive within-intervention amplification, and (g) ensuring positive legacy and maintenance of gains. There is a need to integrate realist principles into evaluation design to improve our understanding of what forms of BFPS work, for whom and under what circumstances.

Trieu, K., et al. (2018). "Process evaluation of Samoa's national salt reduction strategy (MASIMA): what interventions can be successfully replicated in lower-income countries?" *Implementation Science* 13.

Background: Evidence for recommended interventions to reduce population salt intake come from high-income countries, but it is unknown if these can be successfully replicated in low- and middle-income countries. This process evaluation investigated the reach, dose/adoption, fidelity, cost, and context of a national salt reduction program of interventions in Samoa. Methods: Monitoring and Action on Salt in Samoa (MASIMA) was a pre- and post-intervention study of a government-led strategy to lower population salt intake comprising awareness campaigns, community mobilization and policy and environmental changes. Data relating to the five process evaluation dimensions were collected from routinely collected data, a post-intervention survey and stakeholder interviews. Chi-squared tests assessed differences in quantitative survey responses among groups. Thematic analysis of qualitative interview responses was undertaken and triangulated with the quantitative data. Results: Awareness campaigns, school nutrition standards, and community mobilization interventions were implemented with moderate reach and fidelity. Higher than expected costs of campaigns and limited opportunity (one-off) to mobilize community leaders to disseminate salt reduction messages were key implementation challenges, which meant intervention dose was low. Environmental-level initiatives including engagement with the food industry to voluntarily reduce salt in foods and the introduction of salt-related regulations were more challenging to implement within 18-months, particularly given the delay in the passing of the Food Act which provides for enforcement of regulations. Contextual factors that hindered the interventions' mechanism of effect include the food culture, higher cost, and lower availability of healthy low-salt foods relative to unhealthy foods and salty taste preference. Conclusion: Although individual and community-based interventions helped increase awareness about the importance of salt reduction in Samoa, legislative backing was needed to alter the food environment to achieve population reduction in salt intake. It was not possible to engage the food industry to lower salt in foods through a voluntary approach in Samoa's current context, although such initiatives were successful in some high-income countries. Future individual and environmental-level interventions to reduce salt intake need to address the contextual influences of food choices. In Samoa, this means salt reduction strategies need to ensure consuming lower salt is affordable, widely available, and perceived as flavorful.

Tsai, F. M., et al. (2018). "A Preliminary Study of the Effects of a Multithey-Driven Intervention in Adults With Prediabetes Mellitus." *Journal of Nursing Research* 26(3): 216-225.

Background: Prediabetes mellitus (pre-DM) is an important predictive indicator of Type 2 diabetes. A person with pre-DM is eight times more likely to develop diabetes than a person without pre-DM. Prior research suggests that proactive interventions may delay the progression of this disease and reduce the rate of disease development. Purpose: The purposes of this preliminary study were to develop a multithey-driven lifestyle intervention protocol for adults with pre-DM and to evaluate its feasibility and impacts on knowledge regarding pre-DM, dietary behaviors, and physical activity (primary outcomes) as well as to describe the disease progression indicators (secondary outcomes). Methods: A single-group, longitudinal study design was used. Thirty-nine participants were included in the analysis. A generalized estimating equation model was used to determine the trends in changes in the outcomes. All of the participants underwent testing at baseline (T-0) and at 3 (T-1), 6 (T-2), and 12 (T-3) months after the 4-week lifestyle intervention. Results: There were significantly increasing trends for each study parameter (Pre-DM Knowledge Assessment Form-12, $p < .01$; Dietary Behavior Scale, $p < .01$) and significantly positive changes in body weight ($p < .01$), body mass index ($p < .01$), fasting glucose level ($p < .01$), and glycated hemoglobin level ($p < .01$) over the 12-month study period. Conclusions/Implications for Practice: This study supports the feasibility of the developed multithey-driven lifestyle intervention protocol and suggests that its application may improve the effectiveness of diabetes prevention programs in clinical settings. Further randomized controlled trials are needed.

Tseklevs, E. (2017). *Designing for health Introduction*.

Tseklevs, E. and R. Cooper (2017). "Emerging Trends and the Way Forward in Design in Healthcare: An Expert's Perspective." *Design Journal* 20: S2258-S2272.

In this paper the authors provide a new perspective on the emerging trends and way forward for design in healthcare. The article is based on an analysis of 20 chapters and 26 case studies contributed by design research experts for an international book in *Design for Health* (currently in press(1)) edited by the authors. The paper aim is to provide design researchers, with an interested in health, with new insights. Focusing on the five identified emergent trends in design for health the authors discuss how designers can contribute to different dimensions of health (in public, acute, chronic healthcare and in ageing well), as dictated by several of the healthcare challenges and opportunities created by design research and the advent of digital technology. The analysis reveals that design has the capacity to contribute significantly to future healthcare. It has also revealed that the key agenda going forward and requiring immediate attention is that of preventative healthcare.

Tuovinen, E. L., et al. (2018). "Weight concerns as a predictor of smoking cessation according to nicotine dependence A population-based study." *Nordic Studies on Alcohol and Drugs* 35(5): 344-356.

Background: Nicotine-dependent smokers find it difficult to quit smoking. Additionally, smoking-specific weight concerns may affect smoking cessation although the evidence is controversial. We investigated whether smoking-specific weight concerns predict the probability of cessation and, if so, whether the effect varies according to the level of nicotine dependence. Methods: The study was conducted with a population-based sample of 355 adult daily smokers who participated in the baseline examination in 2007 and in the 2014 follow-up. Baseline nicotine dependence was classified as low or high (Fagerstrom Test for Nicotine Dependence; 0-3 vs. 4-10 points). Within these groups, we examined whether baseline weight concerns predict smoking status (daily, occasional, ex-smoker) at follow-up by using multinomial logistic regression with adjustment for multiple covariates. Results: Among low-dependent participants at baseline, 28.5% had quit smoking, while among highly dependent participants 26.1% had quit smoking. The interaction between weight concerns and nicotine dependence on follow-up smoking status was significant. Among participants with low nicotine dependence per the fully adjusted model, greater weight concerns predicted a lower likelihood of both smoking cessation (relative risk ratio 0.93 [95% CI 0.87-1.00]) and smoking reduction to occasional occurrence (0.89 [95% CI 0.81-0.98]). Weight concerns were not associated with follow-up smoking status among participants with high nicotine dependence. Conclusions: Weight concerns are associated with a smaller likelihood of quitting among smokers with low nicotine dependence. Weight concerns should be addressed in smoking cessation interventions, especially with smokers who have low nicotine dependence.

Turnnidge, J. and J. Cote (2017). "Transformational Coaching Workshop: Applying a Person-Centred Approach to Coach Development Programs." *International Sport Coaching Journal* 4(3): 314-325.

It is well established that coach learning and athlete outcomes can be enhanced through participation in Coach Development Programs (CDPs). Researchers advocate that the quality of CDPs can be improved by: (a) placing a greater emphasis on facilitating coaches' interpersonal behaviours (Lefebvre, Evans, et al., 2016), (b) using appropriate and systematic evaluation frameworks to guide the evaluation of interpersonally-focused CDPs (Evans et al., 2015), and (c)

incorporating behaviour change theories into the design and implementation of these CDPs (Allan et al., 2017). In doing so, the relevance of CDP content and the uptake of this content among coaching practitioners may be enhanced. Transformational leadership theory provides a valuable guiding framework for designing CDPs that aim to promote positive development in youth sport. Thus, the goal of the present paper is to outline the development of a novel, evidence-informed CDP: The Transformational Coaching Workshop and to provide practical strategies for the implementation of this workshop.

Twigg, M. J. and D. J. Wright (2017). "Community pharmacy COPD services: what do researchers and policy makers need to know?" *Integrated Pharmacy Research and Practice* 6: 53-59.

COPD is a leading cause of morbidity and mortality across the world and is responsible for a disproportionate use of health care resources. It is a progressive condition that is largely caused by smoking. Identification of early stage COPD provides an opportunity for interventions, such as smoking cessation, which prevent its progression. Once diagnosed, ongoing support services potentially provide an opportunity to assist the patient in managing their condition and working more closely with the rest of the primary care team. While there are a number of robust studies which have demonstrated the role which pharmacists could undertake to identify and prevent disease progression, adoption of such services is currently limited. As a service that would seem to be appropriate for adoption in all societies where smoking is prevalent, we have performed a review of reported approaches that have been used when setting up and evaluating such services, and therefore aim to inform researchers and policy makers in other countries on how best to proceed. Implementation science has been used to further contextualize the findings of the review in terms of components that are likely to enhance the likelihood of implementation. With reference to screening services, we have made clear recommendations as to the identification of patients, structure and smoking cessation elements of the program. Further work needs to be undertaken by policy makers to determine the approaches that can be used to motivate pharmacists to provide this service. In terms of ongoing support services, there is some evidence to suggest that these would be effective and cost-effective to the health service in which they are implemented. However, the capability, opportunity and motivation of pharmacists to provide these, more complex, services need to be the focus for researchers before implementation by policy makers.

Ubhi, H. K., et al. (2017). "A comparison of the characteristics of iOS and Android users of a smoking cessation app." *Translational Behavioral Medicine* 7(2).

iOS and Android smartphone users may differ in ways that affect their use and likelihood of success when using a smoking cessation application (app). If so, it may be necessary to take the device type (iOS and Android) into account when designing smoking cessation apps and in studies evaluating app effectiveness. How do sociodemographic and smoking characteristics, potentially relevant to engagement and cessation outcomes, of the SF28 app users differ between those using the iOS version and those using the Android version? Data were collected between October 2013 and April 2015. The variables measured were age, gender, social grade, time since the most recent quit attempt, choice of medication use (nicotine replacement therapy or varenicline), weekly expenditure on cigarettes, cigarettes smoked per day, reason for using the app and quit date set. The alpha was set to $p < 0.006$ to adjust for multiple comparisons. A total of 1368 users were included in the analysis. iOS and Android device users were similar in terms of age, social grade, weekly expenditure on cigarettes and cigarettes smoked per day. Compared with Android users, iOS users were more likely to have downloaded the app for a serious quit attempt (74.3 versus 69.6%, $p = 0.001$), made a quit attempt within the last 12 months (59.6 versus 45.9%, $p < 0.001$) and set their quit date on the day of registration (61 versus 46.2%, $p < 0.001$). They were less likely to have used stop-smoking medication to support their quit attempt (31.5 versus 48.6%, $p < 0.001$). Differences between smokers using the iOS version of smoking cessation apps and those using the Android version may influence quit success.

Uribe, A. L. M., et al. (2019). "Exploring Family-Medicine Providers' Perspectives on Group Care Visits for Maternal and Infant Nutrition Education." *Journal of Nutrition Education and Behavior* 51(4): 409-418.

Objective: Explore current maternal and infant nutrition education practices and family medicine primary care providers' views on a group care model to deliver nutrition education to mother-infant dyads. Design: In-depth interviews. Participants: Family medicine primary care providers ($n = 17$) who regularly see infants during well-baby visits. Phenomenon of Interest: Current maternal and infant nutrition education practices; views on ideal way to deliver nutrition education to mother-infant dyads; feedback on group care model to deliver nutrition education to mother-infant dyads. Analysis: Audio recordings transcribed verbatim and coded using conventional content analysis. Results: Family medicine primary care providers are limited in the ability to provide maternal and infant nutrition education and desire a different approach. Group care was the preferred method; it was shared most frequently as the ideal approach to nutrition education delivery and participants reacted favorably when presented with this model. However, there were many concerns with group care (eg, moderating difficult conversations, program implementation logistics, sufficient

group volume, and interruption in patient-provider relationship). Conclusion and Implications: Family medicine primary care providers desire a different approach to deliver nutrition education to mother-infant dyads in clinic. A group care model may be well-accepted among family medicine primary care providers but issues must be resolved before implementation. These results could inform future group care implementation studies and influence provider buy-in.

Vallis, M., et al. (2018). "Equipping providers with principles, knowledge and skills to successfully integrate behaviour change counselling into practice: a primary healthcare framework." *Public Health* 154: 70-78.

Objectives: There is an urgent need for healthcare providers and healthcare systems to support productive interactions with patients that promote sustained health behaviour change in order to improve patient and population health outcomes. Behaviour change theories and interventions have been developed and evaluated in experimental contexts; however, most healthcare providers have little training, and therefore low confidence in, behaviour change counselling. Particularly important is how to integrate theory and method to support healthcare providers to engage in behaviour change counselling competently. In this article, we describe a general training model developed from theory, evidence, experience and stakeholder engagement. This model will set the stage for future evaluation research on training needed to achieve competency, sustainability of competency, as well as effectiveness/cost-effectiveness of training in supporting behaviour change. Design and Methods: A framework to support competency based training in behaviour change counselling is described in this article. This framework is designed to be integrative, sustainable, scalable and capable of being evaluated in follow-up studies. Results and Discussion: Effective training in behaviour change counselling is critical to meet the current and future healthcare needs of patients living with, or at risk of, chronic diseases. Increasing competency in establishing change-based relationships, assessing and promoting readiness to change, implementing behaviour modification and addressing psychosocial issues will be value added to the healthcare system. (C) 2017 The Royal Society for Public Health. Published by Elsevier Ltd. All rights reserved.

Van Asseldonk, M., et al. (2018). "Understanding Preferences for Interventions To Reduce Microbiological Contamination in Dutch Vegetable Production." *Journal of Food Protection* 81(6): 892-897.

Understanding growers' preferences regarding interventions to improve the microbiological safety of their produce could help to design more effective strategies for the adoption of such food safety measures by growers. The objective of this survey study was to obtain insights for the design of interventions that could stimulate growers to increase the frequency of irrigation water sampling and water testing to reduce possible microbiological contamination of their fresh produce. The results showed that price intervention, referring to making the intervention less costly by reducing the price via discounts, is the most effective strategy to change growers' intentions to increase their frequency of irrigation water testing. Moreover, a sense of urgency affects their intentions to increase the frequency of irrigation water testing. The findings of this survey support the hypothesis that, to date, safety is not perceived as a quality control issue under normal circumstances, but safety becomes an overriding attribute in a food crisis.

Van de Vyver, J. and P. John (2017). "A field experiment: Testing the potential of norms for achieving behavior change in English parishes." *Journal of Applied Social Psychology* 47(6): 347-352.

Tests of behavioral insights have become increasingly more common, and have been deployed by UK government and agencies. Typically, these field experiments aim to change individual-level behaviors. The current article tests the potential of behavioral insights for changing group-level behavior. This article reports the results of a field experiment carried out with the Department of Communities and Local Government. The field experiment tested whether a normative message (vs. a neutral or no message) could encourage parish councils to register an asset of community value (social action). There was no statistically significant effect from this intervention, but the process of designing and implementing this field experiment shows the potential for theories of behavior change to be used by government departments.

van den Heuvel, E., et al. (2018). "Towards a Food-Based Intervention to Increase Protein Intakes in Older Adults: Challenges to and Facilitators of Egg Consumption." *Nutrients* 10(10).

Background: Dietary protein intake is important for health. Eggs, as a protein-rich food with characteristics that appeal to older adults, may provide opportunities for increasing protein intake. Interventions that focus on the challenges or facilitators that affect a large proportion of the population will be of increased impact on a population-wide scale. This work aimed to investigate the relative importance of a number of challenges to and facilitators of egg consumption in a UK population-wide sample of older adults. Methods: A cross-sectional postal questionnaire, measuring habitual egg intake, reasons for eating/not eating eggs and a range of demographic and lifestyle characteristics, was administered by post to 1082 older adults. Results: 230 questionnaires suitable for analysis were returned (110 females, ages 55-80+ years). Habitual egg intake ranged from 1-89 eggs/month, mean (standard deviation) = 18 (13) eggs/month. Reasons for eating/not eating eggs were reduced using Principal Components Analysis to 23 challenges and facilitators of egg

consumption. Regression analyses revealed habitual egg intake to be associated with 10 challenges and facilitators (smallest beta = 0.14, $p = 0.04$), and with protein consumption, age and Body Mass Index (smallest beta = 0.14, $p = 0.03$). Discussion: Many possibilities for future intervention based on existing challenges or facilitators were found. Our results suggest that strategies to increase egg consumption in older adults should focus on: improving liking, tastiness and adding variety; promoting eggs as an everyday type of food; reducing stereotypes about who does and who does not consume eggs; and promoting eggs for people who have noticed the effects of ageing on their food intake. Strategies that highlight value-for-money may be counterproductive. Future work evaluating the value of these strategies for improving protein intake in this age group would be of value.

van der Wardt, V., et al. "Physical activity engagement strategies in people with mild cognitive impairment or dementia - a focus group study." *Aging & Mental Health*.

Objective: This focus group study aimed to explore how to motivate people with mild cognitive impairment (MCI) or dementia and their carers to engage in exercise and physical activity. Methods: Four focus groups were conducted with six people with MCI or dementia, three carers and four clinicians (nurse, occupational therapist, physiotherapists). A thematic analysis of the data was undertaken. Results: Five main themes were identified: 'memory problems', 'self-motivation', 'external motivation', 'design of activities' and 'barriers'. Participants viewed exercise positively but emphasised that it needed to fit into their daily routine. Goal-setting was seen as helpful by some participants but others saw this as a source of potential failure. Enjoyment was seen as key to engagement. Conclusion: Exercise and physical activity interventions need an individualised approach to engage people with MCI or dementia, with a positive emphasis on enjoyment. Goal-setting should be used with caution in this group of people.

van der Wees, P. J., et al. (2013). "Developing a questionnaire to identify perceived barriers for implementing the Dutch physical therapy COPD clinical practice guideline." *Bmc Health Services Research* 13.

Background: Clinical practice guidelines have been developed to assist healthcare practitioners in clinical decision making. Publication of clinical practice guidelines does not automatically lead to their uptake and barrier identification has been recognized as an important step in implementation planning. This study aimed at developing a questionnaire to identify perceived barriers for implementing the Dutch COPD guideline for physical therapists and its recommended measurement instruments. Methods: An overall questionnaire, based on two existing questionnaires, was constructed to identify barriers and facilitators for implementing the COPD guideline. The construct of the questionnaire was assessed in a cross-sectional study among 246 chest physical therapists. Factor analysis was conducted to explore underlying dimensions. Psychometric properties were analyzed using Cronbach's alpha. Barriers and facilitators were assessed using descriptive statistics. Results: Some 139 physical therapists (57%) responded. Factor analysis revealed 4-factor and 5-factor solutions with an explained variance of 36% and 39% respectively. Cronbach's alpha of the overall questionnaire was 0.90, and varied from 0.66 to 0.92 for the different factors. Underlying domains of the 5-factor solution were characterized as: attitude towards using measurement instruments, knowledge and skills of the physical therapist, applicability of the COPD guideline, required investment of time & money, and patient characteristics. Physical therapists showed a positive attitude toward using the COPD guideline. Main barriers for implementation were required time investment and financial constraints. Conclusions: The construct of the questionnaire revealed relevant underlying domains for the identification of barriers and facilitators for implementing the COPD guideline. The questionnaire allowed for tailoring to the target group and may be used across health care professionals as basis for in-depth analysis of barriers to specific recommendations in guidelines. The results of the questionnaire alone do not provide sufficient information to inform the development of an implementation strategy. The infrastructure for developing the guideline can be used for addressing key barriers by the guideline development group, using the questionnaire as well as in-depth analysis such as focus group interviews. Further development of methods for prospective identification of barriers and consequent tailoring of implementation interventions is required.

van Dongen, B. M., et al. (2019). "Background and evaluation design of a community-based health-promoting school intervention: Fit Lifestyle at School and at Home (FLASH)." *Bmc Public Health* 19.

Background A community-based approach can be a promising strategy for implementing school-based health promotion aimed at stimulating healthy physical activity and dietary behaviour. Such an approach builds on the community capacity of multiple stakeholders, empowering them to design and implement tailored activities, supported by the whole school community. This paper describes the background and evaluation design of the community-based school intervention 'Fit Lifestyle at School and at Home' (FLASH) in four prevocational schools. FLASH includes four strategies for building the community capacity of students, school personnel and parents: 1) identifying leaders in each stakeholder group, 2) stimulating a school culture of participation, 3) having stakeholders design and implement tailored activities and 4) creating a network of local partners for structural embedding. The objective is to monitor the capacity-building processes of the FLASH intervention and to explore if these processes contribute to changes in community

capacity. In addition, we will explore if the FLASH intervention is related to changes in PA, dietary behaviours and BMI of students. **Methods** This study has a mixed methods design and uses a participatory action-oriented approach to monitor and evaluate changes in community capacity, tailored health-promotion activities and implementation processes. Methods include semi-structured interviews, focus groups, journals, document analysis and observational scans of the physical environment. In addition, changes in BMI, physical activity and dietary behaviours of prevocational students will be explored by comparing the four intervention schools to four control schools. Data are collected by questionnaires and anthropometric measurements. **Discussion** The main strength of this study is its use of mixed methods to evaluate real-life processes of creating a healthy-school community. This will provide valuable information on capacity-building strategies for the structural embedding of health-promotion activities within school settings. The results could help schools become more empowered to adapt and adopt integral health-promotion interventions in daily practice that suit the needs of their communities, that are expected to be sustainable and that could lead to favourable changes in the PA and dietary behaviour of students. **Trial registration** ISRCTN67201841; date registered: 09-05-2019, retrospectively registered.

van Eerd, E. A. M., et al. (2015). "Experiences of tobacco smoking and quitting in smokers with and without chronic obstructive pulmonary disease-a qualitative analysis." *Bmc Family Practice* 16.

Background: Smokers with chronic obstructive pulmonary disease (COPD) seem to be a special subgroup of smokers that have a more urgent need to quit smoking but might find it more difficult to do so. This study aimed to explore which justifications for tobacco smoking and experiences of quitting were commonly shared in smokers with and without COPD, and which, if any, were specific to smokers with COPD. **Methods:** In ten primary healthcare centres in the Netherlands, we conducted semi-structured, in-depth interviews in 10 smokers with and 10 smokers without COPD. **Results:** Three themes were generated: 'balancing the impact on health of smoking', 'challenging of autonomy by social interference', 'prerequisites for quitting'. All participants trivialized health consequences of smoking; those with COPD seemed to be less knowledgeable about smoking and health. Both groups of smokers found autonomy very important. Smokers with COPD were indignant about a perceived lack of empathy in their communication with doctors. Furthermore, smokers with COPD in particular had little faith in the efficacy of smoking cessation aids. Lastly, motivation for quitting was dominated by fluctuation and smokers with COPD specifically maintained that their vision of life was linked with quitting. **Conclusions:** The participants showed many similarities in their reasoning about smoking and quitting. The corresponding themes argue for a less paternalistic regime in the communication with smokers with attention required for the motivational stage and room made for smokers' own views, and with clear information and education. Furthermore, addressing social interactions, health perceptions and moral agendas in the communication with smokers with COPD may help to make smoking cessation interventions more suitable for them.

van Koperen, T. M., et al. (2016). "Recommendations and Improvements for the Evaluation of Integrated Community-Wide Interventions Approaches." *Journal of Obesity*.

Background. Integrated community-wide intervention approaches (ICIAs) are implemented to prevent childhood obesity. Programme evaluation improves these ICIAs, but professionals involved often struggle with performance. Evaluation tools have been developed to support Dutch professionals involved in ICIAs. It is unclear how useful these tools are to intended users. We therefore researched the facilitators of and barriers to ICIA programme evaluation as perceived by professionals and their experiences of the evaluation tools. **Methods.** Focus groups and interviews with 33 public health professionals. Data were analysed using a thematic content approach. **Findings.** Evaluation is hampered by insufficient time, budget, and experience with ICIAs, lack of leadership, and limited advocacy for evaluation. Epidemiologists are regarded as responsible for evaluation but feel incompetent to perform evaluation or advocate its need in a political environment. Managers did not prioritise process evaluations, involvement of stakeholders, and capacity building. The evaluation tools are perceived as valuable but too comprehensive considering limited resources. **Conclusion.** Evaluating ICIAs is important but most professionals are unfamiliar with it and management does not prioritise process evaluation nor incentivize professionals to evaluate. To optimise programme evaluation, more resources and coaching are required to improve professionals' evaluation capabilities and specifically the use of evaluation.

van Schalkwyk, M. C. I. and J. S. Mindell (2018). "Current issues in the impacts of transport on health." *British Medical Bulletin* 125(1): 67-77.

