Biomarkers for a successful pregnancy

www.regonline.co.uk/BiomarkPregnanct2013
Thursday, 17 October 2013
Cineworld: The O2, London, SE10 0DX, UK

Successful biomarker profiling in pregnant or prenatal women could not only help predict the pregnancy risk to mothers, but also survival rate of the unborn child and any possible future complications. There is a wide range of possibility for using biomarkers in pregnancy and prenatal testing. For example, research is currently being undertaken to identify biomarkers for

- Identifying: ectopic pregnancy, potential rejection of pregnancy by the mother, possible cardiovascular issues,maternal autoimmune development and hypertensive disorders
- Assessing: pregnancy outcome
- Revealing: maternal alcohol consumption and maternal tobacco use
- Avoiding: reducing multiple pregnancy

to highlight just a few. This event aims to focus on the current research in this area and discuss the way forward in using biomarkers as a predictive and diagnostic tool to improve pregnancy outcome internationally.

This event has **CPD accreditation** and is part of the 2013 Pregnancy Summit - www.PregnancySummit2013.com

Meeting Chair: *Professor Gordon C S Smith*, Professor & Head of Department, Obstetrics and Gynaecology, Cambridge University

Who Should Attend:
Biotech and Pharma Industry Managers: CEOs, Chief Scientists, Group Heads, Senior and Junior Scientists, researchers in the field of biomarkers or pregnancy
Academic and Research Institutes: Group and Lab Heads, Postdoctoral Scientists and Research Students working in the field of biomarkers or pregnancy
Clinicians: Anyone working in the field of pregnancy and diagnosing pregnancy-related illnesses and pregnancy outcome

The deadline for abstract submissions for oral and poster presentations has now passed.

Talk times include 5 – 10 minutes for questions

9:00 – 9:45 **Registration**

9:45 – 10:00 **Introduction by the Chair**: *Professor Gordon C S Smith*, Professor & Head of Department, Obstetrics and Gynaecology, Cambridge University, UK

10:00 – 10:30 **Proteomic biomarkers for the prediction of pre-eclampsia in nulliparous women**
Dr Jenny Myers, Clinical Senior Lecturer, University of Manchester, UK
Preeclampsia, a serious hypertensive pregnancy complication, is largely unpredictable in healthy nulliparous pregnant women. Accurate preeclampsia prediction in this population would transform antenatal care. We have applied proteomic methods in samples (n=600) obtained through the international SCOPE study in order to identify potential markers predictive of this condition. Candidate proteins have been verified using novel mass spectrometry assays using selective reaction monitoring. Two experimental models will be presented; novel candidate markers pregnancy specific glycoproteins 2, 5 and 9, Insulin-like growth factor acid labile subunit, Serine peptidase inhibitor Kunitz type 1 , Melanoma cell adhesion molecule and Selenoprotein P. The potential predictive performance of these markers will be discussed.

10:30 – 11:00 **Screening low risk women for adverse pregnancy outcome**
Professor Gordon C S Smith, Professor & Head of Department,Obstetrics and Gynaecology, Cambridge University, UK
Screening low-risk women for the risk of adverse pregnancy outcome, such as pre-eclampsia and fetal growth restricition (FGR), is still largely based on clinical assessment, due to negative trials of new

methods. I argue that previous studies have weaknesses in their design and have focused on preterm complications despite the lack of clearly effective interventions to improve outcome. A significant proportion of severe pre-eclampsia and FGR occurs at term and could plausibly be prevented by novel screening tests and early term delivery of high-risk women. It is likely that combining ultrasonic assessment and maternal biomarkers could provide clinically useful prediction of risk.

11:00 – 11:30 **Speakers' photo then mid-morning break and poster exhibition and trade show**
Please try to visit all the exhibition stands during your day at this event. Not only do our sponsors enable Euroscicon to keep the registration fees competitive, but they are also here specifically to talk to you.

11:30 – 12:00 **Cell transfer between mother and child in pregnancy**
Dr Kathleen Gillespie, Senior Lecturer, University of Bristol, UK
The bi-directional transfer of cells between mother and child in pregnancy resulting in microchimerism is now well accepted but effects on health and disease remain controversial. In this presentation, the current understanding of the long term effects of these cells on autoimmunity and tissue repair will be addressed.

