

PP.01 WITHDRAWN

PP.02 DETERMINANTS OF RECURRENCE RISK OF PRE-ECLAMPSIA IN WOMEN WITH PREVIOUS PRE-ECLAMPSIA: A PROSPECTIVE STUDY

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Background: Factors determining recurrence risk for pre-eclampsia are sparse. The objective of our study was to elucidate demographic and clinical risk factors that affected risk of recurrent pre-eclampsia.

Methods: Indices of maternal and perinatal morbidity and mortality were determined in 541 women recruited into the Vitamins in Pre-eclampsia trial in 25 hospitals in the UK with previous pre-eclampsia, eclampsia or HELLP syndrome (hemolysis, elevated liver enzymes and low platelets) with data prospectively collected and rigorously validated. The main outcome measures were pre-eclampsia, delivery of small for gestational age infant and preterm delivery.

Results: The incidence of pre-eclampsia was 23% (n = 123) with 58% (n = 71) of these delivering preterm (<37 weeks' gestation). Delivering an infant <10th customised birthweight centile complicated 56% (69/123) of those with pre-eclampsia. Using multiple logistic regression, non-white ethnic origin, booking systolic blood pressure >130 mm Hg, previous pre-eclampsia requiring delivery <34 weeks' gestation, co-existent chronic hypertension or chronic renal disease were identified as risk factors for pre-eclampsia in this pregnancy. In those with previous early onset pre-eclampsia (<34 weeks' gestation), 25% (76/304) developed recurrent pre-eclampsia compared to 20% (47/237) of those with previous late-onset pre-eclampsia; 29% (89/304) with previous early onset disease were delivered preterm compared to 16% (37/237) of those with previous late onset pre-eclampsia.

Conclusions: Women with previous pre-eclampsia are at significant risk of adverse maternal and perinatal outcomes; our study highlights demographic and clinical risk factors for recurrent disease. This group warrant a greater level of surveillance and evaluation of predictive strategies for adverse pregnancy outcome.

PP.03 UTERINE ARTERY DOPPLER AND ADVERSE PREGNANCY OUTCOME IN WOMEN WITH EXTREME DOWN'S SYNDROME SERUM MARKERS

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Introduction: Women with extreme Down's syndrome (DS) screening serum markers are at increased risk of adverse pregnancy outcome. We prospectively evaluated second trimester uterine artery (UtA) Doppler in these women to investigate if Doppler can discriminate those at risk of complications.

Methods: Women booked at University College London Hospital with Combined, Quadruple, Triple or Integrated screening testing for DS were offered UtA Doppler examination at 24 weeks if they had one of the following results: PAPP-A ≤ 0.28 MoM (1% of screened population), Inhibin ≥ 3.0 MoM (2%), hCG ≥ 4.0 MoM (2%), AFP ≥ 2.5 MoM (2%), oestriol ≤ 0 MoM5 (1%). Abnormal UtA Doppler was defined as bilateral or unilateral notching or mean Pulsatility Index ≥ 1.45.

Results: In 240 women with complete outcome data, 92 (38.3%) had an adverse outcome such as fetal growth restriction (FGR), preterm delivery <37 weeks of gestation, late miscarriage, stillbirth, placental abruption and gestational hypertension. UtA Doppler was performed in 159 women and was abnormal in 32 (20.0%). Nearly two-thirds of women with abnormal UtA Dopplers had an adverse pregnancy outcome (RR 2.5, 65.6% vs 26.4%, p<0.001). The risk of

FGR defined as the fifth customised centile, in particular was significantly increased (RR 4.0, 43.7% vs 9.4%, p<0.001). Women with normal Doppler still had a 14% risk of adverse pregnancy outcome.

Conclusions: Women with extreme DS serum screening markers and abnormal second trimester UtA Doppler have higher risk of pregnancy complications and FGR in particular. However, a normal UtA Doppler in this group of women does not rule out an adverse pregnancy outcome.

PP.04 UMBILICAL CORD PH IN THE PREDICTION OF NEONATAL AND LONG TERM MORBIDITY: A SYSTEMATIC REVIEW OF THE LITERATURE AND META-ANALYSIS

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Evidence of acidemia in the umbilical cord at birth is one of the criteria used to define an intrapartum hypoxic event to which permanent impairment such as cerebral palsy may be attributed. However, the evidence is conflicting and the criteria are based on consensus rather than a direct association between acidemia and adverse outcome. The objective of our systematic review was to determine the association of umbilical cord pH with subsequent neonatal and long term complications.

We conducted electronic searches across many databases (database inception–August 2008) and checked reference lists. Two reviewers independently selected the articles without language restrictions. Data were extracted on study characteristics, quality and results to construct 2x2 tables. Pooled diagnostic odds ratios (DOR) were used as summary measures of accuracy, results were stratified according to outcome predicted and subgroup analysis by population and test threshold was performed. There were 47 articles that met the selection criteria, 478 032 individuals and 170 2x2 tables. Meta-analysis was performed.

Low arterial cord pH predicted neonatal mortality with DOR 5.83 (95% CI, 3.01 to 11.32) and neonatal morbidity DOR 4.98 (3.33 to 7.43). The best prediction was for neonatal hypoxic ischaemic encephalopathy or seizures DOR 11.11 (95% CI, 5.29 to 23.32). For long term complications arterial pH gave a DOR for cerebral palsy of 2.44 (95% CI, 1.33 to 4.47). We concluded that these data demonstrate an association between low arterial cord pH, neonatal mortality and morbidity and cerebral palsy. However, the results must be interpreted with caution in view of the degree of heterogeneity and varying study quality.

PP.05 A PROSPECTIVE OBSERVATIONAL STUDY OF THE EFFECT OF DYSLIPIDAEMIA ON PREGNANCY OUTCOME IN OBESE WOMEN

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Background: Obesity is an increasingly important risk factor for many pregnancy complications including caesarean section, prolonged labour, prolonged pregnancy and postpartum haemorrhage. We have found that cholesterol reduces *in vitro* spontaneous myometrial contractility and responsiveness to oxytocin by reducing calcium signalling. Thus, we hypothesised that dyslipidaemia in obese pregnant women would be associated with prolonged labour, increased caesarean section/instrumental delivery for failure to progress, prolonged pregnancy and post partum haemorrhage.

Methods: Consecutive women with body mass index >35 who attended a dedicated bariatric antenatal clinic were recruited with

informed consent and had their gestation assessed by booking visit ultrasonography, fasting serum lipids (cholesterol, LDL, HDL, triglycerides, cholesterol/HDL ratio) measured at 28 week gestation and obstetric outcomes were recorded.

Results: Analysis of the first 125 women to deliver found that, dyslipidaemia did not predict, prolonged labour, caesarean section/instrumental delivery for failure to progress or post partum haemorrhage. However, women with cholesterol/HDL ratio in the highest quartile had more pregnancies that were allowed to, go beyond 40 weeks +9 days gestation compared to those in the lowest quartile (53% v 12%, OR, 4.4, CI 1.02 to 19). No women had a spontaneous preterm labour before 34 weeks gestation.

Conclusion: The clinical effect of dyslipidaemia on uterine function was prolongation of pregnancy. Hence cholesterol may facilitate uterine quiescence.

PP.06 WITHDRAWN

PP.07 SHOULD OLDER WOMEN BE OFFERED EARLY INDUCTION OF LABOUR?

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Introduction: Some obstetricians offer older women induction of labour (IOL) at term believing they are at increased risk of intrauterine death (IUD) after 40 weeks' gestation. Is this practice justified?

Confidential Enquiries into Maternal and Child Health (CEMACH) data show that older women have an increased stillbirth rate; there are no data relating to age of women experiencing IUD at term (≥ 37 weeks' gestation)(tIUD), the gestational age at which IOL might reduce the incidence.

Method: Retrospective review of case notes and computer records was performed on all singleton tIUD over 5 years (2003 to 2007) in our hospital.

Results: There were 35 tIUD amongst 16 260 singleton pregnancies delivering ≥ 37 weeks' gestation. Multivariate logistic regression analysis allowing for confounding variables of parity, gestational age, birth weight centile, booking body mass index (BMI), ethnicity, smoking, diabetes, proteinuria and hypertension showed that women over 35 ($p < 0.001$, odds ratio (OR), 4.74; 95% CI, 2.2 to 10.3), Oriental ($p < 0.001$, OR, 16.45; 95% CI, 4.38 to 61.78) and Asian ($p = 0.002$, OR, 4.88 95% CI, 1.76 to 13.52) women and those with babies on the lower birth weight centiles ($p = 0.003$, OR, 0.59 95% CI, 0.41 to 0.84) were at significantly increased risk of tIUD; other confounders were not significant.

Eight of the 12 tIUDs in women ≥ 35 years were ≥ 40 weeks; two of these would not have been prevented by an age-related IOL policy. Routine IOL at 40 weeks of women ≥ 35 years would adversely affected 2173 other women.

Conclusions: In our unique database maternal age, ethnicity and birthweight are important contributing factors to term IUD. Many 40 week inductions would be required to possibly avoid six tIUDs. This is not likely to be cost-effective or acceptable and will increase maternal and neonatal morbidity.

Maternal age-related IOL is not justified.

PP.08 A RETROSPECTIVE COHORT STUDY OF THE NORTHERN REGION PERINATAL MORTALITY SURVEY 1980 TO 2007 OF CAUSES OF INTRA-PARTUM DEATHS, WITH A FOCUS ON VASA PRAEVIA AND CORD COMPRESSION

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Clinical review of perinatal mortality and morbidity is a standard tool used to improve clinical standards and outcomes. When outcomes are unaffected, review of "near misses" is part of risk management. These assessments are not entirely objective because the outcomes are usually known.

The Regional Maternity Survey Office (RMS) records from 1980 to 2007 of all intra-partum deaths in term normal singleton babies were examined. Neonatal deaths classified as intra-partum hypoxia and deaths due to vasa praevia or cord obstruction were also included. 20 records were found to have sufficient detail indicating hypovolaemia to make a judgement on the management of the case and the likely cause of death. Important details included labour and – cardiotocograph (CTG) abnormalities, fetal scalp pH and cord blood pH results, mode of delivery, condition at birth and neonatal resuscitation.

Without knowing the outcome, a panel of expert obstetricians, midwives and paediatricians reviewed the details and were asked to consider the most likely outcome in each case according to (1) normal, (2) minor morbidity, (3) severe morbidity or death. The experts were specifically requested to state if clinical details indicated that vasa-praevia or cord compression could have been significant.