Transport affects health in many ways. Benefits include access to education, employment, goods, services and leisure, and opportunities for incorporating physical activity into daily living. There are major inequalities: benefits generally accrue to wealthier people and harms to the more deprived, nationally and globally. *Health on the Move 2; Journal of Transport and Health* Benefits of travel for access and physical activity. Harms include health impacts of air and noise pollution; injuries and fatalities from falls or collisions; sedentary behaviour with motorized transport;

community severance (barrier effect of busy roads and transport infrastructure); global climate change; impacts on inequalities; transport's role in facilitating spread of communicable diseases. Biofuels; cycle safety; driving by older people. Effects of default 20 mph speed limits; impacts of autonomous vehicles on health and inequalities.

van Seben, R., et al. (2019). "Safe handovers for every patient: an interrupted time series analysis to test the effect of a structured discharge bundle in Dutch hospitals." *Bmj Open* 9(6).

Objective Patient handovers are often delayed, patients are hardly involved in their discharge process and hospital-wide standardised discharge procedures are lacking. The aim of this study was to implement a structured discharge bundle and to test the effect on timeliness of medical and nursing handovers, length of hospital stay (LOS) and unplanned readmissions. Design Interrupted time series with six preintervention and six postintervention data collection points (September 2015 to June 2017). Setting Internal medicine and surgical wards Participants Patients (≥ 18 years) admitted for more than 48 hours to surgical or internal medicine wards. Intervention The Transfer Intervention Procedure (TIP), containing four elements: planning the discharge date within 48 hours postadmission; arrangements for postdischarge care; preparing handovers and personalised patient discharge letter; and a discharge conversation 12-24 hours before discharge. Outcome measures The number of medical and nursing handovers sent within 24 hours. Secondary outcomes were median time between discharge and medical handovers, LOS and unplanned readmissions. Results Preintervention 1039 and postintervention 1052 patient records were reviewed. No significant change was observed in the number of medical and nursing handovers sent within 24 hours. The median (IQR) time between discharge and medical handovers decreased from 6.15 (0.96-15.96) to 4.08 (0.33-13.67) days, but no significant difference was found. No intervention effect was observed for LOS and readmission. In subgroup analyses, a reduction of 5.6 days in the median time between discharge and medical handovers was observed in hospitals with high protocol adherence and much attention for implementation. Conclusion Implementation of a structured discharge bundle did not lead to improved timeliness of patient handovers. However, large interhospital variation was observed and an intervention effect on the median time between discharge and medical handovers was seen in hospitals with high protocol adherence. Future interventions should continue to create awareness of the importance of timely handovers.

Vayro, C. and K. Hamilton (2016). "Using three-phase theory-based formative research to explore healthy eating in Australian truck drivers." *Appetite* 98: 41-48.

In Australia, fruit and vegetable consumption is lower than recommended while discretionary foods (i.e., foods high in fat, sugar, and salt) are eaten in excess. Long-haul truck drivers are a group at risk of unhealthy eating but have received limited attention in the health literature. We aimed to examine long haul truck drivers eating decisions in order to develop theory-based and empirically-driven health messages to improve their healthy food choices. Drawing on the Theory of Planned Behavior, three phased formative research was conducted using self-report surveys. Phase 1 (N = 30, M-age = 39.53, SDage = 10.72) identified modal salient beliefs about fruit and vegetable (FV) intake and limiting discretionary choices (DC). There were nine behavioral and seven normative beliefs elicited for both FV and DC; while nine and five control beliefs were elicited for FV and DC, respectively. Phase 2 (N = 148, M-age = 44.23, SDage = 12.08) adopted a prospective design with one week follow-up to examine the predictors of FV and DC intention and behavior. A variety of behavioral and control beliefs were predictive of FV and DC intention and behavior. Normative beliefs were predictive of FV intention and behavior and DC intention only. Phase 3 (N = 20, M-age = 46.9, SDage = 12.85) elicited the reasons why each belief is held/solutions to negative beliefs, that could be used as health messages. In total, 40 reasons/solutions were identified: 26 for FV and 14 for DC. In summary, we found that specific behavioral, normative and control beliefs influenced FV and DC eating decisions. These results have implications for truck driver's health and provide formative research to inform future interventions to improve the food choices of a unique group who are at risk of unhealthy eating behaviors. (C) 2015 Elsevier Ltd. All rights reserved.

Vedel, I., et al. (2018). "Shedding light on conditions for the successful passive dissemination of recommendations in primary care: a mixed methods study." *Implementation Science* 13.

Background Passive dissemination of information in healthcare refers to the publication or mailing of newly established guidelines or recommendations. It is one of the least costly knowledge translation activities. This approach is generally considered to be ineffective or to result in only small changes in practice. Recent research, however, suggests that passive dissemination could, under certain conditions, result in modifications of practice, similar to more active dissemination approaches. The objective of our study was to uncover the conditions associated with the change in primary care practice, namely Family Medicine Groups (FMGs) in Quebec (Canada), following the passive dissemination of recommendations for the diagnosis and management of Alzheimer's disease and related dementia (AD). Methods We used a three-step, innovative, convergent mixed methods design based on a multiple case study in eight FMGs. Two studies were conducted in parallel: (1) a before and after retrospective chart review and a cluster analysis of FMGs performed on two clinical performance indicators the rate of AD diagnosis and the quality of follow-up care; (2) a

qualitative descriptive study using interviews and focus groups with FMG clinicians and healthcare managers. The results were integrated using joint displays. Results After the passive dissemination of the recommendations, some FMGs started to implement the recommendations while other FMGs did not change their practice with respect to the AD diagnosis rate and quality of follow-up care. Three interrelated conditions were identified for the successful passive dissemination of clinical recommendations: (1) FMG clinicians with a moderate to high baseline expertise and confidence, which was linked to their existing collaboration with hospital-based specialists in dementia and their motivation; (2) the presence of a self-identified champion (individual champion or collective championship) in the FMGs taking the lead, motivating the clinical staff or organizing training; (3) the availability of sufficient clinical staff enabled these two conditions to have an impact on the implementation of recommendations through passive dissemination. Conclusions Passive dissemination of clinical recommendations, a low-cost knowledge translation approach, may lead to practice change under some specific conditions. More active dissemination efforts may only be needed in sites where these conditions are absent.

Vickerman, P., et al. (2012). "Can needle and syringe programmes and opiate substitution therapy achieve substantial reductions in hepatitis C virus prevalence? Model projections for different epidemic settings." *Addiction* 107(11): 1984-1995.

Aims To investigate the impact of scaling-up opiate substitution therapy (OST) and high coverage needle and syringe programmes (100%NSP obtaining more sterile syringes than you inject) on HCV prevalence among injecting drug users (IDUs). **Design** Hepatitis C virus HCV transmission modelling using UK estimates for effect of OST and 100%NSP on individual risk of HCV infection. **Setting** Range of chronic HCV prevalent (20/40/60%) settings with no OST/100%NSP, and UK setting with 50% coverage of both OST and 100%NSP. **Participants** Injecting drug users. **Measurements** Decrease in HCV prevalence after 520 years due to scale-up of OST and 100%NSP to 20/40/60% coverage in no OST/100%NSP settings, or from 50% to 60/70/80% coverage in the UK setting. **Findings** For 40% chronic HCV prevalence, scaling-up OST and 100%NSP from 0% to 20% coverage reduces HCV prevalence by 13% after 10 years. This increases to a 24/33% relative reduction at 40/60% coverage. Marginally less impact occurs in higher prevalence settings over 10 years, but this becomes more pronounced over time. In the United Kingdom, without current coverage levels of OST and 100%NSP the chronic HCV prevalence could be 65% instead of 40%. However, increasing OST and 100%NSP coverage further is unlikely to reduce chronic prevalence to less than 30% over 10 years unless coverage becomes =80%. **Conclusions** Scaling-up opiate substitution therapy and high coverage needle and syringe programmes can reduce hepatitis C prevalence among injecting drug users, but reductions can be modest and require long-term sustained intervention coverage. In high coverage settings, other interventions are needed to further decrease hepatitis C prevalence. In low coverage settings, sustained scale-up of both interventions is needed.

Vidotto, G., et al. (2013). "Cognitive and Emotional Factors Affecting Avoidable Decision-Making Delay in Acute Myocardial Infarction Male Adults." *International Journal of Medical Sciences* 10(9): 1174-1180.

Background: To study the potentially avoidable decision-making delay in acute myocardial infarction (AMI) adults male with different psychological characteristics a nationwide multicentre study was conducted in Italy by the 118 Coronary Care Units (CCUs). **Method:** 929 AMI patients consecutively presented to the CCU in a conscious condition less than two hours, 2-6 hours, 6-12 hours, and more than 12 hours after symptom onset and completing the Disease Distress Questionnaire (DDQ) were enrolled in a multicentre case-control study. The DDQ collects information regarding the decision time to seek help, and includes a set of items assessing psychological factors and pain-related symptoms. The relationship between the perceived threat and the delay due to decision-making was evaluated by means of a multivariate model using LISREL 8 structural equation modelling. **Results:** The delay significantly correlated with perceived threat, which was mainly related to somatic awareness. It was only slightly related to pain and was not associated with any of the other variables. Perceived threat was also related to psychological upset, fear and health worries, the first of which was considerably influenced by emotional instability. **Conclusion:** Somatic awareness is the main dimension affecting perceived threat, but subjective pain intensity affects the delay both directly and indirectly. The core of the model is the relationship between perceived threat and the delay due to decision-making. The importance of subjective pain intensity is well documented, but it is still not clear how subjective and objective pain interact.

Visscher, T. L. S. and S. P. J. Kremers (2015). "How Can We Better Prevent Obesity in Children?" *Current Obesity Reports* 4(3): 371-378.

The aim of this review is to discuss the state of the art regarding the field of health promotion in the context of childhood obesity prevention in order to learn how we can better prevent childhood obesity. Challenges have been identified that exist within the different steps of health promotion programme development and implementation. Important steps forward include studying behaviours and determinants of behaviours as clusters, upgrading the importance of distal environmental factors in modelling determinants and understanding determinants as a dynamic system: a complex of interacting elements. An important note is that the process of implementation and the analysis

thereof should more often come before the analysis of behaviours and the determinants of behaviour. In applied research, the expertise from the 'real world' practitioners should be used in an early stage to find out whether the answers on research questions really help us in preventing childhood obesity.

Vlaev, I. and P. Dolan (2015). "Action Change Theory: A Reinforcement Learning Perspective on Behavior Change." *Review of General Psychology* 19(1): 69-95.

Traditional theories of behavior change rely mostly on influencing higher-order mental processes as a route to altering deliberate responses, whereas more recent theorizing postulates that interventions can also rely on using contextual cues influencing lower-order processes as a route to changing spontaneous responses. We propose an alternative mechanistic account based on reinforcement learning theory, which utilizes different action control systems in the brain. Therefore, this account works at a different level of analysis and description, which promises to lead to the development of a more general and integrative theory of behavior change. Reward systems generate specific affective states that influence behavior via 3 action controllers. Innate actions are stereotyped evolutionarily determined responses to stimuli. Habitual actions develop through stimulus-response learning without explicit outcome representations. Goal-directed actions are based on an explicit model of the structure of the environment, which utilizes computations of action-outcome contingencies. We describe how these mechanisms for action control parsimoniously explain behavior change theories and techniques.

Vlaev, I., et al. (2016). "The Theory and Practice of "Nudging": Changing Health Behaviors." *Public Administration Review* 76(4): 550-561.

Many of the most significant challenges in health care—such as smoking, overeating, and poor adherence to evidence-based guidelines—will only be resolved if we can influence behavior. The traditional policy tools used when thinking about influencing behavior include legislation, regulation, and information provision. Recently, policy analysts have shown interest in policies that "nudge" people in particular directions, drawing on advances in understanding that behavior is strongly influenced in largely automatic ways by the context within which it is placed. This article considers the theoretical basis for why nudges might work and reviews the evidence in health behavior change. The evidence is structured according to the Mindspace framework for behavior change. The conclusion is that insights from behavioral economics offer powerful policy tools for influencing behavior in health care. This article provides public administration practitioners with an accessible summary of this literature, putting these insights into practical use.

Vlaev, I., et al. (2015). "How behavioural science can improve financial advice services." *Journal of Financial Services Marketing* 20(1): 74-88.

Evidence from the behavioural sciences, notably economics and psychology, has profoundly changed the way policymakers and practitioners view expert advice to consumers. In this article, we take stock of the behavioural science evidence on financial advice and explore its implications for the profession. We organise the evidence in a comprehensive theoretical framework that also serves a practical purpose: the design of behaviour change interventions. We suggest various ways in which financial advisers can use the insights from behavioural science to improve the take-up and effectiveness of their advice. Finally, we discuss ethical and practical considerations for the financial advisor wishing to put behavioural science knowledge to use.

Vogel, J. P., et al. (2016). "Barriers, Facilitators and Priorities for Implementation of WHO Maternal and Perinatal Health Guidelines in Four Lower-Income Countries: A GREAT Network Research Activity." *Plos One* 11(11).

Background Health systems often fail to use evidence in clinical practice. In maternal and perinatal health, the majority of maternal, fetal and newborn mortality is preventable through implementing effective interventions. To meet this challenge, WHO's Department of Reproductive Health and Research partnered with the Knowledge Translation Program at St. Michael's Hospital (SMH), University of Toronto, Canada to establish a collaboration on knowledge translation (KT) in maternal and perinatal health, called the GREAT Network (Guideline-driven, Research priorities, Evidence synthesis, Application of evidence, and Transfer of knowledge). We applied a systematic approach incorporating evidence and theory to identifying barriers and facilitators to implementation of WHO maternal health recommendations in four lower-income countries and to identifying implementation strategies to address these. Methods We conducted a mixed-methods study in Myanmar, Uganda, Tanzania and Ethiopia. In each country, stakeholder surveys, focus group discussions and prioritization exercises were used, involving multiple groups of health system stakeholders (including administrators, policymakers, NGOs, professional associations, frontline healthcare providers and researchers). Results Despite differences in guideline priorities and contexts, barriers identified across countries were often similar. Health system level factors, including health workforce shortages, and need for strengthened drug and equipment procurement, distribution and management systems, were consistently highlighted as limiting the capacity of providers to deliver high-quality care. Evidence-based health policies to support implementation, and improve the knowledge and skills of

healthcare providers were also identified. Stakeholders identified a range of tailored strategies to address local barriers and leverage facilitators. Conclusion This approach to identifying barriers, facilitators and potential strategies for improving implementation proved feasible in these four lower-income country settings. Further evaluation of the impact of implementing these strategies is needed.

Vooijs, M., et al. (2018). "A training programme facilitating guideline use of occupational health professionals: a feasibility study." *Bmc Medical Education* 18.

Background: To evaluate whether a training programme is a feasible approach to facilitate occupational health professionals' (OHPs) use of knowledge and skills provided by a guideline. Methods: Feasibility was evaluated by researching three aspects: 'acceptability', 'implementation' and 'limited efficacy'. Statements on acceptability and implementation were rated by OHPs on 10-point visual analogue scales after following the training programme (T2). Answers were analysed using descriptive statistics. Barriers to and facilitators of implementation were explored through open-ended questions at T2, which were qualitatively analysed. Limited efficacy was evaluated by measuring the level of knowledge and skills at baseline (T0), after reading the guideline (T1) and directly after completing the training programme (T2). Increase in knowledge and skills was analysed using a non-parametric Friedman test and post-hoc Wilcoxon signed rank tests (two-tailed). Results: The 38 OHPs found the training programme acceptable, judging that it was relevant (M: 8, SD: 1), increased their capability (M: 7, SD: 1), adhered to their daily practice (M: 8, SD: 1) and enhanced their guidance and assessment of people with a chronic disease (M: 8, SD: 1). OHPs found that it was feasible to implement the programme on a larger scale (M: 7, SD: 1) but foresaw barriers such as 'time', 'money' and organizational constraints. The reported facilitators were primarily related to the added value of the knowledge and skills to the OHPs' guidance and assessment, and that the programme taught them to apply the evidence in practice. Regarding limited efficacy, a significant increase was seen in OHPs' knowledge and skills over time ($X^2(2) = 53.656$, $p < 0.001$), with the median score improving from 6.3 (T0), 8.3 (T1) and 12.3 (T2). Post-hoc tests indicated a significant improvement between T0 and T1 ($p < 0.001$) and between T1 and T2 ($p < 0.001$). Conclusions: The training programme was found to be a feasible approach to facilitate OHPs' use of knowledge and skills provided by the guideline, from the perspective of OHPs generally (acceptability and implementation) and with respect to their increase in knowledge and skills in particular (limited efficacy).

Voshaar, M., et al. (2016). "Barriers and facilitators to disease-modifying antirheumatic drug use in patients with inflammatory rheumatic diseases: a qualitative theory-based study." *Bmc Musculoskeletal Disorders* 17.

Background: Although disease-modifying anti-rheumatic drugs (DMARDs) are the cornerstone of treatment for inflammatory rheumatic diseases, medication adherence to DMARDs is often suboptimal. Effective interventions to improve adherence to DMARDs are lacking, and new targets are needed to improve adherence. The aim of the present study was to explore patients' barriers and facilitators of optimal DMARD use. These factors might be used as targets for adherence interventions. Methods: In a mixed method study design, patients ($n = 120$) with inflammatory arthritis (IA) completed a questionnaire based on an existing adapted Theoretical Domains Framework (TDF) to identify facilitators and barriers of DMARD use. A subgroup of these patients ($n = 21$) participated in focus groups to provide insights into their facilitators and barriers. The answers to the questionnaires and responses of the focus groups were thematically coded by three researchers independently and subsequently categorized. Results: The barriers and facilitators that were reported by IA patients presented large inter-individual variations. The identified barriers and facilitators could be captured in the following domains based on an adapted TDF: (i) knowledge, (ii) emotions, (iii) attention, memory, and decision processes, (iv) social influences, (v) beliefs about capability, (vi) beliefs about consequences, (vii) motivation and goals, (viii) goal conflict, (ix) environmental context and resources, and (x) skills. Conclusions: Patients with IA have a variety of barriers and facilitators with regard to their DMARD use. All of these barriers and facilitators could be categorized into adapted domains of the TDF. Interventions that address individual facilitators and barriers, based on capability, opportunity, and motivation, are needed to develop strategies for medication adherence that are tailored to individual patient needs.

Vuong, K., et al. (2016). "The experiences of smoking cessation among patients with chronic obstructive pulmonary disease in Australian general practice: a qualitative descriptive study." *Family Practice* 33(6): 715-720.

Background. It is important to understand the experiences surrounding smoking cessation among patients with chronic obstructive pulmonary disease (COPD) to improve the likely success of future smoking cessation programs. Objective. To explore the personal experiences surrounding smoking cessation among general practice patients with COPD. Methods. A purposive sample of 33 general practice patients with COPD, 28 ex-smokers and 5 smokers, participated in the semi-structured telephone interviews. Thematic analysis was conducted using a predominantly deductive approach guided by the Behaviour Change Wheel framework. Results. Three inter-related themes were generated: the motivation, opportunities and capabilities among the participants to quit and maintain smoking cessation.

Most quit attempts occurred without explanation or prior planning, though some attempts were motivated by the participants' family, peers or GP. Internet-based smoking cessation support programs led by general practices and involving the practice nurse were perceived as opportunities to engage in quit attempts. Most participants, both ex-smokers and smokers, demonstrated capacity to engage in multiple quit attempts. However, for many smokers, boredom, mood disturbances, the strong sense of identity as a smoker, peer reinforcement, irritability, cravings, hunger and weight gain limited capability to maintain smoking cessation. Conclusions. Patients with COPD have motivation to quit and have demonstrated capacity to engage in multiple quit attempts. GPs and other primary care practitioners need to recognize the patients' spontaneity around quit attempts and to meet the needs of the individual patient by being ready to offer support for each attempt once the patient has made their decision to quit.

Wade, D., et al. (2018). "Providing psychological support to people in intensive care: development and feasibility study of a nurse-led intervention to prevent acute stress and long-term morbidity." *Bmj Open* 8(7).

Objectives Adverse psychological outcomes, following stressful experiences in critical care, affect up to 50% of patients. We aimed to develop and test the feasibility of a psychological intervention to reduce acute stress and prevent future morbidity. Design A mixed-methods intervention development study, using two stages of the UK Medical Research Council framework for developing and testing complex interventions. Stage one (development) involved identifying an evidence base for the intervention, developing a theoretical understanding of likely processes of change and modelling change processes and outcomes. Stage two comprised two linked feasibility studies. Setting Four UK general adult critical care units. Participants Stage one: former and current patients, and psychology, nursing and education experts. Stage two: current patients and staff. Outcomes Feasibility and acceptability to staff and patients of content and delivery of a psychological intervention, assessed using quantitative and qualitative data. Estimated recruitment and retention rates for a clinical trial. Results Building on prior work, we standardised the preventative, nurse-led Provision Of Psychological support to People in Intensive Care (POPPI) intervention. We devised courses and materials to train staff to create a therapeutic environment, to identify patients with acute stress and to deliver three stress support sessions and a relaxation and recovery programme to them. 127 awake, orientated patients took part in an intervention feasibility study in two hospitals. Patient and staff data indicated the complex intervention was feasible and acceptable. Feedback was used to refine the intervention. 86 different patients entered a separate trial procedures study in two other hospitals, of which 66 (80% of surviving patients) completed questionnaires on post-traumatic stress, depression and health 5months after recruitment. Conclusion The 'POPPI' psychological intervention to reduce acute patient stress in critical care and prevent future psychological morbidity was feasible and acceptable. It was refined for evaluation in a cluster randomised clinical trial.

Wadsworth, E., et al. (2016). "How and Why Do Smokers Start Using E-Cigarettes? Qualitative Study of Vapers in London, UK." *International Journal of Environmental Research and Public Health* 13(7).

The aims of the study were to (1) describe how and why smokers start to vape and what products they use; (2) relate findings to the COM-B theory of behaviour change (three conditions are necessary for behaviour change (B): capability (C), opportunity (O), and motivation (M)); and (3) to consider implications for e-cigarette policy research. Semi-structured interviews (n = 30) were conducted in London, UK, with smokers or ex-smokers who were currently using or had used e-cigarettes. E-cigarette initiation (behaviour) was facilitated by: capability (physical capability to use an e-cigarette and psychological capability to understand that using e-cigarettes was less harmful than smoking); opportunity (physical opportunity to access e-cigarettes in shops, at a lower cost than cigarettes, and to vape in "smoke-free" environments, as well as social opportunity to vape with friends and family); and motivation (automatic motivation including curiosity, and reflective motivation, including self-conscious decision-making processes related to perceived health benefits). The application of the COM-B model identified multiple factors that may lead to e-cigarette initiation, including those that could be influenced by policy, such as price relative to cigarettes and use in smoke-free environments. The effects of these policies on initiation should be further investigated along with the possible moderating/mediating effects of social support.

Waigwa, S., et al. (2018). "Effectiveness of health education as an intervention designed to prevent female genital mutilation/cutting (FGM/C): a systematic review." *Reproductive Health* 15.

