Methods Five hundred and eleven women with uncomplicated, term, singleton pregnancies, underwent a pre-labour ultrasound assessment. This included measurement of fetal biometry, Umbilical artery, Middle cerebral artery, and Umbilical venous resistance indices. Clinicians managing the labour were blinded to the ultrasound results. Following delivery, case notes were reviewed and intra-partum outcomes correlated with ultrasound findings.

Results Infants born by Caesarean section for presumed fetal compromise had the highest Umbilical artery pulsatility index (p = 0.002), the lowest Middle cerebral artery pulsatility index (p < 0.001), the lowest cerebro-umbilical ratio (p < 0.001), the lowest Umbilical venous flow rates (p = 0.003), and the highest cerebral blood flow of any mode of delivery group (p = 0.007). A cerebro-umbilical ratio <10th centile has a positive predictive value of 36% for Caesarean section for presumed fetal compromise. This can be improved to 61.5% by inclusion of the other Doppler parameters. A cerebro-umbilical ratio >90th centile has a 100% negative predictive value.

Conclusion Pre labour fetal Doppler assessment can identify fetuses at both high and low risk of subsequent compromise in labour. Current intra-partum monitoring has a high false positive rate, which could be improved by better risk stratification prior to labour. This technique is easily translatable into clinical practise and would allow risk stratification of normal pregnancies prior to labour, enabling a more targeted approach to intra-partum care.

3.2 WHAT ARE THE INTRAPARTUM RISKS ASSOCIATED WITH OBESITY IN HEALTHY WOMEN WITHOUT ADDITIONAL RISK FACTORS? EVIDENCE FROM THE BIRTHPLACE IN ENGLAND NATIONAL PROSPECTIVE COHORT STUDY

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Maternal obesity is a risk factor for intrapartum complications but some risks may be attributable to the higher prevalence of co-morbidities. This study evaluated the impact of maternal obesity on outcomes requiring obstetric or neonatal care in otherwise low risk births.

Methods We analysed 17,230 women without additional risk factors planning obstetric unit birth in the Birthplace cohort. We adjusted for maternal characteristics using Poisson regression. We evaluated two composite outcomes capturing need for obstetric or neonatal care.

Results The risk of requiring obstetric care (augmentation, instrumental/emergency caesarean delivery, blood transfusion, 3rd/4th degree tear, high dependency care) tended to increase with BMI, but nulliparous women of normal weight had higher absolute risks and were more likely to require obstetric care than multiparous women of BMI > 35 kg/m^2.

Abstract 3.2 Table Percentage receiving obstetric care and adjusted relative risks

	Nulliparous (n = 8795)			Multiparous (n = 7857)		
BMI (kg/m2)	%	RR	(95%CI)	%	RR	(95%CI)
<18.5	45.6	0.94	(0.82–1.09)	14.6	0.87	(0.57–1.31)
18.5–24.9	52.9	1	-	17.7	1	-
25–29.9	55.7	1.04	(0.99–1.08)	20.2	1.16	(1.02–1.32)
30–35	60.2	1.12	(1.05–1.18)	21.3	1.22	(1.05–1.42)
35+	57.1	1.08	(0.99–1.18)	21.0	1.24	(0.97–1.59)

The perinatal composite (intrapartum stillbirth, early neonatal death or neonatal unit admission) exhibited a similar pattern: absolute perinatal risks were higher in nulliparous women of normal weight vs. multiparous women with BMI > 35 kg/m^2 (3.7% vs. 2.9%).

Conclusions Otherwise healthy obese multiparous women have lower intrapartum risks than nulliparous women of normal weight. Planned birth in Alongside Midwifery Units may be safe for some multiparous women with BMI > 35 kg/m^2.

3.3 A CLUSTER RANDOMISED TRIAL TO ENHANCE ASSESSMENT AND REPAIR OF BIRTH ASSOCIATED PERINEAL TRAUMA: THE PEARLS STUDY

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Background Birth associated perineal trauma affects millions of women worldwide. The aim of the Perineal Assessment and Repair Longitudinal Study (PEARLS) was to evaluate if an enhanced, cascaded training programme improved implementation of evidence-based practise in perineal assessment and repair and reduced subsequent maternal morbidity.

