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Abstracts

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Maternal Medicine (EP1b)

EP1b.011

Appropriateness of standardised enhanced recovery program following caesarean section. Survey and improvement of professional practices

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Introduction In 2014, three maternities units of Reunion Island adopted an Enhanced Recovery Program (ERP) following caesarean section. The program was based on the use of carbetocin (Pabal®) as an uterotonic agent, combined with multimodal analgesia, side effects prevention, removal of catheters before leaving the recovery room, early mobilisation and early return to oral intake. The aim was to determine the "appropriateness" (Security, efficiency, and cost) of this protocol compared to the conventional protocol (with oxytocin, Syntocinon®).

Methods We have led a comparative, prospective and multicenter study, of patients who underwent a ceasarean section after 37 weeks of gestation and beyond, who either received the ERP or the standard protocol. The efficacy endpoint was maternal satisfaction with the management of pain and maternal-newborn bond, by calculating an overall satisfaction score.

Results 272 patients underwent ERP (ERP group) and 95, the conventional care (NO ERP group) between March 1st and June 30th, 2015. For patients with previous caesareans, 75.2% of ERP group considered this new protocol to be better, compared to 46.4% ($P = 0.01$) of NO ERP group. The satisfaction score was also significantly higher in this group ($P = 0.03$). Drinks and food were significantly earlier intoduced in the ERP group with respectively 3.6 and 6.9 h on average, against 4.8 h and 9.8 h for NO ERP group, ($P = 0.001$). Significantly more patients declared having limited activities because of pain in NO ERP group (61%, $n = 58$) than in ERP group (39%, $n = 106$), $P < 0.0001$.

The rate of early and late complications was low, 4.9% ($n = 18$) with no difference between the two protocols;

Hospital stay was significantly shorter in the ERP group 4.8 days [3 days–12 days] against 5.2 days in NO ERP group [4 days–13 days], $P < 0.0001$.

The cost of analgesic consumption per patient was reduced to 30% for ERP group (€6.74 vs. €9.76, $P < 0.0001$), and the initial additional costs generated by the systematic use of Pabal® (€26 versus €1.86) did not cause additional costs in 2014 average drugs cost of the maternity ward.

Conclusion ERP following caesarean section seems therefore more relevant than the conventional protocol, with an improvement in the management of pain, the patient satisfaction (effectiveness) with no increase in complications (safety), end the systematic use of Pabal® does not cause additional costs in the maternity ward.

EP1b.029

Is pregnancy and neonatal outcome different in gestational diabetic women who are managed on metformin compared to those on insulin

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Introduction Women who develop diabetes during pregnancy (GDM) are managed either on diet, metformin, insulin or combination of these. This depends on the level of blood sugars, compliance with metformin and the gestational age at which diabetes has been diagnosed.

Women in general who have developed GDM are at higher risk of adverse maternal and neonatal outcomes however are these outcomes any different in this group of women managed on metformin alone compared to those on insulin.

We analysed our local population and compared the outcome in these two groups.

Objective To determine the difference in the pregnancy and neonatal outcome of GDM patients treated with metformin versus Insulin

Methods Retrospective study in a District General Hospital in England. All women delivered in the years 2014 and 2015 were included. Women who developed gestational diabetes in these 2 years were identified. The data were collected from the local diabetes database.

Results 399 (9% of total deliveries) women developed GDM in this 2-year period. Of these 170 women were identified as managed on metformin only while 62 women were on insulin with or without metformin. All women received dietary advice.

The average maternal age was slightly higher in insulin group (32.3 years) compared to the metformin group (31.5 years).

There was no significant difference in the rate of induction of labour in the two groups.

Women in insulin group were delivered 1 week earlier than metformin group (38 + 3 versus 39 + 3 weeks). Insulin group was

1.5 times more likely to be delivered by elective or emergency caesarean section compared to metformin group (29% versus 44%). Women in metformin group were more likely to have a normal vaginal delivery (59% versus 42%).
The number of cases of shoulder dystocia and significant perineal tear were very few to draw meaningful results. However the risk of postpartum haemorrhage (PPH) of more than 1000 mL in women with vaginal delivery was 5 times higher in insulin group than metformin (11% versus 2%).
Similarly admission to special care (SCBU) was approximately double in insulin group as compared to the metformin group (8% versus 4.7%)
Conclusion The insulin group are at much higher risk of adverse maternal and neonatal outcome. This data can also be used in counselling of these women however some data such as risk of shoulder dystocia, perineal tear and admission to SCBU will need larger data to draw a statistically meaningful result.

EP1b.045
Unexplained maternal tachycardia – is it peripartum cardiomyopathy?

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Background Peripartum cardiomyopathy (PPCM) is a disorder of unknown cause. Left ventricular systolic dysfunction and symptoms of heart failure occur between the last month of pregnancy and the first 5 months postpartum. Incidence is estimated at 1:300 to 1:4000 pregnancies.
Methods We report three cases of PPCM seen in our unit over the past year and literature review using PubMed and Medline.
Results
Case 1 A 32-year-old woman booked at 11 weeks' gestation in her first pregnancy. She had no significant past medical/social history. Her mother died of cardiomyopathy following her 6th pregnancy, but no familial investigations were undertaken. She was admitted with ruptured membranes at 39 weeks of gestation. She was persistently tachycardic, with hypertension and proteinuria. An echocardiogram revealed a non-dilated left ventricle with severely impaired systolic function and a LVEF of 18%. She was transferred to a tertiary unit for management of PPCM and delivery by caesarean section.
Case 2 A 34-year-old woman booked at 12 weeks of gestation in her first pregnancy. She had no significant past medical, family or social history. She was admitted at 39 weeks of gestation with shortness of breath and hypertension. Two days after admission she had a placental abruption and a caesarean section with an EBL of 1200 mL. Postpartum she became tachycardic. An echocardiogram revealed a mildly dilated left ventricle with severely impaired systolic function and a LVEF of <25%. She was admitted to ITU and treated for PPCM.
Case 3 A 31-year-old woman booked at 8 weeks of gestation in her third pregnancy. She previously had two normal deliveries. She had no significant past medical/social history. She had an uncomplicated caesarean section at 38 weeks of gestation for transverse lie. Postpartum she became tachycardic and hypoxic with chest pain. An echocardiogram revealed a mildly dilated left ventricle with severely impaired systolic function and a LVEF of <25%. She was transferred to a tertiary unit for further management of PPCM.
Conclusion In all our cases the initial presentation varied, however common to all women was unexplained tachycardia which warranted investigation. An echocardiogram confirmed the diagnosis of PPCM. The pathogenesis of PPCM is poorly understood. Risk factors include: extremes of maternal age, high parity, African origin, pre-eclampsia, prolonged tocolysis and twin pregnancy. The most common presentation is with the symptoms and signs of systolic heart failure. Mortality rates as high as 42% have been reported and early diagnosis is vital to ensure prompt treatment.