12:00 – 12:30 **Intrauterine inflammation - Different etiologies and implication**
*Professor Bo Jacobsson***,** Head Perinatal Laboratory, Department of Obstetrics & Gynaecology, Sahlgrenska University, Gothenberg, Sweden
Preterm delivery is the major problem in international perinatal medicine. Spontaneous preterm delivery is related to intra-amniotic inflammation. We have in several papers evaluated the influence of microbial invasion of the amniotic cavity (MIAC) and histological chorioamnionitis (HCA) on the magnitude of intra-amniotic inflammatory and fetal inflammatory response. In the presentation this will be integrated into the contemporary literature in the area. In the presentation also direction of further research areas will be given.

12:30 – 13:30 **Lunch, poster exhibition and trade show**
Please try to visit all the exhibition stands during your day at this event. Not only do our sponsors enable Euroscicon to keep the registration fees competitive, but they are also here specifically to talk to you.

13:30 – 14:30 **Discussion Session**
This discussion session is an informal question and answer session. This is an ideal opportunity to get advice and opinion from experts in this area. This session is not for questions about specific talks, which can be asked after the speakers session, but for discussing either general topics or specific issues.

There are three ways you can ask questions:
1. *Before the session* you can submit your question to Euroscicon staff at the registration desk,
2. *Before and during the session* you can submit a question or comments, by email, which will be provided on the day of the event
3. *During the session* you can put your hand up and join in

14:30 – 15:00 **Oral Presentations:**

14:30 – 14:40 **BIOMARKERS PREDICTING PRE-ECLAMPSIA AND THE SMALL FOR GESTATIONAL AGE INFANT: A SECONDARY ANALYSIS OF THE PELICAN STUDY**
[1]M Griffin, MBChB, Clinical Research Fellow, [1]S Duckworth, MBBS, Clinical Research Fellow, [1]PT Seed, CStat, Senior Lecturer in Medical Statistics, [1] LC Chappell, PhD, Clinical Senior Lecturer in Maternal and Fetal Medicine, [1] AH Shennan, MD, Professor of Obstetrics,
[1] Women's Health Academic Centre, King's College London, 10th floor North Wing, St Thomas' Hospital, Westminster Bridge Road, London, SE1 7EH United Kingdom

14:40 – 14:50 **A UNIQUE URINARY PROTEOME PROFILE AT 15 WEEKS' GESTATION IN LOW-RISK WOMEN WITH SUBSEQUENT PRE-ECLAMPSIA**
H.D. Mistry[1], K Bramham[1], S. Lynham MSc[2], M.A. Ward[2], D. Arya[1], L. Poston[1] and L.C. Chappell[1].

[1]Women's Health Academic Centre, King's College London, St. Thomas' Hospital, London, SE1 7EH and [2]Centre of Excellence for Mass Spectrometry, King's College London, Institute of Psychiatry, London, SE5 8AF.

14:50 - 15:00 **REFLECTION OF THE IMPACT OF THE ULTRASOUND TRAINING ON THE PRACTICE OF THE POST ADVANCED MIDWIFERY GRADUATES**
Dr Louisa. M Tsweleng, *University of Venda, Thohoyandoy, South Africa*

15:00 – 15:30 **Afternoon Tea, last poster session and trade show**

15:30 – 16:00 **Ectopic pregnancy biomarkers**
Dr Andrew Horne, The Queen's Medical Research Institute, University of Edinburgh, UK
Ectopic pregnancy is diagnosed using transvaginal ultrasound and serial serum beta-human chorionic gonadotrophin levels. Diagnosis is often delayed and these tests are time-consuming and costly, both psychologically to the patient and financially to health services. The development of a biomarker that differentiates a tubal ectopic from an intrauterine implantation is therefore important. In the pre-genomic era, a one-by-one scientific approach has revealed over 20 candidate biomarkers that could be used as a test to diagnose ectopic pregnancy although at present their clinical utility is very limited. Recent approaches using microarray and proteomic technology have facilitated the identification of further biomarkers.

