Poster Presentations

Pregnancy Outcome

PP.001
Can we reduce early onset neonatal GBS disease in preterm pre-labour rupture of membranes?
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Background PPROM occurs prior to 37 weeks. Compared to term infants, preterm infants are more likely to be affected by early onset GBS disease and when affected have a higher perinatal mortality. Management decisions need to balance risks of prematurity and infection.

Objectives To determine the neonatal outcomes when there has been PPROM in the presence of maternal GBS and interventions that may reduce the risk of poor outcome.


Results Electronic notes of 268 women and their 287 babies were reviewed. The gestation at diagnosis of PPROM ranged from 18–36+6 weeks (median 34+6). GBS was detected in 22 women. In 50% the carriage was known prior to PPROM. In 50% this was known prior to 34 weeks of gestation. Overall perinatal mortality was 4% (12/287). Maternal GBS colonisation was associated with higher perinatal mortality, 13.6% versus 3.4% (3/22 versus 9/265).

Active management at 34 weeks where maternal GBS colonisation was known would have prevented one intrauterine death.

Conclusion In this sample, perinatal mortality appears to be increased when PPROM occurs in the presence of maternal GBS colonisation. Recent RCOG guidance3 recommends that it is beneficial to expedite delivery in PPROM from 34 weeks if a woman is a known to be colonised with GBS.

Reference
1. Prevention of early onset neonatal GBS disease, RCOG green top guideline 36, RCOG, September 2017

PP.002
The role of a dedicated pre-term surveillance clinic offering cervical cerclage; changing outcomes for women: A five year analysis at the National Maternity Hospital Holles Street
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To analyse outcomes for women at risk of spontaneous pre-term labor who attended our pre-term surveillance clinic and had a cervical cerclage.

A prospective observational study between 2012 and 2017. Inclusion factors: previous delivery between 16–34 weeks or ≥2 large loop excision of the transformation zone (LLETZ) procedures. Cervical cerclages were history indicated/based on cervical length <25 mm at <24 weeks of gestation on transvaginal ultrasound. Cerclages were McDonalds technique using either mersilene tape or ethilon under spinal/general anaesthetic.

Five hundred and fifty-five women attended the clinic, 8.5%(47) undergoing cerclage. Average age 33, BMI 26.5 kg/m2, 45%(21) nulliparous, 83%(39) Caucasian, 3 twin pregnancies. At first antenatal visit average gestation was 9 weeks. Fifty-seven percent (27) had a history of preterm labor, 32%(15) ≥2LLETZ, 11%(5) both. Average gestation at cerclage was 16 weeks; 53% (25) between 12–14 weeks, 47% (22) between 16–24 weeks of gestation. Mean continuity of pregnancy post cerclage 17.7 weeks. Seventy-five percent(35) received prolutin injections. Forty-one fetus’ were born by study completion including 3 twin pairs. Average gestation at delivery 34.4 weeks, 83% delivering ≥28 weeks, 39% ≥37 weeks. Average birthweight 2.5 kg. Majority delivered vaginally 69%(28), 24%(10) emergency caesarean, 7%(3) elective caesarean. There were two caesarean sections for chorioamnionitis but both women and babies were well at discharge. There was one neonatal death.

Individualising the decision to insert a cervical cerclage, followed by attending a dedicated pre-term surveillance clinic results in successful pregnancy outcomes.
PP.003
Prevention of preterm birth
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To examine preterm birth rates in a high risk population of women with a previous delivery between 16–34 weeks or two previous LLETZ procedures.

A prospective review of women in a tertiary referral unit. Women underwent surveillance with vaginal swabs and midstream urine (MSU), transvaginal ultrasounds or insertion of cervical cerclage. Proluton injections were given between 17–34 weeks.

Outcomes were obtained from the hospital’s electronic records. There were 764 pregnancies in 555 women over the 5-years. The average age was 33 and BMI was 25.6 kg/m². There were 39% (297) primigravidas and 61%(467) multigravidas. The average gestation at delivery was 37.2 weeks and 28.8% delivered preterm (<37 weeks).

All women with a previous second trimester loss delivered at ≥28 weeks of gestation. Mean gestation at delivery for women with a previous preterm birth was 37 weeks, compared with 30.3 weeks in previous pregnancies. 17.8% of women with two previous LLETZ delivered preterm. Women were treated for a positive HVS, ureaplasma/mycoplasma swab or MSU and this was not associated with preterm birth. Proluton was given to 123 women and 2/3 of these delivered ≥37 weeks. A cervical cerclage was inserted in 53 pregnancies and their mean gestation at delivery was 33.7 weeks. The mean birthweight was 3102 g and 6.8% of babies weighed <1000 g. There were 6 stillbirths and 8 neonatal deaths from extreme prematurity. Preterm births occurred at a later gestation than in a previous pregnancy in women attending a preterm birth prevention clinic.

PP.005
What effect does preterm birth have on social, emotional and functional development up to the age of 12 years?
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Introduction The long-term impact of prematurity on children is often not considered; this review looks at the developmental outcomes of bullying, behaviour, motor and cognitive impairments as these are seen to be key to a child’s development up to school age.

Aim The aim of this structured review is to use the selected articles to aid in deciding whether or not the disability of preterm birth have a lasting impact on a child’s life up to the age of 12.

Methods The databases of Scopus, PubMed and Web of Science were used to conduct a detailed and relevant search for articles.

Results Four articles were selected for critical appraisal based on the inclusion criteria of the search.

Discussion All four articles show that elements of the children’s lives were affected by being premature. However, self-reported quality of life was high in children with cerebral palsy and many children only had minor impairments. It was noteworthy that preterm children were more likely to be bullied and socially excluded and did display behavioural and cognitive issues that affected their academic ability.

Conclusion Many of the children born premature will have some form of impairment; this review believes that society’s attitude to this needs to alter and more support should be offered to families who are coping with these long-term outcomes.

Further Recommendations It would have been helpful to look at premature children’s outcomes up to adulthood and if studies measuring the same outcomes had been used so that results were directly comparable.

PP.006
Interpregnancy weight change and adverse pregnancy outcomes: A systematic review and meta-analysis
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Objectives To evaluate the effect of interpregnancy BMI change on pregnancy outcomes, including large-for-gestational-age babies (LGA), macrosomia, gestational diabetes mellitus (GDM), and caesarean section (CS).

Design Systematic review and meta-analysis of population-based cohort studies with the protocol registered a priori (PROSPERO CRD42016041299).

Methods Literature searches were performed across Cochrane, MEDLINE, EMBASE, CINAHL, Global Health and Maternity and Infant Care databases. Adjusted odds ratios (aOR) with 95% confidence intervals were used in the meta-analysis.

Results A total of 910 951 women with singleton births (parity 0 to 1) and no history of diabetes mellitus were enrolled in the meta-analysis of ten studies selected from 924 identified studies. In women irrespective of BMI at first pregnancy, an increase in interpregnancy BMI (>3 units) was associated with an increased risk of LGA (aOR = 1.85, 95% CI 1.71–2.00, P = 0.000), GDM (aOR = 2.28, 1.97–2.63, P = 0.000), and CS (aOR = 1.62, 1.22–2.15, P = 0.001) compared with the reference category. A BMI decrease was associated with decreased risk of LGA (aOR = 0.67, 0.54–0.84, P = 0.000) and GDM (aOR = 0.78, 0.67–0.92, P = 0.002). The risks of LGA and GDM in women with a BMI<25 at first pregnancy who increased BMI ≥3 units between pregnancies were of greater magnitude compared to women with an initial BMI≥25.

Conclusion This is the first meta-analysis to assess interpregnancy weight change and adverse pregnancy outcomes. Interpregnancy weight gain increases the risk of GDM, CS and LGA, whilst weight reduction lowers the risk of LGA and GDM. Clinicians should address interpregnancy BMI change to avoid adverse outcomes.
PP.007
Factors affecting preterm birth in women undergoing cervical cerclage
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Objectives To examine factors (infection, cervical length (CL) shortening rate, fetal fibronectin (fFN) test) associated with preterm birth (PTB, delivery <37 weeks of gestation) in women undergoing elective or ultrasound-indicated cervical cerclage.


Methods Data were extracted from University College London Hospital PTB clinic database and electronic records. All women attending PTBC undergo testing for urinary tract infection (UTI, mid-stream urine culture), bacterial vaginosis (BV), serial transvaginal CL measurement and fFN test during mid-gestation. We compared data in women with elective or ultrasound-indicated cervical cerclage with gestational age at delivery.

Results Of 173 women with cerclage, 29.5% delivered preterm. All women with UTI (pre-cerclage, n = 14;postcerclage, n = 22) or BV (pre-cerclage, n = 5;postcerclage, n = 5) received antibiotic treatment. Women with UTI pre-cerclage delivered earlier (median 36⁺⁶ weeks, IQR 31⁺¹–38⁺¹ versus 38⁺¹ weeks, IQR 36⁺¹–39⁺⁵, P = 0.05). BV diagnosed pre- or post-cerclage and UTI post-cerclage were not associated with gestational age at delivery. The total CL shortening rate during 24–28 weeks of gestation was faster in women delivering preterm (PTB 0.75 mm/week versus term 0.00 mm/week, P = 0.001). Women with PTB were more likely to have fFN>50 ng/ml (43.5% versus 16.7%, P = 0.001). In this small study, pre- and post-cerclage UTI did not enhance the CL shortening rate or chance of fFN>50 ng/ml.

Conclusion Women with UTI pre-cerclage, even when treated, are more likely to deliver preterm. Fast CL shortening rate and fFN>50 ng/ml are associated with a higher rate of PTB.

She subsequently had a spontaneous vaginal delivery and successful ongoing rehabilitation.

Conclusion Spontaneous symphysis pubis diastasis can occur in the antenatal period. We discuss the diagnostic and management challenges and literature review. We welcome discussions on optimal diagnostic modalities and management strategies.

PP.009
Prevalence, antenatal management and perinatal outcomes of monochorionic monoamniotic twin pregnancies: A collaborative multicentre study in England
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Objectives To determine the prevalence of monochorionic monoamniotic (MCMA) twin pregnancies and to describe perinatal outcomes and clinical management of these pregnancies.

Design Multicentre retrospective cohort study.

Methods Antenatal, obstetric and neonatal data on all twin pregnancies with confirmed MCMA placentation were collected from eleven Northern Survey of Twin and Multiple Pregnancy (NorSTAMP) maternity units and ten Southwest Thames Region of London Obstetric Research Collaborative (STORK) hospitals for 2000–2013. The MCMA twin prevalence was estimated using population-based NorSTAMP data. Pregnancy outcomes at <24 weeks of gestation, antenatal parameters and perinatal outcomes (from ≥24 weeks up to the first 28 days of life) were analysed using the combined NorSTAMP and STORK data.

Results The total prevalence of MCMA twin pregnancies in the North of England was 8.2 per 1000 all (singleton and multiple) pregnancies. Overall, there were 85 MCMA twin pregnancies included from both cohorts. In 73% of pregnancies, MCMA placentation was diagnosed by ultrasound scan at ≤13 weeks of gestation. The rate of a spontaneous or iatrogenic fetal death at <24 weeks was 317.6/1000 MCMA fetuses. The perinatal mortality was 146.6/1000 MCMA births. MCMA twins who survived in utero beyond 24 weeks of gestation were delivered, usually by cesarean section, at a median of 33 weeks (interquartile range = 32–34).

Conclusion In MCMA twins surviving beyond 24 weeks of gestation, there was a higher survival rate compared to previous decades presumably due to close surveillance and elective birth around 33 weeks of gestation.

PP.008
Spontaneous symphysis pubis diastasis in pregnancy: An unusual antenatal event
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Objective Antenatal spontaneous symphysis pubis diastasis is uncommon. We seek to raise awareness of antenatal occurrence, review current management and diagnostic strategies and generate debate on optimal management.

Case A young woman presented in her third trimester of her third baby with 11 mm spontaneous pubic diastasis. Her management involved a multidisciplinary team of professionals.
PP.010
Antenatal screening programme—are patients adequately informed?
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Objective To investigate patient satisfaction with antenatal screening.

Design Paper-based patient questionnaire.