The results show that the poor outcome is often unanticipated in this blinded retrospective clinical review. It showed that the possibility of vasa-praevia or significant nuchal compression is not well-recognised or well-managed in labour and during resuscitation. The obstetric and resuscitation management of suspected vasa-praevia, cord compression and other causes of neonatal hypovolaemia are presented.

PP.09 ADMISSIONS TO A SPECIALIST MATERNAL HIGH DEPENDENCY UNIT

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Background: "Safer Childbirth" recommended all maternity units should have provision for women requiring high dependency care (HDC) but there is a dearth of information about the incidence of admission in the context of modern obstetric practice. We have two designated beds staffed 24/7 by midwives with formal external HDC training supported by a senior midwife dually qualified in critical care.

Methods: Prospective data collection of admissions to a dedicated maternal high dependency unit (HDU) of large free standing tertiary maternity unit with 8000 births annually, over a 41-month period 2005 to 2008 using the Critical Care Minimum Dataset (CCMDS).

Results: 1282 HDU admissions (5% of births). Age 14–47 years. 85% were pregnancy-related conditions the most common being haemorrhage (47%) and hypertensive disorders (35%). The level of dependency was known for 981 admissions, 70% were single organ and 11% more than one organ support as defined by the CCMDS. The remaining 19% fulfilled the Intraoperative Cell Salvage (ICS) definitions. 1.3% of admissions were transferred to ICU (0.9%) or Critical Care Unit (CCU) (0.4%) Average length of stay 1.93 days (1–8). HDU Bed Utility rate was 0.99.

Comments: The published studies are retrospective. This is the first large prospective study of such admissions. The case mix is broadly similar to other studies. It confirms the admission rate of 5% admissions as noted by Saravanakumar *et al* over the recent years, which is higher than the 1% to 2% of other published studies. ICU transfers were lower than expected demonstrating the effectiveness of this model of maternal critical care.

PP.10 PREGNANCY OUTCOME IN SICKLE CELL DISEASE: EXPERIENCE OF TWO TERTIARY CENTRES

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Pregnancy in women with sickle cell disease (SCD) is associated with an increase in medical and obstetric complications. To date, there is no documented UK series to show whether improvements

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have been made compared with historical data. We conducted a retrospective analysis of 122 pregnancies in women with SCD (SS 64, SC 45, S beta thalassaemia 11, SE 1, SD 1) managed at St. Thomas' Hospital and at Hammersmith and Queen Charlotte's and Chelsea Hospitals from 2004 to 2008 to determine whether there has been an improvement in mortality and morbidity in these pregnancies.

Age and gestation at booking were 18 to 43 (mean 29.7) years and 9–36 (mean 17.3) weeks respectively. All patients received low dose aspirin and if there was a personal or family history of thrombosis low molecular weight heparin. The most common obstetric complications were pre-eclampsia (11%), preterm delivery (23%) and post-partum haemorrhage (33%). 31 patients required admission for sickle related complications, the most common being vaso-occlusive crisis. 39 patients received transfusions. Four intra-uterine deaths occurred. There was a high rate of delivery by emergency (39%) or elective (21%) caesarean section. 32% of patients had spontaneous vaginal births. Intra-uterine growth restriction was observed in 20% of singleton pregnancies. Perinatal outcome was overall favourable although three neonates developed transient complications related to maternal opiate exposure. There were no maternal deaths.

Early, aggressive multidisciplinary antenatal care of pregnant woman with SCD has resulted in an improvement of fetal and maternal morbidity and mortality.

PP.11 CONGENITAL ANOMALIES AND SOCIOECONOMIC STATUS: A REGISTER-BASED STUDY

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Background: Socioeconomic status (SES) is linked to a range of adverse pregnancy outcomes. The available evidence for this link with congenital anomalies is very limited and is mostly based on individual level SES. Our study investigated the association between the occurrence of non-chromosomal congenital anomalies and neighbourhood SES.

Methods: Case data for the period 1986 to 2003 were obtained from the Northern Congenital Abnormality Survey (NorCAS), a population-based register of congenital anomalies arising within the population of former Northern health region. Two sub-analyses were performed using the Townsend Deprivation Score (TDS) at Enumeration District level (ED, 1991 census) for the period 1986 to 1996 and the Index of Multiple Deprivation (IMD) at lower layer super output area level (LSOA, 2001 census) for the period 1997 to 2003. Congenital anomaly cases in each sub-analysis period were geocoded according to the maternal postcode at delivery and assigned to the corresponding ED/LSOA. The count of cases separately for anomalies of eight organ systems and 15 most frequent anomaly subtypes were extracted for each ED/LSOA. Poisson and logistic regression models were developed to abstract risk for quartiles of TDS/IMD for each outcome group in each sub-analysis.

Results: There were 6202 EDs and 1869 LSOAs across the study region with average population of 454 and 1513. For most outcome groups, a direct deprivation-congenital anomaly risk in consecutive quartiles of TDS/IMD with a significant increase in the risk of the fourth quartile (most deprived) compared with the first quartile (most affluent).

Conclusion: Occurrence of congenital anomalies is associated with the neighbourhood SES.

PP.12 BODY MASS INDEX OF 23–24.9 INCREASES THE RISK OF ADVERSE OBSTETRIC AND PERINATAL OUTCOMES

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Background: Women with a body mass index (BMI) of 25–30 are at increased risk of obstetric morbidities, including gestational

diabetes, pre-eclampsia and emergency caesarean section, as well as perinatal morbidities, including admission to special care (Sebire *et al*, 2001). The World Health Organization (WHO) has recommended that health outcomes be reported in relation to an additional BMI cut-off of 23 (WHO, 2004).

Aim: To assess selected obstetric and perinatal outcomes for mothers booking with BMI 23–24.9.

Design: Cross-sectional study of 40 372 singleton deliveries at one West London maternity unit between 1995 and 2009.

Methods: Maternal BMI at booking was re-classified into the following ranges: <18.5, 18.5–22.9, 23–24.9, 25–29.9, 30–34.9 and ≥35. Risk of gestational diabetes, emergency caesarean section, admission to special care and birthweight >4 kg were assessed against BMI category in multivariate logistic regression models controlling for confounding variables, including gestation at delivery, maternal age, smoking status, ethnicity, proteinuric pre-eclampsia and vaginal parity. Results are presented as adjusted odds ratios (OR) and 95% confidence intervals (95% CI).

Results: In comparison to women of BMI 18.5–22.9, women of BMI 23–24.9 were at significantly increased risk of gestational diabetes (OR, 1.46 95% CI, 1.11 to 1.91), emergency caesarean section (OR, 1.35 95% CI, 1.20 to 1.52), infant birthweight >4 kg (OR, 1.36 95% CI 1.21 to 1.53) and special care admission (OR, 1.18 95% CI, 1.04 to 1.34).

Conclusions: Women booking with BMI 23–24.9 are at significantly increased risk of a range of adverse obstetric and perinatal outcomes. Further studies assessing a more diverse range of outcomes should determine whether a formal reclassification of these women as overweight is warranted.

PP.13 ANALYSIS OF FACTORS INFLUENCING THE PRETERM BIRTH RATE IN A TERTIARY OBSTETRIC UNIT IN THE UK

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Background: The Liverpool Women's NHS Foundation Trust (LWH) is the single largest obstetric and neonatal unit in the UK, delivering around 8000 babies each year and caring for 1000 preterm infants in the Neonatal unit. Neonatal mortality rates are significantly higher than national average (5.7 vs 3.4/1000). In order to explain possible contributing factors to this increase, we analysed all preterm births (PTB) (<34 weeks) between 2002 and 2007.

Methods: 1744 births <34 weeks (3.9% of all births in the study period) were identified using hospital information system (MEDITECH) and divided into mutually exclusive cohorts: i) multiple births, ii) women with history of previous preterm birth iii) singletons with no history of preterm birth.

Results: There were 872 multiple pregnancies (1.94% of all births) of which 238 delivered <34 weeks. PTB rate for this group was 27.3% and contributed 13.6% of all PTBs. 52.1% of PTB in singletons were iatrogenic. Of all PTBs, 7% were from women with previous PTB with decrease from 10% in 2002 to 5% in 2007. 25% of all PTB were from women with no history of PTB. There was a rise in PTB rates in this group from 22% in 2002 to 28% in 2007.

Conclusions: Crude PTB rates do not allow meaningful benchmarking. We propose that in the future, PTB rates and related neonatal mortality and morbidity be presented in the following mutually exclusive cohorts: In-utero transfers, multiple pregnancies, pregnancies with medical disorders, women with previous PTB and uncomplicated pregnancies (subdivided into primips and multips).

PP.14 PROM BEFORE 24 WEEKS – HOW OPTIMISTIC SHOULD WE BE?

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Background: Premature rupture of the amniotic membranes (PROM) before 24 weeks gestation constitutes an important clinical dilemma. It is thought to occur in around 1% of pregnancies. Studies which have focused on the problem have been small and of variable quality but suggest PROM before 24 weeks is associated with an extremely poor outcome. More recent studies suggest outcome is better even among those with PROM before 20 weeks.

Objectives: This study aims to ascertain the outcomes of pregnancies complicated by PROM before 24 weeks within a tertiary referral fetal medicine department.

Methods: A retrospective analysis was undertaken of patients with PROM before 24 weeks between 2000 and 2008. A departmental database was used to identify patients with a diagnosis of PROM. 65 cases were identified.

Results: Outcomes were available for 41 of the 65 pregnancies, of these 28 were managed expectantly. 21 (75%) of these pregnancies resulted in live birth, of which 13 (61%) went on to survive the neonatal period. Mortality amongst the group with PROM <20 weeks was 27% compared with 50% in those with PROM >20 weeks. The study also highlighted wide variation in the information given to patients during the counselling process.

Conclusions: Our results add to the growing body of evidence that PROM before 24 weeks is no longer associated with a universally poor outcome. Furthermore, the study suggests women with PROM <20 weeks, a group previously associated with mortality >90% should be counselled more optimistically.

PP.15 NEONATAL MORBIDITY FOLLOWING SUBSTANCE USE IN PREGNANCY – A FIVE-YEAR EXPERIENCE

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Introduction: There are significant medical and social morbidities in newborns related to substance use in pregnancy. The socio-clinical profile of this population is changing and contemporary published data are limited.

Methods: Pregnant women with history of substance use were identified from "cause for concern" referrals at our hospital between January 2003 and December 2007. Data were collected retrospectively on mother-infant pairs from medical and laboratory records and analysed on Excel 2003. Nonparametric data were analysed using Mann Whitney U test.