EP1b.047
Management of pregnant women with pre-existing cardiac conditions within a tertiary centre

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Introduction Approximately 0.2–4% pregnancies in the Western World are complicated by cardiovascular disease (CVD). Congenital heart disease is the most frequent CVD present during pregnancy (75–82%). Risk has increased as women are first becoming pregnant later in life and prevalence of cardiovascular risk factors is increasing. According to the MBRRACE report, maternal heart disease is now the major cause of indirect maternal deaths during pregnancy, 79% of which is due to acquired heart disease.
Our regional tertiary referral centre has a bi-monthly clinic for women with cardiac conditions. Annually this clinic manages ~148 patients.
There is lack of prospective data on the management of this group of women nationally. Standard regional guidelines do not exist and management is very much individualised. Individual patient characteristics also greatly influence outcomes of these pregnancies. Guidance is taken from European Society of Cardiology Guidelines on the Management of Cardiovascular Diseases during Pregnancy and RCOG's Good Practice Paper No.13.
Methods A sample of 25 patients from the first quarter of 2015 was chosen. Maternity charts were reviewed using a specifically designed proforma.
Objectives Audit how these women are being managed when compared with ESC Guidelines.
Results Twenty charts reviewed, five being unascertainable. Eleven (55%) had acquired cardiac defects, eight (40%) congenital defects, one diagnosis unconfirmed. Nineteen pregnancies were spontaneous conception, one was IVF. Fifteen patients (75%) booked as per NICE guidance. Eight patients (40%) commenced Folic Acid pre-conception, Ten started post-conception. Eleven (55%) were primigravida. Parity ranged from P0-P5. Sixteen

patients (80%) had anomaly scan as per NICE guidance. One was scanned after 22 wk and three had no record of an anomaly scan. Nine patients (45%) had an anaesthetic review antenatally.
Fetal ECHO offered to four patients and carried out as per ESC Guideline recommendations.
For sixteen patients (80%), planned mode of delivery was vaginal. Twenty percent had elective caesarean section (CS). Of those sixteen patients, actual mode of delivery was twelve vaginally (75%) and four by emergency CS (25%). No babies were admitted to the NICU and postnatal length of stay ranged from 6 h to 5 days.
Conclusion Management of most women is in accordance with ESC and NICE guidance. Delivery for all women was in the tertiary centre. Vaginal delivery primary mode of delivery and CS was for obstetric indications only. Though numbers small, use of ESC, NICE and RCOG Guidelines appears to be adequate for the management of these women. Review of larger numbers required before sufficient evidence shows need for development of regional guidance.

EP1b.048
Maternal lifestyle within 24 h before delivery may have a tremendous impact on neonatal glucose levels

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Introduction Neonatal glucose levels are inversely correlated with cord levels of a polypeptide secreted along with insulin: C-peptide. In other words, neonatal hypoglycemia results from hypersecretion of insulin by fetal islets. Since insulin causes fat to be stored, not to fat breakdown, it is expected that chronic hyperinsulinemia will result in large-for-gestational-age neonates. The finding that many small-for-gestational-age neonates have hypoglycemia suggests that insulin overproduction occurs close to delivery. We postulated that a potent stimulation of maternal insulin production close to delivery, stimulating both fetal and neonatal insulin production, would increase the risk of neonatal hypoglycemia.
Methods The study included 155 expectant mothers with ≥1 of the following indicators of supraphysiological stimulation of insulin production: acanthosis; morbid obesity; any invasive bacterial infection within a week before delivery; systemic corticosteroid use within a week before delivery; inactivity within 24 h prior to delivery, defined as <40 min of any moderate or intense physical activity, such as walking or housework; or high-carbohydrate intake within 24 h before delivery, including non-fasting mothers who consumed high-glycemic-index meals (snacks, candies, fiber-free juices, sugar-sweetened beverages) and those requiring >50 g of glucose or equivalent to treat iatrogenic hypoglycemia. Mothers who fasted for ≥12 h before delivery were not classified as high-carbohydrate intake. Glucose levels of their neonates (n = 158) were measured 1, 2 and 4 h after birth. The minimum value was correlated to the maternal indicators and to classical predictors of neonatal hypoglycemia, such as low birth weight, a preterm delivery and diabetes. Significant predictors were entered into a logistic regression model to determine independent predictors of neonatal hypoglycemia, defined as blood glucose ≤40 mg/dL at 1, 2 or 4 h after birth.
Results The only independent predictors were inactivity and high-carbohydrate intake. The risk of neonatal hypoglycemia increased fivefold with inactivity (95% confidence interval [CI]: 2–11, $P < 0.001$), 11-fold with high-carbohydrate intake (95% CI: 4–24, $P < 0.001$) and 329-fold with both risk factors (95% CI: 32–3362, $P < 0.001$). Screening based on maternal risk factors detected all hypoglycemic neonates identified by current screening protocols (n = 43), plus five appropriate-for-gestational-age term neonates born to slim, non-diabetic mothers.
Conclusion Maternal lifestyle close to delivery may have a tremendous impact on neonatal glucose levels. Future studies will clarify whether physical activity and a balanced diet close to delivery can prevent neonatal hypoglycemia (FAPERJ E-26/190.050/2011).

EP1b.057
Falling between the cracks. Perinatal mental health [PNMH] – the poor relation of maternal medicine?

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Introduction Depression is the commonest complication of pregnancy ahead of diabetes and hypertension. 20% of women develop mental illness during the perinatal period with a long-term cost of £8.1 billion annually.
Maternity units offer specialist diabetes clinics, and many have Obstetric Medicine clinics, only 4% have a multidisciplinary PNMH service.
We recognised that women with mental health problems were not receiving optimal care. Is this the role of psychiatrists and psychologists? Where do our maternal medicine skills fit in? How can we optimise maternal mental health and outcome for the child?
Methods We decided that multidisciplinary education would improve the ability of healthcare professionals to deliver and women to access PNMH care. In 2014–5 we received funding from HENWL to develop a collaborative educational project. A team of midwives, GPs, psychiatrists, maternal medicine obstetricians and women developed a training strategy across all areas of maternity care.
Results Those attending training events [n = 270] became more knowledgeable [74%] and confident [100%]. Clinically this translated into more referrals to pre-conception clinic [250%], talking therapies and postnatal wellbeing groups [>200 women]. We engaged with over 800 members of the public and every woman at booking received written information about PNMH and how to access support; we developed an animated patient story - https://www.youtube.com/watch?v=z542ld5_iIg

Conclusion Our project identified areas of poor knowledge. Importantly it forged close working relationships across seemingly impenetrable healthcare barriers, and resulted in closer understanding of how to deliver PNMH services. It was a significant driver in successful commissioning of a collaborative PNMH clinical service recognising the strength of our multidisciplinary approach.

EP1b.062

Are cervical cytokines, antimicrobials and microflora associated with pre-term birth in high-risk women?

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Introduction Spontaneous preterm birth (sPTB; delivery <37 weeks of gestation), accounts for approximately 10% of births worldwide and is a major cause of neonatal mortality and morbidity. The aetiology of spontaneous preterm birth is multifactorial; intra-amniotic infection is present in 30–40% of sPTB cases. The cervix acts as a barrier to ascending infection, potentially via production of cytokines and antimicrobials. These cervicovaginal biomarkers may be altered prior to the onset of sPTB in asymptomatic patients.
Objective To examine whether asymptomatic women with a history of previous sPTB or cervical surgery who subsequently deliver prematurely have an altered expression of biomarkers and/or microflora within cervical fluid at 22–24 weeks of gestation, compared with those who go on to deliver at term.
Methods External cervical os fluid (22–24 weeks of gestation) was collected from 135 patients with risk factors of either previous sPTB and/or cervical surgery using a cytobrush. After washing in sterile PBS and centrifugation, supernatants were concentrated using filter concentrators and total protein concentration determined. Cytokine analysis was performed using FASTQuant Human II multiplex protein array while elafin levels were determined by ELISA. Results are expressed as mean ± SEM pg analyte/mg protein. Genomic DNA was extracted using a QIAmp DNA Kit and Taqman PCR assays for seven different bacterial species were carried out using the ABI Prism 700 detection system. Significance was determined using Mann Whitney U Test for non-parametric data. Differences were considered significant at $P < 0.05$.
Results Cervical fluid IL-8 and IL-1β levels were lower in women who delivered at <37 weeks of gestation ($n = 42$) compared to those who delivered at term ($n = 53$, IL-8 $P = 0.02$; IL-1β $P = 0.04$). There were no differences in elafin levels between the two groups. IL-2, IL-4, IL-6, IL-10, IL-12p70, GM-CSF, MCP-1 and RANTES were not detected. When cervical microflora were analysed, a higher proportion of women who delivered pre-term had 4 or 5 different detectable species ($P = 0.005$). IL-8 levels were reduced in pregnancies with placental chorioamnionitis compared to those without placental pathology ($n = 21$, $P = 0.03$). There was also a trend towards lowered IL-1β and elafin levels in pregnancies with placental chorioamnionitis.
Conclusion High risk patients with previous sPTB or cervical surgery who subsequently deliver preterm have reduced cervical fluid IL-8 and IL-1β levels. The presence of multiple bacterial species was associated with women who subsequently delivered preterm. These biomarkers could be utilised together to predict spontaneous preterm birth in high risk asymptomatic patients and potentially aid with planning antenatal management.