Methods Antenatal screening was grouped into three domains: haemoglobinopathies, chromosome problems and infectious diseases. Questionnaires were handed out to 80 women attending for their fetal anomaly scan over a 1 week period in June 2017. Patients were asked about pre-test information, availability of appointments, and obtaining results.

Results The response rate was 73%. Results were transcribed onto Excel for analysis.

The most common source of information was a combination of verbal and written information using the NHS booklet ‘Screening tests for you and your baby’. Over 80% received information in advance of the test being performed. 95% of patients found the information useful.

Patients felt most informed regarding chromosome problems, with only 3% feeling they had received no information about this domain. All women received a timely appointment.

97% were satisfied to receive results by post, and 85% felt they had the opportunity to discuss their results. Patient suggestions included; inclusion of ‘average’ risk alongside personal risk, and more continuity of care.

Conclusion Satisfaction with antenatal screening was high but areas for improvement are identified.

PP.012
What patient’s want to know - a review of pregnancy outcomes and experiences from a designated twin clinic
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Objectives We sort to address patient’s common questions in our clinic by examining all twin bookings during 2016 and comparing the data with that available nationally.

Methods We reviewed 93 sets of twins delivered during the time period indicated.

The main questions we considered were; Will I need a Caesarean section to deliver my twins? Will I need a Caesarean section to deliver my second twin? Will my babies be delivered early and will my babies require admission to the neonatal unit?

Results Our results show that 63% of babies were delivered by caesarean section overall. In 5 cases an emergency Caesarean was required for the second twin. 27% of twins were delivered before 36 weeks of gestation. 15% of the babies at all gestations required admission to the neonatal unit included in which is 8 babies born at 37 weeks or greater gestation.

Conclusion In conclusion with the more widespread use of assisted reproductive technologies we are seeing a greater number of multiple pregnancies and it is important to provide current information to our patient’s. Our data allows us to begin to provide answers to the questions that they commonly have.

PP.013
Vaginal epithelial cells co-cultured with Lactobacillus and anaerobes differentially express acetate and CXCL8
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Objective In order to clarify metabolite expression profiles of vaginal microflora associated with preterm birth, we investigated the expression of infection-associated metabolite (acetate) and pro-inflammatory chemokine (CXCL8) by cervicovaginal epithelial cells exposed to Bacteria vaginosis-associated bacteria or Lactobacillus spp.

Methods The concentrations of acetate (enzyme-based spectrophotometry) and CXCL8 (ELISA) were determined and compared between monolayer-cultured HeLa cells (HeLa) infected with strains of Gardnerella vaginalis, Mobiluncus curtisii or L. crispatus alone or in combination with each other over a 72-hour period (MOI = 10). Uninfected HeLa were used as controls.

Results HeLa infected with G. vaginalis (P < 0.01) or M. curtisii (P = 0.01) produced higher concentrations of CXCL8 compared to HeLa infected with L. crispatus or uninfected HeLa over time. Addition of L. crispatus to G. vaginalis or M. curtisii infection models reduced expression levels of CXCL8 compared to G. vaginalis or M. curtisii infection alone.

Acetate concentration increased in a time-dependent nonsignificant manner in all infected cultures compared to uninfected controls, except those with G. vaginalis where a decrease was observed after 72 hrs only. Addition of L. crispatus to the infection models of HeLa with either G. vaginalis or M. curtisii, decreased acetate production compared to HeLa cultured with G. vaginalis or M. curtisii alone.

Conclusion Infection of cervicovaginal epithelial cells by G. vaginalis and M. curtisii stimulates secretion of acetate and CXCL8. The presence of L. crispatus attenuates these potentially deleterious effects by reducing acetate and CXCL8 levels, consistent with a role for L. crispatus in promoting vaginal floral health and reducing inflammation-associated preterm birth.
PP.014
Investigating the association between pregnancy following bariatric surgery and adverse perinatal outcomes: A systematic review and meta-analysis
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Objectives To investigate the association between pregnancy after bariatric surgery and adverse perinatal outcomes.

Design Systematic review and meta-analysis of current evidence base to collate findings and identify research gaps. PROSPERO registration: CRD42017051537.

Methods Six electronic databases were searched from inception to June 2017 and supplemented by searches of reference lists, citations and relevant journals. The primary outcomes are congenital anomalies and perinatal mortality. Secondary outcomes include additional adverse perinatal outcomes such as preterm birth and small-for-gestational-age (SGA) neonates. Observational studies published in English language that used obesity or BMI-birth and small-for-gestational-age (SGA) neonates. Observational studies published in English language that used obesity or BMI-matched controls were included. Assessment for suitability of studies published in English language that used obesity or BMI-matched controls were included. Assessment for suitability of pooling data to meta-analysis is on-going.

Results Seventeen studies were included with 7742 women who had bariatric surgery prior to pregnancy and 205 796 controls. The studies seem to suggest a reduced risk of macrosomia, large-for-gestational-age (LGA) neonates and post-term birth but an increased risk of preterm birth and SGA neonates. An increased risk of NICU admission, miscarriage and perinatal mortality were observed in single studies. Only two studies investigated congenital anomalies but had conflicting results and associations were not significant.

Conclusion Bariatric surgery prior to pregnancy appears to be associated with increased risk of SGA neonates and preterm birth. The use of small sample sizes in multiple studies may have resulted in non-significance and large confidence intervals for rare outcomes. Meta-analysis will address this limitation to some extent by increasing power. Larger scale studies of national and international data are required to overcome sample size limitations for rare outcomes.

Design Register-based retrospective cohort study.

Methods Data for triplet pregnancies were obtained from the population-based Northern Survey of Twin and Multiple Pregnancy (NorSTAMP) for deliveries in 1998–2013. Pregnancies resulting in fetal losses of all fetuses were excluded (n = 17); the triplet prevalence was estimated per 10 000 total maternities (singleton and multiple) defined as pregnancies resulting in at least one registered birth. Perinatal mortality (stillbirths and neonatal deaths) by chorionicity and time period was analysed for 2000–2013 as ultrasound chorionicity diagnosis was accessible from 2000.

Results Overall, 165 triplet maternities were identified during 1998–2013. The triplet prevalence declined from 3.98 to 2.62 per 10 000 maternities between 1998–2005 and 2006–2013 (RR = 0.66, 95% CI = 0.48–0.90, P = 0.008). The overall perinatal mortality during 2000–2013 was 88.3/1000 triplet births, with a two-fold decline in stillbirth rates between 2000–2006 and 2007–2013 (RR = 0.48, 95% CI = 0.17–1.32, P = 0.21), but no improvement in neonatal mortality. Triplet pregnancies with a monochorionic placenta (combined dichorionic triamniotic and monochorionic triamniotic pregnancies) had a significantly higher risk of stillbirth (RR = 3.57, 95% CI = 1.03–12.38, P = 0.035) and perinatal mortality (RR = 2.34, 95% CI 1.07–5.12, P = 0.03) than trichorionic triamniotic pregnancies; the excess risk of neonatal death was not statistically significant.

Conclusion The triplet prevalence has significantly declined over the study period. Temporal changes in perinatal mortality should be interpreted with caution due to small numbers. Monochorionic placentation in a triplet pregnancy significantly increased the stillbirth risk, mostly due to twin-to-twin transfusion syndrome.

PP.016
A high third trimester sFlt-1: PIGF ratio is associated with reduced fetal growth velocity
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Objectives Identification of fetal growth restriction (FGR) in babies >10th centile is challenging. We hypothesised that high third trimester sFlt-1: PIGF ratio identifies pregnancies with slowing growth trajectory.

Methods 296 women with reduced fetal movements ≥28 weeks of gestation were recruited. Maternal serum sFlt-1 and PIGF were measured (R&D systems ELISA), and customised estimated fetal weight centile (EFWc) calculated. Subsequent birthweight centile (IBC) was compared to EFWc.

Results EFW accuracy was good (median bias −2.8%). The small for gestational age (weight <10th centile) prevalence increased from enrollment to birth (median 15 days to delivery; 6.8% versus 14.5%, P = 0.0022). A median of 13 centiles were lost before birth (median -1 centile/day; lowest decile −7.3 centiles/day); 27 (9.1%) infants born with IBC>10 had slowing growth. A significant relationship was found between sFlt-1:PIGF ratio and centile difference/day [Log sFlt-1:PIGF coefficient = −1.00 (95% CI −1.54, −0.45), P < 0.0001], with AUC 0.92 (0.88, 0.96) for growth
myers, j; whitworth, uk

completion.

examine whether this has resulted in improved accuracy in MCS recognition of FGR in prevention of stillbirth. We aimed to reports/initiatives have highlighted the importance of antenatal regional stillbirth care pathway was introduced and several 44.1% actual prevalence). Since this initial audit a standardised growth restriction (FGR) in many cases (0.5% reported versus

PP.017
Persistent inaccuracies in stillbirth certificate completion: A regional audit of 264 stillbirths Higgins, l1,2; heazell, a1,2; myers, j1; whitworth, m2

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Objectives The medical certificate of stillbirth (MCS) is designed to record relevant fetal and maternal data relating to the cause of the infant’s death. A 2009 regional audit conducted in North West England demonstrated widespread inaccuracies in MCS completion, in particular a failure to record the role of fetal growth restriction (FGR) in many cases (0.5% reported versus 44.1% actual prevalence). Since this initial audit a standardised regional stillbirth care pathway was introduced and several reports/initiatives have highlighted the importance of antenatal recognition of FGR in prevention of stillbirth. We aimed to examine whether this has resulted in improved accuracy in MCS completion.

Methods All stillbirth certificates issued 01/01/2015–31/12/2015 in 14 obstetric units across the North West of England were examined. Only information that was available at the time of the MCS being issued was considered. Cause of death was then assigned according to the ReCoDe classification.

Results In 19 (7.2%) cases data was insufficient to ascertain the accuracy of MCS completion. Of the remaining 245 cases, fundamental errors were found in 120 (48.9%) cases. Of fundamental errors, 70 (58.3%) related to missed FGR. 19 (15.8%) related to misrepresentation of cause of death in cases of termination of pregnancy. Overall, in 91/120 (75.8%) of ‘unexplained’ stillbirths a cause of stillbirth could be identified.

Conclusion The accuracy of MCS completion has not significantly improved since 2009. FGR remains an unrecognised cause of stillbirth. Structured review of the contemporaneous maternal medical records can significantly improve accuracy of MCS.

PP.018
Combining cervicovaginal fluid metabolite and cervical electrical impedance spectroscopy assessments in mid-trimester improves prediction of preterm birth in asymptomatic pregnant women – towards multimodality screening

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Background Prediction and prevention of spontaneous PTB remains limited. Having recently shown that cervical Electrical Impedance Spectroscopy (EIS) and cervicovaginal fluid (CVF) metabolite levels may individually predict PTB in asymptomatic women, and considering the varied aetiological associations of PTB, we hypothesized that combining cervical EIS (to assess cervical remodelling), and cervicovaginal fluid (CVF) metabolite assays (to assess vaginal ‘dysbiosis’) in mid-trimester may improve the prediction of PTB and inform care.

Methods We studied 94 women at risk (previous history) of PTB, at 20–22 weeks of gestation. We measured cervical EIS using a probe device, CVF metabolites (alanine, acetate, branched chain amino acids, formate, glutamate, succinate and lactate by 1H-Nuclear Magnetic Resonance spectroscopy), fetal fibronectin (qfFN, by ELISA), and transvaginal ultrasound cervical length (TVUS CL) and compared their predictive capacity for PTB by multivariate logistic regression analysis and the area under the Receiver Operator Characteristic (AuROC) curve plots.

Results Of the women studied, 17 (18%) delivered <37 weeks. Cervical EIS and CVF metabolites predicted PTB individually (AuROC 0.83, 95% CI 0.74–0.93 versus 0.65, 95% CI 0.50–0.79, P < 0.05 respectively) and in combination (AuROC 0.86, 95% CI 0.78–0.931, P < 0.01 versus metabolites). When combined with TVUS CL and qfFN PTB prediction improved (AuROC 0.88, 95% CI 0.79–0.93, sensitivity 90, specificity 77) versus qfFN or TVUS CL (P < 0.05).

Conclusion Improved prediction of PTB when metabolite screening is combined with cervical EIS may offer a ‘multimodal’ screening approach that may enable personalised risk stratification and intervention.