Results: 168 (0.94%) of 17 816 live births were born to women with history of substance use in pregnancy. 23% of infants were preterm and 28.2% small for gestation. 59 babies (35.1%) required admission to neonatal unit of which 26 (15.5%) required pharmacological treatment for withdrawal symptoms. 95% babies showed peak withdrawal symptoms within 5 days. No death was reported. Other morbidities were related to complications of prematurity and low birth weight (LBW), hypoglycaemia and need for sepsis screen.

The median duration of hospital stay reduced from 12 days in 2003 to 2006 to 7 days in 2007 following change in guidelines without rise in readmission rate ($p < 0.001$).

82.3% of the babies went home with their mother but only 14.3% breastfed at discharge. 21% of infants were placed on the child protection register.

Conclusions: Neonatal morbidity remains high with substance use in pregnancy, principally related to complications of prematurity, LBW and treatment of withdrawal symptoms. Prolonged hospital

stay can be reduced safely and may have significant impact on resource allocation.

PP.16 PROSPECTIVE OBSERVATIONAL STUDY OF WOMEN ATTENDING THE PRETERM LABOUR CLINIC

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Objective: To observe the pregnancy outcome of women with a past history of idiopathic preterm labour, who attended a protocol driven preterm labour clinic.

Methods: This prospective observational study was carried out between 2003 and 2008. Clinical data of 331 clinic attendees were obtained. All women had monthly ultrasound (TVU) from 16–28 weeks gestation, cervical cerclage was used for a history of cervical weakness and early cervical shortening <20 weeks gestation. Progesterone was prescribed for cervical shortening (<25 mm) or funnelling. The outcome measures were spontaneous extreme (<24 weeks), early (24–28 weeks), mild (29–37 weeks) and term (>37 weeks) birth.

Results: The overall clinic live birth rate was 93%. 192 women had TVU surveillance that was normal, 77 women had TVU abnormalities and were given progesterone and 62 received cerclage and progesterone. The average gestation at delivery for the 192 TVU normal groups was 37 weeks. For those 77 women prescribed progesterone for cervical shortening, 7.8% delivered <24 weeks, 9% between 24–28 weeks, 31.2%, 29–37 weeks and 52% delivered full term. Of 62 patients who received cervical cerclage and progesterone, 40.3% reached term.

Conclusions: The optimal management of women with a history of idiopathic preterm labour has yet to be determined. A dedicated preterm labour clinic can achieve good outcomes in terms of a high live birth rate but recurrent preterm labour remains a problem.

PP.17 PROPHYLACTIC BALLOON CATHETERISATION OF THE UTERINE ARTERY CAN CAUSE FETAL COMPROMISE

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Introduction: We report a case series of women with uterine scar and suspected abnormal placentation presenting for elective caesarean section.

Methods: Records of 14 women at risk of major haemorrhage from placenta accreta who had prophylactic uterine artery balloon catheterisation in the Radiology suite followed by caesarean section in the maternity unit were reviewed.

Results: Serious fetal bradycardia (<70 bpm) was noted in two women. Both were transferred immediately to the maternity unit for emergency caesarean section. The umbilical artery blood pH (UApH) and 5 min Apgar score of neonate I were 6.9 and 5, respectively. This baby needed neonatal unit admission. The UApH and the 5 min Apgar score of neonate II were 7.0 and 9, respectively. The mean UApH in our study was 7.21. All babies were discharged home well. The estimated blood loss ranged from 300 ml to 1500 ml. Blood transfusion was needed in six women. None needed hysterectomy.

Discussion: Vascular complications with interventional procedures vary from simple haematoma to major thrombosis and vessel rupture. Uterine arterial spasm may have been the cause of serious fetal bradycardia in our study. Clarke *et al.*¹ who studied internal iliac artery embolisation in 13 women, had a maximum estimated blood loss (EBL) of 28 L. There was no fetal compromise. However, two women needed hysterectomy. Difficulty in conclusive antenatal diagnosis of placenta accreta may result in unnecessary interventions and potential fetal compromise. The relative risks of

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balloon embolisation of uterine vs internal iliac artery needs further research.

1. Mok M, Heidemann B, Dundas K, *et al.* Interventional radiology in women with suspected placenta accreta undergoing caesarean section. *Int J Obstet Anaesth* 2008;**17**:255–61.
2. Greenburg J, Suliman A, Iranpour P, *et al.* Prophylactic balloon occlusion of internal iliac arteries to treat abnormal placentation: a cautionary case. *Am J Obstet Gynecol* 2007;**197**:470–71.

PP.18 REGISTRATION OF DEATHS OF BABIES BORN AT THE THRESHOLD OF VIABILITY: SURVEY OF PAEDIATRIC CONSULTANTS AND REGISTRARS IN SOUTHEAST ENGLAND

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Background: Birth statistics at the threshold of viability require accurate registration of pregnancy outcomes. The Nuffield and Nursing and Midwifery Council have emphasised the definition of a “live birth” at any gestation.^{1 2}

Aim: To assess the knowledge of perinatal death registration at the threshold of viability among consultant and middle-grade paediatricians in southeast England.

Methods: A paper and web-based questionnaire was sent to one consultant and one middle grade paediatrician within each of 63 neonatal units in south east England. Scenarios ascertained registration practice for the death of a baby born alive at 21 weeks, 22 weeks and 23 weeks gestation and registration of the death of a baby born without signs of life at 22 weeks and 23 weeks gestation.

Results: Response rate was 90% (111/123).

Registration of death of a baby born alive:

Registration of death of a baby born without signs of life: At 22 weeks: 50% registered as a stillbirth; 5% neonatal death; 38% miscarriage. At 23 weeks: 56% stillbirth; 8% neonatal death; 3% miscarriage. Significantly more consultants (28%) than registrars (3.5%) correctly registered deaths for all scenarios ($p = 0.0001$).

Conclusions: Considerable discrepancies exist in the knowledge of registration of deaths by paediatricians at extremely premature gestations. There is under-recognition of neonatal deaths, greater at 21 weeks and 22 weeks. Training and clearer guidance is required to improve data collection for threshold of viability pregnancy outcomes.

1. Nuffield Council on Bioethics. Critical care decisions in fetal and neonatal medicine: ethical issues. 2006. <http://www.nuffieldbioethics.org/>
2. Nursing and Midwifery Council. The care of babies born at the threshold of viability 2007. <http://www.nmcuk.org/>

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Gestation	Neonatal death (%)	Miscarriage (%)	Stillbirth (%)
21 weeks	(44)	(36)	(11)
22 weeks	(52)	(26)	(12)
23 weeks	(73)	(13)	(8)

PP.19 FOLIC ACID SUPPLEMENTATION IN PREGNANCY – THE HARSH REALITY

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Background: Periconceptual dietary folic acid supplementation reduces the incidence of neural tube defects (NTDs) by up to 75%. Its use is recommended by the Chief Medical Officer (CMO). In Northern England, NTDs occur in 1.5/1000 pregnancies, which is higher than the UK average. Nationally, 2/3 of women do not take folic acid before conception rendering it ineffective in reducing the incidence of NTDs.

Aim: To assess women's knowledge and use of folic acid in pregnancy in a general hospital in NE England.

Methods: Questionnaire survey. 190 women (>19 weeks gestation) attending antenatal and ultrasound appointments at Sunderland Royal Hospital over a four-week period in January 2009.

Results: 163(86.2%) confirmed they took folic acid, but only 37(19.6%) started prior to conception, with less than half of these starting three months prior to pregnancy. 74 (39.2%) did not know when to start folic acid. Those with planned pregnancy (56%) were more likely to take folic acid preconceptionally ($p < 0.0001$). Multigravid patients did not use supplements more effectively ($p = 0.14$). Although 162 (85.8%) were aware why folic acid was important, only eight (4.2%) took supplements *exactly* as recommended.

Conclusions: Pregnant women in NE England are at higher risk of NTD. Despite awareness and knowledge about the benefits of supplementation, less than 5% of our study population were taking the recommended folic acid regimen. Unplanned pregnancy is a significant factor. Food fortification in Canada has resulted in a 48% decrease in the incidence of NTD. Our data would support mandatory fortification in the UK.

PP.20 OBSTETRIC OUTCOME FOLLOWING PRECONCEPTUAL TRANSABDOMINAL CERCLAGE

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Transabdominal cerclage (TAC) is a recognised treatment for cervical weakness with a history of recurrent mid-trimester losses (MTL) and a failed vaginal suture. We previously performed TAC between 9 weeks to 11 weeks of gestation in our unit, however since 01 January 2006, TAC has been performed preconceptionally.

We performed an observational cohort study of 30 women who underwent preconceptual TAC from 1 January 2006 to 1 August 2008. These women were referred from 10 geographical locations across the North-West and the Midlands. All patients had suffered recurrent mid-trimester losses (MTL) between 17 weeks and 24 weeks (average MTL = 3; range 2 to 6) and all had at least one previous failed vaginal suture. The average age was 31.8 (22–35). 18 women conceived; average duration from TAC to (last menstrual period) LMP was 100 weeks (2–64); three women are undergoing fertility treatment and nine are not yet pregnant. Of the 18 women who conceived, 12 women have delivered and six have ongoing pregnancies beyond 24 weeks.

In addition to cervical weakness, nine women had associated bacterial vaginosis; two women had antiphospholipid syndrome and three had a bicornuate uterus. 10/30 (33%) women had previous large loop excision of the transformation zone (LLETZ)/Cone biopsy; four women had prior full term deliveries predating the LLETZ.

Of the women who delivered, 100% (12/12) delivered >32/40; 92% (11/12) delivered >35/40. The average gestational age at delivery was 36⁺⁵ (34⁺⁴ to 38) and average birth weight was 2.69 kg (1.89 to 3.255).

Preconceptual TAC is associated with a highly successful pregnancy outcome in the absence of procedure-related major complications.

PP.21 FACTORS ASSOCIATED WITH PROLONGED FAECAL AND URINARY SYMPTOMS FOLLOWING OBSTETRIC ANAL SPHINCTER INJURY FROM 2004 TO 2008

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Objectives: The aim of this study was to determine which factors are associated with the development of faecal and urinary symptoms following obstetric anal sphincter injury (OASIS).

Methods: 324 women, who sustained OASIS over a four-year period, were assessed three months postpartum using a structured questionnaire.

Results: The majority of women were primiparous and had a spontaneous vaginal delivery. The mean birth weight was 3586 g (1240 g to 4800 g).

