Impact of personal hygiene behaviours and household WASH facilities on Streptococcus pyogenes skin carriage and infection in The Gambia

Background
Streptococcus pyogenes (StrepA) is responsible for a significant burden of disease, particularly in low-income countries. As well as common StrepA diseases including skin infections (pyoderma) and throat infections (pharyngitis), it can lead to Rheumatic Heart Disease (RHD), which is of major concern in sub-Saharan Africa. Repeated exposure throughout childhood to StrepA through both pyoderma and asymptomatic skin carriage may increase the risk of RHD. The importance of water access, sanitation and hygiene (WASH) in preventing StrepA skin carriage and infection is unknown in Africa. This study investigated whether hygiene behaviours such as handwashing and household WASH facilities are associated with reduced StrepA skin carriage and infection.

Methods
A nested cross-sectional survey of personal and household-level hygiene behaviour and WASH facilities was conducted within a longitudinal household cohort study investigating StrepA carriage and infection in The Gambia. Data collected included behaviour around handwashing, laundry, bathing, dental hygiene, wound care practices, as well as data on household WASH facilities: water sources, toilet and handwashing facilities, flooring materials and animal presence. Data were combined with StrepA skin carriage and pyoderma incidence data from the cohort study. Poisson regression was used to assess whether lower StrepA skin carriage and infection rates were associated with hygiene behaviours or WASH facilities.

Results
231 participants completed the hygiene survey (44.6% female, median age 13, range 0-85 years). The incidence rates of pyoderma and skin carriage in the cohort were 222 and 105 events per 1000 person years respectively and were highest in males and children under 5 years. In multivariable Poisson regression models accounting for recurrent events and adjusting for age group, sex and household size, no significant associations were found between pyoderma or skin carriage incidence and any personal hygiene behaviours. Pyoderma incidence was lower in participants whose compound has an indoor toilet (IRR 0.45, 95% CIs 0.25-0.80, p=0.005), and tiled or concrete yard (IRR 0.33, 95% CIs 0.16-0.60, p<0.001 compared to earth/sand). Skin carriage incidence was lower in participants whose compound had soap at the handwashing station (IRR 0.12, 95% CIs 0.01-0.58, p=0.004).

Conclusion
In this setting, StrepA pyoderma and skin carriage incidence is high, particularly in young boys. Variations in hygiene behaviours were not associated with lower incidence of StrepA pyoderma or carriage. Outdoor toilets, earth/sand yard, and absence of soap for handwashing were associated with higher StrepA incidence, but household wealth may be a confounding factor.
Exploring the potential acceptability of different menstrual hygiene materials in the rural villages of Podor, Senegal

Menstrual hygiene management (MHM) is often neglected in water, sanitation and hygiene (WASH) interventions yet menstruation is a monthly reality for millions of women and girls around the globe. In the rural villages of the department of Podor in the north of Senegal, there is a lack of safe and affordable menstrual hygiene materials for women to manage their periods. This dissertation aims to explore the acceptability of alternative menstrual hygiene materials in this context to inform a future MHM intervention. Alternatives considered in this study are reusable menstrual pads, menstrual underwear and the menstrual cup. Focus groups discussions and structured key-informant interviews were conducted with local women in four different villages as well as a focus group discussion with WASH practitioners working in the region. Through these qualitative methods current MHM practices and challenges were first explored after which the acceptability of the alternative menstrual materials was assessed. Findings highlighted three key existing challenges: limited mobility for menstruating women, risk of potential urogenital infections, and impacts on sanitation systems and the environment from poor disposal of sanitary pads. Regarding the alternative menstrual materials, there was a clear preference for external absorbents as both reusable menstrual pads and menstrual underwear were widely accepted among participants while the menstrual cup was generally met with rejection and apprehension. Affordability concerns expressed by participants point to reusable menstrual pads as the most appropriate alternative as it is noticeably cheaper than menstrual underwear.
Risk Factors for Taeniasis Prevalence in Rural Sichuan Province, China

