

E-Posters

Labour and obstetric complications (EP10)

EP10.01

Transabdominal cerclage (TAC) via laparotomy or laparoscopy: obstetric outcomes in patients with previous failed transvaginal cerclage (TVC)

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Introduction Cervical cerclage has been used as a treatment for cervical insufficiency for over 50 years. TAC is indicated for cervical insufficiency not amenable to a transvaginal procedure, or following previous failed or suboptimal TVC. Suboptimal TVC women have a surviving infant but required prolonged bed rest and/or hospitalisation during pregnancy and/or had premature deliveries despite the TVC. The aim was to evaluate the obstetric outcome when either laparotomy or laparoscopy are used to insert a transabdominal cervical cerclage.

Methods We compared a prospective cohort of 19 consecutive pregnancies beyond 12 weeks in patients who underwent laparoscopic TAC with a historical control group of 10 patients who had a TAC done via laparotomy. Eligible patients had at least one previous pregnancy with TVC that was suboptimal or failed. Primary outcome was fetal survival. We also looked at increase in gestational age at delivery.

Results There were 14 previous pregnancies with TVC (12 failed and 2 suboptimal) in the laparotomy group and 21 in the laparoscopy group (17 failed and 4 suboptimal). The average gestation duration with TVC was not statistically different ($P = 0.463$) in the two groups: laparotomy: 24.4 ± 2.3 weeks; laparoscopy: 26.8 ± 2.0 weeks. TAC resulted in 100% fetal survival in both groups with no significant difference ($P = 0.244$) in the gestation between the laparotomy (36.0 ± 0.5 weeks) and laparoscopy (36.9 ± 0.4 weeks) groups.

Conclusion TAC results in excellent obstetric outcomes in patients with previous failed or suboptimal TVC. There is no statistical difference in outcome between the approaches to insertion. Given this finding and the reduced morbidity associated with laparoscopy, we recommend this approach as first choice whenever possible.

EP10.02

Maintenance tocolysis in preterm labour with nifedipine

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Introduction Preterm birth is the most important determinant of neonatal morbidity and mortality worldwide. Spontaneous preterm labour is the commonest cause of preterm birth and maintenance tocolysis is intended to reduce the incidence of preterm birth.

Methods From 2011 to 2012, fifty women with arrested preterm labour between $26^{+0/7}$ weeks and $33^{+6/7}$ weeks gestation, singleton pregnancy, intact membranes, were enrolled. Tablet nifedipine (plain) was used for acute tocolysis for 48 hours in these women. They were randomised into two groups after successful acute tocolysis. Women in the study group ($n = 25$) received maintenance tocolysis with tablet nifedipine (retard) 20 mg 8 hourly PO for 12 more days. Women, who did not achieve 34 weeks of gestation after 12 days, continued nifedipine till 34 weeks of gestation. The control group ($n = 25$) did not receive maintenance tocolysis. The primary outcome was achievement of term gestation; others were number of days gained from initiation of maintenance tocolysis to delivery (latency) and adverse perinatal outcomes.

Results Mean gestation at admission was $30^{+4/7}$ weeks for study group and $30^{+6/7}$ weeks for control ($P = 0.582$, NS). Median cervical dilatation and effacement was 2.5 cm (IQR 2.5–3.5) and 60% for the two groups. In the study group 7/25 (28%) women while 2/25 (8%) women in the control group, delivered at term ($P = 0.066$). A latency of 20 (IQR 2.5–51) days versus 14 (IQR 1–27.5) days was achieved for study and control group, respectively ($P = 0.269$, NS). Kaplan–Meier analysis showed a positive trend for pregnancy prolongation in the study group ($P = 0.077$). A significantly increased mean birthweight of babies born in study group (2266 versus 1880 g in controls, $P = 0.044$) was observed. A trend towards less number of days of hospital stay for babies in study group (median days 4; IQR 2–10 versus 5.5; IQR 2.25–12 in control) and neonatal care (median days 4; IQR 2.25–39 versus 7; IQR 4.75–17.75 in control) was seen.

Conclusion The beneficial trends of maintenance tocolysis observed in the present study need to be confirmed by a larger study, as the chief limitation of the present study is a small sample size. We observed that selection of women who require tocolysis is important as the present study is the only one with higher number of women in the control group who delivered

preterm actually. Women with true preterm labour and clinically evident cervical changes are more likely to deliver preterm and may benefit more with acute tocolysis followed by maintenance tocolysis.

EP10.03

A case study on life threatening haemorrhage in preterm pregnancy with placenta praevia and management challenges in a level II nursery regional hospital 187 km from tertiary centre **Akhter, A¹; Giorgio, B¹; Adeyemi, A¹; Rafiqul, I²**

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Introduction Placenta praevia, an obstetric emergency that causes 30% of antepartum haemorrhages. At 16–18 weeks of gestation, low-lying placenta occurs in 5% cases but only 0.5% present at term. The time taken to access support for these patients from emergency retrieval team are often challenging. Also, dilemmas may appear on taking decision for in-utero versus ex-utero transfer of neonate to tertiary hospital.

Case The patient was a 32-year-old woman with one prior normal vaginal delivery. Her morphology ultrasound at 19 weeks revealed anterior low-lying placenta 2 cm from the internal os. She presented at 3am with painless unprovoked per vaginal bleeding and lost about 700 mL blood. On admission blood pressure was 140/80 mmHg; heart rate 110. Uterus was soft and non-tender, cephalic presentation, reassuring CTG. Speculum examination confirmed moderate vaginal bleeding with clot. A plan was made to resuscitate with intravenous fluid, insertion of wide-bore cannulae, blood cross-match, steroid for fetus, and transfer to tertiary hospital ASAP. Emergency retrieval team was contacted and transfer was organised by road, which would take 4 hours. Air ambulance was grounded for unfavourable weather. The patient declined both intravenous and intramuscular needle access. Therefore ambulance staff denied transferring the patient, and it took an inordinate time to counsel regarding her life threatening condition and to obtain consent for needle insertion. By the time she consented, there was a loss of 2 L blood in total; heart rate increased and continued bleeding actively. Therefore, decision was made delivering the baby immediately by caesarean section in that hospital after securing support from the emergency retrieval team.

Subsequently, the woman was resuscitated with blood transfusion, crystalloid solution and under general anaesthesia a 1.3 kg baby boy was delivered by uncomplicated caesarean section. The Apgar score of the newborn was 5 in 1 min and 7 in 5 min. The baby was wrapped in a plastic bag, intubation done, CPAP, IPPV performed and shifted to that level II nursery. Emergency retrieval team became available 3 hours after the delivery and the newborn transferred to a tertiary centre. Mother remained in the regional hospital ICU and recovery was uneventful.

Conclusion On diagnosis of placenta praevia potentially requires counselling regarding preterm delivery, intravenous access for resuscitation. Making rapid decision is the key and transfer mechanism needs to be readily available. Regular training and simulation for staff in regional hospital is needed to manage those cases should safe transfer not be possible.

EP10.04

Placenta accreta managed with methotrexate **Arulpragasam, K¹; Sivasuriam, A²**

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Introduction Placenta accreta is a potentially life-threatening obstetric condition that requires a multidisciplinary approach to management. The reported experience of methotrexate treatment in the conservative management of placenta accreta is scant. We report a case which was successfully managed with methotrexate.

Case A 30-year-old woman having undergone a caesarean section in her previous pregnancy was diagnosed with a major degree placenta praevia in the current pregnancy. Interestingly the placenta was noted to be located on the previous caesarean section scar and further imaging noted that it was invading into the myometrium underlying the scar. A planned caesarean section was performed at which the placenta was noted to be invading further into the myometrium, almost reaching the bladder wall. A significant part of the placenta was therefore left behind at delivery. Postpartum haemorrhage was arrested with a balloon. The patient subsequently received methotrexate and was followed up with further imaging. The placenta resolved completely after 4 months leaving behind a normal uterus.

Conclusion This case highlights the successful use of methotrexate for the management of large retained placental parts avoiding major surgical interventions.

EP10.05

Fetal fibronectin: review of results at the Royal Cornwall Hospital Treliiske **Awe, A; Watkins, K**

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Introduction Fetal fibronectin (fFN) has a high negative predictive value for delivery in the next 7 days in patients at risk of preterm birth. fFn is widely used and it has been accepted as a biochemical assay of choice for preterm labour in most centres. Up until 2013, qualitative fFn has been the method we used, however this has now been changed to quantitative result. Hologic, following results from the EQUIPPE study, has change from the qualitative to quantitative results. The objective was to compare our hospital data with EQUIPPE results.

Methods Retrospective review of 432 fFN result of patients who had fFN testing (using the TL1iq) carried out for threatened preterm delivery over a 22 month period between January 2012 and October 2013. The delivery dates and gestations at delivery were checked on Galaxy and View point and the results analysed. Notes of patients who delivered within 14 days or <34 weeks' gestation with a negative fFN result (i.e. <50 ng/mL) were reviewed to find if delivery was spontaneous or iatrogenic. The results were grouped into Hologic's 5 pre-specified incremental categories.

Results 0.4% of patients with fFN <10 ng/mL delivered within 7 days, none of the patient with results 11–49 or 50–199 ng/mL delivered within 7 days. There was, however, a rise in percentage of delivery levels 200–499 ng/mL with 7% delivering in 7 days and a steep rise to 73% for levels greater or equal to 500 ng/mL. 0.4% of patients with results <10 ng/mL delivered <34 weeks with 73% of our population with results ≥500 ng/mL delivering at <34 weeks. These results are comparable with those of the EQUIPPE study.

Conclusion 0.4% of our patients with fFN results <200 ng/mL delivered within 7 days; therefore we do not give steroids or consider intra utero transfer in patients with fFN levels <200 ng/mL. Prior to quantitative fFN the women with fFN levels >50 ng/mL would have had a positive result and would have had extra intervention.

EP10.06

Main causes of severe acute maternal morbidity in pregnant women admitted to an intensive care unit in Peru

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Introduction Globally, maternal mortality has been declining with a reduction of 45% from 1990 to 2013. However, almost 99% of maternal deaths continue to occur in developing countries. Maternal mortality is only a small proportion of the global burden of maternal morbidity. Peru has 30 million inhabitants, of which 7.8 million are reproductive age women whose maternal mortality ratio has been reduced by 65% since 1990 (530 maternal deaths in 2013). Nonetheless, its main causes remain due to direct obstetrical complications such as obstetric haemorrhage (48.8%) and hypertensive disorders (23.3%). Consequently, monitoring and evaluating severe acute maternal morbidity cases make it possible to improve obstetric care in order to prevent adverse complications and fatal maternal events. Thus, the objective of the study is to assess the incidence, case fatality rate and main causes of severe acute maternal morbidity (SAMM) in a tertiary health care facility in Lima, Peru.

Methods An observational study was conducted on data from 2012 to 2013. Public available data from the tertiary health care facility website in Lima Peru were extracted and analysed by

descriptive analyses. There are about 17 769 deliveries yearly in this institution. Ethical approval was not required for this retrospective study with anonymised data. Intensive care unit admission was the inclusion criterion for defining SAMM.

Results There were 493 SAMM patients with an incidence of 15 SAMM patients per 1000 deliveries, which equates to 1 SAMM patient for every 66 deliveries. Fifteen maternal deaths were reported indicating a case fatality rate of 3.0%, an estimated 1 maternal death for every 33 SAMM patients. Pre-eclampsia/HELLP syndrome was the leading cause accounting for one-half of the SAMM patients (50.7%: 250) which corresponds to an incidence of 7.6 per 1000 deliveries, followed by postpartum bleeding (13.8%: 68) with an incidence of 2.1 per 1000 deliveries. Other conditions were related to sepsis of non-obstetric origin 1.4 per 1000 deliveries (9.1%: 45), sepsis of obstetric origin 1.3 per 1000 deliveries (8.3%: 41), and less frequently miscarriages 0.7 per 1000 deliveries (4.5%: 22) and second trimester bleeding (4.1%: 20).

Conclusion The main cause of SAMM is related to hypertensive disorders which are direct obstetric complications in the studied population. The SAMM incidence is within the rate values across the world. Therefore, an appropriate response and management of severe acute maternal morbidity would enable the improvement of maternal health that in turn may lead to reduction of maternal mortality.

EP10.07

Maternal and perinatal outcomes for primary maternity units in South Auckland, New Zealand

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Introduction Place of birth continues to provoke controversy. This study investigates maternal and perinatal outcomes for women labouring in primary maternity units in Counties-Manukau District Health Board (CMDHB, now retitled Counties-Manukau Health). This large health district has a secondary/tertiary hospital (Middlemore) and three midwifery-led, community-based primary units located 20–45 min from the base hospital. The model of care for low risk women in the primary and secondary/tertiary facilities was comparable: midwifery-led care with medical involvement at Middlemore following consultation.

Methods This is a retrospective observational study of birth outcomes in CMDHB maternity facilities 2003–2010. Women labouring in primary units (including those transferred to secondary care due to labour complications) were compared with women labouring from the outset at Middlemore Hospital. Exclusions were malpresentation, multiple pregnancy, pre-gestational and gestational diabetes, previous caesarean section (CS), preterm labour (before 37 weeks), induced labour, intrauterine fetal death at presentation and CS planned for other reasons (e.g. placenta praevia). The outcomes assessed were instrumental delivery (forceps, ventouse), CS, blood transfusion,

theatre procedures following vaginal birth (retained placenta, perineal repair, management of haemorrhage), level 2/3 neonatal unit admission and intrapartum/neonatal mortality. Outcomes were compared using the Mantel-Haenszel chi-square test with adjustment after stratification for maternal age, ethnicity, socio-economic deprivation and grand-multiparity (5 or more previous births). Outcomes are presented as adjusted odds ratios with 95% confidence intervals. Outcomes for nulliparous and multiparous births are presented separately.

Results 10 147 women laboured in the primary units and 29 384 women laboured at the base hospital. 32% of nulliparous women and 5% of multiparous women labouring in primary units were transferred to Middlemore in labour; their outcomes are included in the primary group. Nulliparous women labouring in primary units had significantly lower rates of instrumental delivery (OR 0.51), CS (OR 0.54), blood transfusion (OR 0.42), theatre procedures (OR 0.49) and neonatal unit admission (OR 0.73). Multiparous women labouring in primary units had significantly lower rates of instrumental delivery (OR 0.25), CS (OR 0.25), blood transfusion (OR 0.48), theatre procedures (OR 0.37) and neonatal unit admission (OR 0.76). Labour-related perinatal mortality was low and was not significantly different between primary and secondary units: nulliparous 1.3 versus 1.5/1000, multiparous 0.4 versus 0.6/1000.

Conclusion Labour in South Auckland primary units is associated with lower rates of intervention and adverse outcome than spontaneous labour at the secondary/tertiary hospital and is a safe option for low-risk pregnancies.

EP10.8

External cephalic version outcomes audit at Princess Alexandra Hospital Ajjawi, S; Balasandrum, S; Al-Baghdadi, O; Bainton, T; Donkor, P

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Introduction Breech presentation complicates 3–4% of all term deliveries; however, the incidence is higher in preterm labour and for those women who have had a previous breech presentation at term. The rationale behind external cephalic version (ECV) is to reduce the incidence of breech presentation at term, thereby reducing the risk of caesarean section (CS). It is recommended to be offered to all women with uncomplicated breech pregnancy after 36 weeks. The aim was to determine the proportion of patients who opted for ECV, the success rate, and to determine the factors associated with reduced success. We also audited complications encountered with ECV, mode of delivery following successful ECV, and compared it with a standard.

Methods This is a prospective study was not only designed to audit our performance of ECV but also to assess the performer's grade, and the type of tocolytics used in the department as indicators of a successful outcome. Data were collected between January 2013 and January 2014.

Results Out of 109 breech presentations detected at or after 36 weeks, 40 (37%) patients opted for ECV. Only 26 (24%)

patients were reviewed and their ECV pro formas audited. Further details were collected from labour ward birth register and diary. The success rate of ECV was 21%, which was low compared to the standard. Registrars performed 69% of cases, 27% performed by consultants and 4% by registrars under consultant supervision. 40% delivered vaginally following successful ECV while CS done for failed IOL in 20% of cases. 40% of women had CS for failure to progress. There was one case complicated by bradycardia during ECV which resolved after discontinuing the procedure, no other complications recorded. As for the unsuccessful ECV, 19% of them opted for second attempt and 25% of those were successful; 81% had elective CS.

Conclusion The guideline was followed appropriately. ECV needs skill and training which should be offered to other consultants and senior registrars to ensure good service provision. A proper understanding of the risks is essential for the obstetrician and midwife to allow accurate counselling. Aim to find new promotion strategies to encourage women to choose ECV in preference to CS. There is no harm of offering second attempt after failed ECV to avoid CS.

EP10.9

Audit of performing trial operative deliveries in theatre at a medium sized district general hospital in the UK

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Introduction Current national guidance suggests that operative vaginal delivery (OVD) should take place in the operating theatre if a higher chance of failure and subsequent caesarean section (CS) is anticipated. We carried out an audit of the practice of instrumental delivery in theatre with a view to establishing current practice and compliance against local and national standards to help identify improvements, and increase the information available to women regarding the safety of trial instrumental delivery.

Methods A retrospective audit was carried out over 11 months from August 2012 to June 2013, examining 95 case notes of trial OVD. Multiple process indicators were examined against local 'Instrumental Delivery', and national RCOG guideline 'Operative Vaginal Delivery'. Additional outcomes were audited including: final mode of delivery; use of additional instruments; CS rate; neonatal wellbeing; maternal length of stay; incidence of PPH; and rate of third and fourth degree perineal tears.

Results 95 trial OVDs were examined. The mean gestation was 40 + 1 (31–42 + 2), mean BMI was 27 (19–46). 32% of cases were following IOL. There was an 85% chance of vaginal delivery, in 26% there was failure of the first instrument, with 60% of those proceeding to CS and 40% use of second instrument. 11% of total cases were successful following a second instrument. Neville Barnes forceps (NBF) were the most successful instrument, accounting for 76% of successful OVDs, as first instrument in

87% of cases. Kiwi ventouse accounted for 52% of failed first instruments, NBF were the successful second instrument in 73% of cases. Of the 15% (14) CS cases 57% (8) followed failed NBF. 43% of CS cases followed IOL. In 86% of cases 3 or fewer pulls were attempted (median 2), with >4 in 7% of cases (range 1–7). 5% of cases resulted in a third degree tear (0% fourth degree), 50% following NBF and 50% Kiwi ventouse. The PPH (>1.5 L) rate was 9%, all following the use of NBF. There was a 15% incidence of unplanned admission to the neonatal unit, 71% following NBF. Maternal length of stay was increased following use of second instrument (2.9 versus 2.5 days) but not as much as following CS (4.6 days).

Conclusion OVD in theatre was generally performed safely and in accordance with guidelines, although there can be improvement in some processes. Valuable information was gathered regarding the success and safety of individual instruments, which can be applied to improve practice.

EP10.10

Emergency peripartum hysterectomies: an Australian audit

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Introduction Emergency peripartum hysterectomies (EPH) are a rarely performed procedure, usually undertaken as a last resort to manage life threatening postpartum haemorrhages, when all other fertility saving measures fail. They can be defined as a hysterectomy performed within 24 hours of delivery. Numerous studies worldwide have looked at the various indications for emergency hysterectomies; however, to date, there have only been a few studies looking at Australian populations. The purpose of this study is to evaluate the incidence and indications for peripartum obstetric hysterectomies at Logan Hospital, Queensland, Australia.

Methods We retrospectively analysed 17 cases of emergency hysterectomies following obstetric complications performed at Logan Hospital between November 2007 and February 2012. Data related to patient demographics, reproductive histories, indications for the hysterectomies and postoperative outcomes were obtained by analysis of electronic hospital records.

Results Between the years of 2007 and 2012, there were a total of 15 041 deliveries. Of this, 17 hysterectomies were performed (8 subtotal hysterectomies, 9 total hysterectomies; 1.13 hysterectomies in 1000 births). All except one hysterectomy were performed following a caesarean section. The mean age of the patients at time of hysterectomy was 31.76 years old. According to our data, placentation abnormalities (including placenta praevia, accreta and percreta) were the most prevalent indication for an EPH (23.5%). This was followed by uterine atony (17.6%), uterine tears (11.8%), and uterine rupture (11.8%). Other indications included postpartum pyrexia of unknown source and HELLP. Clinical DIC was noted in one patient with postpartum haemorrhage secondary to uterine atony.

Following the procedure, 53% of patients required admission to ICU. The average length of stay was 6 days for subtotal hysterectomy and 7 days for total hysterectomy. Average expected blood loss was 3.01 L and 2.3 L for subtotal and total hysterectomies respectively with a mean drop in haemoglobin of 41.5 g/L. Of the 17 cases, 15 required a blood transfusion. The average number of units of packed red blood cells given was 6.176 units. Whilst 64.7% of patients did not experience any post operative complications, postoperative pyrexia was seen in 17.6% of patients and 11.8% suffered an accidental bladder injury.

Conclusion Emergency peripartum hysterectomies are a life-saving measure often when all other forms of treatment have been exhausted. In our series, the incidence of EPH was 1.13 in 1000 births. The most common indication for an EPH was postpartum haemorrhage secondary to placentation abnormalities followed by uterine atony. Awan et al implied that uterine atony and rupture have been overtaken by abnormal placentation in many recent studies. This can be mainly attributed to the improved conservative management of uterine atony. The data featured in our current study reflect similar results.

EP10.11

Audit on the management of third and fourth degree perineal tears over a period of 4 years at a district general hospital

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Introduction Third and fourth degree tears are a serious complication of vaginal deliveries and can lead to faecal incontinence. The overall risk of anal sphincter injury is 1% of all vaginal deliveries. Multiple risk factors have been identified, but further studies are required to investigate the effect of interventions to prevent anal sphincter injury. The management of such injuries has a major impact on the patient and their views on mode of delivery in future pregnancies.

Methods A prospective audit looking at the management of patients suffering a third or fourth degree tears at Princess Alexandra Hospital (PAH), from April 2010 to April 2014. Comparisons were then made to standards set in RCOG guidance. **Results** Data from 322 patients were collected. 223 (69%) patients were primiparous and 97 (30%) were multiparous. 232 (72%) had a spontaneous vaginal delivery, while 87 (27%) had instrumental delivery. Episiotomy was given in 84 (26%) cases. 90 (28%) patients had an epidural in situ at the time of delivery. 102 (31%) cases had a second stage <1 hour, 124 (39%) >1 hour and 96 (30%) had no documentation of length of second stage. 26 (8%) cases delivered a baby of >4 kg and the majority had a birthweight of between 3 and 4 kg (50%). 44 (14%) had a birthweight below 3 kg and birthweight was unrecorded in 91 cases (28%). All cases, with location of repair documented, were performed in theatre. 226 (70%) repairs were performed by specialist registrar or above, with no documentation of grade of surgeon for the remaining cases. 287 (89%) repairs were

performed with an epidural or spinal anaesthetic. One case was performed under general anaesthesia and no documentation related to analgesia was found for the remaining. Documentation related to: degree and grade of tear was found in 293 (91%), suture material used in 302 (94%) and method of repair in 284 (88%). Continence awareness leaflets were provided to 281 (87%) patients.

Conclusion The audit demonstrates that throughout a 4 year period, patients at PAH received a consistently high standard of care despite a changing workforce. However, improvements in documentation are required and need to be addressed. Effective management of patients suffering an anal sphincter injury helps maintain a positive experience of vaginal birth, therefore reducing the incidence of patients opting for caesarean section due to previous perineal trauma.

EP10.12

Caesarean myomectomy prior to delivery of baby in the case of anterior uterine wall fibroid during caesarean section

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Introduction The aim was to assess the safety of procedure during caesarean delivery/maternal and neonatal morbidity.

Methods It was a retrospective study of 1 year duration (May 2013 to May 2014). It included the patients in which fibroid of varying size imposing obstruction to the vaginal delivery. In total ten numbers of patients, all were anterior lower segment fibroid which interfere access to the fetus for delivery.

Results Average age of women was 26 years all were primigravida. Mean gestational age for delivery was 37.7 weeks. 100% success in caesarean myomectomy. No hysterectomy was done and myomectomy added 13 min to the operating time. No neonatal morbidity was observed, in all patients. For maternal morbidity average hospital stay of more than 3 days and blood transfusion in all cases was required.

Conclusion Caesarean myomectomy performed prior to the delivery of baby in cases of anterior uterine wall fibroid causing obstruction to normal vaginal delivery has good fetal maternal outcome in tertiary care hospital with good surgical skills.

EP10.13

Artificial rupture of membranes versus repeat vaginal prostaglandin for induction of labour

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Introduction In Australia, more than 25% of women undergo induction of labour (IOL). The most common method of IOL is

cervical priming with vaginal prostaglandin (PGE₂), then artificial rupture of membranes (ARM) followed by a syntocinon infusion. However, there is a paucity of research evidence to guide when a second dose should be administered or ARM performed.

Methods A randomised controlled trial was undertaken to test a policy of single versus multiple dose PGE₂ vaginal gel for women undergoing IOL after 37 weeks' gestation. Women with a modified Bishop's score ≥ 7 received an initial dose of 1 mg or 2 mg PGE₂ in the evening, and were randomised the following morning into either the ARM Group (who underwent ARM regardless of modified Bishop's score, and only received further PGE₂ if ARM was not technically possible), or to the Repeat-PGE₂ Group (who received further doses of PGE₂ to a maximum of 3 doses, until a modified Bishop's score ≥ 7 when an ARM was performed). In both groups, a syntocinon infusion was commenced once the membranes were ruptured. The primary outcome measure was time from commencement of IOL until birth.

Results Between March 2011 and August 2013, 245 women who received an initial dose of vaginal PGE₂ were assigned randomly to either the ARM Group ($n = 121$) or Repeat-PGE₂ group ($n = 124$). Compared to women in the Repeat-PGE₂ group, those in the ARM Group received fewer doses of PGE₂ (1.2 versus 1.7 doses; $P < 0.001$), had a shorter IOL-to-birth time (24.8 versus 30.0 hours; $P < 0.001$), and no difference in the likelihood of vaginal birth (46.3% versus 44.3%) or caesarean section (36.3% versus 37.1%). More women in the ARM Group reported being happy with their birth experience overall (81% versus 69%, $P = 0.098$).

Conclusion Following an initial dose of vaginal PGE₂, a policy of repeat dosing is associated with a 5 hour prolongation of labour and no difference in mode of birth. Women receiving earlier ARM tended to be more satisfied with their birth experience. Considering the significant volume and impact of IOL on women, providers and health services, it is important to identify timely, safe and acceptable protocols for IOL.