Neither parity, birth weight, degree of OASIS, nor methods of repair were associated with increased risk of developing faecal symptoms or stress urinary incontinence (SUI). 37% of women over 35 years developed poor flatal control compared to 21% of those under 35 years ($p = 0.03$). Furthermore, 26% of women over 35 years developed SUI vs 13% of those under 35 years ($p = 0.03$). 41% of women following OASIS after forceps developed faecal urgency compared to 20% of the non forceps group ($p = 0.05$) 25% of the forceps group developed SUI vs 11% of the non forceps group ($p = 0.002$).

Conclusion: Only advancing maternal age and forceps delivery appear to be important factors associated with a significantly increased risk of faecal symptoms and SUI in women who have sustained OASIS.

Abstract PP.21 Demographic details

Mean age		29.3 years (17–42)
Parity	Primip	82%
	1 previous delivery	15%
	≥2 previous deliveries	3%
Mode of Delivery	Spont vaginal delivery	58.7%
	Forceps	31.7%
	Ventouse	9.6%
Classification	3a	39%
	3b	41%
	3c	14%
	4	6%
Type of Repair	End to end	23.6%
	Overlap	76.4%

PP.22 DOES THE TYPE OF VAGINAL DELIVERY INFLUENCE MORBIDITY ASSOCIATED WITH OBSTETRIC ANAL SPHINCTER INJURY?

FA Marsh, A Johnson, LJ Rogerson, CR Landon, A Wright. *Leeds Teaching Hospitals NHS Trust, Leeds, UK*

Objectives: The aim of this study was to determine whether the type of delivery responsible for obstetric anal sphincter injury (OASIS) has any influence on the development of faecal and urinary symptoms.

Methods: 324 women, who sustained OASIS, were assessed three months postpartum and their faecal and urinary symptoms documented.

Results: The majority of women delivered spontaneously (Abstract PP.22). 32% were forceps deliveries, whereas 8% of all deliveries in this unit are by forceps ($p < 0.0005$)

Significantly, more women delivered using rotational forceps reported faecal urgency (Table 1) compared to women who sustained OASIS following other forms of delivery ($p = 0.02$). Indeed nearly two-thirds of this group reported faecal urgency and one-thirds reported poor flatal control. Faecal incontinence was relatively rare (2.5%). Both types of forceps were associated with increased risk of stress urinary incontinence (SUI) compared to sustaining OASIS after ventouse or spontaneous delivery ($p = 0.003$)

Conclusion: This study suggests that when the anal sphincter is damaged, the instrument used has a significant influence on a woman's risk of developing faecal and urinary symptoms.

Rotational forceps appear to pose a significantly increased risk of faecal urgency compared to other modes of delivery resulting in OASIS.

Abstract PP.22

	Faecal urgency	Poor flatal control	Stress urinary incontinence (SUI)
Spont vaginal delivery 58.7% (n = 189)	31% (n = 116)	24% (n = 43)	12% (n = 22)
Ventouse 9.6% (n = 31)	23% (n = 6)	15% (n = 4)	4% (n = 1)
Non rotational forceps 23.6% (n = 76)	33% (n = 23)	22% (n = 16)	23% (n = 17)
Rotational forceps 8.1% (n = 26)	61% (n = 14)	32% (n = 8)	27% (n = 7)

Spont, spontaneous.

PP.23 AN INVESTIGATION OF THE RELATIONSHIP BETWEEN OBESITY, TWINNING RATES AND PERINATAL OUTCOMES IN ABERDEEN

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Aim: To examine whether natural twins are more likely to be born to women who are overweight or obese than to women of normal body mass index (BMI). And to look at whether maternal BMI affects adverse outcomes among twins.

Methods: A database was created containing information on pregnancies and deliveries booked at Aberdeen Maternity Hospital. Twin deliveries were categorised as natural conceptions or those resulting from assisted reproductive technology (ART). The association between BMI and twinning was described for natural and ART pregnancies, taking into account maternal characteristics. The relationships between BMI and adverse perinatal outcomes were investigated using logistic regression for natural twins, ART twins and singleton deliveries.

Results: Between 1976 to 2006, there were a total of 1135 twin pregnancies amongst Aberdeen city residents. The twinning rate increased from 10 to over 15 twin pregnancies per 1000 maternities. While this trend appears to have been driven by ART, there was also a significant increase in naturally conceived twins. Women with natural twin pregnancies were on average older, taller, heavier and of higher parity than those with singleton pregnancies, but the risk of twin pregnancy did not vary significantly with BMI. Women with higher BMIs were more likely to have premature babies (<28 weeks) and this effect was stronger among twins than singletons. BMI was associated with caesarean delivery more strongly among singletons than among twins, but birth weight discordance was not affected by maternal BMI.

Conclusions: No relationship between BMI and twinning has been found in this population.

PP.24 IMPROVING UPTAKE OF POST-MORTEM EXAMINATION AFTER STILLBIRTH

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Background: Post-mortem is the gold standard investigation following stillbirth but rates are declining. In 2002, perinatal pathology services in Edinburgh relocated to the same site as the maternity unit. A programme of medical and midwifery education was initiated to increase awareness of the value of autopsy and guidelines changed to recommend that only senior trainees and consultants take consent. The aim of this study was to investigate adherence to guidelines and whether there has been any sustained increase in the uptake of post-mortem after stillbirth.

Methods: Retrospective review of 149 cases of stillbirth at the Simpson Centre for Reproductive Health in Edinburgh between January 2005 and December 2008. Results were combined with data from a previous study of 467 stillbirths from 1990 to 2004 (total n = 616).

Results: Between 1990 and 2001, post-mortem rates declined from 87.5% to 71.4%. Uptake increased between 2002 and 2005 and since then rates have remained steady at approximately 80%. This improvement is not evident in national rates, which have continued to decline. Between 2004 and 2008, over 98% of women were offered post-mortem. Consent was performed by senior trainees or consultants in 86% (158/183) of cases overall. However, women who declined autopsy were more likely to have been consented by junior staff than those who accepted it (8.7% vs 5.7%).

Conclusion: Post-mortem rates following stillbirth in Edinburgh have improved since 2002, coinciding with policy changes to increase uptake. Consent by senior staff appears to be valuable and there is significantly better uptake than the UK as a whole.

PP.25 AUDIT OF FAILED INDUCTION OF LABOUR

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Aim and Objective: To assess the rate of failed induction of labour.

Factors affecting the outcome of induction of labour according to maternal and fetal demographics.

Background: The National Institute for Health and Clinical Excellence (NICE) guideline states that in 2004 to 2005, one in five births in the UK were induced. Induced labours have an impact on the birth experience of women and their health and that of their babies. Recent studies have shown an increased in demand for induction of labour (IOL) for social reasons. We used the NICE guidelines as our standards and reviewed individual cases to assess whether we were compliant and what factors contributed to an unsuccessful outcome of IOL.

Material and Methods: A proforma was developed to detect different factors likely to affect the outcome of IOL. Data on all women undergoing IOL in the unit for 12 months (1 January 2008 to 31 December 2008) were retrospectively analysed. 704 women booked for IOL were identified from the labour ward database. 136 case notes had complete data suitable for analysis.

Results: In 2008, total number of deliveries: 3554. Total number of IOL conducted: 704, with 136 unsuccessful IOL resulting in Caesarean section. The IOL was found to be unsuccessful in patients with raised body mass index (BMI), Maternal age (> 38 years), where >2 doses of prostaglandin were used with amniotomy and oxytocin infusion.

Conclusions: The factors associated with failed IOL were raised BMI, maternal age and use of multiple methods for IOL. The main indications for Caesarean section were failure to progress in first stage of labour and fetal compromise.

PP.26 MATERNAL BODY COMPOSITION AS A PREDICTOR OF FETAL ADIPOSITY

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Background: Fat correlates directly with energy stores and constitutes 12% to 14% of the birth weight (BW). Previous studies have highlighted an association between obesity, based on maternal body mass index (BMI) and BW. This study compared BMI with Bioelectrical Impedance Analysis (BIA) as a predictor of fetal adiposity in nondiabetic mothers.

Patients and Methods: 100 women with a singleton pregnancy and a negative glucose tolerance test at 28 weeks gestation were

recruited. On recruitment and at 37 weeks gestation, each woman had a BIA and the BMI was calculated. An abdominal ultrasound was performed to measure the fetal subcutaneous fat.

Results: The mean maternal age was 30.2 years (± 5.3 SD) and mean BMI at 28 weeks was 31.4 kg/m² (± 6.1 SD). Fetal subcutaneous fat at 28 weeks did not correlate with maternal BMI, bone mass and trunk fat mass. The fetal abdominal subcutaneous fat at 37 weeks correlated with maternal BMI at 28 weeks and 37 weeks ($r = 0.23$ and 0.27 respectively, $p < 0.05$) and with maternal trunk fat mass ($r = 0.24$ and 0.23 respectively, $p < 0.05$). The fetal thigh subcutaneous fat at 37 weeks did not correlate with BMI or trunk fat mass, but did correlate with bone mass at 37 weeks ($r = 0.31$, $p < 0.05$).

Conclusion: Maternal bone mass measured by BIA is the most useful component of maternal body composition for predicting fetal thigh subcutaneous fat. The relationship between maternal body composition and fetal adiposity is more complex than hitherto suspected.

PP.27 MATERNAL MORBID OBESITY AND PREGNANCY OUTCOMES

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Objectives: To evaluate whether morbidly obese women have an increased risk of obstetric complications and caesarean delivery.

Methods: A retrospective study was conducted comparing morbidly obese, obese and non-obese women with a singleton pregnancy delivered at our hospital between 1 January 2007 and the 31 December 2007. The hospital computerised database was used to extract information regarding maternal demographics, obstetric and medical history and perinatal outcomes. Morbid obesity was defined as a body mass index (BMI)(weight (kg) divided by height² (m²)) greater than 39.9.

Results: In the study group 1.2% (n = 96) of the women were morbidly obese. The average age in the morbidly obese mothers was 39.3 years (range 18–41) and the majority of which were Caucasians (85.6%). In 23 women a Glucose Tolerance Test (GTT) was not carried out. When compared to the other BMI groups, the morbidly obese women had a higher incidence of pregnancy induced hypertension (12.5% vs 10.5%), pre-eclampsia (14.6% vs 7.1%) and of fetal macrosomia (birthweight >4.5 kg) (6.2% vs 2.4%). The morbidly obese women also had a higher induction rate (45.4% vs 25.9%), caesarean section rate (51.6% vs 22.1%) and a lower vaginal birth after caesarean (VBAC) rate (22.7% vs 47.6%).

Conclusion: Maternal morbid obesity in early pregnancy is strongly associated with a number of pregnancy complications and an increased caesarean delivery rate. Women that are obese and, in particular, morbidly obese should be followed up closely during pregnancy and delivery.

