admission to the neonatal unit (adjOR 1.35, 95% CI 1.06–1.72) and to have a congenital anomaly (adjOR 1.71, 95% CI 1.07–2.76). The overall caesarean section rate in nulliparous women was 23.9% with marked differences at the extremes of maternal age; 10.7% at age ≤ 17 years, adjOR 0.46 (95% CI 0.34–0.62) and 54.4% at age ≥ 40 years, adjOR 3.24 (95% CI 2.67–3.94).

Conclusions Extremes of maternal age need to be recognised as risk factors for adverse delivery outcomes. Low caesarean section rates in younger women suggest that a reduction in overall caesarean section rates may be possible.

PL.22 LACTATE CLEARANCE AND OUTCOME IN NEONATES COOLED FOR HYPOXIC ISCHAEMIC ENCEPHALOPATHY

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Aims To investigate the clearance of blood lactate level in neonates undergoing whole body cooling for hypoxic ischaemic encephalopathy (HIE) related to their outcome.

Methods Retrospective case note review of infants receiving whole body cooling at a tertiary neonatal centre with outcome data enabling grouping into normal or abnormal neurological examination, or death, at follow up. Blood lactate measurements taken at 6, 12, 18, 24, 48, 72 and 96 hours were compared across the outcome groups. Data is given as median (± interquartile range)

Results 61 infants were identified with birth weight 3.31 (2.77–3.55) kilogrammes, gestation 39 (38–40) completed weeks, ten minute Apgar score of 5 (2–6) and arterial cord pH 6.95 (6.82–7.08). 13 infants died, 14 had abnormal and 34 normal neurological follow up at last examination.

Kruskal-Wallis test demonstrated significant differences in blood lactate between the three outcome groups at 6, 12, 18, 24, 48 and 72 hours:

Abstract PL.22 Table 1

Median lactate mmol/L		Time 6hr	12hr	18hr	24hr	36hr	48hr	72hr	96hr
Outcome	Normal	7.4*	4.3*	4.4*	3.1*	2.3	1.9*	1.4*	1.7
	Abnormal	6.7	5.2**	5.6	4.8	3.4	3.0	2.6***	2.0
	Death	13.5	10.4	7.7	4.3	3.9	4.2	4.6	2.0

Using Mann Whitney U test: * p < 0.03 compared to those who died, **p < 0.02 compared to those who died, *** p < 0.02 compared to those who had a normal outcome.

Conclusions In this preliminary study blood lactate measurement shows statistically significant differences for neonatal outcome in terms of death, abnormal or normal examination. This may aid prognostication in infants suffering HIE, and help determine further management.

PL.23 USE OF QUANTITATIVE FETAL FIBRONECTIN MAY IMPROVE RISK ASSESSMENT IN SYMPTOMATIC WOMEN AT RISK OF PRETERM BIRTH

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Background The presence of raised fetal fibronectin (fFN) levels in cervicovaginal secretions between 24–34 weeks gestation is associated with an increased risk of spontaneous preterm birth in symptomatic women. Recent developments in testing now enable a quantitative level to be derived. Currently, a level of ≥50 μmol/l is considered a positive test result. Presently, there is no data to guide clinicians as to which levels signify greater or lesser risk of imminent delivery.

Method This retrospective study was undertaken within Leeds Teaching Hospitals Trust. All fFN tests undertaken in the Maternity Assessment Unit between August 2010 and July 2012 were ascertained, and pregnancy outcomes were collated. 303 results had adequate data to allow analysis and 97 of these included quantitative fFN levels.

Results The overall sensitivity of the test in predicting delivery within 14 days of the test was 64.3%, with a positive predictive value of 17.3%. The specificity of the test was 85.1%, with a negative predictive value (NPV) of 98.0%. The test was more reliable when used in gestations ≤29 weeks when compared to those ≥ 30 weeks as higher values were obtained for specificity and sensitivity; 85.8% and 100% respectively. When examining the quantitative data, the percentage of ladies who delivered within 14 days from the test was 3% if fFN levels were between 0–19, 20% (20–49), 0% (50–199), 20% (200–499) and 100% (>500).