PP.019
A Quality Improvement Programme in England aimed at improving antenatal care for multiple pregnancies

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Tamba, Twins and Multiple Births Association, aldershot, uk

Introduction Multiple births represent 1.5% of UK pregnancies, yet 7% of stillbirths and 10% of neonatal deaths, carrying over six times a singleton’s risk of cerebral palsy. At least 50% experience preterm birth.
Since 2005, patient safety incidents involving multiple pregnancies have increased by 419%, and from 2005–2010 formed 10% of the NHS Litigation Authority’s maternity cases, eliciting payouts of £93 million.

Amid changes to improve NHS pregnancy care, the Department of Health has backed Tamba’s quality improvement programme which encourages use of National Institute for Health and Care Excellence’s 2011 publication, ‘Multiple pregnancy: antenatal care for twin and triplet pregnancies [CG129]’. According to a Tamba and National Childbirth Trust report of parental experience in 2014/15, only 69% of maternity units implemented this guidance.

Maternity Engagement Project This project, started in April 2016, is run by a project manager, two coordinators, an audit/evaluation officer, and specialist consultant midwives. Its steering group includes clinical teams from St George’s (London), Leeds, and Liverpool, and representatives from the Royal College of Midwives, Royal College of Obstetricians and Gynaecologists, Royal College of Nursing, Department of Health, University of Leicester, NHS England and other charities, who meet quarterly to advise on project challenges. 30 maternity units are involved, varying in size, location, and implementation of guidance. These were shortlisted using Tamba’s Maternity Services Report 2015 and national mortality statistics. With Tamba’s ongoing support, units improve services through audits and bespoke improvement packages. Early findings are available with a final report due in 2019.

PP.020
The clinical significance of mid-trimester bulging membranes
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Objectives To identify the pregnancy outcomes of women presenting with bulging membranes in the mid-trimester. A rare and uncommon clinical presentation of which little is known about prognosis following identification of bulging membranes.

Design Five year retrospective single centre cohort study with 6000 deliveries per year.

Methods Patients between 13–26 weeks of gestation presenting to our centre were identified from emergency gynaecology / labour ward attendance registers and theatre diaries. Paper and electronic notes were used to gather data. Time from identification of bulging membranes to delivery was recorded.

Results A total of 28 416 patients attended in this time period of which 22 met the criteria for inclusion. The incidence of bulging membranes in our unit was 0.71/1000 deliveries. Time from identification of bulging membranes to delivery ranged from 45 minutes to 35 days. 68% delivered within 24 hours and 80% by 48 hours. There were three live births, all to women after 21 weeks of gestation.

Conclusion Presentation of bulging membranes in the mid trimester is rare, many patents receive conflicting information regarding prognosis from medical staff. This has a major negative impact on dealing with the possible loss of their pregnancy. This study will enable staff to give evidence based prognostic information, helping patients to make informed choices about their care. It is hoped this will, in some small way, help couples better deal with pregnancy loss.

PP.021
A combined first trimester screening strategy for prediction of pre-eclampsia in high-risk women: Results from the PREDICT study
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1Queen’s University Belfast, Belfast, UK; 2Royal Jubilee Maternity Hospital, Belfast, UK; 3Royal Victoria Hospital, Belfast, UK

Objectives To investigate the ability of a first trimester screening strategy combining baseline characteristics, vascularisation flow index (VFI) and soluble Fms-like tyrosine kinase 1 (sFlt-1), to predict pre-eclampsia (PE) in high-risk women.

Design High-risk women were recruited to the PREDICT study at 11 + 0–13 + 6 weeks (n = 193). Placental vascularisation indices (PVIs) were derived from 3-Dimensional power Doppler (3DPD) imaging via Virtual Organ Computer-aided Analysis (VOCAL) technique. Non-fasting samples were analysed blind to PE outcome. Logistic regression (LR) models used PE as the outcome. Area under the receiver (AUC) operating characteristic (ROC) curve analysis was performed. The added value of a model including baseline clinical characteristics, sFlt-1 and VFI was quantified using the Integrated Discrimination Improvement (IDI) and Net Reclassification Improvement (NRI) indices.

Results Overall rate of PE was 12%. Controlled for maternal risk factors, a 1 standard deviation (SD) increase in VFI was associated with a 77% reduction in odds of developing PE (OR 0.33, 95% CI 0.14–0.78, P = 0.01). A 1 SD change in the logarithmically-transformed concentration of sFlt-1 reduced odds of PE by 54% (OR 0.46, 95% CI 0.24–0.87, P = 0.02). Addition of sFlt-1 and VFI to baseline characteristics improved the AUC, albeit non-significantly, from 0.74 to 0.83, P = 0.05). NRI and IDI analyses confirmed the added clinical utility of VFI and sFlt-1 to baseline characteristics improved the AUC, albeit non-significantly, from 0.74 to 0.83, P = 0.05). NRI and IDI analyses confirmed the added clinical utility of VFI and sFlt-1 to baseline characteristics improved the AUC, albeit non-significantly, from 0.74 to 0.83, P = 0.05). NRI and IDI analyses confirmed the added clinical utility of VFI and sFlt-1 to baseline characteristics improved the AUC, albeit non-significantly, from 0.74 to 0.83, P = 0.05).

Conclusion A first trimester screening strategy combining clinical characteristics, VFI and sFlt-1 has potential to improve clinical management of high-risk pregnancies.

PP.022
Comparison of placental growth factor immunoassays in a multiple pregnancy cohort
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Objective To compare the performance and results of two immunoassays of maternal placental growth factor in multiple pregnancies
PP.024

Administration of corticosteroids in women presenting with antepartum haemorrhage – are we giving them to the right women?

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Objectives National clinical guidelines recommend that corticosteroids should be considered or offered to women presenting with antepartum haemorrhage (APH) between 24 + 0 and 35 + 6 weeks who are at risk of preterm birth. We aimed to determine whether we adhere to these recommendations and the factors that influence practice.

Methods A prospective analysis was performed on 75 consecutive women presenting with APH in our unit, after 24 + 0 weeks of gestation. Information regarding gestation at presentation, severity of APH, clinical symptoms and ongoing management was obtained.

Results Of the 75 women presenting with APH, the median gestational age at presentation was 32 + 4 weeks. 16 women received corticosteroids (12 had ‘spotting’, 2 minor APH and 2 major APH) and 15 of these were managed as in-patients. Of the 59 women who did not receive steroids, 55 had ‘spotting’ and 4 had minor APH, and only 15 of these women were admitted. There was no difference in the gestational ages of the groups. 10 of the 16 women who received steroids delivered preterm; corticosteroids were not offered to 2 women who subsequently delivered preterm (within 7 days of presentation) – both presented with ‘spotting’ though one had a history of preterm birth related to APH.

Conclusion The majority of women presenting with APH who subsequently deliver preterm (11 of 13), received corticosteroids, and conversely, the majority of women presenting with APH who did not deliver preterm were not offered corticosteroids (56 of 62). We conclude that our decision-making, regarding corticosteroid administration to women with APH, is good.
below 50%, what is the impact on outcomes when this leads to potentially unnecessary intervention?

**Methods** Birthweight centiles were collected of all term actual and suspected SGA babies from August 2016–January 2017. From this data set the following groups were identified:

1. Actual SGA birthweight
2. Antenatally-suspected SGA
3. Antenatally-missed SGA
4. Antenatally correctly identified SGA
5. Antenatally incorrectly identified SGA

These groups were compared to each other and to all other term babies in this period in terms of emergency caesarean section (EmCS) rate and a composite neonatal outcome (NNU admission, APGAR < 7 at 5 minutes, arterial pH < 7.10 and stillbirth).

**Results** There was no difference in the EmCS rate when each of these groups was compared to each other (P > 0.05), but the actual SGA and missed SGA babies had higher CS rates (P < 0.05) than the rest of the population. All groups had worse neonatal outcomes than the rest of the population, with the exception of the incorrectly identified SGA group, but none of these comparisons were statistically significant.

**Conclusion** This analysis was underpowered to show differences in neonatal outcomes. The lowest EmCS rate and best neonatal outcomes were found in the incorrectly identified SGA (e.g. false-positive) group, probably as these are mainly a low risk non-SGA population. This group of women and babies are undergoing an unnecessary intervention, albeit with no increased risk of EmCS or differing neonatal outcomes.

**PP.028**

**Mid trimester maternal erythrocyte fatty acid composition is not associated with adverse pregnancy outcomes**

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**Introduction** Essential long chain polyunsaturated fatty acids (PUFAs) are critical for fetal growth and development, and evidence suggests that a suboptimal maternal diet may be associated with adverse pregnancy outcomes. This study aimed to determine if there was an association between mid trimester maternal erythrocyte membrane fatty acid composition with preterm birth (PTB), small for gestational age (SGA) and pre-eclampsia (PET).

**Methods** After written informed consent, maternal blood samples were prospectively obtained between 19 and 21 weeks of gestation, and the erythrocyte fraction stored. Demographic data were collected at recruitment and at completion of pregnancy. Erythrocyte membrane fatty acids were derivatised and PUFAs were measured as a proportion of total fatty acids using liquid chromatography-mass spectrometry. Intergroup differences were sought using Mann-Whitney U analysis.

**Results** A total of 134 maternal blood samples were assessed: 33 PTB, 50 term SGA, 10 PET, and 41 normal-sized term controls. There were no significant differences between the absolute proportions of each PUFAs compared to controls, and no difference in the relative proportions of omega-3/omega-6 fatty acids.

**Conclusion** There was no association between mid trimester maternal erythrocyte fatty acid composition and PTB, SGA, and PET in this study. This might reflect similar dietary intake of PUFA in our low-risk cohort.
PP.029
Maternal outcomes in pregnancy according to WHO class of cardiac disease, a two-year experience from a combined obstetric cardiology tertiary service
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Objectives Cardiac disease is the leading cause of indirect maternal deaths in the UK. This is due to increasing maternal age and obesity, improved identification of cardiac disease, and improved outcomes of patients with congenital cardiac disease. The World Health Organization (WHO) has classified cardiac diseases into four risk classes in pregnancy. This study aimed to evaluate the role of an obstetric-cardiology clinic caring for pregnant women with cardiac disease to assess maternal outcomes.

Design This was a service evaluation of the obstetric-cardiology clinic from 2015–2017.

Methods Data were collected retrospectively on 264 patients referred to the obstetric-cardiology clinic over 2 years from consultants, general practitioners and midwives. Demographic, cardiac, and delivery information were recorded from medical and midwifery notes. A consultant cardiologist assigned the WHO risk classes.

Results Of 264 patients referred; 5 had no cardiac disease, 109 had class I, 60 had class II, 6 class III, 2 class IV cardiac disease, 38 were not pregnant, 24 did not attend and 20 had incomplete records. Those with no cardiac disease and class I were reassured and classified as low risk patients allowing midwifery lead care of labour. Class II-IV patients were managed with frequent follow-up and appropriate interventions in the clinic. There were no maternal deaths or still births and a vaginal delivery rate comparable to the local population.

Conclusion The obstetric-cardiology clinic had good maternal and neonatal outcomes for high risk patients and has an important role in reassuring women and their clinicians thereby preventing unnecessary interventions.

PP.030
Metastatic breast cancer and pregnancy – a successful pregnancy outcome following Capecitabine monotherapy
Liu, B; Hutt, R
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Background Breast cancer is the most common cancer in young women, and affects almost 5000 women of this age group annually in the UK. Chemotherapy plays a crucial role in the treatment, but is contraindicated in the first trimester due to the detrimental effects on the developing fetus. Capecitabine is an oral fluoropyrimidine carbamate used to treat resistant breast cancer, which is metabolised to fluorouracil, predominantly in tumour tissues. This drug is listed under FDA pregnancy category D, where animal studies have confirmed teratogenicity in animals, with limited data in humans.

Case We present a 38 year old with recurrent grade III triple negative invasive ductal carcinoma of the left breast, who has received surgical, chemotherapy, and radiotherapy treatments. She was maintained on Capecitabine monotherapy and Zoledronic acid, when a PET scan incidentally discovered an 18 week fetus, and a new T3 vertebral metastasis. An anomaly scan confirmed a healthy fetus with no obvious abnormalities, and after extensive counselling, she decided to continue with the pregnancy. She was switched to weekly Paclitaxel to prevent progression of her vertebral metastasis. Her pregnancy was complicated by mild gestational diabetes and hypertension in the third trimester, and a healthy baby weighing 2720 g was delivered at 36/40 via caesarean section. She underwent radiotherapy and further chemotherapy to her metastases postnatally.