PP.28 FETAL MACROSOMIA IN ABSENCE OF DIABETES – A RISING TREND

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Introduction: The overall incidence of macrosomia has been rising, affecting 1% to 10% of all pregnancies (National Center for Health Statistics, USA, 1994).

Non-diabetic macrosomia is still an obstetric dilemma as there is no clear consensus regarding its ante partum prediction and management as accurate diagnosis is only made retrospectively.

Material and Methods: This is a retrospective analysis of case notes from January 2006 to December 2006.

Results: Out of 4049, the number of babies weighing more than 4000 g were 406 (10%) and >4500 g were 61 (1.5%). We included more than 4500 g in our study.

Labour-delivery outcome: 49% of women had induction, majority due to post date. 12% had elective caesarean (CS) and 39% went into spontaneous labour. Out of women into spontaneous labour, 67% had vaginal delivery compared to 63% with induction. Overall, 57% had spontaneous vaginal delivery, 8% had instrumental delivery and 35% had lower segment caesarean section (LSCS) including elective and emergency.

Six cases (10%) had shoulder dystocia (two needed McRobert's manoeuvre while four needed more complex manoeuvres). Four were admitted to special care unit and one (baby weight 4762 g) suffered with Brachial Plexus injury.

Conclusions: Prolonged labour with failure or arrest of descent should alarm the obstetrician regarding the potential risk. Estimated fetal weight compared to the weight of the affected infant, GA and prior neurological injury should be considered in deciding the mode of delivery. However, the prenatal diagnosis remains imprecise. Induction of labour and prophylactic caesarean delivery has not been shown to alter the incidence of shoulder dystocia.

PP.29 TWENTY-YEAR SURVIVAL OF CHILDREN BORN WITH CONGENITAL ANOMALIES

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Background: Congenital anomalies are a leading cause of stillbirth and infant mortality. Advances in fetal and neonatal care have improved the prognosis for some anomaly groups and subtypes, but there remains a paucity of knowledge regarding the survival for many others and beyond the first year of life. We used data from the Northern Congenital Abnormality Survey (NorCAS) to estimate survival for a range of congenital anomaly groups and subtypes to age 20 years.

Methods: Information on children with a congenital anomaly, delivered between 1985 and 2003, was abstracted from the NorCAS. National and hospital tracing systems were used to identify the survival status of 99% of live born children and survival up to age 20 years was estimated using Kaplan-Meier methods.

Results: Survival among children with at least one congenital anomaly was 88.8% (95% CI, 88.2% to 89.4%) and 85.5% (95% CI, 84.8% to 86.3%) at one year and 20 years respectively. Twenty-year survival among the most common anomaly groups was 89.3% (95% CI, 88.1% to 90.4%) for cardiovascular, 79.6% (95% CI, 77.2% to 81.7%) for chromosomal, 93.2% (95% CI, 91.6% to 94.5%) for urinary, 83.3% (95% CI, 79.8% to 86.2%) for digestive system, 97.7% (95% CI, 96.1% to 98.7%) for orofacial clefts and 66.3% (95% CI, 66.3% to 70.6%) for nervous system anomalies. Survival varied considerably between subtypes, even within the same anomaly group.

Conclusion: Over 85% of children born with a congenital anomaly survive into adulthood. Our results, particularly regarding individuals subtypes, will be invaluable to families, genetic counselors and other health professionals.

PP.30 THE IMPACT OF MATERNAL OBESITY ON PREGNANCY OUTCOMES

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Background: Due to rising obesity in the obstetric population and its association with fetomaternal complications, there is a need for guidance regarding the management of pregnancy in obese women.

Aims/Objectives: To evaluate the effects of maternal obesity on obstetric complications and neo-natal outcome.

Methods: A retrospective cohort study which compared pregnancy outcome between non-obese and obese population. Group 1: body mass index (BMI) less than 30; group 2: BMI 30 or more. Reviewed case notes of 288 women delivered in a district hospital between 2005 to 2007 (randomly identified from information services).

Results: Out of 288 patients, 166 belonged to group 1 and 122 belonged to group 2. Major antenatal pregnancy complications were more common in obese compared to non-obese (31.6% vs 12.6%). Pre-eclampsia and gestational diabetes mellitus (GDM) were significantly high. Induction of labour (34.4% vs 5.4%), emergency caesarean (CS) rate (20.4% vs 4.2%), elective CS (9.83% vs 3.6%) and instrumental delivery (4% vs 1.8%) was significantly higher for obese group. Problem during spinal was faced in seven obese as compared to one in normal. Hospital resources were used more due to repeated admissions (11.5% vs 7.8%) and scans (52.4% vs 31.3%) needed in obese group. There was no significant difference in neo-natal outcome.

Discussion and Conclusion: Our study confirms significant relationship between obesity and increased incidence of antenatal complications and increased odds of Caesarean section and instrumental delivery. In addition, there is increased use of hospital resources. National and local guidelines for the management of obese pregnant women should be developed to improve obstetric outcome.

PP.31 THE PROGNOSTIC SIGNIFICANCE OF MATERNAL CA 125 IN THREATENED MISCARRIAGE

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Background: To date, the medical literature has been conflicting regarding the significance of serum CA 125 levels in women with threatened miscarriage.

Objective: To assess the prognostic significance of maternal CA 125 in threatened miscarriage and to evaluate its use as a test which predicts immediate outcome.

Study Design: Prospective cohort study of patients presenting with bleeding in first trimester of pregnancy.

Material and Methods: 92 patients with viable intrauterine pregnancy of 5 weeks to 13 weeks gestation presenting with bleeding were recruited into the study. CA 125 was done at recruitment and 5 days to 7 days later.

Primary outcomes measured were miscarriage, gestational age at miscarriage/delivery and birthweight centiles

Results: A total of 86 patients were included. CA 125 was noted to be <35 U in 46.5% (Group A = 40) and it ranged from 35–141 U in 53.4% (Group B = 46). In group A, 32.5% of patients had miscarriage, whereas 67.5% progressed to term. In group B, 8.6% of patients had miscarriage, 8.6% had preterm labour, whereas 82.6% of patients progressed to term. Only 49% (42/86) of patients attended for repeat CA 125 estimation. The Repeat CA 125 was noted to be decreased in 59.5%, increased in 35.7% and unchanged in 4.7%. Miscarriage rate was 20% in patients with rising CA 125 and it was 12% in patients with decreasing CA 125.

Conclusion: The measurement of CA 125 levels does not seem to be clinically useful in predicting miscarriage. However, a rise in CA 125 level may be seen immediately before miscarriage.

PP.32 TERM STILLBIRTHS: WHO IS AT RISK?

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Introduction: Although perinatal mortality is well reported by Confidential Enquiries into Maternal and Child Health (CEMACH), the component due to term (≥ 37 weeks) intrauterine

death (tIUD) in singleton pregnancy is not characterised separately. The aim of this project was to identify factors associated with tIUD, with a view to establishing where additional maternity care may be beneficial.

Method: Retrospective review of notes and computer records of all tIUD over five-year period (2003–2007) in a London hospital.

Results: There were 35 tIUD amongst 16 260 singleton pregnancies delivering ≥ 37 weeks (2.15/1000): Eight at 37 weeks, four at 38, six at 39, four at 40, 11 at 41 and two at 42 weeks. 12 presented with reduced FM, 18 in early labour, one at routine antenatal care (ANC), one was a BBA and two happened during otherwise uncomplicated postdates induction.

21 (60%) women were not born in the UK, eight (23%) booked late and/or attended poorly, 14 (40%) were ≥ 35 years (23% in whole study population), five (14%) had a BMI ≥ 30 (16% in whole study population). In 60% a cause was identified, including diabetes in three (one of whom declined insulin and had a 4530 g baby at 38 weeks), abruption in two, intrauterine growth restriction (IUGR) in five (birthweight 1890 g to 2820 g), sepsis in three, obstetric cholestasis in three, cord accident in one, maternal liver failure in one; one baby had gastroschisis.

Conclusions: This unique dataset allows a contemporary review of factors contributing to tIUD. Women born outside UK are at greater risk and should be encouraged to attend for antenatal care throughout the whole pregnancy. Maternal monitoring of fetal movements remains an important tool in term pregnancy.

PP.33 OBSTETRIC OUTCOME OF PLANNED VAGINAL DELIVERY IN DIABETIC PREGNANCIES WITH SUSPECTED FETAL MACROSOMIA

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Objectives: To determine the obstetric outcome in diabetic pregnancies with an estimated AC ≥ 90 th centile compared to those with an estimated AC < 90 th centile for whom vaginal delivery was planned.

Abstract PP.33

Variables	AC < 90 th centile	AC ≥ 90 th centile	p Value
	N = 172 (66%)	N = 87 (34%)	NS
Mode of delivery			NS
Vaginal	121 (70%)	53 (61%)	
Emergency caesarean section	51 (30%)	34 (39%)	
Primary postpartum haemorrhage (≥ 500 ml)			0.002
No	141 (82%)	56 (64%)	
Yes	31 (18%)	31 (36%)	
Arterial pH (documented in 110 cases)			NS
≥ 7.1	65 (98%)	43 (98%)	
< 7.1	1 (2%)	1 (2%)	
Apgar score (5 min)			NS
> 7	169 (98%)	83 (95%)	
≤ 7	3 (2%)	4 (5%)	
Shoulder dystocia (of 174 cases delivered vaginally)	N = 121	N = 53	0.028
No	119 (98%)	48 (91%)	
Yes	2 (2%)	5 (9%)	
3rd/4th degree perineal tear (of 174 cases delivered vaginally)	N = 121	N = 53	NS
No	121 (100%)	51 (96%)	
Yes	0 (0%)	2 (4%)	

NS, not significant.

Methods: A retrospective study of women with gestational and pregestational diabetes who had ultrasonic measurement of AC within 2 weeks of delivery from January 2003 through December 2007. Suspected fetal macrosomia was defined as AC ≥ 90 th centile for gestational age (Chitty 1994). Appropriate parametric and non-parametric tests were used for statistical analysis.

Results: See table.

Conclusions: Diabetic pregnancies with an AC ≥ 90 th centile for whom vaginal delivery is planned have higher rates of primary postpartum haemorrhage (PPH) and shoulder dystocia but similar rates of emergency caesarean sections and 3rd/4th degree perineal tears and similar neonatal outcomes compared to diabetic pregnancies with an AC < 90 th centile. Planned vaginal delivery may therefore be appropriate in this group.