EP10.14

Intrapartum fetal compromise is associated with lower maternal placental growth factor (PIGF) levels at term

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Introduction Intrapartum fetal compromise (fetal distress) is associated with significant risks of obstetric intervention, perinatal morbidity and mortality as well as longer term complications. These include emergency operative delivery, stillbirth, and admission to neonatal intensive care, neonatal encephalopathy and cerebral palsy. Low PIGF is associated with complications of placental dysfunction – pre-eclampsia and growth restriction. The aim of this study was to investigate the association between maternal PIGF levels and the incidence of intrapartum fetal distress in appropriately grown term singleton pregnancies.

Methods This prospective observational study was conducted at Mater Mother's Hospital, South Brisbane, Queensland. Sixty-one women with appropriately grown singleton pregnancies delivering at term (≥ 37 weeks) had maternal PIGF levels measured every 2 weeks until delivery. Women with multiple pregnancy, pre-eclampsia or pregnancy induced hypertension or fetal growth restriction were specifically excluded. Pregnancy outcomes including mode of delivery, birthweight, incidence of fetal heart rate abnormalities in labour and neonatal outcomes were recorded.

Results The mean PIGF levels were significantly lower in women who required emergency caesarean section for fetal distress (62.1 versus 270 pg/mL, $P < 0.001$) or who had suspicious/pathological fetal heart rate patterns in labour (77.5 versus 121 pg/mL, $P = 0.003$) or delivered babies that had acidosis at birth (84.2 versus 220.8 pg/mL, $P < 0.001$). There was no difference in birthweights between women who developed fetal distress and those that did not.

Conclusion Our study demonstrates that maternal PIGF levels are lower in pregnancies that develop fetal compromise in labour compared to those that do not. This suggests a degree of placental dysfunction, otherwise silent, despite appropriate birthweight.

EP10.15

High-dose versus low-dose oxytocin infusion for induction of labour: a systematic review

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Introduction When women require induction of labour, oxytocin remains the most common agent used, and is titrated to uterine contraction strength and frequency. Despite this, the optimum dose regimen to achieve timely vaginal delivery while minimising adverse outcome such as operative delivery, uterine hyperstimulation, and fetal distress has not been established. Currently used regimens vary widely with respect to dose, delivery (continuous or pulsed) and increments (linear or non-linear).

Methods As the range of oxytocin doses used for induction is wide for starting dose and incremental increase, the review group needed to set a high- and low-dose for comparison. We defined high-dose cut-off of at least 100 mU oxytocin in the first 40 min and 600 mU in the first 2 hours, based on papers read whilst preparing the review protocol and the pharmacological steady state of oxytocin. We searched the Cochrane Pregnancy and Childbirth Group's trials register and the reference lists for relevant papers. Included trials had to be randomised controlled trials or quasi-randomised trials that met the defined oxytocin rates.

Results We included eight trials in the review, involving 2263 women and their babies. The trials were at moderate to high risk of bias overall. Meta-analysis revealed no significant difference in rates of vaginal delivery not achieved within 24 hours with high-dose oxytocin (RR 0.94, 95% CI 0.78–1.14) or caesarean section (RR 1.00, 95% CI 0.84–1.19). Only one trial each reported results

of uterine hyperstimulation with fetal heart rate changes (increased in the high-dose group – RR 1.96, 95% CI 1.80–2.13); serious maternal morbidity or death (no difference – RR 1.24, 95% CI 0.55–2.82); and serious neonatal morbidity or perinatal death (no difference found – RR 0.84, 95% CI 0.23–3.12). No overall difference was found in time from induction to delivery, uterine rupture, use of epidural analgesia, Apgar < 7 at 5 min, or postpartum haemorrhage. When studies at high risk of bias are removed, there is significant reduction in induction to delivery interval with high-dose oxytocin (mean difference 1.94 hours, 95% CI 0.99–2.89) however there was also increased uterine hyperstimulation in this group (RR 1.86, 95% CI 1.55–2.25). **Conclusion** No overall benefit has been shown with the use of high-dose oxytocin; however, results are confounded by poor quality trials and the wide range of oxytocin dose protocols that have been reported. Further trials should be considered.

EP10.16

Station at onset of active labour and the risk of caesarean delivery in nulliparous patients delivered at the University of Santo Tomas Hospital Clinical Division

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Introduction The aim was to determine the outcome of labour in nulliparous women presenting with unengaged head at term and compare it with those who present with engaged head in early active labour.

Method This was a prospective cohort study. All term nulliparous women in active phase of labour admitted at the UST Clinical Division from October 2010 to October 2011 were included in the study. The station of the vertex at the onset of active labour was noted and classified as either engaged or unengaged. The outcomes tested include the durations of the first stage of labour, the second stage of labour, and the total duration of labour from admission to delivery. Other outcome measures tested include the risk of caesarean delivery, the birthweight, and the Apgar scores at 1 and 5 min.

Results Two hundred and fifty-one nulliparous parturient in active phase of labour were included in the study. One hundred and thirty-two patients were unengaged while 115 patients were engaged. The rate of caesarean section in the unengaged group was higher at 30.3% compared with the engaged group at 2.5% ($P < 0.0001$). The unengaged group also was associated with longer duration of the first stage of labour, second stage of labour, and total duration of labour from admission to delivery ($P < 0.0001$, 0.0004, and 0.0004 respectively). The unengaged group was also associated with a higher birthweight ($P = 0.0004$) but with no significant difference in the Apgar scores at 1 and 5 min.

Conclusion Engaged vertex at the onset of active labour is associated with a lower risk of caesarean delivery in nulliparas. On the other hand, patients with unengaged vertex are at higher risk for caesarean delivery due to arrest disorders, longer duration of the first and second stages of labour and total duration of labour from

admission to delivery as well as higher mean birthweights of newborns. Nonetheless, there was no association with unengaged vertex and lower fetal Apgar scores. Also, despite the prolongation of the different stages of labour, the majority of patients in the unengaged group delivered vaginally. This finding allows the clinician to be more optimistic regarding vaginal delivery of nulliparous patients with unengaged vertex in the active phase of labour and avoid hasty decisions toward caesarean delivery.

EP10.17

A case of pulmonary carcinoid in pregnancy and review of carcinoid tumours in pregnancy Kevat, D; Chen, M; Wyld, D; Fagermo, N; Lust, K

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Introduction Carcinoid tumours are rare slow growing tumours which arise from primitive neuroendocrine cells. Approximately 40 cases have been reported at any site during pregnancy in the last 30 years. Only five cases (~10%) of pulmonary carcinoid were reported during pregnancy. The effect of the pregnant state on carcinoid tumours and vice versa remains unclear, as does the optimal management of carcinoid tumours during the pregnancy including labour.

Case We report the rare case of a 36-year-old primigravida woman with large bilateral pulmonary carcinoid tumours. Carcinoid tumour had been diagnosed 3 years prior after imaging for a chest infection had identified the lesions which were then biopsied. The patient had a 4 × 4 × 4 cm mass in the left hilum, and a 6 × 5 × 4 cm mass in the anterior right upper lobe causing complete obstruction of the right bronchi and atelectasis. Clinically the patient's disease was minimally symptomatic with pain on deep inspiration and exertional shortness of breath. The tumour remained non-secretory with no clinical suspicion of carcinoid syndrome and negative biogenic urine testing. There was no evidence of metastatic disease. Surgery was not pursued due to the need for both left pneumonectomy and right upper lobectomy to clear disease. Octreotide therapy was considered but not given as the lesions were not shown to be progressing clinically or on bi-annual imaging. The pregnancy progressed well and the patient proceeded to a spontaneous vaginal delivery of a healthy child. The patient was sent to the ICU for 24 hours of monitoring and discharged home after 48 hours. The postpartum period was uneventful and at 12 month follow-up her disease remained stable.

Conclusion In our case, the conservative management of this patient resulted in a successful outcome for mother and baby despite the extent of the disease. Our approach contrasts with some other cases of pulmonary carcinoid which have taken a more interventionist approach which also resulted in successful pregnancies. It remains difficult to judge whether pregnancy accelerates disease progression as, unlike ours, in most published reports the diagnosis of pulmonary carcinoid was made during pregnancy. Our report will add to the literature and help support preconception counselling and management decisions for patients with carcinoid tumours in pregnancy. To further assist with this we conduct the first literature review in 30 years of all reported

cases in this area and make suggestions as to assessment and monitoring of cases of carcinoid during pregnancy.

EP10.18

Audit of indications for induction of labour at a large teaching hospital in Australia Chesterman, E; Welsh, A

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Introduction It is thought that induction of labour increases the likelihood of intervention in labour (instrumental delivery or caesarean section) with the ensuing additional risks to the mother and the fetus. Any attempt to reduce the rate of induction of labour should therefore be favourable. This audit aimed to examine the indications for induction of labour at a large teaching hospital in New South Wales, and to see whether clear criteria are being observed. Current NSW Health initiatives, including the 'Towards Normal Birth' policy, are directed towards reducing intervention in maternity care and increasing rates of normal birth.

Method A retrospective review of medical records was undertaken of all the women who were booked for induction in the first half of every month in 2009 ($n = 491$). Information was collected on demographics, reason for induction of labour and outcome of delivery, including complications. The reason for induction of labour was deemed to be indicated or not indicated according to a predetermined checklist for each indication for induction. For the study, 218 women met the inclusion criteria and their results were included for analysis.

Results Overall, there was a high rate of emergency caesarean section (31.2%, 68/218) for all women who were booked for induction of labour. Women booked for an indicated post dates induction had a 48.3% chance of caesarean section and a 51.7% chance of a vaginal delivery (37.9% normal vaginal delivery, 13.8% instrumental). Women who did not meet the criteria for a post dates induction had a 60% chance of a caesarean section compared with a 40% chance of a vaginal delivery (35% normal vaginal delivery, 5% instrumental). Comparisons are also made for a range of other indications for induction of labour.

Conclusion Hospitals providing induction of labour need to maintain a commitment to ensuring all inductions are strongly indicated. Ideally, this will reduce the need for induction and ultimately reduce the number of interventions in the process of normal labour, namely caesarean section.

EP10.19

E0 immediate caesarean section audit: baseline data analysis

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Introduction We report in this paper baseline data of E0 deliveries in operating theatre (OT) prior to a planned

introduction of an emergency caesarean section code call. The aims of this project were to audit the E0 process and establish minimum data criteria for future sustainable audit. Auditing 6 months of E0 deliveries following the introduction of an emergency caesarean code call is planned to complete the audit cycle as part of this project.

Methods Medical record and clinician post-event survey data were collected on all planned E0 immediate caesarean sections in a 6 month period (April to October 2013). Quantitative and qualitative analysis was done including triangulation between medical record data and survey data. This project has University of Tasmania HREC approval (Project Number H0013114).

Results 25 E0 immediate deliveries in OT (24 caesarean sections, one instrumental delivery) occurred during this time. 89 completed clinician post-event surveys were returned. Mean gestation at birth was 37.8 weeks, all were singleton pregnancies and 3 had previous caesarean sections. 13 cases occurred on a weekday between 0800 and 1700. The majority were due to non-reassuring fetal status (18 cases; 13 for fetal bradycardia); one case following a maternal Code Blue for suspected eclamptic seizure. In 13 cases, general anaesthesia was required. The majority of deliveries (18 cases) were performed primarily by a specialty trainee. The mean transfer time from decision for E0 to arrival in OT was 15.56 min (range 5–40). The mean time from decision for E0 to birth was 33.72 min (range 13–69). The majority of clinicians were satisfied with transfer times and time to taken to commence caesarean sections. Human factors were identified as both assisting and detracting from the timeliness and quality of the process. Communication was identified as one factor which may be improved upon to facilitate this process.

Conclusion The planned introduction of an emergency caesarean code call is in line with international practice. A multi-faceted approach where learnings from this baseline audit in addition to the planned introduction of this emergency code call is recommended to improve practice. Improvement in communication may be a key factor in improving the process and clinician satisfaction in this process.

EP10.20

A classification tool (GC-CODES) to identify the underlying clinical indication for general anaesthetic at caesarean section

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Introduction Gold Coast Hospital has recently moved to its new site, and the state-of-the-art Gold Coast University Hospital (GCUH) is undergoing rapid transition to a tertiary perinatal service for South East Queensland and Northern New South Wales. National benchmarking data have revealed a higher than expected rate of general anaesthetic (GA) use for caesarean section within our institution. Whilst there is no known ideal rate for GA

caesarean, most healthcare outcomes favour a low overall rate. Existing classification systems do not identify the reason for the choice of GA. We aim to develop a classification tool to allow prospective identification of the underlying clinical rationale. The aim is to target future quality improvement initiatives towards appropriate subgroups of patients.

Methods Local ethics approval was sought. Data were collected for the 3-year period from 1 August 2011 to 31 July 2014. All women with a caesarean birth were identified via hospital-coded data. A validation check to identify miscoded cases was performed using the paper birth register. Details of categorisation (1–4), time of birth and type(s) of anaesthetic were collected. For cases of GA caesarean, the patient medical record was reviewed to determine the clinical indication for the choice of anaesthetic. One of 4 classification codes was applied to each case. These codes were maternal request (GC-MREQ), anaesthetic indication due to medical or surgical risk (GC-ANAE), unsuccessful regional block (GC-UREG), and emergent fetal risk (GC-RISK). The observed to expected frequency of the GC-RISK and CAT 1-3 GC-UREG caesareans was analysed to detect variations between in-hours versus out-of-hours births.

Results Within the study period there were 261 GA caesarean sections. A classification could be successfully assigned in 98% of cases. Ambiguous or contradictory documentation precluded classification in 2%. In 5.3% of cases we identified more than one potential indication for GA. An antecedent principle was applied to assign a classification where this occurred. The associated retrospective audit activity identified that the overall rate of GA caesarean has been >10% across the 3 years studied. No temporal association of significance was identified for any of the subgroups. Antenatal anaesthetic consultation occurred in only 50% of women who subsequently requested a GA.

Conclusion The GC-CODES tool performs well in classifying the underlying clinical rationale for choice of GA at caesarean. Prospective use of this tool is planned.

EP10.21

Second stage delivery in theatre: does consultant presence make a difference?

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Introduction The caesarean section (CS) rate at full dilatation is rising. The litigious and medico-legal mindset that dominates obstetric practice today has led to a disinclination to attempt difficult operative vaginal deliveries (OVDs). This may be as a result of a reduction in the training and supervision of junior obstetric trainees in complicated operative obstetrics. Improved consultant supervision has been shown to increase vaginal delivery rates. A period of mandated consultant presence at second stage deliveries was conducted at a tertiary obstetric unit in Sydney to determine whether improved supervision resulted in an increased vaginal delivery rate with improved maternal and fetal outcomes.

Methods An 8-week period (February to April 2014) of consultant presence at Royal Prince Alfred Hospital was prospectively audited. A retrospective period of 8 weeks immediately prior to the study period was audited for control. Consultants were required to attend women taken to theatre in the second stage of labour. Women with a singleton fetus beyond 37 weeks gestation were included. The primary outcome was mode of delivery and secondary outcomes maternal and neonatal morbidity. Chi squared and Fisher exact test were used to compare proportions. The medical records were reviewed and data collated with local ethics committee permission.

Results 52 women were delivered in theatre in the audited period compared with 46 in the control with consultant attendance increasing from 28.3% to 86.5% ($P < 0.05$). The CS rate reduced from 34.7% to 30.7% ($P = 0.67$) with a coinciding increase in successful vaginal delivery rates (63–67.3%; $P = 0.66$) with consultant presence. 53% of OVDs for malposition completed with Kiellands forceps ($P = 0.23$). Women delivered by CS were more likely to have had an attempt at OVD with consultants in theatre 72% and 45% in their absence ($P = 0.19$). Maternal morbidity relating to obstetric haemorrhage and surgical morbidity was similar between groups however severe perineal trauma (third and fourth degree tears) reduced from 17.2% to 8.5% with consultant presence ($P = 0.29$). One baby sustained a subgaleal haematoma during the supervised period with 4 in the control period.

Conclusion This audit illustrates the potential important learning opportunities in OVD with improved consultant supervision for women taken to theatre in the second stage, particularly in midcavity rotational deliveries. Consultant supervision has the potential to increase OVD rates and decrease both maternal and neonatal morbidity in our unit. This pilot data is encouraging and a longer review period may result in numbers that would confer statistical significance.

EP10.22

Placental development and fetal growth in *Porphyromonas gingivalis*-infected pregnant rats **Dewi, PSM¹; Fitria, IR¹; Maulinda, WT¹; Ariani, MK¹; Kusumawardani, B²**

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Introduction Maternal *Porphyromonas gingivalis* infection on periodontal tissue can result in *Porphyromonas gingivalis* dissemination to umbilical cord. *Porphyromonas gingivalis* presumably gain access to the systemic circulation via local tissue inflammation, and may affect the placental development and the fetus itself. This study aimed to analyse the effect of periodontal infection with *Porphyromonas gingivalis* on placental development, and to determine its effect on fetal growth in a pregnant rat model.

Methods Female rats were infected with live *Porphyromonas gingivalis* at concentration of 2×10^9 cells/mL into subgingival sulcus of the maxillary first molar before and/or during

pregnancy. They were sacrificed on gestational day 20. Fetuses were evaluated for weight and length. All placentas were fixed in 10% buffered formalin, processed for paraffin embedding, and stained with haematoxylin and eosin.

Results The histopathological analysis of placentas on GD 20 showed that trophoblast cells in labyrinth and junctional zone had a greater density in control group than *Porphyromonas gingivalis*-infected periodontal maternal group. The nucleated erythrocytes were found more abundant in the fetal blood vessels of *Porphyromonas gingivalis*-infected periodontal maternal group than in the fetal blood vessels of control group.

Conclusion In conclusion, the impaired placental morphology influenced the normal function of the placenta to maintain the growth and development of fetus. The decreased placental weight resulted in the decreased fetal weight and fetal length.

EP10.23

Acute postpartum uterine inversion treated by modified Haultain's procedure **Dhannapuneni, JS; Amma, JS; Morgan, PR**

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Introduction Acute uterine inversion is rare but life threatening emergency in the third stage of labour. Prompt recognition and immediate management is the key to saving the patient's life. Traditional management options involve immediate manual replacement with or without hydrostatic pressure. When unsuccessful, surgical correction using Huntington and Haultain's procedures are used. Recently more conservative surgical techniques have been reported. We report a case managed successfully using modified Haultain's technique.

Case A 25-year-old para1 + 0 delivered a healthy male infant spontaneously after uncomplicated labour. She received 10 IU of syntocinon with delivery of anterior shoulder. After three unsuccessful attempts at delivering the placenta by a midwife, she started bleeding heavily and medical assistance was summoned. On arrival, the placenta with membranes filled blood was found at the vulva. The loosely attached placental membranes came off easily revealing complete uterine inversion. Immediate attempt at digital replacement of uterus was unsuccessful. She was transferred to theatre swiftly. Under general anaesthesia further attempt at manual replacement followed by hydrostatic pressure method were tried but unsuccessfully. Laparotomy was performed and 3 cm partial thickness vertical incision was made in the posterior uterine wall over the constriction ring and gentle upward traction exerted with Littlewood forceps on either side of incised edges. The incision was extended downwards as the fundus was advancing and two further Littlewoods applied below previous application in a stepwise manner until the uterus was returned to normal anatomical position.

Discussion Surgical correction of uterine inversion is required in minority of cases of uterine inversion. While Huntington's procedure involves application of traction on round ligaments, Haultain's procedure involves hysterotomy (full thickness incision)

over the constriction ring to facilitate uterine replacement. In this case, a partial vertical incision was made in the posterior uterine wall as opposed to full thickness. This has advantages of not entering the uterine cavity thereby reducing risk of uterine rupture in future pregnancies; reducing the risk of infection and reducing surgical time with associated operative blood loss.

EP10.24

Postoperative skin temperature: caesarean section compared to other surgical procedures

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Introduction Wound infections following caesarean section are 5 times as common compared to abdominal hysterectomy. We have a suspicion that wound hypothermia may be a factor that would explain this variation. At time of a caesarean there is a large volume of fluid (approximately 1000 mL liquor and 500 mL blood) spilled on and around the wound. Because of latent heat of vaporisation, this drops the skin temperature.

Methods The skin temperature 1 cm beneath the wound of 20 patients who had just undergone caesarean section was recorded. The skin temperature of 20 patients, who had other surgical procedures (taking the same time as a caesarean) and had skin prep, was measured at the same site.

Results Postop skin temperature adjacent to site of surgical incision following caesarean section was consistently far lower than following other surgical procedure (approximately 29 versus 34°C). This difference is highly significant ($P = 0.0001$, Student's t test).

Conclusion Skin temperature after caesarean section is significantly lower than after other surgical procedures. This is probably due to loss of heat from the latent heat of vaporisation of the large volume of fluid spilled on and around a caesarean section wound. Despite the use of antibiotics wound infection after caesarean section is common. It carries substantial cost implications and much patient dissatisfaction. It may well be that methods of preventing surgical site hypothermia hold the key to reducing the incidence of post caesarean section wound infection. Further research is planned.

EP10.25

Elective caesarean section for women with very high BMI: an anaesthetic perspective

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Introduction The safest way for a woman with high BMI to deliver is vaginally. That risks of wound infection and thromboembolism. However, the risk of requiring an intrapartum caesarean is increased amongst women with a high BMI. There is debate amongst obstetricians as to how best to deliver women with large BMI – some favouring an elective caesarean section

that can be done in the cold harsh light of day rather than having to undertake a caesarean section at full dilatation after a failed instrumental delivery on a woman with a BMI of 55 at 3 am.

Methods We undertook two audits in our unit. One was the number of caesarean sections under general anaesthesia in 2012 compared with the number of caesarean sections performed under general anaesthesia in 1995. How many GA obstetric anaesthetics individual anaesthetists gave was also measured.

Results In 1995 there were far fewer anaesthetists working in the unit and they all undertook large numbers of obstetric general anaesthetics. Because of these large numbers undertaken the anaesthetists were well experienced in delivering an obstetric general anaesthetic. In contrast, by 2012 the vast majority (95%) of caesarean sections were performed under regional anaesthetics by a larger number of team members. This meant that individual anaesthetists administered few general anaesthetics. The second audit was where all obstetric regional anaesthetics required conversion to general anaesthesia. This was indexed to the BMI of the patients. What was discovered was as a patient's BMI got higher, there was a higher chance of conversion to general anaesthetic. A general anaesthetic on an obstetric patient carries inherent dangers. And this is particularly so if the patient has a high BMI. The problem we now face is that women with a high BMI are at increased risk of needing an intrapartum caesarean section. And that there is a fair chance a regional anaesthetic will require conversion to general anaesthesia. Anaesthetists are far less experienced with obstetric general anaesthetics compared to 15 years ago, may be required to do one at 3am with no support.

Conclusion Therefore, we suggest that women with high BMI should have elective caesarean sections, for anaesthetic reasons. There would be no time pressure with getting a regional anaesthetic to work. And if conversion to general anaesthesia were required, it would be done with no downward time pressure. And with plenty of team members to help, perhaps the presence of someone highly experienced in delivering obstetric general anaesthetics.

EP10.26

Spontaneous intracranial venous thrombosis requiring decompressive craniectomy – a rare obstetric complication

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Introduction Venous thromboembolism (VTE) is a serious complication in obstetrics. Peripheral and pulmonary thrombi are monitored for and many strategies are in place to reduce their occurrence. Intracranial venous thrombosis (IVT) is a rare but well recognised sub-class of VTE with increased incidence in pregnancy and the puerperium period. They can occur spontaneously without identifiable risk factors apart from the presumed hypercoagulable state of pregnancy. IVT and its treatment in the obstetric patient is complex and high risk for both mother and fetus. Therefore, they should be managed in tertiary or higher centres with access to obstetric medicine,

neurology, neurosurgery, neonatal, rehabilitation, radiology, specialist anaesthetic and intensive care services. Presented is a case report of a pregnant woman who developed extensive IVT and associated complications but was able to achieve an excellent outcome through the coordinated efforts of her multidisciplinary team.

Case A 27-year-old female who was approximately 8 weeks pregnant presented to the Emergency Department with an altered level of consciousness and seizures. Cerebral imaging demonstrated complete occlusion of her saggital sinus, straight sinus and bilateral transverse sinuses. She was intubated and transferred to the Intensive Care Department and commenced on a heparin infusion under the guidance of her neurology team. Despite successful endovascular clot retrieval by Interventional Radiology, she went on to develop a right cerebral ischaemic infarct with haemorrhagic transformation. The neurosurgeons performed a right decompressive craniectomy and haematoma evacuation. After a short period of intensive inpatient rehabilitation she has made an excellent recovery with minimal neurological deficit. She has been closely followed by her obstetric medical team and fetal ultrasounds have been normal to date. She subsequently went on to have an uncomplicated autologous cranioplasty at 24 weeks' gestation.

Conclusion Intracranial venous thrombosis (IVT) is a rare but important condition that affects the obstetric population. The condition itself as well as its complications and treatment are best managed by a multidisciplinary surgical and medical team in tertiary or higher obstetric centre.

EP10.27

A case of post-coital haemoperitoneum in a pregnant woman

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Introduction Haemoperitoneum and shock associated with coital injury is rare, particularly in the absence of vaginal trauma. Such injuries are rarely reported in pregnancy. This case report describes a case of post-coital haemoperitoneum secondary to uterine artery trauma resulting in significant hypovolemic shock in a pregnant woman.

Case A 38-year-old primiparous woman at 23 + 3 weeks gestation presented to the emergency department at her local hospital with severe cramping and sharp abdominal pain, shoulder-tip discomfort, pre-syncope and pallor. She was an otherwise fit and healthy woman with an unremarkable antenatal history. Her pain had started approximately 90 min earlier immediately post-coital. She and her partner had celebrated their marriage the day prior and this act of coitus was the consummation. On presentation, she was alert and oriented though clinically shocked (hypotensive, tachycardic and pale). Her abdomen was rigid with guarding and rebound tenderness. The uterus was appropriate in size for the gestational age and soft. The fetal heart rate was normal and there

was no vaginal bleeding. Crystalloid resuscitation was commenced and urgent investigations revealed haemoglobin of 9.3 g/dL. Abdominal ultrasound scan revealed large volume of free fluid in the abdomen and pelvis. A provisional diagnosis of intra-abdominal haemorrhage possibly secondary to a ruptured splenic artery aneurysm was made. The patient was transfused and after she was stabilised with fluid resuscitation an urgent laparotomy was undertaken. Emergency midline laparotomy revealed a 2 L haemoperitoneum with no source of bleeding initially identified. Gentle anterior mobilisation of the uterus revealed a bleeding vessel at the right uterine artery vascular pedicle. The right round ligament and Fallopian tube were divided from the uterus to access the right uterine vascular pedicle which on closer examination was found to contain a pseudoaneurysm of the uterine artery which was actively bleeding. Haemostasis was achieved with vascular clips and sutures. The patient had an uneventful postoperative recovery and was discharged on day 6. Follow-up obstetric ultrasounds on a 4 weekly basis were reassuring for growth and placental function. A vigorous 3000 g boy was delivered at 39 + 2 weeks by caesarean for breech presentation.