16:00 – 16:30 **Maternal urinary metabolomics and proteomic screening for Downs Syndrome pregnancy – accurate, earlier, faster and affordable.**
Professor Ray Iles, ELK Foundation for Health Research and MAP Diagnostics, UK
Screening for Downs Syndrome pregnancy is based on the quantitative measurement of a panel of serum biochemical markers. Recently maternal blood circulating cell free fetal DNA (ccFFDNA), subjected to quantitative genomics and bioinformatics has been developed as a new screening test: The results being generated in days/weeks. We have been examining the mass spectral profiles of maternal urinary metabolites in women who carried an aneuploid fetus. MALDI-ToF analysis of neat urine detected all Downs syndrome pregnancies at <14 weeks with no false positives. This test is more accurate, earlier, faster than current practice. Its advantage over ccffDNA testing is in health logistics (urine can be collected at home and results in hours) and cost – 100 times cheaper.

16:30 - 17:00 **Obesity and pregnancy – searching for biomarkers of future disease**
Professor Rebecca Reynolds, Professor of Metabolic Medicine and Honorary Consultant Physician, UoE/BHF Centre for Cardiovascular Science, UK
One in five women in the UK are obese at antenatal booking. Obesity during pregnancy is associated with increased risks for the mother (eg. gestational diabetes, pre-eclampsia) and the offspring (eg. stillbirth, being born large for gestational age). The effects of maternal obesity for the child extend beyond the in utero environment with increased risk of later life obesity, metabolic disorders and premature death from cardiovascular disease. In our research clinic we characterise women with very severe obesity (BMI>40 kg/m2) in detail in order to understand mechanisms linking maternal obesity with adverse outcomes and to identify targets for intervention.

17:00 **Chair's Summary and Close of Meeting**

Keywords: pregnancy, biomarkers, ectopic pregnancy, biomarker, cost, microarray, proteomics, Pre-eclampsia; Fetal growth restriction; Placenta; Ultrasound, preterm delivery, intra-amniotic inflammation, histologic chorioamnionitis, microbial invasion of the amniotic cavity, Downs Syndrome, Screening, Urinary metabolomics, pre-eclampsia, mass sepctrometry, selective reaction monitoring, nulliparous, screening, Pregnancy, obesity, cardiovascular disease, glucocorticoids, birthweight

Registration Website: www.regonline.co.uk/BiomarkPregnanct2013

About the Chair

Gordon Smith is Professor and Head of the Department of Obstetrics and Gynaecology, University of Cambridge, UK. He graduated in Medicine from Glasgow University in 1990. He trained in Glasgow, obtaining, including sub-specialist accreditation in Maternal-Fetal Medicine in 2001. He had two Wellcome Trust clinical research training fellowships: Glasgow University (1992-1993) and Cornell University, USA (1996-1999). He gained his MD, PhD and DSc degrees from Glasgow University. His clinically orientated research focuses on the use of maternal, ultrasonic and biochemical data to determine associations with adverse pregnancy outcome. He was elected a Fellow of the Academy of Medical Science in 2010.

About the Speakers

Jenny Myers graduated from Nottingham University in 1997 and following completion of her basic training in Obstetrics & Gynaecology, Jenny moved to Manchester to work in the Maternal & Fetal Health Research Centre. Her Phd, completed in 2005, was entitled "Circulating Factors in Pre-eclampsia" and included research focusing on vascular biology and plasma proteomics. As a clinical lecturer, Jenny was awarded the William Blair Bell Lectureship in 2009. In April 2011, Jenny was appointed as Consultant Obstetrician/ Clinical Senior Lecturer (University of Manchester) and awarded an NIHR Clinician Scientist award in 2012. She continues to combine clinical work with an active research programme spanning basic science, translational and clinical studies. Her clinical and active research interests include hypertension and diabetes in pregnancy.

Kathleen Gillespie is a molecular biologist with a long term interest in the genetic mechanisms underlying autoimmunity. She is currently Senior Lecturer in the School of Clinical Sciences, University of Bristol.

Bo Jacobsson is a senior consultant in Obstetrics and Maternal/Fetal Medicine and got his PhD at the University of Gothenburg, Sweden. He carried out his post-doctoral research training at Aarhus University in Denmark and has been a Guest Professor at Rikshospitalet, Oslo, Norway. He is presently the director of the Perinatal Research Laboratory at Sahlgrenska University Hospital in Gothenburg. He also holds a position at the Norwegian Institute of Public Health. He is studying basic and applied aspects of the mechanisms of preterm delivery and genetics in complex disease. Another area that has attracted his interest is genetic components of the timing of delivery and also the interplay between genes and the environment. One of his main interests for the moment is the possibility to prevent preterm delivery to happen by intervention with dietary products, e.g. probiotics. He has published more than 100 original papers between 2002 and 2013.