Background: Female Genital Mutilation/Cutting (FGM/C) is a harmful practice that violates the human rights of women and girls. Despite global efforts to restrict the practice, there have been few reports on major positive changes to the problem. Health education interventions have been successful in preventing various health conditions and promoting service use. They have also been regarded as promising interventions for preventing FGM/C. The objective of this systematic review is to synthesise findings of studies about effectiveness of health education as an intervention to prevent FGM/C. Methods: The electronic databases searched were MEDLINE, EMBASE, Cochrane library, Web of Science, Psych INFO, CINAHL and ASSIA. Our search included papers published in the English language without date limits. Study

quality was assessed using the Mixed Methods Appraisal Tool (MMAT). A predesigned data recording form was used to extract data from the included studies which were summarised by comparing similar themes. Results: Twelve out of 359 individual studies met our inclusion criteria. Seven studies were quantitative, three were qualitative and two used mixed methods. Six studies tested before and after the interventions, four studies assessed the effectiveness of previous interventions used by different research teams and two studies endorsed the intervention. Four main factors emerged and were associated with facilitating or hindering the effectiveness of health education interventions: sociodemographic factors; socioeconomic factors; traditions and beliefs; and intervention strategy, structure and delivery. Conclusions: It is vital to target factors associated with facilitating or hindering the effectiveness of health education for FGM/C. This increases the possibility of effective, collective change in behaviour and attitude which leads to the sustainable prevention of FGM/C and ultimately the improved reproductive health and well-being of individuals and communities.

Wakida, E. K., et al. (2018). "Barriers and facilitators to the integration of mental health services into primary healthcare: a qualitative study among Ugandan primary care providers using the COM-B framework." *Bmc Health Services Research* 18.

Background Uptake of clinical guideline recommendations into routine practice requires changes in attitudes and behaviors of the health care providers. The World Health Organization (WHO) has heavily invested in public health and health promotion globally by developing policy recommendations to guide clinical practice; however, clinical guidelines are often not applied. The success of the implementation of any guidelines depends on consideration of existing barriers and adequately addressing them. Therefore, exploring the context specific barriers and facilitators affecting the primary care providers (PCPs) in Mbarara district, Uganda may provide a practical way of addressing the identified barriers thus influence the PCPs action towards integration of mental healthcare services into PHC. **Methods** We adopted a theoretical model of behavior change; Capability, Opportunity and Motivation developed to understand behavior (COM-B). This was a cross-sectional study which involved using a semi-structured qualitative interview guide to conduct in-depth interviews with PCP's (clinical officers, nurses and midwives). **Results** Capability - inadequacy in knowledge about mental disorders; more comfortable managing patients with a mental problem diagnosis than making a new one; knowledge about mental health was gained during pre-service training; no senior cadre to consultations in mental health; and burdensome to consult the Uganda Clinical Guidelines (UCG). Opportunity - limited supply of hard copies of the UCG; guidelines not practical for local setting; did not regularly deal with clients having mental illness to foster routine usage of the UCG; no sensitization about the UCG to the intended users; and no cues at the health centers to remind the PCPs to use UCG. Motivation - did not feel self-reliant; not seen the UCG at their health facilities; lack of trained mental health specialists; conflicting priorities; and no regulatory measures to encourage screening for mental health. **Conclusions** Efforts to achieve successful integration of mental health services into PHC need to fit in the context of the implementers; thus the need to adapt the UCG into local context, have cues to enforce implementation, and optimize the available expertise (mental healthcare providers) in the process.

Walburn, J., et al. (2019). "Psychological correlates of adherence to photoprotection in a rare disease: International survey of people with Xeroderma Pigmentosum." *British Journal of Health Psychology* 24(3): 668-686.

Objectives Xeroderma pigmentosum (XP) is an extremely rare genetic disorder (approximately 100 known cases in the United Kingdom), where DNA damage caused by ultraviolet radiation in daylight cannot be repaired. Adherence to photoprotection is essential to prevent skin cancer. We investigated psychological correlates of photoprotection in the XP population of Western Europe and the United States. **Design** Cross-sectional survey of adults with XP and caregivers of patients <16 years and those with cognitive impairment in the United Kingdom, Germany, the United States, and France (n = 156). **Methods** Photoprotection activities to protect the face and body when outdoors; avoidance of going outside during daylight hours; intention; self-efficacy; and social support were assessed using measures developed for this study. Participants answered questions about their illness representations of XP (BIPQ); beliefs about photoprotection (BMQ); automaticity (i.e., without conscious effort) (SRBAI); clinical and demographic characteristics. Ordinal logistic regressions determined factors associated with photoprotection. **Results** One third did not achieve optimal face photoprotection. After controlling for demographic and clinical factors, modifiable correlates of higher photoprotection included greater perceived control of XP, stronger beliefs in necessity and effectiveness of photoprotection, and higher intention. Avoidance of going outside was associated with greater photoprotection concerns, more serious illness consequences, and higher XP-related distress. Greater automaticity and higher self-efficacy were associated with better protection across all outcomes. **Conclusions** Approximately half of all known cases across three European countries participated. Identified modifiable predictors of photoprotection may be targeted by interventions to reduce the incidence of skin cancers in the immediate future, when a treatment breakthrough is unlikely. **Statement of contribution** What is already known on this subject? Adherence to photoprotection in other populations at elevated risk from skin cancer is poor; however, the level in XP is unknown. Research across chronic conditions shows

that adherence to treatment and lifestyle recommendations are influenced by illness perceptions, self-efficacy, and treatment beliefs. Studies on photoprotection conducted with the general population have found that perceived risk, perceptions of ultraviolet radiation (UVR) protection, self-efficacy for the behaviour, and automaticity (behaviours that are enacted with little conscious awareness) are related to better photoprotection. What does this study add? This is the first international survey to examine adherence and its correlates in people with XP (an under-researched group at very high risk of fatal skin cancer). Adherence varies and at least one third have potential for improvement. Perceptions about XP, photoprotection beliefs, self-efficacy, intention, and automaticity were associated with photoprotection of the face and body when outdoors. Negative emotional representations of XP were associated with avoidance of going outside during daylight hours.

Waldorff, F. B., et al. (2016). "Almost half of the Danish general practitioners have negative a priori attitudes towards a mandatory accreditation programme." *Danish Medical Journal* 63(9).

INTRODUCTION: The objective of this study was to analyse Danish general practitioners' (GPs) a priori attitudes and expectations towards a nationwide mandatory accreditation programme. METHODS: This study is based on a nationwide electronic survey comprising all Danish GPs (n = 3,403). RESULTS: A total of 1,906 (56%) GPs completed the questionnaire. In all, 861 (45%) had a negative attitude towards accreditation, whereas 429 (21%) were very positive or positive. The negative attitudes towards accreditation were associated with being older, male and with working in a single-handed practice. A regional difference was observed as well. GPs with negative expectations were more likely to agree that accreditation was a tool meant for external control (odds ratio (OR) = 1.87 (95% confidence interval (CI): 1.18-2.95)), less likely to agree that accreditation was a tool for quality improvement (OR = 0.018 (95% CI: 0.013-0.025)), more likely to agree that it would affect job satisfaction negatively (OR = 21.88 (95% CI: 16.10-29.72)), and they were generally less satisfied with their present job situation (OR = 2.51 (95% CI: 1.85-3.41)). CONCLUSION: Almost half of the GPs had negative attitudes towards accreditation.

Walker, M. F., et al. (2017). "Improving the Development, Monitoring and Reporting of Stroke Rehabilitation Research: Consensus-Based Core Recommendations from the Stroke Recovery and Rehabilitation Roundtable." *Neurorehabilitation and Neural Repair* 31(10-11): 877-884.

Recent reviews have demonstrated that the quality of stroke rehabilitation research has continued to improve over the last four decades but despite this progress, there are still many barriers in moving the field forward. Rigorous development, monitoring and complete reporting of interventions in stroke trials are essential in providing rehabilitation evidence that is robust, meaningful and implementable. An international partnership of stroke rehabilitation experts committed to develop consensus-based core recommendations with a remit of addressing the issues identified as limiting stroke rehabilitation research in the areas of developing, monitoring and reporting stroke rehabilitation interventions. Work exploring each of the three areas took place via multiple teleconferences and a two-day meeting in Philadelphia in May 2016. A total of 15 recommendations were made. To validate the need for the recommendations, the group reviewed all stroke rehabilitation trials published in 2015 (n=182 papers). Our review highlighted that the majority of publications did not clearly describe how interventions were developed or monitored during the trial. In particular, under-reporting of the theoretical rationale for the intervention and the components of the intervention call into question many interventions that have been evaluated for efficacy. More trials were found to have addressed the reporting of interventions recommendations than those related to development or monitoring. Nonetheless, the majority of reporting recommendations were still not adequately described. To progress the field of stroke rehabilitation research and to ensure stroke patients receive optimal evidence-based clinical care, we urge the research community to endorse and adopt our recommendations.

Walker, M. F., et al. (2017). "Improving the development, monitoring and reporting of stroke rehabilitation research: Consensus-based core recommendations from the Stroke Recovery and Rehabilitation Roundtable." *International Journal of Stroke* 12(5): 472-479.

Recent reviews have demonstrated that the quality of stroke rehabilitation research has continued to improve over the last four decades but despite this progress, there are still many barriers in moving the field forward. Rigorous development, monitoring and complete reporting of interventions in stroke trials are essential in providing rehabilitation evidence that is robust, meaningful and implementable. An international partnership of stroke rehabilitation experts committed to develop consensus-based core recommendations with a remit of addressing the issues identified as limiting stroke rehabilitation research in the areas of developing, monitoring and reporting stroke rehabilitation interventions. Work exploring each of the three areas took place via multiple teleconferences and a two-day meeting in Philadelphia in May 2016. A total of 15 recommendations were made. To validate the need for the recommendations, the group reviewed all stroke rehabilitation trials published in 2015 (n=182 papers). Our review highlighted that the majority of

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Wallace, S. J., et al. (2019). "A how-to guide to aphasia services: celebrating Professor Linda Worrall's contribution to the field." *Aphasiology* 33(7): 888-902.

Background: This article recognises Professor Linda Worrall's contribution to aphasiology and discusses research themes which have grown from her work. Aims: To review, summarise, and discuss literature relating to four themes which have emerged from the work of Professor Worrall: (1) Research capacity building; (2) Implementation of research evidence in clinical practice; (3) Meaningful outcome measurement; and (4) Improvement of psychological and emotional outcomes. Main contribution: A review of the literature, with examples of practical applications. Conclusions: The work of Professor Worrall has greatly influenced the field of aphasia; her legacy is the research capacity she has built in Australia and around the world.

Walsh, H., et al. (2018). "Missed opportunities: a qualitative study of views and experiences of smoking cessation amongst adults in substance misuse treatment." *Addiction Research & Theory* 26(6): 507-513.

Background: Smoking rates amongst people with a substance use disorder are disproportionately high. This study aimed to explore views and experiences of smoking and smoking cessation amongst people in substance misuse treatment in order to uncover novel perspectives which could assist in addressing this disparity. Methods: A qualitative research design was employed, using individual semi-structured interviews. The sample comprised 15 smokers and ex-smokers with a history of drug misuse who were recruited from four inner city substance misuse services. Interviews were audio recorded and analysed using the Framework method. Results: Several themes were uncovered, including the influence of the environment, peers and staff on motivation to quit and quit attempts; a complex link between smoking and substance use and the impact of substance misuse treatment experiences on attitudes towards smoking cessation. A number of missed opportunities were revealed, as well as unique factors affecting access to smoking cessation treatment for this population, demonstrating support for provision of smoking cessation treatment within both generic and specialist health services. Conclusions: People accessing substance misuse treatment seek to apply their learning from quitting illicit substances to smoking cessation. However, despite the availability of smoking cessation treatment including pharmacotherapy within substance misuse services and interest from service users, quit attempts were not encouraged or supported by substance misuse staff. Opportunities to quit within such services are minimal, inconsistent and not aligned or sustained across services.

Walsh, H., et al. (2017). "Commentary on Popova et al. (2017): Co-used and co-administered tobacco and cannabis (marijuana) require further investigation." *Addiction* 112(10): 1830-1831.

Walsh, J. C., et al. (2016). "An mHealth Intervention Using a Smartphone App to Increase Walking Behavior in Young Adults: A Pilot Study." *Jmir Mhealth and Uhealth* 4(3).

Background: Physical inactivity is a growing concern for society and is a risk factor for cardiovascular disease, obesity, and other chronic diseases. Objective: This study aimed to determine the efficacy of the Accupedo-Pro Pedometer mobile phone app intervention, with the goal of increasing daily step counts in young adults. Methods: Mobile phone users (n=58) between 17-26 years of age were randomized to one of two conditions (experimental and control). Both groups downloaded an app that recorded their daily step counts. Baseline data were recorded and followed-up at 5 weeks. Both groups were given a daily walking goal of 30 minutes, but the experimental group participants were told the equivalent goal in steps taken, via feedback from the app. The primary outcome was daily step count between baseline and follow-up. Results: A significant time x group interaction effect was observed for daily step counts (P=.04). Both the experimental (P<.001) and control group (P=.03) demonstrated a significant increase in daily step counts, with the experimental group walking an additional 2000 steps per day. Conclusions: The results of this study demonstrate that a mobile phone app can significantly increase physical activity in a young adult sample by setting specific goals, using self-monitoring, and feedback.

Walsh, J. C. and J. M. Groarke (2019). "Integrating Behavioral Science With Mobile (mHealth) Technology to Optimize Health Behavior Change Interventions." *European Psychologist* 24(1): 38-48.

Recent rapid advances in technology have provided us with a golden opportunity to effect change in health-related outcomes for chronic disease by employing digital technologies to encourage and support behavior change to promote and maintain health. Behavior change theories are the bedrock to developing evidence-based mHealth interventions. Digital technologies enable researchers to empirically test behavioral theories in "real-world" contexts using behavior change techniques (Hekler, Michie, et al., 2016). According to the European Commission (2014) among the world's population of 7 billion, there are over 5 billion mobile devices and over 90% of the users have their mobile device near them 24 hr a day. This provides a huge opportunity for behavior change and one that health psychologists have already begun to address. However, while a novel and exciting area of research, many early studies have been criticized for lacking a strong evidence base in both design and implementation. The European Commission conducted a public consultation in 2016 on the issues surrounding the use of mHealth tools (e.g., apps) and found a lack of global standards was a significant barrier. Recently, the World Health Organization (WHO) mHealth Technical Evidence Review Group developed the mHealth evidence reporting and assessment (mERA) checklist for specifying the content of mHealth interventions. Health psychologists play a key role in developing mHealth interventions, particularly in the management of chronic disease. This article discusses current challenges facing widespread integration of mobile technology into self-management of chronic disease including issues around security and regulation, as well as investigating mechanisms to overcoming these barriers.

Walsh, K. A., et al. (2017). "Influences on Decision-Making Regarding Antipsychotic Prescribing in Nursing Home Residents With Dementia: A Systematic Review and Synthesis of Qualitative Evidence." *Journal of the American Medical Directors Association* 18(10).

Background: Antipsychotic prescribing is prevalent in nursing homes for the management of behavioral and psychological symptoms of dementia (BPSD), despite the known risks and limited effectiveness. Many studies have attempted to understand this continuing phenomenon, using qualitative research methods, and have generated varied and sometimes conflicting findings. To date, the totality of this qualitative evidence has not been systematically collated and synthesized. **Aims:** To synthesize the findings from individual qualitative studies on decision-making and prescribing behaviors for antipsychotics in nursing home residents with dementia, with a view to informing intervention development and quality improvement in this field. **Methods:** A systematic review and synthesis of qualitative evidence was conducted (PROSPERO protocol registration CRD42015029141). Six electronic databases were searched systematically from inception through July 2016 and supplemented by citation, reference, and gray literature searching. Studies were included if they used qualitative methods for both data collection and analysis, and explored antipsychotic prescribing in nursing homes for the purpose of managing BPSD. The Critical Appraisal Skills Program assessment tool was used for quality appraisal. A meta-ethnography was conducted to synthesize included studies. The Confidence in the Evidence from Reviews of Qualitative research approach was used to assess the confidence in individual review findings. All stages were conducted by at least 2 independent reviewers. **Results:** Of 1534 unique records identified, 18 met the inclusion criteria. Five key concepts emerged as influencing decision-making: organizational capacity; individual professional capability; communication and collaboration; attitudes; regulations and guidelines. A "line of argument" was synthesized and a conceptual model constructed, comparing this decision-making process to a dysfunctional negative feedback loop. Our synthesis indicates that when all stakeholders come together to communicate and collaborate as equal and empowered partners, this can result in a successful reduction in inappropriate antipsychotic prescribing. **Conclusions:** Antipsychotic prescribing in nursing home residents with dementia occurs in a complex environment involving the interplay of various stakeholders, the nursing home organization, and external influences. To improve the quality of antipsychotic prescribing in this cohort, a more holistic approach to BPSD management is required. Although we have found the issue of antipsychotic prescribing has been extensively explored using qualitative methods, there remains a need for research focusing on how best to change the prescribing behaviors identified. (C) 2017 AMDA - The Society for Post-Acute and Long-Term Care Medicine.

Wang, M., et al. (2017). "The reporting quality of abstracts of stepped wedge randomized trials is suboptimal: A systematic survey of the literature." *Contemporary Clinical Trials Communications* 8: 1-10.

Background: The stepped wedge trial (SWT) design is a type of the randomized clinical trial (RCT) design in which clusters or individuals are randomly and sequentially crossed over from control to intervention over a number of time periods. Trials using SWT design have become increasingly popular in medical, behavioral and social sciences research. Therefore, complete and transparent reporting of these studies is crucial. In particular, the quality of the abstracts of their reports is important because these may be the only accessible sources for their results. **Objective:** The aims of this survey were to evaluate the reporting quality of SWT abstracts and to identify factors contributing to better reporting quality. **Methods:** We performed literature searches to identify relevant articles in English published from November 1987 to October 2016 in the following electronic databases: Medline, Embase, Web of Science, CINAHL, and PsycINFO. At least two reviewers examined the quality of abstract reporting using the 17-item CONSORT (CONSolidated Standards

Of Reporting Trials) Extension for Abstracts tool. Poisson regression models for incidence rate ratio (IRR) were used to identify factors associated with reporting quality (e.g., CONSORT endorsement, the number of authors, abstract format). Results: A total of 92 eligible articles were identified. Only 6 from the 17 items were reported in more than 80% of the articles (e.g., the statement of conclusions, contact details for the corresponding author). In the multivariable analysis, the year of publication since 2008 (IRR: 1.16; 95% confidence interval (CI): 1.02, 1.33), journal endorsement of the CONSORT Statement (IRR: 1.15; 95% CI: 1.01, 1.31), and multiple authorship (IRR 1.13, 95% CI: 1.01, 1.27) were significantly associated with better reporting quality. Conclusion: The quality of reporting of SWT abstracts was suboptimal, although there have been some significant improvements since 2008. Endorsement of the CONSORT Statement by journals is an essential element of improvement strategies. Also, multiple authorship is significantly associated with better quality of abstract reporting.

Wang, M., et al. (2018). "A Systematic Survey of Control Groups in Behavioral and Social Science Trials." *Research on Social Work Practice* 28(5): 538-545.

Behavioral and social sciences randomized controlled trials (BSSTs) have a significant role in life sciences. Choosing an appropriate control or comparator group for BSSTs is critical, to provide true intervention effects. The objective of this study was to determine the types of control groups used in BSSTs, and the rationale provided to justify these choices. We conducted a systematic survey of BSST protocols published between January 2012 and October 2016 in the Cochrane Library and Medline databases. We randomly selected 200 protocols. The study selection and data extraction were performed independently in duplicate. The most frequent control groups were active concurrent (97/200, 48.5%), and no treatment concurrent controls (88/200, 44.0%). The majority of studies (71.5%) did not provide justification for comparators choice. We concluded that BSSTs trials compare interventions to active and no treatment controls however the majority of trials lacked rationale for the selection of the study comparator.

Ward, D. S., et al. (2013). "Expert and Stakeholder Consensus on Priorities for Obesity Prevention Research in Early Care and Education Settings." *Childhood Obesity* 9(2): 116-124.

Background: Early childhood is a formative period for many weight-related behaviors (diet and activity), but little obesity prevention research targeting this age group has been conducted. Early care and education settings are a useful avenue for interventions targeting young children, but the limited research provides insufficient evidence upon which to base policy decisions, practice guidelines, or mobilized efforts to improve healthy eating and physical activity, and ultimately healthy weight development in these settings. Methods: In September of 2011, prominent researchers, young investigators, and leaders in early care and education came together to examine past research and to explore challenges and priorities for future research on healthy weight development in children aged 2-5 years. During this meeting, experts presented and attendees discussed key issues around measurement of diet and physical activity, policy and environment measurement, intervention approaches, policy research, and capacity development. Following the meeting, attendees were invited to participate in an online voting exercise to select top research priorities. Results: A total of 64 research issues were identified, and voting narrowed this list to 24 issues. Highest-rated issues included: Assessment of the quality of children's meals and snacks, use of financial incentives, interventions that include healthcare providers, the role of screen time, and need for multilevel interventions. Conclusions: The presentations within this meeting highlighted the importance of research to address the unique challenges for those working in early care and education settings. Expert and stakeholder consensus of priorities identified significant and innovative areas where future obesity prevention research efforts should be focused.

Ward, G., et al. (2017). "Evaluation of a web-based app to assist home-hazard modification in falls prevention." *British Journal of Occupational Therapy* 80(12): 735-744.

Introduction: Given the impact falls can have on older people and their families, many health and social care services are focused on preventing falls and implementing interventions to reduce future falls. FallCheck is a web app that supports identification of home-hazards and directs users towards self-management strategies to reduce risk of falling. Method: A survey by clinical experts of a beta version of FallCheck was conducted, producing quantitative and qualitative data including issues and attributes identified by respondents. Thirty-six individuals signed up to take part in the study, and 27 respondents took part in the final evaluation survey. Findings: Testing by health and social care professionals found there is scope for using the app as a digital self-assessment tool by people at risk of falls. It has further potential as an effective tool to support environmental/behavioural change to reduce risk of falls. Conclusion: FallCheck was developed from a sound evidence-base to support home-hazard modification as an effective intervention component within a multifactorial intervention to prevent falls. Health and social care professionals found it had good acceptability for use in practice, justifying further testing of the usability and effectiveness of the app in supporting behavioural changes and environmental modifications with people at risk of falling and carers.

Warner, L. M., et al. (2016). "Revisiting self-regulatory techniques to promote physical activity in older adults: null-findings from a randomised controlled trial." *Psychology & Health* 31(10): 1145-1165.

Objective. A randomised controlled trial (RCT) was conducted to evaluate a three-hour face-to-face physical activity (PA) intervention in community-dwelling older German adults with four groups: The intervention group (IG) received behaviour change techniques (BCTs) based on the health action process approach plus a views-on-ageing component to increase PA. The second intervention group 'planning' (IGpl) contained the same BCTs, only substituted the views-on-ageing component against an additional planning task. An active control group received the same BCTs, however, targeting volunteering instead of PA. A passive control group (PCG) received no intervention. **Design.** The RCT comprised 5 time-points over 14 months in N=310 participants aged 64+. **Main outcome measures.** Self-reported as well as accelerometer-assessed PA. **Results.** Neither PA measure increased in the IG as compared to the other groups at any point in time. Bayes analyses supported these null-effects. **Conclusion.** A possible explanation for this null-finding in line with a recent meta-analysis is that some self-regulatory BCTs may be ineffective or even negatively associated with PA in interventions for older adults as they are assumed to be less acceptable for older adults. This interpretation was supported by observed reluctance to participate in self-regulatory BCTs in the current study.

Warsi, S., et al. (2019). "Using behaviour change theory to train health workers on tobacco cessation support for tuberculosis patients: a mixed-methods study in Bangladesh, Nepal and Pakistan." *Bmc Health Services Research* 19.