1. Chitty LS, et al. Charts of fetal size: 3. Abdominal measurements. *BJOG* 1994;101:125–131.

PP.34 COMPARISON OF PREGNANCY OUTCOME AFTER REPEAT CERVICAL SURGERY AND SINGLE PROCEDURES

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Introduction: Cervical surgery is a known risk factor for pre-term birth¹ (PTB). We assessed the difference between single and repeat procedures of large loop excision of the transformation zone (LLETZ) and of cone biopsy.

Material and Methods: Data of 581 women who presented at the prematurity clinic at St Thomas' Hospital and King's College Hospital were collected between January 2002 and February 2008. The decision to perform a cervical cerclage was based on cervical length measurement and past obstetric history. Data were analysed using SPSS.

Results: Of 581 women, 140 had previous cervical surgery. Rates of previous PTB were similar in both groups (single 23% vs double 18%).

Conclusion: Similar and high rates of cerclage and PTB are seen in women with both single and double procedures on their cervix. A past history of cervical surgery therefore warrants referral and management, independent of the number of procedures.

1. Kyrgiou M, et al. Obstetric outcomes after conservative treatment for intra-epithelial or early invasive cervical lesions: a systematic review and meta-analysis of the literature. *Lancet* 2006;367:489–98.

Abstract PP.34

	Single procedure (n = 124) (%)	Double procedure (n = 16)	Fishers exact
Cerclage	(15)	(13)	ns
Early pre-term birth (24–29/40)	(2)	(6)	ns
Late PTB (30–36/40)	(15)	(19)	ns

PTB, pre-term birth.

PP.35 DOES PLACENTAL HISTOPATHOLOGY HELP DETERMINE THE CAUSE OF STILLBIRTH?

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Introduction: Placental dysfunction is thought to be involved in a significant proportion of stillbirths. Examination of the placenta is included in many protocols for investigation after stillbirth despite few published studies of its efficacy. Recently, stillbirth classification systems have included histological findings of chorioamnionitis and “placental insufficiency”.¹

Objective: To investigate whether placental examination assists with determining the cause of stillbirth.

Methods: A retrospective review of 92 stillbirths after 24 weeks gestation in East Lancashire Hospitals from 1 January 2006 to 31 December 2008.

Results: The placenta was examined in 52 (57%) of cases. Women who had placental examination were significantly less likely to have an unexplained stillbirth (odds ratio (OR) 0.34; 95% CI, 0.11 to 0.97). The findings of placental investigation were included in the ReCoDe classification in 50% of cases. In 18% of cases, the classification was determined primarily by placental examination. Some placental abnormalities found were associated with specific clinical causes of stillbirth, such as placental infarction and intrauterine growth restriction (IUGR) ($p < 0.05$) or leukocyte infiltration and chorioamnionitis ($p < 0.001$). In stillbirth, the placental weight distribution was skewed towards low centiles and the fetal : placental weight ratio was skewed towards higher centiles compared to live births, suggesting that macroscopic as well as microscopic placental measurements may be altered in stillbirth.

Conclusions: Detailed assessment of the placenta, particularly histopathological assessment of villous morphology, can aid classification of stillbirth. Further studies are required to determine differences between placentas from live and stillborn infants. Such studies may highlight changes which underlie the origins of stillbirth.

1. Gardosi *et al.* *BMJ* 2005;**331**(7525):1113–7.

PP.36 USING CLINICAL INDICES TO PREDICT POOR PERINATAL OUTCOME IN WOMEN WHO PRESENT WITH DECREASED FETAL MOVEMENTS

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Background: Decreased fetal movement (DFM) is associated with increased incidence of stillbirth and fetal growth restriction (FGR). Recent studies suggest that after DFM, women should be investigated using cardiotocography and ultrasound for growth and liquor volume. This proposal has significant resource implications. We hypothesised that clinical assessment may identify patients at high-risk of poor perinatal outcome, allowing investigation to be targeted appropriately.

Methods: The case notes of 204 women with a primary complaint of DFM were reviewed; the patients' obstetric and past medical history, details of current presentation and pregnancy outcome were recorded. Odds ratios (OR) with 95% confidence intervals were calculated for poor perinatal outcome (stillbirth, FGR or preterm delivery < 37 weeks). The sensitivity and specificity of identified characteristics were calculated.

Results: Overall, 24.3% of infants had poor pregnancy outcome, including three cases of stillbirth. Poor pregnancy outcome was more frequent in women with relevant past obstetric history (OR, 3.5; 95% CI, 1.2 to 10.6), past medical history (OR, 2.1, CI 1.1 to 4.0), ≥ 2 presentations with DFM (OR, 2.11, CI 1.0 to 4.4) or who have reduced symphysiofundal height measurements (OR, 3.7, CI 1.7 to 8.1). The specificity of these indices to predict poor perinatal outcome was low (14% to 67%), although their sensitivity was higher (51% to 95%).

Conclusion: These data suggest that some clinical indices may identify patients at increased risk of poor perinatal outcome after DFM. Further studies are required to find more specific markers of poor pregnancy outcome in pregnancies complicated by DFM.

PP.37 IMPROVING THE MANAGEMENT OF WOMEN FOLLOWING STILLBIRTH BY A COMPREHENSIVE CARE PATHWAY

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Stillbirth affects approximately 1 in 200 births in the UK. Following stillbirth, women are at increased risk of complications in subsequent pregnancies. The risk of poor pregnancy outcome may be minimised by investigation for underlying causes of stillbirth, which may be amenable to intervention.

The case-notes of 146 women whose pregnancies ended in stillbirth were reviewed (cases dated from 2000 to 2008). Details were collected including screening for pregnancy complications including diabetes, hypertension and small for gestational age (SGA) infants. The postnatal management including acceptance of post mortem, placental histopathology and screening for diabetes, thrombophilias, pre-eclampsia and infection was evaluated.

Before 2005, 29% of women accepted a post-mortem, with 49% of women undergoing placental examination. There was no systematic screening for underlying medical causes of stillbirth. Using the extended Wigglesworth classification system, 67% of stillbirths were of unexplained cause. Subsequently, the ReCoDe classification system and a printed care pathway were introduced to ensure all women are offered appropriate investigation to identify potential causes of stillbirth.

Re-evaluation of care between 2005 to 2008 demonstrated a significant increase in postnatal investigations – 57% had histological examination of the placenta, 76% were screened for medical conditions which predispose to stillbirth. With counselling by senior obstetricians, the rate of post-mortem increased to 35%. 90% of patients accepted a follow-up appointment. The proportion of unexplained stillbirth decreased to 20%.

The introduction of a detailed care pathway and adoption of the ReCoDe classification system increased the frequency of postpartum investigations and decreased the proportion of unexplained stillbirths.

PP.38 PREGNANCY CARE AND OUTCOMES IN WHITE/BRITISH WOMEN AND WOMEN OF ETHNIC MINORITIES – A COMPARATIVE STUDY

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Introduction: The Confidential Enquiries into Maternal and Child Health (CEMACH) report stated the perinatal mortality rate is increased in women of Black and Asian ethnicity. Cultural issues, language and staff insensitivity are important and may prevent women from accessing antenatal care.

Objectives: To compare the care during pregnancy and outcomes in White/British women and women of other ethnic origin.

Methodology: Women who delivered in November 2007 were included in the study. Total number of deliveries was 374 and 352 case notes were reviewed. Language information was obtained from midwives.

Results: 74% of the women were White/British and 26% of the women were of "Other" ethnicities. 26% of the women whose first language was not English spoke little English/needed a translator. Higher percentages of women in the "Other" ethnicity group had low body mass index (BMI), were late bookers, did not accept screening, had abnormal screening results, abnormal anomaly scans and fewer antenatal checks. Equal number of women in both groups had antenatal complications. Higher percentage of White/British women had caesarean sections. Equal percentage of women in both groups had birth weight < 2500 g at term. Higher percentage of White/British babies had low APGAR (Appearance,

Pulse, Grimace, Activity, Respiration) scores and neonatal admissions.

Conclusion: In 2007, 36% of the obstetric population receiving maternity care in Bolton belonged to ethnic minority groups. Women of ethnic minorities receive suboptimal antenatal care which is largely due to cultural issues and language barriers. However, this was not reflected in the pregnancy outcomes. On the contrary, higher percentage of White/British babies had low Apgar scores and neonatal admissions.

PP.39 PREDICTORS OF PREGNANCY COMPLICATIONS IN WOMEN WITH SYSTEMIC LUPUS ERYTHEMATOSUS

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Systemic lupus erythematosus (SLE) is an autoimmune disease associated with pregnancy complications (notably pre-eclampsia) in which dysregulation of Regulatory T cells (T reg) is considered a contributory factor. Transforming Growth Factor beta-1 (TGF- β 1) is a cytokine involved in both T reg cell activation and recognised alterations in arterial stiffness, a predisposing factor for pre-eclampsia. In this preliminary study, we have measured these components in the peripheral circulation of women with SLE and non-pregnant and pregnant healthy individuals.

T reg cells were assessed by flow cytometry (CD4⁺/CD25⁺), TGF β 1 by ELISA and arterial stiffness, expressed as a stiffness index (SI), by pulse wave analysis.

Preliminary results suggest that T reg cells and TGF β 1 are lower in patients with SLE ($n=3$, $5.11 \pm 2.42\%$ and 1.07 ± 0.18 , respectively) compared to non-pregnant healthy controls ($n=9$, $7.91 \pm 1.27\%$, 1.66 ± 0.31 ; $p=0.04$; $p=0.02$). T reg cells showed a dramatic increase in early pregnancy (12 weeks gestation; $n=4$, 13.25 ± 2.93 , $p=0.008$) whilst TGF β 1 was not significantly affected ($n=4$, 1.96 ± 0.46 , $p=0.3$). Arterial stiffness was not markedly elevated in women with SLE ($n=3$, 8.78 ± 1.61 m/s; $p=0.08$) or in early pregnancy ($n=4$, 7.72 ± 1.37 m/s; $p=0.6$), compared to healthy non-pregnant controls ($n=9$, 7.08 ± 0.86 m/s).

Increased levels of T reg cells, but not TGF β 1, may be a prerequisite for a successful pregnancy. Arterial stiffness may not be a predisposing factor for pregnancy complications in SLE, but a failure to acquire necessary T reg cells may impact upon pregnancy outcome. Work is ongoing to confirm this suggestion.

PP.40 PREGNANCY OUTCOME IN WOMEN WITH UNEXPLAINED ANTEPARTUM HAEMORRHAGE

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Introduction: Antepartum haemorrhage (APH), defined as bleeding from the genital tract during pregnancy, is commonly from placenta praevia or placental abruption and less commonly due to local genital causes. In 2% to 3% cases the reason for bleeding remains unknown. Such bleeding has been linked with adverse pregnancy outcomes. We aimed to study foeto-maternal outcome of such women in our unit.