Conclusion Knowledge of quantitative fFN levels may enable more accurate risk assessment of symptomatic women at risk of preterm birth, and inform follow-up pathways.

PL.24 DO BIRTH PLACE DECISIONS CHANGE OVER A WOMAN'S CHILDBEARING CAREER?

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In England, most women give birth in hospital obstetric units (OUs). First births usually occur in an OU, and women are thought more likely to opt for a different place of birth in subsequent pregnancies, especially if their first births are straightforward. However, this assumption is not based on evidence, because few studies explore the impact of birth on future birth place intentions.

This NIHR-funded research used a longitudinal, narrative design; 41 women with mixed parity and clinical risk profiles were recruited, using a maximum variation sampling strategy, and 113 interviews were conducted during pregnancy, birth and the early postnatal period. Longitudinal data analysis explored the influence of events during birth upon future birth place intentions.

Planned place of birth, willingness to consider different settings and the timing of birth place decisions all differed by parity. Most women who intended to give birth in hospital did so; following birth, they would usually do the same in future, even if their births were straightforward. Women who planned birth in non-hospital settings were less likely to achieve this, especially during first pregnancies, but usually wanted to achieve non-hospital birth in the future.

These findings raise questions about the effect of birth place decisions made during one pregnancy upon women's subsequent childbearing careers, and have implications for the sustainability of options other than obstetrician-led units. When balancing risks and benefits of OU birth in one pregnancy, it is important to consider the impact this experience might have on women's future birth place decisions.

PL.25 PRENATAL DIAGNOSIS OF CONGENITAL HEART DISEASE: EFFECT ON LABOUR PROGRESS AND MODE OF DELIVERY

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Objective To compare mode of delivery in fetuses with known congenital heart disease (CHD) versus the background rate in non-anomalous fetuses.
Methods We examined all cases of prenatally-diagnosed CHD over the 5-year study period, 2007–2011. Data were extracted from computerised patient records. Control data for non-anomalous fetuses were obtained from published hospital records for 2007. Categorical data were analysed using Fisher's exact test (5% level significant).
Results We identified 242 cases of prenatally-diagnosed CHD over the study period. We excluded 25 lethal karyotypes, 7 miscarriages and 1 termination. Of the remaining 209 cases, complete labour records were available for 158 women. There were 146 live births (92%) and 12 antepartum stillbirths at ≥24 weeks (8%). Of the live-born infants with CHD, the perinatal mortality rate was 41 per 1,000. Extra-cardiac defects and non-lethal karyotypic abnormalities were present in 22% (n = 34) and 11% (n = 18) of the cohort respectively. Overall, 23% (34/146) underwent elective caesarean section (CS). The remaining 112 women had a trial of labour, with a 13% (n = 15) intrapartum CS rate. The rate of intrapartum CS for nulliparous women with known CHD was 18% (8/45), which was not different to the rate in nulliparous controls in 2007 (13%; 432/3324; p = 0.27). The equivalent rate in multiparous women was 10% (7/67) in CHD versus 2.4% (80/3392) in controls without previous CS (p = 0.0013).
Conclusions The rate of intrapartum CS in fetuses with known CHD is not different to the background rate in nulliparous women but is increased in multips.