EP1b.064

Efficacy and safety of the synthetic osmotic dilator prior to induction of labor: International observational e-Registry

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Introduction The aim of this data collection is to monitor post market clinical practice of the application of synthetic osmotic dilator for cervical ripening prior to induction of labor. The main focus was the rate of caesarean sections. Additionally, we were aiming to confirm safety and tolerability of synthetic osmotic dilators in routine clinical practice as well as to provide clinical recommendations concerning number of dilators and duration of insertion.
Methods This is an interim analysis of a 2-year prospective observational international multicentre data collection involved six study sites in five countries. Demographic and procedural details and post-delivery complications for women undergoing induction of labor when synthetic osmotic dilators were used were recorded on a standardised form and entered into an electronic data capture systhem for analysis.
Results Between the 1 May 2015 and 11 November 2015 214 women were enrolled. The average age was 30 years, 63.5% were nulliparous, 23.4% had a previous vaginal delivery and 13.1% had previous caesarean section. One to five synthetic osmotic dilators were used for cervical ripening prior to induction of labour. One third of patients (30%) received four dilators. The average caesarean section rate was 30,4% and differs from 20% to 33% in relation to each study site. 11.2% of women delivered vaginally without any further induction method after dilator application. The average increase of Bishop score was +3.7. No uterine hyperstimulation and no fetal pathology was reported based on CTG during cervical ripening. 10.3% of patients experienced uterine contractions while the dilator was inserted. Complications or discomfort during cervical ripening were reported in 8.3% of women. Maternal infectious complications were observed in five

cases (2,3%). There was no association with maternal infection and the use of osmotic dilators reported. No neonatal infectious complication was reported.
Conclusion We were able to show that the application of osmotic dilators is a safe and efficient method of cervical ripening. No serious adverse outcome for mother and newborn was reported. The synthetic osmotic dilator has the capability to reach a high vaginal delivery rate. In addition it has the potential to prevent unnecessary caesarean sections in high risk patients. It is cost effective as the application of the osmotic dilator can be an outpatient procedure in low risk patients.

EP1b.075
IVF pregnancy in a patient with a history of estrogen-provoked hereditary angioedema – a step by step case report and literature review

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Background Hereditary angioedema (HAE) was initially described in 1888 by Osler. It is a rare autosomal dominant disease with over 150 mutations in C1 inhibitor gene reported. HAE is caused by deficiency in functional C1 inhibitor leading to uninhibited exaggerated pro-inflammatory response of the complement, coagulation and kallikrein-kinin pathways to minor stimuli such as viral infections, minor trauma, stress and estrogen. It leads to recurrent episodes of non-pruritic, non-pitting, subcutaneous or submucosal oedema causing swelling of face, hands, arms and legs. Angioedema can affect abdominal organs sometimes mimicking a surgical emergency. Involvement of the upper airways can be life-threatening thus necessitating intubation and ventilation in severe cases.
Methods We report a step by step case of a 37-years-old primigravida, IVF pregnancy, with known history of estrogen-provoked HAE whilst on the combined oral contraceptive pill in her 20s. Predictably, she had several episodes of angioedema necessitating a fortnightly treatment regime with Berinert (C1 esterase inhibitor). We discuss the diagnostic dilemmas as her symptoms of abdominal pains, facial and limbs swellings can be due to serious obstetric conditions such as pre-eclampsia which need completely different treatment to HAE.
We support this case with extensive literature review of HAE cases, management regimes and outcomes in pregnancy. We include clinical pictures, investigation findings and describe the pathophysiological basis of the disease and how different treatment modalities interact and correct this pathway.
Conclusion As our general knowledge in HAE improves, so will our ability to treat it thus increasing our confidence in managing patients with HAE in obstetrics.

EP1b.080
Update on the birth weight standard and its diagnostic value in small-for-gestational-age (SGA) infants in China

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Objectives To identify the difference between the current newborn birth weight standard and the previous standard in China, and to evaluate the diagnostic value of newborn birth weight in small-for-gestational-age (SGA) infants.
Methods A retrospective analysis was conducted of 112 441 delivery cases in 2011, from 39 hospitals at different levels in 14 provinces and autonomous regions. Cases with incomplete data, gestational age <24 weeks, or severe fetal malformations or fetal death were excluded. Data were recorded and entered on hard paper copies and into an online database. SPSS 18.0 and SAS 9.2 statistical software were used for data analysis.
Results This study included 109 004 valid cases with an average birthweight of 3,226.02 $\pm$ 525.82 g. Birthweight changed significantly from 1988 for all gestational ages. In preterm infants with gestational age <37 weeks, birthweight for each gestational week was lower than that in the birthweight standard from 15 cities in China in 1988 ($P < 0.001$). Full-term infants with gestational ages from 37 to 41 weeks showed significantly higher average birth weights compared with the previous birth weight standards ($P < 0.001$). The birthweight standard in the present study exhibited better correlations than did the previous standard with regard to the diagnoses of adverse pregnancy outcomes, including SGA infants, stillbirth, neonatal asphyxia, neonatal death, and neonatal complications; with RR values of 18.843 (9.656–36.774), 33.125 (14.576–75.275), 24.254 (10.630–56.256), and 2.492 (0.328–18.909), respectively.
Conclusions The current birth weight standard used in Chinese medical institutions was enacted in 1988. This is not suitable for today's socioeconomic and clinical requirements, and needs to be updated. Diagnosis of preterm infants with SGA based upon the updated demographic birth weight standard manifested higher accuracy and avoided unnecessary medical interventions. However, the updated demographic birth weight standards were no better diagnostically than the previous standard for full-term infants. Customised birthweight standards from larger sample sizes and multi centre studies will be necessary to determine the appropriate birthweight standards in developing countries.

EP1b.082

Patent foramen ovale as a cause of platypnea orthodeoxia syndrome presenting in pregnancy: A case report and review of the literature

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Background At 8 weeks into her third IVF pregnancy, a 40-year-old doctor presented to the Royal Derby Hospital with dyspnoea. Her breathing had worsened since the drainage of 5 litres of ascites from ovarian hyperstimulation syndrome 3 weeks prior. Her symptoms deteriorated and she was intermittently hospitalised from 28 weeks, as she was unable to sit upright without desaturating to 75% in air. This presentation was consistent with Platypnea-Orthodeoxia Syndrome (shortness of breath and arterial desaturation when upright which improves when supine). Investigations including chest X-ray, VQ scan, CTPA, Spirometry, Echo and ECG were normal. Bubble echo was initially normal, but when repeated 2 weeks later it demonstrated a right to left shunt consistent with a patent foramen ovale (PFO). She underwent a caesarean section at 35 weeks following which her symptoms resolved entirely.
Objectives To establish the incidence of PFO in women of reproductive age, presenting symptoms, diagnostic tests and options for management.
Methods Review of recent literature via a web based search.
Results Patent Foramen Ovale is known to affect up to 1 in 3 adults based on autopsy findings from around 1000 'normal' hearts. The incidence in those aged under 30 years is 34.3%, falling to 25.4% in the over 40s. Size is known to increase with age. PFO affects men and women equally, with no difference in size between genders. It has long been recognised as a cause of unexplained stroke, particularly in those under 55, where the incidence is thought to rise to 56%. The vast majority of adults are asymptomatic, although it is occasionally associated with clinical syndromes including decompression syndrome in scuba divers, migraine (particularly with aura) and rarely with Platypnea-orthodeoxia syndrome. The diagnosis is made via Echocardiography, with trans-oesophageal echo considered the gold standard. In the UK use of 'bubble echo' has improved detection, as saline contrast is injected into a peripheral vein during the valsalva manoeuvre, following which bubbles can be seen crossing the septum. Management options include secondary prevention of paradoxical embolic stroke with anticoagulation, and percutaneous transcatheter closure. This method has now been developed for use in the second trimester to allow closure with minimal fetal radiation exposure.
Conclusion Patent foramen ovale is a relatively common phenomenon in women of childbearing age and should therefore feature in the differential diagnosis of worsening shortness of breath in pregnancy, especially if positional.

