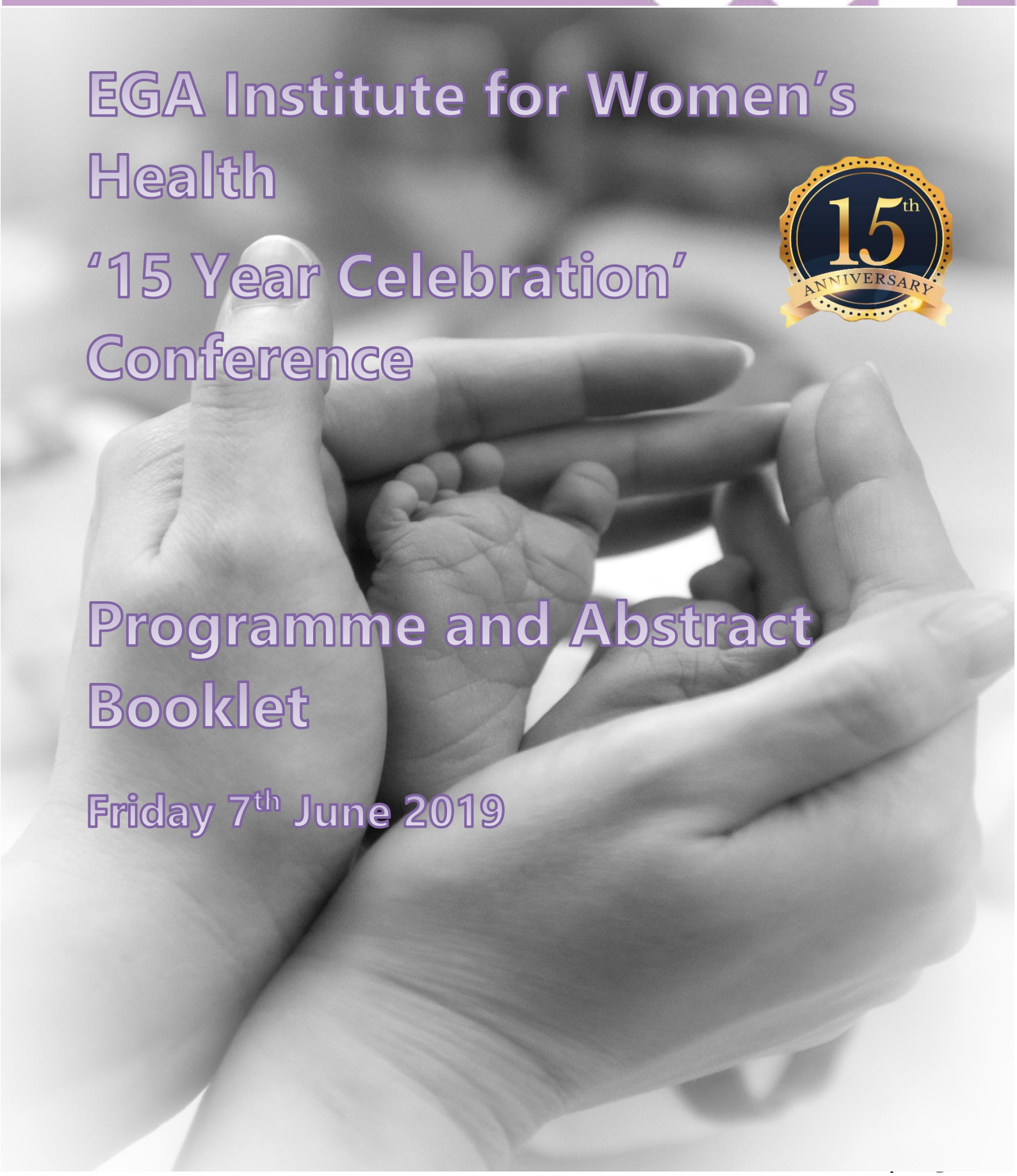
UCL

# EGA Institute for Women's Health

# '15 Year Celebration' Conference



# Programme and Abstract Booklet

## Friday 7th June 2019

UCL EGA Institute for Women's Health

University College London Hospitals NHS
NHS Foundation Trust

Athena SWAN Gold Award

# BOOKLET CONTENT

# Director's Welcome

I am delighted to welcome you to our 15 Year Celebration Conference of the EGA Institute for Women's Health.

**Why an Institute for Women's Health?**
Traditionally, women's health care has been confined to obstetrics and gynaecology, and has failed to take into account all the health issues affecting women and their babies. There are differences in the factors that determine health and the burden of ill-health for women and men, and the dynamics of gender in health have long been overlooked. The Institute was formed in 2004 to address this disparity.

Women's health is the future of human generations. The lack of knowledge about age related decline in fertility has led us to develop a taskforce on fertility education. Through Institute work on preconception healthcare, the vital importance of getting fit for pregnancy is now recognized, and we study how pregnancy can reveal the potential for pathology in older women, such as diabetes and stroke. The Institute also champions improving reproductive choice through novel delivery of family planning advice. We pioneer less invasive treatment of pelvic pathology such as endometriosis and fibroids. Our teams are researching risk-reducing surgery for ovarian cancer and our initiatives are showing that ovarian cancer can be detected years earlier by looking for DNA fragments in the bloodstream. In 2019 threats to women's health comes from all directions, including gender violence, lack of choice in planning their families, and environmental changes. Now more than ever, women's health requires an Institute such as this to provide a broad holistic approach to medicine, improving outcomes for women and their babies.

**The Life-Course Approach**
The Institute is based around the Life-Course of women, from pregnancy and newborn health through adolescence and fertility, screening and cancer prevention and on to a healthy menopause. This is illustrated in this booklet by our Life-Course diagram, new this year. When viewed across this trajectory of women's health, the breadth and depth of all that we do within the Institute comes to life. Along the way, we research, educate and deliver on our promise of better lives for women and babies across the world. Our annual meeting in 2018 was attended by over 250 delegates from across the university and hospital, and our 15 year meeting looks to be even more successful.

**Achievements and Innovations**
The Institute Education team has successfully delivered on two new courses this last year, an MSc in Women's Health, that covers the physical, mental, social, cultural, legal and ethical aspects of women's health and a new MRes to provide a more in depth research period for Masters' students. Our new

Centre for Prenatal Therapy was launched in February 2018. This initiative is a collaboration between the Institute for Women's Health and UCL Great Ormond Street Institute of Child Health, with Great Ormond Street Hospital and UCLH providing core clinical expertise. Through the appointment of KU Leuven's Jan Deprest as Professor of Fetal Surgery, the Centre is bringing innovative prenatal therapy such as open fetal surgery for spina bifida to the UK for the first time. Congratulations go to all the team who recently won the BMJ 2019 Clinical Leadership of the Year award.

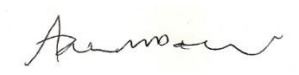
**Appointments and Promotions**

We welcome to the Institute some exciting new appointments. Zeynep Gurtin started as Lecturer in Women's Health. Associate Professor and Consultant Obstetrician Dimitris Siassakos is an expert in intrapartum care, stillbirth and bereavement care both nationally and internationally. He leads a new research group on Perinatal Care and Operative Birth and also takes on the important role of Integrated Clinical Academic Training Lead for the Institute supporting our junior doctors through their clinical academic career path. In addition, Mr Neill Patani has been appointed as Consultant Oncoplastic Breast Surgeon at UCLH and Honorary Senior Lecturer at UCL where he is exploring how breast cancer metabolism can be targeted for novel management strategies. Dr Jacqueline Nicholls is appointed as Associate Professor in Health Law. As well as teaching on our new MSc in Women's Health she is researching informed consent in maternity care, and the implications of the Montgomery ruling in 2015 which was a landmark case for medical litigation in the UK. Finally congratulations to Suzy Buckley who has been appointed as the new Vice-Dean for Equality, Diversity and Inclusion in the UCL Faculty of Population Health Sciences, within which Faculty the Institute is situated.

Great news in 2018 was that Simon Waddington and Rezan Kadir were both promoted to Professor. Simon who has led the Gene Transfer Technology group for many years plays a major role in the outstanding development and clinical translation of genetic therapies at UCL. Rezan is an internationally renowned expert on the impact and management of bleeding disorders in women's health. The Institute was delighted that both Simon and Rezan's work has been recognised by these well-deserved awards.

At our 15 Year Celebration conference today we will be reflecting on the past 15 years, looking back over our achievements to date and also looking forward to how we can move forward with research and innovation over the next 15 years.

I would like to thank everyone who is taking part today – those of you who submitted abstracts for presentation, all of our invited speakers, our scientific review panels, our sessional chairs, and everyone attending the meeting. Our special thanks go to the Conference Organising Committee and other colleagues who make this conference happen. I hope that you enjoy the day.



Professor Anna David
Director of the UCL EGA Institute for Women's Health

# Professor Ian Jacobs
# Founding Director
# (2004)

Congratulations to all involved in the EGA Institute for Women's Health on this 15th anniversary.

I have wonderful memories of moving to UCL to set up the Institute in 2004, of talented highly collegiate colleagues, of exciting meetings to plan the strategy and objectives of the Institute and of the shared sense of purpose in implementing our plans over the initial 7 years.

It has been good to see the progress and impact of the Institute since then and I know that even greater things will follow in the future. The need for progress in women's health across the world is even greater than when the Institute was founded and the extraordinary array of expertise in the Institute team at UCL has a major role to play.

Good luck with the next phase of the Institute and my very best wishes, Ian

You can keep abreast of activities within the Institute for Women's Health on our Facebook page and our Twitter account. https://www.facebook.com/ucl.ega.ifwh @UCL_IfWH

UCL EGA Institute for Women's Health

# Report from Director of WH Division, UCLH

**Donald Peebles**
**Clinical Director**

There is no doubt that 15 years after the launch of the Institute for Women's Health as a joint venture between UCL and UCLH we clearly see the benefits. The wealth of innovation and research being carried out in the hospital by clinical staff is clear from the number of fascinating projects detailed in this report. I am struck by a number of things: first, the breadth of this work, extending as it does across all stages of a woman's life, from managing a very premature baby to the challenges of cancer and the menopause in later life. Second, the range of different approaches used from surgical innovation, biomedical engineering, psychological assessment, new methods of diagnosis and therapy, clinical trials – they are all in there. And finally the high quality of this work, feeding into national recommendations, funded by major national and international grant giving bodies and delivering novel methods to improve clinical outcomes in Women's Health. This has all been aided by the close links that exist between university and hospital.

We have been extremely fortunate to be based for the last 10 years in a wonderful clinical facility – the Elizabeth Garrett Anderson wing, appropriately named after a pioneer of women in medicine linked to this hospital, and the Tower (theatres and in patient wards). This has supported a massive expansion in the scale of our clinical services in Maternity, Neonatology, Gynaecology and Breast surgery over this time - to the extent that we are now again short of space! However, such challenges lead to new ways of working that can provide more efficient, patient centred services, sometimes out of hospital and closer to home. The implementation of EPIC, an electronic health record system, in April 2019 poses many ongoing challenges which are being addressed in the anticipation that this will make a real difference to clinical pathways, research, safety, as well as important areas such as admin processes.

A testament to the quality of our services is that the Care Quality Commission have rated us as Good twice in 3 years with some areas such as our One Stop Gynaecology Clinic and Fetal Medicine Service considered outstanding.

Finally, something that hasn't changed significantly, despite clear and well described challenges, are the people who provide these services and look after women and their babies in our hospital. They have worked extremely hard, with pride and commitment, in a constant and unchanging manner over all this time. Much of what is done is not glamorous and doesn't benefit from the spotlight of obvious reward or fame – it doesn't feature elsewhere in this report. Yet, it is the backbone that enables us to provide a safe and compassionate service day in and day out. I would like to take this opportunity to say a huge thank you to all of them.

UCL EGA Institute for Women's Health

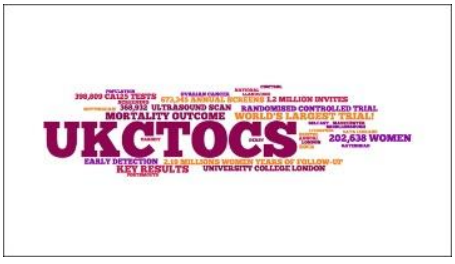
# Impact

## The Institute for Women's Health has had a major impact over the last 15 years on the health of women and their babies.

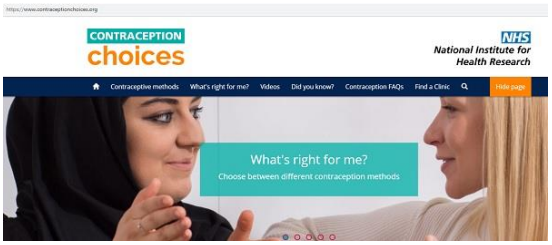
**The Institute was the only university department in the UK awarded the Athena SWAN Gold Award in 2017**. Athena SWAN is a national charter mark which encourages the advancement of gender equality in higher education and research, especially in science, technology, engineering, maths and medicine (STEMM)

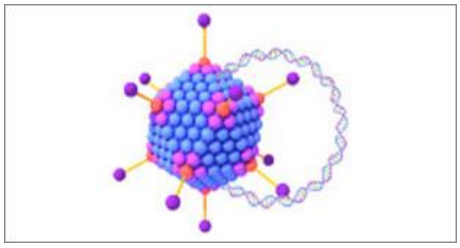
**The Centre for Prenatal Therapy performed the first open fetal surgery for spina bifida in the UK.** The team from UCLH, Great Ormond Street Hospital (GOSH), UCL Institute for Women's Health, UCL GOS Institute of Child Health (ICH) in collaboration with KU Leuven, Belgium recently won the 2019 BMJ Clinical Leadership Award in recognition.

**UKCTOCS:** Lead by the Institute, the UK Collaborative Trial of Ovarian Cancer Screening is the largest ever randomised controlled trial in ovarian cancer screening, recruiting 200,000 women.



**Contraception Choices website**. This website, developed by the Institute and the E-Health Unit at UCL, has been chosen as the lead website for contraception advice on NHS Choices. - https://www.contraceptionchoices.org/



**The Gene Transfer Technology Group** in collaboration with clinicians from GOSH-ICH have set up a pathway from bench to bedside to develop genetic therapies to treat life-threatening inherited childhood diseases including urea cycle diseases, Gaucher's Disease, Dravet Syndrome and Dopamine Transporter Deficiency Syndrome and to work with patient charities to deliver therapy.

**The EPICure studies** are important national studies that have driven national policy and changed attitudes towards children and adults born extremely premature.

EPICure
Population based studies of survival and later health status after extremely premature birth

**UCLH Neonatal unit** is the regional specialist centre for the care of very sick and premature babies with excellent long term follow up and outcome measures.

**The EVERREST project is developing a novel maternal gene therapy to treat severe early onset fetal growth restriction.** The team have performed the largest natural history study of this untreatable condition, providing improved counselling for affected couples about mother and baby outcomes.

EVERREST

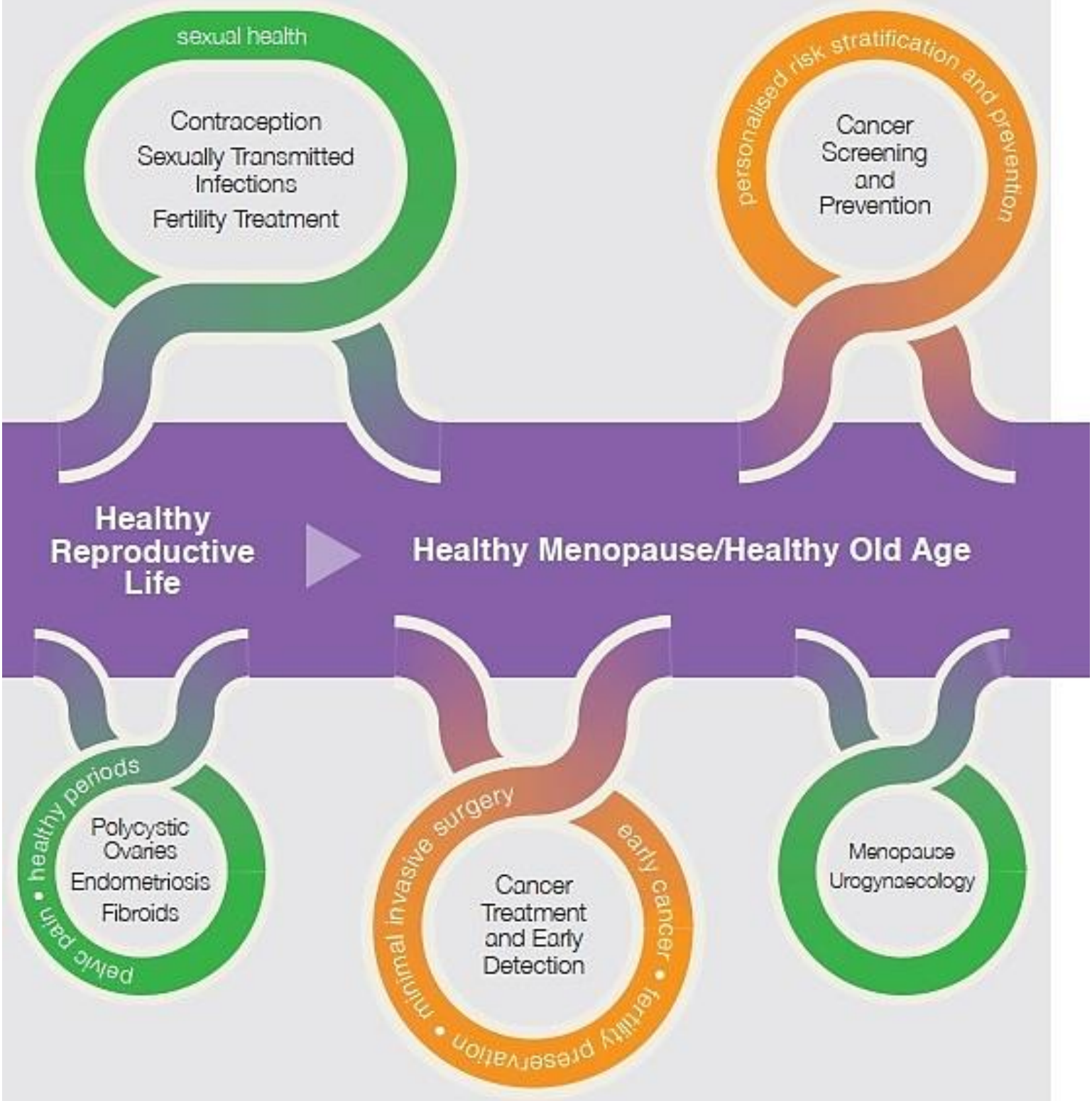
**First baby tested for breast cancer gene BRCA1 before implantation born in UK.** The UCL Centre for PGD was the first to perform preimplantation genetic diagnosis for families who carry mutations the BRCA1 gene in the UK. After a public consultation a licence for BRCA gene testing was granted by the HFEA. In collaboration with the Centre Reproductive and Genetic Research, the first baby was born in 2009.