Materials and Methods: All cases of APH admitted after 20 weeks' gestation (April 2007 to March 2008) were identified. We excluded women with placenta praevia, clinical abruption or those with obvious local cause for bleeding. Case notes for the remaining were retrospectively analysed and data collected for demographics and maternal and perinatal outcome.

Results: After exclusion, 65 cases were identified, incidence 1.7%. Most women were Caucasian (62%), mean age 33 years (14–43 years), average body mass index (BMI) 26 (18–58) with equal proportion of Nulliparas and Multiparas. Mean gestational age at

presentation was 31 weeks (23–41 weeks) while mean gestational age at delivery was 38 weeks (25–42 weeks).

Seven (11%) women delivered preterm and two (3%) developed placental abruption necessitating emergency delivery. 71% went into spontaneous labour and 60% had vaginal deliveries; 18% emergency caesarean sections and 14% assisted vaginal deliveries. Eight (12%) infants were small for gestational age and 10(15%) needed admission to Special Care Baby Unit (SCBU). There was no perinatal mortality.

Conclusion: Most women with unexplained APH proceed to term and have good perinatal outcome but there is significant incidence of preterm delivery which is the main cause for neonatal morbidity. Our numbers are small and a larger study with comparative data from pregnancies without APH will be useful.

1. **McCormack** *et al.* Antepartum bleeding of unknown origin in the second half of pregnancy and pregnancy outcomes. *BJOG* 2008;**115**:1451–57.
2. **Ajayi** *et al.* antenatal testing to predict outcome in pregnancies with unexplained antepartum haemorrhage. *BJOG* 1992;**99**:122–5.

PP.41 INCREASED RISK OF ADVERSE OBSTETRIC OUTCOME IN WOMEN WITH ACQUIRED ACTIVATED PROTEIN C RESISTANCE AND RECURRENT MISCARRIAGE

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Recurrent miscarriage (RM) is associated with acquired activated protein C resistance (APCR). There are no randomised trials to inform best treatment options for women with a history of RM and acquired APCR.

Methods: We conducted a prospective case control study from February 2004 to February 2007. The study group comprised of 121 women with acquired APCR and RM and the control group comprised of 128 women with idiopathic RM; 98 APCR and 102 control women had a subsequent pregnancy. The obstetric outcomes of both groups were elucidated. No patient had previous thrombo-embolism.

A sub-analysis was performed following a choice of treatment offered to the 98 APCR patients: aspirin 75 mg (option 1) or aspirin and fragmin 5000 IU (option 2). 60 patients chose option 1 and 38 chose option 2.

Results: Intrauterine growth restriction (IUGR), placental abruption and pre-eclampsia (PET) occurred in 15%; 12.8% and 6% in the APCR group compared to 20%; 6% and 2.1% in the idiopathic group.

The live-birth rate was similar in both treatment groups 67% in option 1 and 65% in option 2. The rate of abruption was 2% and 6% in the aspirin and fragmin groups; rate of PET and IUGR was 3% and 3.1% in the fragmin group and % and 0% in the aspirin group.

Conclusion: RM with acquired APCR is associated with a higher risk of adverse obstetric outcome. The addition of fragmin did not confer any advantage in reducing adverse obstetric outcomes.

PP.42 THE ROLE OF PHOSPHORYLATED INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN-1 AND TRANSVAGINAL SCAN FOR CERVICAL ASSESSMENT IN PREDICTING PRETERM LABOUR IN TWIN PREGNANCIES

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Background: We set out to evaluate the role of transvaginal scan (TVS) and phosphorylated insulin-like growth factor binding protein-1 (phIGFBP-1) in the prediction of preterm delivery in twin pregnancies. There have been many studies into using the tests separately,^{1–3} but few into combining both.

Method: A retrospective study of forty twin pregnancies between 2006 and 2008 at the Yeovil district Hospital.

A TVS for cervical length assessment at 24 weeks and a high vaginal swab for rapid pHIGFBP-1 test at 26 weeks. A cervical length of >25 mm and a single line on IGFBP were regarded as negative.

Results: 38 patients screened negative for both tests. None of the 38 delivered before 30 weeks, three delivered between 30–33⁺ weeks and all the others delivered after 34 weeks. Two of the deliveries before 34 weeks were caesarean sections for obstetric complications. The third patient went into spontaneous labour at 30 weeks following severe (twin to twin transfusion syndrome) TTTS.

One woman screened positive for both tests; she had a spontaneous preterm delivery at 30 weeks. Another woman screened negative for cervical length and positive for pHIGFBP-1, she delivered at 38 weeks.

Conclusions: Women with twin pregnancies who have a cervical length >25 mm by TVS and a negative pHIGFBP-1 have a low risk of delivery before 34 weeks in the absence of TTTS. The negative predictive value of each test separately or in combination was approximately 97%. Combining both tests does not appear to be superior to each test individually.

1. **Imseis HM**, Albert TA, Iams JD. Identifying twin gestations at low risk for preterm birth with transvaginal ultrasonographic cervical measurement at 24–26 weeks. *Am J Obstet Gynecol* 1997;**177**:1149–55.
2. **Skentou C**, Souka AP, To MS, *et al*. Prediction of preterm delivery in twins by cervical assessment at 23 weeks. *Ultrasound Obstet Gynecol* 2001;**17**:7–10.
3. **Rutanen EM**. Insulin-like growth factors in obstetrics. *Curr Opin Obstet Gynecol* 2000;**12**:163–8.

PP.43 PRECONCEPTUAL CARE IN DIABETIC WOMEN: WHERE DO WE STAND?

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Introduction: This study was to explore the preconceptual advice that women with type 1 and type 2 diabetes received prior to their pregnancy in accordance with the National Institute for Health and Clinical Excellence (NICE) recommendations.

Results: There were 20 women with pre-existing diabetes who were attending the joint clinic during this period. 15 women completed the questionnaire (seven with type 1 and eight with type 2 diabetes). 40% of women felt that the risks of diabetes and pregnancy were explained and 66.6% felt that risks of diabetes for the baby were explained prior to pregnancy. 93.3% knew that good glycaemic control is important. 93% of women took folic acid in the first trimester, however only 33% were taking the recommended 5 mg dose of folic acid and only 33% took preconceptual folic acid. 10 women were on metformin prior to pregnancy. Most of the women (93%) were neither on statins nor angiotensin-converting enzyme (ACE) inhibitors prior to pregnancy. 66% of women had had retinal assessment within a year of getting pregnant and 46% had had their renal function estimated before pregnancy. Most of the women received their preconceptual advice from either their general practitioners or midwives in our study.

Conclusions: Preconceptual counselling aims to educate women with pre-existing diabetes about the importance of tight control of their blood glucose and optimal HbA_{1c} levels prior to conception in order to reduce the morbidity associated with the condition. Our study shows that better preconceptual advice for women with diabetes is needed.

PP.44 EXTERNAL CEPHALIC VERSION – ONLY PARITY AFFECTS OUTCOME

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Introduction: Breech presentation affects 3% to 4% of pregnancies at term. Evidence suggests increased fetal morbidity with vaginal breech delivery in comparison to elective caesarean section therefore

external cephalic version (ECV) should be offered to women with breech presentation.

Objectives: To identify the success of ECV and factors which effect outcome.

Methods: This retrospective observational study included all women attending for ECV from 2004 to 2008. Primary outcome was measured by the success rate and secondary outcome by the vaginal delivery rate. All women received tocolysis. Parity, attitude of the breech, estimated fetal weight, amniotic fluid index, placental site and number of attempts were assessed to evaluate their effect on outcome.

Results: 335 women were included in the study. 77 (23%) of ECV's were successful and 225 (68%) unsuccessful, with 31 (9%) missing data.

ECV was significantly more successful in parous women compared to primigravidas, ($p<0.05$). No other factors had a significant impact on outcome.

There were significantly increased rates of vaginal delivery in the successful group and a significantly higher elective caesarean section rate in the unsuccessful group ($p<0.05$). There was no difference between the two groups in the emergency caesarean section rate.

Most ECVs were successful at the first attempt (61.0%) with the success rate declining with increasing number of attempts.

Conclusions: Successful ECV significantly increases the incidence of vaginal delivery and reduces the need for caesarean section. The success rate is higher in parous women and no other factors were found to significantly affect outcome.

PP.45 TWO-YEAR OUTCOMES FOR INFANTS WITH LOW CORD PH AT BIRTH

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Background: Long-term outcome of neonatal acidosis remains uncertain. Presently, babies who do not appear to have any difficulties immediately after birth, despite a venous cord pH of ≤ 7.0 , are not followed up clinically.

Aim: To determine the long-term outcome of infants born with venous cord pH ≤ 7.0 .

Methods: A prospective case-control was conducted between June 2004 and January 2009. Each case (singleton birth with venous pH < 7) was matched for gestation, gender and mode of delivery with a control. Ages and Stages Questionnaires (ASQ)TM and Health Screening Questionnaires were sent out at 24 months of age. Two independent assessors who were blinded to the case assignment reviewed intrapartum and neonatal events to look for clinical evidence of birth asphyxia among the cases. Composite score was also given by an independent assessor.

Results: 60 infants were recruited (24 cases and 36 controls). 17 matched pairs with no clinical evidence of birth asphyxia were available for analysis. Complete data are available for 17 matched pairs with no evidence of birth asphyxia assessed at median age of 25.4 months (range 24–36 months). One case died after the age of one (severe cerebral palsy).

Conclusion: We found no evidence that babies with low cord pH and no evidence of birth asphyxia have an increased risk of abnormal neurodevelopmental outcome.

Abstract PP.45

	Case (n = 17)	Control (n = 17)
Abnormal Ages and Stages Questionnaires (number (%))	2 (11.8%)	1 (5.9%)
Abnormal composite score (number (%))	3 (17.6%)	1 (5.9%)

PP.46 TURNING THE MANAGEMENT OF BREECH PRESENTATION UPSIDE DOWN

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Background: External cephalic version (ECV) is a safe and effective way to avoid Caesarean section (CS). The RCOG recommends that ECV should be offered routinely where there is adequate expertise.

Method: This audit compared practice in a teaching hospital in Newcastle upon Tyne (6000 deliveries a year) against the Royal College of Obstetricians and Gynaecologists (RCOG) Green-top guideline "External Cephalic Version and Reducing the Incidence of Breech Presentation". Women with a singleton breech presentation at term between May 2007 and October 2007 were identified retrospectively. Data were extracted using a proforma designed for the audit.