EP1b.086

Cardiac performance in obese pregnant women: Are they in jeopardy?

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Objectives The aim is to assess serial changes in "cardiovascular function" in obese pregnant females (body mass index (BMI) $\geq$30 kg/m^2) as compared to lean pregnant controls throughout each trimester and six weeks postpartum by measuring the left ventricular functions.
Methods 100 consented pregnant women in 1st trimester with a singleton live healthy pregnancy were included and divided according to their BMI into two groups. Women with multiple gestations, anemia, hypertension, cardiac disease, pre-gestational diabetes or those who developed gestational diabetes or pre-eclampsia during pregnancy were excluded. All women were subjected to four serial echocardiograms measuring: end diastolic left ventricular internal dimensions, left ventricular posterior wall thickness, left ventricular end systolic stress, left ventricular fractional shortening, circumferential shortening velocity, left ventricular mass, contractility, indices of preload and stroke volume. ANOVA was used to compare data between sequential studies for repeated measures. also, Independent *t*-test and c2 tests were used for continuous data and categorical data respectively.
Results Cardiac index and cardiac output rose significantly during gestation in non-obese women, but not in obese ones ($P = 0.02$). In lean controls, stroke volume increased and contractility was maintained during pregnancy. While, both stroke volume and contractility declined significantly by the third trimester in obese cases. The contractility-dependant indices like systolic shortening index (SSI) and systolic velocity index (SVI) declined in obese women as compared to controls by the third trimester. SSI decreased significantly in obese subjects at 36 weeks ($P = 0.05$), while SVI did not differ significantly between groups during pregnancy. The load-dependant indices like fractional shortening and circumferential shortening velocity did not change significantly in either group. There was no statistically significant difference between both groups among the need of any medications, the need of termination of pregnancy and pregnancy outcomes. The need of advanced cardiac investigations and hospitalisation were significantly higher in obese women at the third trimester.
Conclusion Obese pregnant women demonstrated an altered maladaptive left ventricular contractile physiological response peaking in the third trimester of pregnancy characterised by a relative fall in preload and contractility as compared to lean pregnant ones.
All services were free, so no funding was required.

EP1b.103

Impact of obesity and anemia on brain natriuretic peptide levels during pregnancy

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Introduction With advancing maternal age, underlying medical conditions such as hypertension, diabetes mellitus, and hypercholesterolemia become more common, which increase the risk of cardiac disease in childbearing age women. The importance of evaluating cardiac function of pregnant women is widely recognised, and brain natriuretic peptide (BNP) is a potential biomarker to improve managements of cardiac dysfunction. Past studies reported that obesity and chronic anemia affected BNP levels in the general population. Women experience dynamic changes in body weight during pregnancy and anemia due to hemorrhage at delivery; however, it is still unclear whether dynamic physiological changes during pregnancy affect the maternal BNP levels or not.

Materials and Methods This is a single-center prospective cohort study. This study enrolled 1242 singleton pregnant women, but a total of 469 patients were excluded because of missing data, blood transfusion, heart and kidney disease, preterm birth (<36th gestational week), preeclampsia, eclampsia, placental abruption, HELLP syndrome, and intrauterine fetal death. BNP and anemia were examined in the 36th gestational week and 4 days after delivery. Body weight change during pregnancy was also recorded. Multiple regression analysis was performed to evaluate the independent effects of obesity and anemia.

Results Age, pre-pregnancy body mass index (BMI), body weight change during pregnancy, and hemoglobin level were included as independent variables for the analysis of BNP level before delivery. Pre-pregnancy BMI (standardised partial regression coefficient: $\beta = -0.184$, $P < 0.001$) and hemoglobin level in 36th week ($\beta = -0.130$, $P < 0.001$) were statistically significant. For the analysis of BNP level after delivery, caesarean delivery and body weight change at delivery were added to independent variables. Body weight change during pregnancy ($\beta = 0.126$, $P = 0.001$), body weight change at delivery ($\beta = -0.264$, $P < 0.001$), hemoglobin level after delivery ($\beta = -0.111$, $P = 0.002$), and caesarean delivery ($\beta = 0.071$, $P = 0.042$) were statistically significant.

Conclusions Both chronic and acute anemia during peripartum period increased BNP level. Obese women showed lower BNP levels before delivery; however, body weight change itself was more important for BNP levels than pre-pregnancy BMI. This study revealed that physiological changes during pregnancy affected BNP levels. When interpreting BNP levels of pregnant women, it is important to consider the effect of these confounding factors on BNP levels. We received no financial support for this study.

EP1b.109

Root cause analysis of venous thromboembolism (VTE) in pregnancy and puerperium

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Purpose Venous thromboembolism (VTE) is the current leading cause of maternal mortality in UK. This is due to an increase in the 'at risk' population and difficulties in recognising risk factors for VTE.

Methods We performed root cause analysis (RCA) of 20 cases of VTE over a 3 year period (2012–2015) at Maternity Unit, Bolton NHS Foundation Trust. The aim was to reduce the incidence of VTE in order to improve patient care. The following points were reviewed:

1) Risk factors for VTE
2) Appropriate risk assessments – booking, admissions, labour, and postpartum.
3) Adequate mechanical/chemical thromboprophylaxis
4) Contraindications to thromboprophylaxis
5) Avoidable cases
6) Identification of training issues

Results The RCA of the first 10 cases revealed that 9 out of 10 cases had identifiable risk factors. There was one avoidable case. The recommendation from the RCA was to amend the departmental guideline & BMI 30–39 was added as a risk factor for VTE.

We continued with RCA and had another 10 cases of VTE. All patients had identifiable risk factors for VTE.

Eight patients underwent VTE risk assessments prior to developing VTE. Out of the remaining 2, one patient had incorrect risk scoring and received no thromboprophylaxis during her second and third admissions. She developed DVT during the third admission. This was an avoidable case. The other case developed VTE at 10 weeks prior to her booking appointment. Her BMI was 53 & had history of deep vein thrombosis (DVT). It was an unavoidable event however the importance of pre-pregnancy counselling was highlighted by RCA.

One patient developed pulmonary embolism (PE) during admission for severe sepsis. She declined thromboprophylaxis throughout the admission. There was no documentation that she accepted the risks of VTE but RCA concluded that this would not prevent the occurrence of PE.

Conclusions 1) Not all cases are avoidable

2) Further training on correct VTE risk assessment at booking & every admission is required.

3) RCA highlighted need of appropriate documentation/ pre-pregnancy counselling.

We continue to perform RCA of all women who develop VTE in pregnancy and the puerperium. RCA reports are uploaded onto the trust database, learning points are widely disseminated and feedback is provided to staff who are directly involved in the care of these women. Departmental VTE risk assessment and thromboprophylaxis training sessions are carried out at least twice a year.

EP1b.115
Severity of vitamin D deficiency among the multi-ethnic pregnant population in Birmingham

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Introduction Vitamin D is important for the health of the pregnant woman and reduces the risk of baby developing rickets. Department of Health recommends a daily supplementation of 10 micrograms (400 units) vitamin D for all pregnant patients. However, this dose may be inadequate for women with severe deficiency.

This study was carried out in Birmingham Heartlands Hospital which is a tertiary referral centre with annual delivery of around 6500. A significant proportion of our pregnant population is of ethnic minority origin and is overweight and diabetic. According to the trust guideline, women with severe deficiency should be treated with much higher dose of vitamin D (10 000 units daily/ 10 weeks). Vitamin D level of >50 nmol/L is regarded as normal, 25–50 nmol is moderately deficient & <25 nmol/L is severe deficient. However, there is no guideline for checking Vitamin D level at booking. Therefore, there is no consistency in practice at booking; some of the community midwives check maternal vitamin D levels and others don't.

Hypothesis All pregnant women at booking should have maternal blood Vitamin D levels done and only those with low levels should be treated with correct dose of Vitamin D supplement.