Background Low- and middle-income countries (LMICs) are disproportionately impacted by interacting epidemics of tuberculosis (TB) and tobacco consumption. Research indicates behavioural support delivered by health workers effectively promotes tobacco cessation. There is, however, a paucity of training to support LMIC health workers deliver effective tobacco cessation behavioural support. The TB and Tobacco Consortium undertook research in South Asia to understand factors affecting TB health workers' delivery of tobacco cessation behavioural support, and subsequently developed a training package for LMICs. **Methods** Using the capability, opportunity, and motivation as determinants of behaviour (COM-B) framework to understand any issues facing health worker delivery of behaviour support, we analysed 25 semi-structured interviews and one focus group discussion with TB health workers, facility in-charges, and national tuberculosis control programme (NTP) staff members in each country. Results were integrated with findings of an adapted COM-B questionnaire on health worker confidence in tobacco cessation support delivery, administered to 36 TB health workers. Based on findings, we designed a guide and training programme on tobacco cessation support for health workers. **Results** Qualitative results highlighted gaps in the majority of health workers' knowledge on tobacco cessation and TB and tobacco interaction, inadequate training on patient communication, insufficient resources and staff support, and NTPs' non-prioritization of tobacco cessation in all three countries. Questionnaire results reiterated the knowledge deficits and low confidence in patient communication. Participants suggested strengthening knowledge, skills, and competence through training and professional incentives. Based on findings, we developed an interactive two-day training and TB health worker guide adaptable for LMICs, focusing on evidence of best practice on TB and tobacco cessation support, communication, and rapport building with patients. **Conclusions** TB health workers are essential in addressing the dual burden of TB and tobacco faced by many LMICs. Factors affecting their delivery of tobacco cessation support can be identified using the COM-B framework, and include issues such as individuals' knowledge and skills, as well as structural barriers like professional support through monitoring and supervision. While structural changes are needed to tackle the latter, we have developed an adaptable and engaging health worker training package to address the former that can be delivered in routine TB care. **Trial registration** ISRCTN43811467.

Wastling, T., et al. (2018). "Design for Circular Behaviour: Considering Users in a Circular Economy." *Sustainability* 10(6).

In a linear economy, a product is manufactured and sold to a customer. Then, little concern is given to what the user actually does with it when they have it. However, in a circular economy where the aim is to circulate products at their highest level of value, the customer's behaviour can become an important part of the system. Circular design strategies have tended to focus on the physical aspects of a product (e.g., disassembly, material selection), but the design of products and services can also have an influence on user behaviour and, to date, this aspect of circular design has not been fully explored. This project aims to define what key user behaviours are required for circular business models to work and to outline how design can enable these circular behaviours'. This research project consists of a literature review, case study analysis and expert interviews with practitioners. A theoretical framework for designing products and services to encourage circular behaviour is developed. This work provides an initial step towards a better understanding of the user's role in the transition to a circular economy as well as a preliminary model for how design for behaviour change strategies could be implemented in this context.

Watkins, K., et al. (2016). "Post hoc evaluation of a common-sense intervention for asthma management in community pharmacy." *Bmj Open* 6(11).

Objectives: The aim was to evaluate a common-sense, behavioural change intervention to implement clinical guidelines for asthma management in the community pharmacy setting. **Design:** The components of the common-sense intervention were described in terms of categories and dimensions using the Intervention Taxonomy (ITAX) and Behaviour Change Techniques (BCTs) using the Behaviour Change Wheel (BCW), Capability, Opportunity and Motivation-Behaviour (COM-B) System and Behaviour Change Techniques Taxonomy (BCTTv1). The retrospective application of these existing tools facilitated evaluation of the mechanism, fidelity, logistics and rationale of the common-sense intervention. **Intervention:** The initial intervention study was conducted in 336 community pharmacies in the metropolitan area of Perth, Western Australia. Small-group workshops were conducted in 25 pharmacies; 162 received academic detailing and 149 acted as controls. The intervention was designed to improve pharmacy compliance with guidelines for a nonprescription supply of asthma reliever medications. **Results:** Retrospective application of ITAX identified mechanisms for the short-acting beta agonists intervention including improving knowledge, behavioural skills, problem-solving skills, motivation and self-efficacy. All the logistical elements were considered in the intervention design but the duration and intensity of the intervention was minimal. The intervention was delivered as intended (as a workshop) to 13.4% of participants indicating compromised fidelity and significant adaptation. Retrospective application of the BCW, COMB system and BCTTv1 identified 9 different behaviour change techniques as the rationale for promoting guideline-based practice change. **Conclusions:** There was a sound rationale and clear mechanism for all the components of the intervention but issues related to logistics, adaptability and fidelity might have affected outcomes. Small group workshops could be a useful implementation strategy in community pharmacy, if logistical issues can be overcome and less adaptation occurs. Duration, intensity and reinforcement need consideration for successful wider implementation. Further qualitative evaluations, triangulation of research and evaluations across interventions should be used to provide a greater understanding of unresolved issues.

Watkins, K., et al. (2015). "Effectiveness of implementation strategies for clinical guidelines to community pharmacy: a systematic review." *Implementation Science* 10.

Background: The clinical role of community pharmacists is expanding, as is the use of clinical guidelines in this setting. However, it is unclear which strategies are successful in implementing clinical guidelines and what outcomes can be achieved. The aim of this systematic review is to synthesise the literature on the implementation of clinical guidelines to community pharmacy. The objectives are to describe the implementation strategies used, describe the resulting outcomes and to assess the effectiveness of the strategies. **Methods:** A systematic search was performed in six electronic databases (Medline, EMBASE, CINAHL, Web of Science, Informit, Cochrane Library) for relevant articles. Studies were included if they reported on clinical guidelines implementation strategies in the community pharmacy setting. Two researchers completed the full-search strategy, data abstraction and quality assessments, independently. A third researcher acted as a moderator. Quality assessments were completed with three validated tools. A narrative synthesis was performed to analyse results. **Results:** A total of 1937 articles were retrieved and the titles and abstracts were screened. Full-text screening was completed for 36 articles resulting in 19 articles (reporting on 22 studies) included for review. Implementation strategies were categorised according to a modified version of the EPOC taxonomy. Educational interventions were the most commonly utilised strategy ($n = 20$), and computerised decision support systems demonstrated the greatest effect ($n = 4$). Most studies were multifaceted and used more than one implementation strategy ($n = 18$). Overall outcomes were moderately positive ($n = 17$) but focused on process ($n = 22$) rather than patient ($n = 3$) or economic outcomes ($n = 3$). Most studies ($n = 20$) were rated as being of low methodological quality and having low or very low quality of evidence for outcomes. **Conclusions:** Studies in this review did not generally have a well thought-out rationale for the choice of implementation strategy. Most utilised educational strategies, but the greatest effect on outcomes was demonstrated using computerised clinical decision support systems. Poor methodology, in the majority of the research, provided insufficient evidence to be conclusive about the best implementation strategies or the benefit of clinical guidelines in this setting. However, the generally positive outcomes across studies and strategies indicate that implementing clinical guidelines to community pharmacy might be beneficial. Improved methodological rigour in future research is required to strengthen the evidence for this hypothesis.

Watt, R. G., et al. (2014). "Methodological development of an exploratory randomised controlled trial of an early years' nutrition intervention: the CHERRY programme (Choosing Healthy Eating when Really Young)." *Maternal and Child Nutrition* 10(2): 280-294.

Good nutrition in the early years of life is vitally important for a child's development, growth and health. Children's diets in the United Kingdom are known to be poor, particularly among socially disadvantaged groups, and there is a need for timely and appropriate interventions that support parents to improve the diets of young children. The Medical Research Council has highlighted the importance of conducting developmental and exploratory research prior to undertaking full-scale trials to evaluate complex interventions, but have provided very limited detailed guidance on the conduct of these initial phases of research. This paper describes the initial developmental stage and the conduct of

an exploratory randomised controlled trial undertaken to determine the feasibility and acceptability of a family-centred early years' nutrition intervention. Choosing Healthy Eating when Really Young (CHERRY) is a programme for families with children aged 18 months to 5 years, delivered in children's centres in one urban (Islington) and one rural (Cornwall) location in the United Kingdom. In the development stage, a mixed-methods approach was used to investigate the nature of the problem and options for support. A detailed review of the evidence informed the theoretical basis of the study and the creation of a logic model. In the feasibility and pilot testing stage of the exploratory trial, 16 children's centres, with a sample of 394 families were recruited onto the study. We hope that the methodology, which we present in this paper, will inform and assist other researchers in conducting community-based, exploratory nutrition research in early years settings.

Weatherburn, P., et al. (2017). "Motivations and values associated with combining sex and illicit drugs ('chemsex') among gay men in South London: findings from a qualitative study." *Sexually Transmitted Infections* 93(3).

Objectives There is considerable public health concern about the combining of sex and illicit drugs (chemsex) among gay men. With a view to inform supportive therapeutic and clinical interventions, we sought to examine the motivations for engaging in chemsex among gay men living in South London. **Methods** Community advertising recruited 30 gay men for qualitative semi-structured interview. Aged between 21 and 53 years, all lived in South London in the boroughs of Lambeth, Southwark and Lewisham and all had combined crystal methamphetamine, mephedrone and/or gamma-hydroxybutyric acid/gamma-butyrolactone with sex in the past 12 months. Transcripts were subjected to a thematic analysis. **Results** We broadly distinguished two groups of reasons for combining sex and drugs, within which we described eight distinct motivations. The first major group of motivations for combining drugs with sex was that drugs provide the means by which men can have the sex they desire by increasing libido, confidence, disinhibition and stamina. The second major group of motivations for chemsex was that drugs enhance the qualities of the sex that men value. Drugs made other men seem more attractive, increased physical sensations, intensified perceptions of intimacy and facilitated a sense of sexual adventure. **Conclusion** Analysis revealed that sexualised drug use provides both motivation and capability to engage in the kinds of sex that some gay men value: sex that explores and celebrates adventurism. Those services providing (talking) interventions to men engaging in chemsex should consider these benefits of sexualised drug use alongside the harms arising.

Webb, J., et al. (2016). "Increasing the frequency of physical activity very brief advice for cancer patients. Development of an intervention using the behaviour change wheel." *Public Health* 133: 45-56.

Background: Being physically active has multiple benefits for cancer patients. Despite this only 23% are active to the national recommendations and 31% are completely inactive. A cancer diagnosis offers a teachable moment in which patients might be more receptive to lifestyle changes. Nurses are well placed to offer physical activity advice, however, only 9% of UK nurses involved in cancer care talk to all cancer patients about physical activity. A change in the behaviour of nurses is needed to routinely deliver physical activity advice to cancer patients. As recommended by the Medical Research Council, behavioural change interventions should be evidenced-based and use a relevant and coherent theoretical framework to stand the best chance of success. **Objective:** This paper presents a case study on the development of an intervention to improve the frequency of delivery of very brief advice (VBA) on physical activity by nurses to cancer patients, using the Behaviour Change Wheel (BCW). **Method:** The eight composite steps outlined by the BCW guided the intervention development process. An iterative approach was taken involving key stakeholders (n = 45), with four iterations completed in total. This was not defined a priori but emerged during the development process. **Results:** A 60 min training intervention, delivered in either a face-to-face or online setting, with follow-up at eight weeks, was designed to improve the capability, opportunity and motivation of nurses to deliver VBA on physical activity to people living with cancer. This intervention incorporates seven behaviour change techniques of goal setting coupled with commitment; instructions on how to perform the behaviour; salience of the consequences of delivering VBA; a demonstration on how to give VBA, all delivered via a credible source with objects added to the environment to support behavioural change. **Conclusion:** The BCW is a time consuming process, however, it provides a useful and comprehensive framework for intervention development and greater control over intervention replication and evaluation. (C) 2016 The Authors. Published by Elsevier Ltd.

Webb, J., et al. (2016). "Increasing the frequency of physical activity very brief advice by nurses to cancer patients. A mixed methods feasibility study of a training intervention." *Public Health* 139: 121-133.

Objectives: To examine the impact, acceptability, practicability and implementation of a training intervention, designed using the Behaviour Change Wheel, on the delivery of very brief advice on physical activity, by nurses to cancer patients. **Study design:** A mixed methods feasibility study. **Method:** A purposeful sample of nurses (n = 62) were recruited across two delivery arms, face-to-face (n = 55) and online (n = 7). Frequency of delivery of physical activity advice was collected at baseline with follow-up at 12 weeks. The 'capability, opportunity and motivation' of nurses to deliver very

brief advice was measured via questionnaire. Semi structured phone interviews (n = 14) were completed and analyzed thematically. A cost consequence analysis was undertaken. Results: The intervention improved the 'capability, opportunity and motivation' of nurses resulting in a change in knowledge, attitudes and beliefs towards physical activity. The intervention was both acceptable and practical. Face-to-face was the preferred mode of delivery, however there was also value in the online option. The cost of delivery per participant was 33.87 for face-to-face delivery, and 103.83 for online delivery inflated due to low recruitment numbers. A significant improvement was seen in delivery of very brief advice at 12 weeks ($Z = 4.39$, $P <= 0.01$). Conclusion: The intervention is acceptable, practical and improves delivery of very brief advice on physical activity by nurses to cancer patients in the short-term. Both face-to-face and online delivery should be considered. (C) 2016 The Author(s). Published by Elsevier Ltd on behalf of The Royal Society for Public Health. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Webster, R., et al. (2016). "Increasing condom use in heterosexual men: development of a theory-based interactive digital intervention." *Translational Behavioral Medicine* 6(3): 418-427.

Increasing condom use to prevent sexually transmitted infections is a key public health goal. Interventions are more likely to be effective if they are theory- and evidence based. The Behaviour Change Wheel (BCW) provides a framework for intervention development. To provide an example of how the BCW was used to develop an intervention to increase condom use in heterosexual men (the MenSS website), the steps of the BCW intervention development process were followed, incorporating evidence from the research literature and views of experts and the target population. Capability (e.g. knowledge) and motivation (e.g. beliefs about pleasure) were identified as important targets of the intervention. We devised ways to address each intervention target, including selecting interactive features and behaviour change techniques. The BCW provides a useful framework for integrating sources of evidence to inform intervention content and deciding which influences on behaviour to target.

Webster, R., et al. (2015). "Defining the Content of an Online Sexual Health Intervention: The MenSS Website." *Jmir Research Protocols* 4(3).

Background: Health promotion and risk reduction are essential components of sexual health care. However, it can be difficult to prioritize these within busy clinical services. Digital interventions may provide a new method for supporting these. Objective: The MenSS (Men's Safer Sex) website is an interactive digital intervention developed by a multidisciplinary team, which aims to improve condom use in men who have sex with women (MSW). This paper describes the content of this intervention, and the rationale for it. Methods: Content was informed by a literature review regarding men's barriers to condom use, workshops with experts in sexual health and technology (N=16) and interviews with men in sexual health clinics (N=20). Data from these sources were analyzed thematically, and synthesized using the Behavior Change Wheel framework. Results: The MenSS intervention is a website optimized for delivery via tablet computer within a clinic waiting room setting. Key targets identified were condom use skills, beliefs about pleasure and knowledge about risk. Content was developed using behavior change techniques, and interactive website features provided feedback tailored for individual users. Conclusions: This paper provides a detailed description of an evidence-based interactive digital intervention for sexual health, including how behavior change techniques were translated into practice within the design of the MenSS web site. Triangulation between a targeted literature review, expert workshops, and interviews with men ensured that a range of potential influences on condom use were captured.

Weckowska, D. M., et al. (2017). "Managing the transition to open access publishing: a psychological perspective." *Prometheus* 35(2): 111-135.

To manage the transition to the open access (OA) model of scholarly publishing, we need to understand better what enables, encourages and inhibits the adoption of OA publishing among scientists, and to appreciate individual differences within disciplines. The study adopts a psychological perspective to elucidate motivations, capabilities and opportunities for OA publishing among bioscientists in the UK. To identify differences within the discipline, bioscientists with starkly different past practices for disclosing research data and technologies were interviewed. The sampled bioscientists face similar obstacles and enablers in their physical environment, but that their motivations and experience of their social environments differ. One group is strongly motivated by their moral convictions and beliefs in benefits of OA and feels peer pressure related to OA. The other group expresses fewer pro-OA beliefs, holds beliefs demotivating OA publishing, but feels pressure from research funders to adopt it. The former group makes more frequent use of OA publishing, which suggests that only those with strong motivations will work to overcome the social and physical obstacles. The individual differences within the discipline suggest that bioscientists are unlikely to respond to OA policies in the same way and, thus, the appropriateness of one-size-fits-all OA policies is questioned.

Weir, K., et al. (2018). "Decision-Making Preferences and Deprescribing: Perspectives of Older Adults and Companions About Their Medicines." *Journals of Gerontology Series B-Psychological Sciences and Social Sciences* 73(7): E98-E107.

Objectives: Polypharmacy in the older population is increasing- and can be harmful. It can be safe to reduce or carefully cease medicines (deprescribing) but a collaborative approach between patient and doctor is required. This study explores decision-making about polypharmacy with older adults and their companions. **Method:** Semi-structured interviews were conducted with 30 older people (aged 75+ years, taking multiple medicines) and 15 companions. **Framework analysis** was used to identify qualitative themes. **Results:** Participants varied considerably in attitudes towards medicines, preferences for involvement in decision-making, and openness to deprescribing. Three types were identified. Type 1 held positive attitudes towards medicines, and preferred to leave decisions to their doctor. Type 2 voiced ambivalent attitudes towards medicines, preferred a proactive role, and were open to deprescribing. Type 3 were frail, perceived they lacked knowledge about medicines, and deferred most decisions to their doctor or companion. **Discussion:** This study provides a novel typology to describe differences between older people who are happy to take multiple medicines, and those who are open to deprescribing. To enable shared decision-making, prescribers need to adapt their communication about polypharmacy based on their patients' attitudes to medicines and preferences for involvement in decisions.

Weiss, C. H., et al. (2016). "An Official American Thoracic Society Research Statement: Implementation Science in Pulmonary, Critical Care, and Sleep Medicine." *American Journal of Respiratory and Critical Care Medicine* 194(8): 1015-1025.

Background: Many advances in health care fail to reach patients. Implementation science is the study of novel approaches to mitigate this evidence-to-practice gap. **Methods:** The American Thoracic Society (ATS) created a multidisciplinary ad hoc committee to develop a research statement on implementation science in pulmonary, critical care, and sleep medicine. The committee used an iterative consensus process to define implementation science and review the use of conceptual frameworks to guide implementation science for the pulmonary, critical care, and sleep community and to explore how professional medical societies such as the ATS can promote implementation science. **Results:** The committee defined implementation science as the study of the mechanisms by which effective health care interventions are either adopted or not adopted in clinical and community settings. The committee also distinguished implementation science from the act of implementation. Ideally, implementation science should include early and continuous stakeholder involvement and the use of conceptual frameworks (i.e., models to systematize the conduct of studies and standardize the communication of findings). Multiple conceptual frameworks are available, and we suggest the selection of one or more frameworks on the basis of the specific research question and setting. Professional medical societies such as the ATS can have an important role in promoting implementation science. **Recommendations** for professional societies to consider include: unifying implementation science activities through a single organizational structure, linking front-line clinicians with implementation scientists, seeking collaborations to prioritize and conduct implementation science studies, supporting implementation science projects through funding opportunities, working with research funding bodies to set the research agenda in the field, collaborating with external bodies responsible for health care delivery, disseminating results of implementation science through scientific journals and conferences, and teaching the next generation about implementation science through courses and other media. **Conclusions:** Implementation science plays an increasingly important role in health care. Through support of implementation science, the ATS and other professional medical societies can work with other stakeholders to lead this effort.

Welch, D., et al. (2019). "Hearing-health intervention for nightclub staff." *Health Education Journal* 78(3): 273-287.

Objective: Sound levels in nightclubs are dangerously high. We administered the Dangerous Decibels hearing-health intervention to nightclub staff to test its efficacy. **Design:** In a single group, repeated measures were taken before training, a week after training and at 3 months after training. **Setting:** A nightclub in the city of Auckland, New Zealand. **Method:** We delivered training to 20 people who work in nightclubs: bar staff, disc jockeys (DJs), security staff and police. We assessed supports and barriers towards hearing-health behaviour, knowledge, attitudes and self-reported behaviour at the three time points. **Results:** The ratio of supports to barriers for good hearing-health behaviour improved 1 week after training and continued to improve at 3 months. Participants' knowledge increased after training and was maintained 3 months later. Attitudes and self-reported behaviour did not change. **Conclusion:** The continued improvement in supports-to-barriers ratio at 3 months post-training has not been observed previously and may reflect a change in participants' thinking as a result of the intervention. The lack of change in self-reported behaviour implies that the effect of acculturation to loud music in nightclubs was not wholly overcome.

Wenke, R., et al. (2019). "Factors that influence the sustainability of structured allied health journal clubs: a qualitative study." *Bmc Medical Education* 19.

Background Structured journal clubs are a widely used tool to promote evidence-based practice in health professionals, however some journal clubs (JC) are more effectively sustained than others. To date, little research has provided insights into factors which may influence sustainability of JCs within health care settings. As part of a larger

randomised controlled study, this research aimed to gain understanding of clinicians' experiences of sustaining a structured JC format (TREAT- Tailoring Research Evidence and Theory) within their clinical context. The study also aimed to identify which strategies may assist longer term sustainability and future implementation of the TREAT format. Methods We employed a qualitative methodology, informed by behaviour change theory. Clinicians (n=19) from five different JCs participated in focus groups to explore their experience in sustaining the JC format six months after the formal trial period had completed. Clinicians were asked to describe factors which they perceived helped or hindered sustaining components of the JC format within their local context. Following a descriptive summary of the data, barriers and enablers were thematically analysed according to behaviour change theory domains: capability, motivation and opportunity and further mapped to targeted implementation strategies. Results Participants reported perceived benefits of maintaining the TREAT format and described several components that promoted its sustainability. Sustaining factors linked to individuals' capability included building research knowledge and skills and having access to research experts. Sustaining factors that enhanced opportunities for behaviour change included management expectation to attend and a team culture which values evidence based practice, while factors found to enhance individuals' motivation included the JC having close application to practice and clinicians sensing ownership of the JC. Several implementation strategies to enhance these factors are described including graduated support to clinicians in facilitation of JCs and greater engagement with managers. Conclusions Long-term sustainability of a structured JC is dependent on both individual and service level factors and a balance of implementation strategies that enhance capability, opportunity and motivation. Consideration of how clinicians can be engaged to take ownership and build their own capability from the commencement of the JC is important. Trial registration ACTRN12616000811404.

Wensing, M. (2015). "Implementation science in healthcare: Introduction and perspective." *Zeitschrift Fur Evidenz Fortbildung Und Qualitaet Im Gesundheitswesen* 109(2): 97-102.

Implementation science is the scientific study of the methods to promote the uptake of research findings into routine healthcare in clinical, organisational, or policy contexts. The presence of gaps between knowledge and practice is well documented and a range of strategies is available to overcome these gaps. To optimize their impact, it is recommended that implementation strategies are tailored to the target population, setting and goals for improvement. Themes for future research in the field are: implementation of personalized medicine, the economics of implementation, knowledge implementation in various health professions, patient involvement in implementation, and a better understanding of the determinants of implementation. Addressing these challenges requires dedicated training programs, research funding, and networks for effective collaboration with stakeholders in healthcare.

Wensing, M., et al. (2013). Developing and selecting knowledge translation interventions.

Wensing, M., et al. (2014). "Tailored Implementation of Evidence-Based Practice for Patients with Chronic Diseases." *Plos One* 9(7).

Background: When designing interventions and policies to implement evidence based healthcare, tailoring strategies to the targeted individuals and organizations has been recommended. We aimed to gather insights into the ideas of a variety of people for implementing evidence-based practice for patients with chronic diseases, which were generated in five European countries. Methods: A qualitative study in five countries (Germany, Netherlands, Norway, Poland, United Kingdom) was done, involving overall 115 individuals. A purposeful sample of four categories of stakeholders (healthcare professionals, quality improvement officers, healthcare purchasers and authorities, and health researchers) was involved in group interviews in each of the countries to generate items for improving healthcare in different chronic conditions per country: chronic obstructive pulmonary disease, cardiovascular disease, depression in elderly people, multi-morbidity, obesity. A disease-specific standardized list of determinants of practice in these conditions provided the starting point for these groups. The content of the suggested items was categorized in a pre-defined framework of 7 domains and specific themes in the items were identified within each domain. Results: The 115 individuals involved in the study generated 812 items, of which 586 addressed determinants of practice. These largely mapped onto three domains: individual health professional factors, patient factors, and professional interactions. Few items addressed guideline factors, incentives and resources, capacity of organizational change, or social, political and legal factors. The relative numbers of items in the different domains were largely similar across stakeholder categories within each of the countries. The analysis identified 29 specific themes in the suggested items across countries. Conclusion: The type of suggestions for improving healthcare practice was largely similar across different stakeholder groups, mainly addressing healthcare professionals, patient factors and professional interactions. As this study is one of the first of its kind, it is important that more research is done on tailored implementation strategies.