Conclusion Metastatic cancer and its treatment pose an ethical dilemma in pregnancy. Sensitive counselling, thorough multidisciplinary discussions, together with close monitoring and emotional support, can help to provide an optimal outcome, and the emotional satisfaction of motherhood.

PP.031
Pregnant women’s experiences and perceptions of participating in the EVERREST Prospective Observational Study
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Objective To explore the experiences and perceptions of pregnant women taking part in research during a pregnancy affected by severe growth restriction.

Design A retrospective descriptive qualitative interview study.

Methods Audio-recorded semi-structured telephone interviews were conducted with a purposive sample of 12 women who had participated in the EVERREST Prospective Observational Study. Two of these pregnancies had ended in stillbirth and one in neonatal death, reflecting the outcomes seen in the EVERREST study. Participants gave informed consent, were 16 years or older and were interviewed in English. A topic guide was used to ensure a consistent approach. Questions focused on pregnancy experiences, involvement with the study and potential involvement in future research. Recordings were transcribed verbatim for thematic analysis using NVivo10.

Results Four broad themes were identified; ‘before joining the EVERREST Prospective Study’, ‘participating in research’, ‘information and support’ and ‘looking back and looking forwards’. Each broad theme incorporated several subthemes. All participants recalled their reaction to being told their baby was smaller than expected. The way this news was given had a lasting impact. A range of benefits of participation in the EVERREST Prospective Study were described and the

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participants were positive about its conduct. Their experiences meant they were receptive to participating in future research. However, research teams should be sensitive when approaching families at a difficult time or when they are already participating in other research.

Conclusion This study highlights the willingness of pregnant women to participate in research and identifies strategies for researchers to engage participants.

PP.032
Treatment and outcomes of fetal/neonatal alloimmune thrombocytopenia: A nationwide cohort study in newly detected cases
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Objective Postnatal management in fetal/neonatal alloimmune thrombocytopenia (FNAIT) is aimed to reduce bleeding tendency by increasing platelet counts, but evidence for the optimal treatment is lacking. Therefore we reviewed postnatal management strategies and outcome in FNAIT, diagnosed and treated in the first week of life.

Design Nationwide observational cohort-study.
Methods All newborns with newly detected FNAIT born between 1-1-2006 and 1-1-2017 in the Netherlands. Antibodies against human platelet antigens (HPA) were detected and maternal-fetal HPA-incompatibility was confirmed. Data on postnatal management and outcomes were gathered from medical files and laboratory information systems.

Results The cohort comprised 102 cases of unanticipated FNAIT. Postnatal strategies included no treatment (n = 34), platelet transfusion (PTxs) with compatible (n = 24) or random-donor platelets (n = 16), or both (n = 6), and IVIG (with (n = 9) or without PTx (n = 9). In all strategies a median platelet count >50 × 10^9/L was reached within four days after birth without new haemorrhages. Highest and fastest increment in platelet count was observed after HPA-compatible PTx. Treatment with IVIG only gave the smallest increment in platelet counts. Random-donor PTxs were not associated with a higher use of additional PTxs.

Conclusion Independently of postnatal treatment strategy, no new bleedings occurred and platelet count increased and reached safe threshold in all cases within five days. Our data suggest that treatment with 'IVIG only' might be considered outdated and that transfusion with random-donor platelets could be envisaged as first line therapy in FNAIT, if HPA-compatible platelets are not directly available.

PP.033
Critical discourse analysis on the influence of media commentary on fatal fetal abnormality in Ireland
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Introduction Antenatal Diagnosis of a fatal fetal anomaly (FFA) confronts parents with their child’s mortality, creating difficult decisions including whether to terminate or continue with the pregnancy. Media offers an insight into health-related information available to the public. Readers are both active and selective in their interpretations of text however; the influential nature of media is well documented as readers are constrained by the framing of texts. This study analysed information on FFA, termination of pregnancy following FFA (TOPFFA) and perinatal palliative care (PPC) published in the media.

Methods This qualitative study applied a critical discourse analysis which examines the relations between discourse and social and cultural phenomena. It analysed language and visuals in a broadsheet and tabloid identifying the discourse abilities to favour or exaggerate certain descriptions of reality and influence the reader.

Results 128 articles (2012–2017) referencing FFA, TOPFFA and PPC were identified. During times of controversy and opportunity for change in Irish Abortion Laws, the media alluded to the legalising of TOPFFA being the preferred choice of the public. This was in addition to implying scepticism about government proceedings. Themes of power and politics, international influence, ethical dilemmas and emotional appeal are imbedded in the discourse, creating political influence and appealing to the emotional side of the reader to influence perceptions and views.

Conclusion Language is not neutral and therefore it is important to analyse the information being delivered to the public. This is of additional relevance as a referendum to adapt Irish Abortion Laws is imminent.

PP.035
The cerebroplacental ratio as a tool for universal third trimester screening: Systematic review and meta-analysis of diagnostic test accuracy
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Objective The cerebroplacental ratio (CPR) has been used for monitoring high risk pregnancies. The objective of this study was to determine whether measurement of CPR in the third trimester predicts adverse pregnancy outcome when used as a screening test in unselected pregnancies.

Methods We searched Medline, EMBASE and the Cochrane library from inception to June 2017. We included studies where the CPR was calculated as part of third-trimester screening or in low-risk pregnancies only. The risk of bias was assessed using QUADAS-2. Meta-analysis was carried out using the hierarchical summary ROC (HSROC) model and extracting the results for fixed 5% false positive rate.

Results We identified 15 studies that included 77,644 patients in total. Two studies (36,818 patients) offered universal screening, five studies (11,367 patients) included only low risk pregnancies and eight studies (29,459 patients) performed the test during a clinically indicated ultrasound. Only two studies (11,751 patients) blinded clinicians to the results. The summary positive likelihood ratios (with 95% confidence intervals) were 1.92 (1.42–2.60) for NICU admission, 2.48 (1.60–3.85) for operative delivery for fetal distress and 1.02 (0.76–1.37) for fetal acidosis. The summary negative likelihood ratios were 0.93 (0.89–0.98), 0.89 (0.83–0.96) and 1.00 (0.97–1.03), and the sensitivities for fixed 5% false positive rate were 8.5% (5.4–13.2%), 12.5% (6.6–22.2%) and 5.4% (3.7–7.8%) respectively. The results were similar for other neonatal outcomes.

Conclusion CPR has a poor predictive accuracy for adverse pregnancy outcomes in unselected pregnancies and should not be used alone for universal third-trimester ultrasound screening.

PP.038
Pregnancy outcomes in women with transposition of the great arteries after the arterial switch operation
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Objectives The Arterial Switch has been the operation of choice for transposition of the great arteries since the 1980s. Potential long term sequelae include neo-aortic root dilatation and aortic valve regurgitation. We sought to assess whether changes in blood volume, cardiac output and hormones during pregnancy caused progression of these cardiac lesions.

Methods Women under follow-up until November 2017 at Queen Elizabeth Hospital Birmingham were identified.

Results From 56 women age 17–37 years (mean 23.5 ± 5.1), 14 women with 23 pregnancies were identified. 3 women had 3 pregnancies, 3 had 2 and 8 had a single pregnancy. The average age at first pregnancy was 23 ± 4 years. 51% of deliveries were caesarean sections, 13% recommended for aortic dilatation and 36% for obstetric indications. All babies were live births.

Conclusion These results suggest that pregnancy is well tolerated following the arterial switch operation and does not typically preclude vaginal delivery or result in progression of neo-aortic root dilatation or aortic regurgitation.

PP.036
A case of vasa praevia from diagnosis through to delivery
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Background Vasa praevia is a rare phenomenon with a mean incidence of 0.60 per 1000 pregnancies. Risk factors include conception by assisted reproduction technologies, multiple pregnancies, second trimester placenta praevia, velamentous cord insertion and a bi-lobed or succenturiate lobed placenta. If undiagnosed, there is a high risk of fetal haemorrhage when the membranes rupture, leading to a neonatal outcome.

Case We present the case of a multiparous, 37 year old woman, with a history of previous pre-term vaginal deliveries at 35 and 36 weeks of gestation. The routine second trimester anomaly scan confirmed an anterior placenta praevia but also a posterior succenturiate lobe. The umbilical cord was implanted within the membranes in between the placental lobes directly above the internal os of the cervix. The type two vasa praevia was confirmed by the fetal medicine team and admission to the antenatal ward from 32 weeks recommended. The patient received a course of steroids and was delivered by elective caesarean section at 34 weeks of gestation. The baby was delivered en caul and the vasa praevia diagnosis confirmed.

Conclusion Failure to detect a vasa praevia antenatally puts the fetus at a high level of risk. A small quantity of bleeding from fetal vessels can have significant implications given the fetus’ relatively low blood volume. In this case, there was high clinical suspicion once the posterior succenturiate lobe was identified in addition to the anterior low placenta.
PP.039
The vaginal microbiota differs between women who deliver preterm relative to those who deliver full-term
Crosby, D1; Feehily, C2,3; Cabrera-Rubio, R2,3; Ross, RP3; Cotter, P2,3; Higgins, S1; McAuliffe, F1
1UCD Obstetrics and Gynaecology, School of Medicine and Medical Science, University College Dublin National Maternity Hospital, Dublin 2, Ireland; 2Teagasc, Moorepark Food Research Centre, Fermoy, Co. Cork, Ireland; 3APC Microbiome Institute, University College Cork, Cork, Ireland

Objective Perturbations in the vaginal microbiota have been associated with preterm birth (PTB). The objective of this prospective study was to examine the vaginal microbiota using 16S amplicon sequencing to determine its association with PTB.

Study Design We prospectively recruited pregnant women at risk of PTB from the preterm surveillance clinic. Women who had had a previous full term vaginal birth (FTB) and deemed not at risk of preterm birth were recruited as controls. Vaginal swabs were taken from 10–36 weeks of gestation.

Methods Using 16S amplicon sequencing, we compared the vaginal microbial composition between women who delivered preterm to those who delivered at full term to determine any underlying microbial association with PTB.

Results Three patient groups were compared. There were 70 swabs taken from 37 women at risk of preterm labour longitudinally between 10 and 36 weeks of gestation. Of the 37 women at risk, 8 women subsequently delivered preterm. There were 13 swabs collected from 11 women who had had a previous FTB. L. crispatus (P = 0.03) and L. reuteri (P = 0.04) were significantly reduced in the preterm birth group. Aldercreutzia equolifaciens was associated with preterm birth (P = 0.004). There was no significant difference in microbial diversity across groups or a distinct BV associated community present in the preterm group.

Conclusion L. crispatus is a key indicator of a healthy vaginal microbiota which was not associated with PTB. This holds potential for preventive interventions. Further studies are required to delineate the role of vaginal microbiota in the aetiology of PTB.

PP.040
The test accuracy of antenatal ultrasound definitions of fetal macrosomia to predict birth injury. A systematic review and meta-analysis
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Objectives Fetal macrosomia is associated with an increased risk of adverse outcomes. Many ultrasound measures exist to define and predict macrosomia, with a lack of consensus regarding which predict adverse outcomes. We evaluated the diagnostic test accuracy of ultrasound definitions of fetal macrosomia for the prediction of shoulder dystocia (SD) and brachial plexus injury (BPI).

Design A systematic review and meta-analysis in accordance with PRISMA, registered with PROSPERO.

Methods Search of MEDLINE, EMBASE, PubMed, Cochrane Library and Web of Science (inception – July 2016). Cohort and diagnostic accuracy studies of women with a singleton pregnancy, third-trimester imaging to predict macrosomia (e.g. AC>90th centile) and outcomes recorded. Two reviewers screened studies, assessed methodological quality and performed data extraction to synthesise odds ratios (OR) and confidence intervals (95%CI) using a bivariate random-effects meta-analysis model.