Aim To ascertain the prevalence and severity of Vitamin D deficiency in our multi-ethnic and inner-city pregnant population.

Method In this prospective 3 months study period (September 2014-November 2014) 1083 pregnant women were booked. The data were analysed to see how many women had their vitamin D level checked at booking and the degree of severity of Vitamin D deficiency.

Results Only 28% (299/1083) women had their vitamin D level checked. Of those 299 women, 60% (179/299) were Asian, 11% (32/299) were Afro-Caribbean and 29% (88/299) were Caucasian. 80% of Asian women were vitamin D deficient (45% of them were severe). 74% of Afro-Caribbean women were vitamin D deficient (37% of them were severe). 35% of Caucasian women were vitamin D deficient (8% of them were severe).

Conclusion In our multi-ethnic population vitamin D deficiency is extensively prevalent. But only one-third of the women had their vitamin D level checked at booking.

Recommendation Standard Vitamin D supplementation is not cost-effective nor it is sufficient and beneficial to women with severe deficiency. All pregnant women should have their Vitamin D levels checked at booking so that correct dose can be prescribed to those with deficiency.

EP1b.118
Evaluating the expression of individual calmodulin dependent kinase II (CAMKII) – delta and -gamma subunits in human myometrial fibres, myometrial arteries and placental arteries

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Introduction Calmodulin-dependent protein kinases (CaMK) have been suggested to be important mediators of smooth muscle function via putative actions on several signaling modalities including myofilament activation, sarcoplasmic reticular Ca^{2+} homeostasis and gene transcription[1]. Recent experiments have demonstrated differences in uteroplacental tissue responsiveness to CAMKII inhibitor KN-93. Myometrial arteries (MA) and placental arteries (PA) were more sensitive to KN-93 inhibition than myometrium (MYO).

Aims and methods We used quantitative PCR to determine if differences in individual CaMKIID and CaMKIIG isovariant expression can in part account for altering tissue responsiveness to KN-93 outlined above. Myometrial strips (MYO) myometrial (MA) and placental arteries (PA) segments were microdissected from tissue samples obtained, following written informed consent, from normal pregnant women undergoing elective Caesarean section at term. Microdissected tissues were subjected to RNA isolation (Qiagen RNeasy fibrous kit #74707) and reverse transcription with (AffinityScript cDNA synthesis kit #600559).

Results CaMKIID isovariant 1 expression (fold-change relative to calibrator RNA) was less in MA (1.33 ± 0.15) compared to PA (3.74 ± 0.59) and MYO (3.08 ± 0.35, $P < 0.05$, $n = 10$, mean $\pm$ SEM, One way-ANOVA, Tukeys Post test). CaMKIIG isovariant 1 expression was higher in MYO (4.73 ± 0.71) compared to MA (2.14 ± 0.30) and PA (2.26 ± 0.28, <0.05, $n = 10$). The expression of the other CaMKIID and CaMKIIG isovariants were similar to that outlined for the sequences above. Our results show that this effect of CaMKII inhibition was not comparable to tissue-specific expression profiles of the individual CaMKIID and CaMKIIG isovariants. Instead, the tissue-specificity of action of CaMKII inhibition is likely to reflect alterations in protein expression and/or activity.

EP1b.119
Myometrial myosin phosphatase targeting leucine zipper positive (MYPTLZ+) subunit expression varies with pregnancy and labour

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Introduction Nitric oxide donors and other protein kinase G related vasodilators activate a trimeric protein phosphatase bind to induce smooth muscle relaxation. The leucine zipper (LZ) region of the MYPT subunit of the protein phosphatase is essential for dimerisation and subsequent activation of the phosphatase. Several investigators have reported differences in

tissue responsiveness to NO donors in nonpregnant and pregnant uterine smooth muscle. We hypothesise that these differences in myometrial sensitivity to NO vasodilators may in part be due to tissue-specific differences in human MYPTLZ^{+} isovariant expression.

Aims and methods Quantitative PCR using isovariant specific primers were used to measure MYPTLZ^{+} and MYPT1LZ^{-} isovariant expression in myometrial samples from nonpregnant (NP) women undergoing hysterectomies for benign indications; pregnant women not in labour (NIL) undergoing elective Caesarean section at term and pregnant women in labour (IL) who had caesarean deliveries for dystocia and fetal distress.

Results MYPT1LZ^{+} expression (fold-change relative to calibrator RNA) was less in NIL (4.05 $\pm$ 0.42) than in NP (19.06 $\pm$ 2.84, $P < 0.01$, $n = 10$, mean $\pm$ SEM, t-test). MYPT1LZ+ expression was lower in the IL (1.05 $\pm$ 0.19) compared to the NIL (2.8 $\pm$ 0.32). MYPT2LZ+ expression was less in NIL (6.54 $\pm$ 0.91) compared to NP (28.61 $\pm$ 5.15, $P < 0.01$, $n = 10$. MYPT2LZ+ expression was invariant between the NIL (25.42 $\pm$ 0.28) and IL (24.97 $\pm$ 0.58) groups, $P > 0.05$, $n = 10$. Our analyses demonstrate significant changes in the expression of several MYTPLZ+ isovariants during pregnancy and in labour. Further research is required to investigate how these changes in MYPT isovariant expression relate to myometrial sensitivity to PKG donors during pregnancy and labour.

EP1b.121
Evaluation of thyroid status at booking and its correlationwith pregnancy outcomes in a South-Indian urban population

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Objectives Our study was designed to evaluate the thyroid status at booking and its correlation with pregnancy outcomes in a South Indian Urban population.

Methodology A retrospective chart review of 2330 singleton deliveries at a single urban obstetric centre between January 2014 and December 2015 was done. Serum Free T4 and Thyroid Stimulating Hormone (TSH) were done at booking visit by the chemiluminescent Immunoassay. Those women with pre-existing hypothyroidism who were already on treatment were not included in the study. Women with TSH values between 3 mIU/mL–10 mIU/mL were classified as subclinical hypothyroidism. Those with TSH >10 mIU/mL and <3 mIU/mL were classified as overt hypothyroidism and euthyroid respectively. Correlations of TSH at booking with BMI, weight gain, GDM, preeclampsia, GA at delivery and birth weight were analysed.

Results 2330 women were booked and delivered under our care. Median age of study was 28 (range 18–45 years). 260 (11.2%) of these had pre-existing hypothyroidism. Based on the booking THS values, 1740(74.7%) were euthyroid while 553(23.7%) had subclinical hypothyroidism, 37(1.6%) had overt hypothyroidism. 1880 (80.7%) had their booking TSH done in the 1st trimester, 393(16.9%) in 2nd trimester and 57(2.4%) in the 3rd trimester. Among women with subclinical hypothyroidism 321(58.1%) were treated with levothyroxine and 232(41.9%) were untreated. The decision to treat was based on the treating clinician as there was no standardised practice of treating all subclinical hypothyroidism in our practice. No significant differences in BMI at booking were found between the three groups. There was however, significant statistical association was made out for weight gain in pregnancy ($P = 0.02$) comparing the overt and subclinical group with the euthyroid group.

No significant differences in pregnancy outcomes were found between the treated and untreated group among the subclinical cohort. When the pregnancy outcomes were compared with subclinical and overt hypothyroidism with euthyroid patients preeclampsia was significantly more in the overt (5.4%) group compared to subclinical (1.8%) and euthyroid (1.2%)($P = 0.08$). There was no difference in gestational diabetes, birth weight orgestational age of delivery.

Conclusion Overt hypothyroidism is seen ina very small precentage of women at booking. There was significantly more preeclampsia in this group. There was no difference in other pregnancy outcomes between the groups and indeed between those treated and left untreated in the subclinical hypothyroid group.

EP1b.124
Anaemia in pregnancy and the puerperium – a common problem

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Anaemia is a common complication of pregnancy. Dietary and oral iron supplementation remain the mainstay of management with response affected by factors including intolerance and non-compliance. It remains unclear if parenteral iron should be used more widely or as an alternative first line treatment in pregnant patients.