Werder, O. (2019). "Toward a humanistic model in health communication." *Global Health Promotion* 26(1): 33-40.

Since the key to effective health communication lies in its ability to communicate well, some of its core problems are those that relate to the sharing of meaning between communicators. In elaborating on these problems, this paper offers two key propositions: one, health communication has to pass through the filter of a particular world view that creates a discrepancy between expected and actual message reception and response. Two, the assumption of a rational human actor made implicitly by most health psychological models is a contestable issue, as many times message recipients do not follow a cognitive judgment process. The phenomenon of resisting health messages by reasonable people asks the question whether we ought to rethink our adherence to a particular vision of human health as many times the adverse reaction to behaviour modification occurs as the result of a particular dialogical or discursive situation. At the same time, most motivational decisions in people's daily routines are automatic and use a concept known as self-identity to give stability to their behaviour patterns. Finally, health communication as part of organised government practices adheres to predominant value perspectives within health promotion practice that affect the manner in which health issues become problematised. This paper proposes a humanistic model that aims to pay attention to the intricacies of human communication by addressing all of the above problems in turn. It interprets the sharing of meaning element in human communication and addresses the question of how the idea of health is created through discourse. As such, it offers a complementary and constructive paradigm and set of approaches to understand health, its meanings and communication.

West, D. S., et al. (2016). "Evidence-Based Lifestyle Interventions for Obesity and Type 2 Diabetes: The Look AHEAD Intensive Lifestyle Intervention as Exemplar." *American Psychologist* 71(7): 614-627.

The majority of individuals with Type 2 diabetes (T2D) are overweight or obese, and this excess adiposity negatively impacts cardiovascular risk and contributes to challenges in disease management. Treatment of obesity by behavioral lifestyle intervention, within the context of diabetes, produces broad and clinically meaningful health improvements, and recent studies demonstrate long-term sustained weight management success with behavioral lifestyle interventions. Details of the Look AHEAD intensive lifestyle intervention are provided as an exemplar approach to the secondary prevention of T2D and obesity. The presence of behavior change expertise in the development and delivery of evidence-based behavioral weight control is discussed, and issues of adaptation and dissemination are raised, with a model to guide these important steps provided.

West, L. M. and M. Cordina (2019). "Educational intervention to enhance adherence to short-term use of antibiotics." *Research in Social & Administrative Pharmacy* 15(2): 193-201.

Background: Non-adherence to short-term antibiotics is considered to be one of the factors leading to medicines wastage, and this can increase misuse of medicine taking, promote antibiotic resistance and cause environmental pollution. Interventions developed to enhance adherence to short-term antibiotics should be easily implementable into daily practice. No studies utilising Normalization Process Theory to develop interventions aiming to enhance adherence to antibiotics were identified. Objectives: To assess whether an intervention supported by an educational leaflet enhances adherence and reduces cost in relation to wastage of unused antibiotics amongst patients taking short-term antibiotics in community; and to determine a possible association between adherence and patients' general medicines' beliefs. Methods: Fourteen community pharmacies were randomly selected: seven pharmacies used an educational leaflet (intervention) to counsel patients; seven pharmacies acted as control. Patients with an antibiotic prescription were recruited until 200 patients per group was reached. Two focus groups based on Normalization Process Theory were held with pharmacists from the intervention group to refine the leaflet. After finishing the antibiotics, patients were contacted to assess adherence, storage, knowledge about antibiotic resistance and beliefs about medicines using 'Beliefs about Medicines Questionnaire-General' (BMQ-General). Results: Ten percent from intervention group and 24% from control were non-adherent ($p < 0.0005$), with a 2.8-fold more in the percentage cost of wasted antibiotics in control group. 'General-benefit' belief was significantly higher for intervention group ($p=0.044$). For control group, higher 'general-overuse' beliefs were significantly associated with non-adherence ($p< 0.0005$). Conclusions: An educational intervention has significantly enhanced adherence to prescribed short-term antibiotics and reduced wastage.

West, L. M., et al. (2016). "A focus group based study of the perspectives of the Maltese population and healthcare professionals on medication wastage." *International Journal of Clinical Pharmacy* 38(5): 1241-1249.

Background The World Health Organization states that globally more than half of all medication is inappropriately prescribed, dispensed or sold with a need to implement wastage reduction strategies. Developing processes which include behaviour change theories, such as the Theoretical Domains Framework (TDF), significantly impacts the positive implementation of evidence into healthcare practice. Objective To describe and understand the beliefs and behaviours regarding medication wastage of the Maltese public and healthcare professionals (HCPs) and to explore potential solutions. Setting: Malta. Method Five 90 min audio recorded focus groups (2 public and 3 HCPs) were conducted with a purposive sample who responded to a previous survey study and were willing to participate in focus

groups in Malta. The guide was based upon the TDF with interview questions derived from findings of the questionnaire phase. Focus groups were audio recorded and transcribed verbatim. Analysis was carried using the framework approach. Main outcome measure Beliefs and behaviours regarding medication wastage and potential solutions to reduce medication wastage. Results A total of eleven pharmacists, six doctors and six members of the public consented to participate. Focus groups conducted with HCPs and the general public identified the following four key themes aligned with the TDF domains to address proposed solutions to minimise medication wastage: (1) practitioner effects; (2) patients effects; (3) political effects; (4) societal effects. Conclusion This study has employed a theoretical framework to obtain a better understanding of facilitators which require attention as part of strategic development.

West, R. (2011). "Preventing tobacco companies from advertising using their packaging could be an important component of comprehensive tobacco control: A commentary on Australia's plain packaging of cigarettes." *Drug and Alcohol Review* 30(6): 681-682.

West, R., et al. (2013). A SYNTHETIC THEORY OF MOTIVATION.

This chapter sets out a second draft of a synthetic theory of motivation (PRIME Theory) to provide a basis for a theory of addiction. It sets this within a broader model of behaviour, the COM-B model, which recognises that capability, opportunity and motivation all interact with behaviour as a dynamic system. The motivational theory needs to be able to provide a common framework for conscious choice processes and non-conscious motivational systems. It also needs to describe common mechanisms underlying apparently diverse patterns of addictive behaviour. Finally, it needs to set out the principles underlying the developmental process by which addiction and recovery from addiction occur.

Westland, H., et al. (2017). "Unravelling effectiveness of a nurse-led behaviour change intervention to enhance physical activity in patients at risk for cardiovascular disease in primary care: study protocol for a cluster randomised controlled trial." *Trials* 18.

Background: Self-management interventions are considered effective in patients with chronic disease, but trials have shown inconsistent results, and it is unknown which patients benefit most. Adequate self-management requires behaviour change in both patients and health care providers. Therefore, the Activate intervention was developed with a focus on behaviour change in both patients and nurses. The intervention aims for change in a single self-management behaviour, namely physical activity, in primary care patients at risk for cardiovascular disease. The aim of this study is to evaluate the effectiveness of the Activate intervention. Methods/design: A two-arm cluster randomised controlled trial will be conducted to compare the Activate intervention with care as usual at 31 general practices in the Netherlands. Approximately 279 patients at risk for cardiovascular disease will participate. The Activate intervention is developed using the Behaviour Change Wheel and consists of 4 nurse-led consultations in a 3-month period, integrating 17 behaviour change techniques. The Behaviour Change Wheel was also applied to analyse what behaviour change is needed in nurses to deliver the intervention adequately. This resulted in 1-day training and coaching sessions (including 21 behaviour change techniques). The primary outcome is physical activity, measured as the number of minutes of moderate to vigorous physical activity using an accelerometer. Potential effect modifiers are age, body mass index, level of education, social support, depression, patient-provider relationship and baseline number of minutes of physical activity. Data will be collected at baseline and at 3 months and 6 months of follow-up. A process evaluation will be conducted to evaluate the training of nurses, treatment fidelity, and to identify barriers to and facilitators of implementation as well as to assess participants' satisfaction. Discussion: To increase physical activity in patients and to support nurses in delivering the intervention, behaviour change techniques are applied to change behaviours of the patients and nurses. Evaluation of the effectiveness of the intervention, exploration of which patients benefit most, and evaluation of our theory-based training for primary care nurses will enhance understanding of what works and for whom, which is essential for further implementation of self-management in clinical practice.

Westland, H., et al. (2018). "Nurses' perceptions towards the delivery and feasibility of a behaviour change intervention to enhance physical activity in patients at risk for cardiovascular disease in primary care: a qualitative study." *Bmc Family Practice* 19.

Background Self-management support is widely accepted for the management of chronic conditions. Self-management often requires behaviour change in patients, in which primary care nurses play a pivotal role. To support patients in changing their behaviour, the structured behaviour change Activate intervention was developed. This intervention aims to enhance physical activity in patients at risk for cardiovascular disease in primary care as well as to enhance nurses' role in supporting these patients. This study aimed to evaluate nurses' perceptions towards the delivery and feasibility of the Activate intervention. Methods A qualitative study nested within a cluster-randomised controlled trial using semistructured interviews was conducted and thematically analysed. Fourteen nurses who delivered the Activate intervention participated. Results Three key themes emerged concerning nurses' perceptions of delivering the

intervention: nurses' engagement towards delivering the intervention; acquiring knowledge and skills; and dealing with adherence to the consultation structure. Three key themes were identified concerning the feasibility of the intervention: expectations towards the use of the intervention in routine practice; perceptions towards the feasibility of the training programme; and enabling personal development. Conclusions Delivering a behaviour change intervention is challenged by the complexity of changing nurses' consultation style, including acquiring corresponding knowledge and skills. The findings have increased the understanding of the effectiveness of the Activate trial and will guide the development and evaluation of future behaviour change interventions delivered by nurses in primary care. Trial registration ClinicalTrials.gov NCT02725203.

Westland, H., et al. (2019). "Patients' experiences with a behaviour change intervention to enhance physical activity in primary care: A mixed methods study." *Plos One* 14(2).

Objective To explore the experiences of patients at risk for cardiovascular disease in primary care with the Activate intervention in relation to their success in increasing their physical activity. **Methods** A convergent mixed methods study was conducted, parallel to a cluster-randomised controlled trial in primary care, using a questionnaire and semi-structured interviews. Questionnaires from 67 patients were analysed, and semi-structured interviews of 22 patients were thematically analysed. Experiences of patients who had objectively increased their physical activity (responders) were compared to those who had not (non-responders). **Objective success** was analysed in relation to self-perceived success. **Results** The questionnaire and interview data corresponded, and no substantial differences among responders and non-responders emerged. Participating in the intervention increased patients' awareness of their physical activity and their physical activity level. Key components of the intervention were the subsequent support of nurses with whom patients' have a trustful relationship and the use of self-monitoring tools. Patients highly valued jointly setting goals, planning actions, receiving feedback and review on their goal attainment and jointly solving problems. Nurses' support, the use of self-monitoring tools, and involving others incentivised patients to increase their physical activity. Internal circumstances and external circumstances challenged patients' engagement in increasing and maintaining their physical activity. **Conclusion** Patients experienced the Activate intervention as valuable to increase and maintain their physical activity, irrespective of their objective change in physical activity. The findings enable the understanding of the effectiveness of the intervention and implementation in primary care.

Wheeler, T. S., et al. (2018). "Feasibility and usability of an ontology-based mobile intervention for patients with hypertension." *International Journal of Medical Informatics* 119: 8-16.

Background: Lifestyle changes and the adoption of healthy behaviours are well established recommendations for the management of hypertension—a risk factor for cardiovascular and kidney disease. Mobile health interventions offer unique advantages and novel approaches to helping individuals make and maintain such behaviour changes; however, current interventions often lack theoretical and scientific grounding. **Objective:** The goal of this study is to effectively model the knowledge, concepts and relationships relevant to the management of a chronic illness like hypertension, and to implement this knowledge model within a mobile self-management application that can be used by patients. **Methods:** A behaviour modification approach based on COM-B (capability, opportunity, motivation, behaviour) Model and the associated Behaviour Change Wheel was developed. An ontology-based knowledge model was implemented to formally conceptualise relevant knowledge in hypertension clinical practice guidelines, behaviour change models and associated behaviour change strategies. A hypertension management decision support framework was designed and implemented as a proof-of-concept mobile phone application (EmpowerBP) using the aforementioned model. The usability of this pilot application was tested using think-aloud protocol by eight individuals with hypertension while performing predefined tasks. Thematic analysis with inductive thematic coding was performed to identify specific feedback and areas for improvement. **Results:** The most common positive feedback included participants finding application resources interesting or helpful and liking the user interface. The most common negative feedback was finding the included salt calculator confusing or laborious to use and finding the profile creation questionnaire too long. The derived themes were: features, profile creation, resources, scenario, usability, user interface. **Conclusions:** The ontology knowledge model formalises variables, properties, and relationships such that they can be used for problem solving. By integrating and computerising complex knowledge from clinical practice guidelines, behaviour change theories, and associated behaviour change strategies, it is possible to model existing information about the management of hypertension as an ontology. This proof-of-concept application creates clinical and behavioural profiles of a user to provide them with personalised management strategies, rooted in established behaviour change theory, that will engage and empower them to manage their condition. Given the nature of ontological models, this approach can be easily modified to address a variety of chronic illnesses.

Whitaker, L. and S. Backhouse (2017). "Doping in sport: an analysis of sanctioned UK rugby union players between 2009 and 2015." *Journal of Sports Sciences* 35(16): 1607-1613.

To inform anti-doping policy and practice, it is important to understand the complexities of doping. The purpose of this study was to collate and systematically examine the reasoned decisions published by UK Anti-Doping for doping sanctions in rugby union in the UK since the introduction of the 2009 World Anti-Doping Code. Case files were content analysed to extract demographic information and details relating to the anti-doping rule violation (ADRV), including individuals' explanations for how/why the ADRV occurred. Between 2009 and 2015, 49 rugby union players and one coach from across the UK were sanctioned. Over 50% of the cases involved players under the age of 25, competing at sub-elite levels. Reasons in defence of the ADRV focused on functional use and lifestyle factors rather than performance enhancement. An a priori assessment of the need, risk and consequence of using a substance was not commonplace; further strengthening calls for increasing the reach of anti-doping education. The findings also deconstruct the view that doped athletes are the same. Consequently, deepening understanding of the social and cultural conditions that encourage doping remains a priority.

Whitehead, L. and P. Seaton (2016). "The Effectiveness of Self-Management Mobile Phone and Tablet Apps in Long-term Condition Management: A Systematic Review." *Journal of Medical Internet Research* 18(5).

Background: Long-term conditions and their concomitant management place considerable pressure on patients, communities, and health care systems worldwide. International clinical guidelines on the majority of long-term conditions recommend the inclusion of self-management programs in routine management. Self-management programs have been associated with improved health outcomes; however, the successful and sustainable transfer of research programs into clinical practice has been inconsistent. Recent developments in mobile technology, such as mobile phone and tablet computer apps, could help in developing a platform for the delivery of self-management interventions that are adaptable, of low cost, and easily accessible. Objective: We conducted a systematic review to assess the effectiveness of mobile phone and tablet apps in self-management of key symptoms of long-term conditions. Methods: We searched PubMed, Embase, EBSCO databases, the Cochrane Library, and The Joanna Briggs Institute Library for randomized controlled trials that assessed the effectiveness of mobile phone and tablet apps in self-management of diabetes mellitus, cardiovascular disease, and chronic lung diseases from 2005-2016. We searched registers of current and ongoing trials, as well as the gray literature. We then checked the reference lists of all primary studies and review papers for additional references. The last search was run in February 2016. Results: Of the 9 papers we reviewed, 6 of the interventions demonstrated a statistically significant improvement in the primary measure of clinical outcome. Where the intervention comprised an app only, 3 studies demonstrated a statistically significant improvement. Interventions to address diabetes mellitus (5/9) were the most common, followed by chronic lung disease (3/9) and cardiovascular disease (1/9). A total of 3 studies included multiple intervention groups using permutations of an intervention involving an app. The duration of the intervention ranged from 6 weeks to 1 year, and final follow-up data ranged from 3 months to 1 year. Sample size ranged from 48 to 288 participants. Conclusions: The evidence indicates the potential of apps in improving symptom management through self-management interventions. The use of apps in mHealth has the potential to improve health outcomes among those living with chronic diseases through enhanced symptom control. Further innovation, optimization, and rigorous research around the potential of apps in mHealth technology will move the field toward the reality of improved health care delivery and outcomes.

Wikstrom, E., et al. (2019). "The Safe Hands Study: Implementing aseptic techniques in the operating room: Facilitating mechanisms for contextual negotiation and collective action." *American Journal of Infection Control* 47(3): 251-257.

Background: Even though hand hygiene and aseptic techniques are essential to provide safe care in the operating room, several studies have found a lack of successful implementation. The aim of this study was to describe facilitative mechanisms supporting the implementation of hand hygiene and aseptic techniques. Methods: This study was set in a large operating room suite in a Swedish university hospital. The theory-driven implementation process was informed by the literature on organizational change and dialogue. Data were collected using interviews and participant observations and analyzed using a thematic approach. The normalization process theory served as a frame of interpretation during the analysis. Results: Three facilitating mechanisms were identified: (1) commitment through a sense of urgency, requiring extensive communication between the managers, operating room professionals, and facilitators in building commitment to change and putting the issues on the agenda; (2) dialogue for co-creation, increasing and sustaining commitment and resource mobilization; and (3) tailored management support, including helping managers to develop their leadership role, progressively involving staff, and retaining focus during the implementation process. Conclusions: The facilitating mechanisms can be used in organizing implementation processes. Putting the emphasis on help and support to managers seems to be a crucial condition in complex implementation processes, from preparation of the change process to stabilization of the new practice. Crown Copyright (C) 2018 Published by Elsevier Inc. on behalf of Association for Professionals in Infection Control and Epidemiology, Inc.

Wilbur, J., et al. (2018). "Developing Behaviour Change Interventions for Improving Access to Health and Hygiene for People with Disabilities: Two Case Studies from Nepal and Malawi." *International Journal of Environmental Research and Public Health* 15(12).

Limited evidence exists about how to design interventions to improve access to health care for people with disabilities in low and middle-income countries (LMICs). This paper documents the development of two behaviour change interventions. Case study one outlines the design of an intervention to improve uptake of referral for ear and hearing services for children in Malawi. Case study two describes the design of an intervention to improve menstrual hygiene management for people with intellectual impairments in Nepal. Both followed existing approaches: Medical Research Council Guidance for developing and evaluating complex interventions and Behaviour Centred Design. The purpose is to demonstrate how these frameworks can be applied, to document the interventions developed, and encourage further initiatives to advance health services targeting people with disabilities. Important components of the intervention design process were: (1) systematic reviews and formative research ensure that interventions designed are relevant to current discourse, practice and context; (2) people with disabilities and their family/carers must be at the heart of the process; (3) applying the theory of change approach and testing it helps understand links between inputs and required behaviour change, as well as ensuring that the interventions are relevant to local contexts; (4) involving creative experts may lead to the development of more engaging and appealing interventions. Further evidence is needed on the effectiveness of these types of interventions for people with disabilities to ensure that no one is left behind.

Wiles, L., et al. (2015). "Exercise training combined with psychological interventions for people with chronic obstructive pulmonary disease." *Respirology* 20(1): 46-55.

Previous systematic reviews have confirmed the benefits of both exercise training and psychological interventions in people with chronic obstructive pulmonary disease (COPD). The objective of this systematic review was to examine the effect of interventions which combine exercise training and psychological interventions for a range of health outcomes in people with COPD. Database searches identified randomized controlled trials of people with COPD participating in interventions that combined exercise training with a psychological strategy compared with control (usual care, waiting list) or active comparators (education, exercise, psychological interventions alone). Health outcomes included dyspnoea, anxiety, depression, quality of life or functional exercise capacity. Standardized mean differences (SMD) were calculated for each intervention arm/control comparison. Across the 12 included studies (738 participants), compared with control conditions, SMD consistently favoured interventions which included both exercise+psychological components (SMD range dyspnoea -1.63 to -0.25; anxiety -0.50 to -0.20; depression -0.46 to -0.18; quality of life 0.09 to 1.16; functional exercise capacity 0.22 to 1.23). When compared with active comparators, SMD consistently favoured interventions that included exercise training+psychological component for dyspnoea (SMD range -0.35 to -0.97), anxiety (SMD range -0.13 to -1.00) and exercise capacity (SMD range 0.64 to 0.71) but were inconsistent for depression (-0.11 to 1.27) and quality of life (0.02 to -2.00). The magnitude of effect for most interventions was greater than the minimum required for clinical significance (i.e. >0.32) in behavioural medicine. While interventions, outcomes and effect sizes differed substantially between studies, combining exercise training with a psychological intervention may provide a means of optimizing rehabilitation in people with COPD.

Wilkinson, S., et al. (2019). "Implementation of gestational weight gain guidelines - what's more effective for ensuring weight recording in pregnancy?" *Bmc Pregnancy and Childbirth* 19.

Background Pregnant women who gain weight in accordance with guidelines have the lowest risk of pregnancy and birth-related complications. However, evidence-practice gaps often exist. To address pregnancy weight management barriers, a stepped implementation science approach was used, comprising targeted in-services, provision of scales for clinic rooms, and changes to routine weight recording in a hospital electronic medical record. The aim of this study was to assess the cumulative influence of evidence-based interventions on staff's compliance to recording of antenatal weights. Methods Retrospective data analysis of weight recording over three 15-month cohorts across April 2014-December 2017. Variables calculated from data included: proportion of women with weight recorded at booking and proportion of women who had a weight recorded at each visit. Generalised estimating equation modelling was used to examine differences in weight recording compliance rates between cohorts, pre-pregnancy body mass index categories, model of care and clinicians. Results There were approximately 13,000 pregnancies in each cohort. The proportion of women who had a weight recorded at each visit per cohort differed significantly between cohorts from 4.2% (baseline), 18.9% (scales and in-services) to 61.8% (medical record prompts), $p < 0.001$. Conclusion Significant improvements were achieved through systematic barrier analysis and subsequent mapping and implementation of appropriate and effective interventions. Improvements were observed across the entire service, in all models of care with all professional groups demonstrating increased recording of weights.

Wilkinson, S. A., et al. (2017). "Service-wide management of healthy gestational weight gain following an implementation science approach." *Maternal and Child Nutrition* 13(2).

The aim of health guidelines is to ensure consistency in the delivery of care to minimise health-related complications. However, even when good evidence is available, professionals do not necessarily implement it. Following a 2011 survey (Time 1) of staff in a tertiary maternity hospital, a number of service changes were implemented to facilitate best practice delivery of care to pregnant women regarding gestational weight gain (GWG). A (second) staff survey was then undertaken to re-assess staff knowledge, attitudes and behaviours around the management of GWG in our hospital. This cross-sectional, prospective online survey was distributed to staff in antenatal clinic. The survey assessed staff awareness of pregnancy-related weight complications, knowledge and application of specific guidelines, and a guideline adherence score was calculated. Sixty-nine staff (44.8% response rate) completed the 2014 (Time 2) survey. Just over half (51.9%) stated they were familiar with clinical guidelines regarding weight management in pregnancy. Guideline adherence ranged from 3.7 +/- 1.9 to 11.3 +/- 1.0 /15 across different professional groups; significant improvements with adherence by dietitians were noted over time. Despite minimal change over time in the overall adherence score, compliance with individual elements of the guideline recommendations comprising the adherence score differed. Improvements in staff practices and attitudes are apparent since the first survey. However, further improvements in guideline awareness and guideline elements are still required to improve the delivery of best practice antenatal GWG care.

Wilkinson, S. A., et al. (2018). "Process of knowledge translation within routine clinical care: Implementing best practice in weight management." *Nutrition & Dietetics* 75(4): 363-371.