Results Nineteen observational studies were included (11447 patients). For BPI, the only significant positive association was found for Abdominal Circumference (AC) - Head Circumference (HC) >50 mm (OR 7.2, 95%CI 1.8–29.0). Meta-analysis revealed SD was predicted by Abdominal Diameter (AD) - Biparietal Diameter (BPD) ≥2.6 cm (OR 5.27, 95% CI 2.83–9.77) and AC>90th centile (OR 2.80, 95%CI 1.19–6.57) but not Estimated Fetal Weight (EFW) > 4000 g (OR 1.97 95%CI 4.28 and 0.90).

Conclusion Observational data suggests BPI may be predicted by AC-HC>50 mm. SD appears to be predicted by AD-BPD≥2.6 cm and AC-90th centile but not by EFW. There is need for RCT to further evaluate these associations.

PP.041
Using pictorial emotions (emojies) to measure workplace culture
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Introduction Workplace culture is the sum of behaviours, attitudes and norms in everything we do within the organisation. A positive workplace culture is an important factor influencing the quality of clinical and organisational outputs and outcomes. A positive culture can also improve morale, communication, performance, staff wellbeing and resilience. A previous trust-wide exercise of online questionnaire had poor staff engagement for measuring the workplace culture.

Objective The objective was to identify a way of effectively engaging the staff to measure the workplace culture.

Methods A group of clinical staff identified emojis from the smartphone messaging system as a universal language to express thoughts. Eight sets of emojis (happy, frustrated, valued, anxious, excited, angry, content and disinterested) were used and explanations were sought for reasons that generated those emotions at workplace. We conducted these drop-in workshops over a week.

Result There were a total of 152 responses. This was a 6-fold increased response compared to previous online questionnaire. Their role in helping patients, effective team-working and being appreciated for what they do made the staff feel happy and valued. Whereas, rudeness, being talked down to, not being listened to, sense of inequality and feeling undervalued led to anger and frustration.
Conclusion Using emojis improved staff engagement and allowed them to express their thoughts and attitudes towards their workplace. This may reflect the familiarity and simplicity of the emojis as well as a familiar team conducting the workshops. Next we aim to roll out these workshops across the trust to assess reproducibility.

PP.042
Celebrating human factors week: Improving staff engagement and awareness in a tertiary maternity unit
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Introduction Human factors concepts underpin the integrated, evidenced and coherent approach to patient safety, quality improvement and clinical excellence. Therefore understanding and applying human factors is key to improving quality, safety and satisfaction of staff and patients.

Objective To assess the acceptability of human factors training in the form of drop-in workshops amongst all staff groups at the maternity unit at University hospitals Bristol NHS trust.

Methods A group of clinical staff conducted a week of human factors training in the form of drop-in workshops. A different set of human factor themes were addressed daily with interactive workshops. Feedback was anonymous and was obtained from participants before leaving; regarding whether they found it useful, how it will change their attitude at work and suggestions for improvement of training.

Results A total of 169 staff members participated over the five days, with excellent support from a variety of staff groups. We received 43 evaluation forms. All of the respondents found the workshop helpful. Comments regarding change in attitude at work included ‘More reflection of how to work within a team’, ‘Time to show appreciation of my colleagues’, ‘Look at the whole picture’, ‘Be aware of others who are stressed’ and ‘Respect and listen to each other’. The participants found the workshops for human factors training ‘interactive’, ‘encouraging’, ‘informative’, ‘friendly’, ‘enjoyable’ and ‘useful’.

Conclusion The workshops proved to be successful in achieving staff engagement and the feedback was overwhelmingly positive, offering a unique opportunity to support cultural change and empower the staff.

PP.044
A 5 year retrospective analysis of stillbirths at a large teaching hospital 2012–2016 – are we doing enough for at risk groups?
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Introduction In the United Kingdom stillbirths fell from 4.20 to 3.37 per 1000 births from 2013 to 2015.

Methods We conducted a systematic evaluation of all stillbirths (intrauterine death over 24 weeks of gestation) over a five year period presenting to a large central London teaching hospital between January 2012–December 2016.

Results In the 5 year period there were 45 stillbirths, equal to 2.95/1000 births, below the national average. We compared our stillbirth population with our booking population over the same time-period. In the still birth population there was an excess of nulliparous women (47% versus 34%); and women age 21–30 years (53 versus 43%). In keeping with national data we also found that non-white ethnicity was a risk factor (72 versus 51%). This was particularly marked in the South Asian population (13% versus 7%). Our stillbirth population also had a higher proportion of women who did not speak English as a first language. 2% of women experiencing stillbirth were drinking alcohol at booking, in keeping with national data,
although the rate of substance abuse in our stillbirth population was lower. We also found a lower rate of smoking locally (11%) than nationally (19%).

**Conclusion** Strategies nationally to reduce stillbirth such as the ‘Saving Babies Lives’ care bundle are honourable, but should we be moving towards increased screening of those with known risk factors?

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**PP.045**

**The Perinatal Mortality Review Tool implementation support – ‘review once, review well’**

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The Perinatal Mortality Review Tool (PMRT) is a national standardised review tool to support high quality local reviews of stillbirths and neonatal deaths. The PMRT is designed to facilitate robust, systematic, multidisciplinary reviews with parental involvement and come to a clear understanding of why each baby died and whether with different actions the death of their baby might have been prevented.

The implementation support available via the PMRT website (and outlined in this poster) aims to assist units in developing and improving their perinatal review process. This includes: an outline of the key steps in setting up a review process, the team who should be involved and terms of reference. The process of involving external reviewers is discussed with examples of how this can be achieved in different units. Information on how to use the tool, common questions and the use of ‘tool tips’ which summarise the national guidance through the process are discussed. Working with Sands information on how to approach and incorporate parents’ perspectives of their care in the review process is outlined. A series of presentations and podcasts outline the process of root cause analysis, helping units to identify system errors and to develop strong action plans that result in organisational learning with examples. The tool development is an iterative process and we welcome feedback on how it can be improved to help units deliver high quality reviews to better understand why babies die and how future deaths can be prevented.

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**PP.046**

**A five year review of fatal fetal anomalies in a large Irish tertiary maternity hospital**

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**Introduction** 141 Irish women sought a termination of pregnancy (TOP) in England for a major fetal anomaly in 2016 (from NHS data). There remains relatively little data on TOP for fatal fetal anomaly (FFA) in the Irish population. We aimed to identify the outcome of each pregnancy that received an antenatal diagnosis of FFA, looking specifically at those undergoing TOP.

**Methods** This was a retrospective five-year review from 2012–2016. Women with a known fatal anomaly diagnosed through radiological imaging, non-invasive and invasive prenatal testing were identified from referrals to the fetal medicine department in our unit. The outcome of each pregnancy was then analysed.

**Results** 39 755 women delivered in CUMH from 2012–2016. 179 women received an antenatal diagnosis of FFA. The median gestational age at diagnosis was 18 weeks (range 11 to 36 weeks of gestation). The two largest subgroups of FFA diagnosed were cranial abnormalities (n = 47) and aneuploidy (n = 44). Overall, 49 women underwent TOP for fatal anomalies, or 10 women per year, with procedures carried out in other jurisdictions. Of the remaining pregnancies, there were 49 stillbirths, 31 second trimester miscarriages and 47 neonatal deaths, representing 27%, 17% and 26% of the total respectively.

**Conclusion** There are significant numbers of women who receive an antenatal diagnosis of FFA in our unit each year. Some women will seek elective TOP in other jurisdictions based on prenatal diagnosis, at substantial financial and emotional cost. This review will help to guide bereavement standards and raise awareness of this population.

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**PP.047**

**A review of the management of secondary postpartum haemorrhage in a tertiary maternity hospital**

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Secondary postpartum haemorrhage (PPH) is abnormal vaginal bleeding occurring 24 hours to six weeks postnatally. Aetiology may be infectious, often assumed secondary to retained products of conception (RPOC). Optimal management is unclear in the literature. Commonly ultrasound is used to identify RPOC, despite poor specificity and low histological confirmation (32–37%), often resulting in further medical or surgical intervention. Postnatal ERPC is associated with significant intra-operative risk.
Postnatal presentations to Cork University Maternity Hospital from May to December 2016 were reviewed for presentations of heavy or malodorous vaginal bleeding. Demographics, investigations and management were recorded.

There were 4990 deliveries during this period, 105 (2.1%) presented postnatally with PPH. Rates of secondary PPH were similar regardless of mode of delivery; 46/2598 (1.8%) SVD, 19/835 (2.3%) instrumental delivery and 38/1589 (2.4%) cesarean section.

PP.048
Early screening for gestational diabetes in high-risk women is associated with improved neonatal and maternal outcomes
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Screening for gestational diabetes (GDM) usually occurs between 24–28 weeks of gestation, although recent studies show changes in insulin sensitivity and growth trajectories associated with GDM at earlier stages of pregnancy. Previously, NHS Lothian employed a universal GDM screening protocol with majority of diagnostic tests after 24 weeks. Screening was changed in August 2016 to universal GDM screening protocol with majority of diagnostic tests after 24 weeks. Screening was changed in August 2016 to earlier diagnostic testing for high-risk women at 20-24 weeks of gestation, although recent studies show changes in insulin sensitivity and growth trajectories associated with GDM at earlier stages of pregnancy. Previously, NHS Lothian employed a universal GDM screening protocol with majority of diagnostic tests after 24 weeks. Screening was changed in August 2016 to universal GDM screening protocol with majority of diagnostic tests after 24 weeks. Screening was changed in August 2016 to universal GDM screening protocol with majority of diagnostic tests after 24 weeks. Screening was changed in August 2016 to universal GDM screening protocol with majority of diagnostic tests after 24 weeks. Screening was changed in August 2016 to universal GDM screening protocol with majority of diagnostic tests after 24 weeks. Screening was changed in August 2016 to universal GDM screening protocol with majority of diagnostic tests after 24 weeks. Screening was changed in August 2016 to earlier diagnostic testing for high-risk women at 20-24 weeks of gestation. We tested the hypothesis that earlier screening of high-risk women improves maternal and neonatal outcomes. This could be mediated by increased duration of lifestyle interventions and interactions with healthcare professionals.

Results
The introduction of early screening for high-risk women doubled the proportion of women diagnosed with GDM before 24 weeks (77 (42.8%) versus 74 (21.1%), P < 0.001). This led to longer duration of diet therapy (59.3 (56.6) versus 44.1 (37.5), P < 0.05), earlier initiation of metformin (187.9 (52.8) versus 206.8 (44.1) days of gestation, P < 0.05), and no change in insulin duration. The protocol change reduced primary adverse outcomes (composite of emergency caesarean section, clinical neonatal hypoglycaemia and macrosomia, 30.6% versus 41.7%, adjusted P < 0.05) and maternal complications (51.7% versus 66.1%, adjusted P < 0.05).

Discussion
We propose that a structured approach for management of preterm labour using the acronym MAST be MaD (Magnesium, Antibiotics, Steroids, Tocolysis before considering Monitoring and Delivery) could lead to improved outcomes.
PP.050
Extreme preterm caesarean sections – a retrospective analysis of maternal and neonatal outcomes and an introduction to the ‘PREM CAESAR’ trial
Miti, C; Woodman, J
Walghgrave Hospital, University Hospital Coventry & Warwickshire, Coventry, UK

Introduction Prematurity is the leading cause of neonatal death with costs stretching from initial hospitalisation to lifetime disabilities. The optimal mode of delivery for preterm babies both cephalic and breech is controversial.

Objectives To evaluate the maternal indications, morbidity and neonatal survival and morbidity in extreme preterm caesarean deliveries occurring in our tertiary unit.

Design Retrospective Cohort Analysis.

Methods Data from maternal and neonatal discharge summaries, evolution records and main hospital records was collected from 1/01/2016 to 1/01/2017 on maternities and singleton neonatal births occurring after caesarean deliveries performed between 23 + 5 to 26 + 5 weeks of gestation.

Results 14 singletons were delivered at a gestation ≤ 26 + 5/40 during this period giving an extreme preterm CS rate of 0.87%. The overall CS rate for this period was 24.68%. 43% were delivered by classical uterine incision. Rates were 0.07% for stillbirth and 14% for early neonatal deaths. Birthweights ranged from 400 g to 1005 g. 79% babies received corticosteroids comparable to the 83% in ‘EPICURE’. Only 7% babies received neuroprotective magnesium sulphate. Cephalic presentation was most frequent. Neonatal morbidity included retinopathy of prematurity and chronic lung disease on long term oxygen therapy. Maternal complications included sepsis and vessel injury.