Andrew Horne is a Clinical Senior Lecturer at the MRC Centre for Reproductive Health at the University of Edinburgh (www.crh.ed.ac.uk/research/dr-andrew-horne) and an Honorary Consultant Gynaecologist at the Royal Infirmary of Edinburgh. He has a major research interest in Fallopian tube and endometrial biology, embryo implantation and early pregnancy problems. His aim is to further understanding of the causes of ectopic pregnancy, develop a blood test to better diagnose the condition, and investigate novel methods for treating ectopic pregnancy.

Ray Iles has 25 years experience in clinical chemistry and molecular diagnostics from Downs Syndrome screening to biomarkers of cancer metastasis. Eight years of University senior manager experience, whilst maintaining active research as a Professor of Biomedical Sciences and expert in Biomarkers and oncofetal antigen biology. Currently developing IP to market biotechnology tech transfer in cancer and prenatal diagnosis; also future patents linking salivary biomarkers with stress profiling and wellbeing.

Rebecca Reynolds is Professor of Metabolic Medicine in the Centre for Cardiovascular Science, University of Edinburgh and a Principal Investigator in the Tommys Centre for Maternal and Fetal Health, University of Edinburgh, which has focus on obesity in pregnancy. Her work focuses on understanding the link between low birthweight and later life disease with a focus on glucocorticoid hormones. Her research has shown that activation of stress hormones is a key mechanism linking early development with health and disease over the lifespan. Her clinical work includes diabetes, endocrinology, obesity and pregnancy and reproductive endocrinology.

POSTER PRESENTATIONS

RELATIONSHIP BETWEEN THE DYNAMICS OF HEART RATE FLUCTUATIONS AND UTERINE ACTIVITY DURING TERM LABOUR

J.J. Reyes-Lagos[1], J.C. Echeverría-Arjonilla[1], M.A. Peña-Castillo1, M.T. García-González[1], M.R. Ortiz-Pedroza[1], R. González-Camarena[1], C. Vargas-García[2]†.

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Nonlinear techniques have been applied to explore dynamics of physiological data such as the heart rate fluctuations (HRF) or the uterine electrohysterogram (EHG). A recent study has found differences in the entropy of EHG between a group of patients whose labours resulted in a vaginal delivery and another group whose labours led to cesarean section after oxytocin administration (p<0.05); both groups studied were of women at term and low risk pregnancy. These results indicated that more irregularity was manifested in the electrohysterographic dynamics during vaginal delivery [1]. Likewise, in a preliminary study we found that a nonlinear scaling exponent is a sensible marker to identify uterine contractions through the analysis of HRF [2]. Here, we explore if there is a functional link between the dynamics of heart rate fluctuations and the uterine activity during labour involving oxytocin administration. We selected, according to clinical data at CIMIGen (Maternal and Child Research Center, Mexico City), sixteen singleton pregnancies considered to receive intravenous oxytocin during early labour. Women aged 18 to 37 years, with gestational age ranged from 37 to 41.4 weeks, and showing the presence of regular contractions as well as cervical effacement and dilation. EHG and HRF data were collected during labour from women classified into two groups: G1 included patients whose labours resulted in a vaginal delivery (N=8); G2 involved patients whose labour lead to cesarean section (N=8). Notably, the G1 and G2 groups presented statistical differences in cervical dilation; G1: 6.06±2.33 cm vs. G2: 1.93±2.07 cm (p<0.003). We calculated the EHG Sample entropy (SampEnt), which is a measure of the irregularity of time series, as well as the following short-term HRF parameters: $RR_{mean,}$ RMSSD and the scaling exponents of Detrended Fluctuation Analysis (α_1, $\alpha_{1(MAG)}$, $\alpha_{1(SIGN)}$). These parameters offer information about the magnitude and dynamics of HRF data. Subsequently, we verified the existence of linear correlation (ρ) between the EHG (SampEnt) and HRF parameters (RR_{mean}, RMSSD, α_1, $\alpha_{1(MAG)}$, $\alpha_{1(SIGN)}$). No statistical differences were found in RR_{mean}, RMSSD, α_1, $\alpha_{1(MAG)}$, $\alpha_{1(SIGN)}$ between G1 and G2 groups. Thus, according to the dynamics meaning of these parameters, the short-term heartbeat fluctuations maintain in both groups irregular fractal-like ($\alpha_1 \approx 1$), nonlinear ($\alpha_{1(MAG)} > 0.5$) and low anticorrelated dynamics ($\alpha_{1(SIGN)} \approx 0.4$). Also, we found a significant negative correlation between SampEnt vs. $\alpha_{1(MAG)}$, ρ=-0.913 (p<0.002) in G2, indicating that higher complexity in the dynamics of the HRF is associated with increased regularity in EHG activity, however this did not occur for G1, ρ=-0.213 (p=0.778). These findings seem to indicate a functional short-term relationship between the cardiovascular regulation and the uterine activity. Probably, this link is established by the fact that oxytocin is manifested in both dynamics, as a regulator of uterine activity and as a cardiovascular regulatory peptide [3]. Interestingly, this relationship is broken in the case of a larger cervical dilation, but the physiological meaning of this finding remains to be elucidated. The results of this study may contribute to obtain a quantitative clinical biomarker to identify the establishment or withdrawal of a functional short-term relationship; this could even provide information about a systemic modulating role of oxytocin during labour. Currently, oxytocin administration is not only used during the third stage of labour to reduce haemorrhage, but also to induce it or to improve uterine contractility at early stages [4]. In future work we will recruit women without administered oxytocin and increase the number of patients.