Conclusion Post-coital haemoperitoneum and shock in a pregnant woman without obvious vaginal trauma is a rare but serious clinical scenario. This case highlights the importance of rapid assessment and surgical intervention in a compromised patient. Despite significant blood loss the perinatal outcome was good in this case.

EP10.28

Poorer perinatal outcomes with higher maternal body mass index

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Introduction Maternal obesity exacerbates risks for both mother and baby. Despite strategies to encourage healthy weight management, rates of maternal overweight and obesity continue to rise. This study documents maternal body mass index (BMI) and intrapartum and neonatal outcomes of women delivering at an Australian tertiary obstetric unit.

Methods This retrospective observational study was conducted at Mater Mothers' Hospital, Brisbane, between 2001 and 2011. Inclusion criteria were public (non-insured), primiparous women (18–40 years of age), with singleton, appropriately grown (>2500 g) term babies (37–42 weeks). Small for gestational age and fetal anomaly pregnancies were excluded. Maternal BMI was classified according to World Health Organisation: underweight (<18.5kg/m²), normal weight (18.5–24.9kg/m²), overweight (25.0–29.9kg/m²) and obese (Class I and II obesity 30–39.99kg/m²; Class III obesity ≥40.0 kg/m²). Maternal demographics, intrapartum and neonatal outcomes (mode of delivery, gestation at delivery, birthweight, Apgar score, cord blood acidemia, respiratory distress, need for resuscitation, nursery admission and stillbirth rates) were analysed.

Results Of 9094 women who met the inclusion criteria, 922 (10.1%) were underweight, 5402 (59.4%) normal weight, 1720 (18.9%) overweight and 1050 (11.5%) obese. The obesity rates increased 10.5–11.3% over the study period. Obese women smoked more compared to the normal BMI group (46.1% versus 34.5%, $P < 0.001$). There were no Asian women in the Class III obesity group though Aboriginal and Torres Strait Islander women were significantly more likely to be in this group than the normal BMI range (3.6% versus 1.9%, $P = 0.05$). Compared to women of normal BMI, obese women were less likely to deliver by normal vaginal delivery (57.5% versus 45.4%, $P < 0.001$) and more likely to deliver by emergency caesarean (30.5% versus 18.3%, $P < 0.001$) for both failure to progress (15.1% versus 9%, $P < 0.001$) and suspected fetal distress (10.5% versus 6.8%, $P < 0.001$). Elective caesarean was also significantly more likely in this group (5.1% versus 3%, $P < 0.001$). Babies born to obese mothers had greater birthweight than those born to mothers in the normal BMI group (3674.5 ± 461.8 g, $n = 1050$, versus 3517.2 ± 413.5 , $n = 5402$, $P < 0.001$) as well as more cord blood acidemia (9.8% versus 7.3%, $P = 0.006$), need more resuscitation (58.1% versus 44.8%, $P < 0.001$) and required transfer to the neonatal nursery (10.7% versus 8%, $P = 0.005$).

Conclusion This large retrospective cohort study demonstrates poorer perinatal outcomes for women of greater BMI. Australian clinicians and patients need to recognise the significant sequelae arising from maternal obesity particularly on the rate of obstetric intervention and poorer outcomes in the neonatal period.

EP10.29

A study of various factors influencing fetal scalp lactate and their correlation with composite fetal and neonatal outcome

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Introduction Fetal scalp lactate has been shown to be as effective as fetal scalp pH in predicting neonatal outcomes. However its positive predictive value for neonatal outcome is low. Maternal-fetal factors influencing variability in fetal scalp lactate have not been fully explored. The aim of this presentation is to explore the association of gestational age, maternal age, parity, time in labour and birthweight with fetal scalp lactate and examine whether existing thresholds are predictive of adverse outcomes.

Methods A retrospective study of all singleton births with a fetal scalp lactate taken during labour at a public teaching hospital between 1 July 2007 and 1 June 2013. Descriptive, bivariate and multivariate analysis was used to explore the association between fetal scalp lactate and other variables of interest.

Results A total of 326 patients with fetal scalp lactate measurements were studied. Fetal scalp lactate was not associated with gestational age (Spearman's $\rho = -0.006$, $P = 0.92$), parity ($P = 0.56$) or birthweight ($P = 0.32$). A fetal scalp lactate ≥ 4.8 mmol/L was associated with increasing maternal age ($P = 0.049$) and shortened

time in labour ($P = 0.001$). Fetal scalp lactate was strongly associated with a combined outcome variable of umbilical artery pH ≤ 7.20 , base excess of ≤ -12 , Apgar score ≤ 7 at 1 or 5 min, presence of meconium, special care nursery admission or emergency operative delivery for fetal distress (OR = 1.90, 95% CI 1.44–2.51; $P < 0.001$). There was no significant association with a poor combined fetal and neonatal outcome when emergency intervention was excluded (OR = 1.11, 95% CI 0.93–1.25; $P = 0.092$). Of the individual outcome variables, operative delivery for fetal distress (OR = 14.9, 95% CI 7.37–30.3, $P < 0.001$) and Apgars < 7 at 1 and 5 min (OR = 2.23, 95% CI 1.37–3.65, $P = 0.001$ and OR = 4.40, 95% CI 1.92–10.10, $P < 0.001$, respectively) were associated with a fetal scalp lactate of ≥ 4.8 mmol/L.

Conclusion There was no significant correlation between fetal scalp lactate and gestational age, parity or birthweight; further exploration of the association with maternal age is warranted. A raised fetal scalp lactate is associated with progression to emergency operative delivery and shorter time in labour and may be an indicator of poorer neonatal outcomes, although exploration in a larger population is warranted.

EP10.30

Caesarean section in the second stage of labour as a risk factor for cervical incompetence

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Introduction The caesarean section rate is progressively increasing, both locally and internationally, and a number of these are performed in the second stage of labour. At full dilatation, the uterine cervix is incorporated into the lower uterine segment. There is no clear surgical or anatomical landmark that differentiates the proximal border of the cervix at caesarean section. We have noted an association between cervical incompetence and a personal history of caesarean section in the advanced stages of labour.

Methods We performed a retrospective analysis over an 8 year period of women who delivered significantly preterm or with significant cervical changes in the midtrimester. Ten women were identified who had a previous caesarean section in the advanced stages of labour of a term gestation. Confounders for preterm delivery were excluded, including multiple gestations, previous preterm delivery, uterine or fetal anomalies, and previous cervical surgery.

Results There were 17 617 were singleton births in the study period. The caesarean rate was 25.4%, of which 59.4% are emergency caesarean sections. 11.1% (295) occurred in the second stage of labour. The overall extreme prematurity rate (< 28 weeks' gestation) in this period is 1.6%. The rate of cervical incompetence in women in women with previous caesarean section in the second stage of labour is 3.4%.

Conclusion Caesarean section in the second stage of labour in a term gestation should be considered as a risk factor for cervical

incompetence. These women should be appropriately counselled and monitored in subsequent pregnancies with cervical surveillance in the first instance, and consideration given for preventative treatment.

EP10.31

What is the failure rate in extending labour analgesia in patients with class three obesity compared with normal weight or overweight patients? A retrospective pilot study

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Introduction Neuraxial labour analgesia has been recommended in obese parturients, to prevent the requirement for general anaesthesia if caesarean section is necessary. The insertion and management of labour epidurals in obese women is not straightforward. This study aimed to compare the failure rate of extension of epidural analgesia for emergency caesarean section, in pregnant women with a body mass index (BMI) ≥ 40 (Group O), to those with a BMI < 30 (Group C).

Methods The Human Research Ethics Committee of the Royal Brisbane and Women's Hospital approved the study. Subjects were selected from the obstetric database and delivered between January 2007 and December 2011. Subjects in Group C were matched on the month of delivery. All subjects used epidural analgesia during labour and subsequently required caesarean section. Failure was defined as (1) use of an alternative neuraxial technique or (2) administration of general anaesthesia. Data were extracted from the patient medical record. Chi-square or Fisher's exact tests were used to detect differences between groups. Multiple logistic regression was used to assess other associated variables.

Results There were 63 subjects in each group. The mean BMI of Group O was 45.4 (5.8) kg/m² and 23.9 (3.0) kg/m² in Group C. Respiratory comorbidity was significantly more common in Group O (41% versus 14.3%, $P = 0.001$). The odds ratio for failure to extend the existing epidural blockade was 2.48 (95% CI 1.02–6.03) for Group O compared with Group C (adjusted for age, parity and gestation). The presence of respiratory comorbidity was a significant predictor of failure. The conversion rate from regional anaesthesia to general anaesthesia was 14.3% in Group O and 3.2% in Group C ($\chi^2 = 4.88(1)$, $P = 0.03$). The probability of extension failure in controls was 0.159. With the odds ratio of extension failure in obese subjects found to be 2.48, a prospective study would require 110 subjects in each group, to demonstrate a significant difference between groups with power of 0.8 and significance level of 0.05.

Conclusion A prospective study is required to confirm the relationship between BMI, respiratory comorbidity and extension failure. Confirmation of these results may change the nature of anaesthetic advice given to high BMI women in the antenatal period.

EP10.32

Delayed delivery of second twin by rescue cervical cerclage

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Introduction Although there is insufficient evidence to support the practice delayed interval delivery of twin 2, it should be considered if there is no medical or obstetric contraindication. Rescue cerclage can be considered provided there is no evidence of infection.

Case 30-year-old woman G2P0 + 1 with dichorionic diamniotic twin pregnancy at 17 weeks gestation presented with bulging membranes and delivered the first twin. Cervical cerclage was inserted after delivery of first twin after explaining benefits and risks. This resulted in prolongation of pregnancy till 37 weeks, with good outcome to both mother and baby.

Conclusion Delayed delivery of second twin by emergency cerclage has been reported but only few cases. Patients should be carefully counselled with emphasis on risks and the uncertainty of the outcome. Use of tocolytics and or antibiotics is controversial. This case demonstrated one of best outcome and one of the longest interval (141 days) reported.

EP10.33

Vaginal birth after caesarean section audit

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Introduction There are an increasing proportion of births by caesarean section in the UK and therefore there is an increased proportion of the obstetric population who have a history of previous caesarean section. The current practice in the UK is to offer women the choice of vaginal birth after caesarean (VBAC) or an elective caesarean section. However, there is evidence that VBAC carries significant risk of scar dehiscence and uterine rupture, which can result in perinatal mortality and significant perinatal morbidity. Therefore appropriate antenatal counselling and intrapartum care is required to prevent adverse outcomes. At Birmingham City Hospital we have a dedicated VBAC antenatal clinic to counsel patients and support them in making an informed decision about their labour and delivery. A VBAC pro forma should be completed and filed in the case notes at the clinic. This audit aims to demonstrate compliance with the Royal College of Obstetricians and Gynaecologists Green-top guideline Birth after Previous Caesarean Section and to identify areas for change in clinical practice to improve patient care and minimise adverse outcomes.

Methods This was a retrospective audit of women attending VBAC clinic between June 2013 and December 2013. A random sample of 45 case notes was taken from the total number of 110 patients. Their case notes were reviewed for documented evidence

of counselling about the risks and benefits of VBAC versus elective caesarean section, the use of continuous electronic fetal monitoring in labour (CEFM) and evidence of consultant involvement in induction or augmentation of labour.

Results Thirty-six out of 45 case notes (80%) had evidence of discussion of the risks and benefits of VBAC compared to elective caesarean section. Eight women had a successful VBAC, 24 opted for elective caesarean section and 13 had an emergency caesarean section. Thirteen out of 19 women in total who planned for VBAC had continuous electronic fetal monitoring. Twenty-four out of 45 (53%) had clear evidence of consultant involvement in the decision making process. There were two cases that had signs of scar dehiscence leading to delivery by category one caesarean section and one confirmed case of uterine rupture.

Conclusion The results reflect the busy nature of the VBAC clinic and that despite a pro forma being available it is not always adequately completed. The pro forma does not explicitly provide evidence of consultant involvement and therefore needs to be reviewed.

EP10.34

Do birth plans affect delivery outcome?

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Introduction For many years an important part of a woman's maternity care, in the UK, is writing their birth plan; empowering women as well as facilitating discussion between women and midwives about preferences and expectations. The aim of this study was to examine whether written birth plans affect mode of delivery.

Methods All maternity notes of women booked for hospital or home confinements at St Michaels Hospital between 1 May 2012 and 31 May 2012 were retrospectively examined. Women transferred into the maternity unit from other hospitals were excluded from the study.

Women were divided into two groups: birth plan (Bp) and non-birth plan (NoBp). Maternal age, parity, mode of delivery, rates of epidural, manual removal of placenta (MROP), postpartum haemorrhage (PPH) and shoulder dystocia were compared.

Results Birth plans were present for 27% (96/355) women. Mean age was comparable in both groups (Bp versus NoBp: 28.3 versus 29.3 years). Mean parity was lower in the birth plan group (Bp versus NoBp: 0.52 versus 1.00). Women with birth plans were statistically more likely to have a forceps delivery: all women Bp versus NoBp 17.7% versus 5.0% ($P = 0.00014$), primiparous 27% versus 12.5% ($P = 0.02$), multiparous 12.5% versus 1.6% ($P = 0.58$), but there was no statistical difference in the ventouse delivery rate (all women Bp versus NoBp: 7.3% versus 4.6%, primiparous 10.3% versus 11.4%, multiparous 3% versus 1.6%). The caesarean section rate was statistically lower for women with a birth plan (all women 13.5% versus 26.7% $P = 0.009$). Women with birth plans had a non-statistically significant higher rate of

epidurals (27.1% versus 19.7%), MROP (3.1% versus 0.8%), PPH (7.3% versus 2.7%) and shoulder dystocia (4.2% versus 0.8%).

Conclusion This study suggests that women who make a birth plan are statistically less likely to have a caesarean section but statistically more likely to have a forceps delivery with a tendency towards greater rates of labour complications. This may indicate that women who choose to write a birth plan are more motivated to get to fully dilated, however they may have greater expectations with their birth journey, therefore greater disappointment with an operative vaginal delivery or intrapartum complication. This study suggests the need for realistic antenatal counselling on labour and its outcomes when advising women on their written birth plan, as unrealistic expectations can lead to a disappointing, even traumatic birth experience, which can have life-long consequences.

EP10.35

Uterine rupture in precipitated labour of unscarred uterus results in complete fetal and placenta expulsion into abdominal cavity: a case report **Fauziah, J; Zaki, NM; Shukri, M; Johan, SR**

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Introduction Uterine rupture of unscarred uterus is a rare condition, the prevalence is estimated to occur in 1/5700 to 1/20 000 pregnancies. Risk factors include grandmultipara, advanced maternal age, macrosomic baby, multiple gestation and dystocia resulting protracted labour. Consumption of some traditional preparation to precipitate labour may worsen the condition.

Case We present a case of a 32-year-old gravida 2 para 1 woman at 40 week + 1 day period of amenorrhoea and history of forceps delivery who presented with spontaneous labour. Initially presented to a district hospital with complaint of leaking of liquor and os fully dilated after 2½ hours in active labour. She was encouraged pushing for 1 hour; however, there was no descent of the fetus. The initial assessment was prolonged second stage. She was planned to be transferred to a tertiary centre immediately; however, developed hypotension and tachycardia. She was tachypneic and pale with haemoglobin level was 4.4 g/dL. Resuscitation was initiated and transabdominal ultrasonography revealed fetal bradycardia. A relative provided history of traditional medication consumption prior to delivery. Upon arrival to our tertiary centre, repeated bedside ultrasound revealed empty uterus, with fetus in the abdominal cavity with no demonstrable fetal heart activity. It was surrounded with fluid collection with high index suspicion of blood. Our impression was uterine rupture with intrauterine death and hypovolemic shock. We performed an emergency laparotomy, which revealed the whole body of the fetus and placenta completely expelled into the abdominal cavity. A fresh stillbirth baby was delivered. Approximately 3 L of haemoperitoneum collection discovered. There was a 10-cm diagonal tear at left posterior part of the uterus extending from posterior cervical lips up to near the ovarian ligament also involving the posterior vaginal wall.

Simultaneously two cycles of DIC regime was transfused. The repair of the ruptured uterus was performed using catgut 1/0 in two layers, homeostasis was secured with multiple 'figure of eight' and warm compression. Bilateral tubal ligation was performed by modified Pomeroy's method. Postoperatively patient was well, with no complications observed. She was discharged well after day 3 postoperative and was seen after 1 month.

Conclusion A high index suspicion of uterine rupture is required to prevent this catastrophic event, especially in mothers consuming traditional preparations to fasten labour.

EP10.36

A case of placenta increta managed through uterine artery embolisation (UAE)

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Introduction Placenta accreta occurs when part or whole of the placenta abnormally attached to the myometrium. It is classified based upon the degree of the placental invasion, namely accreta, increta and percreta. It is also associated with placenta praevia. Studies indicate that the presence of placenta praevia, the risk for placenta accreta was 3%, 11%, 40%, 61% and 67% for the first, second, third, fourth and fifth or greater repeat caesarean deliveries. Postpartum haemorrhage is a recognised sequelae, as such uterine artery embolisation is indicated. Uterine artery embolisation (UAE) involves delivering small particle to block blood supply to avoid haemorrhage. The ultrasound and magnetic resonance image (MRI) may or may not indicate clearly an invasive placenta, however final diagnosis is made intraoperatively and supported by histopathological examination.

Case study We present a case of 33-year-old Malay woman gravida 4 para 3 at her 37 weeks, with history of 3 previous caesarean section with placenta praevia type 4 who underwent elective caesarean section. Operation was started with cystoscopy and bilateral ureteric stenting. We managed to avoid intraoperative bleeding, by uterine artery embolisation (UAE) technique. We enter the uterus via vertical incision at the upper segment, to avoid placenta praevia. A healthy baby 3.05 kg girl was delivered via breech extraction. Before incision was made at vault, UAE was performed at uterine arteries that resulted in significant reduction in blood loss during standard hysterectomy procedure. Vault was sutured using vicryl sutures. Finally after securing normal haemostasis, abdomen was closed using normal technique. The specimen (uterus and cervix) was sent for histopathological examination that confirmed diagnosis of placenta praevia increta.

Conclusion Women with advanced maternal age and those with myometrial damage caused by previous caesarean delivery are on

a greater risk for placenta increta. Despite early diagnosis through ultrasound and MRI, hysterectomy remains a common procedure in case of postpartum haemorrhage for placenta increta. The use of conservative techniques such as UAE not only results in significant reduction in blood loss but also minimises surgical complications and preserves fertility.

EP10.37

Large intrauterine epithelial inclusion cyst complicating labour

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Introduction A mass in the lower uterine segment is a rare cause of preventing head engagement in labour. We discuss the initial diagnosis of a pedunculated fibroid which in fact was a large epithelial inclusion cyst which prevented the descent of the fetal head in a primigravida at term.

Case A 33-year-old primigravida was admitted to the labour ward with spontaneous rupture of membranes and high fetal head at 39 + 2 weeks gestation. She was in established labour throughout the next 4 hours but the head remained high. The woman's antenatal history did not indicate a cause for the high head. The next vaginal examination revealed a 5 cm dilated cervix and intact forewaters with clear liquor pooling in the vagina. A controlled rupture of membranes was performed; however the head still remained high. Further examination revealed a large, rounded mass protruding through the cervix. It had a smooth surface and was of medium consistency. It was not pulsatile. As this mass was clearly obstructing the descent of the fetal head, an emergency caesarean section was performed and the baby was delivered without complications. The mass was located in the lower uterus and upper cervix and was about 14 cm in size. It had a narrow pedicle which was bleeding. It was removed and sent for histology. The bleeding was arrested with haemostatic sutures and pressure. According to the histopathology report the specimen measured 60 mm × 40 mm × 37 mm and weighed 47 g. It contained a cystic structure filled with soft cream material. The resection margin was continuous with benign endocervical and ectocervical mucosa. The inner surface of the cyst was lined by benign non-keratinising squamous epithelium. The features were consistent with a benign squamous epithelial inclusion cyst. The epithelial inclusion cyst is the commonest cyst found in the vulva and is also found in the ovaries but our literature survey did not find a similar occurrence in the uterus. Interestingly, this mass was not identified at second trimester ultra sound scan which clearly shows a long and closed cervix.

Conclusion Although the occurrence of a previously unidentified mass preventing descent of the fetal head is rare, this case serves as a reminder to clinicians to be mindful of potential causes of persistent high head in labour.

EP10.38

Spontaneous pneumomediastinum and subcutaneous emphysema during labour in an uncomplicated pregnancy**Fernando, M; Edmonds, H**

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Introduction Spontaneous pneumomediastinum (Hamman's syndrome) is uncommon in labour, with <250 cases reported worldwide. Almost all cases have occurred in healthy primiparous women. It is believed to be caused by increased intra-alveolar pressure created by repeated valsalva manoeuvres during pushing in labour. This can lead to alveoli rupture and air leaking into the mediastinum producing a pneumomediastinum. The gas then tracks up along the subcutaneous perivascular fascial planes towards the face and neck.

Serious adverse events are very rare and are associated with haemodynamic compromise. Therefore, in otherwise well women, conservative management is indicated. There have only ever been two cases of recurrence reported in subsequent pregnancies, both occurring prior to 1900. As such, there is no evidence for routine epidural blocks and instrumental deliveries in future pregnancies.

Case A healthy 29-year-old primigravida presented in spontaneous labour at 41 weeks. Her pregnancy was uncomplicated and she had no medical or surgical history. She was an ex-smoker with a four pack years smoking history. Her first stage of labour lasted 11 hours and she pushed for 3 hours. During labour she used Entonox. Due to significant maternal exhaustion, a rotational vacuum delivery was attempted. After three pulls the head was at the perineum. Fetal bradycardia was noted and the baby was delivered with forceps. The patient had a 1 L post partum haemorrhage which was managed effectively. Three hours after delivering a healthy baby she complained of discomfort and a 'crackling sensation' under her skin in the supraclavicular area. She also felt 'puffy' in the face. She was otherwise asymptomatic. On examination, she had bilateral subcutaneous emphysema. The remainder of the examination was normal. A chest X-ray showed subcutaneous emphysema and pneumomediastinum. A CT scan ruled out a pneumothorax. She was managed conservatively in consultation with a respiratory physician. Throughout her stay she remained stable, maintaining her saturation at 100% on room air, with no signs of respiratory compromise. She had no complications on 2 weeks post discharge.

Conclusion Hamman's syndrome is uncommon in labour and occurs mostly in primigravid women. Serious adverse events are very rare and women who are haemodynamically stable should be managed conservatively. There is no evidence to recommend routine epidural analgesia and instrumental delivery in future pregnancies.

EP10.39

A retrospective cohort study of outcome of neonates with meconium stained liquor
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Introduction Between 15% and 20% of term pregnancies are associated with meconium-stained liquor (MSL). Meconium aspiration syndrome (MAS) accounts for 2% of perinatal deaths in UK. Independent predictors of MSL (in UK) were African or South Asian race, vaginal breech delivery and advancing weeks of gestation. Although Africans and South Asians have a significantly greater risk for MSL compared to whites the case fatality rate was similar in MAS among the above races. Two studies done at Castle Street Hospital, Sri Lanka (1995), found that frequency of MSL was 4% and 6% and 31% and MAS 34% respectively. Neonatal death occurred in 14.2% and 7.3% with MAS respectively. In the absence of facilities for fetal scalp blood sampling MSL is a common indication for emergency caesarean sections in Sri Lanka due to the fear of adverse perinatal outcomes.

Methods A retrospective cohort study conducted at ward 7, De Soysa Hospital for Women (DSHW) in Colombo, Sri Lanka. All MSL deliveries documented in the birth registry of ward 7 DSHW from January 2012 to March 2013 were included. Age, parity and BW matched controls with clear liquor at birth were randomly selected for comparison. Data were extracted from maternal and neonatal records. Data were analysed with SPSS and chi square test and Fisher's exact were used for comparison of data.

Results Total sample size was 188 of which 94 were MSL and 94 were controls. The frequency of MSL was 6.2% and MAS was 3.2%. Case fatality was 2.1%. Mean age of the study population was 28.5 years, SD = 6, range from 16 to 45 years. There were 47 (50%) primiparous women in each group. Period of amenorrhoea at the time of delivery was significantly higher in the MSL [39 weeks + 1 day (SD = 1.4) versus 38 weeks + 4 days (SD = 1.3), $P < 0.01$]. Prostaglandin induction was significantly higher in the MSL (17% versus 7%) ($P = 0.04$). Abnormal CTGs (17% versus 1%) and emergency LSCS rate (27.6% versus 9.5%) were significantly higher in the MSL group ($P < 0.01$). Abnormal CTGs (17% versus 1%) and emergency LSCS rate (27.6% versus 9.5%) were significantly higher in the MSL group ($P < 0.01$). PBU admissions (13.8% versus 4%), respiratory distress of the new born (4% versus 0%) and neonatal deaths (2% versus 0%) were statistically significant in the MSL group compared to controls ($P < 0.05$).

Conclusion The rate of 5.2% for MAS was less compared to previous two studies (31% and 34%).

EP10.40

Trends in severe adverse outcomes following postpartum haemorrhage, 2003–2011**Ford, JB¹; Patterson, JA¹; Seeho, SKM^{1,2}; Morris, JM^{1,2}; Roberts, CL¹**¹Clinical and Population Perinatal Health Research, Kolling Institute, University of Sydney, Sydney, NSW, Australia; ²Royal North Shore Hospital, St Leonards, Sydney, NSW, Australia

Introduction While rates of postpartum haemorrhage have continued to rise in Australia and other high income countries, it is not clear if the association with transfusion and other morbidity has changed over time. This study explores maternal outcomes of postpartum haemorrhage (transfusion, maternal morbidity) following vaginal and caesarean delivery.

Methods Linked birth and hospital data were used to examine postpartum haemorrhage and outcomes in maternal singleton birth admission records, 2003–2011, in New South Wales, Australia ($N = 818\,965$ pregnancies). Blood loss ≥ 500 mL following a vaginal birth, or ≥ 750 mL following a caesarean birth is classified as a postpartum haemorrhage in hospital data. Logistic regression models were developed separately for vaginal and caesarean births, and for red cell blood transfusion and a validated maternal morbidity composite indicator (excluding transfusion). The composite indicator includes severe outcomes such as cardiac or renal failure, cerebrovascular complications, hysterectomy and dialysis. Unadjusted rates of transfusion and maternal morbidity are presented with chi-square test for trend P values. Adjusted odds ratios (aOR) for yearly change and 95% confidence intervals (CI) are also presented where appropriate. Adjustment included maternal (e.g. age, country of birth) and pregnancy factors (e.g. parity, interventions, pregnancy complications).