Conclusion Survival observed was encouraging within the limitation of the small numbers and the resulting neonatal morbidity was as that reported in EPICURE. As more babies are surviving extreme pre-term gestations, we are extending this study to a larger prospective trial that will evaluate outcomes and advise new thresholds for intervention and delivery mode.

PP.052
Iron-deficiency, anaemia, and pregnancy outcomes in a malaria-endemic region of Papua New Guinea – differential effects on birthweight
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Objectives To assess the prevalence of iron deficiency (ID) in pregnancy, factors associated with ID, and the relationship of ID and anaemia with birthweight, in a malaria-endemic area of Papua New Guinea (PNG).

Methods Using enzyme-linked immunosorbent assays we determined ferritin levels in stored blood samples collected at antenatal booking (≤26 weeks) from 1921 women enrolled in a clinical trial of intermittent preventive treatment of malaria in PNG. Factors associated with ID, and associations between ID with anaemia and birthweight were examined using standard statistical methods. ID was defined as a ferritin <30 μg/l and were adjusted for inflammation (C-reactive protein, α-1-acid glycoprotein).

Results At first antenatal visit, 69.0% of women had ID, 82.3% were anaemic (haemoglobin [Hb] <110 g/L), and 58.2% had ID anaemia (Hb <110 g/L, low ferritin). Ferritin correlated positively with Hb (P < 0.001) and mid-upper arm circumference (P = 0.003). Betel nut use (P = 0.015), smoking (P = 0.007) and multigravidity associated with lower ferritin levels, and malaria parasitaemia with higher levels (P < 0.001). Amongst women with singleton live births (97.7%) ID demonstrated a tendency for increased mean birthweight (43.7 g, P = 0.065), with such effects being most pronounced amongst primi- and secundigravidae (62.3 g, P = 0.030). Anaemic women with normal ferritin, but not women with IDA, had reduced mean birthweights (~52.2, P = 0.044).

Conclusion In PNG ID is associated with increased birthweights in primi- and secundigravidae, which may relate to possible protective effects against malaria. Causes of anaemia other than ID need further exploration.

PP.053
Caesarean section in the second stage of labour does not increase the risk of preterm delivery in a subsequent pregnancy: A retrospective cohort study
Ewington, L; Quenby, S
Warwick Medical School, Coventry, UK

Objectives Extension of the uterine incision is a common complication of full dilatation caesarean section. If it extends to the cervix, this could alter its structural integrity leading to cervical incompetence and an increased risk of preterm delivery in a subsequent pregnancy. The aim of this study was to determine if caesarean section at full dilatation increased the risk of preterm birth in a subsequent pregnancy.

Methods A retrospective cohort study encompassing 1559 women was undertaken. The 3 exposure groups were 0–5 cm, 6–9 cm and 10 cm dilated. Odds ratios were calculated for variables known to increase the risk of preterm birth and incorporated into a logistic regression model.

Results Caesarean section at full dilatation did not increase the risk of spontaneous preterm delivery in a subsequent pregnancy OR 1.49 (95% CI: 0.80 – 2.72) and adjusted OR 1.85 (P = 0.09). Increasing cervical dilatation did not increase the risk of spontaneous preterm birth. Full dilatation caesarean didn’t increase the risk of preterm delivery <28 (OR 1.44, 95% CI: 0.25–7.06) and <32 weeks (OR 1.54, 95% CI 0.55–4.40). The variables were
PP.054
The diagnosis and management of a rare genetic disorder in a District General Hospital – a case report of Saethre-Chotzen syndrome
Choo, BL; Chan, WY; Duthie, SJ
Blackpool Teaching Hospitals, Blackpool, UK

Objectives Genetic disorders in newborns are often overlooked due to the diversity of pathologies; perinatal investigations carry its own risks, requiring thorough counselling with the parents and could lead to difficult dilemmas both clinically and morally. Saethre-Chotzen syndrome (SCS) is a rare congenital disorder that is associated with craniosynostosis, premature closure of coronal suture that gives rise to the characteristic abnormal head shape of the fetus. It is also associated with hypertelorism and syndactyly. It is caused by a mutation in the TWIST gene on chromosome 7p21 with a prevalence of 1 in 50000.

Introduction

Saethre-Chotzen syndrome is a rare congenital disorder that could lead to difficult dilemmas both clinically and morally. Coordinated perinatal care was provided locally and provided, including geneticists, neonatologists, and fetal medicine specialists. Coordination of care by the district general hospital allowed for more localised care which increased patient satisfaction.

PP.055
Diabetes and pregnancy outcome: A population based retrospective study
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Introduction

Approximately 700 000 women give birth in England and Wales each year, and up to 5% of them have either pre-existing diabetes or gestational diabetes mellitus (GDM).

Objectives To check that in both pre-existing and GDM, women are receiving regular antenatal care with serial growth scans, having appropriate timing and mode of delivery and to identify whether baby needing special care baby unit (SCBU) admission or not.

Design A population based retrospective study was conducted in a district general hospital over a time period of 1 year (March 2016 to February 2017).

Methods Women were identified from the combined antenatal clinic (joint diabetes clinic) database and their pregnancy outcome noted from the local obstetric electronic system. Results analysed using simple statistical methods.

Results 240 women were identified, of which 46 had pre-existing diabetes (types 1 and 2 together) and 194 had gestational diabetes. 194 had gestational diabetes. For pre-existing diabetes having regular ANC care, 4 weekly growth scans noted in 94%, whereas in GDM it was 77.2%. In pre-existing diabetes, induction of labour (IOL) in 30.4% of which 85.7% were > = 37/40, whereas in GDM IOL in 40.7% of which 88.6% were > = 37/40.

In pre-existing diabetes 44.5% had caesarean section (elective and emergency), compared to 48% in GDM. SCBU admission noted in 44.5% of pre-existing DM and 26% of GDM.

Conclusion Pregnancy with pre-existing or gestational diabetes can have a positive outcome for the mother and baby, provided it is managed in an effective way and a proper care plan is in place.

PP.056
Incidence and detection of small for gestational age babies in Scotland: Can we improve perinatal outcomes?
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Introduction Small for Gestational Age (SGA) babies are at increased risk of adverse perinatal outcomes but detecting these babies before delivery is challenging.

Objectives To determine the Scottish incidence of SGA deliveries, the antenatal detection rate and the potential to improve perinatal outcomes by improving SGA detection.

Design Retrospective population cohort study.

Methods Population: Singleton deliveries in Scotland, Dec 2014–Feb 2015. Cohort: SGA babies (<10th centile on UK-WHO1990 birthweight charts) as identified by NHS Information Services Division. Case note review was conducted in the delivering maternity unit. Data was analysed centrally.

Results The incidence of SGA was 5.6% (682/12218 singleton births). Perinatal mortality was higher in the SGA than the non-SGA group (2.1% [14/682] versus 0.45% [52/11451]; P < 0.0001). Overall 27.3% (186/682) of SGA cases were identified antenatally. Perinatal mortality was higher in the detected than the non-detected group (5.38% [10/186] versus 0.85% [4/470]; P = 0.0009). Detection rates varied widely between the 15 units, from 0–60%. The 3 units using the GROW customised package found to increase the risk of preterm delivery in a subsequent pregnancy were EBL <500 ml at index caesarean section (OR 1.85, P = 0.038), gestation index delivery 37–38 weeks (OR 2.51, P = 0.004) and inter-pregnancy <1 year (OR 14.55, P < 0.001).

Conclusion Full dilatation section doesn’t significantly increase the risk of preterm delivery in a subsequent pregnancy. Short inter-pregnancy does. This is important information to convey to women post caesarean section.

PP.054
The diagnosis and management of a rare genetic disorder in a District General Hospital – a case report of Saethre-Chotzen syndrome
Choo, BL; Chan, WY; Duthie, SJ
Blackpool Teaching Hospitals, Blackpool, UK

Objectives Genetic disorders in newborns are often overlooked due to the diversity of pathologies; perinatal investigations carry its own risks, requiring thorough counselling with the parents and could lead to difficult dilemmas both clinically and morally. Saethre-Chotzen syndrome (SCS) is a rare congenital disorder that is associated with craniosynostosis, premature closure of coronal suture that gives rise to the characteristic abnormal head shape of the fetus. It is also associated with hypertelorism and syndactyly. It is caused by a mutation in the TWIST gene on chromosome 7p21 with a prevalence of 1 in 50000.

Introduction

We report the patient journey of a 38 years old multiparous woman. She was referred to consultant led care at 18 weeks of gestation after an abnormal anomaly scan. She was then referred to the tertiary service; amniocentesis was performed and genetic analysis confirmed the diagnosis of SCS. A thorough package of care via a multiple disciplinary team of health professionals was provided, including geneticists, neonatologists, and fetal medicine specialists. Coordinated perinatal care was provided locally and she subsequently had an elective caesarean section at 39 weeks of gestation in a district general hospital.

Methods

This case report depicts the patient journey that details the antenatal and postnatal management with a confirmed gestation in a district general hospital.

Conclusion

Full dilatation section doesn’t significantly increase the risk of preterm delivery in a subsequent pregnancy. Short inter-pregnancy does. This is important information to convey to women post caesarean section.
had significantly better detection rates than those 12 units using Chitty charts ($49.2\%$ versus $25.1\%, P = 0.0001$).

**Conclusion** We have shown that SGA pregnancies are high risk but the potential to improve outcomes by improving the antenatal detection of SGA pregnancies may be limited. In this study only $4/14 (28.6\%)$ stillbirths were not detected prior to delivery and perinatal mortality was higher in the SGA detected group. Additionally, detection rates varied widely between units, suggesting a need to standardise care across Scotland.

**PP.057**

**Antenatal serum fructosamine does not predict neonatal morbidity or macrosomia in women with gestational diabetes mellitus**

**Cook, J; Reilly, S; Kojeku, A; Parisaei, M**

Homerton University Hospital, London, UK

**Objectives** Fructosamine is a glycated protein which indicates average serum glucose levels during the preceding three weeks. Fructosamine can be useful in evaluating glucose homeostasis in women with gestational diabetes mellitus (GDM) because, unlike HbA1c, it is unaffected by red blood cell disorders and renal disease, and can report rapid changes in glucose handling. We sought to assess if antenatal serum fructosamine predicts neonatal morbidity or macrosomia.

**Design** We performed a retrospective single-centre study of serum third trimester fructosamine levels in all women with singleton pregnancies diagnosed with GDM November 2015–July 2016.

**Methods** We identified 135 women, 28 of whom we excluded due to incomplete data. The primary outcome was a composite neonatal morbidity score of $\geq 1$ of: admission to the newborn unit, Apgar $< 7$ at 5 minutes, umbilical artery pH $< 7.10$, shoulder dystocia or perinatal death. Macrosomia $\geq 4000$ g was a secondary outcome. Binomial logistic regression modelling was used to assess the relationship between serum fructosamine and neonatal morbidity and macrosomia.

**Results** 13(12%) cases fulfilled the criteria for neonatal morbidity and 8(8%) babies were born macrosomic. The median serum fructosamine was 352 $\mu$mol/L (range 201–442 $\mu$mol/L). Serum fructosamine was not associated with composite neonatal morbidity ($P = 0.75$). There was no relationship with macrosomia ($P = 0.5$).

**Conclusion** Clinicians were not blinded to serum fructosamine levels and will have acted on the results by commencing or inducing delivery. Fructosamine may have a relationship with neonatal morbidity if measured independently of obstetric management.

**PP.059**

**Supporting staff in striving for safety in maternity – learning from incidents**

**Bahl, R; Tomlinson, A; Taylor, KM; Sheldon, S-J; Basude, S**

University Hospitals Bristol NHS Foundation Trust, Bristol, UK

**Introduction** Human factors and staff engagement to promote positive safety culture is increasingly being recognised as a valuable component of reducing perinatal morbidity. It is important that an organisation is open and shares learning from incidents leading to or near misses in maternity services. Objective of this project was to assess how supported the staff felt when involved in an incident and the factors leading to this perception.