Aim Failure to translate research into practice is common. The present study implemented an evidence-based model of care to address identified evidence-practice gaps in our department's weight management service. **Methods** Implementation science frameworks were used to identify barriers to best practice and determine appropriate strategies to overcome them. No practice change occurred pre-implementation. The new model of care incorporated evidence-based interventions into a flowchart, supported by written resources, and integrated routine data collection into clinic processes. Alignment with a statewide telephone counselling program enhanced service capacity. Data were collected for adult patients whose primary intervention was weight management at a South-East Queensland hospital and included service attendance metrics, anthropometry, diet quality, and interventions delivered, and were compared with guidelines. Change in outcomes was calculated at 3 months after initial appointments. **Results** Pre-implementation, 69.2% (n = 91) of patients referred were seen by a dietitian. During the new model of care (n = 60), over half (63.3%) were referred to telephone counselling. The remainder were triaged according to the flowchart with 100% attendance. Guideline adherence for reviews significantly increased over time (4.4%-50%, P < 0.001). Follow-up data were available for 31.3% and 54.5% of the pre-implementation and new model of care patients, respectively. No significant differences were observed between outcomes. **Conclusions** The present study demonstrated successful implementation of weight management guidelines within routine clinical care. Following a systematic assessment of existing evidence-practice gaps resulted in a pragmatic evidence-based model of care that could be delivered within service capacity.

Wilkinson, S. A., et al. (2016). "Evaluation of a process of implementation of a gestational diabetes nutrition model of care into practice." *Nutrition & Dietetics* 73(4): 329-335.

Aim Poorly controlled gestational diabetes mellitus can result in negative pregnancy and delivery outcomes. A reduced need for insulin was documented in the validation of American gestational diabetes Nutrition Practice Guidelines, which recommend at least three dietitian visits. No Australian gestational diabetes mellitus nutrition guidelines exist. This paper evaluates the implementation of a dietetic model of care based on the American guidelines in an Australian hospital. **Methods** The implementation plan consisted of a nine-month pre (usual care)/post (new model of care) design with a month for integration' across 2012-2013. Primary outcomes were uptake of the new dietetic model of care and requirement for pharmacotherapy. **Results** Both phases ran for seven months; integration required four months. Pre-intervention, only one woman received a review appointment. Significantly more women received best-practice care post-implementation (P = 0.02); of the 162 women seen, 50.6% received two review appointments. As a result of heavy clinical demand, only 31.5% of the women seen post-implementation received an individual dietitian assessment and education session, deviating from best practice. Clinically relevant changes were seen in medication requirements with a decrease in women requiring pharmacological treatment (31.1% (pre); 26.9% (post)). The difference was more pronounced in women who received best-practice care (27.2% (no) vs 25.0% (yes)). **Conclusions** This project successfully increased the proportion of women seen according to best practice. Service limitations impaired the delivery of optimal care. The present study illustrates the opportunities and challenges of conducting evidence-based implementation research in routine clinical care.

Wilkinson, S. A., et al. (2018). "Clinically relevant improvements achieved from a facilitated implementation of a gestational diabetes model of care." *Nutrition & Dietetics* 75(3): 271-282.

Aim Medical nutrition therapy is a cornerstone treatment in gestational diabetes; however, most Australian women diagnosed with gestational diabetes do not receive this. The project evaluated adaptation of a successful evidence-based gestational diabetes model of care implementation from a tertiary centre into regional sites with varied demographics, population size and service capacity. Methods The project used a hub (project team)-spoke (sites) model in Far North Queensland (Site 1) and regional South-East Queensland (Site 2). Sites selected demonstrated strong gestational diabetes team cohesiveness and project commitment. The project phases were consultation, baseline, transition and implementation. A best practice decision tree tool was provided to assess/manage barriers to the model of care and clinical outcomes captured through a project database. Results Role clarification of site members, management engagement, site visits, decision tree and database refinement were completed in the project's first phase. Unexpected organisational and team barriers prevented timeline implementation as planned. Sites negotiated relevant reallocation of resources to achieve project deliverables. The proportion of women seen according to best practice increased from 3.5 to 87.8% ($P < 0.001$) (Site 1) and nil to 4.8% ($P = 0.09$) (Site 2), and those on medication dropped by 3.4 (Site 1) and 9.1% (Site 2). Conclusions This project demonstrates a successful implementation using a facilitated and rigorous approach. Support, engagement and tools at many levels were keys to success at both sites. The present study illustrates the opportunities and challenges of conducting implementation research within routine clinical care, particularly in resource-challenged sites.

Wilkinson, S. A., et al. (2019). "Implementing a best-practice model of gestational diabetes mellitus care in dietetics: a qualitative study." *Bmc Health Services Research* 19.

Translating research into clinical practice is challenging for health services. Emerging approaches in implementation science recognise the need for a theory-driven approach to identify and overcome barriers to guideline adherence. However, many clinicians do not have the capacity, confidence, or expertise to realise change in their local settings. Recently, two regional sites participated in a facilitated implementation project of an evidence-based model of gestational diabetes mellitus (GDM) care in dietetics, supported by a team at a metropolitan centre. This study describes (i) stakeholder experiences', and (ii) learnings to inform implementation of the model of care (MOC) across Queensland. This qualitative descriptive study utilised semi-structured telephone interviews with staff involved in implementation of the MOC project at two regional sites. Eight participants were recruited; five participants were from one site. Interviews were transcribed and analysed to identify recurrent themes. Four main themes were derived: (1) catalyst for positive change, (2) managing project logistics, (3) overcoming barriers, and (4) achieving change. A model of external facilitated implementation using an evidence-based decision making tool is an effective method of fostering health service change and is acceptable to staff. Key elements of the facilitation were building confidence and capacity in local implementers, through regular contact, encouraging local networking, linking to higher management support and assessing and/or influencing workplace or organizational culture. However, the balance between delivering clinical care while participating in a service change project proved challenging to many participants.

Wilkinson, S. A. and H. Stapleton (2012). "Overweight and obesity in pregnancy: The evidence-practice gap in staff knowledge, attitudes and practices." *Australian & New Zealand Journal of Obstetrics & Gynaecology* 52(6): 588-592.

Background: Statewide (Queensland) Clinical Guidelines reflecting current best practice have recently become available for the management of pregnancy-related obesity. However, dissemination of guidelines alone do not change practice. Aim: To systematically assess evidence-practice gap in the multidisciplinary management of overweight and obesity (ow/ob) in pregnancy to inform an intervention to facilitate translating obesity guidelines into practice in a tertiary maternity service. Materials and Methods: An online survey, available over a three-week period (May-June 2011), was disseminated to obstetric, midwifery and allied health staff. Outcomes of interest included a 15-point guideline adherence score, knowledge of guideline content, advice given, knowledge of obesity-pregnancy-related complications, previous training and referral patterns. Results: Eighty-four staff completed surveys (57% response rate). Widespread discordance with the guideline was noted. The majority (88.1%) reported overweight/obesity (ow/ob) as an important/very important general obstetric issue, most correctly identified associated complications. However, only 32.1% were aware of existing guidelines, with only half correctly identifying BMI categories for ow/ob. Compliance with referral recommendations varied; 20% of staff considered referral 'was not their job'. Conclusions: Staff are aware of negative outcomes associated with maternal ow/ob, although few are fully compliant with referral guidelines or provide advice in line with recommendations. These findings will be categorised using implementation of science methodological frameworks, and effective behaviour change interventions will be constructed to facilitate translation of this important guideline into practice.

Willamowski, J., et al. (2018). Impact of Corporate Social Responsibility on Innovation Activities: The Case of Xerox. *Innovation Management and Corporate Social Responsibility: Social Responsibility as Competitive Advantage*. R. Altenburger: 263-280.

Willett, A. B. S., et al. (2017). "Control blindness: Why people can make incorrect inferences about the intentions of others." *Attention Perception & Psychophysics* 79(3): 841-849.

There is limited evidence regarding the accuracy of inferences about intention. The research described in this article shows how perceptual control theory (PCT) can provide a "ground truth" for these judgments. In a series of 3 studies, participants were asked to identify a person's intention in a tracking task where the person's true intention was to control the position of a knot connecting a pair of rubber bands. Most participants failed to correctly infer the person's intention, instead inferring complex but nonexistent goals (such as "tracing out two kangaroos boxing") based on the actions taken to keep the knot under control. Therefore, most of our participants experienced what we call "control blindness." The effect persisted with many participants even when their awareness was successfully directed at the knot whose position was under control. Beyond exploring the control blindness phenomenon in the context of our studies, we discuss its implications for psychological research and public policy.

Willett, M., et al. (2017). "Effectiveness of behavioural change techniques in physiotherapy interventions to promote physical activity adherence in patients with hip and knee osteoarthritis: a systematic review protocol." *Bmj Open* 7(6).

Introduction Osteoarthritis (OA) is a common degenerative articular disease, the highest cause of individual level disability and a significant socioeconomic burden to healthcare services. Patient education and physical activity (PA) prescription are recommended components of interventions in several healthcare guidelines and are commonly provided by physiotherapists. However, these interventions lack long-term clinical effectiveness. Patient adherence to PA prescription requires patients to modify their PA behaviour and appears critical in maintaining symptomatic improvements. This systematic review aims to evaluate the effectiveness of behavioural change techniques (BCTs) used in physiotherapy interventions to improve PA adherence. Methods and analysis Medline, Cochrane and PEDro registers of Controlled Trials, EMBASE, CINAHL and PsycInfo databases, and key grey literature sources will be rigorously searched for randomised controlled trials that compared a physiotherapy intervention incorporating BCTs with other therapies, placebo interventions, usual care or no-treatment. Two independent researchers will conduct literature searches, assess trial eligibility, extract data, conduct risk of bias assessment (using Cochrane risk of bias tool), classify BCTs and evaluate the quality of the body of literature following Grading of Recommendations, Assessment, Development and Evaluation (GRADE) guidelines. Narrative synthesis of key outcomes will be presented and meta-analysis will be performed if included trials are clinically homogenous, based on their intervention and comparator groups and outcome measures. This review will be reported in line with the Preferred Reporting Items for Systematic review and Meta-Analysis guidelines. Ethics and dissemination Research ethics approval is not required. This review will help inform clinicians and researchers on the most effective behavioural change techniques used in physiotherapy interventions to enhance adherence to PA prescription for patients with lower limb OA. The findings will be disseminated through publication in a peer-reviewed journal and conference presentations.

Williams, M. T., et al. (2017). "Counseling for health behavior change in people with COPD: systematic review." *International Journal of Chronic Obstructive Pulmonary Disease* 12: 2165-2178.

Counseling has been suggested as a promising approach for facilitating changes in health behavior. The aim of this systematic review of counseling interventions for people with COPD was to describe: 1) counseling definitions, 2) targeted health behaviors, 3) counseling techniques and 4) whether commonalities in counseling techniques were associated with improved health behaviors. Ten databases were searched for original randomized controlled trials which included adults with COPD, used the term "counseling" as a sole or component of a multifaceted intervention and were published in the previous 10 years. Data extraction, study appraisal and coding for behavior change techniques (BCTs) were completed by two independent reviewers. Data were synthesized descriptively, with meta-analysis conducted where possible. Of the 182 studies reviewed as full-text, 22 were included. A single study provided a definition for counseling. Two key behaviors were the main foci of counseling: physical activity (n=9) and smoking cessation (n=8). Six studies (27%) reported underlying models and/or theoretical frameworks. Counseling was the sole intervention in 10 studies and part of a multicomponent intervention in 12. Interventions targeting physical activity included a mean of 6.3 (+/- 3.1) BCTs, smoking cessation 4.9 (+/- 2.9) BCTs and other behaviors 6.5 (+/- 3.9) BCTs. The most frequent BCTs were social support unspecified (n=22; 100%), goal setting behavior (n=11), problem-solving (n=11) and instructions on how to perform the behavior (n=10). No studies shared identical BCT profiles. Counseling had a significant positive effect for smoking cessation and positive but not significant effect for physical activity. Counseling for health behavior change was rarely defined and effectiveness varied by target behavior. Provision of specific details when reporting studies of

counseling interventions (definition, BCTs, dosage) would allow clarification of the effectiveness of counseling as an approach to health behavior change in people with COPD.

Williams, N. J. (2016). "Assessing mental health clinicians' intentions to adopt evidence-based treatments: reliability and validity testing of the evidence-based treatment intentions scale." *Implementation Science* 11.

Background: Intentions play a central role in numerous empirically supported theories of behavior and behavior change and have been identified as a potentially important antecedent to successful evidence-based treatment (EBT) implementation. Despite this, few measures of mental health clinicians' EBT intentions exist and available measures have not been subject to thorough psychometric evaluation or testing. This paper evaluates the psychometric properties of the evidence-based treatment intentions (EBTI) scale, a new measure of mental health clinicians' intentions to adopt EBTs. Methods: The study evaluates the reliability and validity of inferences made with the EBTI using multi-method, multi-informant criterion variables collected over 12 months from a sample of 197 mental health clinicians delivering services in 13 mental health agencies. Structural, predictive, and discriminant validity evidence is assessed. Results: Findings support the EBTI's factor structure ($\chi^2(5) = 3.96, p = .556$) and internal consistency reliability ($\alpha = .80$). Predictive validity evidence was provided by robust and significant associations between EBTI scores and clinicians' observer-reported attendance at a voluntary EBT workshop at a 1-month follow-up ($OR = 1.92, p < .05$), self-reported EBT adoption at a 12-month follow-up ($R^2 = .17, p < .001$), and self-reported use of EBTs with clients at a 12-month follow-up ($R^2 = .25, p < .001$). Discriminant validity evidence was provided by small associations with clinicians' concurrently measured psychological work climate perceptions of functionality ($R^2 = .06, p < .05$), engagement ($R^2 = .06, p < .05$), and stress ($R^2 = .00, ns$). Conclusions: The EBTI is a practical and theoretically grounded measure of mental health clinicians' EBT intentions. Scores on the EBTI provide a basis for valid inferences regarding mental health clinicians' intentions to adopt EBTs. Discussion focuses on research and practice applications.

Williams, N. J. (2016). "Multilevel Mechanisms of Implementation Strategies in Mental Health: Integrating Theory, Research, and Practice." *Administration and Policy in Mental Health and Mental Health Services Research* 43(5): 783-798.

A step toward the development of optimally effective, efficient, and feasible implementation strategies that increase evidence-based treatment integration in mental health services involves identification of the multilevel mechanisms through which these strategies influence implementation outcomes. This article (a) provides an orientation to, and rationale for, consideration of multilevel mediating mechanisms in implementation trials, and (b) systematically reviews randomized controlled trials that examined mediators of implementation strategies in mental health. Nine trials were located. Mediation-related methodological deficiencies were prevalent and no trials supported a hypothesized mediator. The most common reason was failure to engage the mediation target. Discussion focuses on directions to accelerate implementation strategy development in mental health.

Williams, N. J., et al. (2017). "Mechanisms of Change in the ARC Organizational Strategy: Increasing Mental Health Clinicians' EBP Adoption Through Improved Organizational Culture and Capacity." *Administration and Policy in Mental Health and Mental Health Services Research* 44(2): 269-283.

The development of efficient and scalable implementation strategies in mental health is restricted by poor understanding of the change mechanisms that increase clinicians' evidence-based practice (EBP) adoption. This study tests the cross-level change mechanisms that link an empirically-supported organizational strategy for supporting implementation (labeled ARC for Availability, Responsiveness, and Continuity) to mental health clinicians' EBP adoption and use. Four hundred seventy-five mental health clinicians in 14 children's mental health agencies were randomly assigned to the ARC intervention or a control condition. Measures of organizational culture, clinicians' intentions to adopt EBPs, and job-related EBP barriers were collected before, during, and upon completion of the three-year ARC intervention. EBP adoption and use were assessed at 12-month follow-up. Multilevel mediation analyses tested changes in organizational culture, clinicians' intentions to adopt EBPs, and job-related EBP barriers as linking mechanisms explaining the effects of ARC on clinicians' EBP adoption and use. ARC increased clinicians' EBP adoption ($OR = 3.19, p = .003$) and use (81 vs. 56 %, $d = .79, p = .003$) at 12-month follow-up. These effects were mediated by improvement in organizational proficiency culture leading to increased clinician intentions to adopt EBPs and by reduced job-related EBP barriers. A combined mediation analysis indicated the organizational culture-EBP intentions mechanism was the primary carrier of ARC's effects on clinicians' EBP adoption and use. ARC increases clinicians' EBP adoption and use by creating proficient organizational cultures that increase clinicians' intentions to adopt EBPs.

Willis, N., et al. (2013). "'Communicate to vaccinate': the development of a taxonomy of communication interventions to improve routine childhood vaccination." *Bmc International Health and Human Rights* 13.

Background: Vaccination is a cost-effective public health measure and is central to the Millennium Development Goal of reducing child mortality. However, childhood vaccination coverage remains sub-optimal in many settings. While

communication is a key feature of vaccination programmes, we are not aware of any comprehensive approach to organising the broad range of communication interventions that can be delivered to parents and communities to improve vaccination coverage. Developing a classification system (taxonomy) organised into conceptually similar categories will aid in: understanding the relationships between different types of communication interventions; facilitating conceptual mapping of these interventions; clarifying the key purposes and features of interventions to aid implementation and evaluation; and identifying areas where evidence is strong and where there are gaps. This paper reports on the development of the 'Communicate to vaccinate' taxonomy. Methods: The taxonomy was developed in two stages. Stage 1 included: 1) forming an advisory group; 2) searching for descriptions of interventions in trials (CENTRAL database) and general health literature (Medline); 3) developing a sampling strategy; 4) screening the search results; 5) developing a data extraction form; and 6) extracting intervention data. Stage 2 included: 1) grouping the interventions according to purpose; 2) holding deliberative forums in English and French with key vaccination stakeholders to gather feedback; 3) conducting a targeted search of grey literature to supplement the taxonomy; 4) finalising the taxonomy based on the input provided. Results: The taxonomy includes seven main categories of communication interventions: inform or educate, remind or recall, teach skills, provide support, facilitate decision making, enable communication and enhance community ownership. These categories are broken down into 43 intervention types across three target groups: parents or soon-to-be-parents; communities, community members or volunteers; and health care providers. Conclusions: Our taxonomy illuminates and organises this field and identifies the range of available communication interventions to increase routine childhood vaccination uptake. We have utilised a variety of data sources, capturing information from rigorous evaluations such as randomised trials as well as experiences and knowledge of practitioners and vaccination stakeholders. The taxonomy reflects current public health practice and can guide the future development of vaccination programmes.

Wills, J., et al. (2015). "Using population segmentation to inform local obesity strategy in England." *Health Promotion International* 30(3): 658-666.

Little is known about the views of obese people and how best to meet their needs. Amongst London boroughs Barking and Dagenham has the highest prevalence of adult obesity at 28.7%; the lowest level of healthy eating and of physical activity; and is the 22nd most deprived area of England. The study aimed to gain insight into the attitudes, motivations and priorities of people who are obese or overweight to inform the social marketing of an obesity strategy. Two hundred and ten obese or overweight adults were recruited through visual identification in public thoroughfares to attempt to recruit those seldom seen in primary care. One hundred and eighty-one street-intercept and 52 in-depth interviews were conducted. Thematic analysis was followed by psychographic segmentation. Eleven population segments were identified based on their readiness to change, the value accorded to tackling obesity, identified enabling factors and barriers to weight management and perceived self-efficacy. This population showed considerable variation in its readiness to change and perceived control over obesity but considerable similarity in the exchange value they attributed to tackling their obesity. Even within a relatively homogenous socio-demographic community, there needs to be a range of interventions and messages tailored for different population segments that vary in their readiness to change and confidence about tackling obesity. The dominant emphasis of policy and practice on the health consequences of obesity does not reflect the priorities of this obese population for whom the exchange value of addressing obesity was daily functioning especially in relation to family life.

Wilson, C. and M. R. Marselle (2016). "Insights from psychology about the design and implementation of energy interventions using the Behaviour Change Wheel." *Energy Research & Social Science* 19: 177-191.

Improving the design and implementation of interventions to encourage end-use energy efficiency has the potential to contribute a substantive reduction in carbon emissions. A plethora of behaviour change frameworks is available to guide policymakers and designers but none have been found to be comprehensive or well-used. A new framework - the Behaviour Change Wheel (BCW) - purports to be a useful aid for developing all types of behaviour change interventions. This paper assesses whether the BCW comprehensively describes programmes attempting to reduce energy consumption. To do this, components of behaviour change programmes as identified in four EU guidance documents were mapped onto the BCW. Most of the components discussed in the guidance could be readily coded to the BCW framework. The main energy policy under-represented in the BCW was energy price. Based on our work in this paper, we believe that the BCW offers a useful aid for the systematic design and development of behaviour change around end-use energy efficiency. We also propose that it may support development of a common lexicon for activities that can be rather vaguely described currently in energy efficiency guidance. (C) 2016 Elsevier Ltd. All rights reserved.

Wilson, D. K. (2015). "Behavior Matters: The Relevance, Impact, and Reach of Behavioral Medicine." *Annals of Behavioral Medicine* 49(1): 40-48.

Growing evidence suggests behavioral interventions that target a few key behaviors may be effective at improving population-level health outcomes; health status indicators; social, economic, and physical environments; personal capacity; and biological outcomes. A theoretical framework that targets both social and cognitive mechanisms of behavioral interventions is outlined as critical for understanding "ripple effects" of behavioral interventions on influencing a broad range of outcomes associated with improved health and well-being. Evidence from randomized controlled trials is reviewed and demonstrates support for ripple effects—the effects that behavioral interventions have on multiple outcomes beyond the intended primary target of the interventions. These outcomes include physical, psychological, and social health domains across the lifespan. Cascading effects of behavioral interventions have important implications for policy that argue for a broader conceptualization of health that integrates physical, mental, and social well-being outcomes into future research to show the greater return on investment.

Wilson, K. E., et al. (2016). "Brief Self-Efficacy Scales for Use in Weight-Loss Trials: Preliminary Evidence of Validity." *Psychological Assessment* 28(10): 1255-1264.

Self-efficacy is a commonly included cognitive variable in weight-loss trials, but there is little uniformity in its measurement. Weight-loss trials frequently focus on physical activity (PA) and eating behavior, as well as weight loss, but no survey is available that offers reliable measurement of self-efficacy as it relates to each of these targeted outcomes. The purpose of this study was to test the psychometric properties of brief, pragmatic self-efficacy scales specific to PA, healthful eating and weight-loss (4 items each). An adult sample (n = 1,790) from 28 worksites enrolled in a worksite weight-loss program completed the self-efficacy scales, as well as measures of PA, dietary fat intake, and weight, at baseline, 6-, and 12-months. Confirmatory factor analysis supported the hypothesized factor structure indicating 3 latent self-efficacy factors, specific to PA, healthful eating, and weight-loss. Measurement equivalence/invariance between relevant demographic groups, and over time was also supported. Parallel growth processes in self-efficacy factors and outcomes (PA, fat intake, and weight) support the predictive validity of score interpretations. Overall, this initial series of psychometric analyses supports the interpretation that scores on these scales reflect self-efficacy for PA, healthful eating, and weight-loss. The use of this instrument in large-scale weight-loss trials is encouraged.

Withanage, C., et al. (2017). DESIGN CHALLENGES IN ENERGY CONSERVATION STRATEGIES FOR SHARED SPACES. *Ds87-5 Proceedings of the 21st International Conference on Engineering Design*. A. Maier, S. Skec, H. Kim et al.: 179-188.

Business and service buildings, mainly consisting of shared spaces, account for 38% of the total Singapore energy consumption. However, compared to energy use studies in private spaces (i.e., apartments, houses, etc.), there are far fewer studies on shared spaces. This paper describes the results of a user study conducted in four cohort classrooms at Singapore University of Technology and Design (SUTD). The user study was designed to gain insights into students' attitudinal and behavioural changes in response to energy feedback displays placed in their classrooms, and an inter-cohort classroom energy competition with monetary incentives. The research questions: (RQ1) which factors shape energy use behaviour and (RQ2) which factors shape energy users' responses to interventions aimed at sustainable behaviour, were formulated to explore shared space energy use behaviours. The results show that social dynamics, contextual forces such as policies on resource usage, and personal capabilities are playing roles in shaping energy use behaviours as well as shared space users' responses to interventions.