Results: 65 women were identified: 57 (88%) were diagnosed antenatally and eight in labour. No women diagnosed in labour were offered ECV. Six of them had unplanned vaginal breech deliveries and two had emergency CS.

ECV was offered to 48 women diagnosed antenatally (74%). 33 women chose ECV (69%); 13 (39%) were successful (mode of delivery: nine cephalic vaginal deliveries; four emergency CS); five had spontaneous versions. 15 women had unsuccessful ECVs (mode of delivery: 11 elective CS, three emergency CS and one unplanned vaginal breech delivery). 15 women declined ECV (mode of delivery: 11 elective CS, three emergency CS and one unplanned breech vaginal delivery).

Discussion: Uptake and success rates of ECV were low. The success rate was lower than the 50% which women were advised. After updating staff regarding ECV we should aim to offer all eligible women ECV to increase numbers and develop clinical skills. A re-audit to assess improvement is planned for 2009.

PP.47 CERVICAL IMMUNOBIOLOGY IN WOMEN AT RISK OF PRETERM LABOUR (CERVIX STUDY)

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Introduction: Previously, we have shown that women with a low cervical macrophage count before 20 weeks gestation were more likely to have recurrent preterm birth, so we have investigated the relationship between cervical macrophage and morphological ultrasound findings in this observational non-interventional study.

Abstract PP.47

Tests	Previous preterm labour (PTL)			p Value
	Delivered <34 weeks (n = 5) mean (SD)	Delivered > 34 weeks (n = 6) mean (SD)	Controls delivered >34 weeks (n = 22) mean (SD)	
Leukocytes				
Macrophages	0.136 (0.018)	0.22 (0.182)	0.234 (0.288)	0.737
Monocytes	0.002 (0.004)	0.007 (0.016)	0.001 (0.005)	0.356
B cells	0 (0)	0.002 (0.004)	0.001 (0.005)	0.779
T cells	0.006 (0.013)	0.007 (0.016)	0.031 (0.055)	0.37
Granulocytes	0.046 (0.103)	0.103 (0.160)	0.16 (0.181)	0.372
Dendritic cells	0 (0)	0 (0)	0.01 (0.033)	0.617
Ultrasound				
CX Length	3.276 (0.617)	3.782 (0.817)	3.93 (0.72)	0.207
CX Volume	26.242 (5.537)	35.052 (8.108)	35.631 (6.23)	0.022
Vascularisation Index	5.305 (2.569)	12.034 (10.32)	12.306 (7.858)	0.208
Flow Index	29.108 (5.143)	31.797 (5.389)	33.348 (4.725)	0.221
Vascularisation Flow index	2.064 (1.955)	3.448 (2.695)	3.513 (3.066)	0.595

Methods: Cytobrush swab of the external cervical os for Leucocytes sub-population as assessed by flowcytometry, three-dimensional (3D) Trans-Vaginal and Power Doppler scan for cervical ultrasound studies.

Conclusion: Cervical volume may be associated with preterm labour (PTL). Although leukocytes findings are statistically insignificant, macrophages appear to be present in fewer numbers in PTL patients who delivered <34 weeks.

PP.48 STEROID USAGE IN RECURRENT MISCARRIAGE – IS IT OF BENEFIT?

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Aim: To assess the effect of steroids on pregnancy outcome in patients with recurrent miscarriage (RM).

Methods: A retrospective study of 277 patients. 49 patients were excluded as a result of incomplete data or failure to conceive. Further seven patients were excluded because of ectopic or molar pregnancy. Patients at their first visit had their CD56/CD16 NK cell absolute count and percentage of lymphocytes and natural killer (NK) cell CD69 activation measured. Thrombophilia screen, other antibodies, sonography and karyotyping were done to exclude other causes. CD69 count ≥ 1 was considered abnormal. SAS was used for statistical analysis. Contingency analysis was used to evaluate the effect of steroids on pregnancy outcome and Logistic Regression to determine the best NK cell marker for the use of steroids to improve outcome.

Results: Patients with high CD69 counts (n=50) had a miscarriage rate of 10% when treated with steroids compared to a miscarriage rate of 37% if the CD69 count was normal (n=162). Contingency analysis showed a significant difference in the pregnancy outcome with the use of steroids in patients with a CD69 count of $\geq 1 \times 10^6/\text{ml}$ (p<0.001). NK CD69 activity appears to be a better outcome predictor (p = 0.052) with steroid usage in pregnancy compared to CD56/CD16 NK cell absolute count and percentage.

Conclusion: Steroid usage in patients with high CD69 count may increase the livebirth rate. Prospective studies and comparison with untreated patients is required to find the best possible marker for Natural killer cell activity in patients with RM.

PP.49 SIMPLE TOCOLYSIS TO AID EXTERNAL CEPHALIC VERSION

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Background: The successes rate of external cephalic version (ECV) has been proven to increase with the use of Tocolysis.

Objective: To assess the outcome of ECV for term breech using 10 mg of ritodrine intramuscular (I.M) injection for tocolysis.

Design: Retrospective audit on all ECVs from 1 January 2001 to 31 December 2008

Results: In total, 253 ECVs were preformed on 249 patients. An intramuscular injection of 10 mg ritodrine was given 10–20 min prior to the procedure. The overall success rate of ECV was 61% (53% in Primips compared to 74% in multips) and 85% of successful ECVs achieved a cephalic vaginal delivery (77% primips compared to 89% multiparous). The intramuscular injection was a simple and quick route for tocolysis and it was well tolerated by the patients.

Conclusions: The route of administration of and type of the tocolytic drug used for ECV have varied but nothing in the literature proved one route superior to the other. Intramuscular ritodrine is an easy and well-tolerated route. More research is needed comparing intramuscular ritodrine to other routes of administration or types of drugs for tocolysis.

PP.50 AN AUDIT OF POSTNATAL CONTRACEPTION IN A TEENAGE PREGNANCY POPULATION

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With the highest rate in Western Europe, UK teenage pregnancies remain a socio-economic and health concern. Those presenting with teenage pregnancy are a self-selected group at higher risk of further unplanned teenage pregnancy. Adequate provision of contraception is important in reducing this risk, to assist in achieving government targets for halving teenage conception rates by 2010.

In a retrospective audit, we reviewed the notes of women delivered under the teenage pregnancy service in 2006 at Salford Royal Hospital. We looked at how many teens were offered contraceptive advice after their pregnancies, what proportion was actually prescribed a method of contraception upon discharge and what this method of contraception was.

Out of the 132 patients, we found that 80 (61%) had no evidence of contraceptive counselling. Of the 52 (39%) who were offered advice, 18 (35%) declined contraception. Of those who did accept contraception, 9% opted for barrier methods, 44% for the oral contraceptive pill (OCP) or patch and 41% for long acting reversible contraception (LARC).

Our results suggest that postnatal contraceptive counselling and provision was deficient in this group at this time. The majority of those commenced on contraception opt for the OCP or patch which is not as reliable as LARC.

These deficiencies could leave this teenage population at risk of further unplanned pregnancy. We propose routine contraceptive counselling in the antenatal period to improve standards and outcomes.

PP.51 FACTORS AFFECTING SECONDARY RECURRENT MISCARRIAGE

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Background: Secondary recurrent miscarriage is defined as three or more consecutive pregnancy losses after a delivery of a viable infant.

Objective: The aims of this study were to determine if secondary recurrent miscarriage is associated with (i) gender of previous baby, maternal age, pregnancy to miscarriage interval and duration of miscarriage history (ii) increased risk of other pregnancy complications.

Methods: Retrospective review of 66 cases of secondary recurrent miscarriage from the pregnancy loss clinic.

Results: The median age at first miscarriage was 37 years (range 21–41) and the median duration of miscarriage history was two

years (range 1–8). All patients had routine recurrent miscarriage investigations and 21% (n = 12) had an abnormal result. These included two prothrombin gene mutation and three factor V Leiden heterozygotes, one with a combination of both, three decreased luteal phase progesterones, two chromosomal abnormalities and one polycystic ovarian syndrome combined with hypothyroidism. 33 (63%) of these women gave birth to a male child (or children) prior to the recurrent miscarriages compared to 19 (37%) who gave birth to a female child. The majority of these women had a history of uncomplicated full term, normal birth-weight vaginal deliveries.

Conclusion: There is a high incidence of thrombophilia in this population. However, secondary recurrent miscarriage does not seem to be associated with adverse fetal outcomes. The results of this study suggest that a previous male child may be associated with an increased risk of secondary recurrent miscarriage. Further investigations at molecular level should help to further investigate these findings.

PP.52 LIVERPOOL WOMEN'S STILLBIRTH AUDIT: STANDARDS OF CARE AND THEIR RELATION TO GESTATIONAL AGE

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Introduction: Our previously reported classification of stillbirths by standard of care has been expanded to include relationship with gestational age when stillbirths occur.

Methods: 159 stillbirths born between 2004 to 2007 after excluding termination of pregnancies and lethal congenital abnormalities were classified into four categories: 1) Normal care, 2) Different management may not have altered outcome, 3) Different management may have altered outcome and 4) Different management would reasonably have been expected to alter outcome.

Results: Themes identified were failure to identify fetal growth restriction (FGR), a pre-existing risk for FGR/abruption, non-reassuring cardiotocograph (CTG) and diabetes. Stillbirths where different management could have influenced outcome were most common at 29–31 weeks (n = 11) and 38–40 weeks (n = 14). Of these, 17 (68%) were stillbirths related to FGR despite monitoring with symphysis-fundal height (SFH) measurements, growth scans or CTG.

Conclusion: Our findings suggest there are two distinct groups of stillbirths where management could be improved: very early and late onset FGR. Reliance on SFH and serial growth scans discontinued too early may be contributory factors. Strategies for recognising early onset FGR should be developed. Continued surveillance in pregnancies at high risk for late onset FGR should be considered.

Abstract PP.52 Stillbirths in each standard of care category by gestational age

Category	23–25 weeks	26–28 weeks	29–31 weeks	32–34 weeks	35–37 weeks	38–40 weeks	41 weeks	Total
Stillbirths	24 (%)	18 (%)	9 (%)	20 (%)	28 (%)	41 (%)	9 (%)	159
1	20 (20)	11 (11)	7 (7)	12 (12)	19 (19)	25 (25)	6 (6)	100
2	2 (17)	1 (8)	1 (8)	3 (25)	2 (17)	2 (17)	1 (8)	12
3	2 (5)	6 (14)	8 (20)	4 (10)	7 (17)	12 (29)	2 (5)	41
4	0	0	3 (50)	1 (17)	0	2 (33)	0	6