Objectives To determine the prevalence of anaemia in the pregnant population at West Middlesex University Hospital and to assess trend in anaemia status throughout the course of pregnancy and postpartum.

Methods Local guidelines recommend routine Haemoglobin estimation at booking, 28 weeks' and thereafter for women with or at risk of anaemia, and both dietary and oral iron supplementation when anaemia is diagnosed. World Health Organisation definitions are used – Haemoglobin <110 g/L in 1st trimester, <105 g/L in 2nd/3rd trimester and <100 g/L postpartum.

From 2014 laboratory data of 22543 Haemoglobin assays in 8067 women, and using only those women with normal electrophoresis who both booked and delivered in the timeframe, we retrospectively identified 2460 women, of whom 582 were tested at booking, 26–30 weeks' gestation, term and postpartum.

Results Overall prevalence of anaemia was 3% at booking (65/2045 women), 21% at 26–30 weeks (441/2130), 11% at term (138/1298) and 37% postpartum (346/945). Of the anaemic women,

median Heamoglobin was 106 g/L (range 63–109 g/L) at booking, 101 g/L (82–104 g/L) at 26–30 weeks, 100 g/L (58–104 g/L) at term and 91 g/L (56–99 g/L) postpartum.
Of 582 women with a complete dataset, 3% (n = 20) were anaemic at booking, 12 remained anaemic at 26–30 weeks' and 2 anaemic throughout pregnancy and postpartum. 21% (n = 121) were anaemic at 26–30 weeks of whom 20% (n = 24) were still anaemic at both term and postpartum, and 36% (n = 43) became anaemic again postpartum despite being non-anaemic at term. At term, 8% (n = 44) were anaemic; 89% remained anaemic postpartum. 37% (n = 217) of cohort were anaemic postpartum. Postpartum, anaemia rates were 29% (54/189), 35% (85/243), 30% (93/306)* and 56%(111/197)* following elective and emergency Caesarean, spontaneous vaginal and instrumental delivery respectively (*$P < 0.001$).
Conclusion Anaemia is common in this diverse patient population, with over 20% anaemic women at 26–30 weeks and almost 90% anaemic at term still anaemic postpartum. Instrumental delivery is associated with highest postpartum anaemia rates.
More intensive education and guidance about oral and dietary iron should be aimed at these women. Outside pregnancy, single bolus total intravenous iron infusions cause rapid rises in Haemoglobin within 2 weeks: this may be an option in 3rd trimester or postpartum women, which may reduce blood transfusion and improve wellbeing.

EP1b.128
How do women view band management during pregnancy? Need for change in support and information delivery

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Background Prevalence of obesity (BMI ≥30 kg/m^2) in pregnancy ranges from 18% to 24%, leading to increases in morbidity and mortality for mothers and babies and contributing to substantial NHS costs. Women undergo bariatric surgery to reduce weight, and gastric bands have become an option of choice for many. Rates of pregnancy in women with gastric bands have been increasing, yet there is little evidence to support clinical management. Clinical staff are often given little or conflicting information with regards to how to advise and support these women, and no trial evidence exists to guide clinicians in band management. Furthermore, there is no evidence on how these women feel they are being supported during pregnancy. This study aimed to understand women's experience of pregnancy following gastric band insertion (ENGAGE study) and to assess the acceptability of involvement in a future band management trial.
Methods 8 women were recruited into the study from multiple sites across SouthWest England. Women were interviewed by a midwife and health psychologist at 18 and 30 weeks to understand if changes in pregnancy would impact upon band management. Topics included healthy lifestyle, experiences of pregnancy, experiences of band management and body image. Thematic content analysis was used to identify themes related to 1) involvement in band management trials, and 2) experiences of pregnancy with a gastric band.
Results Women expressed concerns around involvement in future trials, specifically about randomisation. Some women would not participate due to the perceived risk of change in care and risk to baby while weight management was an issue for others. Opinion about band management changed for some during pregnancy as they became more confident with their expectations. Women also highlighted a lack of information, guidance and support regarding management of their gastric band in pregnancy. They frequently received conflicting advice and referred to Internet sources or weight loss groups. Women requested increased availability of guidance and clarity regarding their management during pregnancy.
Conclusions Conducting a trial with this group of women would likely be difficult due to concerns about band management and weight during pregnancy. Women need more guidance, information and psychological support during pregnancy, as well as respect from those delivering clinical care. Strategic re-thinking of how clinicians and midwives interact with this group could be an important step to improving the current support provided.
This work was funded by North Bristol Trust.

EP1b.132
Designing a postpartum lifestyle intervention for mothers diagnosed with gestational diabetes: Formative evaluation

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Women diagnosed with gestational diabetes (GDM) have an increased risk of subsequently developing Type 2 Diabetes Mellitus (T2DM); this risk is further increased in the presence of an elevated BMI. Lifestyle interventions in the postpartum period have shown potential to reduce the progression to T2DM, however postpartum mothers are hard to engage in lifestyle interventions. We have therefore undertaken a survey amongst healthcare professionals and mothers diagnosed with GDM, as part of the formative evaluation for the development of a lifestyle intervention in this population.
Two online surveys were performed: One amongst GPs, midwives, obstetricians and diabetologists (n = 46) and a second, with postnatal GDM mothers (n = 83). The survey contained questions concerning attitude to weight management, exercise and diet; the ideal time to engage postpartum mothers; barriers and facilitators to lifestyle change and questions about intervention content and preferred modes of delivery. Likert questions were measured on a 5-point scale: 1 strongly disagree to 5 strongly agree). Results were analysed by SPSS 23.0, using ANOVA and non-parametric tests.

Mothers had a positive attitude to weight management, healthy eating and exercise. (3.86 ± 0.35; 3.58 ± 0.58; 3.52 ± 0.57); younger mothers were more positive about exercise than older mothers ($P = 0.043$). Barriers identified were the difficulty of balancing your own health needs with the demands of a baby (36% agreed, Md 3), tiredness (64% agreed, Md 4) and the need for childcare in order to exercise (64% agreed, Md 4). Healthcare professional indicated that women are not aware of the T2DM risk after a GDM diagnosis and 38% found the subject of weight difficult to discuss. There was a wide range of responses from mothers and healthcare practitioners about the best time to engage mothers indicating that the appropriate time may vary from individual to individual. The preferred intervention design was group sessions, in the community. Technology based interventions, delivered via mobile or internet, were preferred by 22% of the mothers. Both healthcare practitioners and mothers agreed the intervention should contain dietary advice, exercise sessions and weigh-ins. Mothers were less in favour of cooking sessions than healthcare practitioners ($P = 0.043$). Walking was the most popular form of exercise to include.
Healthcare practitioners and post-GDM mothers are supportive of a lifestyle intervention in the community. The intervention should be flexible, allow women to engage at a time that is appropriate for them and needs to consider childcare constraints.

EP1b.134
Using social media to create an action on pre-eclampsia patient/public involvement group for research

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Introduction Patient and public involvement (PPI) groups give lay members and patients the opportunity to become involved in all aspects of research. Action on Pre-Eclampsia (APEC) is a charity that aims to raise public and professional awareness of pre-eclampsia.
Increasingly members of the public turn to social media for education and support about medical conditions. In order to increase awareness and promote public involvement in new research, APEC aimed to utilise the social media site Facebook and create an online PPI group. Facebook has 1.23 billion active users worldwide, with 24 million people in the UK logging in every day. There are over 200 different groups discussing pre-eclampsia on Facebook, none of which concentrate specifically on new research.
Methods The APEC PPI Facebook page is managed by an Obstetrics and Gynaecology trainee with a special interest in pre-eclampsia. The group is open to anyone with an interest in the condition. It can be utilised by clinicians to ask women specific research questions, review participant information leaflets and provide the opportunity to be involved in the research study steering committees. In addition it highlights upcoming conferences, MBRRACE findings; international news about pre-eclampsia.
Results The APEC patient research group was launched on 10th October 2015. In January 2016 it had 383 members, with 31 members medical professionals. The most popular post was from December 2015 which highlighted a BMJ study looking at antenatal blood pressure measurements for prediction of pre-eclampsia, preterm birth, and small for gestational age babies. The post reached 956 people and had 21 "likes" comments and shares. Other posts utilising the group include
· Imperial College London to advertise the CONCEIVE study (maternal haemodynamics in women at high risk of Pre-Eclampsia) reached 1115 people.
· King's College London who developed an on-line survey to inform the design of the PARROT study (the utilisation of sflt-1 and placental growth factor to diagnose and manage pre-eclampsia) which was accessed by 27 people 89.2% of whom where interesting in participating in this study. Results of this survey were used in the funding application.
Conclusion The APEC PPI Facebook page has successfully attracted interested members of the public. Lay members have been able to add their voice to specific research questions, keep up to date with new research and volunteer for studies. The long-term aims for the group include building membership, and working with researchers to form local PPI meetings around the UK.