Witzel, T. C., et al. (2016). "HIV Self-Testing among Men Who Have Sex with Men (MSM) in the UK: A Qualitative Study of Barriers and Facilitators, Intervention Preferences and Perceived Impacts." *Plos One* 11(9).

Introduction Innovative strategies, such as HIV self-testing (HIVST), could increase HIV testing rates and diagnosis. Evidence to inform the design of an HIVST intervention in the UK is scarce with very little European data on this topic. This study aims to understand values and preferences for HIVST interventions targeting MSM in the UK. We explore the acceptability of HIVST among MSM in the context of known barriers and facilitators to testing for HIV; assess preferences for, and the concerns about, HIVST. Methods Six focus group discussions (FGD) were conducted with 47 MSM in London, Manchester and Plymouth. HIVST as a concept was discussed and participants were asked to construct their ideal HIVST intervention. OraQuick (TM) and BioSure (TM) kits were then demonstrated and participants commented on procedure, design and instructions. FGDs were recorded and transcribed verbatim, then analysed thematically. Results Convenience and confidentiality of HIVST was seen to facilitate testing. Issues with domestic privacy problematised confidentiality. HIVST kits and instructions were thought to be unnecessarily complicated, and did not cater to the required range of abilities. The window period was the most important element of an HIVST, with strong preference for 4th generation testing. Kits which used a blood sample were more popular than those using saliva due to higher perceived accuracy although phobia of needles and/or blood meant some would only access HIVST if a saliva sample option was available. A range of access options was important to maintain convenience and privacy. HIVST kits were assumed to increase frequency of testing, with concerns related to the dislocation of HIVST from sexual health care pathways and

services. Discussion Utility of HIVST arises from relatively high levels of confidentiality and convenience. Until 4th generation assays are available HIVST will be seen as supplementary in a UK context.

Wolfensberger, A., et al. (2018). "Preventing ventilator-associated pneumonia-a mixed-method study to find behavioral leverage for better protocol adherence." *Infection Control and Hospital Epidemiology* 39(10): 1222-1229.

Objective: Preventing ventilator-associated pneumonia (VAP) is an important goal for intensive care units (ICUs). We aimed to identify the optimal behavior leverage to improve VAP prevention protocol adherence. Design: Mixed-method study using adherence measurements to assess 4 VAP prevention measures and qualitative analysis of semi-structured focus group interviews with frontline healthcare practitioners (HCPs). Setting: The 6 ICUs in the 900-bed University Hospital Zurich in Zurich, Switzerland. Patients and participants Adherence to VAP prevention measures were assessed in patients with a device for invasive ventilation (ie, endotracheal tube, tracheostomy tube). Participants in focus group interviews included a convenience samples of ICU nurses and physicians. Results: Between February 2015 and July 2017, we measured adherence to 4 protocols: bed elevation showed adherence at 27% (95% confidence intervals [CI], 23%-31%); oral care at 41% (95% CI, 36%-45%); sedation interruption at 81% (95% CI, 74%-85%); and subglottic suctioning at 88% (95% CI, 83%-92%). Interviews were analyzed first inductively according a grounded theory approach then deductively against the behavior change wheel (BCW) framework. Main behavioral facilitators belonged to the BCW component 'reflective motivation' (ie, perceived seriousness of VAP and self-efficacy to prevent VAP). The main barriers belonged to 'physical capability' (ie, lack of equipment and staffing and side-effects of prevention measures). Furthermore, 2 primarily technical approaches (ie, 'restructuring environment' and 'enabling HCP') emerged as means to overcome these barriers. Conclusions: Our findings suggest that technical, rather than education-based, solutions should be promoted to improve VAP prevention. This theory-informed mixed-method approach is an effective means of guiding infection prevention efforts.

Wong, B., et al. (2017). "Selection of peritoneal dialysis among older eligible patients with end-stage renal disease." *Nephrology Dialysis Transplantation* 32(2): 384-392.

Background: Older patients with end-stage renal disease (ESRD) are less likely to choose peritoneal dialysis (PD) over hemodialysis (HD). The reasons behind their choice of dialysis modality are not clear. This study seeks to determine the patient-perceived factors that influence ESRD patients' choice of dialysis modality among older ESRD patients who are deemed eligible for both PD and HD. Methods: All patients had completed a multidisciplinary modality assessment, were deemed eligible for both PD and HD, and had received modality education. Semi-structured interviews were conducted and transcripts were read repeatedly to derive potential codes using line-by-line textual analysis. The Capability, Opportunity, Motivation-Behaviour (COM-B) and Theoretical Domain Framework (TDF), validated tools that were developed for designing behavioral change interventions, were used to help guide the coding framework. Results: Among older ESRD patients who are deemed eligible for both PD and HD, factors relevant to their modality decision-making were identified with respect to physical strength/dexterity and having a sound mind (capability), external forces and constraints (opportunity), and values and beliefs (motivation). Often a combination of factors led to an individual's choice of a particular dialysis modality. However, preferences for PD were primarily based around convenience and maintaining a normal life, while a heightened sense of security was the primary reason for those who selected HD. Conclusions: We have identified patient-perceived factors that influence choice of dialysis modality in older individuals with ESRD who are eligible for PD and HD. These factors should be considered and/or addressed within PD programs seeking to promote PD.

Woodside, J. V., et al. (2013). "Fruits and vegetables: measuring intake and encouraging increased consumption." *Proceedings of the Nutrition Society* 72(2): 236-245.

A high intake of fruit and vegetables (FV) is associated with reduced risk of chronic disease, although the evidence base is mostly observational. Blood biomarkers offer an objective indicator of FV intake, potentially improving estimates of intakes based on traditional methods. A valid biomarker of overall FV intake would be able to confirm population intakes, more precisely evaluate the association between intakes and health outcomes and confirm compliance in FV interventions. Several substances have been proposed as biomarkers of FV intake: vitamin C, the carotenoids and polyphenols. Certain biomarkers are strong predictors of single FV; however, the proposed single biomarkers of FV consumption are only modestly predictive of overall FV consumption. This is likely to be due to the complexity of the FV food group. While accurately measuring FV intake is important in nutrition research, another critical question is: how best can an increase in FV intake be achieved? Increased FV intake has been achieved in efficacy studies using intensive dietary advice. Alternative, less intensive methods for encouraging FV consumption need to be developed and tested for population level intervention. Systematic reviews suggest peer support to be an effective strategy to promote dietary change. This review will describe the evidence for a link between increased FV intake and good health,

outline possible novel biomarkers of FV consumption, present the most recently available data on population intake of FV and examine the usefulness of different approaches to encourage increased consumption of FV.

Woon, S. A. and D. Fisher (2016). "Antimicrobial agents - optimising the ecological balance." *Bmc Medicine* 14.

Background: There is no more challenging a group of pharmaceuticals than antimicrobials. With the antibiotic era came great optimism as countless deaths were prevented from what were previously fatal conditions. Although antimicrobial resistance was quickly identified, the abundance of antibiotics entering the market helped cement attitudes of arrogance as the "battle against pestilence appeared won". Opposite emotions soon followed as many heralded the return of the pre-antibiotic era, suggesting that the "antibiotic pipeline had dried up" and that our existing armament would soon be rendered worthless. Discussion: In reality, humans overrate their ecological importance. For millions of years there has been a balance between factors promoting bacterial survival and those disturbing it. The first half century of the "antibiotic era" was characterised by a cavalier attitude disturbing the natural balance; however, recent efforts have been made through several mechanisms to respond and re-strengthen the antimicrobial armament. Such mechanisms include a variety of incentives, educational efforts and negotiations. Today, there are many more "man-made" factors that will determine a new balance or state of ecological harmony. Conclusion: Antibiotics are not a panacea nor will they ever be inutile. New resistance mechanisms will be identified and new antibiotics will be discovered, but most importantly, we must optimise our application of these extraordinary "biological tools"; therein lays our greatest challenge - creating a society that understands and respects the determinants of the effectiveness of antibiotics.

Wootton, S. L., et al. (2017). "Effects of ground-based walking training on daily physical activity in people with COPD: A randomised controlled trial." *Respiratory Medicine* 132: 139-145.

This study explored the effects of ground-based walking training on physical activity (PA) and sedentary time (ST) in people with chronic obstructive pulmonary disease (COPD). Participants were randomised to a walk group (WG) [supervised, ground-based walking training, two or three times per week for 8-10 weeks] or a control group (CG) [usual medical care]. Before and after the intervention period, PA and ST were measured using the SenseWear (R) Pro3 Armband. Of the 143 participants randomised, 101 (71%) had sufficient data for the primary analysis; 62 were from the WG (mean [SD] age 69 [8] years, FEV1 42 [15] % predicted) and 39 were from the CG (age 68 [9] years, FEV1 43 [15] % predicted). No between-group differences were demonstrated in any measure of PA or ST (all $p > 0.05$). Secondary analyses ($n = 44$) revealed that, compared to the CG, the proportion of waking hours spent in moderate intensity PA accumulated in uninterrupted bouts of between 30 and 60 min, increased in the WG by 0.8% (95% CI = 0.4 to 1.3). This study demonstrated that, in people with COPD, ground-based walking training alone had little, if any clinically important effect on daily PA and no effect on ST.

Wou, C., et al. (2018). "The associations between the response efficacy and objective and subjective change in physical activity and diet in the Information and Risk Modification trial." *Public Health* 165: 26-33.

Objectives: Many health promotion campaigns and interventions focussing on improving health-related behaviours have been based on targeting response efficacy. This is based on the assumption that response efficacy is an important modifiable determinant of behaviour change. This study aimed to quantify the association between response efficacy and objective and subjective measures of physical activity and diet. Study design: Prospective cohort analysis of data from a randomised controlled trial. Methods: A total of 953 participants were assessed for response efficacy at baseline and 12 weeks following randomisation to interventions to increase physical activity and improve diet. Subjective measures were collected via a self-report questionnaire that included two questions used to derive the Cambridge Index of physical activity and questions about daily or weekly fruit and vegetable, whole grain, meat and fish intake, based on the dietary guidelines to lower cardiovascular risk. Objective measures were quantified using accelerometers and plasma carotenoids. Results: The mean change in response efficacy for physical activity was +0.5 (standard deviation [SD] 2.0) and for diet was +0.5 (SD 2.1). There were no clinically or statistically significant associations between baseline or change in response efficacy and objective and subjective measures of physical activity or objective measures of diet. There was a small statistically significant association between baseline response efficacy and change in self-reported wholegrain consumption, but this is unlikely to be clinically significant. Conclusions: Response efficacy is not a fundamental determinant of diet and physical activity and should not be the main focus of interventions targeting these behaviours. (C) 2018 The Author(s). Published by Elsevier Ltd on behalf of The Royal Society for Public Health.

Wozney, L., et al. (2017). "Implementation of eMental Health care: viewpoints from key informants from organizations and agencies with eHealth mandates." *Bmc Medical Informatics and Decision Making* 17.

Background: The use of technology such as computers, tablets, and smartphones to improve access to and the delivery of mental health care (eMental Health care) is growing worldwide. However, despite the rapidly expanding evidence base demonstrating the efficacy of eMental Health care, its implementation in clinical practice and health care

systems remains fragmented. To date, no peer-reviewed, key-informant studies have reported on the perspectives of decision-makers concerned with whether and how to implement eMental Health care. Methods: From September to November 2015, we conducted 31 interviews with key informants responsible for leadership, policy, research, and/or information technology in organizations influential in the adoption of technology for eMental Health care. Deductive and inductive thematic analyses of transcripts were conducted using the Behavior Change Wheel as an organizing framework. Frequency and intensity effect sizes were calculated for emerging themes to further explore patterns within the data. Results: Key informant responses (n = 31) representing 6 developed countries and multiple organizations showed consensus on common factors impacting implementation: individual and organizational capacities (e.g., computer literacy skills [patients and providers], knowledge gaps about cyber security, limited knowledge of available services); motivational drivers of technology-based care (e.g., extending care, data analytics); and opportunities for health systems to advance eMental Health care implementation (e.g., intersectoral research, rapid testing cycles, sustainable funding). Frequency effect sizes showed strong associations between implementation and credibility, knowledge, workflow, patient empowerment, electronic medical record (EMR) integration, sustained funding and intersectoral networks. Intensity effect sizes showed the highest concentration of statements (>10% of all comments) related to funding, credibility, knowledge gaps, and patient empowerment. Conclusion: This study provides previously unavailable information about key informant perspectives on eMental Health care implementation. The themes that emerged, namely the need to intensify intersectoral research, measure/monitor readiness to implement, define cost-utility benchmarks, raise awareness about available technologies, and test assumptions that 'proven' technologies will be easily integrated can inform the design and evaluation of eMental Health care implementation models.

Wu, Y. P., et al. (2016). "A systematic review of interventions to improve adherence to melanoma preventive behaviors for individuals at elevated risk." *Preventive Medicine* 88: 153-167.

Background and objectives. To examine the effectiveness of behavioral interventions for melanoma prevention targeted to individuals at elevated risk due to personal and/or family history. Methods. Through literature searches in 5 search databases (through July 2014), 20 articles describing 14 unique interventions focused on melanoma prevention among individuals at elevated risk for the disease were identified. Interventions targeting only patients undergoing active treatment for melanoma were excluded. Results. The average study quality was moderate. The majority of interventions (6 out of 9, 66% of studies) led to improvements in one or more photoprotective behaviors, particularly for improvements in use of protective clothing (3 out of 5, 60% of studies), and frequency and/or thoroughness of skin self-examinations (9 out of 12, 75%). Fewer interventions (5 out of 14, 36%) targeted uptake of total body skin examinations (60% led to improvements). Also, fewer interventions targeted all three preventive behaviors (5 out of 14, 36%). Conclusions. Findings suggest that future interventions should aim to improve adherence across multiple preventive behaviors, over a longer time period (past 8 months post-intervention), and target high-risk children. Studies should include adequate sample sizes to investigate moderators and mediators of intervention effectiveness. Interventions may be strengthened by new techniques, such as incorporating family members (e.g., to improve thoroughness of skin self-examinations) and eHealth technology. (C) 2016 Elsevier Inc. All rights reserved.

Wu, Z. Y., et al. (2015). "Simplified HIV Testing and Treatment in China: Analysis of Mortality Rates Before and After a Structural Intervention." *Plos Medicine* 12(9).

Background Multistage stepwise HIV testing and treatment initiation procedures can result in lost opportunities to provide timely antiretroviral therapy (ART). Incomplete patient engagement along the continuum of HIV care translates into high levels of preventable mortality. We aimed to evaluate the ability of a simplified test and treat structural intervention to reduce mortality. Methods and Findings In the "pre-intervention 2010" (from January 2010 to December 2010) and "pre-intervention 2011" (from January 2011 to December 2011) phases, patients who screened HIV-positive at health care facilities in Zhongshan and Pubei counties in Guangxi, China, followed the standard-of-care process. In the "post-intervention 2012" (from July 2012 to June 2013) and "post-intervention 2013" (from July 2013 to June 2014) phases, patients who screened HIV-positive at the same facilities were offered a simplified test and treat intervention, i.e., concurrent HIV confirmatory and CD4 testing and immediate initiation of ART, irrespective of CD4 count. Participants were followed for 6-18 mo until the end of their study phase period. Mortality rates in the pre-intervention and post-intervention phases were compared for all HIV cases and for treatment-eligible HIV cases. A total of 1,034 HIV-positive participants (281 and 339 in the two pre-intervention phases respectively, and 215 and 199 in the two post-intervention phases respectively) were enrolled. Following the structural intervention, receipt of baseline CD4 testing within 30 d of HIV confirmation increased from 67%/61% (pre-intervention 2010/pre-intervention 2011) to 98%/97% (post-intervention 2012/post-intervention 2013) (all $p < 0.001$ [i.e., for all comparisons between a pre- and post-intervention phase]), and the time from HIV confirmation to ART initiation decreased from 53 d (interquartile range [IQR] 27-141)/43 d (IQR 15-113) to 5 d (IQR 2-12)/5 d (IQR 2-13) (all $p < 0.001$). Initiation of ART increased from 27%/49% to 91%/89% among all cases (all $p < 0.001$) and from 39%/62% to 94%/90% among individuals with CD4 count ≤ 350

cells/mm³) or AIDS (all $p < 0.001$). Mortality decreased from 27%/27% to 10%/10% for all cases (all $p < 0.001$) and from 40%/35% to 13%/13% for cases with CD4 count ≤ 350 cells/mm³) or AIDS (all $p < 0.001$). The simplified test and treat intervention was significantly associated with decreased mortality rates compared to pre-intervention 2011 (adjusted hazard ratio [aHR] 0.385 [95% CI 0.239-0.620] and 0.380 [95% CI 0.233-0.618] for the two post-intervention phases, respectively, for all newly diagnosed HIV cases [both $p < 0.001$], and aHR 0.369 [95% CI 0.226-0.603] and 0.361 [95% CI 0.221-0.590] for newly diagnosed treatment-eligible HIV cases [both $p < 0.001$]). The unit cost of an additional patient receiving ART attributable to the intervention was US\$83.80. The unit cost of a death prevented because of the intervention was US\$234.52. Conclusions Our results demonstrate that the simplified HIV test and treat intervention promoted successful engagement in care and was associated with a 62% reduction in mortality. Our findings support the implementation of integrated HIV testing and immediate access to ART irrespective of CD4 count, in order to optimize the impact of ART.

Yakovchenko, V., et al. (2019). "Primary care provider perceptions and experiences of implementing hepatitis C virus birth cohort testing: a qualitative formative evaluation." *Bmc Health Services Research* 19.

BackgroundIn 2014, the Department of Veterans Affairs (VA) adopted a screening test policy for hepatitis C virus (HCV) in all Baby Boomers - those born between 1945 and 1965. About 1 in 12 Veterans were estimated to be infected with HCV yet approximately 34% of the birth cohort remained untested. Early HCV diagnosis and successful antiviral treatment decrease the risk of onward transmission, cirrhosis, hepatocellular carcinoma, liver transplant, and death. Implementing evidence-based HCV screening in primary care has great potential to reduce morbidity and mortality. To inform design and implementation of a quality improvement intervention, we studied primary care provider (PCP) perceptions of and experiences with HCV birth cohort testing.**Methods**We conducted a formative evaluation using qualitative semi-structured interviews guided by the integrated Promoting Action on Research Implementation in Health Services (i-PARIHS) framework. Twenty-two PCPs in six states across a large integrated US healthcare system were interviewed. Content analysis with a priori and emergent codes was performed on verbatim interview transcripts.**Results**We identified three themes related to primary care provider HCV testing and linkage practices, as mapped to i-PARIHS constructs: 1) evaluating cues to HCV testing (innovation/evidence), 2) framing HCV testing decisions (recipients), and 3) HCV testing and linkage to care in the new treatment era (context). The most frequently reported HCV testing cue was an electronic clinical reminder alert, followed by clinical markers and the presence of behavioral risk factors. Most PCPs saw testing as routine, but less urgent, leading to some reluctance. Providers largely saw themselves as performing guideline-concordant testing, yet no performance data were available to assess performance. Given the recent availability of new HCV medications, many PCPs were highly motivated to test and link patients to specialty care for treatment.**Conclusions**Our results suggest a multi-component intervention around awareness and education, feedback of performance data, clinical reminder updates, and leadership support, would address both a significant need, and be deemed acceptable and feasible to primary care providers.

Yardley, L., et al. (2015). "The Person-Based Approach to Intervention Development: Application to Digital Health-Related Behavior Change Interventions." *Journal of Medical Internet Research* 17(1).

This paper describes an approach that we have evolved for developing successful digital interventions to help people manage their health or illness. We refer to this as the "person-based" approach to highlight the focus on understanding and accommodating the perspectives of the people who will use the intervention. While all intervention designers seek to elicit and incorporate the views of target users in a variety of ways, the person-based approach offers a distinctive and systematic means of addressing the user experience of intended behavior change techniques in particular and can enhance the use of theory-based and evidence-based approaches to intervention development. There are two key elements to the person-based approach. The first is a developmental process involving qualitative research with a wide range of people from the target user populations, carried out at every stage of intervention development, from planning to feasibility testing and implementation. This process goes beyond assessing acceptability, usability, and satisfaction, allowing the intervention designers to build a deep understanding of the psychosocial context of users and their views of the behavioral elements of the intervention. Insights from this process can be used to anticipate and interpret intervention usage and outcomes, and most importantly to modify the intervention to make it more persuasive, feasible, and relevant to users. The second element of the person-based approach is to identify "guiding principles" that can inspire and inform the intervention development by highlighting the distinctive ways that the intervention will address key context-specific behavioral issues. This paper describes how to implement the person-based approach, illustrating the process with examples of the insights gained from our experience of carrying out over a thousand interviews with users, while developing public health and illness management interventions that have proven effective in trials involving tens of thousands of users.

Yeates, K., et al. (2017). "The Effectiveness of Text Messaging for Detection and Management of Hypertension in Indigenous People in Canada: Protocol for a Randomized Controlled Trial." *Jmir Research Protocols* 6(12).

Background: Hypertension, the leading cause of morbidity and mortality, affects more than 1 billion people and is responsible globally for 10 million deaths annually. Hypertension can be controlled on a national level; in Canada, for example, awareness, treatment, and control improved dramatically from only 16% in 1990 to 66% currently. The ongoing development, dissemination, and implementation of Hypertension Canada's clinical practice guidelines is considered to be responsible, in part, for achieving these high levels of control and the associated improvements in cardiovascular outcomes. A gap still exists between the evidence and the implementation of hypertension guidelines in Indigenous communities in Canada, as well as in low-and middle-income countries (LMICs). The rapid rise in the ownership and use of mobile phones globally and the potential for texting (short message service, SMS) to improve health literacy and to link the health team together with the patient served as a rationale for the Dream-Global study in both Canada and Tanzania. Objective: The primary objective of the Dream-Global study is to assess the effect of innovative technologies and changes in health services delivery on blood pressure (BP) control of Indigenous people in Canada and rural Tanzanians with hypertension using SMS messages and community BP measurement through task shifting with transfer of the measures electronically to the patient and the health care team members. Methods: This prospective, randomized blinded allocation study enrolls both adults with uncontrolled hypertension (medicated or unmedicated) and those without hypertension but at high risk of developing this condition who participate in a BP screening study. Participants will be followed for at least 12 months. Results: The primary efficacy endpoint in this study will be assessed by analysis of variance. Descriptive data will be given with the mean and standard deviation for continuous data and proportions for ordinal data. Exploratory subgroup analyses will include analysis by community, sex, mobile phone ownership at baseline, and age. The knowledge gained from the text messages will be assessed using a questionnaire at study completion, and results will be compared between the groups. Conclusions: This study is expected to provide insights into the implementation of an innovative system of guidelines-and community-based treatment and follow-up for hypertension in Indigenous communities in Canada and in Tanzania, an example of an LMIC. These insights are expected to provide the information needed to plan scalable and sustainable interventions to control BP virtually anywhere in the world.

Yerrakalva, D. and S. Griffin (2017). "Conversations about sitting: are we and should we be telling patients to sit less?" *British Journal of General Practice* 67(663): 473-474.

Yeung, W. F., et al. (2018). "Effects of Zero-time Exercise on inactive adults with insomnia disorder: a pilot randomized controlled trial." *Sleep Medicine* 52: 118-127.