**Approximately 7000 women have been recruited to the FORECEE trial.** FORECEE (Female Cancer Prediction Using Cervical Omics to Individualise Screening and Prevention) aims to develop personalised risk prediction and prevention for common female cancers.

**£82,000,000 of grant funding received at the Institute for Women's Health**

# The Life Course Approach for Woman's Health

The diagram outlines a woman's healthy development through her life as a purple banner and her typical health care needs across the life course above the banner. At the Institute for Women's Health, we strive to protect healthy development, responding promptly to departures from health below the banner and restoring health whenever possible throughout the life course.



UCL EGA Institute for Women's Health

# IfWH '15 Year Celebration' Conference
## Friday 7th June 2019
## Christopher Ingold Building XLG2 Auditorium

## Programme

08.30 – 09.15 **Registration and Tea/Coffee** (Christopher Ingold XLG2 Auditorium)

09.15 – 09.35 **Welcome and Highlights of the Day** Presenters: **Prof. Anna David and Prof. Donald Peebles**

09.35 – 10.45 **SESSION 1: EGA Institute for Women's Health – Reflections on The First 15 Years of the Institute**

Chair: **Mr Patrick O'Brien**

**Professor Neil Marlow,** Dept. of Neonatology, IfWH
**Professor Joyce Harper,** Dept. of Reproductive Health, IfWH Dept. of MFM, IfWH
**Mr Davor Jurkovic,** Consultant Gynaecologist/Director of Gynaecology Diagnostic and Outpatient Treatment Unit, UCLH; Dept. of Reproductive Health, IfWH
**Mr Adam Rosenthal,** Consultant Gynaecologist/Colposcopy Lead, UCLH Dept. of Women's Cancer, IfWH
**Professor Martin Widschwendter,** Dept. of Women's Cancer, IfWH
**Mrs Natilla Henry,** Head of Midwifery, UCLH

10.45 – 11.15 **Coffee Break** (Ramsey LT, G21)

11.15 – 12.15 **SESSION 2: EGA KEY NOTE LECTURE** Chair: **Professor Donald Peebles**

***Implementation and Spread of Innovation in Women's Health***

**Dr Amanda Begley,** (Director of Innovation and Implementation, UCL Partners)

Audience discussion with panel:
**Professor Joyce Harper**, (Dept. of Reproductive Health, IfWH)
**Mr Adam Rosenthal, (**Consultant Gynaecologist/Colposcopy Lead, UCLH)
**Dr Dimitrios Siassakos** ,(Dept. of MFM, IfWH)
**Miss Ephia Yasmin,** Consultant Gynaecologist, UCLH; Dept. of Reproductive Health, IfWH) - TBC

12.15 – 12.30 **SESSION 3: Anne Boutwood Travelling Fellowship Award – EGA Hospital Charity**
Introduction by: **Dr Melanie Davies**

***Think research value: the benefits of speaking a common language***

**Dr James Duffy** (National Medical Director's Clinical Fellow, NHS England/NHS Improvement)

12.30 – 12.40 **SESSION 4: Medical Student Prize Talk** Chair: **Dr Melanie Davies**

***The Effect of Individual Midwife Consultations on Fear of Childbirth in Pregnant Women***

**Roise Dudley** (Medical Student, Maternal & Fetal Medicine)

***A Group Photo will be taken immediately after Session 4 in the Christopher Ingold XLG2 Auditorium. We would like as many attendees to be present for this as possible.***

13.00 – 14.15 **Lunch and Poster Viewing (Haldane Room Wilkins Building/UCL North Cloisters)**

14.15 – 15.30 **SESSION 5: Early Career Researcher Presentations (2 Parallel Sessions)**

***Christopher Ingold XLG2 L/T*** Chair: **Professor Anna David**

1. *Detecting Jaundice in Ghanaian Neonates with a Smartphone* (**Felix Outlaw,** Neonatology)
2. *Caregiver presence impacts an infant's brain response to pain* (**Laura Jones,** Neonatology)
3. *AAV9 gene therapy rescue of an eEF1A2 knockout mouse model* (**Rajvinder Karda,** IfWH, Maternal & Fetal Medicine)
4. *Thromboelastography in pregnancy: can it predict postpartum haemorrhage?* (**Ozlem Turan,** UCLH Women's Health)
5. *Safety and efficacy of laparoscopic mesh sacrohysteropexy in the midterm: A multicentre study.* (**Dana Saud Aldabeeb,** MSc Student)
6. *Multivariate network analysis of cerebral autoregulation indicates injury severity following encephalopathy* (**Subhabrata Mitra**, Neonatology)

***Christopher Ingold XLG1 L/T*** Chair: **Professor Simon Waddington**

1. *Remote ischaemic pre-conditioning; a potential non-invasive therapy to improve endothelial function in women at risk of pre-eclampsia and with established pre-eclampsia* (**Tamara Kubba,** Maternal & Fetal Medicine)
2. *Placental Perfusion and Fetal Blood Oxygen Saturation Measured with MRI in Normal Pregnancy and Fetal Growth Restriction* (**Rosalind Aughwane,** Maternal & Fetal Medicine)
3. *Criteria for IVF funding in the NHS are not fit for purpose* (**Sophie Platts,** Reproductive Health)
4. *Intravenous or intranasal human umbilical cord tissue mesenchymal stem cells as an adjuvant to therapeutic hypothermia in a piglet model of neonatal encephalopathy* (**Kathryn Martinello,** Neonatology)
5. *Trial results of the Contraception Choices project.* (**Anasztazia Gubijev,** Reproductive Health)
6. *Epigenetic risk assessment of female cancers: women's information needs and attitudes* (**Dan Reisel,** Women's Cancer)

15.30 – 16.00 **Tea/Coffee Break** (Ramsey LT, G21)

16.00 – 17.00 **SESSION 6: Hot Topics** Chair: **Professor Neil Marlow**

1. *Fetal surgery for spina bifida* – **Dr Adalina Sacco,** Fetal Surgery Fellow, UCLH; Dept. of MFM, IfWH
2. *Gene therapy* – **Professor Simon Waddington,** Dept. of MFM, IfWH
3. *Primary ovarian failure* – **Dr Melanie Davies,** Consultant Gynaecologist, Reproductive Medicine Unit, UCLH; Dept. of Reproductive Health, IfWH
4. *Stillbirth and bereavement care* – **Associate Professor Dimitrios Siassakos,** Dept. of MFM, IfWH
5. *Cancer proteomics* – **Associate Professor John Timms**, Dept. of Women's Cancer, IfWH
6. *High altitude pregnancy* – **Dr Sara Hillman,** Clinical Lecturer, Dept. of MFM, IfWH
7. *Patient reported outcomes: Part of the bigger picture in clinical research?*– **Dr Anne Lanceley,** Associate Professor in Women's Cancer, Dept. of Women's Cancer, IfWH

17.00 – 17.30 **SESSION 7: EGA KEY NOTE LECTURE** Chair**: Professor Judith Stephenson**

***Women's and children's health in the era of the Sustainable Development Goals***

**Professor Anthony Costello** (Professor of International Child Health and Director of UCL, Institute for Global Health)

17.30 – 17.45 **Prizes and Awards and Close of Meeting (Professor Anna David)**

17.45 – 19.00 **Drinks Reception (UCL North Cloisters)**

# Key Note Speakers

**Dr Amanda Begley (Director of Innovation and Implementation, UCL Partners)**

Dr Amanda Begley is Director of Innovation and Implementation at UCLPartners. Her focus is to build partnerships and expertise to deliver innovation at scale and pace for patient and population benefit.

She is co-founder and National Director for the NHS Innovation Accelerator (NIA), which is delivered as a partnership between NHS England and the country's 15 Academic Health Science Networks, hosted at UCLPartners.

Amanda is UCLPartners' Lead Director for the 'Optimising Behaviour' research theme at the NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC) North Thames, a Fellow at the Centre for the Advancement of Sustainable Medical Innovation (CASMI), and a Non-Executive Director on the Royal College of General Practitioners' Innovation and Research Board. Amanda is also a core member of the development team building a One-London Digital Innovation Hub proposal, aimed at enabling the safe and responsible use of health-related data at scale for research and innovation.

Amanda has been selected as an #NHS70 Woman Leader through the London NHS Leadership Academy, and included in Pharmaceutical Market Europe's 30 Women Leaders in UK Healthcare.

Following her PhD, Amanda joined the NHS as an Assistant and Trainee Clinical Psychologist. She has worked as a commissioner and senior manager across primary, community and secondary care, and as Head of Innovation at London's Strategic Health Authority. While at UCLPartners, Amanda completed a Fellowship at GSK.

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**Professor Anthony Costello (UCL Institute for Global Health)**

Anthony Costello is Professor of International Child Health and previous Director of the UCL Institute for Global Health. He trained as a paediatrician and has expertise in maternal and child health epidemiology and programmes in developing countries. He contributes papers on paediatrics, maternal health, health economics, health systems, child development, nutrition and infectious disease.

His areas of scientific expertise include the evaluation of community interventions on maternal and newborn mortality, community mobilisation through women's groups, the cost-effectiveness of interventions, community and social life saving treatments for maternal and newborn mortality in the poorest populations, and links between sustainable livelihoods and nutrition. He is currently exploring the health effects of climate change in south Asia and Africa.

# Abstracts
# Oral Presentations

**Presenter**
Felix Outlaw
**Authors**
Outlaw F, Nixon M, MacDonald LW, Leung TS, Meek J, Enweronu-Laryea C
**Abstract**
BACKGROUND: Neonatal jaundice is a common condition affecting 60% of term and 80% of pre-term babies. Worldwide, 18% are at risk of jaundiced-related adverse outcomes including neurological damage and death. Available treatments are effective, but early diagnosis is critical. Effective screening is challenging in the home setting, especially in rural areas and parts of the world without adequate healthcare resources. Smartphones may fill this gap as they are ubiquitous and offer an objective measure of colour via the inbuilt camera. The degree of yellow discolouration of the newborn skin and sclerae relates to the concentration of bilirubin in the blood, and so point-of-care, colour-based smartphone screening techniques are seeing increased research interest. METHODS: Our team have developed the neoSCB app to measure the sclera colour of newborns. A two-year study in Ghana's Greater Accra Regional Hospital and local communities is underway, allowing us to validate the screening potential of our technique. Thus far, 32 neonates have been imaged using our app before a routine total serum bilirubin (TSB) measurement. The sclera chromaticity is calculated by extracting the raw pixel values in the sclera region. A linear model is used to calculate what we call Scleral-Conjunctival Bilirubin (SCB), analogous to Transcutaneous Bilirubin (TcB). RESULTS: The correlation of SCB with TSB is 0.66 ($p<0.01$). In screening for babies with TSB above 205µmol/L (the treatment threshold for term babies at 24 hours age) a sensitivity of 100% and a specificity of 71% could be achieved with an SCB decision threshold of 225µmol/L. CONCLUSION: The neoSCB app is a promising low-cost screening tool. As more data is collected we will improve the SCB estimation algorithm and validate the robustness of the technique in different environments. We hope that parents and midwives worldwide can be empowered by smartphone technology to avoid jaundice-related disability and death.

**Presenter**
Laura Jones
**Authors**
Jones L, Laudiano-Dray MP, Whitehead K, Meek J, Fitzgerald M, Riddell P, Fabrizi L
**Abstract**
Background
Hospitalised neonates can experience numerous painful procedures as part of their clinical care, which can negatively impact their rapidly developing nervous system[1]. It is important that we develop adequate pain relief methods in order to ameliorate any long-term effects of repeated pain. Non-pharmacological methods are currently used which involve various degrees of caregiver presence. Parental holding, specifically skin-to-skin care, can successfully regulate behavioral and physiological responses following a painful procedure[2]. However, we have shown that these responses are not always related to the brain's response to the same stimulus[3].
Methods
We measured the effect of caregiver presence (specifically maternal) upon the brain activity in infants undergoing a clinically-required heel lance. Age- and sex-matched infants (N=27, mean age at birth 34±5 completed weeks, 44% female) were grouped according to degrees of maternal presence at the time of lance: skin-to-skin care, simple holding, and individualized care in the cot/incubator (swaddling and containment). The cortical response was measured using electroencephalography (EEG), time-locked to the heel lance, together with pain behavior and heart rate.
Results
After initial cortical responses that were qualitatively the same across the groups, different forms of maternal presence elicited fundamentally different brain activity following the lance, i.e. the underlying source of the activity was different. Moreover, the magnitude of the brain activity during skin-to-skin care was significantly smaller compared to simple holding. Behavioral and physiological responses did not differ.
Conclusion
Both the magnitude of the pain-related brain activity and its origin within the brain, is dependent upon the degree of maternal presence. The extent of these influences cannot be deduced from behavioral and physiological measures alone.

**Presenter**
Rajvinder Karda
**Authors**
Ng J, Chu H, Berti M, Tijani M, Diaz JA, Abbott C, Schorge S, Karda R
**Abstract**
Background
Mutations in the eukaryotic translation elongation factor 1 alpha 2 (eEF1A2) have been associated with severe intellectual disability, autism and epilepsy. There are currently no effective treatments.
Methods
We used an existing, well-characterised eEF1A2 knock out mouse (Wasted mice) to test the hypothesis that function of the protein could be restored with gene therapy. We designed an adeno-associated virus 9 (AAV9) using a pan neuronal promoter, human Synapsin, to drive expression of the human eEF1A2 cDNA (hSyn-eEF1A2). We interrogated its bio-distribution after single intravenous or intracerebroventricular injections to new born mice.
Results
We found widespread transgene expression in the CNS after both routes of administration from injection of a GFP marker gene. Following this we treated cohorts of mice in a randomised, blinded trial with AAV9-hSyn-eEF1A2. Mice with combined intracerebroventricular and intravenous neonatal administration (n=4), or intracerebroventricular (n=3) only were completely rescued by AAV9 hSyn-eEF1A2. Behavioural studies, rota-rod and inverted grid, further validated the

efficacy of the treatment. Both treated groups showed no significant difference compared to wild-type controls and survived until the experiment was terminated when the entire cohort had reached 72 days of development.

Conclusion

We present for the first time a successful gene therapy approach for the eEF1A2 wasted mice, which raises the potential for a new treatment approach for children affected by mutations in this gene.

**Presenter**

Ozlem Turan

**Authors**

Malina M, Jose S, Riddell A, Turan O, Gomez K, Kadir RA

**Abstract**

Introduction

Postpartum hemorrhage (PPH) is a leading cause of maternal morbidity and mortality. Dynamic coagulation assays are gaining attention for their potential role in managing PPH. The aim of our study was to establish reference ranges forthromboelastography (TEG) in term pregnancy and explore its role in predicting blood loss at delivery.

Methods

101 term pregnant women were included. Prepartum citrated blood samples were collected for TEG analysis and demographic/delivery information was recorded. Statistical analysis included Spearman's test, Kruskal-Wallis and linear regression.

Results

Estimated blood loss correlated to MA (Maximum Amplitude, an indicator of clot strength, P=0.023, 95% CI;-0.41 to -0.03). This association was attenuated but remained in a multivariable regression (P=0.058). Blood loss was significantly different between patients in different MA subgroups (P=0.018). Incidence of PPH was 29% in the bottom quartile, compared to 8% and 12% in the intermediate and top quartiles (P=0.06).

Conclusion

This study adds to limited data on reference ranges for TEG in term pregnancy and for the first time demonstrates a correlation between MA and PPH. Further research is required into mechanisms behindthis and clinical implications.

**Presenter**

Dana Saud Aldabeeb

**Authors**

Izett M, Kupelian A, Cartwright R, Cutner A, Jackson S, Price N, Vashisht A

**Abstract**

Background

Pelvic organ prolapse is a common disorder in females [1]. Vaginal hysterectomy (VH) has been the mainstay of surgical treatment and is indeed the most common procedure performed for POP [2] .However, sixty percent of women that was evaluated for hysterectomy as POP management declined hysterectomy if offered an equally effective alternative and favourite to keep their uterus [3] . This led to an increase to favour uterine-sparing surgery including laparoscopic sacrohysteropexy ( LSH ) technique [4]. A recent systematic review suggests a lack of adequate safety and efficacy data, with only small single-centre studies with short-term follow-up [5]. As concerns about complications of pelvic mesh have grown, longer-term data are urgently needed to inform treatment decisions [6,7].

Methods

We conducted a multicentre, questionnaire study, using both mailed and online questionnaires of women who had undergone sacrohysteropexy at either of two major tertiary referral urogynaecology centres between 2007 and 2008

Results

1,766 women were approached with, 1,089 response (response proportion 61.7%). With a median follow-up of 50 months (range 2-141), 0.83% ( 9/1089) of women reported a complication requiring the removal of mesh. 1.84% (20/1089) of women had been referred to chronic pain services, and 5.69% (62/1089) reported a new diagnosis of a systemic inflammatory and autoimmune disease (SAID) condition. 13.4% (146/1089) of women had undergone a subsequent prolapse operation and 2.3% (25/1089) a subsequent incontinence operation. 81.6% of participants reported a Patient Global Impression of Improvement of 'very much better' or 'much better', and 82.4% of respondents would recommend the operation to a friend.

Conclusion

This study provides the best available evidence regarding the long-term efficacy and safety of sacrohysteropexy, with high patient satisfaction, and low rates of reoperation for mesh complications or recurrence. Rates of chronic pain and SAID are in keeping with other elective surgical procedures.

**Presenter**

Subhabrata Mitra

**Authors**

Mitra S, Dablander M, Bale G, Bainbridge A, Sokolska M, Kendall G, Meek J, Tachtsidis I, Robertson N

**Abstract**

Background

Loss of cerebral autoregulation following neonatal encephalopathy (NE) relates to poor outcome.

The aim of this project was to assess cerebrovascular and metabolic reactivity using a novel multivariate network analysis of broadband near infrared spectroscopy (BNIRS) variables and mean arterial blood pressure (MABP) for early identification of infants with adverse outcome following NE.