EP1b.142
Impaired glucose tolerance and dyslipidaemia

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Background Gestational Diabetes Mellitus (GDM) impacts up to 12% of pregnant women in developed economies. Recent research has found that Triglycerides are significantly elevated in women with GDM compared to those without GDM. This finding was consistent across all trimesters. Lower High Density Lipoprotein levels in the second and third trimester in women with GDM have also been found. There is currently little known about blood lipid levels among pregnant women with impaired glucose tolerance.
Methods Analysis was carried out on 327 women from the ROLO study (Randomised cOntrol trial of LOw glycaemic index diet in pregnancy). Fasting blood lipids and glucose levels were recorded in early (14 weeks) and late (28 weeks) pregnancy. At 28 weeks gestation, glucose challenge testing (GCT) 1-h post 50-g glucose load was performed. A 3 day food diary was recorded in each trimester. Lipid analysis of cord blood was also performed. Impaired glucose tolerance was defined as fasting glucose of 5.1 mmol/L or greater or a 1 h glucose challenge test result of >7.8 mmol/L.
Results Triglyceride levels in late pregnancy were significantly higher in women with impaired glucose tolerance compared with euglycaemic women ($P = 0.017$). A trend towards raised triglycerides in early pregnancy was also noted ($P = 0.086$). No significant association was found with HDL, LDL or non-HDL cholesterol or cord cholesterol levels. On dietary analysis, a

negative association was found between consumption of polyunsaturated fats in the second and third trimester and triglyceride levels in late pregnancy ($P = 0.02$, $P = 0.009$). An association, approaching significance ($P = 0.057$), between consumption of saturated fat in the second trimester and triglyceride levels in late pregnancy was also noted.

Conclusions Impaired glucose tolerance is associated with higher triglyceride levels in the third trimester. High consumption of polyunsaturated fat in the second trimester was linked with lower triglyceride levels. While a low glycaemic index diet is often recommended for these women to maintain good glucose control, these results suggest that perhaps we should also recommend a diet higher in polyunsaturated fats.

EP1b.154
When minutes matter: Revisiting maternal cardiac arrest

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Introduction The incidence of maternal cardiac arrest in UK is 1 in 34 000. Fewer than 1 in 1000 pregnant women with haemorrhage experience cardiac arrest. It is a challenging emergency where the multidisciplinary team has to work together efficiently to avoid poor outcome.

Case presentation A 35 year old Chinese lady (booking weight - 45 kg), known to have grade 4 placenta previa, presented with major haemorrhage at 34 weeks of gestation.

The assessment at admission revealed severe pallor, weak radial pulse-80/min, BP -112/70, a soft uterus and fetal heart was present. The protocol of major obstetric haemorrhage was triggered for an estimated blood loss of a litre at home. An emergency caesarean section was performed within 18 min of arrival. Four minutes following delivery, patient had a cardiac arrest. The emergency medical response team, ITU anaesthetist, consultant anaesthetist and consultant obstetrician were called for help.

Cardiopulmonary resuscitation (CPR) was immediately started and pulseless electrical activity was diagnosed. Return of spontaneous circulation was noted after 6 min. Uterus was closed after inserting Bakri balloon and the estimated blood loss was 4 L. Postarrest resuscitation was continued in intensive care unit. The lady recovered well and was discharged after 7 days.

Discussion Effective communication within the different disciplines of the team led to the best possible outcome.

It is important to take the woman's stature into account to evaluate the responses to the estimated blood loss.. The more the percentage of the circulating blood volume lost, the more rapidly the woman will decompensate in major haemorrhage.

The members of the resuscitation team in a maternal cardiac arrest do not work together on a regular basis in any hospital. Each hospital should consider the concept of a dedicated maternity cardiac arrest team comprising of members from different discipline (obstetric/anaesthetic/critical care physician/midwifery/neonate) which will be alerted in these incidents. The team needs to attend training on human factors to improve the performance in an emergency situation.

The maternal cardiac arrest is a rare event but the clinical team needs to be well versed with the drill to optimise outcome. We felt that simulation training should be arranged on regular basis on resuscitation in maternal cardiac arrest.

All cases of maternal cardiac arrest should be reviewed by the risk management group and identified deficiencies should be corrected.

Our experience reinforces the recommendations by the Ameriacan Heart Association on management of cardian arrest in pregnancy published in October 2015.

EP1b.170
Joint Perinatal Mental Health Clinic (PMH) in North West London Hospital – a success story of collaborative working

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Maternity service at Northwick Park Hospital commissioned perinatal psychiatrist from Coombe Wood PMH service to run a joint PMH clinic three times in a week, to participate in multidisciplinary meetings, to work with obstetric lead and specialist midwife for PMH to provide effective care and last but not the least to teach in monthly mandatory training sessions for midwives

This service aimed at timely referrals, assessment and management of women with moderate-severe mental health disorder in pregnancy.We reviewed the both psychiatric and obstetric outcomes.

Methods This service started in April 2014. Forty-five case notes were reviewed for psychiatrist and obstetric outcomes.

Information was gathered from local safeguarding database, CMIS and mental health database.

Results The age range was 17–43 years of which 2/3rds were from Asian origin and just over one third of women were expecting their first baby. Over 50% had moderate – severe depression while anxiety disorders [GAD, panic disorder, phobia] was diagnosed in 9 women, one women developed acute anxiety at 32 weeks and was started on medication. Four women had psychosis and one woman had past history of bipolar disorder with strong family history of mental disorder. Three women were diagnosed with emotionally unstable personality disorder while other three had post-traumatic stress disorder

All these women were assessed in this clinic during pregnancy and followed-up in postnatal period. Over 50% women needed psychotropic medications and 8 women underwent psychological counselling.

Majority improved at time of discharge as assessed by clinical judgement, HONOS Scores, HAD Scales. Only one developed puerperal psychosis and managed in community. There were no SIs and no admission to mother and baby unit in this cohort.

All women delivered at term. Over 60% of these women had spontaneous onset of labour while rest were induced. Majority of these women delivered vaginally with 27% having caesarean section.
Gestational diabetes was the commonest obstetric complication seen in the cohort.
All babies except one had good APGAR scores at birth. Only one baby needed admission to NICU for observation. The birth weight range 2.1–4.7 kg
In this cohort five newborns were on child protection plan while 2 were on 'child in need' plan.
Conclusion This Joint PMH clinic provides a platform for collaborative working with PMH unit and maternity service at NPH. Women with moderate to severe mental health illness were referred appropriately and managed within the multi-disciplinary setting with good obstetric and psychiatric outcomes.