**Methods** Staff were invited to rate their perceived level of support when they had been involved in an incident and to reflect on the factors that led them to feel supported or unsupported. This was a one day section of a week-long initiative aimed at raising awareness of human factors. All healthcare professionals involved in maternity care within a University teaching hospital maternity unit were invited to participate voluntarily.

**Results** Twenty-four participants rated their support with 16 of the 24 participants felt supported and 8 felt that they did not have adequate support. The factors that contributed to feeling supported included having individual timely debrief, support to reflect and undertake further training if needed. Perception of blame culture and gossip led to feeling unsupported. Immediate line manager’s attitude was important as a supportive manager made the staff experience better and conversely poor relationship with manager led to feeling unsupported.

**Conclusion** We have identified factors that impact on staff attitude towards safety culture related to incidents. We propose using appreciative inquiry technique to identify behaviours that lead to these factors.

**PP.060**

**A 10 year retrospective cohort study: Pregnancy and neonatal outcomes in women with Sickle Cell disease at an East London Teaching Hospital**

**Sivarajah, K; Akhter, F; Barroso, F**

Royal London Hospital, Barts health NHS Trust, London, UK

**Objectives** To evaluate the pregnancy and neonatal outcomes of women with sickle cell disease at our trust over a 10 year period.

**Design** A retrospective cohort study of women with sickle cell disease, who booked their antenatal care at our trust in the study period of 10 years.

**Methods** Pregnant women with Sickle Cell disease were identified from a Trust haematology database, from January 2000 to January 2010. The total number of cases were 44. CRS birth summaries were used to find the gestation at delivery, mode of delivery, obstetric complications: PET, PH, VTE, neonatal Apgars, admission to NICU.
Results Of the 44 patients, 24 were delivered at term (54%). 7 patients were delivered preterm (16%). The indications for preterm delivery is currently being collated. 3 patients had a TOP (7%). We report 1 stillbirth (2%). The incidence of PTE in this cohort was 34%, PIH- 15% and VTE- 0%. Neonatal Apgars have been summarised in a table, as expected lower in the preterm deliveries. Majority of the neonates responded well to initial resuscitation (75%) with Apgars increasing to >8 by 10 minutes. There were no unexpected NICU admissions.

Conclusion The obstetric and short term neonatal outcomes in women with sickle cell disease are very good at our trust. They are managed appropriately antenatally in a joint haematology-obstetric clinic. A systematic review of pregnancy outcomes in sickle cell disease can be conducted, and used to compare the trust’s performance against a national/international benchmark.

PP.061
Cervical cerclage insertion at a regional centre: a retrospective review
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1Medical School, University College Cork, Cork, Ireland; 2Cork University Maternity Hospital, Cork, Ireland; 3Department of Obstetrics and Gynaecology, Cork University Maternity Hospital, Cork, Ireland

Objectives While it remains a common prophylactic intervention to prevent recurrent pregnancy loss in women with cervical incompetence, the use of cerclage is controversial due to the absence of clear evidence of benefit on pregnancy outcomes. This study aims to determine the incidence and the clinical indications for cerclage insertion at Cork University Maternity Hospital (CUMH) and to compare pregnancy outcomes in the cerclage cohort versus national data.

Methods All cases of cerclage insertion over 4 years, from Jan 2013 to Dec 2016, were identified through CUMH theatre books (N = 85). Clinical indications and pregnancy outcome data pertaining to the relevant group were also collected and analysed using statistical software.

Results Of 32 152 pregnancies seen in CUMH in this timeframe, cerclages were implemented in 85; resulting in an incidence of 2.64 per 1000 pregnancies. The indications for insertion were history indicated alone (45.9%), ultrasound indicated alone (11.76%) with 32.94% having no recorded indication. Neonatal birthweights and gestational ages at delivery were significantly lower in the cerclage cohort when compared to the national average (P < 0.01) however 69.7% of deliveries occurred after to 37 weeks of gestation. There is also a significant correlation between gestational age at delivery, birthweight and number of previous miscarriages (P = 0.01) in this vulnerable population.

Conclusion Post cerclage insertion, there remained an increased risk of premature delivery and perinatal mortality in this cohort compared to the national average. Clinical indications appear to vary widely in this unit and a local guideline for cervical cerclage insertion should be considered.

PP.063
Analysis of newspaper coverage of obstetric care – A mixed methods study
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Objectives News media play a central role as an information source regarding health care and medical therapies. There has been increasing interest in healthcare with a rise in media coverage particularly of obstetric and maternity events. General perception anecdotally is that coverage largely focuses on adverse events and the majority are of negative viewpoint. Aim of the study was to evaluate content of lay press reporting/coverage of maternity/obstetric care (women’s health) between Ireland and the UK.

Design A prospective qualitative study.

Methods The highest circulation broadsheet and tabloid were identified for each jurisdiction and sampled for week one of the month (March–June). The number of womens health articles were quantified, content analysis performed and thematic analysis until saturation. Stories were categorised positive, negative or neutral.

Results Ireland – highest circulating paper = The Independent, tabloid = The Star. UK – highest circulating broadsheet = The Independent, tabloid = The Sun.

Over 250 articles were published during study period covering women’s health or issues. Articles were more likely to be neutral/fact based or negative than positive. The majority of positive UK tabloid coverage related to celebrity pregnancy. Health related coverage was also more likely to be sensationalist with research findings overstated. Overall there was more coverage of stories relating to maternity in The Sun than in The Guardian but it was largely superficial.

Conclusion News media are an important source of information for prospective patients. The material and manner it is covered have far reaching results both positively and negatively.

PP.064
Subsequent pregnancy outcomes in women with previous placental chronic histiocytic intervillositis (CHI)
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1University of Manchester, Manchester, UK; 2Maternal and fetal health research centre, UoM, MFT, Manchester, UK

Introduction Chronic histiocytic intervillositis (CHI) is a rare placental pathology, describing the presence of inflammatory cells in the intervillous space of the placenta. It is associated with poor outcomes such as miscarriage, stillbirth and fetal growth restriction. A high recurrence rate (66–100%) has been reported. Although aetiology is poorly defined, an immunopathological process has been suggested. Studies report the use of immunosuppressive and thromboprophylactic agents in the management of women with previous CHI.
Objective We therefore aim to report subsequent pregnancy outcomes and placental histology in women receiving these medications through our specialist tertiary clinic.

Design Retrospective study

Methods Cases diagnosed with CHI between 2012 and 2017 were identified and case notes were reviewed.

Results Twelve patients with fourteen subsequent pregnancies were identified. Treatment regimens included a varying combination of low dose aspirin (75 mg), low molecular weight heparin, prednisolone (10–20 mg) and hydroxychloroquine (200–400 mg). The live birth rate increased from 8% (1/12) in the untreated index pregnancies to 86% (12/14) in the treated subsequent pregnancies. Pregnancy loss (including stillbirth and miscarriage) decreased from 75% (9/12) to 7% (1/14) and growth restriction decreased from 75% (9/12) to 21% (3/14) in subsequent pregnancies. Placental histology was available for 8 placentas and the recurrence rate in is 37.5% (3/8).

Conclusion With treatment, a good outcome can be achieved in women with previous placental CHI. However CHI remains to be detected in placentas of treated pregnancies. Therefore, determining the efficacy of the treatment is limited.

PP.066
Pilot study of midwifery Practice in Preterm birth including women’s Experiences (POPPIE): Development and implementation of a pilot randomised controlled trial of midwifery continuity of care and preterm birth for women at higher risk of preterm birth in Lewisham

Sandall, J1; Fernandez-Turienzo, C1; Briley, A1,2; Shennan, A1,2; Bolland, M3; Cross, P4; Mehta, M3; Seed, P5; Bick, D1; Singh, C2; Tribe, R1; Moulla, J3; Healey, A1


Objectives Women at higher risk of preterm birth often suffer from fragmented maternity care. The POPPIE team provides ‘wrap around care’ combining continuity of midwife care throughout pregnancy up to six weeks postpartum, with rapid referral to a specialist obstetric clinic. Objectives include assessment of: trial recruitment, randomisation, data quality, follow-up; and implementation and outcome data.

Methods Two arm non-blinded randomised pilot trial of 350 pregnant women at risk of preterm birth over 12 months. Primary outcome: initiation of interventions related to the prevention and/or management of preterm labour and birth. Secondary outcomes: maternal and neonatal, outcomes, women’s experiences of care, Implementation outcomes: fidelity, staff acceptability, organisational impact, resource use, and mechanisms of effect.

Results We describe logistical issues around developing collaborative complex organisational interventions in the current NHS context, and how we are exploring potential theories of mechanisms of action, and the methodological design measurement issues involved. This includes key factors in the development and implementation of the POPPIE team which ends recruitment in April 2018. Including collaboration by key stakeholders and PPI groups, co-design of model and trial, use of logic model to conceptualise structure, process, outcomes and hypothesised mechanism of effect and discussion of implementation strategies and measures.

Conclusion The implementation of this model of care involves a complex, organisational transformation which requires whole system support, with close alignment between top and frontline leadership. We provide new information on how to assess implementation of a midwifery continuity of care model.
Poster Presentations

PP.068
Optimised placental sampling to best inform adverse pregnancy outcomes

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1UCL Institute for Women’s Health, London, UK; 2UCL Medical School, London, UK; 3Centre for Trophoblast Research, Cambridge University, Cambridge, UK

Introduction Robust sampling protocols should form the foundation of studies investigating placental pathologies. Recent protocols encourage standardised collection of placental samples but acknowledge ‘one size does not fit all’.

Design This study describes a sampling protocol that comprehensively assesses phenotypic, stereological and functional homogeneity across the whole placenta.

Methods Pregnant women were recruited from UCHL. Placentas were trimmed, weighed, photographed and pregnancy outcome data recorded. Sections were fixed in 4% paraformaldehyde (PFA) or formaldehyde for comparison, for 48 hours at 4°C. Samples were subjected to short and long paraffin embedding protocols, H&E staining and microscopy. Placental samples were also extracted for RNA, immediately beside the areas histologically sampled.

Results We studied 11 healthy, one growth restricted and one placenta where lead perfusion and microCT imaging was also performed. Positive markers of good preservation of placental morphology were identified across histological sections including: identifiable fetal vessels and cell types, continuous syncytiotrophoblast membranes, well-circumscribed and retained nuclei, intact stromal architecture, and cell layer adherence. Both formaldehyde and 4% PFA fixation showed good maintenance of placental morphology. The shorter embedding protocol retained good placental architecture for healthy and growth restricted placentas. Significant structural differences were seen in the growth restricted placenta.

Conclusion To investigate placental homogeneity we have developed reverse systematic uniform random (SUR) sampling – a deviation of the recognized SUR sampling method. Furthermore, we propose a ‘fix first, sample later’ approach to best retain placental architecture. This method offers global interrogation without assuming similar placental size, shape or natural pattern variation.

PP.070
Quantitative fetal fibronectin for prediction of spontaneous preterm birth in asymptomatic twin pregnancy

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Objective Quantitative fetal fibronectin (qfFN) is a valuable predictive biomarker in asymptomatic high-risk women, but there is little data available on its value in twins. Twins are a common cause of preterm birth. We compared qfFN measurement from 22 to 27 weeks of gestation for the prediction of spontaneous preterm birth in twin pregnancy.

Design A prospective cohort study.

Methods We studied the accuracy of cervicovaginal fluid qfFN concentrations measured between 2210 and 2716 weeks of gestation in high risk asymptomatic women with twin pregnancies attending Preterm Surveillance Clinic, to predict spontaneous preterm birth before 34 weeks of gestation.

Results Of 130 women, 11.5% delivered spontaneously <30 weeks, and 23.8% delivered <34 weeks of gestation. PPV increased from 3, 7 to 75% with increasing qfFN levels of <10, 100–199, 200 ng/ml or greater respectively for delivery <30 weeks. Corresponding values for delivery <34 weeks were 9, 25 and 88%. Even at 200 ng/ml NPVs were 88% and likelihood ratios were 32. Clinical risk factors did not improve prediction, but cervical length added value when measured at <24 weeks.

Conclusion QfFN can predict preterm birth in both high risk and normal twin pregnancy, with an optimal threshold of 200 ng/ml. Higher PPVs are related to the higher prevalence of preterm birth compared to singletons. Further work needs to establish whether this knowledge can improve management.