Methods

Relationships between MABP and BNIRS variables (cerebral metabolism and oxygenation measured as cytochrome-c-oxidase (oxCCO) and hemoglobin difference (HbD) respectively) were assessed in 24 infants during cooling at 48h. For each baby, the multivariate signal was transformed into a multilayer network using the horizontal visibility algorithm. The topological properties of each multilayer network were investigated by computing structural descriptors (average edge overlap (AEO) and mutual information of degree distribution (MID)) from mathematical graph theory. AEO is a measure of similarity between two signals while high MID values imply high dependence between them. Proton MRS derived thalamic Lac/NAA threshold of 0.39 was used to

identify infants with good (n=13) and adverse (n=11) outcome.

Results

Individual examples of oxCCO-MABP AEO network map are presented in Fig 1. Significant differences were noted between the two outcome groups for both cerebral metabolic reactivity (oxCCO-MABP AEO (p=0.048) and MID (p=0.034)) (Fig 2A,B) and cerebrovascular reactivity (HbD-MABP AEO (p=0.024) and MID (p=0.006)) (Fig 2C,D). Receiver operating characteristics (ROC) analysis revealed area under curve (AUC) for oxCCO-MABP reactivity: AEO 0.71, MID 0.75 and for HbD-MABP reactivity: AEO 0.74, MID 0.81 (Fig 3).

Conclusion

Structural descriptors from functional network analysis (AEO and MID) from this novel mathematical approach identified both disturbed metabolic and cerebrovascular reactivity following HIE. There was higher correlation and dependency between oxCCO-MABP and HbD-MABP for babies with adverse versus good outcome, resulting from a loss of both metabolic and cerebrovascular reactivity, likely indicating mitochondrial injury and vasoparesis.

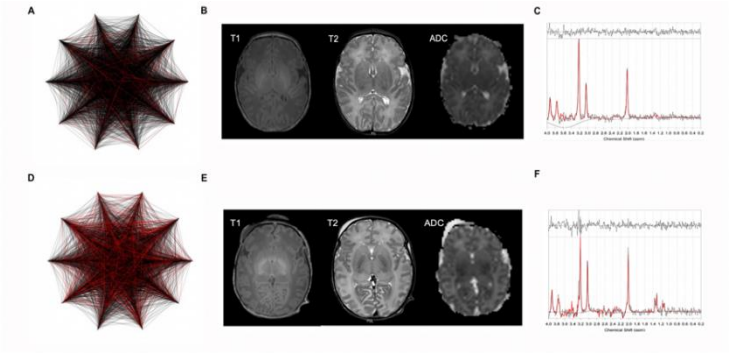



Figure 1. Individual examples of network map of AEO in an infant with moderate encephalopathy (A) with MRI images showing no significant changes in deep grey matter (B) and a Lac/NAA ratio 0.26 (C). Figure D presents the network map of AEO in an infant with severe encephalopathy along with significant changes in DGM (E) and Lac/NAA ratio 0.43 (F).

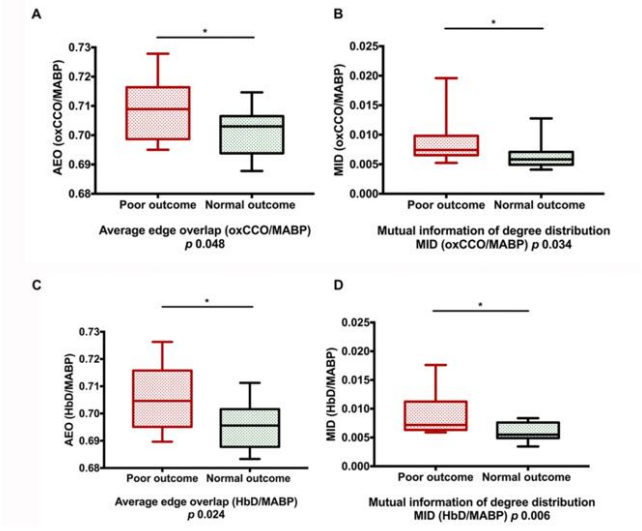



Figure 2. Significant differences in both AEO and MID for metabolic (oxCCO/MABP) and cerebrovascular reactivity (HbD/MABP).

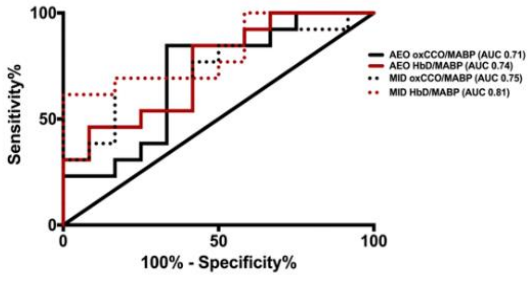



Figure 3. Receiver operating characteristics curve for outcome prediction using AEO and MID for

**Presenter**

Tamara Kubba

**Authors**

Kubba T, Davidson S, Williams DJ

**Abstract**

Background

Remote ischaemic pre-conditioning (RIPC) is a phenomenon whereby transient, brief episodes of ischaemia applied to a distant organ or tissue, protects a remote organ or tissue from future ischaemic injury. RIPC has never previously been studied in pregnant women. Women with chronic hypertension or a history of preeclampsia have impaired endothelial function and uteroplacental ischaemia, which predisposes them to future preeclampsia. We hypothesised that RIPC will improve endothelial function, as measured by brachial artery flow mediated dilatation (FMD), in women at risk of pre-eclampsia and women with established pre-eclampsia.

Methods

Pregnant women between 24+0 and 36+6 weeks' gestation were recruited into one of 3 groups: normotensive (n = 34), at risk of pre-eclampsia (n=19), established pre-eclampsia (n=4). Baseline measures of brachial artery flow mediated dilatation (FMD) were recorded. RIPC was administered to the upper arm as 3 cycles of 5-minutes of ischaemia, followed by 5-minutes of reperfusion. Twenty-four hours later, maternal FMD was re-measured.

Results

Healthy normotensive pregnant women had higher baseline FMD (9.52% +/- 0.52%; mean +/- SEM), compared with women at risk of pre-eclampsia (7.74% +/- 0.85%) and women with established pre-eclampsia (4.31% +/- 1.97%; p=0.003). Following RIPC, normotensive women showed no change in FMD (9.67% +/- 0.54%). However, women at risk of pre-eclampsia increased their FMD to 9.07% +/- 0.77 and those with pre-eclampsia to 6.04% +/- 1.77%. Following RIPC, FMD was no longer statistically different between normotensive pregnant women and those with preeclampsia (p=0.11).

Conclusion

RIPC is a non-invasive technique that appears to improve endothelial function in pregnant women at risk of preeclampsia or with established pre-eclampsia. If these early results are confirmed, RIPC may act as an adjunct to improving pregnancy outcomes for women at risk of preeclampsia or with established hypertensive pregnancies.

**Presenter**

Rosalind Aughwane

**Authors**

Aughwane R, Sokolska M, Flouri D, Spencer R, Maksym K, Mufti N, Bainbridge A, Atkinson D, Kendall G, Deprest J, Vercauteren T, Ourselin S, Melbourne A, David AL

**Abstract**

Background

Placental insufficiency results from poor placental development associated with inadequate spiral artery remodelling. A high resistance uterine artery circulation results in deficient placental perfusion and fetal growth restriction (FGR). Understanding this pathophysiology is key to timely

diagnosis and potential management of FGR. DECIDE is a novel multicompartment MRI model that quantifies fetal (f) and maternal (v) perfusion through the whole placenta (Melbourne;MRM:2018). Fetal blood oxygen saturation can be estimated from the T2 relaxation sequences, due to sensitivity of the signal to oxygenation (Portnoy;MRM;77:2017). We hypothesised that DECIDE would detect reduced placental perfusion and difference in fetal blood oxygenation in FGR compared with normal pregnancies.

Methods

8 women with uncomplicated pregnancies (birthweight centile 25-56%, gestational age (GA) at delivery 38+5-40wks) and 6 women with pregnancies complicated by FGR (birthweight centile 0-7%, GA at delivery 27+5-36+4wks) were imaged with a combined T2 relaxometry and diffusion weighted image acquisition (GA at MRI: control 25+1-34+0wks, FGR 25+4-32+0wks). The DECIDE model was applied for voxel-wise fit of fetal and maternal perfusion and fetal blood T2 relaxation, which was converted into blood saturation. Data are shown as mean±standard deviation. Statistical analysis was with independent student t-tests.

Results

Maternal perfusion was reduced in FGR compared with normal placentas (0.27±0.03 vs 0.38±0.13, p=0.04, CI 0.004-0.21, FGR vs control). There was a tendency to reduced fetal perfusion (0.18±0.03 vs 0.21±0.04, p=0.06, 95% CI -0.002-0.7 FGR vs control). Fetal blood oxygen saturation was significantly reduced in FGR compared with normal placentas (56(±11)% vs 77(±11)%, p=0.0004, 95% CI 8-34% FGR vs control).

Conclusion

The DECIDE model parameters identify reduced maternal placental perfusion and fetal blood oxygen saturation in pregnancies complicated by FGR. This demonstrates the potential of MRI in improving our understanding and ability to diagnose placental pathology, as signal goes beyond imaging structure, and relates to tissue microstructure and function.

**Presenter**

Sophie Platts

**Authors**

Platts S, Mavrelos D

**Abstract**

Background

Clinical care groups (CCG) ration provision of in vitro fertilisation treatment (IVF) to infertile couples based on ovarian reserve criteria (ORT). Different CCGs have different criteria which affords an opportunity to examine whether treatment eligibility criteria are fit for purpose.

Methods

Retrospective cohort study of couples undergoing IVF treatment at the Reproductive Medicine Unit (RMU) between January 2014 and January 2015. Our primary outcome was cumulative livebirth rate (CLBR), calculated as number of women who had livebirth after starting a cycle of ovarian stimulation and transfer of resulting embryos over number of women starting a cycle of ovarian stimulation in the study period.

Results

During the study period 391 couples underwent IVF treatment. 87/391 (22.2%, 95% CI 18.4 – 26.6) were classified as having low ORT as defined by North West London CCG criteria. The CLBR for these couples was 51/87 (58.6%, 95% CI 48.1 – 68.4). There was no difference in clinical pregnancy rate after initial transfer between women with low and normal ORT [44/87, 50.6% (95% CI 40.2 – 60.8) vs. 152/304, 50.0% (44.4 – 55.5)] (p>0.05). There was a significant difference in CLBR between women with low and normal ORT [51/87, 58.6% (95% CI 48.1 – 68.4) vs. 245/304, 80.6% (95% CI 75.8 – 84.6)] (p=0.001).

Conclusion

Restrictive ORT criteria set by CCGs to ration NHS IVF provision are resulting in couples losing the opportunity to have a biological family.

**Presenter**

Kathryn Martinello

**Authors**

Martinello KA, Advic-Belltheus A, Meehan C, Boggini T, Pang R, Mutshiya T, Lingam I, Yang Q, Price D, Sokolska M, Bainbridge A, Hristova M, Golay X, Kramer B, Lowdell M, Robertson NJ

**Abstract**

Background

Mesenchymal stem cells (MSCs) have shown promise in preclinical models of neonatal encephalopathy (NE). Minimally invasive, locally administered intranasal MSCs have been successfully used, but not compared with intravenous administration. Few studies have used MSCs in conjunction with therapeutic hypothermia (HT), the standard of care for infants with NE.

Methods

17 Large White male newborn piglets underwent transient cerebral HI. Piglets were then randomized to i) Hypothermia (HT, core temperature 33.5$^{o}$C from 1-13 h after HI, rewarmed at 0.5$^{o}$C/h, n=7); ii) HT plus intravenous hUCT-MSCs (30 million cells in 1.5ml) at 24 and 48h post HI (IV MSC+HT, n=5); or iii) HT plus intranasal hUCT-MSCs (15 million cells in 0.5ml in each nostril) at 24 and 48h post HI (IN MSC+HT, n=5). Magnetic resonance spectroscopy (MRS) was performed at 30 and 65h after HI. After 72h, TUNEL positive cells were quantified in 8 brain regions.

Results

HI severity was similar between groups. There was no difference in inotrope requirement or physiological parameters. EEG recovery post HI was more rapid for IN-MSC+HT compared with HT from 25 to 42h, and from 49 to 54h (p≤0.046) (Figure 1). 35% of piglets had EEG seizures; seizure incidence was similar between groups (p=0.69). MRS PCR/Pi was higher at 30h in the IN-MSC+HT group than HT (p=0.035). There was no difference in Lactate/N-acetyl aspartate at 30 and 65h. Overall histological cell death was similar between groups (Figure 2). There was a trend towards reduced TUNEL+ cells in the internal capsule and periventricular white matter with IN-MSC+HT (p=0.05 and 0.07, respectively compared with HT).

Conclusion

Intranasal hUCT-MSCs at 24 and 48h after insult, as an adjunct to 12h HT resulted in improved brain energy and EEG recovery;

there was weak evidence of neuroprotection in the white matter. There was no apparent effect of intravenous hUCT-MSCs

**Presenter**
Anasztazia Gubijev
**Authors**
Gubijev A, Stephenson J
**Abstract**
Background
Preventing unintended pregnancy is a global/national priority. Effective use of contraception can reduce unintended pregnancies but myths/misunderstandings and concerns about contraception abound. Increasingly women turn to online sources of information on healthcare. The Contraception Choices (CC) project is an RCT which is a co-designed, evidence-based, interactive website to aid contraception choice. This is a report on the final trial results.
Methods
Women aged 15-30 were recruited from clinics where most contraceptive consultations occur and through the online central booking system at a sexual health clinic. Women were followed up 3 and 6 months after registering. Primary outcomes were follow-up rates, LARC (long-acting reversible contraceptive) use and contraceptive satisfaction, measured at 6 months. The qualitative component was views and experience of the website and trial procedures, assessed through interviews and a free-text component.
Results
927 women were randomised to the intervention (website) (n=464) or control group (no website) (n=463) of whom 739 provided 6-month follow-up data; 786 women provided 3 and/or 6-month data for primary outcome analysis. There was no significant difference in LARC use at 6 months, nor in level of satisfaction with contraceptive method. Written feedback about the website was provided by over four-fifths of intervention participants and was remarkably positive.
Conclusions
The website was popular among women and service providers. However, no significant differences in LARC use or contraceptive satisfaction were observed. A possible limitation was not including a range of intermediate measures, such as contraception knowledge or confidence in discussing contraception with healthcare professionals potentially indicating other benefits of the website. Most women were satisfied with their method at baseline, leaving little room for improvement in satisfaction. Additionally, systematic reviews of factors affecting contraception use globally indicate a wide spectrum of conditions influencing contraception use; therefore a website alone may not be enough to orchestrate change.

**Presenter**
Dan Reisel
**Authors**
Reisel D, Rebitschek F, Lein I, Wegwarth O, Widschwendter M
**Abstract**
Background
Epigenetic tests herald a new way to assess individual risk of disease. As a tool to assess individual cancer-risk, it has the potential to improve surveillance and management provided to women at risk. However, the extent to which such care is desired, and the potential concerns and obstacles involved, remain to be fully explored.
Method
We assessed the perceived benefits and the potential patient concerns in 32 pre-menopausal (mean age 34 years) and 13 post-menopausal (mean age 63 years) women across four focus groups. Each group was presented with a detailed set of questions as well as a patient leaflet about proposed epigenetic testing. The responses and ensuing discussion was videotaped, transcribed and categorised into themes by two independent coders. Both evaluative and frequency analysis was conducted on the final set of codes.
Results
The results indicate that the women canvassed responded positively to the prospect of epigenetic testing for individual cancer-risk. However, there were specific concerns with regard to incidental findings, data ownership and privacy, potential employment and insurance discrimination, and the burden associated with non-modifiable risk.
Conclusion
The promise of predicting individual cancer is not enough, it still needs to be experienced as beneficial for the service user. This focus group study was conducted to explore the relevant informational needs, the specific test and communication requirements, and the potential barriers in a small sample of healthy women drawn from the general population. Our study suggests that specific informational needs apply to epigenetic tests, and have to be addressed before such tests are introduced.

# Abstracts

# Poster Presentations

**Presenter**
Ahmad Mohamed
**Authors**
A Mohamed, V Romanova, D Deslandes, R Dixon, A N Rosenthal
**Abstract**
Background
In 2014, the NHS Cervical Screening Program introduced a Test of Cure (TOC) protocol, including for women treated for cervical glandular intra-epithelial neoplasia (CGIN), although the latter lacks a strong evidence-base.
Method
Aim is to assess compliance with TOC and to document outcome following CGIN treatment.
All CGIN patients treated from July 2014 (date TOC introduced) - July 2017 at University College London Hospitals. Data were collected retrospectively from electronic records, Compuscope, Open Exeter, and entered onto an Excel spreadsheet.
Results
- 13 CGIN cases, median age 31 yr (range 25-42), median f/u 23 months (range 6-44)
- 5/13 (38%) CGIN was incidental diagnosis
- All 13 had complete excision (med depth 22mm, range 6-33). 4x LLETZ, 8x cone, 1 hysterectomy. 1/13 (8%) had further excision for repeatedly LG but HPV-neg TOC
- 11 of 13 (85%) had >=1 TOC. Remainder; 1 hysterectomy with clear margins, 1 private follow-up
- 1st TOC - 7/11 (64%) neg/neg. Following this, 1 failed to re-attend and 1 discharged after single neg/neg TOC
- 2nd TOC - 9/9 (100%) <24 months and 2/9 (22%) discharged as 2x neg/neg
- Another 3 discharged after 3rd TOC, and 1 after 4th TOC, as 2x consecutive neg/neg
- 3 still under follow-up; awaiting 2x consec neg/neg
- 6/11 (55%) women had been discharged with 2x consec neg/neg after median 3 visits (range 2-4) over 22.5 months (range 13-37)

Conclusions
- Significant minority of CGIN cases were incidental findings
- Suboptimal compliance with recommended TOC visit schedules
- Overall treatment outcomes satisfactory with majority correctly discharged < 2yr

Recommendations
- Colposcopy units and Cytology labs should keep auditable registers of CGIN cases (Will lab know to check for endocervical cells on TOC?)
- Longer follow-up of large CGIN cohort needed to confirm success of TOC

**Presenter**
Alegria Vaz Mouyal
**Authors**
Vaz Mouyal A.
**Abstract**
Background
One in six couples require ART in order to have children. This statistic does not exempt Orthodox Jewish couples. This project investigated the experiences and infertility journeys of twenty-six Orthodox women. Interviews resulted in fascinating stories from within the community. A deeper understanding of women's experiences is needed to better women's experiences and form bridges between women, doctors and religious scholars.