Results Overall there was a significant increase in postpartum haemorrhage rates, from 6.1% ($n = 5158$) in 2003 to 8.3% in 2011 ($n = 7866$) ($P < 0.0001$). Among births complicated by postpartum haemorrhage, unadjusted morbidity rates remained stable at 2.9 per 100 births and unadjusted transfusion rates increased from 12.3 ($n = 636$) to 14.5 ($n = 1145$) per 100 births ($P < 0.001$). Following vaginal births with postpartum haemorrhage, unadjusted transfusion rates increased from 11.1 ($n = 481$) per 100 births in 2003 to 13.9 ($n = 860$) per 100 births in 2011 ($P < 0.001$) and the increase persisted following adjustment for maternal and pregnancy factors [aOR 1.02 (1.00–1.03)]. There was no significant trend in transfusion amongst caesarean births [aOR 0.99 (0.97–1.01; $P = 0.30$)] although the numbers of women receiving transfusion increased (155–285 women).

Conclusion It is encouraging that there have been no large increases in morbidity or transfusion associated with increasing postpartum haemorrhage rates.

EP10.41

Uterine rupture due to placenta percreta at 13/40 gestation resulting in hysterectomy
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Introduction Uterine rupture due to placenta percreta is a rare diagnosis. Reviewing the literature, it mainly occurs in the second and third trimesters but has also been reported to occur as early as 9/40. Risk factors for uterine rupture in pregnancy include previous caesarean section (CS), placenta praevia, multiparity and advanced maternal age. Uterine rupture as a result of placenta percreta carries high morbidity from haemorrhage due to increased vascularisation at the rupture point and can be more dangerous than rupture from a previous CS scar opening alone. There are case reports of conservative management including curettage, packing, methotrexate treatment, bilateral uterine artery occlusion and primary closure of the defect. However, given the high morbidity/mortality associated with uterine rupture, hysterectomy is usually preferred in controlling life threatening haemorrhage.

Case A 26-year-old G3P1 at 13 + 5/40 gestation presented to our Emergency Department (ED) with sudden onset right iliac fossa (RIF) pain radiating to her shoulders. Past history included an emergency CS 1 year prior for fetal distress at 2 cm dilatation at 39 weeks and a spontaneous first trimester miscarriage. The index pregnancy had been complicated by vaginal bleeding but transvaginal ultrasound scans (TV USS) at 10 and 12 weeks had shown a live intrauterine pregnancy (IUP) and normal adnexae. On examination the patient appeared unwell but vital signs were normal. There were signs of peritonism in the RIF. Cervical excitation and right adnexal tenderness were present on vaginal examination. Haemoglobin was 11.5 g/dL. TV USS showed free fluid in the pelvis and a live IUP. The patient deteriorated whilst being managed in ED and was rushed to theatre following resuscitation. Laparoscopy revealed a massive haemoperitoneum with ongoing profuse bleeding and laparotomy was performed. A ruptured uterus with placenta extruding through the anterior wall was identified as the bleeding point. The fetus was delivered via hysterotomy in an attempt to salvage the uterus. Profuse bleeding continued despite removal of the placenta and the patient was unstable. A hysterectomy was performed promptly. Estimated blood loss was over 3.5 L. Ten units of blood, ten units of cryoprecipitate, one bag of platelets and four units of fresh frozen plasma were transfused. The patient recovered well. Histopathology confirmed placenta percreta.

Conclusion An acute abdomen in pregnancy should have uterine rupture from placenta percreta considered as a differential diagnosis, even in the first trimester.

EP10.42

One year of the postnatal debrief clinic in Aberdeen Maternity Hospital**Fullerton, G; Humphrey, T; Forrest, J**

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Introduction Childbirth can be a difficult time for women both physically and psychologically. Many factors contribute to this and even women who appear to have a normal vaginal birth can be left scarred by the experience. Although formal debriefing is not recommended for all women who have a traumatic birth, good practice dictates that women should have the opportunity to talk to a health professional about their experience if they wish.

Methods A dedicated multidisciplinary clinic was established at Aberdeen Maternity Hospital by midwives and obstetricians in September 2013. A referral sheet was circulated to community midwives, health visitors and GPs to identify women who would benefit from the service and facilitate a clear referral pathway. Following the consultation, a data sheet is completed to capture the reason for referral, experience of care (positive and negative) and any action taken. This information is being used to inform service improvements and birth stories are being captured for training and education purposes.

Results 89 women were referred to the clinic. The time period between birth and the consultation ranged from 1 to 90 months. Most women had a caesarean section (38.2%), 31.5% had a normal birth, and 25.8% had an instrumental birth. Some women (15.7%) were pregnant at the time of their appointment and were referred due to increased anxieties about previous births. 37% came to the clinic for review following complications at the time of delivery, most commonly postpartum haemorrhage and preterm labour. Common themes in women's experiences were delayed or ineffective analgesia, issues with postnatal care in hospital and a lack of effective communication. Women seemed to value aspects of their care across a wide range of settings, particularly when the care they received was compassionate and reflected their preferences.

Conclusion Immediate feedback from women about this service is positive, in particular those who wish to understand more about the labour events. Those who are pregnant and have concerns regarding past births value plans for ongoing care and go on to have more positive experiences. Longer term follow-up evaluating women's experience of the clinic is ongoing. The service concerns highlighted have prompted targeted improvement work in specific areas and training and education of groups of staff. Where women and families have highlighted good practice, this is being feedback with the aim of replicating it across the service.

EP10.43

Our experience in use of the fetal pillow – an innovative method to reduce morbidity in second stage caesarean section**Ganapathy, R¹; Cole, J²; Castleman, J²; Raut, N³**¹Consultant Maternal and Fetal Medicine; ²Specialist Trainee in Obstetrics and Gynaecology; ³Consultant obstetrics and Gynaecology, City Hospital SWBH NHS Trust, Birmingham, United Kingdom

Introduction Second stage caesarean sections are associated with significantly higher morbidity in mothers and babies. The risks are of uterine angle extensions, excess blood loss, blood transfusions, increased operative time and prolonged hospital stay. Fetal injuries, difficulty in delivery after uterine incision with consequent neonatal admission. Various operative techniques have been described to reduce these risks but Fetal Pillow[®] is supposed to overcome these problems with no variation in technique.

Methods Our inner city hospital in Birmingham delivers 6000 women a year. We have used the fetal pillow in second stage caesareans for 1 year. All juniors and consultants were initially trained in the use of the fetal pillow over 6 weeks. We compared the maternal and neonatal outcomes with the complication rates in our trust prior to introduction of the Fetal Pillow.

Results We present the data of 57 consecutive second stage caesareans where fetal pillow was used. None of the users reported any concerns with the device or training in its use and reported ease in delivery of the fetal head. We had a uterine tear extension rate of 5.2% (rate prior to use of fetal pillow was 11%), none of the cases (0%) had a vaginal or cervical tear (previously 4.4%). Postpartum haemorrhage (PPH) >1000 mL was seen in 3 cases with 2 of them >1500 mL. This is an incidence of PPH of 5.2% (previously 20%). 2 of our cases were admitted to the high dependency unit for a 24 hour period after massive obstetric haemorrhage (3.5%), and none required intensive care (previously 4–5%). Only 2 patients (5.2%) required a blood transfusion (previously 10%). The quicker recovery resulted in a shorter hospital stay averaging 2.7 days. This is lower than the average of 5–7 days in women with complications. This is associated with a significant cost reduction.

We had 2 cases of neonatal admissions; both were for observation over a 2 day period for suspected chorioamnionitis in the mother. Infection in two cases was limited to superficial wound infection and one was associated with a hospital stay for 1 day.

Conclusion The number of patients studied does not allow us to draw a firm conclusion about reduction in neonatal morbidity. Use of Fetal Pillow shows a significant trend towards reduction in maternal morbidity. There also is a complementary reduction in cost of care by reducing duration of stay, infections and blood transfusions.

EP10.44

Is a vaginal betadine wash after caesarean section an effective intervention in reducing the incidence of postoperative endometritis and sepsis?

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Introduction The objective of this study was to determine whether vaginal betadine washes immediately following caesarean section led to reduction in postoperative infection rates.

Method In an attempt to reduce the incidence of postoperative infections our department adopted a universal policy of vaginal cleansing with betadine after elective and emergency caesareans. This study was an audit of the change of this clinical practice. The primary outcomes measured were endometritis, sepsis, fever, hospital readmission or wound complication.

Results The period of study was over a 4 month period when 172 women underwent elective and emergency caesareans. In the study period there were 72 elective caesareans and 100 emergency caesarean procedures. In the elective procedures there were 4 cases where antibiotics were given empirically for suspected superficial wound infection (wound cultures were negative in all) and there was one case of proven urinary tract infection. In the emergency cases there were 9 cases of culture proven wound infections and 5 cases of urinary tract infections. 2 cases of antenatally diagnosed chorioamnionitis that received antibiotics were not included in the analysis. Analysis of the cases of infection in the elective caesarean section showed no correlation between reasons for surgery, duration of surgery, suture material and maternal demographic characteristics. Analysis of the emergency caesareans with wound infections showed that there were 7 cases of superficial wound infection and no cases of sepsis or endometritis. None of the cases had post op pyrexia, wound haematomas, readmission to hospital. Only 3 cases had a clinically significant rise in the white blood cell count – 2 with superficial wound infection and one with a proven UTI with klebsiella org. In all these cases the C-reactive protein (CRP) showed no correlation with clinical signs. 5 of these cases had received intrapartum antibiotics for GBS prophylaxis.

Blood culture was negative in both the cases with chorioamnionitis.

Conclusion In emergency and elective caesareans betadine vaginal washing does not have any effect on superficial wound infections. There is a significant reduction in postoperative endometritis and possibly urinary tract infections in elective caesareans. Although it appears pragmatic the practice will not change the incidence of superficial wound infections or urinary tract infections. There is a definite benefit in this practice as none of the women had pelvic infections necessitating longer hospital stay and this has a definite cost benefit in healthcare.

EP10.45

A view of the uterus at caesarean section in a subsequent pregnancy following the use of a Bakri balloon in a previous pregnancy for the management of PPH

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Introduction The use of balloon tamponade technology (BTT) has steadily increased since the original descriptions in 1992. Despite the multitude of uterine and non-uterine specific balloons that have been used for the treatment of PPH secondary to an atonic uterus, few studies have commented on the subsequent effect of menses, fertility and pregnancy.

Following failed first-line uterotonics (FLU), other second-line approaches (SLA) such as compression sutures and vascular ligation/occlusions, have been associated with future menses, fertility and pregnancy related problems. Although more recently, uterine perforation and uterine rupture have been described in relation to BTT, few studies comment on the external/internal gross structure of the uterus following the use of BTT in the management of PPH.

Cases Two cases are presented in which a Bakri balloon was used for the management of PPH following a previous vaginal and caesarean birth. Both patients subsequently became pregnant and a lower segment caesarean section was performed. This provided an opportunity to view the gross external and internal surfaces of their uteri as well as the thickness of their respective lower segments. At caesarean section, there were no apparent adhesions on the external surface of either uterus. The myometrial thickness at the level of the lower segment appeared as expected in both cases, and the inner endometrial surfaces were regular in contour.

Conclusion The use of a Bakri balloon whether at caesarean section or following a vaginal birth, does not appear to result in any gross uterine structural alterations in a subsequent pregnancy.

EP10.46

The relationship between mid trimester cervical length and pregnancy outcome: a retrospective observational study

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Introduction It is widely accepted that short cervical length is a risk factor for preterm labour. However, there have been few studies investigating the relationship between cervical length mid pregnancy and mode of delivery. Therefore it is hypothesised that a long cervical length at the 18 week morphology scan is associated with caesarean section at term, prolonged labour, induction of labour and post term delivery.

Methods The relationship between cervical length and various birth outcomes was examined retrospectively. We studied 1384 women who were in confinement in Toowoomba Hospital from 1 April 2011 to 31 December 2012. Cervical length at approximately 18 weeks gestation and mode of delivery were statistically analysed for associations.

Results The mean cervical length mid pregnancy for women who had a caesarean section was 3.87 and for a vaginal birth 3.74. This is statistically significant with a *P* value of 0.001. There was no statistically significant relationship between mid-term cervical length and IOL, prolonged labour or post-term delivery.

Conclusion Cervical length measured at the 18 week morphology scan is an independent predictor of caesarean section at term. However there is no relationship between cervical length at mid pregnancy and IOL, post-term delivery or prolonged labour.

EP10.47

Differences in indications for category 1 caesarean section between term and preterm pregnancies Grace, L¹; Kumar, S^{1,2}; Greer, RM²

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Introduction Caesarean section (CS) rates are increasing in many countries. The reasons for this are complex and unclear, but may be due to a variety of factors including improved intrapartum fetal surveillance, lower threshold for operative intervention, perceived safety profile of CS, as well as obstetrician preference. The purpose of this study was to identify the indications for Category 1 CS at both preterm and term gestations at a major maternity centre in Australia.

Methods This was a retrospective study of all singleton pregnancies at the Mater Mothers' Hospital in Brisbane, Australia, between May 2007 and June 2014. Category 1 CS was defined as a CS that required a decision to delivery time interval of not more than 30 min for any indication that posed an immediate threat to the life of a woman or her fetus.

Results A total of 34 010 public singleton deliveries were eligible for analysis. Of these, 1531 (4.5%) were Category 1 CS, with 1179 performed at term (3.8% of all term deliveries), and 352 at preterm gestation (10.5% of all preterm deliveries). Of the 352 preterm gestation cases, the most common Category 1 indication was non-reassuring fetal status (35.8%, 126/352). Other preterm indications included antepartum haemorrhage and placenta praevia (24.1%, 85/352), malpresentation (15.1%, 53/352) and maternal disease (9.7%, 34/352). Of the term gestation cohort, again the most common Category 1 CS indication was non-reassuring fetal status (65.9%, 777/1179) followed by failure to progress (10.1%, 119/1179), failed instrumental delivery (8.1%, 96/1179) and malpresentation (5.8%, 68/1179).

Conclusion Our study showed that although the most common indication for Category 1 CS regardless of gestation was non-reassuring fetal status this was almost twice as common at term compared to preterm gestation. Given that intrapartum hypoxia is

responsible for a significant proportion of cases of neonatal encephalopathy and longer term sequelae particularly in developing countries, it is important to identify those fetuses most vulnerable to the stress of labour. Refinements in intrapartum monitoring combined with improved detection of suboptimal fetal growth and other risk factors may reduce the rates of Category 1 CS for fetal compromise and hopefully ameliorate adverse neonatal and longer term sequelae.

EP10.48

Perinatal consequences of a Category 1 caesarean section at term

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Introduction Category 1 caesarean section (CS) is associated with higher maternal and neonatal morbidity compared to non-Category 1 CS and non-caesarean delivery. The purpose of this study was to characterise maternal demographics and risk factors associated with term Category 1 CS.

Methods This was a retrospective study of all singleton pregnancies at the Mater Mothers' Hospital in Brisbane, Australia, between May 2007 and June 2014. Category 1 CS was defined as one that required a decision-to-delivery time interval of <30 min when there was an immediate threat to the life of a woman or fetus.

Results A total of 30 719 women delivering at term were included. Of these, 1179 (3.8%) women required a Category 1 CS. The comparison group of 3527 women included all other categories of emergency CS. The vast majority of Category 1 CS were performed for non-reassuring fetal status (65.9%, 777/1179) followed by failure to progress (FTP) (10.1%, 119/1179), failed instrumental delivery (8.1%, 96/1179) and malpresentation (5.8%, 68/1179). The indications for non-Category 1 emergency CS included FTP (46.5%, 1641/3527), non-reassuring fetal status (19%, 671/3527) and malpresentation (12.4%, 437/3527). Maternal demographics, including age, BMI and medical disease, did not differ significantly between the two cohorts (*P* > 0.05). Caucasian women were equally as likely to undergo a Category 1 CS as a non-Category 1 CS; whilst indigenous [Aboriginal and Torres Strait Islander (ATSI)] women (3.2%, 38/1179 versus 2.6%, 92/3527) and women of Asian ethnicity (24.3%, 287/1179 versus 23.9%, 842/3527) were more likely to undergo a Category 1 CS, as were women born outside of Australia regardless of ethnicity (50.6%, 597/1179 versus 49.2%, 1735/3527). Significantly higher (*P* < 0.001) perinatal complications were seen within the Category 1 CS cohort compared to the non-Category 1 CS cohort, with Apgar scores <7 at 1 min (20.4%, 241/1179 versus 10.7%, 377/3527) and 5 min (5.8%, 68/1179 versus 1.9%, 67/3527), umbilical arterial pH < 7.2 (23.7%, 279/1179 versus 9.1%, 321/3527), neonatal resuscitation (59.9%, 706/1179 versus 51.8%, 1828/3527), and NICU admission (9.8%, 116/1179 versus 2.5%, 87/3527).

Conclusion The results from this study demonstrate poorer perinatal outcomes associated with term Category 1 CS compared

to non-Category 1 emergency CS. Women of ATSI and Asian ethnicity, and women born outside of Australia, were more likely to undergo a Category 1 CS. The reasons for this are unclear. Early identification (both antenatally and intrapartum) of women who may be at risk of requiring a Category 1 CS may minimise the risk of complications to the newborn.

EP10.49

Do we still believe that earth is flat – an experience of vaginal birth of the primi mothers with breech presentation

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Introduction The mode of delivery of primi mothers with breech presentation by elective caesarean section is safer. That does not mean that vaginal deliveries impossible in these mothers. Our unit in the De Soysa Maternity Hospital Colombo offers the vaginal birth to the fetus presented with breech presentation with the exception of footling breech. So far we could not find any failure in vaginal deliveries offered to the mothers with breech presentation. Four primi mothers who presented with breech presentation successfully delivered their babies vaginally.

Case Four primi mothers delivered their first babies by assisted vaginal breech delivery in this year (2014) without any complications. All were followed up in the antenatal clinic. Dates were confirmed by early ultrasound scan. Diagnosed breech presentation in the abdominal palpation, followed up with serial scan. All were extended breech presentation. All mothers delivered after the period of gestation of 37 weeks. None of them were tried with external cephalic version. They developed spontaneous onset of labour. Deliveries attended by registrars and senior house officers while the consultant was informed and kept stand by. Patient kept left lateral position till perineal phase of the labour. Delivery was in the lithotomy position. None of the mothers ended up in the emergency caesarean section. All delivered live non asphyxiated babies with the Apgar of 10 at 1, 5 and 10 min. The birthweights were 2.320 kg (diagnosed symmetrical IUGR by USS), 2.760, 2.980 and 3.520 kg. All the deliveries attended by paediatric medical officer. Following day they were examined by consultant neonatologist. No maternal or fetal complications identified.

Conclusion Primi mothers with extended breech presentation can be delivered vaginally safely. More research is needed to support the validity of our findings.

EP10.50

Third and fourth degree tear incidence and risk factors in Mafrag Hospital

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Introduction Obstetric anal sphincter injury encompasses both third and fourth degree tears. The objective was to determine incidence of cervical tear and its associated risk factors in Mafrag hospital, and compare it with standard rate which is 1% of vaginal deliveries.

Method This was a retrospective study; relevant data were collected from delivery and operative theatre register book, entered into the pro forma sheet and the results were analysed manually. Total 22 patients of vaginal deliveries with third and fourth degree tear during a period of 32 months from April 2011 to end of December 2013. Data were analysed: incidence, maternal characteristic (age, parity), GA, BMI, GDM, risk factors; history of 3, 4 degree tear, h/o perineorrhaphy, mode of delivery, duration of labour, h/o episiotomy, type of tear, birthweight, h/o shoulder dystocia, type of repair and type of suture used, type of analgesia, antibiotics and laxative administered, follow-up, h/o sexual dysfunction, anorectal surgeon with endo anal USS, anorectal manometry performed at postnatal follow-up.

Results Total number of deliveries 5255, total 22 patients developed third and fourth degree tear, 12 (54.5%) in age 21–30 years, 10 (45.4%) 31–40 years, 10 (45.4%) primi, 12 (54.5%) were parous, 13 (59%) had GA 37–40 weeks, 9 (4.9%) had GA >40 weeks, no patient had previous perineorrhaphy, 3 had vacuum delivery (13.6%), 2 had home delivery (9%), 8 had labour of 10 hours (36.3%), no patient had BMI < 18.5, 1 (4.5%) BMI 18.5–20, 13 BMI 20–30 (59%). 8 had BMI 30–40 (36.4%), 2 had IOL (9%), 9 had episiotomy (40.9%), 12 had 3A tear (54.5%), 4 had 3B tear (18.2%), 4 had 3C tear (18.2%), 2 had fourth degree tear (9%), 19 had birthweight 2.5–4 kg (86%), 2 had weight 2–1.5 kg (9%), 1 patient birthweight >4 kg (4.5%). 1 patient shoulder dystocia (4.5%) at 3.8 kg birthweight. 14 were sutured in OT under GA (63.6%), 8 were sutured in LW (36.4%) under local. In 9 patients PDS 2/0 used (40.9%), 7 patients had 3/0 PDS suture (7%). All patients (100%) received antibiotics and laxatives. At follow-up, most patients defaulted clinic with 1 had fecal incontinence at 12 weeks (4.5%), 1 patient had incontinence of stool immediately in the postoperative period was advised for endoanal USS and anorectal manometry but patient defaulted clinic. 1 (4.5%) with fourth degree tear was reviewed by colorectal surgeon before discharge and was asymptomatic, 6 had normal follow-up (27.2%) and remaining defaulted the clinic.

Conclusion Incidence of obstetric anal sphincter injury in Mafrag hospital is 0.42% which is far below the average standard according to RCOG which is 1%. No proper documentation was available in the medical records including method of diagnosis and technique used. All women should be offered physiotherapy and pelvic-floor exercises for 6–12 weeks after obstetric anal sphincter repair and should be reviewed 6–12 weeks postpartum by a consultant

obstetrician and gynecologist. All women who sustained obstetric anal sphincter injury in a previous pregnancy should be counselled about the risk of developing anal incontinence or worsening symptoms with subsequent vaginal delivery and advised that there is no evidence to support the role of prophylactic episiotomy in subsequent pregnancies. All women who have sustained an obstetric anal sphincter injury in a previous pregnancy and who are symptomatic or have abnormal endoanal ultrasonography and/or manometry should have the option of elective caesarean birth. When third and fourth degree repairs are performed, it is essential to ensure that the anatomical structures involved, method of repair and suture materials used are clearly documented and that instruments, sharps and swabs are accounted for. The woman should be fully informed about the nature of her injury and the benefits to her of follow-up. This should include written information where possible, and risk management team involved.

EP10.51

Rupture uterus

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Introduction Uterine rupture is a disruption of the uterine muscle which may extend or involve the uterine serosa or bladder or broad ligament. High morbidity and mortality rate with fetal mortality is 10 times more than the mother. It occurs in 0.02% of all pregnancy 0.002 with pre-existing uterine scar.

Case study 34-year-old, Yemeni, G6 P3 + 2. HPI: booked for elective LSCS at 38 weeks but delivered at home. Presented to the hospital by ambulance with h/o bleeding pv and lower abdominal pain and retained placenta. PMH: 2 LSCS, myomectomy. On admission, vital signs were stable and abdomen is soft, placenta delivered in ER. Later on she was assessed in labour room as c/o abdominal pain and tenderness. Pelvic scan: pelvic fluid collection from the fundus of the uterus up to morrison's pouch, measuring 11.5 8.5/7.7 cm, with thick echoes. Management: patient was advised for exploratory laparotomy for possible ruptured uterus, but refused despite detailed counselling. Hence decided for close monitoring of vitals and urine o/P. She refused catheterisation; vitals were stable with Hb 97–96 with Hct 0.303–0.300. Symptoms became more severe with marked abdominal tenderness, and the patient consented for exploratory laparotomy. Operative details: longitudinal incision done with uterus found to be 20 weeks size. A 4 cm rent in rt peritoneum. A 6 cm complete rupture of uterus on rt side of previous scar. Clotted blood with free fluid and blood removed – 400 mL.

A tear in the middle of uterus and down to cervix and posterior wall of bladder. The edges of the lower uterine segment were difficult to retrieve required bladder dissection. Retrograde filling of bladder done with dye. A rent of 1–2 cm noted in the posterior bladder wall. Urologists attended. Dissection of bladder from the uterine wall done. Edges of bladder refined, bladder muscle found deficient, anterior vesical peritoneum dissected and a flap patch on the bladder sutured to strengthen the weak area. Bladder repaired in 2 layers. Uterine T shaped tear sutured with

monocryl in 2 layers. Suprapubic catheter inserted and in for 2 weeks with follow-up in the urology clinic in 2 weeks for cystogram. Antibiotics for 14 days and discharged home on good general condition. Follow-up: pt had follow-up at 8 weeks postpartum with h/o clear watery vaginal discharge; P/S discharge present, lax vagina. No trickle of fluid. Patient was started on vaginal metronidazole. Differential diagnosis: possible vesicovaginal fistula and cystogram shows intact bladder structure with no leak.

Conclusion Uterine rupture is serious maternal morbidity and mortality including maternal haemorrhage, damage to other pelvic structures, hysterectomy, fetal complications and demise and maternal death. Planned VBAC carries risk of uterine rupture of 21/10 000 while no risk 3/100 000 of uterine rupture in woman undergoing elective repeat caesarean section.

Women requesting for a trial of vaginal delivery after two caesarean sections should be counselled appropriately on the basis of success rate 71.1%, uterine rupture rate 1.36% and of a comparative maternal morbidity with repeat CS option.

EP10.52

Management of early onset pre-eclampsia: reasons for delivery, current treatment and outcomes for mothers and babies at <34 weeks of gestation

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Introduction Early onset pre-eclampsia in women <34 weeks of gestation affects approximately 1% of pregnancies and presents the most complicated management dilemma for obstetricians. In the context of improvements in obstetric monitoring and neonatal care we conducted a retrospective analysis of women with early onset pre-eclampsia to identify the characteristics of these women, the indications for delivery, what clinical treatment is currently used, the timing and method of delivery and the current maternal and neonatal outcomes in women with early onset pre-eclampsia.

Methods A retrospective study of women with early onset pre-eclampsia was conducted at two major tertiary centres in Queensland over 5 years, including 467 women who were managed between 2008 and 2012.