Background
Taenia solium taeniasis is a foodborne illness caused by the consumption of pork that has been infected with juvenile tapeworms. While taeniasis is contained to the small intestine and often presents asymptptomatically, it is the necessary precursor to cysticercosis: a debilitating disease of the muscles, eyes and brain. By breaking the taeniasis lifecycle, both taeniasis and cysticercosis can be controlled. As such, the present study aims to investigate taeniasis transmission routes in order to elucidate risk factors for infection that could serve as future areas of intervention.

Methods
The study followed a two-stage sampling design. Seven villages in rural Sichuan Province, China, were selected by student cysticercosis prevalence level (high or low), as determined by a preceding school-based study. Fieldworkers surveyed an average of 90 adults per village about social and demographic factors, animal ownership and symptoms of disease. These data were used to describe the distribution of exposures in villages with high and low Associated Student Cysticercosis Levels (ASCL), estimate taeniasis and cysticercosis prevalences, and build causal models of taeniasis transmission using logistic regression.

Results
630 households from seven villages consented to participate. Across the villages, taeniasis prevalence ranged from 4.6% (95% confidence interval [CI]: 1.3, 11.4) to 24.3% (95% CI: 14.8, 36.0) and cysticercosis prevalence ranged from 2.3% (95% CI: 0.3, 8.0) to 8.7 (95% CI: 3.8, 16.4). In adjusted analyses, consumption of undercooked pork was associated with a 2.30 times higher taeniasis prevalence (95% CI: 1.01, 5.25; p=0.058) and use of commercial pig feed was associated with 81% lower taeniasis prevalence (95% CI: 53%, 93% reduction, p<0.001).

Conclusions
Consumption of undercooked pork may increase taeniasis prevalence while the use of commercial pig feed may decrease it. Future research should endeavour to employ more sensitive diagnostic tools and attempt to establish dose-response effects. Overall, future interventions may be successful in controlling taeniasis transmission, and the resulting spread of cysticercosis, if they focus on improving pork preparation and pig feeding practices.
Small places, big problems: Understanding environmental health in smaller African urban centres

The case of Karong Town, Malawi 2016-2017

Africa is simultaneously the world’s least urbanised and second most rapidly urbanising continent following Asia. Most of Africa’s future urban growth is expected to occur south of the Sahara Desert, where as much as 40% of the urban population is estimated to live in small towns and cities with fewer than 500,000 inhabitants. These smaller urban centres are also expected to accommodate a growing share of future urban growth with urbanisation. But many suffer from a lack of capacity to plan and manage urban growth, provide basic infrastructure and services, and adapt to emerging environmental hazards (including disasters and climate change). Levels of poverty also tend to be high in smaller urban centres, with levels of health care often similar to rural areas.

Environmental health may therefore not only be especially poor in smaller African urban centres, it may also be worsening. Yet virtually all research on urban environmental hazards comes from the largest cities. Consequently, very little remains known in smaller urban centres about what the most serious environmental hazards are, even less about whose health is most at risk and why, or how urban planning and public health can effectively respond.

At the same time, existing knowledge on the relationship between urban planning and public health remains overwhelmingly based on research in Europe and North America. There are serious concerns as to whether this knowledge is appropriate in the global South, where the assumptions of urban planning do not necessarily apply. In this context, this study addressed the disconnection between (a) existing evidence on environmental health problems in the largest cities versus smaller urban centres, and (b) existing knowledge on urban planning and public health in the global North versus the global South. In doing so, it drew on a detailed case study of Karonga Town, one such smaller urban centre in Malawi, to contemplate the prospects for reconnecting these two fields in these increasingly important contexts.
What do men in the Samburu tribe think about family planning programs that relate family size to the environment?