**Presenter**
Amrita Banerjee
**Authors**
Banerjee A, Tetteh A, Casagrandi D, Greenwold N, Bredaki E, Kindinger L, Greig E, Warner D, Napolitano R, Jurkovic D, David A
**Abstract**
Background: full dilatation caesarean section (fdcs) is a risk factor for subsequent spontaneous preterm birth (sptb). Evaluation of the caesarean section (cs) scar characteristics by ultrasound may help in predicting the risk of subsequent sptb.
Method: This is a retrospective observational study on singleton pregnant women with previous FDCS referred to UCLH preterm birth (PTB) clinic between March 2017 and March 2019. Cervical length (CL) and distance of previous CS scar from the internal cervical os were measured on sagittal view using transvaginal ultrasound (TVS), from 16 to 22 weeks of gestation. Intervention (cerclage or vaginal progesterone) were recommended for CL <25mm.
Results: 109 women with a previous term FDCS attended. Delivery outcome data were available in 77 women, of whom 4 (5%) had PTB (<37 weeks); 2 delivered at <26 weeks (including one woman who had cerclage). CS scar assessment by TVS was available in 57 women (74%) of which 17 had a CS scar ?5mm above the internal cervical os or within the cervix. Among the 4 women who delivered preterm, 75% (3/4) had a CS scar ?5mm above the internal cervical os, including the 2 early PTBs < 26 weeks (RR 7.1, 95% CI 0.8-63.1; P=0.08). Overall 11 women (14%) required a preventative intervention; 7 received a cerclage and 4 were started on progesterone. 5/7 women requiring a cerclage were also noted to have a CS scar ?5mm above internal cervical os or within the cervix (71% [RR 5.8, 95% CI 1.2-27; P=0.02]).
Conclusion: Women with a CS scar <5 mm above the internal cervical os or within the cervix are more likely to require a

preventative intervention and may be at increased risk of subsequent SPTB. Further studies are needed to observe the incidence of the condition and evaluate the most effective prevention methods of SPTB.

**Presenter**

Anasztazia Gubijev

**Authors**

Gubijev A, Stephenson J, Hall J.

**Abstract**

Background

Traditionally recruitment methods involved a researcher/clinician approaching participants at schools/universities/hospitals/clinics/charities. However, with the rise of the digital age online recruitment has become a possibility, potentially replacing in-person recruitment as a more efficient method. The contraception choices (cc) project is an rct to help women choose a method of contraception that suits their needs. The p3 study is a cohort study assessing women's feelings and preferences towards future pregnancy. These studies used in-person and online recruitment methods. This is a report on the advantages of online recruitment in these trials.

Methods

The cc project recruited participants in 6 months from 6 clinics. Potential participants were approached by a researcher. However, due to project interest, cc was changed to a phase 3 trial needing an additional 500 participants, therefore a rapid recruitment technique was needed. Remaining participants were recruited through an online booking system. The p3 study initially recruited participants by a researcher leaving fliers/leaflets/posters in schools/universities/clinics. Subsequently, age-related targeted advertisements were used on social media.

Results

The cc project recruited 400 participants in 6 months from 6 clinics. A further 533 were recruited online taking merely 6 weeks. The p3 study recruited 80 participants from schools/universities/clinics in 14 days. A further 920 were recruited online in just 4 days.

Conclusion

The results provide valuable insight into the success of online recruitment with strong implications for research studies. While in-person recruitment has a place in research, sexual/reproductive health trials can be difficult to recruit to due to the sensitive nature of the topic, therefore online recruitment offers an alternative recruitment strategy. In-person recruitment can be time/cost incurring, which can be avoided with online recruitment. Follow-up rates were the same for both methods of recruitment. Current findings support online recruitment as a time/cost effective, efficient method of recruitment.

**Presenter**

Anya Baig

**Authors**

Baig A

**Abstract**

Background

One-fifth of women in the U.K. experience mental health problems during the perinatal period. Poor management and delayed treatment of women with perinatal mental health problems may adversely impact the health and wellbeing of both the mother and child. This study aimed to determine women's experiences of support for perinatal mental health problems within the NHS and to analyse the characteristics of women referred to the North London Partners Specialist Perinatal Mental Health Service (SPMHS.

Methods

A telephone survey of 23 patients and a case review of 41 patients referred to the North London Partners SPMHS were conducted.

Results

43% of women surveyed said that it would have been helpful to have been seen by the North London Partners SPMHS before giving birth. Women waited an average of 6 weeks before disclosing symptoms of perinatal mental health problems to health care professionals, and 73% of women had to wait more than 2 weeks before their first appointment with the North London Partners SPMHS. A lack of awareness amongst patients and health care professionals regarding symptoms for perinatal mental health problems; women's reluctance to disclose symptoms; and various service-related restrictions, all contribute to a delay before women with perinatal mental health problems are identified and treated.

Conclusion

Health care professionals should be encouraged to initiate conversations with women about their mental wellbeing and take women's disclosures seriously. Women's specific circumstances, such as their psychiatric, obstetric, and social history should be considered in order to provide patient-centred, holistic care.

**Presenter**

Audrey Epstein - 1

**Authors**

Epstein A, Turan O, Pollard D, Yee T, Abdul-Kadir R

**Abstract**

Background

Von Willebrand disease (VWD) is the most common inherited bleeding disorder. The impact of VWD in women is prominent due to the haemostatic challenges of reproductive life.

Methods

This study looked at the gynaecological problems and management of 34 women with severe and 17 women with moderate VWD. Data in relation to menstrual problems and management was collected during patients' attendance to the joint women/haemophilia clinic

Results

The median FVIII, VWF:Ag and VWF: RCO levels were 30, 19 and 7 IU/dL and 27, 27 and 23 IU/dL for the severe and moderate VWD, respectively. Overall, 93% of women suffered from Heavy menstrual bleeding (HMB) during their lifetime. HMB was the presenting symptom in 3% and 38%

and starting since menarche in 66% and 59% of women with severe and moderate VWD; respectively. The main symptoms leading to diagnosis were epistaxis and easy cutaneous bruising in the severe cohort and HMB in the moderate cohort. The average pictorial blood loss assessment score was 1058 and 363 in the severe and moderate cohorts respectively. 58% severe and 50% moderate women had a history of anaemia requiring iron therapy. Haemorrhagic ovarian cysts were reported in 64% of women with severe VWD and 12% of women with moderate VWD; 38% required treatment. First line medical treatment of HMB included: Tranexamic acid (TXA), hormonal contraceptive (COC) or Desmopressin with TXA. 65% from the severe and 82% of the moderate cohort received second line treatment, 35% required third line treatment including TXA with COC with Desmopressin, Mirena IUS with TXA and factor concentrate, endometrial ablation with insertion of Mirena IUS. Hysterectomy was performed in 3 (6%) of women.

Conclusion

Women with moderate and severe VWD are at high risk of HMB. Multi-discplinary team management and provision of combination therapy can reduce the need for surgical intervention.

**Presenter**

Audrey Epstein - 2

**Authors**

Epstein A, Turan O, Pollard D, Yee T, Abdul-Kadir R

**Abstract**

Background

Women with VWD are at increased risk of bleeding complications during pregnancy and delivery, especially those with severe coagulation defects.

Methods

This observational study looks at the pregnancy complications and outcomes of women with severe (n=13) and moderate (n=7) VWD. A review of 25 pregnancies, from 20 women with severe and moderate VWD was evaluated. Changes in FVIII, VWF: Ag and VWF:RCo levels throughout pregnancy , mode of delivery and maternal bleeding complications were recorded.

Results

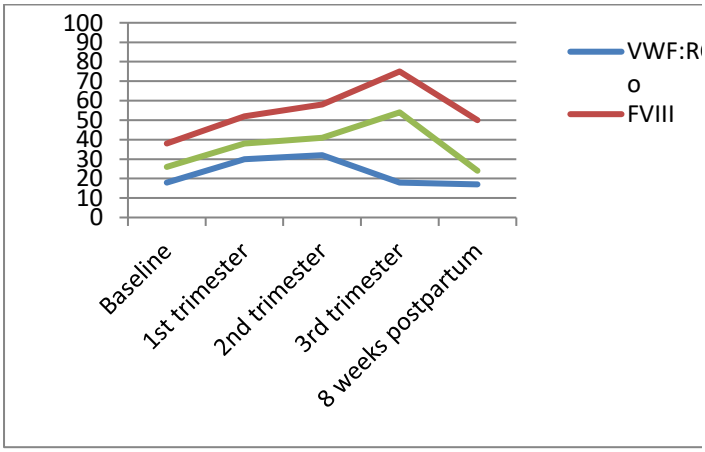



**Figure 1: FVIII, VWF: RCO and VWF changes throughout pregnancy.**

FVIII and VWF:Ag increased two-fold from the first to third trimester while VWF:RCO levels remained unchanged. All women were seen and had a risk assessment and management plan for labour and delivery at the joint Women/haemophilia clinic at 32-34 weeks gestation. Mode of delivery was vaginal delivery (40%), elective C-section (32%) and emergency C-section (28%). Mean Gestation age at delivery was 38 with a range of 36 to 42. Median EBL was 400 mL (range 200-1000 mL). There were only 3 (12%) post-partum haemorrhage, with 2 deliveries from the same women; none required blood transfusion. 25% of infants born were affected by VWD. There were no neonatal bleeding complications. Haemostatic cover for labour and delivery included tranexamic acid (TXA) for all deliveries with Factor concentrate (FC) in 69% and desmopressin in 24%. The FC dose range was 40-75 IU/Kg to achieve peak VWF of 100 IU/dL. FC was given every 8-12 hours in the first 24 – 48 hours. All women received 1g TXA for up to 6 weeks, with 75% receiving FC for post-partum management.

Conclusion

Women with moderate and severe VWD are at risk of bleeding complications. This study shows that Multi-disciplinary including appropriate bleeding risk assessment and provision of adequate haemostatic cover can minimise the risk.

**Presenter**

Bola Grace - 1

**Authors**

Johnson S, Grace B, Soumpasis

**Abstract**

Background

A new home fertility test system, Clearblue Connected Ovulation Test System (COTS) enables women seeking to conceive to monitor their fertility level via LH and estrone-3-glucuronide measurement and obtain their results on an associated mobile phone App. Users input cycle information in the App to guide testing. Users' cycle and ovulation test data is stored anonymously in the cloud, so can be analysed for big data-based insights on menstrual cycles.

Methods

Data from USA women using COTS (SPD Swiss Precision Diagnostics GmbH, Geneva) from 1st September 2017 to 21st May 2018 was analysed. This consisted of 15104 unique user IDs, 33094 cycle records and 171101 ovulation test records. Data was cleaned to remove data from validation testing, leaving 32540 cycle records. Python 3 and the relevant libraries including Pandas have been used to develop the Jupyter notebooks for this analysis.

Results

When users input their cycle length at first use, 25.3% selected a 28 day cycle, with next most common choices 27 (10.8%), 26 (10.1%) and 30 (10.0%) days. Actual cycle length was normally distributed with most common length also being 28 days, but at a lower frequency of 11.8%. Very short cycles (<23 days) were seen in 5.3% and long cycles (>44

days) in 0.9%. Of those who thought their cycle was 28 days long, 55% had their next cycle within 2 days, but 10% fell outside the range 23-44 days. 52% of users with 4 cycles data (n=534) had cycle lengths that varied by 5 or more days.
Conclusion
In one of the biggest datasets ever examined on menstrual cycles in women seeking to conceive, the cycle length distribution and variability mirrors previous studies. Some women appear to have poor knowledge of their cycles, selecting the text book length of 28 days. Those with cycles far shorter or longer than expected could be due to poor understanding of their cycle or cycle irregularity. Clearblue COTS therefore provides women with more insight on their cycles and enables them to accurately time intercourse when trying to conceive.

**Presenter**
Bola Grace - 2
**Authors**
Usman N, Grace B
**Abstract**
Background
Women's equality and empowerment is one of the UN Sustainable Development Goals and female genital mutilation (FGM) is a violation of the basic rights of women and girls. Health implications include shock, hemorrhage, sepsis, sexual dysfunction and death. FGM is usually perpetuated without the victim's consent or awareness of possible health implications. This study therefore aimed to evaluate the knowledge, attitudes and practices of FGMC among women attending antenatal clinic at a health facility in Zaria, Nigeria.
Methods
Study participants for this cross sectional study were selected using systematic sampling. Information was obtained from 225 respondents using semi-structured, interviewer administered paper-questionnaires over a 3 month period from June to September 2017. The data was analysed using SPSS version20.
Results
Majority (79.1%) of the respondents had primary school as their highest level of education. Most of the respondents in this study (93.3%) were aware of female genital mutilation/cutting. However, only 16.9% had knowledge of the health implications of the practice. There was a statistically significant relationship between knowledge and level of education. Nearly half of the respondents 42.9% had poor attitudes towards female genital mutilation/cutting. There was a statistically significant association between the educational status of the respondents and desire to circumcise their female children ($p = 0.005$). Nearly one third of the respondents had experienced some form of female genital mutilation/cutting before puberty. Over one-fifth of respondents (20.4%) plan to continue the practice on their daughters.
Conclusion
The knowledge of the health implications of FGM among respondents is poor and majority viewed FGM in a favourable light. Lower levels of education are associated with increased practice of FGM. Improved education and awareness campaigns on the dangers of this practice are needed to stop this violation of the basic rights girls and to end all forms of violence against women.

**Presenter**
Bola Grace - 3
**Authors**
Grace B, Shawe J, Johnson S, Stephenson J
**Abstract**
Background
Involvement of men in fertility and reproductive health is important for healthy pregnancies and positive outcomes for mother, father and child. However, there is a paucity of data on men's perspective in this area. While many studies have postulated numerous reasons for lack of inclusion of men, few have actually included men. Poor engagement is often cited as reason for this. We therefore interviewed different groups, including men, to understand the underlying reasons.
Methods
The study was a qualitative component of a wider mixed methods study. Participants were sampled from Fertility Awareness Survey respondents who agreed to follow-up interview. 35 in-depth interviews were conducted (13men, 13women and 9HCPs). Interviewees were purposively sampled to include the reproductive age-range and diverse socio-economic backgrounds. Framework analysis was utilised.
Results
We found recurring themes towards men's reluctance to engage in fertility and reproductive health discussions. The reasons different groups gave for the lack of male involvement were varied and reflected a need to evaluate different approaches for improvement. Women reported stereotypical male and female roles as barriers. They discussed the impact of societal norms and the perception that fertility is the 'woman's territory'. Healthcare professionals supported this view but also highlighted that poor male involvement was across healthcare needs and not just unique to fertility. Contrary to expectations, we found that men wanted to be involved in family building discussions and wanted to improve their knowledge. However, men felt they did not have a voice on the topic because discussions have traditionally focused on women. The notion that men were not expected to be interested and engaged thus becomes a self-fulfilling prophecy.
Conclusion
To encourage male involvement, current female-oriented services and education programmes on fertility and reproductive health should be revised to involve men. Additionally, educational programs on sexual and reproductive health should be engaging and structured to include boys and adolescents.

**Presenter**
Bola Grace - 4

**Authors**
Grace B, Shawe J, Johnson S, Stephenson J
**Abstract**
Background
Active participation of men in the process of informed decision making regarding family-building is beneficial for mother, father and child. However, in research studies in these areas, little attention has been given to men. Additionally, there is poor engagement by men; as well as a dearth of information from, and on, the male perspective. This study was therefore conducted to explore men's attitudes toward family-building.
Methods
This is a mixed methods study with a quantitative survey on 319 participants and 35 in-depth interviews. Interview study participants were sampled from the Fertility Awareness Survey respondents who agreed to follow-up interview. Participants were purposively sampled to include the reproductive age range and socio-economic background. Interview data was transcribed and analysed via framework analysis.
Results
We found that men desired family-building and wanted to be engaged and involved in reproductive decision-making. Several interconnecting socioeconomic and personal factors influence family building decisions. These were used to identify five main groups of individuals: No Desire, Stoppers, Betweeners, Planners and Conceivers) for whom fertility awareness information would need to be tailored differently to suit different intentions
Conclusion
Emphasis on pregnancy-prevention means that relatively little attention is being drawn to issues associated with postponement of childbirth and impact of infertility. There remains an important need for advocacy of family-planning education but this should be balanced with family-building information. To improve fertility awareness for men, current initiatives need to further explore men's attitudes towards family building and tailor relevant information in order to help enable men achieve their desired fertility intentions.

**Presenter**
Brian Dromey
**Authors**
Dromey B, Ahmed S, Vasconcelos F, Mazomenos E, David A, Stoyanov D, Peebles D
**Abstract**
Background
This study aimed to define measurable differences between expert and novice ultrasound operators and to understand how these metrics could be applied to define a specific, measurable performance goal for training in ultrasound.
Methods
We undertook a prospective, observational study. We recruited a total of twenty participants, ten were experts (>200 ultrasound examinations) ten were novice operators (<25 ultrasound examinations). Each participant was asked to obtain three common cross-sectional images of the fetus. The required views were of the transventricular plane(HC), the transabdominal plane, (AC) and a view of the femur (FL). The position of the probe was tracked using an Aurora electromagnetic tracking system (NDI Inc, Ontario, Canada). Prior to commencing, each participant was given written instructions, participants were permitted to refer to these instructions during the task.
Results:

| | Expert ± SD | Novice ± SD | *p* |
|---|---|---|---|
| **BPD** (mm) | | | |
| 58 (Manufacturer Spec) | 60.21±1.54 | 62.59±3.21 | 0.03 |
| **AC** (mm) | | | |
| 177 (Manufacturer Spec) | 181.52±4.05 | 183.12±5.95 | 0.79 |
| **FL** (mm) | | | |
| 37 (Manufacturer Spec) | 44.32±1.87 | 44.04±2.50 | 0.56 |
| | | | |
| Image Score | 11.8±1.87 | 10.2±1.46 | 0.04 |
| Time (sec) | 176.46±47.31 | 666.935±490.36 | 0.0004 |
| Probe Path Length (mm) | 521.23±27.41 | 2234.82±188.50 | 0.007 |

Table 1 - Mean biometry results as achieved by Expert and Novice Operators.

There was a difference in the process by which novice and expert operators acquired the required ultrasound image. When scanned by an expert the probe made three distinct pauses, corresponding to an anatomical plane at which a measurement was made.