Results The mean gestation at delivery was 28.8 weeks, the average age of women in the study was 30.5 years, the mean BMI was 29 and 61% of women were primiparous. The most common concomitant medical conditions were pre-existing hypertension and diabetes. The mean time from diagnosis to delivery was 23 hours. The most common length of time from diagnosis to delivery was 2 days. Maternal reasons for delivery were cited in 65.4% of cases. Fetal indications for delivery were cited in 53.8% of cases. Uncontrolled/severe hypertension was the most common reason for delivery. 56.4% of patients received more than one anti-hypertensive agent prior to delivery. 51.4% received a minimum 4 hours of MgSO₄ prior to delivery for maternal and/or fetal indications. In 55% of cases there was <24 hours for steroid loading prior to delivery. The most common mode of delivery

was caesarean section (67.9%). Maternal morbidity included PPH, anaemia, wound haematoma/infection and persistent hypertension. 71.8% of women had a hospital stay of 5 days or more after delivery. Neonatal outcomes included respiratory distress, hyaline membrane disease and infection, with a mean neonatal ICU stay of 39.3 days and SCN stay of 22.77 days.

Conclusion This is the largest retrospective study of women with early onset pre-eclampsia in the literature to date. At <34 weeks, the balance between maternal risk and neonatal outcomes is difficult, with the average patient being delivered within 23 hours of diagnosis in this study. Expectant management is limited based on the evidence, however, there may be opportunities identified within our current resources, such as anti-hypertensive treatment and steroid loading that warrant further research, to determine if outcomes can be improved in early onset pre-eclampsia without compromising maternal health.

EP10.53

Hamman's syndrome following precipitate spontaneous vaginal birth

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Introduction Spontaneous subcutaneous emphysema, with or without pneumomediastinum (Hamman's syndrome) occurs in 1 in 100 000 births, resulting from the disruption of alveoli secondary to high pressures generated from Valsalva manoeuvre in active second stage of labour. It is self-limiting, requiring only supportive treatment. Due to the rarity of this condition, evidence base for management in subsequent deliveries is lacking. We describe a case of Hamman's syndrome managed conservatively, occurring after precipitous delivery.

Case A 19-year-old primip presented at term in spontaneous labour. She had a medical history of BMI 32 and childhood asthma, she was a smoker, and had no known allergies. Her antenatal course had been unremarkable. On initial assessment she was 3 cm dilated with membranes intact. Labour progressed rapidly with the first stage lasting 1 hour and 37 min, nitrous oxide and pethidine analgesia was utilised. The second stage of labour lasted 17 min, resulting in normal vaginal delivery of a live-born female infant weighing 3290 g. Third stage of labour was completed after administration of 10 units syntocinon. Naproxen was prescribed for postpartum analgesia. Eighteen hours after delivery the patient complained of neck swelling and 'bubbles under [her] skin'. A medical emergency was called as she was noted to have shortness of breath, dysphonia and increasing respiratory distress despite stable vital signs. Over a course of 10 min she was noted to desaturate to 94% on room air. Chest auscultation revealed widespread inspiratory and expiratory wheeze. Differential diagnosis included Hamman's syndrome, infective exacerbation of asthma and hypersensitivity reaction to naproxen taken following delivery. Chest radiography revealed

subcutaneous emphysema and pneumomediastinum without pneumothorax. Respiratory swabs detected rhinovirus and a tryptase level was within normal limits. The patient was transferred to HDU for overnight observation, with supportive treatment with nebulised salbutamol and respiratory team input. She was discharged from hospital 4 days post delivery. On review 6 weeks postpartum there was complete resolution of subcutaneous emphysema on both CT and clinical examination.

Conclusion Hamman's syndrome has been reported to be secondary to the rupture of marginal alveoli resulting in subcutaneous emphysema with or without pneumomediastinum. Our case highlights that irrespective of length of second stage, Hamman's syndrome may develop after prolonged or vigorous Valsalva. Recommendation for future deliveries involves strategies to minimise Valsalva in second stage including epidural analgesia and instrumental delivery.

EP10.54

Caesarean delivery at full cervical dilatation in primigravid women – a 3 year audit of a tertiary obstetric unit

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Introduction To assess for potentially modifiable intrapartum risk factors, we reviewed caesarean deliveries performed at full cervical dilatation in primigravid women for second stage labour dystocia over 3 years.

Methods The study was conducted at a Level 6 maternity hospital undertaking >4000 births per year. Using the local obstetric database, we extracted cases of nulliparous women transferred to the operating theatre (OT) at full cervical dilatation for possible instrumental or caesarean delivery between 1 January 2011 and 30 September 2013. We then collected data on intrapartum events and delivery outcomes in a sub-cohort of 79 primigravidas who delivered by caesarean with a primary indication of delay in second stage.

Results During the study period 542 nulliparous women were transferred to OT at full dilatation, of whom 279 (51.5%) underwent caesarean delivery, which represents 7.9% of all caesarean births in this unit. Twenty-six women (4.8%) had an abandoned attempt at instrumental birth prior to the caesarean. There were 79 primigravidas delivered by caesarean for second stage labour dystocia including 76 singleton and 3 twin pregnancies. Diagnosis of labour occurred at or prior to 7 cm dilatation in 85%. Diagnosis of position occurred at or prior to 7 cm dilatation in 17% and at full dilatation in 68%. The most commonly diagnosed position was occipitoposterior (46/79, 58%). An abandoned instrumental delivery occurred in 11% (9/79), which was not statistically different to the nulliparous cohort [9/79 versus 17/200; RR 1.3, CI 0.61–2.82]. Median time to access OT after decision to deliver was 77 min. Rates of operative complications in the primigravida group included intraoperative vaginal manual disimpaction (15%), extension of the uterine incision (8%) and postpartum haemorrhage >1000 mL (8%).

None had documentation of a postnatal debrief by midwifery staff. A debrief of events by medical staff was documented in 58% of cases. Only 14% had a documented discussion of suitability for a trial of vaginal delivery for subsequent births.

Conclusion Review of caesarean deliveries for labour dystocia at full dilatation informs efforts to prevent the primary caesarean and thus impact future mode of delivery and overall vaginal birth rates. This audit reveals opportunities for improvements in: the clinical diagnosis of fetal position, the intrapartum management of the occipitoposterior fetus, timely access to the OT and provision of medical and midwifery debrief including suitability for a trial of vaginal birth in future pregnancies.

EP10.55

Pregnancy in uterine anomalies: two case reports with different outcome

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Introduction Congenital uterine anomalies result due to malfusion or developmental arrest of müllerian ducts during embryonic life. The range of anomalies is unicornuate, bicornuate, septate and didelphys uteruses. Exact prevalence in unselected or low risk population is unknown. Due to improved diagnostic modalities more women are presenting with uterine anomalies. The presence of uterine anomaly results in sub fertility, ectopic pregnancy, recurrent miscarriages, preterm births, malpresentations and intrauterine growth restriction.

Case 1 A 33-year-old G2P1 + 0 with bicornuate uterus and previous LSCS due to breech presentation booked for antenatal care at 15 weeks. Pregnancy was in right horn and left horn was rudimentary. Her pregnancy progressed without complications and she had LSCS at term again due to breech presentation.

Case 2 A 31-year-old G5P1 + 3L0 presented at 5 weeks of gestation with bicornuate uterus. Pregnancy was in left horn, right horn was rudimentary and right kidney was absent congenitally. Her first 3 conceptions were natural and in first two outcomes was first trimester miscarriages, third was left sided tubal pregnancy and resulted in left salpingectomy. Next two conceptions were in vitro fertilisation, one of them ended in preterm delivery of twins at 25 weeks and early neonatal deaths. Current pregnancy resulted in miscarriage at 6 weeks.

Conclusion The actual pregnancy outcome with each anomaly is still not determined. Unnecessary surgical interventions for minor anomalies should be avoided. Extent of fusion anomalies and associated other congenital anomalies can predict outcome and need for corrective surgery.

EP10.56

Fetus papyraceous in a twin pregnancy: a case report

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Introduction Fetus papyraceous is the flattened, paper like mummified fetus which occurs due to intrauterine death of one twin in second trimester and compression of this fetus between uterine wall and growing fetus. It is uncommon and reported incidence is 1 in 17 000 to 20 000 pregnancies. Death of one fetus in first trimester with vanishing twin syndrome is common (up to 29%) and pregnancy usually continues without any adverse effects. But death of one twin in second or third trimester is associated with adverse maternal and fetal outcomes.

Case A 22-year-old woman, G3P2A0 with previous 2 lower segment caesarean sections (LSCS), presented in our hospital at 10 weeks of pregnancy for antenatal checkup (ANC). This was spontaneous conception. Obstetrical ultrasound scan (USS) revealed dichorionic diamniotic (DC DA) twins. She had history of pre-eclampsia in previous both pregnancies, so low dose aspirin started. At 16 weeks antenatal checkup both twins were alive; but at next visit on 18 weeks one twin was alive and other was dead. She developed gestational diabetes mellitus (GDM) and mild gestational hypertension. GDM controlled on low carbohydrate diet. Pregnancy was monitored with serial USS and Doppler studies. Pregnancy progressed uneventfully and she defaulted to her ANC appointments after 36 weeks. At 40⁺² weeks she presented in emergency department with decreased fetal movements. Her vital signs were stable. Alive twin was in transverse lie; cardiotography trace showed reduced variability. Emergency LSCS performed and a male baby of 2.9 kg delivered with good Apgar score. A Papyraceous twin of 19 g adherent to placental surface delivered. It was DC DA twin pregnancy. No adverse effects on mother were reported.

Conclusion Single fetal death in twin pregnancies is not common and outcome depends upon placentation and gestational age. In DC DA twins perinatal outcome with expectant management is usually good but requires close surveillance in tertiary care hospital.

EP10.57

Pubic symphysis diastasis in normal vaginal delivery: a case report

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Introduction Pubic symphysis diastasis in normal vaginal delivery is rare with incidence of 1 in 300 to 1 in 30 000. The etiology of symptomatic symphyseal dislocation is not clear but it is associated with multiparity, macrosomia, physiological joint loosening and excessive force on pubic area.

Case This is a case report of a 35-year-old lady, gravida3, para 2, who presented to labour room at 38 weeks of gestation with labour pains. Abdominal examination revealed fundal height of 38 cm with fetus in cephalic presentation. On vaginal examination

cervical os was 8 cm dilated, with presenting part at -2 station. Patient was admitted to a delivery room after initial workup. She delivered a baby boy weighing 3.8 kg with Apgar score of 10 at 5 min without any instrumental manipulation. Placenta and membranes were delivered completely. Post-delivery she had postpartum haemorrhage and bled about 800 mL but remained stable haemodynamically. Upon abdominal examination, uterus was well contracted, but vaginal examination revealed a left para-urethral tear extending up to retro pubic space. Patient was taken to the operating room for examination under general anaesthesia. There was a left paraurethral tear involving the urethral sphincter and para-urethral ligaments. Urogynaecologist was called in who repaired the tear. She received pre-operative intravenous antibiotic and was followed by oral nitro-furantoin. Foley's catheter was inserted and kept in place for 2 weeks. On second post-delivery day, patient was unable to move, so the orthopedic team was consulted. Pelvic X-rays showed significant diastases of pubic symphysis measuring 6.7 cm. She was advised complete bed rest with external braces for extra support. CT scan of pelvis was done 2 days later which revealed persistence of severe diastasis of pubic symphysis measuring 5.6 cm and there was also mild diastasis of left sacroiliac joint. She was kept on conservative treatment including physiotherapy. A repeat X-ray 6 days later, showed interval reduction to 4.9 cm but she was still having severe pain with limited mobility. Patient was offered surgery and open reduction with internal fixation was carried out using 6 holes plate across the pubic symphysis. Postoperative recovery was unremarkable and the patient gradually increased her walking endurance. She was discharged home after 6 days. At outpatient follow-up after 4 weeks, she was pain free and fully mobile without assistance.

Conclusion The surgical techniques of internal fixation for pubic symphysis diastasis is a good option if conservative treatment fails to attain adequate mobility.

EP10.58

Why do pregnant women go to the critical care unit (CCU)?: a 7 year retrospective analysis from a district general hospital in the UK

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Introduction With decreasing maternal mortality in developed countries, admission to a CCU can be used as a surrogate marker of severe maternal morbidity. We audited our admissions to our CCU over a 7 year period and compared this with the recent publication by the Intensive Care National Audit and Research Centre (ICNARC), with an aim to improve the quality of our obstetric services.

Method All CCU admissions classified as currently or recently pregnant (ICNARC classification) from 1 January 2007 to 31 December 2013 were retrospectively evaluated. Data were obtained using patients' notes and the hospital database. Data collected included age, ethnicity, BMI, reason for admission, length of stay

(LOS), APACHE scores and the requirement of ventilatory and / or inotropic support.

Results The mean age of women in our sample was 28.2 with an average booking BMI of 28, obstetrics accounting for 1.2% of all CCU admissions in our hospital. The overall mean LOS was 3.6 days with APACHE scores of 12.3, 30 patients requiring level 3 care. Over the 7 years there were 27 449 deliveries, of which 62 women accounted for 65 admissions to the CCU giving an incidence of 2.37 per 1000 deliveries which is similar to the findings of the ICNARC study. There were 17 currently pregnant and 48 recently pregnant admissions. The entire currently pregnant sub-group had a non-obstetric cause for their presentation, with respiratory problems or complications found in 9 (53%) admissions. In the recently pregnant group 31 (65%) had an obstetric cause; 20 had major obstetric haemorrhage, 7 had eclampsia and sepsis was responsible for 13 of the admissions with the source originating from the genito-urinary tract in 6 of these women. Our observed mortality of 4.6% is comparable to other developed countries with three deaths and one late death, and the mortality rate of 10.9 per 100 000 deliveries is less than the number found in the latest Centre for Maternal And Child Enquiries (CMACE) report.

Conclusion Minority ethnic groups make up 35% of the local Wolverhampton population, a non-white ethnicity being a known independent risk factor for maternal morbidity was found in more than 50% of our audit population. Sepsis was found to be a contributory factor to the primary or secondary diagnoses in many patients and is re-emerging as a major cause of morbidity, emphasising the need for protocols and training to ensure early recognition and treatment of the acutely ill pregnant woman.

EP10.59

Moving beyond maternal deaths: maternal near misses in Sri Lanka

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Introduction An estimated total of 54 000 women with pregnancy-related complications present to healthcare services in Sri Lanka every year. The country also reports 100–140 maternal deaths annually. With low levels of maternal, further improvements of survival of women can be done focusing on women experiencing complications related to pregnancy or childbirth. We aimed to ascertain the incidence and the management of severe maternal complications in a selected network of health facilities in Sri Lanka.

Methods We conducted this study as a component of a large, worldwide cross-sectional study – World Health Organization (WHO) Multi-country Survey on Maternal and Newborn Health in 14 Health Facilities in the Western, Southern and Eastern

provinces. We collected information from medical records of all women admitted for delivery and those with severe complications. We assessed the occurrence of severe maternal complications, maternal near miss and preterm birth and evaluated process indicators, as well as outcome indicators and potentially confounding factors. In the evaluation of quality of care, we used the WHO near miss concept and the availability and use of preventive and therapeutic interventions.

Results From 14 health facilities in seven districts, 18 129 women were recruited and 17 988 live births were reported. Mean age of study sample was 28.3 (SD 5.7) years. Of the women studied, 862 (4.8%) reported at least one major pregnancy complication and out of them, 75 (8.7%) had organ dysfunctions. Obstetric haemorrhage was the commonest complication ($n = 354$, 2%), followed by hypertensive disorders ($n = 233$, 1.3%) and heart disease ($n = 124$, 0.68%). Commonly required interventions were oxytocin for postpartum haemorrhage ($n = 201$, 23.3%) and transfusion of blood products ($n = 183$, 21.2%). Maternal near miss ratio and intra hospital maternal mortality ratio (limited to 7 days postpartum) was 405.8 and 16.7 per 100 000 live births. The estimated severe maternal outcome ratio was 423 (95% CI 328–517) per 100 000 live births. Still birth ratio, early neonatal death ratio and perinatal death ratio in selected hospital settings was 6.1, 4.7 and 10.7 per 1000 live births respectively.

Conclusion Our study provides an evaluation of the implementation status of critical life-saving interventions in the continuum of maternal and perinatal care in Sri Lanka. Results indicate that the markers of severe maternal morbidity can be incorporated into routine data collection systems, and provide a standardised evaluation of quality of care in local health facilities when number of maternal deaths declines.

EP10.60

Causes of third and fourth degree tears over a 6 month period

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Introduction The rate of third and fourth degree tears during delivery appears to be on the rise within the UK. This unit has also seen a similar trend. We assessed all the third and fourth degree tears that occurred within the midwife led unit (MLU) and consultant unit (CU), to establish if there is a common link and therefore find a possible solution.

Methods A retrospective case note review of all tears that occurred during a 6 month period in both the MLU and CU. All notes were audited against local and national guidelines, but also searched for further information that may look into the cause of the tear. This including obtaining the mothers' demographics, her past medical history, assessing the known risk factors of perineal trauma per RCOG greentop guideline 29, as well as other possible risks. Other risks included the use of water, either during latent or active labour phase or delivering in water.

Results There was a total of 54 third and fourth degree tears total of 1229 vaginal deliveries, 49 (4.5%) took place on the CU and 9 (3.2%) on MLU, 1 delivered before arrival to hospital. We assessed all 54 cases. There was a total of 49 third degree and 4 fourth degree tears. The majority of patients were white British (35) with healthy BMI (47), 75% were primips; of the remaining multips, none had a previous history of a third or fourth degree tear. 66% were undergoing induction of labour and 80% had a working epidural. The majority of fetal positions were OA (35). 33% had laboured in water, 10% delivered in water. 28% had an active second stage of <30 min, 50% had second stage that last longer than 60 min. Only 8 had an instrumental delivery, with no sequential or shoulder dystocia. Only 10% had a birthweight of over 4 kg and the head circumference varied greatly.

Conclusion There is an increase in incidence in the unit of third and fourth degree tears, of which, we cannot find a cause. Many of the women who experience a tear do not have the known risk factors. Head circumference does not appear to increase the risk of tear ($P = 0.05$). More research is needed to further assess the role of water in labour and delivery and any associate risks.

EP10.61

Does a larger fetal head circumference increase the risk of a third or fourth degree tear?

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Introduction There appears to be an increasing incidence of third and fourth degree tears following deliveries with our local unit and possibly nationally. We looked into why this maybe the case, from looking at the known risk factors from RCOG greentop guidelines 29, to possible unknown factors. One of which being the head circumference of the newborn. The rationale being that the larger the head circumference, the more likely a third or fourth degree tear would occur, because tissues are required to stretch further in order to allow the delivery of the newborn.

Methods A retrospective case note review of all third and fourth degree tears that occurred over a 6 month period. These notes were audited initially against local and RCOG guidelines on management of third and fourth degree tears. We then assessed each delivery and obtained the head circumference of all the newborns that were examined prior to discharge from the delivery suite.

Results A total of 54 third and fourth degree tears occurred in a 6 month period, out of 1229 vaginal deliveries. 18 head circumferences were not recorded prior to transfer to the postnatal ward therefore excluded. 12 newborns had a circumference of >34 cm, 10 had circumference between 33.1 and 33.9 and 8 between 32.1 and 32.9 cm ($P = 0.05$).

Conclusion There does not appear to be a link between head circumference and third and fourth degree tears; however, a larger sample size is required in order to improve our confidence.

EP10.62

Acute hyponatraemia in labour secondary to water intoxication: a case report

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Introduction Hyponatraemia due to water intoxication is an increasingly recognised problem in labouring women. We report a case of hyponatraemia in labour presenting in an unusual way significantly affecting obstetric, anaesthetic and neonatal management.

Case A normally fit and well 26-year-old Caucasian primiparous female was transferred to a tertiary hospital delivery suite from a primary birthing unit, for a prolonged first stage of labour at 41/40 gestation. Prior to admission she had consumed large quantities of sports drinks and water due to the belief that this would shorten the duration of labour and promote uterine activity. Shortly prior to her admission she became lethargic and uncommunicative. This was initially attributed to fatigue from a prolonged first stage of labour. A syntocinon infusion in normal saline was administered for 2 hours. Following this, the obstetric team requested regional anaesthesia for instrumental delivery due to failure to progress in second stage. Inability to communicate with the patient prompted investigation of the cause of her mutism and lethargy. Her serum sodium returned as 120 mmol/L and dilutional hyponatraemia secondary to water intoxication was diagnosed. Ultimately the patient's inability to consent for and to cooperate with both regional anaesthesia and assisted vaginal delivery prompted emergency delivery by caesarian section under general anaesthesia. The hyponatraemia was corrected, without the feared complication of central pontine myelinolysis, using hypertonic saline and fluid restriction. Interestingly the neonate was also found to be hyponatraemic and required a period of continuous positive airway pressure (CPAP) ventilation and oral sodium supplementation in the newborn unit.

Conclusion Hyponatraemia is an increasingly recognised and yet frequently undiagnosed complication in labouring women, one which, as in this case, may have significant implications for the anaesthetic and obstetric care of both the mother and child. A review of the literature is presented as well as the underlying pathophysiology in relation to sodium and water metabolism in labour. This case should be of interest to anyone responsible for the care of labouring women as unrecognised hyponatraemia poses risks of seizures and death to both mother and child. It should alert caregivers that in cases of prolonged labour lack of communication or peculiar behaviour should not be attributed to fatigue or pain alone, but the differential of electrolyte disturbance should be explored. Furthermore, guidelines should be initiated for monitoring fluid intake in early labour under primary care.

EP10.63

Peripartum cardiomyopathy: diagnostic dilemmas of an unusual complication in the puerperium

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Case report The patient was a 34-year-old G2P1 with 36 weeks of gestation admitted for chronic pain on the back. She is a known patient of Brown Sequard syndrome from MVA from which she was suffering from hemiparesis on the left side of her body. This pregnancy was complicated with gestational diabetes, deep vein thrombosis, depression and anxiety. She was on metformin 1 g, clexane 180 mg, venlafaxine 300 mg and fentanyl patch for pain relief. She had elective repeat caesarean section at 38 week and had atonic postpartum haemorrhage of 1800 mL and had 3 pack cell transfusion. On postoperative day 1 she was pale. Her haemoglobin went down to 85 mg/L from 132 mg/L preoperatively and she had constant pain which was managed with, ketamine intermittent infusion, oxycodone PCA, fentanyl patch. As she was on epidural infusion she was monitored continuously and her arterial oxygen saturation was maintained at 96% with 2 L of oxygen. On consecutive days her oxygen saturation went down to 87% with 3 L of oxygen. She was asymptomatic apart from the pain. She was tachycardic with heart rate of 106/mt with blood pressure 110/65. She was mobilising, not breathless but had pain on inspiration. On day 4, considering her clinical signs of tachycardia and haemoglobin another pack cell transfusion started. After 1 hour, she developed shortness of breath, chest pain on and off. Hence blood transfusion stopped. Medical emergency team called and they suggested the breathlessness could be due to fluid overload. Clinically, her chest she had bilateral crepitations with muffled heart sounds and third heart sound. Her jugular venous pressure was raised. Her arterial oxygen saturation dropped to <90% and her oxygen concentration was increased to 6 L. The clinical diagnosis of heart failure due to pulmonary embolism was made. The patient was already on therapeutic clexane. The patient was shifted to intensive care and further investigations done. Her chest X-ray showed left sided atelectasis, dilated cardiomyopathy, fluid overload, lower lobar collapse and her ECG findings include sinus tachycardia, nonspecific ST and T wave abnormalities. The ventilation perfusion scan performed showed no evidence of embolus. And her cardiac enzymes and troponin were normal. The arterial blood gases showed oxygen saturation of 70% with 6 L of oxygen on flow. Urea, electrolytes, creatinine were normal. Ultrasound both lower limbs were normal. Patient was treated with frusemide, clexane and pain relief. The cardiologist was involved who confirmed peripartum cardiomyopathy, with bed side echo showing ejection fraction of 43%, moderately dilated left ventricle and moderate systolic dysfunction and mitral and tricuspid regurgitation. They started beta blocker, for heart failure and patient was given aggressive diuresis and clexane. After 4 days of intensive treatment for heart failure her arterial oxygen saturation raised to 98% without oxygen, and she improved symptomatically. She had daily bed side ultrasound chest to see the improvement in heart size, and collapse. Patient discharged from CCU on day 8. Patient discharged from maternity on day 12

with beta blockers and pain relief. The follow-up of patient with maternity team and cardiologist team made after 2 weeks. The differential diagnosis before echo were anemia, pulmonary embolism, fluid overload. The picture of peripartum cardiomyopathy was not in our differentials. She also presented in a different way which is unusual for cardiomyopathy except for falling oxygen saturation. Since her main complaint was pain on the legs and back from brown sequard, deep venous thrombosis with pulmonary embolus was thought of as a differentials. The prompt management of heart failure with oxygen, diuretics and beta blockers prevented her from developing progressive heart failure, arrhythmias, and thromboembolism.

Discussion Peripartum cardiomyopathy is defined as a condition meeting four criteria: development of heart failure (HF) in the last month of pregnancy or within 5 months of delivery; absence of another identifiable cause for the HF; absence of recognisable heart disease prior to the last month of pregnancy; LV systolic dysfunction (e.g. left ventricular ejection fraction [LVEF] below 45% or a reduced fractional shortening). The reported incidence of ppcm varies. Much of the reported discrepancy is due to wide geographical variation, with reported incidences of 1:2289 to 1:4000 despite many attempts to uncover a distinct aetiology of ppcm, the cause still remains unknown and may be multifactorial. Some of the proposed mechanisms are abnormal immune response, inflammatory cytokines, myocarditis. And lately prolactin is identified to be the cause of ppcm and bromocriptine given postpartum is used to improve the ejection fraction.

Conclusion Prognosis is related to recovery of ventricular function. The normal ventricular function returns within 6 months in some patients. Those with persistent dysfunction the mortality rate climbs up to 50%. The availability of cardiac transplantation has improved the outlook for those with persistent dysfunction.

EP10.64

Do women with a low lying placenta at the morphology scan require a follow-up third trimester scan?

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Introduction A low lying placenta is a common finding at the mid trimester morphology scan. The current practice in many Australian hospitals is to repeat an ultrasound in the third trimester for all women with a low lying placenta at the morphology scan. However, international guidelines recommend limiting third trimester ultrasound for assessment of placenta praevia to those cases where the placenta reaches or overlaps the internal cervical os at the second trimester ultrasound. The aim was to evaluate the risk of placenta praevia, vasa praevia or cord prolapse in women reported to have a low lying placenta not reaching or overlapping the internal cervical os during routine second trimester ultrasound.