Methods PEARLS was a pragmatic matched pair cluster randomised controlled trial with 22 participating UK maternity units. Within each of the 11 matched pairs one unit was randomised to receive the intervention early (cluster A) and the other late (cluster B). Women sustaining a second-degree tear or episiotomy were eligible. Outcomes included pain on activity at 10–12 days postnatal, clinically reported outcomes by women and implementation of evidence-based surgical repair. Analysis was based on summary statistics at cluster level, using paired t-tests.

Results 1470 and 2211 women were recruited in groups A and B respectively. No significant difference in mean primary outcome was noted between clusters that had received the intervention and those who had not (0.7% 95% CI (–10.1%, 11.4%), p = 0.89), with the overall percentage of women being 77% and 74% respectively. Improvement was seen in implementation of evidence-based perineal management. A significant reduction was noted in mean percentages of women reporting wound infections and needing suture removal in the early intervention clusters.

Conclusion PEARLS is the first RCT to assess the impact of a 'hands-on' training package on implementation of evidence-based perineal trauma management and clinical outcomes for women. Findings will support improvements in clinical practise and women's longer-term health.

4.1 AMIPROM: A PILOT RCT ON SERIAL TRANSABDOMINAL AMNIOINFUSION VERSUS EXPECTANT MANAGEMENT IN VERY EARLY PROM (ISRCTN 8192589)

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Objective a randomised controlled multicentre pilot study to assess:

- the feasibility of recruitment and the retention through to long term follow up of participants with very early rupture of membranes.
- short- and long-term outcomes and data to inform a larger, definitive clinical trial.

Participants Women with singleton pregnancies and confirmed preterm prelabour rupture of membranes between 16^{+0} and 24^{+0} weeks gestation.

Women with fetal abnormality or obstetric indication for immediate delivery were excluded.

Interventions Participants were randomly allocated to either serial weekly trans-abdominal amnioinfusions when the deepest pool of amniotic fluid was less <2 cms or expectant management.

Results 58 pregnancies recruited: 28 in the amnioinfusion group (AI); 28 in the expectant management group (exp); two post-randomisation exclusions. Overall perinatal survival in both groups was 17/56.

Mean gestational age for AI group was 28.4 weeks vs. 29.8 weeks for exp (mean SD-1.4, 95% CI –0.2–1.5). One case of severe maternal sepsis requiring admission to HDU in the expectant management arm.

Overall chance of surviving without long-term respiratory or neurodevelopmental disability is 7.1%; 4/28 (14%) in the AI group and 0/28 in the exp group (RR 9.0; 95% CI 0.51, 159.70).

Conclusions The pilot findings do not suggest that clinicians should alter the current practise of expectantly managing rupture of membranes between 16 + 0 and 24 + 0 weeks of pregnancy. A larger definitive study to evaluate whether amnioinfusion has a cost-effective and acceptable role in improving healthy survival in very early rupture of membranes indicated.

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4.2 VARIATION IN BETA DEFENSIN 1 GENOTYPE IS ASSOCIATED WITH PRETERM BIRTH

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Introduction Human beta defensin 1 (HBD1) is an antimicrobial and immunomodulatory peptide present in cervical mucus. Variation in cervical antimicrobial expression is associated with preterm labour. We hypothesised that SNPs in the HBD1 gene may be associated with preterm birth.

Methods This is a retrospective case control study using blood collected at 11–13 weeks from women attending King's College Hospital March 2006-September 2010. 50 women with PPROM and 50 with spontaneous preterm labour were matched with 300 who delivered >37/40. SNPs rs1799946 (5'UTR) and rs1047031 (3'UTR) were genotyped by KASP assay (Kompetitive Allele Specific PCR, KBioscience). Data were analysed using multiplicative (rs1047031) and recessive (rs1799946) models and Chi Square Test.