[1] García-González M.T et al, "Characterization of EHG Contractions at Term Labor by Nonlinear Analysis", 35rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '13), in press, 2013.

[2] Reyes J.J., "Análisis de la dinámica en el corto plazo de las fluctuaciones de la frecuencia cardiaca en mujeres durante el trabajo de parto", MS thesis, UAM-Iztapalapa, Mexico City, 2013. [3] Higa K.T et al, "Baroreflex control of heart rate by oxytocin in the solitary-vagal complex", Am. J. Physiol. Regul. Integr. Comp. Physiol., vol. 282, pp. R537 R545, 2002. [4] Sosa C.G. et al, "Use of oxytocin during early stages of labor and its effect on active management of third stage of labor", Am J Obstet Gynecol, 2011.

BIOMARKERS PREDICTING PRE-ECLAMPSIA AND THE SMALL FOR GESTATIONAL AGE INFANT: A SECONDARY ANALYSIS OF THE PELICAN STUDY

[1]M Griffin, MBChB, Clinical Research Fellow, [1]S Duckworth, MBBS, Clinical Research Fellow

[1] PT Seed, CStat, Senior Lecturer in Medical Statistics, [1] LC Chappell, PhD, Clinical Senior Lecturer in Maternal and Fetal Medicine, [1] AH Shennan, MD, Professor of Obstetrics, [1] Women's Health Academic Centre, King's College London, 10th floor North Wing, St Thomas' Hospital, Westminster Bridge Road, London, SE1 7EH United Kingdom

Introduction: Women with pre-eclampsia and small for gestational age (SGA) fetuses are at increased risk of antenatal and neonatal complications. The pathogenesis of these conditions largely relates to placental dysfunction. Measurement of

biomarkers reflecting placental function may offer an alternative to identify at risk women. Currently diagnosis relies on investigations with limited diagnostic accuracy. A test, which could accurately identify those at risk would allow appropriate resource allocation, and give reassurance to low risk women. Methods: 274 women with singleton pregnancies recruited to the PELICAN study (multicentre, prospective study investigating the diagnostic accuracy of low placental growth factor (PlGF) in women with suspected pre-eclampsia before 35 weeks gestation) were included in this planned secondary analysis. 58 additional biomarkers, identified following an extensive literature review, were measured. Their ability in predicting pre-eclampsia requiring delivery within 14 days and SGA (defined as birth weight <3rd centile) were investigated in isolation and in combination with PlGF by factor analysis and multiple stepwise logistic regression. Results: PlGF outperformed all tested biomarkers in its ability to predict pre-eclampsia requiring delivery within 14 days and SGA, with receiver operated curve (ROC) areas of 0.87 (0.83 to 0.92) and 0.83 (0.78 to 0.88)respectively. Other biomarkers had lower ROC areas for prediction of these outcomes. Using biomarkers in combination with PlGF increased ROC areas for prediction to 0.90 (0.86 to 0.93) and 0.84 (0.79 to 0.89) respectively. Conclusion: In women presenting prior to 35 weeks' gestation with suspected preeclampsia, PlGF predicts pre-eclampsia requiring delivery within 14 days and those who subsequently delivered an SGA infant. Further biomarkers added only small increments to test performance and are unlikely to be of benefit in clinical practice. Measurement of PlGF offers a real, accurate adjunct for identifying pre-eclampsia and SGA in this high-risk population.