Methods A retrospective analysis of singleton pregnancies reported to have a low lying placenta at the mid trimester ultrasound scan was undertaken. These were grouped into those with placenta to os distance 1–10 and 11–20 mm. For comparison, data were also collected for women reported to have a placenta reaching the os at mid-trimester.

Result The composite outcome of placenta praevia, vasa praevia or cord prolapse was recorded in 19% (4/21) women with placenta 1–10 mm from the internal cervical os and 5.7% (4/69) women with placenta 11–20 mm from the os. Compared to women with placenta reaching the os at mid-trimester, the odds ratio for a composite outcome was 0.65 (CI 0.17–2.51) and 0.2 0.18 (CI 0.05–0.66) for the two groups respectively.

Conclusion When the lower placental edge is more than 10 mm from the internal cervical os at mid-trimester, it is reasonable not to rescan for placental localisation in the third trimester.

EP10.65

Effect of consanguinity on perinatal outcomes including stillbirth in an Australian metropolitan obstetric population

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Introduction Consanguinity defined as the union between two related individuals has been a relatively infrequent practice in Australia. However, due to emergent migrant population from countries within West Asia, Southeast Asia, Middle East and North Africa where consanguinity is of common practice, the prevalence within Australia is also changing. Studies have suggested that consanguinity is associated with adverse obstetric outcomes. Understanding the relationship between consanguinity and pregnancy outcomes is of great relevance to improve healthcare and perinatal outcomes in a metropolitan population. The objective of this study was to assess the effect of consanguinity on perinatal outcomes.

Methods Singleton pregnancies delivered over a 10 year period between 1 January 2004 and 31 December 2013 at a single metropolitan Australian tertiary centre were retrospectively analysed. Demographic and perinatal outcome data were extracted from the hospital obstetric database (Obstetrix). Perinatal outcomes including stillbirth, preterm labour, low birthweight were compared between consanguineous and non-consanguineous patients. The statistical software package SPSS version 21 was used to analyse the data. Two-tailed tests with a 5% significance level were used throughout to assess the association between consanguinity, different covariates and perinatal outcomes. Multinomial multiple logistic regression analysis adjusting for all variables known to be contributors to stillbirth was also performed.

Results There were 46 397 singleton births recorded over the 10 year study period. Births were excluded from the study if consanguinity data were missing ($n = 2395$). The overall consanguinity rate was 5.8%. The consanguinity rate in Australian

born women was 3.8% as compared to 7.1% in the overseas born women. Consanguinity was associated with higher rate of threatened premature labour ($P < 0.003$), fetal congenital abnormality ($P < 0.004$), perinatal mortality ($P < 0.001$), lower Apgar at 1 min ($P < 0.006$) and 5 min ($P < 0.001$) and reduced risk of hypertension in pregnancy ($P < 0.001$). Logistic regression analysis revealed consanguinity as an independent risk factor for stillbirth with a relative risk of 2.7 ($P < 0.001$, CI 1.8–3.9).

Conclusion Women from consanguineous relationships are at higher risk of adverse perinatal outcomes including stillbirth. Given the increasing prevalence of consanguinity in our obstetric population, these findings are important in guiding counselling, obstetric care and resource allocation in a multicultural metropolitan obstetric population. Further research is required to ascertain the causes of stillbirth in this group and to determine preventative strategies for perinatal morbidity and mortality. Consanguinity should be included as a significant risk factor in future research into perinatal outcomes including stillbirth.

EP10.66

Fetal fibronectin testing in a district general hospital setting – are we changing our management of women with symptomatic preterm labour?

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Introduction Preterm birth, as a consequence of preterm labour, is known to be the most important single determinant of adverse infant outcome, both in terms of survival and quality of life. However, ‘over-diagnosis’ of preterm labour in women with alternative pathologies can lead to hospital admission and unnecessary courses of management. Fetal fibronectin (fFN) is an extracellular matrix protein which has been used as a direct biochemical marker to predict threatened preterm labour in symptomatic women. We evaluated the use of fetal fibronectin (fFN) testing in women symptomatic of preterm labour, and their consequent management, within East Sussex Healthcare Trust (ESHT) as part of a yearly re-audit. fFN testing has been used as part of routine care at the Trust since April 2009. Standards used were ESHT Trust guidelines as available on the Trust Intranet.

Methods Cases were identified using the antenatal fFN ‘results folder’ and by Euroking system. A retrospective case note review was undertaken of women having fFN testing at Eastbourne District General Hospital and Conquest Hospital between May 2011 and April 2012. Data are available from previous audits from 2009.

Results Total 156 tests performed with 89 available for analysis. There were 83% negative fFN and 17% positive tests. 8% delivered within 14 days of positive test, 1% within 14 days of negative test (induction of labour due to pre-eclampsia). This equates to a positive predictive value of 11.1% and negative predictive value of 98.25% which is in line with previous available literature. Hospital admission and corticosteroid treatment

occurred in 100% with a positive fFN, and tocolysis in 21%. In-utero transfer was required for 4 women with a positive result, significantly reduced compared to previous data. Hospital admission was avoided in 80% with negative fFN. According to guidelines 3% of tests were performed at inappropriate gestation. **Conclusion** fFN testing has a strong negative predictive value for threatened preterm labour. Implementation of fFN testing in ESHT has shown a significant reduction in the use of steroids, tocolysis, hospital admissions and in-utero transfer. The use of fFN testing within District General Hospital settings therefore has numerous benefits, allowing targeted management and use of resources for women at highest risk of preterm birth, with consequential clinical and financial advantages.

EP10.67

Managing eclampsia in practice; a study based in a London teaching hospital

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Introduction Eclampsia is the second leading cause of maternal mortality in the UK, and data from the Centre for Maternal and Child Enquiries (2011) indicated that the majority of these maternal deaths were avoidable. Increased clinical awareness of developing hypertension in pregnancy/pre-eclampsia and easy access to antenatal care, are reducing these numbers. However, eclamptic fits still occur and are an obstetric emergency. It is crucial that the obstetric team are confident in managing eclampsia on the ward therefore reducing risks of adverse outcomes. We explored within the multidisciplinary team in a London Teaching Hospital the experience of clinical staff of managing and treating eclampsia, their knowledge of treatment and the confidence of managing an eclamptic fit, in practice, on the ward. From this study we can elicit and consequently address knowledge gaps.

Methods An anonymous survey was provided to multidisciplinary clinical staff (August to September 2014) in the obstetric department (delivery suite, postnatal suite and obstetric theatre). The information was then collated and analysed.

Results We surveyed $n = 47$ midwives, obstetricians and anaesthetists with a range of 1–27 years postgraduate experience (average 7.7 years). 46.8% of staff had never witnessed or managed an eclamptic fit. Of those who had previously managed or witnessed eclampsia, 80% felt confident in their ability to consequently manage an eclamptic fit. Of those who had not witnessed or managed an eclamptic fit previously only 27.7% felt confident in managing eclampsia. 87% were aware of the location of at least one of the departments ‘Emergency Eclampsia’ treatment box. 80.8% were aware that the ‘Emergency Eclampsia’ box included Magnesium Sulphate, with 57.4% knowing more comprehensive details of medication and other equipment contained.

Conclusion The practical knowledge, clinical confidence and skills and availability of equipment are all crucial factors to timely and thorough management, therefore improved outcomes, of

eclampsia. This knowledge must be prevalent throughout obstetricians, midwives and anaesthetists of all grades due to the unpredictable nature of eclampsia.

Our study has highlighted that lack of experience (witnessing or managing eclampsia) is key in reducing clinicians' confidence in ability to manage the condition. This finding is likely common within other hospitals. In order to address these issues we plan to introduce structured 'real time' ward-based, eclampsia simulation sessions for all clinical staff. We plan to repeat this study after completing these sessions and if our results are improved, plan to implement these sessions regularly, and encourage similar practice within other trusts.

EP10.68

Audit of CTG interpretation and documentation in tertiary care centre in Brunei Darussalam Abidin, N; Khalil, A

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Introduction We present our audit of 50 CTG (Cardio Tocograph) cases in labour where documentation and interpretation was audited in RIPAS Hospital, Brunei. Accurate CTG interpretation is crucial in the management of women in labour. This follows the NICE guidance on electronic fetal monitoring and intapartum care. Caesarean section in the department in on the rise and CTG abnormalities are the usual indication for emergency LSCS in the department. The aim of our audit is to find out if CTG interpretation is correctly documented, how often CTG is reviewed and documented during labour and if appropriate action plans are made according to the CTG interpretation.

Method We aim to collect 50 patients undergoing labour (high risk and low risk) prospectively and study the documentation of CTG in labour according to our set pro forma (based on NICE guidance). We shall be looking into the documentation of CTG using the acronym DR C BRVADO: DR, define risk; C, contraction; BR, baseline rate; V, variability; A, acceleration; D, deceleration; O, overall impression/plan. We are using the audit standard that it is expected that documentation of CTG and appropriate action plans according to the category of CTG interpretation be stated in each case notes of patient. A standard of 100% is expected.

Results Initial results show 100% of the CTG was labelled. Maternal pulse was recorded in 20% of the cases. Risk was defined 7 out of 10 times. Baseline rate, variability and decelerations were documented only half the time. However, when there were decelerations it was defined appropriately in all the cases. Contractions and overall assessment was mentioned in 80% of the cases. However, overall assessment and plan was documented in only 20% of the cases. None of the CTG was seen at regular intervals.

Conclusion This audit shows a lack of adherence to standards. Hence, we propose to use a template table with all the criteria of DRCBRaVADO to be inserted as required in the electronic patient notes. We also plan to have staff training on CTG interpretation

and concept of Fresh eyes for CTG interpretation. We aim to re-audit our practice in 6 months.

EP10.69

Pregnancy outcome in women attempting VBAC (vaginal birth after caesarean section) at Werribee Mercy Hospital

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Introduction The purpose of this study was to determine the labour outcomes at Werribee Mercy Hospital in women with previous caesarean section who chose to attempt a vaginal birth in their subsequent pregnancy. This would enable us to counsel women who opt for a VBAC in our hospital appropriately with our local success rates.

Methods A retrospective analysis of medical records of 101 women who chose to attempt a vaginal birth at Werribee Mercy Hospital in the year 2013 was carried out. Women who had an elective CS (eight) for obstetric or medical indications that developed in the course of pregnancy were excluded. Hence, we had a total of 93 women who attempted VBAC.

Results Of the 93 women attempting VBAC that were included in our analysis, 57 women had a vaginal birth while 44 had a caesarean section. The rate of successful VBAC in our hospital was 61.3%. Of the women who had a successful VBAC, 35 (37.6%) women had a normal vaginal birth, 18 (19.4%) had ventouse birth and 4 (4.3%) had a forceps birth. The emergency CS rate was 38.7%. There were 2 cases primary PPH and 2 cases of scar dehiscence noted at caesarean section. One patient had an obstetric hysterectomy for uncontrolled bleeding. A total of 27 women had had previous vaginal births and 20 (74%) of them had a successful VBAC. In women who had not had a previous vaginal birth, the rate of successful VBAC fell to 50%.

Conclusion A trial of labour can safely be offered to women who are well motivated. A previous vaginal birth is associated with a higher likelihood of a successful vaginal birth as compared to women who have never had a previous vaginal birth (75% versus 50%).

EP10.70

Maternal morbidity and associated fetomaternal outcome in women with twin pregnancy Ambreen, A; Khurshid, S; Khurshid, M; Intasar, A; Fatima, A

Fatima Memorial Hospital Shadma, Pakistan

Introduction Multiple pregnancies still warrants special attention as it is associated with increasing risk for mother and fetus. Preterm delivery increases the risk for baby. This study was conducted to evaluate the risks of pregnancy complications and associated fetal and maternal outcome in women with twin pregnancy.

Methods It was 1 year observational study from 1 January 2012 till 31 December 2012 at department of obstetrics and gynecology Fatima memorial hospital Lahore. All women admitted to the labour ward with multiple pregnancy after 28 weeks of gestation were included in the study. Main outcome measures were maternal complications (i.e. anaemia, preterm labour, pregnancy induced hypertension, postpartum haemorrhage etc), perinatal morbidity and mortality. All data collected were analysed using SPSS-16.

Results Majority of women 78 (78%) were unbooked and only 22 (22%) were booked, 56 (56%) women presented with preterm labour, anemia was found in 72 (72%) patients and hypertension in 33 (33%) patients. Majority presented between 30 and 35 weeks of gestation and 30 (30%) patients delivered at 36 weeks and above. The most common cause of neonatal death was very low birthweight followed by sepsis and jaundice.

Conclusion Multiple pregnancy is associated with increasing risk for the mother and fetus. Preterm delivery increases the risk for baby.

EP10.71

Maternal morbidity and associated fetomaternal outcome in women with twin pregnancy

Ambreen, A; Khurshid, S; Khurshid, M; Intasar, A; Fatima, A

Fatima Memorial Hospital Shadma, Pakistan

Introduction Multiple pregnancies are no longer a rare event, mostly due to widespread use of assisted reproductive techniques. Incidence of twin pregnancy is high and is significantly associated with more pregnancy complications and poor obstetric outcome. Twins represent 2–3% of all live births; 30–60% of twins are born prematurely, this accounts for 7–12% of all deliveries, as well as for over 85% of all perinatal morbidity and mortality. Delivery before 37 weeks in singleton pregnancies occurs in 1–11% and the prematurity rate is between 8% and 10%. Multiple pregnancy still warrants special attention as it is associated with increased risk for the mother and fetus. A national study described major complication for twin pregnancy as preterm labour (84%), premature rupture of membranes (84%), anaemia (5–6%), pregnancy induced hypertension (31.2%), abruption placentae (6.2%) and postpartum haemorrhage (12.5%). Women with twin pregnancy had a higher incidence of GDM (3.98%) when compared with singleton pregnancies (2.32%). According to a national study hypertensive disorders of pregnancy, cord prolapse, malpresentation, PROM, low Apgar scores, caesarean section rate and perinatal death are significantly higher in twin pregnancies than in singleton. The national study described that about half of twins were born with a birthweight of <2500 g. Twin specific maternal nutrition may be beneficial in achieving optimal fetal growth and birthweight. The most common cause of neonatal death was low birthweight (32.8%) followed by sepsis and jaundice. However, the chances of survival for very small twin babies are higher than for very small singleton babies. Neonatal death due to very low birthweight was 32.8% for twin-1 and 34.4% for twin-2. Twin-1 had birthweight of 1500–2500 g and

among twin-2 42.2% had birthweight between 1500 and 2500 g; however, 67.1% had very low birthweight <1500 g, 9.4% of babies were stillborn, 76.56% of babies were born alive. Spontaneous vaginal delivery was more common for twin-1 (50%), for twin-2 it was 35%. LSCS rate was 43.6% for twin-1 and 46.9% for twin-2. Caesarean section rate overall was 41.5%, of which 54% were elective and 46% were emergency representing emergency caesarean section rate of 19.1% of all twin pregnancies and of 24.6% after exclusion of elective caesarean section. Birthweight and gestational age are important factors affecting perinatal morbidity and are most significant determinants of infant and childbirth morbidity. Close antenatal and intrapartum care are needed in order to improve outcome and decrease complications. The impact of monitoring interventions relies on use of effective and timely intervention should the problem be detected. Though considerable amount of literature already exists regarding twin pregnancies and associated outcomes, the incidence of twin pregnancy has greatly risen over past few years owing to the development and advancement in the assisted reproductive techniques with large proportion of infertile couples resorting to them. Thus re-evaluating these patients may add more to existing knowledge. Also, with a very well equipped neonatal care unit at Fatima Memorial Hospital, we receive a lot of patients with twin pregnancies due to risk of prematurity and subsequent requirement of neonatal care services from the periphery. So with this large proportion of twin gestations presenting to us and an effective clinic for infertile couples; both males and females. I have been interested to gain deeper insight into the issues related to twin pregnancies both to mothers and babies with a view to identify areas of critical care. The objective was to determine maternal morbidity and associated maternal and fetal outcome in subjects with twin pregnancy.

Methods It is a cross-sectional descriptive study. It is conducted in the department of obstetrics and gynecology Fatima Memorial Hospital, Lahore. Non probability purposive sampling. Subjects with twin pregnancy >32 weeks (gestational age as confirmed by LMP and dating) were included. 100 women with twin pregnancy admitted through OPD and emergency will be included in this study. An informed consent for using their data in research will be obtained. History will be taken from patients regarding age, parity, duration of gestation, and any associated risk factors. Examination and investigations will be performed. Mode of delivery, gestational age at the time of delivery and fetal outcome will be noted. All this information will be recorded on pre-designed pro forma. The collected data will be entered in SPSS version 16.0 and analysed through its statistical package.

Results A total of 6645 patients were delivered during the study period, of which 100 women presented with twin pregnancy. Majority of the women belonged to age group 25–35 years; most of the women were unbooked and only 25 (25%) were booked. Frequency of twin pregnancy was 25.6% in primigravida, 24% in multi gravid and 50% in grand multigravida; major maternal complications were preterm labour, anaemia, premature rupture of membranes, PIH and postpartum haemorrhage. Antenatal steroids were given to all patients threatening to deliver prior to 34 weeks of gestation, mode of delivery was spontaneous, vertex

vaginal delivery in 35 cases, and caesarean section in 65% of cases. When perinatal outcome was analysed, prematurity was the major problem in patients in twin pregnancy, majority 85% presented between 28 and 35 weeks of gestation. 15% came in labour at 36 weeks or above. 30% twin A had birthweight between 1500 and 2500 g and twin B 70% had birthweight between 1500 and 2500 g. Neonatal death due to very low birthweight was 36% for twin A and 42% for twin B followed by sepsis and jaundice as a reason for neonatal death.

Discussion Twin pregnancy is a high risk pregnancy associated with increased maternal morbidity and increased perinatal morbidity and mortality. The incidence of twin pregnancy varies throughout the world. Most of the women were found in the age group between 31 and 40 which reported that incidence is higher in older age group. Similar observation was found in the study conducted by Malik et al, Lahore. Most studies have found that the incidence of twin pregnancy increased with advance maternal age upto 35 years after which the rate declines. Most of the women presented with preterm labour at <36 weeks and 6% were at gestational age of more than 36 weeks. Mean gestational age was 39 weeks in singletons, 35.8 weeks in twins and 32.5 weeks in triplets. In the present study, most of the patients belong to parity 5 or above. Similar results were found in the study by Malik et al. Most of the women were unbooked. The same frequency of unbooked cases was found in the study conducted by naqvi MM in 2003 where among 96 cases 65 patients were unbooked. During the antenatal period, anemia, preterm labour, PIH and abruption placentae were the major complicating factors. However, in the study done by Shahela, anaemia was the most common complication.

Conclusion Multiple pregnancies are associated with increased maternal and perinatal risk. There is a need for specialised pre natal care to reduce the complications and adverse outcomes in multiple pregnancies and the need for on going social and medical care beyond the prenatal and perinatal periods.

EP10.72

A 5-year review of maternal mortality in FMH Ambreen, A; Khurshid, S; Intasar, A; Khurshid, M; Anwar, K

Fatima Memorial Hospital Shadman, Pakistan

Introduction The aim was to identify the main causes and associated factors contributing to maternal deaths.

Method A retrospective study. Place and duration of study: Fatima Memorial Hospital Lahore from 1 January 2007 to 31 December 2011. The medical record of all the women dying in the department of obstetrics and gynecology were reviewed. Demographic records including age, parity, socioeconomic status and antenatal care were analysed from the patient's records.

Results There were 16 maternal deaths during the study period with the maternal mortality ratio MMR of 52.04/100 000 live births (16/30 741). The probable causes of deaths were ascertained on clinical assessment done jointly by gynaecologist, anaesthetist and physician as postmortem examination was not done. The

major causative factors were haemorrhage in 8 (50%) patients, thromboembolism in 2 (12.50%), septic shock in 2 (12.50%) and acute pancreatitis in 1 (6.25%). 12/16 patients were unbooked and brought in emergency department. The ages of the women who died ranged between 21 and 39 years. There were 5 primigravidas (70.95/100 000), 5 patients (22.54/100 000) were para 1–4 and 6 women (396.30/100 000) had a parity more than 4. Most of them had poor socioeconomic status.

Conclusion Most of the maternal deaths can be prevented by providing skilled obstetrical care at the time of delivery, by emergency department and proper management of complications. Safe motherhood requires no costly technology but only appropriate setting of resources; we also need public awareness, raising the self determination and awareness of women rights and improvement of her role in decision making.

EP10.73

A 5 years review of maternal mortality in FMH Ambreen, A; Khurshid, S; Intasar, A; Khurshid, M; Anwar, K

Fatima Memorial Hospital Shadman, Pakistan

Introduction According to the World Health Organization (WHO), 'A maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from the accidental or incidental cause'. Globally every year an estimated 529 000 maternal deaths are due to pregnancy related preventable causes, e.g. haemorrhage, hypertensive disorders, sepsis, obstructed labour and unsafe terminations of pregnancy. The world figure of MMR was highest in Africa (830) followed by Asia (330) Oceania (240), Latin America and Caribbean (190) and developed countries. According to the Planning commission estimate, MMR was 350/100 000 in 2000–2001 and 400/100 000 in 2005. Pakistan is one of the 191 countries that endorsed the United Nations millennium development goals comprising of eight ambitious goals. The one of the health related goal is 75% reduction in MMR by 2015. According to WHO and UNICEF the MMR of Pakistan is 340/100 000 live births. According to Pakistan demographic health survey report of 2006–2007 the MMR was 371/100 000 live births in rural areas. Pakistan is being ranked third among the developing countries as having highest maternal deaths.

Methods The study was done in the Department of Obstetrics and Gynecology at Fatima Memorial Hospital, Lahore. It is an analysis of retrospective data. Records of deliveries conducted during the last 5 years (2007–2011) were studied. Demographic record including age, parity, socioeconomic status and antenatal care were analysed. The socioeconomic status was divided into four categories according to monthly income (poor class, i.e. less than Rupees (Rs) 3000 per month, lower middle class i.e. Rs 10 000–20 000 and high class i.e. more than Rs 20 000). Probable cause of death was made on clinical assessment done by gynaecologist, anaesthetist and physician as postmortem examinations was not done.

Results The numbers of deliveries carried out from January 2007 to December 2011 were 30 741. During this time period there were 16 maternal deaths and thus maternal mortality ratio calculated was 52.04/100 000. All 16 deaths were classified as direct (death directly related to pregnancy) and compared with a previous study in FMH carried out between years 2001–2005. Haemorrhage turned out to be the major cause of maternal mortality. Thromboembolism and septic shock were the second commonest causes compared with causes of maternal mortality in study at FMH carried out between years 2001–2005. The age of the women dying ranged between 21 and 39 years. Out of 16 dead women, 10 had an age range between 20 and 30 years (48.25/100 000), 4 were between 31 and 35 years (61.43/100 000) and 2 were more than 35 years of age (159.10/100 000).

Discussion Death of mother is a tragic event. In practical life it has a severe impact on the family, community and eventually the nation. The young surviving children left motherless are unable to cope with daily living and are at an increased risk of death. Reduction of maternal mortality is an important MDG especially in low income countries, where one in 16 women dies of pregnancy related complications. MMR varies throughout different countries of the world. In sub Saharan Africa, MMR reported in 2000 was 1000/100 000 live births almost twice that of south Asia, four times higher than in Latin America and Caribbean and nearly 50 times higher than the industrialised countries. The preliminary results of demographic and household survey 2007 reported the nationwide MMR of 276/100 000 live births. It is 320 in rural areas as compared to 177 in urban areas. The figures are 277 in the provinces of Punjab, while in Sindh, NWFP and Baluchistan it is 311, 272, and 765 respectively. Women die because they have no access to skilled personnel during pregnancy and parturition and when an emergency arises they cannot reach a facility where emergency obstetrical services are available. The country with highest estimated number of maternal deaths is India (136 000) followed by Nigeria (37 000) and Pakistan (26 000). Further, it is well recognised that maternal mortality numbers are often significantly underreported. While comparing MMR at different regions of Pakistan, it was observed that MMR at Abbotabad, NWFP, was the highest (1270/100 000) followed by Quetta Baluchistan 650/100 000 and Karachi Sindh (304/100 000). Haemorrhage followed by pre-eclampsia/eclampsia were the main causes of deaths observed in most of the studies carried out in Pakistan. According to Confidential Enquiries into maternal deaths in UK 2000, the MMR is 11.4/100 000 with thromboembolism being the major direct cause followed by hypertensive disorders and sepsis. In a survey done in USA, the MMR calculated was 12.6/100 000. MMR in India is close to that of Pakistan being 259/100 000 with hypertension and haemorrhage as the main causes. Severe pre-eclampsia/eclampsia was the commonest cause of death among patients in Nigeria. Causes of maternal deaths worldwide is haemorrhage 25%, hypertension 25%, infection 15%, unsafe terminations of pregnancy 15% and indirect causes 20%. Maternal mortality ratio increases drastically with increasing age, parity and lack of antenatal care as found out in our study. The MMR among unbooked patients as compared to booked patients (339.7 /

100 000) in a hospital at Nigeria was extremely high (23121.4 per 100 000). It is seen that the percentage of women who seek antenatal care is extremely low. Each year 60 million women give birth with the help of untrained traditional birth attendant. The distance from health services, cost of transportation and drugs, multiple demands on women's time and lack of decision making power within the family are the major hindrances in seeking essential health services by our women and thus as few as 5% of women receive such care in poor countries and regions.

Conclusion The government and the medical community place a very high emphasis on safe motherhood. However, MMR is alarmingly high as compared to the developed countries. It is still possible that MMR may be higher in rural settings than the estimates in this study. This situation can be rectified only by the efforts of the health authorities, the medical professionals and the government acting in concert with one another.

EP10.74

Changes in caesarean section rates in ART pregnancies over the last 10 years

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Introduction ART has always been associated with higher caesarean rate. Reasons include multiple pregnancies, advanced maternal age, obstetrician anxiety, parental anxiety and documented poorer outcomes for ART babies. There are long-term data to indicate increase in preterm delivery, low birth rate, and increase in perinatal mortality in babies, whether singleton or multiple, arising from ART. With increasing caesarean section rate in the general population, from 25.4% to 32.3% between 2002 and 2012, we are interested whether a similar change has occurred in ART pregnancies.

Methods We have reviewed the ANZARD database from 2002 to 2012, in relation to caesarean section rate, multiple pregnancy rates and maternal age.

Results Between 2002 and 2012, the number of ART deliveries rose from 5737 to 12 545. The multiple pregnancies rate fell from 18.9% to 6.4%. The caesarean section rate remains constant at 48% in 2002 and 49% in 2012. The caesarean section rate in multiple pregnancies was 71% in 2002. Assuming the caesarean section rate in 2012 for multiple pregnancy has risen to 80%, the caesarean section rate for singleton would be 44%, a substantial rise from the 34% in 2002.