PL.26 VALIDATION OF A FORMATIVE ASSESSMENT TOOL FOR VACUUM DELIVERY

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Introduction Operative vaginal delivery is one of the first operative procedures a trainee obstetrician performs independently. Competence is developed through work place experience and formative feedback in the form of OSATS. In OSATS each subtask is classified as 'competent' or 'needs help' with a global rating scale to support the assessment. We have developed a formative assessment tool that is likely to aid the feedback by classifying each subtask into five skill levels.
Aim To ascertain the construct validity of a new formative assessment tool.
Method Twenty three videos of vacuum delivery conducted by 10 expert (ST6 and above) and 13 novice (ST1 and ST2) obstetricians were recorded. The video recordings were anonymised and reviewed by a senior obstetrician using the formative assessment tool to score the video recording. There were a total of 12 subtasks, each scored between one and five.
Results The mean score for the experts was 48.4 (80.6%) compared to the mean score for novices of 34.6 (57.7%). The students T test result was significant at 5.01 with p value of <0.001 and 95% confidence intervals of 8.6 to 19.1. The average median score for experts was 4.8 and for novices was 3.3.
Discussion The above findings show that the formative assessment tool for vacuum extractor delivery has construct validity and is able to differentiate between an expert and a novice. We believe that the detailed feedback using this assessment tool will facilitate greater understanding of the skills required to develop expertise in vacuum extractor delivery.

PL.27 ASSESSMENT OF THE DELIVERY OF CELL PENETRATING PEPTIDES TO HUMAN UTEROPLACENTAL CELLS

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Introduction The increasing incidence of preterm birth, the severity of its consequences and the inability of current therapies to improve morbidity and mortality in clinical trials creates an urgent need to develop effective new treatments[1]. Cell penetrating peptides (CPP's) are short peptides that facilitate delivery of drug cargo across plasma membranes, showing great promise as intracellular drug delivery vectors in many clinical fields[2]. However, the efficacy of CPP delivery of cargo to human uteroplacental cells remains to be resolved. We aimed to explore the capacity of 3 different CPPs to deliver fluorescent cargo to human myometrial and placental cells in vitro.
Methods Human myometrial and amnion cell cultures were prepared from tissues obtained at elective Caesarean section. Three separate CPPs (TAT peptide, polyarginine, and Penetratin peptide) were conjugated to AlexaFLuor488 dye and compared with non-cell-permeable peptide ($(GC)_4$). Cells were incubated at 37°C with fluorescently labelled CPP-cargo conjugates and visualised using live cell confocal microscopy.
Results Myometrial or amnion-derived cells consistently expressed fluorescent cargo delivered with each CPP at 1–10 μM after 1–4 hours. Peptide staining often was punctuate throughout the cell cytoplasm appearing perinuclear at the longest timepoints and highest concentrations. At concentrations below 1 μM there was little evidence of cargo uptake. No fluorescent cargo was delivered with $(GC)_4$.
Conclusion CPP's show promise as cargo delivery vectors in human uteroplacental cells. Their potential use as vectors for bioactive cargo in these cells requires further study.

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PL.28 WITHDRAWN BY AUTHOR

PL.29 MOBILE APPS: THE FUTURE OF PREGNANCY PATIENT INFORMATION

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Introduction Throughout a 'normal' pregnancy women receive up to 45 paper-based patient information leaflets from healthcare professionals about pregnancy, birth and postnatal care. At St Michael's Hospital, Bristol we are developing a smart-phone application (app) to deliver our pregnancy related patient information. We aim to improve patient experience whilst significantly reducing financial and environmental costs. There is a paucity of literature around the use of smart phone apps in healthcare, despite this being a growing area commercially. This project assesses the acceptability of women receiving pregnancy related information electronically.
Method A structured answer survey was carried out on 50 consecutive women attending consultant antenatal clinic. The results were collated and analysed.
Results Fifty women participated in the survey. Thirty six (72%) women owned and used a smart-phone. Of these 21 (58%) women reported to have used pregnancy related applications on their phones and 33 (86%) stated that they would consider accessing antenatal information through a phone application. 37 (74%) of women showed a preference towards using applications (24 women) or internet (13 women). 19 (38%) women showed a preference towards using paper leaflets.
Conclusion Women would like their pregnancy patient information in electronic form, and would prefer to use smart phone applications. We anticipate that by the introduction of a smart phone application and providing information on the internet we will improve patients experience whilst reducing costs.