FRAMINGHAM SCORE ESTIMATIONS OF MATERNAL CARDIOVASCULAR RISK AND SYNDROME OF 'COMPLICATED PREGNANCIES': QUANTIFYING ASSOCIATIONS

Prerna Bhasin, Satwanti Kapoor
Obesity Research Unit, Physiological Anthropology Laboratory, Department of Anthropology, University of Delhi, India
Background: Most researches related to pregnancy complications and future cardiovascular disease, and its risk factors have been equivocal. The existence and extent of these complications, as a contributing factor to CVD risks with the underlying mechanisms of these associations still remain uncertain. Objective: The current study tends to examine the associations between syndrome of "complicated pregnancies" with obesity markers known to be coherent reflections of cardiovascular health. Methods and Settings: A cross sectional sample of 631 Punjabi Khatri (mean age 33 ± 5.58 years) urban women were studied for associations of pregnancy DM, hypertensive disorders, preterm delivery, and size for GA with calculated 10-year CVD risk (based on the Framingham score). A wide range of obesity measures (BMI, WC, WHR, WHtR) were measured 3-8 years after pregnancy treating it as a prospective cohort. Results: The association with the calculated 10-year CVD risk (≥ 10 %) based on the Framingham prediction score was 3.01OR (2.11 -3.72CI) for pregnancy DM, 4.52 (3.68–4.93CI) for preeclampsia/gestational hypertension, 2.16 (2.01–2.79 CI) for size at GA (SGA and LGA), 2.25 (1.91-2.85 CI) for preterm births and 2.48(2.08-3.98 CI) for abnormal birth weight when compared with women without pregnancy diabetes mellitus, preeclampsia/gestational hypertension, appropriate gestational age, full term babies, and normal birth weight respectively in completely adjusted models. Conclusion: HDP, pregnancy diabetes mellitus, and pregnancy outcomes are all associated with an increased risk of CVD 10 years later. Pregnancy complications may provide an opportunity to identify women at increased risk of CVD relatively early in life.

A UNIQUE URINARY PROTEOME PROFILE AT 15 WEEKS' GESTATION IN LOW-RISK WOMEN WITH SUBSEQUENT PRE-ECLAMPSIA

H.D. Mistry[1], K Bramham[1], S. Lynham MSc[2], M.A. Ward[2], D. Arya[1], L. Poston[1] and L.C. Chappell[1].
[1]Women's Health Academic Centre, King's College London, St. Thomas' Hospital, London, SE1 7EH and [2]Centre of Excellence for Mass Spectrometry, King's College London, Institute of Psychiatry, London, SE5 8AF.
Background: Pre-eclampsia remains one of the leading causing of maternal and perinatal morbidity and mortality. Recent plasma biomarker discovery has improved the diagnosis of pre-eclampsia; however no factors which are quantitatively different remote from disease onset, which enable appropriate monitoring and expectant delivery have been identified. Urine represents an ideal non-invasive fluid for analysis and potentially rich source of biomarker detection. Proteomics is a rapidly developing technique which allows the detection and identification of individual proteins. We propose that early glomerular changes will result in significant differences in the urinary proteome of women destined to develop pre-eclampsia, prior to detection of the clinical syndrome. Objectives: To define a urinary profile at 15 weeks' gestation, predictive of subsequent pre-eclampsia, in low risk nulliparous women. Methods: Urine samples from twelve women at 15 weeks' gestation who subsequently developed pre-eclampsia (cases) and twelve gestation-, BMI- and age-matched controls were selected from the SCreening Of Pregnancy Endpoints (SCOPE) cohort. A proteome profile was established using a validated workflow, involving selective immunodepletion, 1D SDS-PAGE gel fractionation, in-gel digestion of gel sections, LC-MS/MS analysis

and normalised spectral analysis. Results: More than 900 proteins were identified using minimal stringency in Scaffold. Spectral counts revealed 24 proteins were significantly upregulated in cases and absent in controls and 3 proteins were absent in cases but present in controls. Conclusions: A urinary proteomic signature can be identified in the urine of women at 15 weeks' gestation who subsequently develop pre-eclampsia. Formal quantitative analysis is underway using selective reactive-monitoring analysis, followed by subsequent validation of this differential proteomic profile using a larger number samples per groups.