Conclusion Although the multiple pregnancy rate has decreased by 3 fold, the caesarean section rate for ART pregnancies remains stable at around 50%, indicating the increased use of caesarean section in ART singleton pregnancies. Increasing awareness of the high risk nature of ART pregnancies, even singletons, may be responsible for this change. A more detailed analysis of the data will be presented to further document these changes.

EP10.75

Anaesthesia for Category 1 caesarean section: a retrospective audit of practice at the Royal Brisbane and Women's Hospital, 2010–2013**Lee, K^{1,2}; Eley, V^{1,2}; Owen, T¹; Pelecanos, A³; Mimery, A²; Volante, S²**¹Anaesthesia and Perioperative Medicine, Royal Brisbane and Women's Hospital, Brisbane, NSW, Australia; ²School of Medicine, University of Queensland, Australia; ³QIMR Berghofer Medical Research Institute

Introduction Audit of Category 1 caesarean section (CS) is important to review team performance and ensure a rapid and safe response. The aim of this retrospective clinical audit was to document anaesthetic technique and the time taken to provide anaesthetic care. The results were standardised and benchmarked using definitions and targets published by The Royal College of Anaesthetists.

Methods An exemption from full ethical approval was granted. Patients were selected from the hospital obstetric database and delivered by Category 1 CS between January 2010 and December 2013. Data on anaesthetic technique, arrival-to-delivery interval (ADI), maternal and neonatal outcomes were collected. Chi-square/Fisher's exact tests and an ANOVA were used to examine relationships between: anaesthetic technique and demographic/outcome variables, and anaesthetic technique and ADI respectively. Statistical significance was declared at $P < 0.05$. A general linear model was used to model the relationship between original intention to treat and ADI.

Results A total of 376 patient records were studied. Overall, general anaesthesia (GA) was used in 66.0%. The rate of conversion from regional anaesthesia (RA) to GA was 38.8%. Epidural extension was successful in 60.5%. There was no association between the anaesthetic sub-group and BMI, seniority of staff or timing of shift. Two hundred and ninety-eight subjects (79.2%) had their CS declared for a fetal indication and these subjects were significantly more likely to have primary RA ($P < 0.001$). Seventy-six subjects (20.2%) had a gestation < 37 weeks and these subjects were significantly more likely to have primary GA ($P < 0.001$). One hundred and thirty-two subjects (35.1%) were multiparous and these subjects were significantly more likely to have Primary GA ($P < 0.001$). Successful primary RA was associated with less uterotonic usage than GA at any point ($P = 0.008$). Those subjects who immediately received GA were significantly associated with both maternal ($P = 0.011$) and neonatal ($P = 0.006$) higher level care. Original intention to use RA was significantly associated ($P < 0.001$) with longer ADI, compared with early decision to use GA (15.8 min, 95% CI (13.9, 18.0) versus 13.2 min, 95% CI (11.6, 15.0) respectively).

Conclusion Our audit identifies a high conversion rate from RA to GA. It is likely that clinical urgency contributed significantly to the failure of Primary RA. Regular clinician review of labour ward epidurals and standardisation of epidural extension may increase the use of RA in Category 1 CS. An interdisciplinary understanding of the trade-off between speed and safety is necessary to maintain maternal and neonatal safety.

EP10.76

Caesarean section rates following elective induction of labour and expectant management at term in an Asian cohort**Li, S¹; Chan, YH²; Lim, MY¹; Biswas, A¹; Chi, C¹**¹National University Hospital, National University Health System, Singapore; ²Yong Loo Lin School of Medicine, National University of Singapore, Singapore

Introduction Induction of labour (IOL) is among the most common obstetric interventions. Elective IOL without medical indication is often performed for logistics or discomfort reasons. More pertinent in an Asian society, women may have cultural ideations regarding the timing of birth. Studies of IOL have variously reported both increased and decreased caesarean section (CS) rates. The prevailing belief that IOL increases the risk of CS likely has arisen from observational studies comparing women who underwent IOL to women with spontaneous labour at a particular gestational age. On the contrary, recent studies that compared elective IOL to expectant management have found equivalent or reduced CS rates. The objective is to examine the CS rates following elective IOL compared with expectant management in an Asian cohort.

Method This was a retrospective cohort study of women with term, live, singleton cephalic pregnancy who delivered at a university teaching hospital over a 19-month period (2012–2014). Women with previous CS or elective CS were excluded. Women who had elective IOL at a given gestational week were compared with those who had expectant management and delivered at a later gestation. Women with known maternal/fetal conditions requiring medically indicated IOL were excluded. However, women who only later developed medical indications for IOL were allowed to remain in the expectant management group until the gestation at delivery.

Results 3410 women were identified; 1838 were nulliparous. The main ethnic groups were Chinese (41.2%), Malays (23.9%) and Indians (20.6%). 198 (5.8%) elective IOL were performed. For nulliparous women, the adjusted odds of CS among women with elective IOL were higher at 37 weeks [odds ratio (OR) 1.27, 95% confidence interval (CI) 0.11–4.35] and 40 weeks [OR 1.55, CI 0.93–2.60] and lower at 38 weeks [OR 0.90, CI 0.18–4.46] and 39 weeks [OR 0.82, CI 0.25–2.69] compared with expectant management; however, they did not reach statistical significance, though borderline at 40 weeks. In a multivariable logistic regression models, Indian women had higher odds of CS compared to Malay women across all gestational ages and parity [37 weeks OR 2.62, CI 1.92–3.57; 38 weeks OR 2.33, CI 1.67–3.25; 39 weeks OR 2.08, CI 1.40–3.08; 40 weeks OR 2.74, CI 1.75–4.30, $P < 0.001$].

Conclusion No significant difference in the odds of CS could be detected between elective IOL and expectant management, likely due to limited sample size. The finding of a significant influence of ethnicity on the odds of CS deserves further investigations.

EP10.77

Management of placenta accreta in an Australian tertiary referral centre: a 10-year experience

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Introduction Placenta accreta (PA) remains a highly morbid obstetric condition, with increasing prevalence concurrent with the rising caesarean section rate worldwide. Despite modern medical advances, there is yet consensus on the best strategies to manage such high-risk pregnancies. In our tertiary-level hospital, we routinely employ a multidisciplinary team approach led by the obstetrics team, and includes interventional radiology, maternal-fetal medicine, critical care personnel, midwives, social workers. We hereby report our 10-year experience in the management of this highly relevant obstetric complication.

Methods Retrospective analysis of all histological proven (PA) cases at Liverpool Hospital (Sydney, Australia) between January 2004 and December 2013 was conducted. Medical records were reviewed for obstetrics history, operative details, postoperative management, and neonatal outcomes. Statistical analyses were performed using unpaired Student's *t* test for continuous variables and chi-square test for categorical variables. Level of significance was set at two-tailed *P* values of <0.05.

Results 16 cases of PA were identified during the time period. Mean maternal age at time of delivery was 35.7 ± 5.3 years. 75% (12/16) had identifiable risk factors for PA. 87.5% (14/16) of patients were diagnosed antenatally. Mean gestational age at time of delivery was 34 ± 3.4 weeks. 10 cases were performed electively, while the rest underwent emergency caesarean section (5 for antepartum haemorrhage, 1 for preterm labour). 1 patient was managed conservatively with placenta left in-situ; time to complete resolution of placenta was 71 days. Among patients who underwent hysterectomy (15/16), the proportion of total ($n = 8$) versus subtotal ($n = 7$) hysterectomy was similar. Average operating time was 123 ± 45.9 min. Compared to emergency cases, patients who underwent elective surgery had significantly lower blood loss (2.2 versus 3.1 L, $P < 0.05$) and unsurprisingly required less packed cell transfusion (5.8 versus 8.6 units, $P < 0.05$). Common iliac artery balloons were deployed in 8 cases, with a non-statistically significant reduction in intraoperative blood loss (2 versus 3.2 L, $P < 0.05$). 50% required ICU admission, with mean length of stay of 2.5 days. Neonatal survival at 6 months was 93.75% (15/16).

Conclusion Our report demonstrates the importance of timely diagnosis and comprehensive preparation in the surgical management of patients with placenta accreta. The availability of relevant services in the perioperative phase, including: experienced obstetricians, interventional radiology facility and personnel, intensive care and neonatology teams, are crucial in achieving optimal outcome for the patient and neonate. In line with reports in the literature, we advocate a team-based multidisciplinary approach in a tertiary-level centre for management of this high-risk condition.

EP10.78

Maternal deaths from amniotic fluid embolism in China, 1996–2013

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Introduction Amniotic fluid embolism (AFE) is potentially catastrophic condition that is unique to pregnancy. It is now ranked as one of the leading causes of maternal mortality throughout the developed world. Despite this, advancing the understanding of AFE is hindered by the rare and unpredictable nature of the condition. The aim of this study was to examine the maternal deaths secondary to amniotic fluid embolism in China and to describe the contribution of AFE to the maternal mortality rate (MMR) as well as information related to the clinical presentation and symptoms, timing of onset, treatment, and death.

Methods A population-based retrospective study reviewing all maternal deaths from amniotic fluid embolism in China based on data retrieved from the Maternal and Child Health Surveillance System (MCHSS). For the purposes of this study woman with a diagnosis of AFE as the cause of death was defined by the county/district review committee and reviewed by the Provincial and National Review Committee. The participants comprised 664 maternal deaths due to AFE between 1 January 1996 and 30 September 2013 from a total of 20 006 880 live births.

Results 664 maternal deaths were diagnosed as having AFE. The estimated MMR for AFE was 3.3 per 100 000 live births (95% CI 3.1–3.6 per 100 000 live births). MMR for AFE decreased from 4.5 to 2.5 per 100 000 live births between 1996 and 2013. The mean maternal age was 30.1 ± 5.4 years. Presenting features included: shortness of breath (71.1%), hypotension (64.2%), premonitory symptoms (57.5%), and maternal haemorrhage (51.9%). Over half ($n = 337$) the cases of AFE occurred post-delivery of which the majority occurred within the first hour after delivery. The time from the initial presenting feature to death was available for 580 cases of which 16.7% of deaths occurred within 1 hour and 50.9% occurred within 3 hours. Majority of deaths (86.6%) occurred in hospital whilst 6.6% occurred on the way to hospital and 6.1% at home.

Conclusion AFE is a significant contributor to maternal mortality in China. Even though the MMR for AFE in this study population has decreased over time, as improvements are made in other causes of maternal mortality, the overall contribution of AFE to maternal mortality is increasing. Further prospective studies on the treatment and management of this condition are required to improve the outcomes of women experiencing AFE.

EP10.79

Prognostic value of certain rates of the system of endothelial factors and cytokines in case of placental insufficiency depending on the fetal gender**Botasheva, TL; Linde, VA; Ermolova, NV; Sargsyan, OD; Palieva, NV**

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Introduction In case of placental insufficiency (PI), significant abnormalities of angiogenesis are observed that is accompanied with a change in the expression of endothelial growth factors and interleukins, however, peculiarities of their expression depending on the fetal gender remain undetermined.

Methods 735 women were examined: 390 patients with physiological pregnancy (187 women with female fetuses and 203 women with male fetuses); 345 patients with PI (169 women with female fetuses, 176 women with male fetuses). We determined the level of vascular-endothelial growth factor-A (VEGF-A), placenta growth factor (PGF), tumor necrosis factor- α (TNF- α), epidermal growth factor (EGF), endothelin-1, interleukin-1 β (IL-1 β), interleukin-6 (IL-6), interleukin-10 (IL-10) and interleukin-12 (IL-12) in the blood serum.

Results In case of physiological pregnancy, a higher expression of VEGF-A (1.5 times higher), endothelin-1 (2.5 times higher), EGF (1.6 times higher) was detected in mothers of girls as compared with mothers of boys. In case of PI, a higher expression of IL-1 β (1.5 times higher), IL-6 (1.8 times higher), IL-10 (5.7 times higher) was detected in mothers of girls. It is established that the change in the production of angiogenic growth factors and cytokines conduces to the increase of unfavorable rates of the fetal biophysiological profile, occurrence of oligoamnion (11.4%), hydramnion (9%), pre-eclampsia (6.8%) in mothers of boys, whereas anaemia appears more often in mothers of girls (31.3%). In mothers of boys, reduction of the production of EGF, PGF, TNF- α and IL-10 aggravates severity of the course of PI that declares itself in the retarded fetal development (10.0% and 5.3%, respectively), hypoplasia of placenta (8.5% and 5.3%, respectively), preterm placenta maturation (10.8% and 8.9%, respectively). At the same time the risk of preterm delivery (30.7% and 17.7%, respectively), anomalies of labour activity (9.1% and 6.5%, respectively).

Conclusion In the course of both physiological and complicated pregnancies there is an increase of production of certain angiogenic factors and cytokines, which is more expressed in mothers of girls, and it indicates peculiarities of the hormonal and immunological 'request' from the uterus-placenta-fetus complex determined by the fetal gender. According to the results of the multivariate analysis, in trimester II of pregnancy prognostically significant factors of the development of PI were the following: in mothers of boys – epidermal EGF (more than 310 pg/mL), PGF (<40.0 pg/mL), IL-12 (more than 3.2 pg/mL); in mothers of girls – endothelin-1 (more than 0.42 pg/mL), TNF- α (more than 6.5 pg/mL), IL-1 β (more than 17.6 pg/mL).

EP10.80

Postgenome and posttranslational modifications of proteins of placenta in case of placental insufficiency**Pogorelova, TN; Gunko, VO; Linde, VA; Krukier, II; Drukker, NA**

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Introduction Fetal development is largely determined by the placenta state. Functional and metabolic sufficiency of placenta depends extensively on the composition and properties of its proteins, which play a key part in all cellular processes. Postgenome and posttranslational modifications of proteins of placenta may be an important cause for the development of complicated pregnancy and perinatal pathology. The aim of this research is the analysis of proteomic spectrum and the study of intensity of carbonylation, amidation, glycation, cyclic nucleotide-dependent phosphorylation of proteins in placenta in case of placental insufficiency (PI).

Methods Full-term placentas were obtained after delivery (39–40 weeks of gestation) from women with physiological pregnancy ($n = 24$) and with PI ($n = 20$). The proteomic analysis of placentas was carried out using the two-dimensional electrophoresis with the subsequent silver staining of protein and matrix-assisted laser desorption/ionisation time-of-flight mass spectrometry of peptides extracted from gel. Proteins were identified using the Mascot program and Swiss-Prot database. The intensity of posttranslational modifications of those proteins was determined using kits. Mann–Whitney *U*-test was used to determine statistical significance of differences.

Results In the course of pregnancy complicated with PI, the expression of 21 proteins down-regulates as compared with physiological pregnancy. Among them those proteins are of greatest importance that participate in the cellular transduction, intercellular transport, energy metabolism, oxidation-reduction reactions and that fulfill the function of chaperones: annexins A2 and A4, endoplasmic reticulum protein 29, prohibitin, β - and γ -actins, actin-related proteins Arp 2 and Arp 3, 20S proteasome, 60S acidic ribosomal protein, mitochondrial citrate synthase and dienoyl-CoA isomerase. We detected the upregulated expression of α -actinin-4, vimentin, β -tropomyosin, α -ketoglutarate dehydrogenase and endoplasmic reticulum protein 29. The activity of nucleotide-dependent phosphorylation of proteins of different subcellular fractions in placenta in case of PI is lower than normal values by 25–35%. Similar orientation and modification degree are characteristic of the processes of amidation of proteins in placenta. On the contrary, the degree of carbonylation of proteins increases on the average by 30% that indicates the intensification of their oxidative modification. The intensity increase (by 20–25%) is also characteristic of the processes of glycation of proteins in placenta. The detected changes in proteins of placenta in case of PI increase their liability to enzymic hydrolysis and damage regulatory capabilities.

Conclusion Changes in the composition and properties of proteins in placenta may be pathogenetically significant for the development of PI and may be used as predictors of the course of neonatal period.

EP10.81

Pathogenetic role of cholesterol in the formation of fetal hypotrophy as a factor of the 'strategy of survival'

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Introduction According to the theory of a fetal 'strategy of survival' in adverse conditions, the main mechanism of fetal adaptation is the growth impairment stipulated by the change in metabolism of cholesterol that is the main structural component of cell membranes. The level of cholesterol is maintained by the mother's blood as well as its transportation from placenta, which is realised by α -fetoprotein (AFP). The main function of this protein in the embryo is a transport one. AFP selectively binds polyunsaturated fatty acids both in the placenta and in the mother's blood with their subsequent transportation into the embryo's blood and cells to build cell membranes. The objective of the study is to determine the cholesterol, low-density lipoprotein cholesterol (LDL-C) and high-density lipoprotein cholesterol (HDL-C) in the AF taking into account the transport function of AFP.

Methods 53 parturient women were included in the study, 34 of them had fetal hypotrophy at 28–35 weeks and 19 of them did not have such pathology (control group). In the first group the body weight of babies was within the limits from 2050 to 2610 g and in the second group it was from 2970 to 3590 g. The cholesterol, LDL-C and HDL-C were determined in the AF of the observed patients after its discharge in the first period of labour using Randox Company kits (Germany). The content of AFP was estimated with the use of Cayman Chemical Company kits for ELISA (USA). The statistical processing of data was performed with the use of Statistica licensed program package of StatSoft Inc. (version 5.1).

Results In the amniotic fluid the content of cholesterol was 2.24 times lower, the content of LDL-C was 1.5 times higher and the content of HDL-C was 3 times higher as compared with the control group. At that the double fall in the level of AFP was observed. As a result the transportation of the cholesterol to the fetus is abruptly decreased. The increase of LDL-C changes the function of the integral proteins of the cell membrane and HDL-C allows to maintain a definite level of tissue formation of the developing fetus.

Conclusion The revealed changes of the lipid components and AFP, providing the modification of the cholesterol transportation to the fetus, are a peculiar mechanism of the cholesterol exchange regulation by the fetus, which provides its growth inhibition as a factor of the 'strategy of survival'.

EP10.82

SVT in pregnancy and postpartum
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Introduction Paroxysmal supraventricular tachycardia (SVT) is the commonest cardiac arrhythmia during pregnancy. Pregnancy has been identified as a risk factor for paroxysmal SVT. Atrioventricular nodal re-entry (60%) and Wolf Parkinson–White syndrome (30%) account for the majority of SVT in this population, with an incidence of 1.2 per 1000 people. Over half these patients are symptomatic. Symptoms include shortness of breath, palpitations, dizziness, presyncope, and syncope – frequently occur during normal pregnancy. The presence of SVT is likely to cause an exacerbation or new onset of these symptoms and in particular, the patient feels unwell. The diagnosis is confirmed by ECG.

Case report A 25-year-old woman was admitted with high temperature 2 weeks after a normal vaginal delivery. She was treated with antibiotic for puerperal sepsis of unknown origin, in the labour ward's high dependency unit. She had a previous history of supra ventricular tachycardia at 28 weeks of pregnancy for which she was treated with flecainide/and metoprolol. She was seen by the cardiologist later in pregnancy and advised for postnatal ablation. At the time of presentation the patient was uncomfortable, although haemodynamically stable. Her electrocardiograph (ECG) showed SVT with HR 193 bpm. Carotid massage/valsava was given but unsuccessful. Adenosine 6 mg bolus which resulted in conversion to sinus rhythm. Discharged home on day 8 with oral biosoprolol.

Conclusion Pregnancy has been identified as a risk factor for paroxysmal SVT. The increase in frequency of arrhythmias during pregnancy may be a result of the associated haemodynamic, hormonal, autonomic, and emotional changes. An expanded circulating volume may increase myocardial irritability and, heart rate, also alter tissue excitability, and initiating a reentry circuit. It has been postulated that estrogens may heighten cardiac excitability like their effect on uterine muscle. Furthermore, estrogens sensitise the myocardium to catecholamines by increasing the number of alpha adrenergic receptors. Peripartum oxytocic, tocolytic and anaesthetic drugs have also been suggested as triggers for inducing SVT. The prognosis usually depends on (i) the type of underlying heart disease and (ii) the type of tachycardia, and (iii) the degree of hemodynamic compromise of the patient. In cases of absence of structural heart disease, prognosis usually points to a benign condition, responding favorably to antiarrhythmic drugs. Additionally, several factors contribute to the difficulty of maintaining therapeutic blood levels during pregnancy are important like increased blood volume, reduction in plasma protein, increased renal blood flow, increased hepatic metabolism and gastric absorption.

EP10.83

External cephalic version (ECV) at term: a survey of success rates and factors affecting success rates in consultant led maternity units in the UK

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Introduction The aim of this survey was to determine ECV success rates in the UK and evaluate non-clinical factors that may affect the results.

Methods This was a cross-sectional survey of all consultant led maternity units in the UK. An anonymous questionnaire consisting of ten domains was posted to lead obstetricians in 2012 in all 220 consultant led units. The results were collated on an Excel spreadsheet and Chi-square test performed to determine if there were significant associations between success rates and non-clinical factors such as unit size and number of consultants that perform ECV.

Results The overall response rate was 80%. The median success rate was in the hospital group who had a 35–49% success rate for ECV. There is an association between unit size and success rates ($P = 0.0070$). This was because the smaller units with <2000 deliveries had an opposite result to the units with 2000–4000 deliveries. Even if the units with >60% success rate are collapsed into those with 50–60% success rate (due to small numbers) the result is still significant ($P = 0.0092$). If units with <4000 deliveries are compared with larger units, there is no significant difference in success rates ($P = 0.2528$). There is a significant association with success rates ($P = 0.0227$) in units where one consultant rather than 2 or more perform the ECV. There was no significant association between the proportion of women that are offered ECV and the number of consultants doing ECV ($P = 0.6334$). We did not find a significant association between the proportion of women that are offered ECV and unit size ($P = 0.0529$) but there was some evidence to suggest that there are more successes when ECV is offered a greater proportion of the time. Tocolysis was routinely used in 75% of units and 99% of units scanned women prior to ECV. Fifty units had witnessed fetal distress in association with ECV at any time in the past. Eighty percent of units regularly audited their ECV data.

Conclusion Our documented success rates of ECV in consultant led maternity units in the UK range from <35% (28 units) to >60% (7 units). Units with >2000 deliveries appear to have significantly higher success rates compared with units with <2000 deliveries. The success rates of ECV appear to be better when a single consultant provides the service. These results could justify centralisation of ECV services with dedicated ECV clinics.

EP10.84

Cervical laceration: an unexpected cause of significant PPH following a lower uterine segment caesarean section

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Introduction Postpartum haemorrhage is a major cause of mortality and morbidity. The majority of cases are due to uterine atony, however in this case an unexpected cervical laceration resulted in significant PPH.

Case A 31-year-old G2P0 underwent postdates induction at 40 + 5/40 on a background of macrosomia and polyhydramnios (AFI 29 and EFW 4.6 kg). She had previously miscarried spontaneously but otherwise was medically well. She progressed and was fully dilated 11 hours after commencing a syntocinon infusion and cervical ripening with dinoprostone. A vaginal examination performed 1 hour later showed signs of obstructed labour and she proceeded to emergency caesarean section. She underwent a routine lower uterine segment caesarean section and a live female was delivered in good condition. The placenta was delivered manually due to significant attachment. The uterus was routinely closed however found to be atonic. Fundal massage and intravenous oxytocics were given. Closure was routine however she continued to have ongoing vaginal bleeding in theatre in excess of 3000 mL despite further oxytocics (rectal misoprostol) and a contracted uterus. On speculum examination in lithotomy position a 7 cm cervical laceration extending to the right vaginal fornix was identified as well as a smaller laceration on the posterior vaginal wall. These were sutured in addition to intramyometrial administration of PGF2alpha. The total estimated blood loss was 5000 mL and she was resuscitated with 2 units packed red blood cells, 3 units fresh frozen plasma and 2500 mL of colloids. She was then transferred to intensive care for observation on a syntocinon infusion.

Conclusion Cervical laceration represents significant morbidity associated with vaginal delivery. While cervical laceration can be a complication of caesarean sections, particularly emergency cases, it does not appear to be so in this case, given the experience of the operator (consultant level) and the significance of the tear. Though we do acknowledge this cannot be excluded, it is possible the cervical laceration occurred prior to caesarean section during first or second stage of labour, which is unusual given she did not deliver vaginally. There is limited literature on the mechanisms of cervical laceration and which stage of labour they usually occur. Further insight into this may see changes in our intrapartum management to prevent cervical lacerations in addition to identifying potential risk factors.

EP10.85

Primary spontaneous pneumothorax in the first trimester of pregnancy

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Introduction Spontaneous pneumothorax in pregnancy is a rare condition. There are approximately 50 cases cited in the literature of which 37% did not have an underlying lung disease. Thirty-five percent of these occurred at the first trimester of pregnancy.

Case A 36-year-old Filipina, Gravida 3 Para 1 (1011) on the fifth to sixth week of gestation presented with sudden onset of dyspnea. Two hours prior to admission, the patient developed shortness of breath just after rising from a sitting position. This was associated with orthopnea but no chest pain. The patient had stopped smoking a year prior. A chest X-ray done within the year was normal. The pregnancy resulted from in vitro fertilisation, with implantation of a single 5-day old blastocyst 23 days prior to admission. Although the patient did not have vaginal bleeding, subchorionic haemorrhage was seen on ultrasound done the day before. The patient was taking estradiol valerate and dydrogesterone orally and was using progesterone vaginal gel daily. The respiratory rate was 36/min. There was alar flaring. Breath sounds were absent on the right lung field. The first impression was pulmonary embolism. Oxygen saturation, however, was at 99%. A chest X-ray with abdominal shield showed 55% pneumothorax on the right with shift in the midline structures to the opposite side. After explaining the advantages and disadvantages of observation versus surgery, a closed chest tube thoracostomy was done by a cardio-thoracic surgeon. A French 28 tube was inserted through the right sixth intercostal space, anterior axillary line under local anaesthesia. Nalbuphine and paracetamol were used for analgesia. The tube was removed after 72 hours. Pneumothorax did not recur throughout pregnancy. Since the patient had a prior spontaneous vaginal delivery, the plan was to perform vacuum-assisted delivery at term to prevent repeated Valsalva manoeuvres. When the patient went into labour on the 39th week of gestation, epidural anaesthesia was given prior to delivery of a normal baby via ventouse. To date, 2 months after delivery, the patient remains asymptomatic.

Conclusion The symptoms of spontaneous pneumothorax may mimic common respiratory symptoms associated with pregnancy. A high index of suspicion is necessary so that prompt management may be initiated. Due to the paucity of practice guidelines, the goals of treatment should aim for early diagnosis and prompt resolution of symptoms. Management should be arrived upon after informed consent. Ultimately, the objective is to safely deliver a healthy baby from a healthy mother.