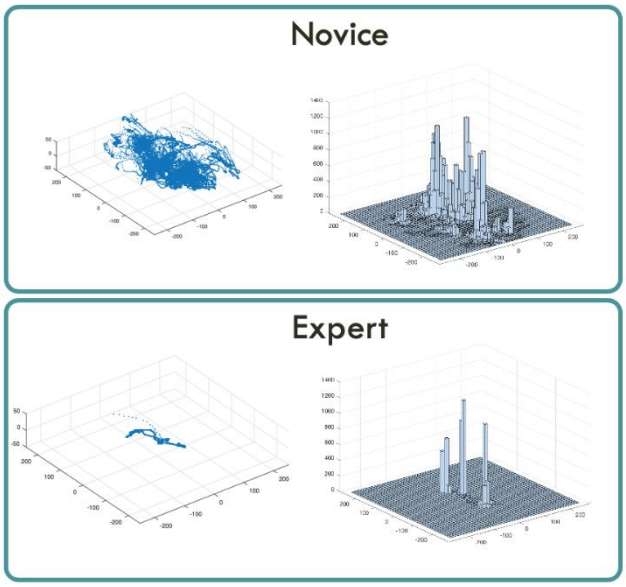
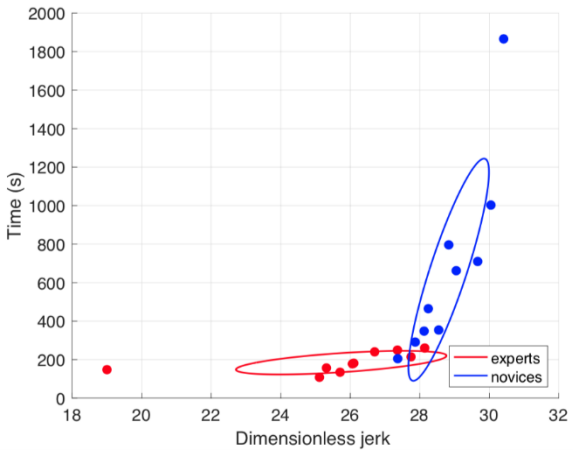



**Figure 1. Path Length and Probe Travel in both groups**

Dimensionless Jerk quantifies common deviations from smooth, coordinated movement and has been applied in endoscopic surgery to discriminate between expert and novice operators.
Figure 2 demonstrates DJ against time for the novice and expert groups. The resulting ellipses have a small area of overlap, indicating that considerations of time and DJ together can differentiate novice from expert performance.
Conclusion:
We found that the process of performing an ultrasound is more discriminatory between experts and novice operators than the quality of the images acquired. Our results suggest

a series of metrics by which training progress could be assessed.




**Presenter**
Catharine Lumb
**Authors**
Lumb C, Izett M, Vashisht A
**Abstract**
Background
Uterine prolapse is a common condition that affects women, and following failed conservative treatment is commonly managed by a hysterectomy. However, uterine preserving procedures are growing in popularity. Laparoscopic mesh sacrohysteropexy is one such uterine preserving procedure. Yet the use of mesh in surgery has been subject to increasing medical and media scrutiny, and it is becoming increasingly important to reflect on the patient perspective in order to deliver the best quality care. Currently, little research exists that explores the use of mesh and this increasingly popular surgery with respect to what patients regard as the most important features of their treatment experience.
Methods
A questionnaire was distributed to women who had undergone laparoscopic mesh sacrohysteropexy at one of two tertiary urogynaecology centres. This non-validated questionnaire allowed for free-space commentary to provide to clinicians and researchers. Responses were analysed using a framework analysis methodology supported by N Vivo 11.
Results
Comments were left by 738 women (70.1% of respondents). Following the development of 29 codes, and 189 sub nodes, six core themes were identified. These were 'pelvic floor symptoms', 'health status', 'treatment success', 'pain', 'care', and 'mesh'. The analysis revealed an optimistic outlook amongst patients, in which their focus and evaluation of success of their surgery was founded on regained functions, rather than abilities restricted post surgery. References and concerns about mesh were often speculative, and lacked the anticipated intensity following recent coverage.
Conclusion
The predominant focus of comments is on women's general and pelvic floor health. This paper offers an initial framework upon which more focused qualitative and quantitative research of this surgery can be based.

**Presenter**
Chris Meehan
**Authors**
Meehan C, Avdic-Belltheus A, Martinello KA, Pang R, Mutshiya T, Yang Q, Boggini T, Frymoyer AJ, Juul S, Robertson NJ
**Abstract**
Background
High dose Erythropoietin (Epo) is a promising neuroprotective agent in pre-clinical and clinical studies. Target therapeutic Epo levels have been deduced from pre-clinical studies as maximum concentration ($C_{Max}$) 10,000mU/ml and area under the curve during first 48h of treatment ($AUC_{48h}$) 140,000mU*h/ml. In human neonates 1000U/kg/24h for the first 2d of therapy achieved these targets. There is no information on the optimal dose for therapeutic levels of Epo in piglets. We aimed to assess PK of intravenous high dose recombinant Epo in a piglet model of hypoxia ischemia (HI) with therapeutic hypothermia (HT) to inform pre-clinical neuroprotection studies
Methods
15 newborn Large White Male piglets underwent transient cerebral HI followed by HT (33.5°C) from 1-13h post insult. Piglets received 1000-3000U/Kg intravenous bolus of recombinant human Epo (Epoetin Alfa, Janssen) at 1&24h post HI; n=11 received a further dose at 48h. n=9 also received a 2h infusion of 20mg/kg melatonin immediately after each Epo dose. Serum samples were collected at Baseline and at periodic intervals after each dose of Epo. Serum Epo concentration was determined using a Mesoscale Discovery U-Plex Human Epo Assay.
Results
3,000U/kg Epo was the only dose to reach the pre-clinical target peak, with a mean serum Cmax of ~10,000 mU/ml (SEM~300)(Figure1A) and there was no significant difference in Cmax for subsequent doses(p=0.146). Cmax for all 3000U/Kg doses was reached within 1h of administering Epo. 3,000U/kg was the only dose to reach pre-clinical targets with a mean AUC48h of ~200,000mU*h/ml (SEM~10,000) There was no interaction between melatonin and Epo with no difference in the mean Cmax(p=0.533) or AUC48h (p=0.216)(Figure1C) between treatment groups.
Conclusion
Intravenous administration of 3,000U/Kg EPO produced a consistent dose response in this piglet HI model, with $C_{max}$ and $AUC_{48h}$ at the therapeutic targets in neonatal clinical trials and required three times the clinical trial dose.

**Presenter**
Claudia Sisa - 1
**Authors**
Rocha-Ferreira E, Sisa C, Bright S, Fautz T, Harris M, Contreras Riquelme I, Agwu C, Hill D, Lange S, Hristova M

**Abstract**
Background:
Hypoxic-ischaemic encephalopathy (HIE) is a major cause of mortality and morbidity in neonates, with global incidence of 3/1000 live births. HIE brain damage is associated with inflammatory response and oxidative stress, resulting in the activation of cell death pathways. There is an unmet clinical need for the development of novel therapeutic interventions for the treatment of HIE. Curcumin is an antioxidant reactive oxygen species scavenger, with anti-tumour and anti-inflammatory activity. Curcumin attenuates mitochondrial dysfunction, stabilises the cell membrane, stimulates proliferation, and reduces injury severity in adult models of spinal cord injury, cancer, and cardiovascular disease. The role of curcumin in neonatal HIE has not been studied due to its low bioavailability and limited aqueous solubility.
Methods:
We aimed to investigate the effect of curcumin treatment in neonatal HIE, including time of administration and dose-dependent effects.
Results:
Curcumin administration prior HIE in neonatal mice elevated cell, tissue loss, and glial activation compared to HI alone. However, immediate post-treatment with curcumin was significantly neuroprotective, reducing grey and white matter tissue loss, TUNEL+ cell death, microglia activation, reactive astrogliosis and iNOS oxidative stress when compared to vehicle-treated controls. This effect was dose-dependent, with 200µg/g BW as the optimal dose-regimen and was maintained when curcumin treatment was delayed by 60min or 120min post-HI. Cell proliferation measurements showed no changes between curcumin and HI alone, suggesting that the protective effects of curcumin are likely due to curcumin's anti-inflammatory and antioxidant properties, as seen in the reduced glial and iNOS activity, and decrease of phosphorylated STAT3 Y705 and S727 protein levels. Curcumin-treated animals showed an increase in ipsilateral PHB, supporting its role as a mitoprotective and neuroprotective agent.
Conclusion:
This study suggests curcumin as a potent neuroprotective agent with potential for the treatment of HIE. The delayed application of curcumin further increases its clinical relevance.

**Presenter**
Claudia Sisa -2
**Authors**
Sisa C, Naylor J, Herrera Sanchez M, Kholia S, Bruno S, Deregibus M, Camussi G, Inal JM, Lange S, Hristova M
**Abstract**
Background
Neonatal hypoxic-ischemic (HI) insult is a leading cause of disability and death in newborns, with therapeutic hypothermia being the only currently available clinical intervention. Thus there is a great need for adjunct and novel treatments for enhanced or
alternative post-HI neuroprotection. Extracellular vesicles (EVs) derived from mesenchymal stromal/stem cells (MSCs) have recently been shown to exhibit regenerative effects in various injury models. Here we present findings showing neuroprotective effects of MSC derived EVs in the Rice-Vannucci model of severe HI-induced neonatal brain insult.
Methods
Mesenchymal stromal/stem cell-derived EVs were applied intranasally immediately post HI-insult and behavioural outcomes were observed 48 h following MSC EV treatment, as assessed by negative geotaxis. Brains were thereafter excised and assessed for changes in glial responses, cell death, and neuronal loss as markers of damage at 48 h post HI-insult.
Results
Brains of the MSC-EV treated group showed a significant decrease in microglial activation, cell death, and percentage tissue volume loss in multiple brain regions, compared to the control-treated groups. Furthermore, negative geotaxis test showed improved behavioural outcomes at 48 h following MSC-EV treatment.
Conclusion
Our findings highlight the clinical potential of using msc-derived Evs following neonatal hypoxia-ischaemia.

**Presenter**
Claudia Sisa - 3
**Authors**
Sisa C, Agha-Shah Q, Sanghera B, Carno A, Stover C, Hristova M
**Abstract**
**Background:**
Hypoxic-ischaemic (HI) encephalopathy is a major cause of neonatal mortality and morbidity, with global incidence of 3 per 1000 live births. Intrauterine or perinatal complications, including maternal infection constitute a major risk for the development of neonatal HI brain damage. The mechanisms triggering brain damage under the conditions of HI alone and infection-sensitised HI overlap, but also differ. During HI brain damage inflammatory response and oxidative stress occur, causing subsequent cell death. The presence of an infection sensitises the neonatal brain making it more vulnerable to the HI damage. Therapeutic hypothermia is the only clinically approved treatment for HI, however it is only partially effective in HI alone and ineffective in infection-sensitised HI. Therefore there is an unmet clinical need for the development of novel therapies for the treatment of HI. An alternative is targeting the complement system. Absence of the classical pathway in the neonatal HI brain is neuroprotective, however there is paucity of data on the alternative pathway and on the role of properdin in HI brain damage.
Methods
Our study aimed to validate the effect of global properdin deletion in two models: HI alone and LPS-sensitised HI, addressing two different clinical scenarios.
Results
Global properdin deletion in a mouse model of neonatal HI and LPS-sensitised HI brain damage, clearly reduced

forebrain cell death, microglial activation, and tissue loss. In HI alone, deletion of properdin reduced TUNEL+ cell death and microglial post-HI response at 48h post insult. Under the conditions of LPS-sensitised HI, properdin deletion diminished TUNEL+ cell death, tissue loss and microglial activation at 48h post-HI.

Conclusion

Our data suggests a critical role for properdin, and a contribution in neonatal HI alone and in infection-sensitised HI brain damage. Thus, properdin can be considered a novel target for treatment of neonatal HI brain damage

**Presenter**

Dilisha Patel -1

**Authors**

Patel D, Blandford A, Warner M, Shawe J, Stephenson J

**Abstract**

Background

Infertility can place a significant burden on couples and individuals when trying to conceive. Approximately 20-30% of all cases of infertility are due to male-related factors, and little is known about how men find support when dealing with fertility issues, or when or how online resources are being used. The experience of coming to terms with an unexpected diagnosis has been explained by Genuis and Bronstein, who articulate that normality is most commonly used to describe a situation in which there is an absence of disease or ill-health. We apply the Finding a New Normal model to men experiencing fertility issues.

Methods

We present findings from our qualitative study of anonymous online fertility forum posts. We analysed this data using thematic analysis to understand how men are using online forums as a resource when experiencing fertility issues.

Results

N = 603 posts were included in our analysis. Many of the threads centred around more serious fertility concerns which involved seeking advice on improving conception success rates, as well as understanding the impact of not being able to conceive a child naturally and understanding what this meant for their new normal. Our findings were categorised into three main themes: (1) Community led health advice, investigations and diagnoses, (2) Negative emotions of internalising the stigma associated with infertility, and (3) Online anonymity as a resource for sharing for men experiencing fertility issues.

Conclusion

Our analysis of online forum comments has shown that some men use online spaces to openly discuss their thoughts and feelings and to share their experiences with an empathetic anonymous audience. We found that users also seek to connect with one another and to express themselves in a safe space and understand their new normal. Online forums play a valued role in facilitating connections between men experiencing an often stigmatised condition.

**Presenter**

Dilisha Patel - 2

**Authors**

Patel D, Blandford A, Shawe J, Stephenson J

**Abstract**

Background

Trying to conceive and dealing with infertility is often a couple's private journey and not publicly shared. Research which explores support for pregnancy planning and fertility has predominantly focused on women and men are repeatedly excluded. Previous research has examined men's knowledge and awareness of preconception care, health and well-being before conception, but has not focused on men's requirements whilst they are struggling to conceive.

Methods

In order to explore how to support men whilst they experience fertility difficulties, we recruited and undertook semi-structured in-depth interviews with men (n=27), who were either currently experiencing fertility difficulties or had recently gone through assisted reproductive support to conceive. Interviews were audio recorded with consent, transcribed, anonymised, and analysed using an inductive thematic analysis approach.

Results

We found that men repeatedly reported the need for information. They described not knowing or understanding what was going to happen at the fertility clinics, as appointments were focused towards their partner. Fertility treatments were reported as being intense and exhausting and men described being ill-informed and therefore unable to adequately support their partner through the procedures.

Conclusion

Communication and treatment from clinicians played a significant role in men's experiences. Participants described how they felt when speaking to health professionals, including the difficulties they experienced when interacting with clinicians and fertility clinic staff during their fertility journey. Men found that they were often ignored during the fertility journey, even if they had received a male-factor infertility diagnosis. Attention, sincerity and honesty from clinicians was highly valued by this population of men. We present these along with other key findings from our on-going interview study with men who experience infertility.

**Presenter**

Dimitrios Spiliopoulos

**Authors**

Spiliopoulos D, Kadir RA

**Abstract**

Background

Factor X deficiency (FXD) is a rare autosomal recessive bleeding disorder with a variable phenotypic severity. In women, heavy menstrual bleeding (HMB), recurrent ovulation bleeding and bleeding complications in pregnancy such as retroplacental haematoma and postpartum haemorrhage have been reported.

Methods

The aim of this review was to examine gynaecological problems and obstetric complications in women with congenital FXD. A total number of 49 relevant articles were identified, including 332 women, dating from 1960 to 2018.

Results

Heavy menstrual bleeding was reported in 72/284 (25%)

women in total, 14/30 (47%) in case reports and 58/254 (23%) in eleven case series, 64% and 10% required blood products and blood transfusion, respectively. Haemoperitoneum from ovulation bleeding or ruptured haemorrhagic ovarian cyst requiring blood transfusion occurred in 8/322 (2.4%) women, six required surgical intervention, including oophorectomy in two. 31 pregnancies were reported in 19 women. There were four miscarriages (including a late miscarriage at 21 weeks). There was a high rate of preterm birth and neonatal death occurring in eight (30%) and three (11%) of pregnancies reaching viability stage. Postpartum haemorrhage (PPH) occurred in six (22%) of deliveries, one requiring hysterectomy.
Conclusion
Women with FXD are at an increased risk of heavy bleeding during menstruation and ovulation as well as adverse pregnancy outcome and postpartum haemorrhage. Collaboration in a multidisciplinary team including an obstetrician/gynaecologist, a perinatologist and a haematologist is necessary for the prevention and management of these complications.

**Presenter**
Dimitra Flouri
**Authors**
Flouri D, Owen D, Aughwane R, Mufti N, Soloska M, Atkinson D, Kendall G, Bainbridge A, Vercauteren T, Ourselin S, David AL, Melbourne A
**Abstract**
Background
Placenta diffusion and relaxation imaging are quite susceptible to low signal-to-noise ratio (SNR) and motion artefacts due to maternal breathing motion and fetal movements. Such movements have strong impact on the analysis of the data and image registration is thus required. Least-squares methods are the most commonly used algorithms for voxel-wise fitting; however, they give noisy estimates due to low SNR. An alternative is the use of robust Bayesian approaches. The purpose of this work was twofold: 1) develop a model-driven registration strategy which incorporates a multi-modal signal model to account for changes in image contrast; 2) develop a Bayesian shrinkage prior (BSP) approach for the multi-modal model that can be used to fit estimates of perfusion and oxygenation parameters to placental imaging data.
Methods
The study involved a cohort of ten normal pregnant subjects with no known placental complications with gestational age between 24-34 weeks. The study approved by the local research ethics committee and all subjects gave written informed consent. To minimise the effect of motion we developed a non-rigid registration method which incorporates a multi-modal model for diffusion and relaxation into the registration process. Voxel wise parameter estimated were obtained using a Markov Chain Monte Carlo approach in the BSP technique.
Results
Analysis of the 10 ROIs showed a reduction of error in registered data. The BSP approach notably reduced the error in all placental estimated parameters. Significant linear trends are observed for the maternal blood volume fraction ($p=0.001$, $v = -0.034(\text{GASTU}) + 1.38$) and fetal oxygen saturation measurements ($p=0.0004$, $FO. = -3.6(\text{GASTU}) + 190.2(\%)$) which both appear to reduce with increasing gestational age.
Conclusion
We developed a comprehensive framework for measuring robust longitudinal trends in placenta perfusion and fetal oxygenation which may help us to refine knowledge of changes in MRI properties with increasing gestational age in both normal and pathological placenta.