Results There was no difference in BMI, smoking status or ethnicity between groups. Genotyping was successful in 98% (n = 390) and 97% (n = 386) samples for rs1047031 and rs1799946 respectively. Allele distribution demonstrated Hardy-Weinberg equilibrium. AA-homozygotes (rs1799946) had increased risk of PPROM; OR 2.24 (95%CI 1.11–4.49), p = 0.0.0257. 117 women had at least one prior delivery <37/40, 36 had a history of delivery <28/40. AA-homozygotes (rs1799946) had increased risk of delivery <37/40; OR 2.14 (95%CI 1.24–3.68), p = 0.005 and <28/40; OR 4.08 (95%CI 1.93–8.63), p < 0.0001. A allele carriers (rs1047031) were less likely to deliver <28/40; OR 0.288 (95%CI 0.121–0.683), p = 0.003.

Conclusion rs1799946 is associated with PPROM, a doubled risk of delivery <37/40 and a four-fold increase in the risk of delivery <28/40. rs1047031 may be protective. Variation in immune genotype may contribute to the clinical phenotype of women who deliver preterm.

4.3 THE RELATIONSHIP BETWEEN CAUSE AND TIMING OF PREVIOUS STILLBIRTH AND THE RISK OF STILLBIRTH IN SECOND PREGNANCIES

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Background Women with a previous stillbirth are at increased risk of stillbirth in their second pregnancy. However, there is little information on the relationship between the cause and timing of stillbirth in the first pregnancy and the risk in the second.

Methods and Results We identified 244,122 records in nationally collected Scottish data with complete information on their first and second births. The risk of stillbirth in the second pregnancy was 2.7 per 1,000 among 242,800 women with previous live birth and 15.9 per 1,000 among 1,323 women with previous stillbirth (odds ratio [OR] = 5.95 [95% CI 3.84–9.22] p < 0.001). Adjustment for maternal characteristics had no material effect. The risk was similarly elevated for different causes of stillbirth in the first pregnancy. It was also similarly elevated whether the previous stillbirth was extreme preterm (24–32 weeks) or late preterm/term (33–43 weeks). However, the association in the second pregnancy significantly varied across the range 24–43 weeks (test of proportional hazards assumption p = 0.01). Previous stillbirth was strongly associated with the risk at 24–28 weeks (15.66 [8.44–29.05], P < 0.001), at 29–32 weeks (5.16 [1.64–6.27], P = 0.005) and 33–36 weeks (6.03 [2.47–14.72], P < 0.001) but there was no significant association at term (1.7 [0.42–6.82]), probably due to routine elective delivery at 37–38 weeks.

Conclusion Previous stillbirth is a strong risk factor for stillbirth in second pregnancies irrespective of the cause of the first stillbirth. The recurrence risk is much higher at extreme preterm gestational ages, but is still present at 33–36 weeks.

Fetal Medicine Posters

PF.01 PRENATAL CHROMOSOMAL MICROARRAY USE: A PROSPECTIVE COHORT OF FETUSES AND A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background Chromosomal microarray testing (CMA) is utilised in prenatal diagnosis to detect chromosomal abnormalities not visible by full, conventional karyotyping. We present our prospective cohort of women undergoing fetal microarray and karyotyping for an abnormal prenatal ultrasound scan (USS). This cohort is presented in the context of a systematic review and meta-analysis of the literature (until December 2012) which defines overall detection rates by microarray over karyotyping.

Systematic review methods: MEDLINE (1970–June 2012), EMBASE (1980–June 2012), Cinhal (1982–June 2012) were searched electronically. Selected studies had >5 cases and microarray testing was performed prenatally in addition to karyotyping. The search yielded 559 citations. Full manuscripts were retrieved for 85 and 24 primary studies were included in the systematic review.

Cohort Methods A prospective cohort study of 243 women undergoing microarray testing alongside karyotyping when a structural abnormality was detected on prenatal USS.

Results When clinical indication for testing was abnormal fetal USS our cohort study noted a 4.1% increase in detection rate; lower than the rate of 10.1% (95% CI 8.0–12.7%) by meta-analysis. When any clinical indication for prenatal microarray was meta-analysed the detection rate over karyotyping was 5.6% (95%CI 3.0–10.6%) and the variant of unknown significance (VOUS) rate was 1.4% (95%CI 0.5–3.7%).