EP1b.172
The management of HIV in pregnancy: A 10-year experience

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Background The package of care to reduce HIV mother to child transmission (MTCT) has evolved significantly since trials of ante and intrapartum antiretroviral therapy (ART) in 1994. In the UK MTCT rate has fallen from 25.6% in the 1990s to 0.5%. We review the management of HIV in pregnancy in Brighton in the context of evolving guidelines.
Methods HIV, obstetric and neonatal notes of all HIV positive women, pregnant between 2003 and 2014, were reviewed.
Results 97 pregnancies in 75 women were identified, resulting in 76 live births. Antenatal HIV diagnosis was made in 22 (28%). The proportion of pregnancies in those with known HIV at conception increased over the time period. 34 (35%) initiated ART following conception, on average at 22 weeks gestation (range 6–34). Choice of combination ART (cART) varied with time reflecting changing guidelines. Prior to 2008 an AZT containing regimen was used in 83% versus 8% after. Efavirenz was only used in those established on ART since 2007.
Planned mode of delivery has varyed over time with evolving guidelines, 43 (59%) were delivered by caesarean section (CS). Pre-2006 66% were delivered by CS, all to prevent MTCT, compared to post-2012 where 33% delivered by CS all for other obstetric indications.
For neonates, 100% received neonatal post-exposure prophylaxis (PEP): 68 (88%) AZT monotherapy, 9 (12%) cART. 8 (10%) experienced side effects. In the 10-year review period, one infant (1.3%) was diagnosed HIV positive, both mother and infant received care in accordance with guidelines.
Conclusion Care of the HIV positive pregnant woman in Brighton has been successful with overall transmission consistent with that seen nationally. Despite effective preventative strategies MTCT remains a risk and women should be counselled accordingly.

EP1b.176
Cardiac arrhythmias in pregnancy: A 2 year retrospective review of a multidisciplinary Obstetric Medicine Clinic registry

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Objectives Cardiac disease is the leading cause of indirect maternal death in the UK. Palpitations are common in pregnancy but appropriate investigation is essential to exclude sinister causes. We reviewed the outcomes of pregnant women with symptoms suggestive of cardiac arrhythmia who were managed in our Obstetric Medicine Clinic [OMC] supported by a Cardiology multidisciplinary team [CMDT].
Methods A 24 month retrospective review was conducted at West Middlesex University Hospital from 1st August 2013. Women were seen in OMC and discussed at CMDT if cardiovascular pathology was suspected.
Results 58 [34%] women, aged 19–46 years referred to CMDT between 6 weeks' gestation to 2 week postnatal, had symptoms or signs suggestive of arrhythmia. 17 [29%] women had documented arrhythmia, of which 7 were diagnosed during pregnancy and immediate puerperium.
48 [83%] women described palpitations, 12 [25%] of whom had documented arrhythmia. Other presenting symptoms included chest pain and syncope.
6 (10%) had nodal reentry tachycardia ("SVT"), of whom 4 [67%] had their first presentation in the index pregnancy. One responded to Valsalva manoeuvre, 5 needed further treatment [adenosine $n = 4$, electrical cardioversion $n = 1$]. 2 presented in the immediate postpartum period, the others before 20 weeks' gestation. 4 [67%] had a structurally normal heart, 2 had cardiomyopathy. None had recurrence in pregnancy.
5 [9%] had atrial fibrillation [AF] of which 2 were new presentations. All had symptoms, and required beta blockade; 2 needed electrical cardioversion. All had structurally normal hearts. One had thyrotoxicosis.
6 (10%) women had other documented arrhythmias: ventricular tachycardia, ventricular ectopy, complete heart block, 2nd degree heart block, sinus bradycardia, persistent sinus tachycardia.
In women without documented arrhythmia but experiencing palpitations, 4 had an abnormal echo (ASD, cardiomyopathy, LV hypertrophy, pericardial effusion].
Conclusion Despite palpitations being commonly attributed as a normal symptom in pregnancy, we identified an important cause in 44% of these women.
Thorough assessment and selective investigation via the CMDT, allows detection and management of underlying cardiac conditions in a significant number of pregnant women.

Awareness of arrhythmias and potential underlying cardiac pathology must be emphasised within standard obstetric training, and multi-disciplinary team input highlighted for those working within Obstetric medicine.

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Is pregnancy-associated venous thromboembolism rare in Asia? – an epidemiology study in Singapore from 2004 to 2015

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Introduction Pregnancy- associated venous thromboembolism (VTE) includes both deep vein thrombosis (DVT) and pulmonary embolism (PE) during antepartum as well as postpartum period. Though rare, VTE remains one of the leading causes of maternal mortality and morbidity in the developed countries. The reported incidence of pregnancy associated VTE varies considerable from 0.008% to 0.71%, and is thought to be more common in the Caucasians as compared to Asians. MJ Jang in 2011 reported the incidence of VTE in Korea as 10-fold less than in the Caucasian population. However, recent studies have shown that incidence of pregnancy associated VTE in the Asian population has been on the rise and approaching that of Western populations. We aim to study the epidemiology of pregnancy associated VTE in Singapore and evaluate risk factors, maternal and neonatal outcomes as well as treatment regimens in our centres.

Methods A retrospective epidemiology study was conducted in 2 maternity hospitals in Singapore, over a period 10 years from 2004 to 2015. Women with thromboembolic diseases during pregnancy and puerperium were identified from electronic database using the ICD codes; and their case records retrieved and reviewed. Only VTEs diagnosed by objective methods such as Duplex ultrasound and ventilation scan or angiogram were included. Maternal demographics, obstetric information, treatment received and maternal outcomes were recorded and to be analysed with the SPSS software.

Results A total of 135 pregnancy associated VTE cases were identified, of which 114 had DVT and 21 had PE. There were a total of 120 000 deliveries from the 2 centers. The estimated incidence of pregnancy associated VTE is 0.11%, which is similar to that of the Caucasian population.

Conclusions This is one of the few Asian epidemiological study of VTE incidence in Asia. The rising incidence is comparable to Caucasian population and should not be ignored as an extremely rare condition in Asia.

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Maternal outcomes in acute fatty liver of pregnancy in a tertiary-care referral institute in North-India

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Introduction Acute fatty liver of pregnancy (AFLP) is a rare entity mostly occurring in the late trimester of pregnancy. Furthermore, clinical presentation often simulates fulminant viral hepatitis. The aim of this study was to assess the demographic profile and the maternal outcomes in women with AFLP.

Methods A retrospective observational study of 32 patients with the diagnosis of AFLP was conducted in the Department of Obstetrics & Gynaecology, PGIMER, Chandigarh from January 2008 to December 2013. The women diagnosed with AFLP based on the Swansea criteria were reviewed for their clinical presentation, laboratory parameters and clinical course. The maternal complications and mortality rates were recorded.

Results The mean age of the women was 24.8 $\pm$ 3.4 years and mean gestational age at presentation was 34.4 $\pm$ 2.9 weeks. Twenty four (75.0%) women were nulliparous and 8 (25.0%) were multiparous. The mean gestational age at delivery was 34.7 $\pm$ 2.5 weeks. Twenty two women (68.8%) had presented after 34 weeks gestation, 8 (25%) between 28 – 34 weeks and 2 (6.3%) women before 28 weeks of gestation. Jaundice [mean serum bilirubin 12.9 $\pm$ 5.6 mg/dL] was the most common clinical presentation seen in 30 (93.8%) women. Mean serum transaminase levels being aspartate transaminase (AST) = 354 $\pm$ 553 IU/L, alanine transaminase (ALT) = 360 $\pm$ 542 IU/L. Pre-eclampsia was noted in 11 (34.4%) patients. Only 13 (40.6%) women had ultrasound imaging suggestive of fatty liver changes. Coagulopathy was observed in all women (100%) with a mean prothrombin time of 34 $\pm$ 20s [range 16s-120s]. Other complications included encephalopathy 23 (71.9%), hypoglycemia 29 (90.6%), acute renal failure 29 (90.6%), postpartum haemorrhage (28.6%) and sepsis (59.4%). ICU admission was needed in 25 (78.1%) with 22 women (68.8%) requiring mechanical ventilation. Seven (24.1%) women required dialysis for renal shutdown. Twenty six (92.8%) women were delivered vaginally and two (7%) by lower segment caesarean section. Three women died undelivered while one was taken against medical advice by her relatives. Maternal mortality rate observed in present study was 53.4%.

Conclusions AFLP has high incidence of maternal mortality (53.4%). Meticulous approach and high index of suspicion is needed in establishing the diagnosis. Management in tertiary care settings with multidisciplinary team involving obstetricians, hepatologists, and intensive care specialists would help improve the outcome.