**Presenter**
Elisabeth Bean - 1
**Authors**
Bean E, Cutner A, Saridogan E, Wong M, Natfatlin J, Jurkovic D
**Abstract**
Background
Endometriosis is a common benign condition affecting approximately 10% of women of reproductive age. Endometriosis has significant associated morbidity and a concurrent economic burden on society. The cause of deep endometriosis (DE) is unknown and there is currently no effective treatment for the prevention of DE. The aim of this study was to test the hypothesis that significant haemoperitoneum that is managed conservatively precipitates the development of DE.
Methods
This was a prospective observational cohort study conducted over 18 months at University College London Hospital. We included consecutive pre-menopausal, non-pregnant women who attended our dedicated gynaecology unit with acute severe lower abdominal pain and underwent clinical assessment including pelvic ultrasound examination. Presence of significant haemoperitoneum was defined by ultrasound findings of blood clots within the pelvis. Women were managed surgically or conservatively, depending on the severity and cause of symptoms. Those who had conservative management were invited for follow up scans. The primary outcome of interest was evidence of newly developed DE at follow up.
Results
During the study period, 118 non-pregnant pre-menopausal women attended our gynaecology unit with acute severe lower abdominal pain. 17% had emergency surgery and 83% were managed conservatively. 17 women were excluded from the study due to a previous history of endometriosis or findings of DE on pelvic ultrasound at initial assessment. Of the 81 women included in the study, 8(10%, 95% CI 3-16) had evidence of significant haemoperitoneum. Of the 35 women that attended for follow up, 4/6(67%, 95% CI 22-96) women with initial presentation of haemoperitoneum have developed new evidence of DE compared to 1/29(3%, 95% CI 0-18) without haemoperitoneum [RR 19.3 (95% CI 3-144) P <0.001)]
Conclusions
In some women, the presence of significant haemoperitoneum that is managed conservatively precipitates the development of DE.

**Presenter**

Elisabeth Bean - 2

**Authors**

Bean E, Chaggar P, Bottomley C, Jurkovic c

**Abstract**

Background

Transvaginal ultrasound (TVS) has been widely adopted as the first line assessment for the diagnosis and assessment of pelvic endometriosis. However, there is no available data in the literature to demonstrate the intraobserver repeatability of measurements for endometriotic cysts and nodules. The aim of this study was to examine the inter-observer and intra-observer reproducibility of ultrasound diagnosis of pelvic endometriosis and assess the repeatability of measurements.

Methods

This was a prospective observational cohort study conducted in our specialist endometriosis centre over a period of 12 months. We included all consecutive women who were scanned by two experienced operators during the same visit to the clinic. Outcomes of interest included the inter- and intra-observer reproducibility of diagnosis and locations of endometriotic lesions and repeatability of measurements of lesion size.

Results

We included 50 consecutive women who were referred to our specialist endometriosis service. There was a good level agreement between operator A and operator B in detecting endometriotic lesions (k=0.72). There was a good level of agreement identifying endometriotic nodules (k=0.61)and a very good level of agreement in identifying endometriotic cysts (k=0.88). There was a very good level of agreement in identification of endometriotic bowel nodules (k=0.82). The inter- and intra-observer repeatability of measuring endometriotic cysts was excellent (ICC 0.98). There was good inter-observer measurement repeatability for bowel nodules (ICC 0.88), but this was poor for nodules in the posterior compartment (ICC 0.41). The intra-observer repeatability for nodule size measurements was good for both operators (ICC 0.86).

Conclusion

Transvaginal ultrasound is highly reproducible for the detection of pelvic endometriotic lesions, in particular for the detection of endometriotic cysts and endometriotic bowel nodules. Both inter- and intra-observer measurements of endometriotic cysts are highly reproducible. Intra-observer repeatability of nodule measurements is superior to inter-observer repeatability.

**Presenter**

Emily Cornish

**Authors**

Cornish E, Williams D

**Abstract**

Background

Chronic histiocytic intervillositis (CHI) is a rare placental disorder that affects approximately 1 in 10,000 pregnancies and is strongly associated with severe fetal growth restriction (FGR) and stillbirth. Its aetiology is unknown but hypotheses include an alloimmune maternal response to a paternally-derived placental antigen. CHI carries a 70-100% risk of recurrence and although various immunosuppressive protocols have been tested, no treatment has been proven to reliably prevent recurrent CHI.

Methods

Following a patient engagement day advertised on Facebook, we recruited women with histologically confirmed CHI (n=19). We performed detailed clinical phenotyping, recording index pregnancy outcomes and the effect of various immunosuppressive regimens on subsequent pregnancy outcomes. We have established 4 experimental techniques to investigate maternal immunity associated with CHI: (1) immunoprecipitation, to identify a novel maternal alloantibody against cultured syncytiotrophoblast; (2) placental immunohistochemistry, to identify maternal IgG targeted against trophoblast; (3) an in vivo immune challenge model, to determine a functional defect in maternal immunity; and (4) whole-genome sequencing, to identify novel gene variants associated with CHI.

Results

Of the index CHI pregnancies, 100% (19/19) were stillborn, 94.7% (18/19) were preterm (<37 weeks at delivery) and 84.2% (16/19) showed severe FGR (<0.4th individualised birthweight centile). Of the 19 women, 15 went on to have subsequent pregnancies, of which 7 were treated with immunosuppression. These pregnancies showed statistically significant improvements in mean gestational age at delivery and mean individualised birthweight centile and 71.4% (5/7) ended in live birth. Immunoprecipitation and immunohistochemistry results are pending.

Conclusion

CHI is a rare but devastating condition associated with strikingly high rates of recurrent prematurity, FGR and stillbirth. Surviving children frequently require prolonged neonatal unit admission. Determining a pathophysiological pathway would identify women at risk of CHI and could translate into a targeted therapy with wider benefits for those affected by other gestational alloimmune diseases.

**Presenter**

Folakemi Oladinni

**Authors**

Oladinni F, Izett M, Kupelian A, Vashisht A

**Abstract**

Background

The impact of laparoscopic mesh sacrohysteropexy on bladder symptoms has previously been described. However, the role of preoperative UDS is yet to be reported, and for other forms of apical prolapse surgery, UDS offer no additional advantage over clinical assessment.

Methods

We report a retrospective case series in a tertiary urogynaecology centre between 2010 and 2018, of women who underwent UDS prior to laparoscopic mesh sacrohysteropexy. UDS diagnoses and patient-reported outcomes were collected from case notes and analysed using StataSE 15.

Results

Seventy patients were included, with a median follow-up of nine months (range 2-79). The preoperative primary UDS diagnoses were normal (19%, n=13), urodynamic stress incontinence (USI) (61%, n=43), detrusor overactivity (DO) (13%, n=9) and voiding dysfunction (7%, n=5). Normal UDS were associated with a 15% risk of postoperative overactive bladder (OAB) symptoms, and a 38% risk of stress urinary incontinence (SUI). Detrusor overactivity predicted postoperative OAB (78% vs. 15% , p = 0.003), although other variables did not predict outcome. Sixteen patients with USI on UDS underwent concurrent continence procedures. Performing a concurrent continence procedure in these patients increased the likelihood that women reported their incontinence symptoms as 'very much' or 'much' better (100% vs. 53%, p = 0.008). Amongst the group who had concurrent continence surgery, a trend towards a lower rate of postoperative SUI was noted (13% versus 44%).

Conclusion

UDS may guide patient counselling prior to laparoscopic sacrohysteropexy. Normal preoperative UDS are associated with a low risk of postoperative OAB. However, in the presence of preoperative DO, such postoperative symptoms are likely to be present. In women with USI on UDS, performing a continence procedure increases the likelihood of them reporting an improvement in incontinence. This study is limited by small patient numbers and further prospective work would be beneficial to corroborate findings.

**Presenter**

Fredrika Asenius

**Authors**

Marzi S, Aviva P, Elwin A, Greco A, Williamson E, Williams D

**Abstract**

Background

Paternal obesity, unlike maternal obesity, has been associated with reduced offspring birthweight in animals and humans. We aimed to test this association in a cohort of 500 family trios at UCLH and investigate whether epigenetic changes associated with obesity, might be evident in sperm DNA and growth-restricted offspring.

Methods

In a prospective cohort study, 485 couples due to have a baby at UCLH were categorised according to paternal BMI; lean (BMI<25kg/m2; n=225), overweight (BMI 25-30kg/m2; n=182) and obese (BMI>30kg/m2; n=78). Maternal phenotype and offspring birth weight were recorded. Semen samples were collected from 170 participating fathers. We firstly determined whether DNA methylation differences (EPIC array) existed between matched semen and blood samples (n=96).

Results

Despite significant metabolic and cardiovascular differences between the 3 paternal phenotypes and following exclusion of mothers with a BMI >25kg/m2, we found no association between paternal BMI or paternal HOMA-insulin resistance and offspring birthweight (p=0.16 and p=0.89, respectively). The EPIC array showed novel DNA methylation differences between blood and sperm.

Conclusion

In this cohort of almost 500 family trios, we did not show the anticipated inverse association between paternal BMI and offspring birthweight. This may be due to a lack of statistical power, or that paternal obesity influences fetal growth when it is also compromised through other pathways. Further research is needed to determine how acquired parental metabolic traits alter epigenetic marks and influence offspring growth.

**Presenter**

Joy Delhanty

**Authors**

Ghevaria H, Sengupta S, Naja R, Sun X, Odia R, Serhal P, Vinals Gozalez X, Delhanty J

**Abstract**

Background

Oogenesis is an error prone process. As women age the risk of an aneuploid oocyte increases with most errors affecting meiosis I or II. The application of next generation sequencing (NGS) has allowed us to confirm our earlier finding, from molecular cytogenetic studies, that a significant proportion of apparently meiotic aneuploidy is in fact present in the early embryo, leading to a high risk of oocyte aneuploidy irrespective of age. It has also provided evidence that genetic factors influence premeiotic oocyte aneuploidy.

Methods

The oocyte DNA was extracted, amplified and NGS was performed using the Ion ReproSeqPGS Kit (ThermoFisher Scientific) or VeriSeqPGS Kit (Illumina). Immature oocytes included 29 Germinal Vesicles(GV), 11 Metaphase I (MI), 4 GV/MI stage oocytes. Mature oocytes included 20 Metaphase II – 1st polar body (MII-PB1) complexes where both cells were analysed together and 4 analysed separately. In total, 68 oocytes from 18 women, (average mat age 34.83 years) were tested.

Results

Only five of the women were infertile; most oocytes were donated from cycles of egg freezing for social reasons; two young women were preserving oocytes due to breast cancer treatment. Overall 11 of 68 (16%) oocytes showed premeiotic (PM) errors. Of the 18 patients 6 had oocytes with PM errors, of which only one had primary infertility. From a total of 27 PM abnormalities, 19 errors were in five of 10 oocytes from the two cancer patients. In contrast 14 oocytes from one woman for social egg freezing were all euploid.

Conclusion

We conclude that the application of NGS has provided accurate information regarding the frequency of aneuploidy that is due to premeiotic errors compared with that caused by errors at MI of oogenesis and that on an individual basis this is influenced by genetic factors.

**Presenter**

Juan Antinao Diaz

**Authors**

Diaz JA, Counsell JR, Schorge S, Berti M, Davidge J, Waddington SN, Karda R

**Abstract**

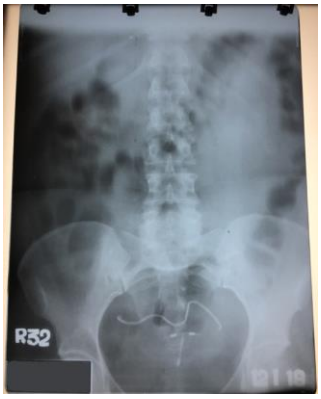
Background

Dravet Syndrome (DS) is a genetic childhood epilepsy. Over 80% of the cases are caused by a mutation in the SCN1A gene;

leading to happloinsufiency of the ion channel NaV1.1. Patients suffer from seizures, ataxia and cognitive impairment. Seizures can result in premature death. DS remains untreatable by either medical or surgical means. Using adeno-associated vectors (AAV) for DS faces several challenges; difficulties in propagating wild-type SCN1A plasmids in competent cells and the large transgene (6 Kb) limits incorporation into AAV vectors.
Methods
We have designed a dual AAV system; SCN1A is split into two complementary halves. Each is driven by a human synapsin promoter. Additionally, we incorporated red and green fluorescent proteins (RFP & GFP) to the first and second half of SCN1A plasmids, respectively. A control carrying only GFP was also produced. A mouse model of DS is used for in vivo validation.
Results
We have detected the channel by western blot and electrophysiology on cells co-transfected with both plasmid constructs. AAV8-GFP vector was delivered via neonatal bilateral intracerebroventricular injection into WT mice, showing widespread brain expression. Knockout Dravet mice received either both treatment vectors (n=7) or control GFP (n=3) in a randomised, blinded study; no difference in survival was found.
Conclusion
This is the first use of a dual AAV system to restore $Na_V1.1$ expression. Fetal injection will be done in the future, to hopefully provide a positive change in the disease phenotype.

**Presenter**
Katie Gallagher
**Authors**
Shaw C, Drew P, Connabeer K, Aladangady N, Marlow N
**Abstract**
Background
Some of the most challenging conversations between doctors and parents in neonatal care, are about the redirection of intensive to palliative care. Such decisions may arise because a baby is born extremely premature, with congenital anomalies, or from a severe lack of oxygen at birth. Doctors are guided by the best interests of the baby, and yet this is not clear cut and often based on risk rather than certainties. Involving parents in decision-making is important ethically and legally. Our paper builds on previous work (Shaw et al., 2016), exploring how doctors convey to parents what has to be decided about the treatment of their baby.
Methods
Data comes from two level 3 neonatal intensive care units in England. Twenty-seven video and audio recorded conversations were identified across 21 families in which the doctor presented a decision about limiting life sustaining treatment. Data were transcribed and analysed using the qualitative method of conversation analysis.
Results
We found that in 8/27 cases, the decision phase of the consultation was initiated by the parents. Parent initiations occurred when the parents demonstrated alignment with the trajectory of the news and tended to occur in the context of conversations about withdrawing intensive care. Parent initiations tended to be followed by options, where-as doctor-initiated decisions were more likely to be followed by recommendations and other formats which offer choice in a less structured way.
Conclusion
Our results highlight the importance of the news delivery phase of the consultation in ensuring the parents are in alignment with the trajectory of the news, particularly in the case of withdrawing intensive care, where deterioration may be a reality rather than a possibility. The affordance of doing so is that the decisions may be initiated in a way that most effectively includes the parents.

**Presenter**
Kevin Dominique Tjandraprawira
**Authors**
Grace A, Tjandraprawira KD
**Abstract**
Background
Intrauterine device (IUD) is an effective long-term contraception. However, it can migrate to extrauterine compartment, with some reporting simultaneous multiple IUDs findings. While often asymptomatic, it is not always so.
Method
This is a case report of multiple IUDs finding in a nonpregnant woman with history of recurrent miscarriage.
Results
A 44-year-old G4P2A2 woman who presented to a low-resource private general hospital in East Nusa Tenggara, Indonesia with acute urinary retention and a radiating left lower abdominal pain. She had had a Lippes loop inserted 18 years ago, mistakenly assumed to have been expelled during a miscarriage. She then had a copper IUD inserted 8 years ago but underwent no follow-ups. Plain abdominal radiograph revealed a copper IUD and a Lippes loop above the copper IUD. Removal of copper IUD was successful while the Lippes loop was not located. Ultrasound by the Emergency Medicine (EM) physician demonstrated no intrauterine Lippes loop. Lack of on-site obstetricians/gynaecologists led to her discharge and referral. Exploratory laparotomy was performed at the nearest hospital with obstetricians/gynaecologists on standby. The Lippes loop was discovered in the rectovaginal pouch embedded to the uterus' posterior wall and subsequently removed. The patient made an uneventful recovery afterwards.



Conclusion
The lack of on-site specialists and the low-resource setting presented unique challenges to this case and simultaneously highlighted the inevitable limitation of optimal obstetric care in low-to-middle-income countries. Subsequently, it also underlines the importance of EM physicians being adept at point-of-care ultrasound (POCUS) to improve obstetrics care in specialists-poor low-resource settings. Lack of POCUS training is an urgent issue for Indonesian EM physicians practicing in low-resource facilities and customized POCUS ultrasound trainings need to be developed for them to provide proper patient care, thus improving their quality of life.

**Presenter**
Kimberley Whitehead
**Authors**
Whitehead K, Jones L, Laudiano-Dray MP, Meek J, Fabrizi L
**Abstract**
Background
High-grade (large) germinal matrix-intraventricular haemorrhage (GM-IVH) is one of the most common causes of somatomotor neurodisability in pre-term infants. GM-IVH presents during the first postnatal week and can impinge on somatosensory circuits resulting in aberrant somatosensory evoked potentials straight after injury. Subsequently, somatosensory circuits undergo significant plastic changes, sometimes allowing the reinstatement of a cortical somatosensory response. However, it is not known whether this restructuring results in a full recovery of somatosensory functions.
Methods
To investigate this, we compared somatosensory responses to mechanical stimulation measured with 18-channels EEG between infants with high-grade GM-IVH (with ventricular dilatation and/or intraparenchymal lesion; n = 7 studies from 6 infants; mean corrected gestational age = 33 weeks; mean postnatal age = 56 days) and age-matched controls (n = 9 studies from 8 infants; mean corrected gestational age = 33 weeks; mean postnatal age = 42 days).
Results
We showed that infants who had high-grade GM-IVH i) do not recruit the same cortical sources following stimulation of the foot, and ii) have a stronger cortical response during certain time periods following stimulation of the foot and hand.
Conclusion
These results show that cortical somatosensory circuits are restructured in infants who had GM-IVH during the several weeks after injury, but remain different from those of infants without brain injury. An important next step will be to investigate whether these evidences of neural reorganisation predict neurodevelopmental outcome.

**Presenter**
Maria Pureza Laudiano-Dray
**Authors**
Pureza Laudiano-Dray M, Pillai Riddell R, Iyer R, Jones L, Whitehead K, Fitzgerald M, Fabrizi L, Meek J
**Abstract**
Background
There is increasing evidence that the long-term outcome of premature babies is adversely affected by repeated noxious procedures in the Neonatal Intensive Care Unit (NICU). Such interventions differ widely in extent of tissue injury and duration, therefore are likely to contribute differently to the pain burden of each individual, and ultimately on their development. Here we aim to estimate the pain load of common NICU procedures to understand their impact on the pain experience of hospitalized neonates.
Methods
We estimated the pain load of NICU procedures using neonatal pain reactivity scores derived from the literature. We also assessed the efficacy of this estimation in differentiating procedures with distinct characteristics. Randomised controlled trials that provided control group data on procedures (i.e. no intervention) were reviewed. Data was synthesized for 12 NICU procedures from 53 neonatal studies. Reported pain reactivity scores up to 1 minute from the painful procedure were normalized to a scale of 0-100%. Differences between meanpooled pain reactivity scores per procedure, weighted for pooled sample size, were tested using ANOVA.
Results
The procedures with the highest pain load estimation were lumbar puncture, peripheral arterial puncture and intramuscular injection. 7 of 12 procedures fell within the moderate range cutoff of 40-69% and were not discriminated by our estimator. Lumbar puncture was the only procedure that had a statistically higher pain load estimation from all other procedures, ANOVA ($F(11, 2081) = 37.01$, $p<.001$).
Conclusion
Although the average pain reactivity of NICU procedures populated the full range of a 0-100% normalized scale, pain reactivity measures is insufficient in discriminating the pain load associated with different NICU procedures. A possible explanation is that all these procedures elicit the same immediate response as measured by current neonatal pain assessment tools and that differentiating their nature requires further refinement or a different approach to pain load estimation.