PP.071
Raman spectroscopic analysis of cervicovaginal fluid as a predictive tool for spontaneous preterm birth

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Introduction Spontaneous preterm birth (sPTB) remains a major obstetric challenge worldwide which is responsible for over 1 million deaths a year. As current screening techniques have limited predictive value, there is a clear need to develop more accurate non-invasive tools for sPTB. We proposed using Raman Spectroscopy (RS), a technique which is based on inelastic scattering of low-intensity monochromatic light, to assess the cervicovaginal fluid (CVF) in pregnant women for prediction of sPTB.

Methods High vaginal swabs were taken from asymptomatic high risk (AHR) women with previous history of sPTB (n = 10) between 20 and 28 weeks of gestation and from symptomatic (SYM) women (n = 14) between 20 and 36 weeks, and analysed with DXR™ Raman Microscope using PCA-LDA (Unscrambler X, CAMO).

Results Results were then interpreted in the context of the clinical history of the patients, their cervical length by transvaginal ultrasound (TVU CL) and the measurement of fetal fibronectin (fFN).

AHR and SYM women who delivered prematurely (n = 17) had higher fFN values and shorter TVU CL than their term
counterparts. However, none of these differences proved to be statistically significant. RS, on the other hand, was capable of predicting sPTB with a sensitivity of 80% and a specificity of 78% in the AHR group, and a sensitivity of 85.57% and specificity of 80% in the SYM group.

**Conclusion** This pilot study suggests that RS analysis of CVF for prediction of sPTB is not only feasible but also potentially more accurate than current screening techniques.

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**PP.072**

**The impact of low dose aspirin on pre-eclampsia biomarkers and fetal growth in low-risk women: A secondary analysis of the TEST RCT**

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**Objective** Evaluate the impact of low dose aspirin (LDA) on: (i) PAPP-A and PLGF, (ii) albumin creatinine ratio (ACR) and blood pressure, (iii) fetal growth and (iv) placental histopathology.

**Methods** This secondary analysis included data from the primary site of the TEST RCT where 546 low-risk nulliparous women were randomised at 11-weeks to: (i) routine aspirin 75 mg; (ii) no aspirin; and (iii) aspirin based upon the pre-eclampsia Fetal Medicine Foundation screening test. At baseline women underwent assessment of blood pressure, PAPP-A, PLGF and ACR. These were repeated at 20–22 weeks (9–10 weeks post LDA commencement) in addition to ultrasound assessment of fetal growth, repeated again at 32 weeks. Gross and histopathological placental analysis were performed in line with Amsterdam criteria. Aspirin and non-aspirin groups were compared.

**Results** 445 subjects were included (LDA n = 163 no LDA=282). LDA was associated with an increase in abdominal circumference (P = 0.04) and femur length (P = 0.01) at 20–22 weeks (P = 0.04), which was not persistent at 32 weeks (P = 0.60). There was no difference in birthweight 3520.3 g (507.6) versus 3470.7 g (523.0) P = 0.70. Although there was an increased fetal placental weight in the aspirin group (7.5 versus 7.3), this didn’t reach significance. There was no difference between groups in relation to blood pressure, serum and urine biomarkers or placental findings.

**Conclusion** Low dose aspirin appears to promote fetal growth in low-risk nulliparous women between the first and second trimester, which is not evident thereafter. Our study did not demonstrate an impact of aspirin on placental or systemic biomarkers assessed.

**PP.073**

**Therapeutic plasma exchange in the management of intractable intrahepatic cholestasis of pregnancy – effect on pruritogens, itch severity, bile acids and liver function**

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**Objectives** Despite maximal pharmacological therapy, intrahepatic cholestasis of pregnancy (ICP) can result in intractable pruritus and dramatically elevated bile acids and liver enzymes. We aimed to determine whether therapeutic plasma exchange (TPE) improves symptoms, lowers serum biochemical markers and removes pruritogens in very severe ICP.

**Design** Case series of four women with characterisation of bile acids, liver function, itch severity, pruritogens and cytokine profiles from serum and waste plasma.

**Methods** TPE was performed with albumin replacement with 3–10 exchanges per patient. Serial visual analogue scores of pruritus and serum biochemistry analyses were collected. UPLC-MS was used to determine individual serum bile acid and progesterone sulfate concentrations, and enzymatic methods to determine autotaxin activity and inflammatory cytokine profiles. Segmental linear regression was used to determine individual trend lines for pruritus score, total bile acids and liver enzymes; ratio-paired t-tests were used to compare pre- and post-exchange pruritogen and cytokine concentrations.

**Results** Subjective improvements in pruritus were observed by all women, although the duration of improvement was short. Total bile acids and ALT were reduced following TPE. Bile acids, sulfated progesterone metabolites, autotaxin and cytokines are removed by TPE. The bile acid pool altered following TPE, with increased UDCA and other bile acids reduced (P = 0.0329).

**Conclusion** TPE presents an additional treatment option for women with the most severe disease, although effects are short-lasting. The alteration of the bile acid pool and reduction in bile acid levels may be of particular benefit to the fetus.
PP.074
Morbidly Adherent Placenta: A review of associated maternal morbidity over a 10 year period in a tertiary maternity hospital
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Objective Morbidly adherent placenta (MAP) is a condition associated with a high morbidity and mortality. Its incidence continues to rise worldwide in parallel with increasing rates of caesarean section. The objective of this study was to review the number of cases of MAP over a 10 year period and to assess associated maternal morbidity.

Methods Cases of MAP were identified by retrospective review of the annual reports over a 10 year period from 2006–2016. Maternal demographics, antenatal management, surgical approach and maternal morbidity were recorded. Cases were correlated with pathological reports.

Results 30 cases of MAP were identified during the study period, with a rising incidence observed. In parallel, the caesarean section rate in our unit increased from 18.9% in 2006 to 26% in 2016. Ultrasound examination successfully diagnosed 57% (n = 17) of cases antenatally; 9 patients subsequently had an MRI to confirm the diagnosis. There was a significant maternal morbidity associated with the condition, with 87% (n = 26) requiring a peripartum hysterectomy, an average estimated blood loss of 5.5L (range 1–19.5L) and 97% (n = 29) requiring a blood transfusion. Cases were also associated with a high rate of preterm delivery, with 55% of patients delivered prior to 36 weeks, contributing an additional neonatal morbidity.

Conclusion Our study shows the rising incidence of morbidly adherent placenta over a 10 year period and the severe maternal morbidity associated with this condition. It also highlights the need to improve antenatal diagnosis of the condition, as a significant number were missed.

PP.075
Perinatal management and outcomes in super-morbidly obese women with BMI ≥ 50, at the Rosie Hospital, Cambridge, UK
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Introduction Super-morbid obesity, defined as BMI ≥ 50 kg/m² is becoming increasingly prevalent in the UK, and is associated with an increased risk of many perinatal complications. Rates of fetal macrosomia, pre-eclampsia and caesarean section have been shown to be greater than in obese women of lower BMI. This audit assessed whether women with BMI ≥ 50 were correctly managed according to local and national guidelines, and the incidence of perinatal complications.

Methods Data on women with BMI ≥ 50 delivering in the hospital between January 2015–January 2017 was collected using the hospital’s electronic record system, and compared to RCOG and local unit guidelines.

Results 11 patients were identified. 100% received the appropriate booking BMI recording, obstetrics referral and VTE assessment. A 28 week GTT was performed in 8 patients; 3 were found to have gestational diabetes. 10 patients received an antenatal anaesthetic review, and appropriate extra growth scans. All women suffered significant complications, with a high incidence of ante-partum haemorrhage (55%), recurrent episodes of reduced fetal movements (55%), and intrapartum complications (72%). 4 women out of 7 who underwent caesarean section developed wound infections, some requiring further surgery. All pregnancies resulted in live births, though 4 babies were admitted to NICU.

Conclusion Despite good adherence to guidelines, rates of perinatal complications remained higher than national averages, as obesity is the main risk factor. Recommendations focused on pre-pregnancy counselling and weight management, referral to the dietician for regular dietician review and blood sugar monitoring, and post-caesarean wound care.

PP.077
Empowering midwife-led management in a Maternity Day Assessment Unit and reducing the need for doctor reviews: A Quality Improvement Project
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Introduction The Lewisham Maternity Day Assessment Unit is managed primarily by a small midwifery team with obstetric support available. Referrals are accepted from antenatal clinics, community midwives or GPs, plus regular appointments and walk-ins. During busy periods, patients may wait hours for a doctor assessment. We undertook a quality improvement project to encourage more midwife-led care and reduce the need for doctor involvement.

Methods We introduced management flowsheets to aid midwifery triage and prompt management decisions on common presenting complaints. These included: reduced fetal movements, hypertension, itching, rash advice and review following ultrasound scans. We performed an audit reviewing the patients attending over a two week period and compared them to a similar review the previous year.

Results The average number of patients seen in the unit per day was stable at 17. Those needing to be reviewed by a doctor had reduced from 57% to 30%. The average waiting time from arrival to seeing a doctor reduced from 93 to 85 minutes. The percentage of inappropriate doctor referrals had increased from 11% to 25%, but most of these women were inappropriately referred to the unit and should have been managed in the community.

Conclusion The flowsheets have enhanced midwife-led management in the assessment unit and have reduced the number of women requiring a doctor review and therefore improved waiting times. Further to this project we have identified additional areas for improvement, including the development of a patient...
review pathway for both presentation scans and review following departmental ultrasound scans.

**PP.078**

Teenage pregnancy: An experience in a university hospital

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International Planned Parenthood Federation has reported that UK has the highest teenage birth and termination of pregnancy rates in Western Europe. It is however reassuring that the rates have been steadily falling since last few years. Teenage pregnancy has huge implications on both the mental and physical wellbeing of mother and the baby. We present their demographics and our experience of 3 years of managing them in a university hospital. We would share our experience from last 2013–2016.

**Aim**

To audit the management of teenage pregnancy from 2013 to 2016.

**Setting**

A tertiary care University Hospital in South West UK.

**Methods**

Retrospective review of the database.

**Results**

Total number of pregnancies: 171.

- More than 90% compliant with their appointments.
- More than 70% pregnancies were booked from socio economically deprived areas.
- More than 58% smoked some time in their life.
- H/O domestic violence in 18%.
- More than 98% agreed for STI screening, more than 94% tested negative for chlamydia.
- And 100% tested negative for gonorrhoea.
- Only about a third of them attended parentcraft.
- 100% live birth.
- 85% delivered beyond 37 weeks and 94% delivered beyond 34 weeks.
- Small for gestation age neonate (SGA) was 11%.
- About half of them chose to breastfeed.

**Conclusion**

There is a significant association with socio economic background and teenage pregnancy.

Smoking and domestic violence are more prevalent in this cohort SGA rated were comparable to overall population.

They fare well in labour with good record of achieving normal vaginal delivery rates.

**PP.079**

The use of simulation training to improve identification of causes and early management of Massive Obstetric Haemorrhage

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**Objectives**

To assess the prevalence and causes of Massive Obstetric Haemorrhage (MOH) at a central London teaching hospital.

**Methods**

A retrospective audit was carried out of all women delivering in our unit who had a MOH of >1500 ml over a 1 year period (2014) and of all those with a MOH of >4000 ml over a 3 year period (2012–14).

**Results**

Rates of MOH in our unit were found to be decreasing; 2.4% in 2013, falling to 2.0% in 2015, against a backdrop of an increasing number of deliveries.

Of 146 patients with an estimated blood loss (EBL) of >1500 ml in 2014, uterine atony and surgical loss were the commonest causes with an average transfusion rate of 70% in those with an EBL >2000 ml.

Between 2012–14, 21 patients were identified with an EBL of >4000 ml; 47% due to uterine atony, 47% placental site and 6% uterine rupture. 64% of patients went to ITU and a third underwent a hysterectomy.

**Conclusion**

Two interventions at our unit may have aided the decrease in MOH cases and prompt management when MOH does occur; the introduction of remote issue bloods fridges to aid rapid transfusion of bleeding patients as recommended by NICE 2015 Blood Transfusion guidelines; and the ongoing development of dedicated haemorrhage stations within mandatory multidisciplinary simulated obstetric emergency training.

Ongoing work within the maternity education team is focusing around optimising the immediate team response to haemorrhage in order to further reduce the incidence of MOH in our unit.