Reflection of the impact of the ultrasound training on the practice of the post advanced midwifery graduates.
Ms L. M Tsweleng
Aim: The paper reports a study reflecting on the impact of the ultrasound training on the practice of the post advanced midwifery graduates. Methods: A descriptive survey was done which was quantitative and findings were strengthened by qualitative data. Participants were a purposive and convenient sampling of 33 advanced midwives who trained at Ga-Rankuwa nursing college since 2001 and they were from all over South Africa. Data collected using telephonic questionnaires and face interviews. Analysis done through using statistical analysis and open coding. Findings: Findings revealed that: 3 of the 33 of the respondents were not actively using the ultrasound but were benefiting from the information acquired during its training in the work that they were doing. 30 0f the 33 respondents were actively using it and able to operate it independently and to perform basic skills. 27 of the 33 were able to perform more of the basic skills. Recommendations and conclusions: The findings of this research suggest that the post advanced midwifery graduates were using ultrasound in their practice after it was incorporated in their training, and a higher number of them, 27 of the 33 i.e. 81% were able to perform more of the basic skills. This can help them to ensure fetal and maternal safety during pregnancy and labour and result in good outcomes.

Lead in Blood and Meconium: A Study on South Asian Mother-Baby Pairs Living in the UK
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Background: Meconium, the baby's first faeces, receives chemicals transferred across the placenta from the mother and is recognised to serve as a repository for a variety of metabolites and environmental toxicants. The excretion of meconium shortly after parturition provides a non-invasive opportunity to explore the relationship between maternal and foetal exposure of chemicals and evaluate potential biomarkers of exposure and effect with other biological matrices such as blood. Lead is an environmental poison to which the foetus is especially at risk due to its effect on neurological development. Women of South Asian origin may be at increased risk of exposure to lead because of a variety of lifestyle factors. Aim: The aim of this study was to assay lead in the blood of pregnant women of South Asian origin living within the UK, identify potential sources of exposure in this group and determine the exposure of their foetus ante-partum to lead as measured in cord blood and meconium. Methods: Lead in ante-natal blood matched to cord blood and meconium was measured by inductively coupled plasma mass spectrometry (ICPMS). A lifestyle questionnaire survey tool was developed to assess the mothers exposure to lead in pregnant South Asian (n=98) and in White British (n=38) women. Results: Ante-natal blood lead was below the current tolerable threshold of 5µg/dl in both groups. However, significant differences were observed between South Asian and White British participants in the levels of lead in blood and meconium ($p<0.000$); while a strong positive correlation existed between the two bio-matrices ($r=0.65$, $df=97$, $p<0.000$). A strong positive correlation was observed between the ante-natal blood collected in the 2nd and 3rd trimester ($p=0.000$); ante-natal blood and cord blood ($p=0.022$); and between cord blood and meconium ($p=0.047$). Based on cross-sectional data (n=209) a/n blood lead levels appear to increase by 85% from 26 to 39 weeks, then decline from this peak level by about 30% in cord blood. Eight lifestyle variables showed an independent association with maternal blood and baby's meconium lead levels, of which only one variable was common to both lists – use of an amulet; this tends to be culturally-specific habit; amulets often being manufactured from lead. Conclusion: Lead is easy to detect in blood and meconium and whilst exposure of the general population to lead continues to fall, no safe exposure limit exists. South Asian women and children living in the UK remain vulnerable to this environmental pollutant, vigilance is still required and awareness of the potential sources of exposure due to cultural specific lifestyle should be promoted in those at risk. Furthermore, meconium is available in large amounts, can be obtained by non-invasive means and is suitable for further biomarker studies of infant health.

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This meeting was organised by Euroscicon (www.euroscicon.com), a team of dedicated professionals working for the continuous improvement of technical knowledge transfer to all scientists. Euroscicon believe that they can make a positive difference to the quality of science by providing cutting edge information on new technological advancements to the scientific community. This is provided via our exceptional services to individual scientists, research institutions and industry.

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