**Presenter**
Nada Mufti
**Authors**
Mufti N, Sokolska M, Narayanan P, Bainbridge A, Atkinson D, O'Brien P, Sebire N, Aughwane R, Kendall G, Ourselin S, Melbourne A, David AL
**Abstract**
Background
Placental accreta spectrum (PAS) disorders are a growing obstetric issue due to increasing caesarean section rates. Serious maternal and fetal morbidity is associated with these conditions (e.g. severe haemorrhage, and peripartum hysterectomy).
Methods
MRI is currently recommended as an adjunct to ultrasound. Currently use of contrast agents is not considered safe in pregnancy to improve diagnostic performance of MRI. We propose a new MRI method to image placental vasculature

which may help surgical planning. Diffusion-rElaxation Combined Imaging for Detailed Placental Evaluation (DECIDE) is a novel multicompartment MRI model that quantifies fetal and maternal perfusion through the whole placenta, with a resolution of 1.9mm.
Results
A 34-year-old with two previous caesarean sections had pelvic and transvaginal ultrasound scans at 28+6, and 32+6 weeks gestation. These indicated placental accreta illustrating placental lacunae and increased vascularity between bladder and uterus. She had an MRI at 29+6 and was imaged with a combined T2 relaxometry and diffusion weighted image acquisitions. In our DECIDE model we displayed the vasculature using diffusion and perfusion coefficients, and perfusion and fluid fractions. This showed increased vascularity at the placental bladder interface suggesting bladder infiltration, which was shared with the multidisciplinary team meeting (MDT) to plan the caesarean delivery. A placenta accreta was clinically confirmed at delivery. Due to the adherent placenta and ongoing massive obstetric haemorrhage the decision was made to perform a caesarean hysterectomy. The patient sustained a bladder injury at the time of hysterectomy which required urological repair. Placenta and uterus were professionally photographed, and placenta accretta was confirmed on histopathology.
Conclusion
The DECIDE model parameters are able to separate maternal and fetal vasculature which can be applied to patients with PAS disorders. Whilst the addition of MRI to ultrasound may not aid the diagnosis of placenta accreta, visualisation of the vasculature may help the MDT plan the surgery.

**Presenter**
Natasha Soong-Ying Liou
**Authors**
Liou N, Turan O, Gomez K, Kadir R.A.
**Abstract**
Background
Antithrombin (AT) deficiency is a rare inherited thrombophilia with a tendency for recurrent venous thrombo-embolism especially during pregnancy. In some cases, thromboses may occur despite therapeutic heparin due to a phenomenon of heparin resistance. Simultaneously, women run the risk of obstetric haemorrhage while being anticoagulated.
Methods/Results
We present the obstetric case of a woman with type I AT deficiency due to a missense variant predicted to result in aberrant splicing. Prior to pregnancy she was on long-term warfarin with target INR 2.0 – 3.0. She developed recurrent venous thrombosis while on supra-therapeutic LMWH with adequate anti-Xa levels in early pregnancy, and had an antepartum haemorrhage at 32 weeks gestation. We describe the pathophysiology of LMWH resistance, the pitfalls of anti-Xa level monitoring, and the role of antithrombin concentrate. We review the literature for management of AT deficiency in pregnancy and offer our view on balancing adequate anticoagulation with the inherent bleeding risks that accompany pregnancy.
Conclusions
Women with AT deficiency present a unique challenge in management during their pregnancies. An understanding of the condition and its various phenotypes is necessary to avoid overzealous anticoagulation. Balancing the risks of thrombosis and haemorrhage is best achieved through the collaboration of an obstetrician and haematologist in a multidisciplinary approach.

**Presenter**
Paraskevi Dimitriadi
**Authors**
Attilakos G, Wimalasundera R
**Abstract**
Background
Dichorionic triplet pregnancies are associated with increased adverse perinatal outcomes in comparison to twin and trichorionic pregnancies. There has been an increased incidence of these pregnancies since the introduction of Day 5 blastocyst transfer in assisted conception. Reduction of one monochorionic twin with Radio Frequency Ablation (RFA) can reduce the rate of preterm delivery by allowing the pregnancy to proceed as a dichorionic twin pregnancy. The objective of this study is to compare the perinatal outcomes for dichorionic triplet pregnancies with or without RFA fetal reduction at the Fetal Medicine Unit (FMU) of University College London Hospital (UCLH).
Methods
This was a retrospective review of dichorionic triplet pregnancies managed by the FMU of UCLH from 1 January 2015 to 31 December 2018. We analyzed the outcomes of three groups: expectant management, fetal reduction (FR) to twins and FR to singleton. Outcome measures included miscarriage, fetal loss, gestational age at delivery, method of delivery, birth weight, and the need for neonatal intensive care unit stay.
Results
70 dichorionic triplet pregnancies were identified. 84% resulted from assisted reproductive technology. 26 pregnancies underwent FR to twins, 7 pregnancies underwent FR to singleton and the remaining 37 had expectant management. The mean gestational age at delivery was 32+1 weeks for expectant management, 34+3 weeks for FR to twins and 37+6 weeks for FR to singleton.
Intrauterine fetal deaths happened to 1 case with FR to twins. There were 6 spontaneous reductions to twins in the expectant management group. The number of miscarriages was 2 in the expectant management group and none after FR to twins or singletons.
Conclusions
Fetal reduction with RFA can prolong the pregnancy with a relatively small risk of miscarriage or fetal loss.

**Presenter**
Rachel Peasley
**Authors**
Peasley R, Casagrandi D, Lia C, Tsikimi I, Pranav P, Peebles D,

Napolitano R

**Abstract**

Background

Late fetal growth restriction (FGR) affects 7-11% of pregnancies and is associated with significant intrapartum and neonatal morbidity. We assessed impact of a novel multiparameter protocol managing FGR antenatally and compared outcomes if diagnosed ante- or postnatally.

Methods

In February 2018, at UCLH, a new protocol was implemented managing late FGR (>32 weeks) within a dedicated clinic. Referral criteria included estimated fetal weight (EFW)<10th customised centile.

Delivery<40 weeks was advised if at high of risk of placental insufficiency (PAPP-A<0.4MoM, uterine artery Dopplers>95th centile in the third trimester, EFW or cerebroplacental ratio<5th centile), with pregnancies otherwise managed conservatively up to 41 weeks.

The new cohort was compared with a historical suspected late FGR cohort (customised birth weight <10th centile). Abnormal labour outcomes included induction of labour, emergency caesarean section and instrumental delivery.

Composite abnormal neonatal outcomes were "mild" (Apgar<7 at 1min, hypoglycaemia, jaundice, infection, difficulty feeding, NNU admission) or "severe" (neonatal death, resuscitation, respiratory, cerebral and circulation morbidity, arterial cord pH<7.1 and Apgar<7 at 5min).

Fisher's exact test was used with significant level 0.05.

Results

162 late FGR babies were diagnosed antenatally and 155 confirmed small on customised birth weight centile. Out of 55 babies in the historical cohort, 44% were diagnosed antenatally. The historical cohort had significantly lower gestational age at delivery (38 v's 38 weeks + 6 days, lower birth weight 2439 v's 2591g but similar gestation at diagnosis, 31 weeks. Abnormal labour outcomes were more frequent whereas mild and severe abnormal neonatal outcomes were reduced in the new cohort (42% v's 65%, 78% v's 42%, and 24% v's 10% respectively, p<0.05).

Conclusion

A novel multiparameter evidence based management of late FGR using a conservative approach could improve neonatal outcome, at the expense of more intervention in labour. Antenatal FGR detection is confirmed to have better neonatal outcome.

**Presenter**

Rachel Peasley

**Authors**

Peasley R, Casagrandi D, Tortora D, Willinger M, Pandya P, Peebles D, Napolitano R

**Abstract**

Background

Late fetal growth restriction (FGR) commonly affects 7-11% of pregnancies and is associated with significant intra-partum and neonatal morbidity.

Timing of delivery is an important and complex question. Delivery too early is associated with iatrogenic preterm complications; delivery too late risks hypoxia, long-term organ damage and mortality.

Studies investigating induction of labour versus expectant monitoring for SGA babies at term (DIGITAT study) showed no benefits with an earlier delivery.

We plan to assess outcomes in late FGR babies delivered early versus late at term.

Methods

At UCLH, a new protocol was implemented to manage late FGR >32weeks. Referral criteria included estimated fetal weight (EFW) <10th centile, with delivery at <40 weeks if at high risk of placental insufficiency (PAPP-A <0.4MoM, uterine artery Doppler>95th centile in third trimester or cerebroplacental ratio <5th centile, with pregnancies otherwise managed conservatively up to 41 weeks

Abnormal labour outcomes included induction of labour, emergency caesarean section and instrumental delivery.

Composite abnormal neonatal outcome were "mild" (Apgar<7 at 1min, hypoglycaemia, jaundice, infection, difficulty feeding, NNU admission) or "severe" (neonatal death, resuscitation, respiratory, cerebral and circulation morbidity, arterial cord pH<7.1 and Apgar<7 at 5min).

Fisher's exact test was used with significant level 0.05.

Results

During one year 162 late FGR babies were diagnosed antenatally and 155 confirmed small on customised birth weight centile.

In the low risk group (delivery>40 weeks) there was significant reduction in mild neonatal outcomes compared with high-risk group delivered between 37-40 weeks (27% v's 47%; p<0.05)

Between the low and high risk group there was no significant difference between severe neonatal and maternal outcomes (10% v's 11% and 63% v's 65%)

Conclusion

Appropriate risk stratification with delivery recommended after 40 weeks in small babies at low risk of complications is safe and could have beneficial effect on neonatal and long-term development.

**Presenter**

Rachel Sagar

**Authors**

Sagar R, Walther Jallow L, Gotherstrom C, Westgren M, David AL, on behalf of the BOOSTB4 Consortium

**Abstract**

Background

Two trials of in utero stem cell transplantation (IUSCT) are planned to treat alpha thalassaemia (AT) and osteogenesis imperfecta (OI) prenatally using haematopoietic (HSCs) and mesenchymal stem cells (MSCs, BOOSTB4 trial) respectively. We performed a systematic review of all published IUSCT cases to provide information for regulatory authorities, healthcare professionals and patients.

Methods

Searches of Medline®, Embase, Cochrane library and Web of Science for Title/Abstract (fetus OR fetal OR "in utero" OR intrauterine) AND ("Stem cell") AND (Transplant*) were

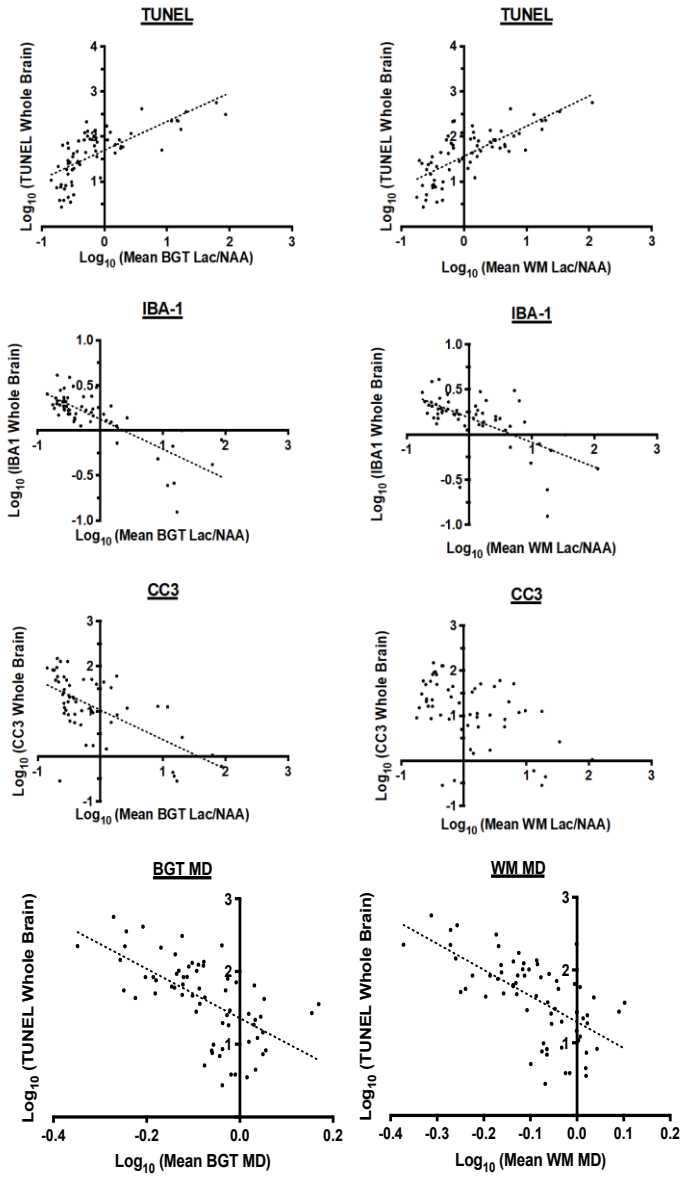
performed electronically on 25/9/2018.
Results
The review identified 48 IUSCT procedures performed in 40 fetuses between 1967-2014 for a variety of underlying pathologies, from haemoglobinopathies to OI. Transplantation was with HSCs(n=38) or MSCs(n=2). Cell sources comprised fetal liver, bone marrow and blood from related/unrelated donors. The gestational age(weeks) was variable(range 11-34), as was number of IUSCT given(range 1-3).
All reports described acute complications and outcome for fetal recipients. Three fetuses were lost after IUSCT in association with sepsis(n=1) and bradycardia(n=2), one fetus with immunodeficiency later died secondary to donor cell infiltration(n=1). Iatrogenic membrane rupture occurred in one pregnancy(n=1). The acute procedural mortality rate was 6.25%(3/48) whilst the acute procedural complication rate was 8.33%(4/48). Neonatal survival was 82.5%(33/40).
Long term fetal outcomes were described in all cases. Twelve fetuses(30%) treated for immunodeficiency(n=9), AT(n=1) and OI(n=2) showed benefit; the remaining 21 fetuses showed no improvement.
Only 27.5% of cases(11/40) described maternal outcomes; no adverse events were reported.
Conclusion
This review supported the successful BOOSTB4 trial regulatory submission. No maternal complications of IUSCT were reported although maternal outcomes lacked documentation. The fetal complication rate was 8.33%. All complications occurred prior to 1999 and technical advances have meanwhile ensued. IUSCT should take place in the setting of clinical trials, with primary outcomes of fetal and maternal safety in both immediate and long term reported.
EU Horizon 2020 funded.

**Presenter**
Radhika Kumar
**Authors**
Kumar R, Cooper N, Siassakos D, Whitten M, Hillman S
**Abstract**
Background
Gestational diabetes (GDM) is often associated with macrosomia and increased risk of birth injury. Little is known about GDM women with small for gestational age (SGA) pregnancies. We aimed to compare the maternal and neonatal outcomes of SGA pregnancies in women with GDM to those without GDM.
Methods
A retrospective search was conducted to identify GDM SGA pregnancies between 2010-2016 at UCLH. These were case control matched with SGA pregnancies without GDM. Individual patient notes were used to collect data regarding maternal demographics, GDM management and neonatal outcomes.
Results
14 cases of GDM SGA pregnancies were identified. Maternal demographics showed that 50% were South Asian, 50% were overweight or obese and 43% had poor obstetric history. Over half (58%) of GDM women were managed on diet control alone, 25% required metformin with diet control and a further 17% required additional insulin. In 64%, onset of SGA was noted after GDM management was implemented. It was unclear whether this was related to tight blood glucose control.
There were no adverse neonatal outcomes in the study group, compared to 25% of neonates in the control group requiring NNU admission. No significant difference in birth weight between GDM and control groups was observed.
Conclusion
Lack of adverse maternal and neonatal outcomes in the study group indicated successful management of GDM in SGA pregnancies. Further investigation is needed due to the small sample size. There is potential for research into separate guidelines for GDM pregnancies with SGA to avoid development of IUGR.

**Presenter**
Rajvinder Karda
**Authors**
Karda R, Antinao Diaz J, Counsell JR, Berti M, Davidge J, Caproni LJ, Tite JP, Schorge S & Waddington SN
**Abstract**
Background
Dravet Syndrome is a lethal early onset childhood epilepsy. 80% of Dravet patients exhibit a mutation in SCN1A gene, which encodes a sodium ion channel, Nav1.1. Patients suffer from tonic-clonic seizures, ataxia, cognitive impairment and premature death. Currently is no effective drug or surgical treatment.
Gene therapy for Dravet syndrome has remained a distant possibility for two main reasons; 1. Plasmids containing the SCN1A gene are highly unstable and toxic in E.coli making molecular manipulation and propagation extremely difficult. 2. Mouse models of Dravet syndrome exhibit a severe phenotype with early mortality therefore the window of gene therapy intervention is inherently narrow.
Methods
To overcome these difficulties, we have employed/used/utilised enzymatic, rather than bacterial amplification to produce large quantities of closed linear double-stranded DNA, referred to as Doggybone DNA (dbDNA•). We created a lentiviral dbDNA containing a pan-neuronal human Synapsin promoter (hSyn) driving a full human SCN1A cDNA, linked by T2A to a reporter gene green fluorescent protein (GFP).
Results
We produced lentiviral dbDNA gene therapy vector and validated the functionality by recording sodium currents in vitro. We found GFP expression in the hippocampus after neonatal bilateral intracerebroventricular injections of the control vector db hSyn-eGFP (1x108 vector genomes/mL, 5µl per hemisphere). Following this we treated the knockout Dravet mice by neonatal bilateral intracerebroventricular injections (1x108 vg/mL, 5µl per hemisphere) in a randomised, blinded study with the db hSyn-SCN1A-eGFP (n=4) or db hSyn-eGFP control vector (n=4). However, mice which received the gene therapy vector did not live longer than

untreated controls.
Conclusion
We present for the first time the production of a lentiviral vector containing the full SCN1A cDNA sequences. Future work will involve foetal injections in order to achieve a more widespread expression profile, and earlier gene expression, which may ameliorate the disease phenotype in the knockout Dravet mice.