Objective: To evaluate the feasibility and clinical effects of a lifestyle-integrated exercise, namely zero-time exercise (ZTE), on improving insomnia in inactive adults with insomnia disorder. Methods: In this pilot randomized controlled trial, 37 physically inactive adults (mean age: 49.9 years; SD: 13.6 91.9% female) fulfilling the diagnostic criteria of insomnia disorder recruited from the community were randomly assigned to ZTE training or sleep hygiene education (SHE) groups. Subjects in the ZTE group (n = 18) attended two 2-hour training lessons to learn ZTE which they then practiced daily for eight weeks. Subjects in the SHE group (n = 19) attended two lessons of the same schedule and duration. The primary outcome measure was the Insomnia Severity Index (ISI). Results: The ZTE group had lower ISI scores than the SHE group, with a large between-group effect size of 0.93-1.10 at weeks two, four, six, and eight, but the difference became non-significant at week eight, suggesting a loss of efficacy two months after the training. For secondary outcomes, no significant between-group differences were found in sleep parameters by sleep diary or objective actigraphy. The adherence to the ZTE training course was satisfactory, with 83% of the group completing two sessions and 78% continuing to practice ZTE for five days or more per week during the eight-week intervention period. Conclusion: The simple and brief ZTE training showed high acceptability and exercise compliance and the first evidence of efficacy in reducing insomnia severity in inactive adults with insomnia disorder. Confirmatory trials with longer follow-up are justified. Trial registration number: ClinicalTrials.gov, #NCT03155750 (c) 2018 Elsevier B.V. All rights reserved.

Young, A. M., et al. (2018). "Improving nutritional discharge planning and follow up in older medical inpatients: Hospital to Home Outreach for Malnourished Elders." *Nutrition & Dietetics* 75(3): 283-290.

Aim Nutritional decline during and after acute hospitalisation is common amongst older people. This quality improvement initiative aimed to introduce a dietitian-led discharge planning and follow-up program (Hospital to Home Outreach for Malnourished Elders, HHOME) at two hospitals within usual resources to improve nutritional and functional recovery. Methods Prospective pre-post evaluation design was used. Medical patients aged 65+ years at-risk of malnutrition and discharged to independent living were eligible. Participants receiving nutrition discharge planning and dietetic telephone follow up for four weeks post-discharge (HHOME') were compared to usual care (pre-HHOME'). Nutritional (weight and mini nutritional assessment (MNA)), functional (gait speed, handgrip strength and modified Barthel index) and assessment of quality of life-6D (AQoL-6D) outcomes were measured on discharge and six weeks later.

Results At six weeks, no significant difference in nutritional status was observed between pre-HHOME (n=39) and HHOME cohorts, although the HHOME cohort on average maintained weight while pre-HHOME cohort lost weight (0.42.9 kg vs -1.0 +/- 3.7 kg, P=0.060). Greater improvement in gait speed was seen in HHOME group (+0.24 +/- 0.27 vs +0.11 +/- 0.22, P=0.046) with no other significant outcome improvements. Across both cohorts, half were readmitted to hospital and 10% died within 12 weeks post-discharge. Conclusions The nutritional discharge planning and dietetic follow up provided to older community-living malnourished patients made a small impact on nutritional and functional parameters but clinical outcomes remained poor.

Young, L., et al. (2018). "Factors that influence Australian speech-language pathologists' self-reported uptake of aphasia rehabilitation recommendations from clinical practice guidelines." *Aphasiology* 32(6): 646-665.

Background: There are clinical practice guidelines for speech-language pathologists' aphasia management practices. However, reported adherence to aphasia guideline recommendations is variable. The barriers and facilitators to meeting aphasia management recommendations are not well understood. In order to develop theory-informed strategies to improve implementation of aphasia management practices, a better understanding of these barriers and facilitators is required. Aims: This study aimed to describe barriers and facilitators to speech-language pathologists' uptake and implementation of five prioritised recommended practices for aphasia management. Methods & Procedures: An online survey sought information from Australian speech-language pathologists working with clients with aphasia. The survey focused on five practices including goal setting, information provision, constraint-induced language therapy, timing, and intensity of intervention. The Theoretical Domains Framework was used to design the survey, with several statements generated about factors influencing practice for each domain. Outcomes & Results: Surveys were completed by 63 respondents. The theoretical domain environmental context and resources (e.g., I have insufficient time to engage in...) was the main perceived barrier for the majority of practices being investigated, whilst the theoretical domain social/professional role and identity (e.g., It is part of my role with the multidisciplinary stroke team to engage in...) was the main perceived implementation facilitator for all practices. The top three barriers and facilitators varied for each of the five recommended practices being investigated. Across clinical settings, there were commonalities and differences in the perceived barriers and facilitators to implementation. There was a significant correlation between self-reported uptake of all of the aphasia rehabilitation recommendations we investigated and participants' total barrier scores. Total barrier scores were also significantly different between clinical settings in the area of goal setting, with acute settings having a higher number of reported barriers to goal setting than rehabilitation settings (p=0.011). Conclusions: Implementation interventions that seek to overcome the barriers of environmental context and resources (time, competing priorities and resources) are likely to have the most effect on aphasia best practice uptake. Encouraging behaviour change in the social professional role and identity domain by emphasising the role of the speech-language pathologist in aphasia rehabilitation within the multidisciplinary stroke team should further improve uptake of recommended practices. At a local level, departments or individual speech pathologists need to identify their own barriers and facilitators and choose effective implementation interventions using the Behaviour Change Wheel. Both strategies should help close the evidence-practice gap in aphasia rehabilitation.

Young, T., et al. (2014). "What Are the Effects of Teaching Evidence-Based Health Care (EBHC)? Overview of Systematic Reviews." *Plos One* 9(1).

Background: An evidence-based approach to health care is recognized internationally as a key competency for healthcare practitioners. This overview systematically evaluated and organized evidence from systematic reviews on teaching evidence-based health care (EBHC). Methods/Findings: We searched for systematic reviews evaluating interventions for teaching EBHC to health professionals compared to no intervention or different strategies. Outcomes covered EBHC knowledge, skills, attitudes, practices and health outcomes. Comprehensive searches were conducted in April 2013. Two reviewers independently selected eligible reviews, extracted data and evaluated methodological quality. We included 16 systematic reviews, published between 1993 and 2013. There was considerable overlap across reviews. We found that 171 source studies included in the reviews related to 81 separate studies, of which 37 are in more than one review. Studies used various methodologies to evaluate educational interventions of varying content, format and duration in undergraduates, interns, residents and practicing health professionals. The evidence in the reviews showed that multifaceted, clinically integrated interventions, with assessment, led to improvements in knowledge, skills and attitudes. Interventions improved critical appraisal skills and integration of results into decisions, and improved knowledge, skills, attitudes and behaviour amongst practicing health professionals. Considering single interventions, EBHC knowledge and attitude were similar for lecture-based versus online teaching. Journal clubs appeared to increase clinical epidemiology and biostatistics knowledge and reading behavior, but not appraisal skills. EBHC courses improved appraisal skills and knowledge. Amongst practicing health professionals, interactive online courses with guided critical appraisal showed significant increase in knowledge and appraisal skills. A short workshop using problem-based approaches, compared to no intervention, increased knowledge but not appraisal skills. Conclusions: EBHC teaching and

learning strategies should focus on implementing multifaceted, clinically integrated approaches with assessment. Future rigorous research should evaluate minimum components for multifaceted interventions, assessment of medium to long-term outcomes, and implementation of these interventions.

Yu, C. H., et al. (2018). "Impact of the Canadian Diabetes Association guideline dissemination strategy on clinician knowledge and behaviour change outcomes." *Diabetes Research and Clinical Practice* 140: 314-323.

Aim: Implementation of clinical practice guideline (CPG) into clinical practice remains limited. Using the Knowledge-To-Action framework, a guideline dissemination and implementation strategy for the Canadian Diabetes Association's 2013 CPG was developed and launched to clinicians and people with diabetes. Methods: The RE-AIM framework guided evaluation of this strategy clinician; we report here one aspect of the effectiveness dimension using mixed methods. We measured impact of the strategy on Clinician knowledge and behaviour change constructs using evaluation forms, national online survey and individual interviews. Results: After attending a lecture, clinician confidence (n = 915) increased (3.7(SD 0.7) to 4.5 (SD 0.6) on a 5-point scale (p < 0.001)), with 55% (n = 505) intending to make a practice change (e.g. clinical management regarding glycemic control). Ninety-four percent of survey respondents (n = 907) were aware of the guidelines, attributed to communications from professional associations, continuing professional development events, and colleagues Forty to 98% of respondents (total n 462-185) were correct in their interpretation of CPG messages, and 33-65%(total n 351-651) reported that they had made changes to their practice. Interviews with 28 clinicians revealed that organizational credibility, online access to tools, clarity of tool content, and education sessions facilitated uptake; lack of time, team-based consensus, and seamless integration into care and patient complexity were barriers. Conclusion: The complexity of diabetes care requires systemic adoption of organization of care interventions, including interprofessional collaboration and consensus. Augmenting our strategy to include scalable models for professional development, integration of guidelines into electronic medical records, and expansion of our target audience to include health care teams and patients, may optimize guideline uptake. (C) 2018 Elsevier B.V. All rights reserved.

Zaforteza, C., et al. (2015). "Factors limiting and facilitating changes in caring for the intensive care unit patients' relatives." *Nursing in Critical Care* 20(2): 78-88.

AimTo explore how the intensive care unit (ICU) context influenced receptivity to change in clinical practice, in order to improve the care offered to patients' relatives. BackgroundFamilies of critically ill patients have unmet needs that are not being addressed. Lack of attention to these needs is related more to the ICU context than to a lack of scientific evidence. DesignParticipatory action research (PAR), a qualitative study conducted in a Spanish ICU. MethodEleven participants agreed to represent their teams in all scheduled group discussions. Field diaries were kept by the principal investigator and discussion participants, and five in-depth interviews were conducted. Content analysis was performed. ResultsFour factors limited change: (1) Not acknowledging the legitimacy of scientific evidence regarding the families of critically ill patients. (2) Imbalanced power relationships between the members of multidisciplinary teams. (3) Lack of nurse participation in the information flows. (4) The organization of time and physical space in the unit. Three factors facilitated change: (1) A sense of individual and shared commitment. (2) Leadership in day-to-day matters. (3) A process based on reflection. ConclusionsPAR can lead to change in clinical practice, although the process is complex and requires substantial input of time and energy. Contextual factors limiting this change were structural whereas facilitating factors were circumstantial and depended upon individuals' characteristics. Professionals working at the bedside are capable of identifying, developing and introducing changes to the context in which they work. Relevance to clinical practiceKnowing these factors and sharing the experience of a successful change process can help others design processes appropriate to their site.

Zaforteza, C., et al. (2015). "Transforming a conservative clinical setting: ICU nurses' strategies to improve care for patients' relatives through a participatory action research." *Nursing Inquiry* 22(4): 336-347.

This study focuses on change strategies generated through a dialogical-reflexive-participatory process designed to improve the care of families of critically ill patients in an intensive care unit (ICU) using a participatory action research in a tertiary hospital in the Balearic Islands (Spain). Eleven professionals (representatives) participated in 11 discussion groups and five in-depth interviews. They represented the opinions of 49 colleagues (participants). Four main change strategies were created: (i) Institutionally supported practices were confronted to make a shift from professional-centered work to a more inclusive, patient-centered approach; (ii) traditional power relations were challenged to decrease the hierarchical power differences between physicians and nurses; (iii) consensus was built about the need to move from an individual to a collective position in relation to change; and (iv) consensus was built about the need to develop a critical attitude toward the conservative nature of the unit. The strategies proposed were both transgressive and conservative; however, when compared with the initial situation, they enhanced the care offered to patients' relatives and patient safety. Transforming conservative settings requires capacity to negotiate positions and potential

outcomes. However, when individual critical capacities are articulated with a new approach to micropolitics, transformative proposals can be implemented and sustained.

Zardo, P., et al. (2014). "External factors affecting decision-making and use of evidence in an Australian public health policy environment." *Social Science & Medicine* 108: 120-127.

This study examined external factors affecting policy and program decision-making in a specific public health policy context: injury prevention and rehabilitation compensation in the Australian state of Victoria. The aim was twofold: identify external factors that affect policy and program decision-making in this specific context; use this evidence to inform targeting of interventions aimed at increasing research use in this context. Qualitative interviews were undertaken from June 2011 to January 2012 with 33 employees from two state government agencies. Key factors identified were stakeholder feedback and action, government and ministerial input, legal feedback and action, injured persons and the media. The identified external factors were able to significantly influence policy and program decision-making processes: acting as both barriers and facilitators, depending on the particular issue at hand. The factors with the most influence were the Minister and government, lawyers, and agency stakeholders, particularly health providers, trade unions and employer groups. This research revealed that interventions aimed at increasing use of research in this context must target and harness the influence of these groups. This research provides critical insights for researchers seeking to design interventions to increase use of research in policy environments and influence decision-making in Victorian injury prevention and rehabilitation compensation. (c) 2014 Elsevier Ltd. All rights reserved.

Zeijen, M. E. L., et al. (2018). "Workaholism versus work engagement and job crafting: What is the role of self-management strategies?" *Human Resource Management Journal* 28(2): 357-373.

Job crafting refers to the proactive actions employees take to redesign their jobs in order to get a better fit with their competencies, expectations, and wishes. So far, little is known about job crafting's underlying mechanisms. In this study, we examine how two different states of affective well-being (workaholism and work engagement) relate to job crafting 3 months later and how these well-being states steer different self-management behaviours, which ultimately lead to job crafting. Structural equation modelling on a heterogeneous sample (N=287) revealed that work engagement and workaholism both relate to expansive job crafting through different self-management strategies. Work engagement relates to challenge and resource seeking via self-goal setting and self-observation strategies, whereas workaholism associates with challenge and resource seeking only through self-goal setting. In addition, the results show a strong relationship between workaholism and self-punishment. Altogether, the findings suggest that self-management strategies can function as an explanatory mechanism for different job crafting behaviours.

Zhang, S. L., et al. (2016). "Genetic Study Identifies CBLN4 as a Novel Susceptibility Gene for Accident Proneness." *Frontiers of Engineering Management* 3(1): 30-38.

Frequent traffic accidents constitute a major danger to human beings. The accident-prone driver who has the stable physiological, psychological, and behavioral characteristics is one of the most prominent causes of traffic accidents. The internal link between the individual characteristics and the accident proneness has been a difficult point in the accident prevention research. The authors selected accident-prone drivers as cases and safe drivers as controls (case-control group) from 18,360 drivers who were enrolled from three public transportation incorporations of China using area stratified sampling method. The case-control groups were 1: 1 matched. The authors performed genome-wide association study (GWAS) by 179 cases and 179 controls using the U.S. Affymetrix Genome-Wide Human Mapping SNP 6.0 Array. The authors observed that the gene frequencies of 34 single-nucleotide polymorphisms (SNPs) in three regions of cases were higher than those in the control ($P < 10^{-4}$). The authors then tested two independent replication sets for strong association 6 SNPs in 349 pairs of case-control drivers using the U.S. ABI 3730 sequencing method. The results indicated that SNP rs6069499 within linked CBLN4 gene are strongly associated with accident proneness (P -combined = 6.37×10^{-10}). According to CBLN4 gene mainly involved in adrenal development and the regulation of secretion, the authors performed 12 biochemical parameters of the blood using radioimmunoassay. The levels of dopamine (DA) and adrenocorticotrophic (ACTH) hormone showed significant differences between accident-prone drivers and safe drivers (P -DA = 0.03, P -ACTH = 0.01). It is suggested that the accident-prone drivers may have the idiosyncrasy of susceptibility.

Zhuang, X. L. and C. X. Wu (2014). "Saving energy when using air conditioners in offices-Behavioral pattern and design indications." *Energy and Buildings* 76: 661-668.

Air Conditioners (ACs) in office buildings consume so much energy that the Chinese government enacted a regulation to limit the temperature setting range. To evaluate its effectiveness and provide clues for new behavior change methods, the study surveyed 527 office workers' knowledge of the compulsory approach, temperature sensation and preferences. The latter is included to evaluate the reasonableness of the regulation. Their actual behaviors covered in

this survey include factors influencing temperature setting, operating patterns in setting, and readjusting behaviors after setting. The aim is to find possible ways to encourage higher temperature setting and correct operation. The results show that although the regulation is reasonable (within the [26 degrees C to 28 degrees C range), more than half of the users violate it with an average setting at 24.9 degrees C. The low awareness of the regulation (31.9%) can only account for part of the ineffectiveness: people with knowledge set higher, but still below 26 degrees C. The survey also found some non-comfort motivations that can be potentially used to encourage higher temperature setting: personal health, noontime napping, connecting with nature, and protecting the environment. On the contrary, office workers would set the temperature lower when they first entered the office. It should be noted that office workers strongly consider colleagues when setting the temperature, but generally do not consider electricity consumption. Some of their operating patterns should also be paid attention like setting a low initial temperature; and constantly shutting off and turning on the AC. The discussion includes applications of these findings in terms of enhancing user motivation and simplifying thermostat operation. (C) 2013 Elsevier B.V. All rights reserved.

Ziebart, C., et al. (2018). "Left to my own devices, I don't know": using theory and patient-reported barriers to move from physical activity recommendations to practice." *Osteoporosis International* 29(5): 1081-1091.

Knowledge exchange with community-dwelling individuals across Ontario revealed barriers to implementation of physical activity recommendations that reflected capability, opportunity, and motivation; barriers unique to individuals with osteoporosis include fear of fracturing, trust in providers, and knowledge of exercise terminology. Using the Behaviour Change Wheel, we identified interventions (training, education, modeling) and policy categories (communication/marketing, guidelines, service provision). Introduction Physical activity recommendations exist for individuals with osteoporosis; however, to change behavior, we must address barriers and facilitators to their implementation. The purposes of this project are (1) to identify barriers to and facilitators of uptake of disease-specific physical activity recommendations (2) to use the findings to identify behavior change strategies using the Behaviour Change Wheel (BCW). Methods Focus groups and semi-structured interviews were conducted with community-dwelling individuals attending osteoporosis-related programs or education sessions in Ontario. They were stratified by geographic area, urban/rural, and gender, and transcribed verbatim. Two researchers coded data and identified emerging themes. Using the Behaviour Change Wheel framework, themes were categorized into capability, opportunity, and motivation, and interventions were identified. Results Two hundred forty community-dwelling individuals across Ontario participated (mean +/- SD age = 72 +/- 8.28). Barriers were as follows: capability: disease-related symptoms hinder exercise and physical activity participation, lack of exercise-related knowledge, low exercise self-efficacy; opportunity: access to exercise programs that meet needs and preferences, limited resources and time, physical activity norms and preferences; motivation: incentives to exercise, fear of fracturing, trust in exercise providers. Interventions selected were training, education, and modeling. Policy categories selected were communication/marketing, guidelines, and service provision. Conclusions Barriers unique to individuals with osteoporosis included the following: lack of knowledge on key exercise concepts, fear of fracturing, and trust in providers. Behavior change techniques may need tailoring to gender, age, or presence of comorbid conditions.

Ziegler, S. A., et al. (2018). "Changes in Therapist Actions During a Novel Pediatric Physical Therapy Program: Successes and Challenges." *Pediatric Physical Therapy* 30(3): 223-230.

Purpose: To monitor changes in time spent on pediatric physical therapy actions during a COPing With and Caring for Infants With Special Needs (COPCA) course. Methods: Data were collected before (T0), during, and after (T3) the course, which was attended by 15 Swiss physical therapists. Four treatment sessions of each therapist were video recorded and analyzed with the Groningen Observation Protocol 2.0, allowing for quantification of relative duration of therapeutic actions. Results: Between T0 and T3, time spent on caregiver coaching and hands-off approaches significantly increased. Conclusions: The shift from caregiver trainer to family coach and the increasing hands-off techniques represent successful changes in various domains of behavior. The moderate changes in hands-off approaches suggest that changing habits requires specific attention. The COPCA course will be adapted accordingly.

Zou, H. J., et al. (2017). "Identification of factors associated with self-care behaviors using the COM-B model in patients with chronic heart failure." *European Journal of Cardiovascular Nursing* 16(6): 530-538.

Background: Self-care can improve heart failure outcomes. Self-care confidence is associated with self-care behaviors and may serve as a mediator between potential influencing factors (e.g. functional capacity, knowledge, and health literacy) and self-care behaviors. However, evidence is limited on these relationships. The COM-B model (consisting of capability, opportunity, and motivation) may be an appropriate framework to understand the above relationships. Aim: The purpose of this study was to explore factors associated with self-care behaviors and to examine the mediating role of self-care confidence. Methods: Three hundred and twenty-one patients (mean age 64 years, 51% male) with chronic heart failure completed measures of functional capacity, knowledge, health literacy, social support,

socioeconomic status, self-care, and sociodemographic and clinical characteristics. Structural equation modeling was used to analyze the data. Results: The scores for self-care maintenance and management were 48.4 +/- 15.9 and 54.3 +/- 19.3, respectively. The revised model showed good fit (root mean square error of approximation=0.029; comparative fit index=0.989). Functional capacity and knowledge were directly associated with self-care management, and health literacy and social support were directly related to self-care maintenance. Moreover, self-care confidence mediated the relationships between knowledge, health literacy, social support and self-care behaviors. Conclusions: Chinese patients with chronic heart failure have poor self-care behaviors. Factors associated with self-care behaviors are confidence, functional capacity, knowledge, health literacy and social support. Self-care confidence appears to be a mediator between knowledge, health literacy, social support and self-care behaviors. Targeted interventions are required to optimize self-care behaviors in patients with chronic heart failure.

Zullig, L. L., et al. (2019). Moving from the Trial to the Real World: Improving Medication Adherence Using Insights of Implementation Science. *Annual Review of Pharmacology and Toxicology*, Vol 59. P. A. Insel. 59: 423-445.

Medication nonadherence is a serious public health concern. Although there are promising interventions that improve medication adherence, most interventions are developed and tested in tightly controlled research environments that are dissimilar from the real-world settings where the majority of patients receive health care. Implementation science methods have the potential to facilitate and accelerate the translation shift from the trial world to the real world. We demonstrate their potential by reviewing published, high-quality medication adherence studies that could potentially be translated into clinical practice yet lack essential implementation science building blocks. We further illustrate this point by describing an adherence study that demonstrates how implementation science creates a junction between research and real-world settings. This article is a call to action for researchers, clinicians, policy makers, pharmaceutical companies, and others involved in the delivery of care to adopt the implementation science paradigm in the scale-up of adherence (research) programs.

Zullig, L. L., et al. (2018). "Countering clinical inertia in lipid management: Expert workshop summary." *American Heart Journal* 206: 24-29.

Zwolinsky, S., et al. (2018). "Designing programmes of physical activity through sport: learning from a widening participation intervention, 'City of Football'." *Bmc Public Health* 18.

Background: Implementation profoundly influences how well new audiences engage with sport-based physical activity programmes. Recognising that effective implementation relies on concurrently generating supportive contexts, systems and networks for the least engaged 'target' groups; this paper aims to address what underpins children's (non) engagement with football-based physical activity. Methods: An observational research design, using a non-probability sample of N = 594 primary and secondary schoolchildren assessed outcomes of a three-year 'City of Football' (CoF) programme. Pupils self-reported football participation, personal friendship networks and exposure to six concurrent sources of influence (Sol). A 2-step hierarchical cluster analysis and univariate analyses assessed between-cluster differences. Results: Girls played football least regularly ($\chi^2(4) = 86.722, p = 0.000$). Overall, participation was significantly associated with personal networks engaged in football. Boys' personal networks were more stable and structurally effective. Football participation was also positively and linearly associated with Sol scores. Girls and pupils with no personal networks around football reported the lowest Sol scores. Three clusters emerged, dominated by social network influences. The Traditional Market (n = 157, 27.7%) comprised 81.7% boys; they regularly played football, had the most effective network structure and scored highly across all six domains of Sol. The Sporadically Engaging Socialisers (n = 190, 33.5%) comprised 52.9% girls who rarely played football, reported low Sol scores and an inferior network structure. In the Disconnected cluster (n = 220, 38.8%), 59.3% were non-footballing girls who reported the lowest motivation and ability Sol scores; and no personal networks engaged in football. Conclusions: This study reveals new insights about the primacy of social network effects for engaging children in football-based physical activity programmes. With little or no attention to these social-oriented issues, such interventions will struggle to attract 'target' children, but will readily engage already well-connected, experienced football-playing boys. The challenge for drawing non-footballing children into football-based interventions lies with engaging children -especially girls -whose social networks are not football-focused, while they also find football neither personally motivating nor easy to do.