Introduction
Men have been identified as a barrier to the uptake of family planning services in Sub-Saharan Africa. This study investigated the thoughts of men from the pastoral Samburu tribe in Kenya on the Community Health Africa Trusts’ (CHAT) PHE programme, focusing on their views about the relationship between family size and the environment.

Methods
I carried out three focus group discussions and nine semi-structured interviews with a total of 27 Samburu men equally divided into the age groups 18-30, 30-45 and 45+. Following translation and transcription of the qualitative data collected, I conducted a thematic analysis.

Results
Men universally supported the environmental education that CHAT’s FP programme delivers, highlighting their dependency on natural resources, and how it is difficult to provide for a large family and maintain livestock during prolonged drought. Having many children and large herds of livestock were said to lead to exhaustion of natural resources, environmental degradation and wildlife dispersal. Key economic and educational benefits to the community from environmental and wildlife conservation were highlighted, along with the start up of businesses by women and increased education of children leading to future employment. Large family size and traditional livestock practices were understood as incompatible with wildlife conservation. Despite understanding the benefits of FP, not all men intended to use contraception in their own homes. Men encouraged CHAT’s programme to visit communities that continued to live with large families and livestock, describing them as responsible for a resource exhaustion-migration cycle that caused environmental degradation in the region.

Conclusions
Relating family size to the environment is a compelling strategy to improve support for FP among Samburu men. This is largely due to the demonstrated economic and livelihood benefits that reductions in family size, and the resulting improvements in natural resource availability and wildlife conservation bring to the community. CHAT should continue to provide its PHE FP programme in the region, expanding where possible to include hard-to-reach communities. Kenyan FP policy should consider integrating community-based PHE strategies among underserved pastoral groups living in fragile ecosystems.
Active Living in Glasgow’s Neighbourhoods: a qualitative investigation into the role of physical and social environments in physical activity

Recent research shows a physically active lifestyle can significantly reduce mortality, independent of overweight and obesity. However, population levels of physical activity are extremely low. As with other aspects of health, there is a social gradient to physical activity, with low socioeconomic status groups achieving less activity than others.

Socio-ecological models of physical activity hypothesise that the physical environment, social/cultural environment and individual characteristics exert independent and interactive influences on activity. Previous research has demonstrated that features of the physical environment such as street lighting, maintenance, green space and aesthetics are related to physical activity. Likewise, aspects of social capital such as social cohesion, feelings of belonging and trust between neighbours have been shown to be associated with increased physical activity levels. However, while there is a push to create physical environments with more opportunities for physical activity such as walking, there is little research exploring how active environments may be affected by levels of social capital. It could be hypothesised that an active physical environment will only be successful in increasing residents’ physical activity when it is supported by social capital, or vice versa.

A recent publication using data from a sample of adults living in socially-rented housing in Glasgow presented significant independent relationships between neighbourhood walking and self-reported aspects of the physical environment and social capital. In order to provide further insight to these associations, this project collected new qualitative data in two GoWell study areas: Drumchapel and Govan. The project used photovoice methodology to explore features of the physical environment that are related to social capital (e.g. communal space, indicators of vandalism or poor upkeep, opportunities for natural surveillance) and how residents believed they relate to their propensity to be physically active (engaging in walking, light, moderate and vigorous activity).

A total of 23 participants residing in social-rented accommodation provided neighbourhood photographs and participated in a semi-structured interview lasting 45-90 minutes. Of these participants, 20 also completed a questionnaire including items on socio-demographics, physical activity behaviour, social capital and perceptions of the local physical environment. Participants were relatively evenly distributed across neighbourhoods (Govan=12, Drumchapel=11), sex (male=10, female=13) and age (16-24 years=5, 25-39 years=6, 40-60 years=5, >60 years=4, didn’t answer=3). Both physical and social environments were viewed as important in creating active environments and regularly interacted with each other. Further thematic analysis of interview transcripts is currently being conducted in NVivo 10.