**Presenter**
Raymand Pang
**Authors**
Pang R, Martinello KA, Meehan C, Avdic-Belltheus A, Bainbridge A, Sokolska M, Mutshiya T, Robertson NJ
**Abstract**
Background
Pre-clinical studies of novel neuroprotective agents to augment hypothermia for neonatal encephalopathy (NE) use outcome markers such as Magnetic Resonance Spectroscopy (MRS), diffusion weighted imaging (DWI) and immunohistochemistry. Lactate/N-acetylaspar
Methods
Following HI, 67 piglets were randomized to: HT+melatonin (18mg/kg at 1 and 24h) (n=13); HT+magnesium (n=8); LPS infusion (n=5); LPS+hypoxia (n=15); HT+vehicle (n=18); or naïve (n=3). HT was for either 12h (n=28) or 24h (n=17). MRS and DWI from BGT and subcortical white matter (WM) regions at 24h and 48h post insult were correlated with average TUNEL positive cell counts, IBA-1 ramification index and CC3 across 8 brain regions.
Results
There was a positive correlation between mean Lac/NAA and TUNEL+ cells in both BGT and WM voxels (BGT r=0.722, WM r=0.748, p<0.01). There was a strong negative correlation between Lac/NAA and IBA-1 ramification index in both voxels (BGT r=-0.786, WM r=-0.632). The correlation between Lac/NAA and CC3 (BGT r=-0.636, WM r=-0.495) was inconsistent. The relationship between MD and TUNEL was weaker than Lac/NAA and TUNEL in both the WM and BGT (mean BGT MD r=-0.615, mean WM MD r=-0.635).
Conclusion
We observed a strong correlation between MRS Lac/NAA to histological cell death and microglia activation in the piglet model, following different neuroprotective interventions. The weak correlation with CC3 suggests cell death occurs through caspase-independent pathways. We observed a weaker correlation between MD and TUNEL, which may be a result of changes in diffusivity over time and alteration with HT. These data give pre-clinical biological plausibility for the use of Lac/NAA as an outcome marker and support the translational relevance of Lac/NAA in neuroprotection studies.
tate (Lac/NAA) predicts 2-year neurodevelopmental outcomes in infants with NE, however the relationship with histology, a primary outcome measure in preclinical models is unknown. We aimed to assess this relationship to validate Lac/NAA for future studies.




**Presenter**
Riccardo Privolizzi
**Authors**.
Privolizzi R, Tijani M, Oosterveen T, Iglesias J. M, Cooper S, Giardina E, Antinao Diaz J. F, Waddington S. N, Roberts M. L, Ng J
**Abstract**
Background
Gene therapy provides great therapeutic potential for previously untreatable neurological diseases. However, neurological diseases are diverse with different brain regions and cell types affected. It is clear the use of ubiquitous promoters may not be suitable for all neurological gene therapies and delivery needs to be specific to the neurological disease. We describe the design of novel CNS selective promoters using a bioinformatics-based promoter construction platform.
Methods
Data derived from large-scale functional genomics datasets and machine learning algorithms were applied to identify functional gene regulatory elements. These were used as

constituent parts to construct novel CNS promoters. All promoters were cloned into AAV expression cassettes containing a GFP reporter gene and packaged into adenoassociated virus type 9 (AAV9) capsid. Neonatal CD1 mice received titre-matched AAV9 viral vector by intracerebroventricular or intravenous delivery and euthanised at 5 weeks for GFP whole brain biodistribution. Systemic organs were collected for off-target expression analysis.
Results
We present results obtained from 8 novel synthetic CNS promoters compared to human Synapsin 1 promoter evaluated in vivo. All 8 vectors were active in the CNS delivered by ICV or IV injection. Vectors with the novel promoters CNS-1, 2, 4, 6 and 7 showed widespread expression in the brain with raustrocaudal gradient. Vectors with CNS-3, 5 and 8 showed predominantly hippocampal expression. Vectors with CNS-2 and 8 promoter showed neuronal expression only, CNS-3 promoter showed predominantly glial expression, while CNS-1, 4, 5, 6 and 7 showed mixed neuronal and glial expression. qPCR quantification of systemic organs showed off-target expression in liver and kidney for 4 novel promoter designs. Off-target expression was also observed with hSyn1 control promoter in the liver.
Conclusion
We demonstrate that our genomics-based platform can successfully be used to produce novel CNS promoters by rational design with predominant expression in the CNS in vivo.

**Presenter**
Roise Dudley
**Authors**
Dudley R, Whitten M, Richens Y
**Abstract**
The Effect of Individual Midwife Consultations on Fear of Childbirth in Pregnant Women
Background
Fear of childbirth (FOB) is a potentially debilitating condition which affects approximately 14% of pregnant women worldwide. Women with FOB have an increased rate of elective and emergency caesarean sections as well as an increased risk of co-morbid perinatal mental health conditions. The Fear of Birth clinic is a component of the antenatal services offered at UCLH, with an aim to reduce FOB through midwife-led consultation. This study represents the first effort to examine the efficacy of this service and its acceptability to patients.
Method
Women attending the FOB clinic between 31st January and 29th March 2019 completed two Fear of Birth Scales to assess level of fear pre- and post-appointment. In addition, four questions were posed in a VAS format, allowing patients to rate the clinic staff, the utility of the service, skill of the consultant midwife and preference towards continuity of antenatal care.
Results
A significant decrease in FOB was found across these two measures ($p<0.001$). Moreover, women reporting a clinically recognisable FOB (FOBS score $\geq 60$) fell from 76.5% (n=27) to 39.4% (n=13). In terms of the clinic's acceptability, patients expressed a close alignment with the 'Strongly Agree' anchor phrase of each VAS in a series of positive statements regarding the clinic (M = 74.98 – 92.40).
Conclusion
The results of this evaluation strongly suggest that even a single midwife-led consultation is an effective intervention to reduce FOB in pregnant women. Patients also expressed strong preference for a continuous model of midwifery care and rated the utility of the clinic highly.

**Presenter**
Sergio A. Silverio
**Authors**
Silverio S.A, McCabe L, Halford J.C.G, Bennett K.M, Harrold J.A, Fallon V
**Abstract**
Background
Perinatal mental health conditions are under-recognised and under-reported, despite consistent relationships with adverse maternal and infant health outcomes. Perinatal anxiety measurement is limited by using non-childbearing-specific tools and depression is often used to explain poor mental health. Little work captures longitudinal changes in mood and experiences over the transition from late-pregnancy through birth and into parenthood. This study explores women's experience of anxiety from pregnancy to parenthood identifying their origins, presentations, and course.
Methods
18-women took part in a longitudinal interview study (once in the final trimester; twice postpartum). Data were transcribed and analysed with Grounded Theory by three members of the research team. Inter-rater reliability was deemed excellent and theme saturation was achieved.
Results
Four themes were generated: tipping points; anticipatory vs. reactive anxiety; planning, routine, and experience; paradox of caring. A clear distinction was observed between adaptive and maladaptive anxiety across timepoints. The "tipping points" were dependent on a range of biopsychosocial risk- and protective-factors. Anxiety in pregnancy was anticipatory and emotionally focused on future events (birth/parenting). Postpartum anxieties were reactive and pragmatic. Women consistently used plans and routines as coping mechanisms, and these became more effective as their parenting evolved. The final theme demonstrates an important paradox in women's experiences: while emphasis is placed on creating the optimal parenting environment, anxieties are often rooted in pursuing perfection and 'caring too much'.
Conclusion
The evidence highlights the need for research and screening tools acknowledging differences between adaptive and pathological anxieties occurring in pregnancy and the postpartum. Self-awareness techniques may be useful in combating anticipatory anxiety in pregnancy. Pragmatic parenting toolkits may help with reactive anxieties experienced postpartum. Managing unrealistic expectations of motherhood in pregnancy and emphasising the need for flexibility in parenting may be useful techniques to prevent

'searching for perfection' and the anxieties it creates.

**Presenter**
Sophia Lalani
**Authors**
Lalani S, Izett M, Welford K, Lyons A, Kupelian A, Vashisht A
**Abstract**
Background
Vaginal pessaries form part of the management of female pelvic organ prolapse (POP), with pessary care becoming increasingly nurse-led.
Methods
We report a retrospective case series in a tertiary referral centre undertaken by review of case notes for patients who underwent pessary insertion between July 2012 and February 2018. Our primary outcome was discontinuation of pessary and we performed a two-sample t-test and chi2 test as appropriate, using StataSE 15.
Results
We identified 210 patients who had pessaries inserted in nurse-led clinic. The mean age of patients was 64 years with a median follow-up of 11 months (range 0-67). 71% of patients had apical compartment POP, 66% had anterior POP and 30% had posterior POP. Ring, Doughnut and Shaatz pessaries were used most frequently. At three months follow-up, 58% of patients had failed treatment and the overall treatment failure rate was 72%. For those using a pessary beyond three months, the average length of use was 16 months. Lack of efficacy was the most common reason for discontinuation (52%), followed by pain or discomfort (25%), vaginal discharge (10%) and decision to undergo surgery (10%). Only ring pessary was found to be associated with a lower risk of discontinuation, RR 0.79 [95% CI 0.67-0.93, p=0.008]. Prolapse compartment did not alter the risk of discontinuation. In our cohort, 15% of patients eventually underwent surgery for POP.
Conclusion
From our limited data, it appears that a ring pessary should be considered first line given the low rate of discontinuation. With no difference in discontinuation between types of prolapse and lack of efficacy the principle reason for discontinuation, our data support the role of a trial of pessary for all women with POP. The role of various pessaries in the treatment of POP requires further prospective randomised study.

**Presenter**
Stacey Bryan
**Authors**
Bryan S, Lee J, Bhide S, Rosenthal A, Olaitan A
**Abstract**
Background
High risk HPV (human papillomavirus) is responsible for 99% of cervix pre-cancers and cancers. It has an affinity for squamous cells, entering via a break in the epithelium. HPV can lay dormant for many years, evading the immune system. However, with persistent basement membrane and is released into the bloodstream alongside HPV DNA.
Over 80% of sexually active women will have had HPV, but the majority of these women clear the infection spontaneously. A small percentage will have persistent infection which can lead to cervical pre-invasive lesions, or cancer if untreated.
We hypothesise that a simple blood test could be used to discriminate between a pre-cancerous cervical lesion or an invasive cancer, utilising the idea that cancer releases HPV DNA into the blood whilst a precancerous lesion with HPV infection does not.
Method
'HPV detect' is an assay that has been used in head and neck cancers with > 90% sensitivity and specificity for the detection of HPV DNA in the blood. By using DNA extraction from plasma and PCR amplification methods, we wish to validate this test in cervical lesions, and therefore provide a triage tool to determine those women needing urgent assessment (i.e. HPV detect positive) and those who can be reassured that their abnormal smear or symptoms are not cancer.

- 2 cohorts
  - High grade dyskaryosis referred to colposcopy clinic
  - Diagnosed invasive cervical cancer from gynaecology oncology clinics
- Blood test prior to treatment and then at follow up appointment
- Correlation with biopsy results

Results
The study is ongoing and open to recruitment.
Conclusion
Circulating HPV DNA may pose as a biomarker for the detection of cervical cancer. We aim to use this as a triage tool and also to monitor treatment for cancer.

**Presenter**
William Dooley
**Authors**
Dooley WM, Chaggar P, De Braud LV, Bottomley C, Jauniaux E, Jurkovic D
**Abstract**
Background
The published data regarding the accuracy of transvaginal ultrasound (TVS) in the diagnosis of extra-uterine ectopic pregnancy (EUEP) varies widely. Recent publications have suggested that a conclusive diagnosis can only be made where a gestational sac containing a yolk sac or embryo is visualised, with other morphological types being termed as "probable" EUEP. The aim of this study was to assess the overall accuracy of TVS in the diagnosis of all types of EUEP and to assess the positive predictive value (PPV) of the different ultrasound morphological types.
Methods
We performed a retrospective observational study of all pregnant women who underwent emergency surgery following diagnosis of EUEP in our Early Pregnancy Unit between January 2009 and December 2017. The TVS findings were compared with the operative findings.
Results
A total of 26401 women presented with early pregnancy complications during the study period. 1241 (4.7%, 95% CI 4.5-5.0) women were diagnosed with an EUEP. 721 (58.1%, 95% CI 55.3-60.8) underwent surgical management out of which 710 had been diagnosed with an EUEP on a preoperative TVS. The

remaining 11 women had severe pain and significant haemoperitoneum and were managed surgically, without an EUEP having been identified on ultrasound scan. At laparoscopy the diagnosis of EUEP was confirmed in 706/710 (99.4%, 95% CI 98.6-99.8) of women with positive ultrasound diagnosis and in all 11 women with presumed ultrasound diagnosis of EUEP.
The PPV of ultrasound in the diagnosis of EUEP was 99.4% (95% CI 98.6-99.8) with a sensitivity of 98.5% (95% CI 97.3-99.1). There was no statistically significant difference in the accuracy of the diagnosis for the five morphological types of EUEP (p=0.76).
Conclusion:
The accuracy of pre-operative ultrasound diagnosis of EUEP is high. The morphological type of EUEP on TVS had no significant effect on the accuracy of pre-operative diagnosis.

**Presenter**
Xuhui Sun
**Authors**
Sun X, Odia R, Williams C, Campbell-Forde M, Orach I, Sugumar G, Ben Nagi J, Serhal P, Sen Gupta, S.
**Abstract**
Background
In human preimplantation embryos, the DNA repair and cell cycle checkpoint system responds to genetic errors, resulting in the loss or the arrest of embryonic cells when repair fails. However, in the early stage of development, the system allows rapid cell division despite the presence of genetic errors in embryos. Currently, how DNA repair and cell cycle checkpoint system is regulated in human preimplantation embryos remains unclear.
Methods
Between 2016 and 2018, 114 human blastocysts (20 euploid and 94 aneuploid) were analysed in order to compare expression of DNA repair and cell cycle checkpoint genes between euploid embryos and aneuploid embryos. Embryo and couple -related baseline data were collected from the fertility clinic simultaneously. Gene expression of 16 genes including GADD45A, PARP1, CDKN1A, BRCA2, RB1, TP53BP1, MPG, CREBBP, ERCC4, TUFM, FANCA, TP53, NF1, BRCA1, CHEK2, and XRCC6 was examined via qPCR. Correlations between ploidy status of embryos and expression of these genes were identified via multiple linear regressions, where all results were adjusted for baseline data of embryos and couples.
Results
Both of GADD45A and CDKN1A are DNA damage response genes regulated by TP53. Results showed the expression of GADD45A (B = 14.487, P = 0.000) and CDKN1A (B = 16.726, P = 0.006) was positively correlated with the total number of chromosomes wholly lost or gained in blastocysts. The expression of GADD45A (B = 1.651, P = 0.039) and CDKN1A (B = 3.027, P = 0.028) was also positively correlated with the maternal age of embryos, the most important risk factor of IVF failure. In addition, this study identified that gene expression of many genes including GADD45A, PARP1, RB1, MPG, CREBBP, TUFM, FANCA, BRCA1, CHEK2, and XRCC6, was DNA-dose-dependent.
Conclusion
Human blastocysts responded to aneuploidy via a GADD45A and CDKN1A –related DNA repair and cell cycle checkpoint system.

**Presenter**
Yanyan Ni
**Authors**
Ni Y, Beckmann J, Marlow N.
**Abstract**
Background
To investigate growth trajectories from age 2.5 to 19 years in extremely preterm (EP) individuals compared with term-born controls.
Methods
A longitudinal analysis of growth data from the EPICure Study, a prospective cohort of 315 children born before 26 completed weeks of gestation in the UK and Ireland in 1995 and 160 term-born controls recruited at age 6. Measurements at age 2.5, 6, 11 and 19 years were converted to standard deviation scores (z-scores).
Results
Of the 315 EP survivors, 155(49.2%) were males. At age 19, mean z-scores in EP participants were significantly different from zero: for height -0.98 SD (95% CI -1.19 to -0.78), weight -0.25 SD (-0.51 to -0.00), BMI 0.32 SD (0.08 to 0.56) and head circumference -0.84 SD (-1.07 to -0.61); 23.4% (30/128) were overweight and 6.3% (8/128) were obese. Apart from BMI, mean z-scores were significantly lower in EP participants compared to controls from age 6 to 19 years. On average, EP participants showed "catch-up" in their weight by 0.06 SD per year, BMI by 0.08 SD, and head circumference by 0.04 SD, but no evidence of catch-up in height. Trajectories of height, weight and head circumference were similar in both groups, but there was a greater increase in BMI z-scores in EP individuals. Within the EP cohort, birth weight z-score was positively associated with height and head size at each age; gestational age predicted head size only; enteral feeding begun day 7 was positively related to weight and BMI.
Conclusion
Individuals born EP remained shorter and lighter and had a smaller head circumference than reference data or term-born controls in early adulthood, despite catch-up growth. Increasing BMI and high rates of overweight/obesity are of concern as they may predispose EP individuals to increased risk of later cardiovascular diseases.

UCL EGA Institute for Women's Health

# Medical Student Prize Talk

***The Effect of Individual Midwife Consultations on Fear of Childbirth in Pregnant Women***

**Roise Dudley** (Medical Student, Maternal & Fetal Medicine)

Fear of childbirth (FOB) is a potentially debilitating condition which affects approximately 14% of pregnant women worldwide. Women with FOB have an increased rate of elective and emergency caesarean sections as well as an increased risk of co-morbid perinatal mental health conditions. The Fear of Birth clinic is a component of the antenatal services offered at UCLH, with an aim to reduce FOB through midwife-led consultation. This study represents the first effort to examine the efficacy of this service and its acceptability to patients.

Women attending the FOB clinic between 31st January and 29th March 2019 completed two Fear of Birth Scales to assess level of fear pre- and post-appointment. In addition, four questions were posed in a VAS format, allowing patients to rate the clinic staff, the utility of the service, skill of the consultant midwife and preference towards continuity of antenatal care.

A significant decrease in FOB was found across these two measures ($p<0.001$). Moreover, women reporting a clinically recognisable FOB (FOBS score $\geq 60$) fell from 76.5% (n=27) to 39.4% (n=13). In terms of the clinic's acceptability, patients expressed a close alignment with the 'Strongly Agree' anchor phrase of each VAS in a series of positive statements regarding the clinic ($M = 74.98 – 92.40$).

The results of this evaluation strongly suggest that even a single midwife-led consultation is an effective intervention to reduce FOB in pregnant women. Patients also expressed strong preference for a continuous model of midwifery care and rated the utility of the clinic highly.

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