EP10.86

An unusual cause of antepartum haemorrhage: acute myeloid leukemia

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Introduction Leukemia during pregnancy is rare, posing a complex series of questions. While antepartum haemorrhage (APH) complicating pregnancy occurs in 10% of pregnancies, acute myeloid leukemia (AML) as a cause is not commonly seen.

Case A 21-year-old woman presented at 36 weeks of gestation with antepartum haemorrhage. The patient was a primi, with a significant drop in platelets from 119 on 18 June 2013 to 65 on 2 July 2013. She was in hospital for assessment on 3 July 2013 but left to attend a social commitment. She was rushed back to the hospital with significant bleeding. There were no clinical signs of abruption but ongoing bleeding necessitated lower segment caesarean section (LSCS). At the LSCS, a live male infant was delivered. Liquor was clear. No evidence of abruption. There was continuous bleeding despite watertight closure of the wound. Medical management of postpartum haemorrhage (ergometrine, prostaglandin, misoprostol, syntocinon infusion) did not help. Bilateral uterine artery ligation and placement of a bakri balloon was instituted. Four units of fresh frozen plasma and four units of cryoprecipitate were given. Platelets had to be brought from Wagga Wagga hospital (2 hours away) hence could not be given in the OT though she did receive two units in the ICU. The patient was flown out to Canberra due to the possibility of continuing bleeding. She did not bleed any further but bone marrow studies revealed that she had developed acute myeloid leukemia. She was treated with ATRA (all trans-retinoic acid). She has had ongoing issues with heavy bleeding during her periods 6 months postpartum and is presently on norethisterone. She is using Implanon for contraception. The AML is in remission and she is awaiting bone marrow transplant.

Conclusion Blood disorders are very rare as causes of APH. However, they must be considered when presentation is unusual.

EP10.87

Advanced abdominal pregnancy with conservative management of the placenta

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Introduction Abdominal pregnancy accounts to 1% of all ectopic pregnancies. It is associated with significant morbidity and mortality both to the mother and the fetus. The mortality risk from abdominal pregnancy is 7.7-fold that of tubal pregnancy and 90-fold that of intrauterine pregnancy. We report a case of a 35 weeks' gestation diagnosed as secondary abdominal pregnancy.

Case A 33-year-old gravida 2 para 1 at 35 weeks gestation was referred for breech with oligohydramnios and suspected intrauterine growth restriction. She was sure of her dates and verified by scan at 12 weeks. She was well at presentation and her pregnancy was told to be uneventful previously. She had an uncomplicated normal delivery in her first pregnancy. Examination revealed a soft abdomen with fetal parts easily felt. Ultrasound scan showed an extrauterine abdominal pregnancy with breech fetus lying behind the uterus. Fetal heart was present however the heart appears enlarged with abnormal rhythm. Parameters were around 29 weeks of gestation with estimated fetal weight of 1462 g. Patient was counselled regarding the diagnosis and need for a laparotomy. A midline incision was made. Secondary abdominal pregnancy diagnosis was confirmed. The right tube and ovary was not clearly visualised. The placenta was adherent to the right posterior aspect of uterus, retroperitoneal area, pelvic wall, rectum and mesentery. Fortunately there was no bleeding from the placental bed and therefore decision was made to leave the placenta in situ. The baby was born alive with severe limb contractures; however, baby succumb on day 2 of life due to severe lung hypoplasia complication. The patient recovered uneventfully and had undergone close monitoring. The serum β -hCG level dropped to 1325 mIU/mL from 48 018 mIU/mL after 5 weeks postpartum. However, methotrexate was not given in view of raised liver transaminases. β -hCG level normalised 3 months postpartum. The placental tissue shrank gradually to 8 × 6 cm with no further reduction in size observed after 3 months. Subsequently, the patient successfully conceived again 15 months later. The pregnancy was uncomplicated. She was planned to have an elective caesarean delivery. Intraoperatively, the right tube and ovary was noted embedded in a single mass with the previous placenta forming a complex fibrotic mass.

Conclusion Abdominal pregnancy is a rare condition and requires an awareness to reduce its mortality and morbidity. Conservative management of the placenta by leaving it in-situ may be required in reducing the morbidities associated with this condition.

EP10.88

Partial placenta accreta managed by delayed evacuation of the uterus – a case report **Math, V; Charters, D; Narayan, R; Sem, E**

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Introduction Placenta accreta is an obstetric emergency that can result in significant maternal morbidity and mortality. Massive haemorrhage may lead to emergency hysterectomy.

Case A 27-year-old primiparus woman was clinically diagnosed with placenta accrete after a normal vaginal birth. She was managed conservatively initially. A successful complete evacuation of the retained placenta was achieved at a later date.

Conclusion Initial conservative management followed by evacuation of the uterus is an option in managing women with placenta accreta who wish to preserve future fertility.

EP10.89

Spontaneous haemoperitoneum in a twin pregnancy: a rare cause of maternal collapse **leera, A¹; Pamela, T²; Manisha, M²**

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Introduction Spontaneous haemoperitoneum in pregnancy (SHiP) is a rare condition associated with high materno-fetal mortality and morbidity. Endometriosis is a risk factor either via invasion of the adjacent vessels or bleeding from decidualised endometriosis implants.

Case We present a case of 31-year-old primigravida, who presented at 21 weeks, with sudden onset severe upper abdominal pain. This was a dichorionic-diamniotic twin pregnancy, following vitro fertilisation for subfertility secondary to severe endometriosis. On admission, pain score was 9/10 with stable vital signs. Abdominal palpation revealed generalised tenderness with guarding. Blood investigations were stable and imaging studies were unremarkable apart from some free fluid. Obstetric ultrasound revealed twin pregnancy with demise of one fetus. As the patient improved clinically, conservative management was continued. However, on day 3, she collapsed following another episode of pain with tachycardia and hypotension. Bedside ultrasound revealed free fluid in paracolic gutters. An exploratory midline laparotomy was carried out for suspected haemorrhage, revealed haemoperitoneum of 2.2 L with frozen pelvis. Active bleeding was noted from left adnexa. However, exact bleeding point could not be identified due to gravid uterus and distorted anatomy. Decision was made for hysterectomy to improve access. Left fallopian tube was distended and stretched due to endometriotic adhesions with active bleeding. Salpingectomy was performed to control bleeding. Recovery thereafter was uneventful.

Conclusion SHiP is a rare but catastrophic event. Advances in assisted reproductive techniques have allowed subfertile women with endometriosis to get pregnant. Preoperative diagnosis can be challenging due to non-specific presentation. Laparotomy becomes necessary after maternal collapse or fetal distress. Midline incision allows adequate access to exploration. Although preservation of a pre-viable pregnancy is desirable, often delivery of fetus or rarely a hysterectomy is required for haemostasis. Although improvement in resuscitative and anaesthetic techniques has significantly reduced the maternal mortality, perinatal mortality still remains high. Increased awareness is paramount for prompt diagnosis and management.

EP10.90

An audit of the current practice of diagnosis and management of patients presenting with preterm premature rupture of membranes at a tertiary referral centre in Singapore

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Introduction Preterm premature rupture of membranes (PPROM) is a complication in 2–3% of all pregnancies. Patients with PPRM are managed conservatively until 34 weeks gestation with antibiotics and corticosteroids. Delivery may be expedited if chorioamnionitis sets in earlier. Clinical practice guidelines have been developed at KKH, Singapore for the diagnosis and management of PPRM.

Methods Retrospective data collection utilising existing databases in KKH from 1 September to 31 December 2013.

Results A total of 51 patients were admitted with PPRM, with mean gestational age at diagnosis of 30.7 weeks. Diagnosis was made clinically via sterile speculum examination for 38 (74.5%) patients. In the remaining patients, 8 (61.5%) had both Amnicator and Actim PROM tests to confirm diagnosis. Bedside ultrasound scans were performed in 29 (56.9%) patients. Genital swabs were taken for 50 (98.0%) patients. Mean latency period from diagnosis to delivery was 8 days, and 50% of the patients delivered 4 days after diagnosis. There were 2 (3.9%) patients who delivered after 34 weeks' gestation. Of all patients, 43 (84.3%) received tocolytic therapy. First dose of corticosteroids was given to 49 (96.1%) patients, and 45 (88.2%) patients completed both doses. Of the 49 (96.1%) patients who received antibiotics, penicillin and erythromycin were administered to 46 (93.9%) and 47 (95.9%) patients respectively. There were 21 (41.2%) patients who had an emergency C-section. 59 babies were delivered, with 1 (1.7%) intrauterine stillbirth. Of the live births, 48 (82.8%) required monitoring in specialised units. Placental swab was performed for 45 (88.2%) patients, and 43 (84.3%) patients had placentas sent for histological evaluation. Histological chorioamnionitis was diagnosed in 14 (27.5%) patients, of which 3 (21.4%) were diagnosed clinically pre-delivery.

Conclusion Almost all components of the guidelines were adhered to 80–98% of the time, leading to good outcomes including low latency periods and low rates of infection. Reasons for suboptimal compliance included limited time, patients presenting in active labour, and the availability of formal ultrasound imaging in place of bedside ultrasound. We recommend the use of a clinical pathway in the management of PPRM in the future, as well as continuing medical education for residents to improve adherence and patient outcomes.

EP10.91

A risk stratification tool for the early detection of placenta accreta

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Introduction Placenta accreta a by product of increased caesarean section rate can be an unrelenting complication in pregnancy carrying a risk of major obstetric haemorrhage, uterine rupture, hysterectomy and death (reported in up to 6% of cases). A large proportion of these cases present in an emergency situation thus a documented early management plan can be life saving. Risk stratification to aid early detection in a district general hospital setting is valuable in appropriately planning resources including further imaging, alerting anaesthetics, radiological support and in very high risk cases prompt referral to a specialist centre. Ultrasound and MRI scoring systems for detection of accreta have been published but some studies report that this may not be as accurate as previously described.

Method A case series of patients with placenta accreta was undertaken looking at clinical risk profiles (parity, previous surgery, co-morbidities, smoking, maternal age) and early sonographic changes (presence of placental lakes and thinning of decidua) and relating this to outcomes.

Results and Conclusion Analysis of combined clinical risk and early sonographic evidence to predict major haemorrhage and hysterectomy was used to devise our risk stratification tool. This proves to be a more reliable tool than scoring using imaging alone.

EP10.92

Observational study comparing the efficacy of vaginal PGE2 controlled-release pessary (Propess[®]) with PGE2 tablet (Prostin[®]) for induction of women with pre-labour rupture of membranes at term
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Introduction There are no studies comparing the efficacy of different regimes of vaginal prostaglandin E2 (PGE2) in the management of women with pre-labour rupture of membranes (PROM) at term. The NICE guidelines do not specify which method to use and in our hospital the choice of prostaglandin is made by the clinician.

Objective To compare the efficacy of vaginal PGE2 controlled-release pessary (Propess[®]) with PGE2 tablet (Prostin[®]) for cervical ripening in women who were induced for PROM at term. The primary outcome measure was induction to delivery interval.

Method This was an observational study of 59 patients with confirmed PROM after 36 weeks and 0 days gestation over a 4 month period in 2012. There were 55 women included in the analysis (4 patients were excluded due to lack of data) and of these 20 were induced with Propess[®], 27 with Prostin[®] and 8

with oxytocin only. *Z* test for 2 population proportions was used to calculate significance.

Results In both groups the women who required an emergency caesarean were excluded. The average time of presentation of PROM to induction was similar for both groups (Prostin[®] 26.8 hours and Propess[®] 24.9 hours). In the Prostin[®] group (27 women: 21 nulliparous, 6 parous) the average time of first stage of labour was 7.9 hours with 74% (20 women: 16 nulliparous, 4 parous) requiring oxytocin for augmentation. The average time from starting induction of labour (IOL) to delivery was 19.7 hours. In the Propess[®] group (20 women: 14 nulliparous, 6 parous) the average time of first stage of labour was 4.7 hours with 45% (9 women: 8 nulliparous, 1 parous) requiring oxytocin. The average time from starting induction of labour until delivery was 16.2 hours.

Conclusion This study suggests that the time from induction to delivery is shorter overall when Propess[®] is used as compared to Prostin[®] (16.2 versus 19.7 hours). The use of Propess[®] for IOL in PROM is associated with a statistically significant reduced need for oxytocin ($P < 0.05$), a shortened duration of first and second stage of labour when compared to Prostin[®]. We acknowledge that our numbers are small and there were confounding factors such as delays in starting oxytocin due to activity on delivery suite. However, this study indicates that a larger study is warranted to provide data to guide the management of induction of labour for PROM at term.

EP10.93

A review of 4 years of serious incident investigations of unexpected admission to neonatal unit at term at a London teaching hospital

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Introduction A serious incident (SI) for an unexpected admission to the neonatal unit (NNU) is defined as an unexpected admission after 37 weeks of gestation requiring intensive care or ventilation for 24 hours. This may occur following resuscitation at delivery or in the immediate postnatal period. Any case which meets this criteria was subjected to a full investigation by a multidisciplinary panel comprising midwives, obstetricians, anaesthetists and neonatologists. A report is generated including a root cause analysis to establish if there were lessons which could be learnt to improve future care which is disseminated to the department. The aim of this review was to analyse the key factors in each SI in order to categorise the SI to review the trends within the department.

Method The departmental risk management database was searched and all eligible SI reports obtained over a 4 year period from 1 April 2010 until 31 March 2014. These included all unexpected neonatal admissions after 37 weeks of gestation with any cases of serious fetal abnormality excluded. The SI reports were reviewed to ascertain the root cause of the admission and contributory factors.

Results The total number of SIs for each year were as follows: in 2010 a total of 11 SIs, in 2011 a total of 14 SIs, in 2012 a total of

6 SIs and in 2013 9 SIs. These were further analysed in relation to the total number of deliveries and 2011 where the most SIs occurred in the year of the most deliveries. The root cause of the SI was divided into the following subcategories: antenatal event, intrapartum event (divided into first stage and second stage complication) and postnatal admission. When comparing the results of the 4 year period the percentage of incidents related to antenatal causes remained consistent as did complications such as shoulder dystocia and cord prolapse. In the 2 years with the greatest number of SIs there appears to be a greater number of cases of chorioamnionitis (33–36% of all cases) and meconium aspiration (18–29% of all cases).

Conclusion The analysis of these 40 cases over a 4-year period provides the department with a focus of which areas to monitor and to direct resources towards. The biggest factor in unexpected term admission is related to chorioamnionitis in labour.

EP10.94

Does the use of intraoperative cell salvage reduce the need for allogeneic blood transfusion following caesarean section?

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Introduction The transfusion of allogeneic blood following caesarean section (CS) is associated with significant patient risk and hospital costs. The aim of intraoperative cell salvage (ICS) is to reduce or eliminate the need for allogeneic blood transfusion (ABT). While evidence supports use of ICS in orthopaedic and cardiac surgery, less evidence is available to support its use in CS. The aim of the study is to describe one of the largest experiences of ICS use in CS and determine if ICS reduces the need for ABT. **Methods** Approval was obtained from the Mater Health Services Human Research Ethics committee (Ref 2012-93). A retrospective cohort study was undertaken at the Mater Mothers' Hospital, Brisbane between January 2009 and September 2013. Data for all women undergoing CS were extracted from the hospital's electronic maternity record system, cases with ICS were identified from blood management service records, and those receiving an ABT within 7 days of delivery were identified from hospital blood bank records. When transfusion occurred on the day of delivery, the health record was reviewed to confirm transfusion was not preoperative. Each case of ICS was matched with two cases of women undergoing CS without ICS for blood loss, preoperative Haemoglobin (HB), financial status and year of birth. Categorical Data were analysed using chi squared or Fisher's exact test and continuous data analysed using the Student *t*-test; $P < 0.05$ was considered statistically significant.

Results Of the 17 931 CSs performed during the study period, 178 utilised ICS (0.99%). An ABT was administered to similar numbers of women receiving ICS (13/178; 7.3%), and to controls (31/356; 8.7%; OR 0.86; CI 0.44–1.67). The mean number of units transfused in those who received an ABT was lower in women with ICS but did not reach statistical significance (4.3 versus

5.6 units, $P = 0.33$). No complications were reported related to ICS use.

Conclusion The use of ICS at CS did not reduce the need for ABT compared to controls. Further research is recommended.

EP10.95

Audit of obstetric sepsis bundle in a tertiary referral obstetric hospital

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Introduction Obstetric sepsis is an important cause of maternal morbidity and mortality. We implemented a sepsis bundle in 2012. Our aim was to identify our unit's compliance (aiming at 100%). By comparison, the adult general population complete compliance with the Surviving Sepsis Campaign bundles in Europe is 18.4%.

Methods After institutional clinical governance approval, data were collected retrospectively for 1 year. In order to better identify septic cases, we assessed records of all parturients who underwent blood cultures. We collected data on maternal demographics, delivery management, vitals at diagnosis, sepsis interventions, microbiology findings, maternal and neonatal outcomes.

Results Case review included 229 cases. We identified 72 patients with sepsis during index pregnancy. Of these, 50 were documented as being placed on the sepsis bundle whilst 22 met the sepsis criteria but were not formally placed on the bundle. Lactate ranged between 0.6 and 6.1 and was not done in 40 cases of sepsis. Antibiotics were administered within 1 hour in the majority of patients placed on the bundle (46 out of 50). Eight patients presented antenatally, 27 patients presented postnatally and 37 intrapartum. Forty-five cases had positive microbiology documented or placental histological findings of chorionitis or funisitis. The likelihood of negative microbiology screen was high in cases where a limited number of samples was sent. Pyrexia in labour was the main reason for blood cultures. There were no maternal mortalities in our series and no level 3 ITU admissions. Three patients required HDU management which was provided in our delivery suite. Two cases developed acute kidney injury and two patients required further surgery. Length of hospital stay varied, mean being 6.5 days and a maximum of 27 days. Neonatal outcomes included 18 NICU admissions for sepsis workup or prematurity.

Conclusion Our data illustrate that there is still scope for improvement in implementation of the bundle (areas include recognition of sepsis, fluid administration in sepsis, lactate measurement and MEOWS documentation). Overall compliance with our bundle was 69.4%; however, for individual components it was lower. Sepsis needs to be recognised before multiorgan failure becomes established, as mortality can reach 40–60% in cases of group A Streptococcal infections, for example.

EP10.96

The use of the Bakri balloon in the management of postpartum haemorrhage: 7 year experience from one metropolitan health service

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Introduction Postpartum haemorrhage (PPH) remains a leading cause of maternal morbidity and mortality worldwide. While the mainstay of management of primary PPH remains pharmacological a significant number of women will require surgical measures such as a compression suture or hysterectomy. In 2001 a less invasive approach was described, namely the insertion of an inflatable balloon (Bakri balloon) into the uterine cavity to tamponade uterine haemorrhage secondary to atony. In this study we aimed to assess the effectiveness of the Bakri balloon in reducing the need for surgical management in women with a major PPH in whom medical therapy had failed.

Methods A retrospective analysis of all cases of severe PPH in which a Bakri balloon was used since its introduction to a single Victorian health service delivering about 8000 women per year.

Results In our health service, between May 2008 and September 2014, 78 women had a Bakri balloon inserted for PPH, with a mean (range) age of 32 (23–44) years and a mean (range) gestation at delivery of 38⁺⁴ (30⁺⁴–42⁺⁰) weeks. Over the 7 years, the use of the Bakri balloon in our service is generally increasing, with three in 2008, nine in 2009, 12 in 2010, 14 in 2011, 11 in 2012, nine in 2013, and 20 in 2014. Thirty-six (46%) woman had had a vaginal birth, 23 (30%) an elective caesarean section and 19 (24%) an emergency caesarean section. The average (range) volume of estimated blood loss was 2590 (400–10 000) mL. The average (range) duration of insertion of the Bakri balloon was 17.25 (0.5–36) hours. Overall, in 86% of women the Bakri balloon was sufficient management of the PPH. In the remaining 14% a hysterectomy was required. In those women, the average (range) estimated blood loss was 5400 (3000–10 000) mL.

Conclusion In our service, the Bakri balloon appears an effective therapy the management of PPH, avoiding the need for hysterectomy in nearly 9 out of 10 women in which it is used. Assessment of factors that might predict it lack of success might be expected to improve its use and improve the care of individual women.

EP10.97

Prospective audit on PROM after 24 weeks in a DGH

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Introduction The aim was to audit the management following PROM after 24 weeks and to evaluate the outcome.

Methods We reviewed 50 case notes prospectively on those women who presented either to the DAU or delivery suite with confirmed rupture of membranes after 24 weeks.

Result Nearly three quarters of the women were nulliparous and rest was multips. About one fifth of the pregnancies were high risk. Nearly two thirds presented at term and the rest were preterm. Diagnosis was made in nearly half of the patients using a pad rest whilst the other half had a speculum examination. Only one woman had both. Midwifery staff made more than two thirds of the diagnosis and doctors made the rest. Twenty-three women (48%) went into spontaneous labour and 25 (50%) were induced. Two women had elective caesarean section for breech presentation. The vast majority of the women (84%) were induced after 24 hours whilst 4 (16%) were induced immediately one due to the presence of meconium and the rest due to Group B streptococcus colonisation. The spontaneous vaginal delivery rate was 74%, instrumental delivery rate was 12% and caesarean section rate was 14% respectively. There was CTG evidence of fetal distress in 14 labours. However, there was no adverse maternal outcome. The neonatal unit admission rate was about 10%.

Discussion Generally all women who presented to the unit with pre labour rupture of membranes were managed well in par with the national guidelines. They were counseled and induction of labour was offered appropriately. Women who presented with preterm rupture of membranes were given steroid and antibiotic cover appropriately. The spontaneous vaginal delivery rate was high both in the spontaneous labour group as well as the induction group. There was no increased incidence of adverse maternal or fetal outcome.

EP10.98

A case of large vulvar haematoma post consensual intercourse in a pregnant patient

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Introduction The vulva is highly vascular in pregnancy. Haematoma formation in pregnancy following consensual intercourse is rarely reported. This is a case of large vulvar haematoma which formed post consensual intercourse in a 20 weeks pregnant patient.

Case This is a case of an 18-year-old G3P0⁺², booked late at 20 weeks' gestation. At 29 weeks of gestation, she attended Accident and Emergency Department with symptoms of vulvar swelling following consensual intercourse. This was a sudden onset of vulvar swelling following consensual intercourse. There was no history of any interpersonal violence, abuse and instrumentation with other objects. There was extreme discomfort in micturition, walking and adducting her thighs. There was no reported bleeding per vaginum. On examination, her vital signs were stable. There was a right labial swelling that was approximately 10 cm × 7 cm. It was soft, not tense, very tender and fluctuant. There was bruising on the medial aspect. It did not extend beyond the midline and had no evidence of external

bleeding or laceration. Patient was catheterised. All baseline blood tests were done which were within normal range. A conservative approach was adopted to observe this patient and she was started on analgesics and antibiotics. The swelling reduced in size and patient was discharged on day 5 with a comprehensive follow-up plan. At 35 + 1 weeks of gestation, she was admitted with confirmed preterm, premature rupture of membranes. She was treated with antibiotics and steroids as per hospital protocol. By this time, there was >50% reduction in size of the swelling. Mode of delivery was discussed at this stage and she was reassured regarding vaginal delivery. Patient declined vaginal delivery and requested lower segment caesarean section. Eventually she had a lower segment caesarean section at 35 + 3 weeks of gestation. She had an uneventful post operative recovery. On discharge the vulvar swelling significantly subsided by >80% of size without any complications.

Conclusion This case highlights the fact that conservative management has a significant role in this kind of scenario. Increase vascularity in pregnancy makes it prone to the possibility of torrential haemorrhage from torn blood vessel which can lead to shock and need for resuscitation. Large vulval haematoma following intercourse is rarely reported.

Increased reporting of the management of similar cases is imperative to develop a solid evidence base with regards to future management of similar occurrences.

EP10.99

Uterine torsion, a rare cause of acute abdominal pain in the third trimester of pregnancy; a case report

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Introduction Uterine torsion is a rare complication of pregnancy, defined as rotation of the gravid uterus to >45° around the long axis. The rarity of this phenomenon is evident in the paucity of reported cases.

Case We present a case of uterine torsion in a 23 year old with Ehlers–Danlos syndrome; having presented with acute epigastric pain at 36 weeks gestation. In view of the worsening abdominal pain an emergency lower segment caesarean section was indicated. Intraoperative findings of a loss of the bladder reflection, torturous ovarian vessels and abnormal positioning of the broad ligament, fallopian tube and ovary over the lower segment of the uterus, helped achieve a diagnosis of uterine torsion, with 180° laevorotation. Following unsuccessful de-torsion, a posterior uterotomy was performed to achieve delivery with subsequent de-torsion of the uterus to restore normal anatomical orientation.

Discussion As a differential diagnosis for the acute abdomen in pregnancy, there is need for prompt evaluation and exclusion of alternative diagnosis such as placental abruption. Familiarity with the aetiology and clinical features associated with uterine torsion will allow for its consideration as a cause for abdominal pain in pregnancy and as a potential complication of pregnancy in

women undergoing caesarean section. Such familiarity will improve the clinical assessment and management of these rare cases, bettering both maternal and fetal outcomes.

EP10.100

Management of maternal sepsis in a district general hospital: a prospective observational study **Nasir, S; Arutchelvam, S; Ankers, D**

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Introduction Sepsis in pregnancy is the most common cause of direct maternal death, with a rise in sepsis-related mortality rate caused by Group A Strep (GAS). Sepsis in the puerperium is also an important cause of maternal death, causing about 10 deaths per year in the UK. Any baby of a mother found to have sepsis in the peri-partum period should be discussed with paediatricians so that appropriate screening for sepsis and prophylactic antibiotic administration to the baby can be considered.

Methods This is a prospective analysis of all women started on the trust-wide sepsis pathway on Labour Ward and Postnatal Ward of Mid Cheshire Hospital Trust, a district general hospital. This study was carried out between May and June 2014 and we included 13 women in this study. We used the standards from the Royal College of Obstetricians and Gynaecologists (Greentop Guideline 64) and Mid Cheshire Hospital Trust guidelines on maternal sepsis – Management of Sepsis in Pregnant and Postnatal Women (Maternity Manual guideline).

Results All except one patient who had a Maternity Early Warning Score (MEWS) >2 on two or more parameters were started on sepsis pathway, with full completion of pathways by both medical and midwifery teams. 100% of patients had blood cultures done (all negative except one with GAS) prior to antibiotics and had antibiotics administered within 1 hour. Lactate was done in all patients and 5 patients had a lactate >2 , a feature of severe sepsis. Only one patient, who was positive of GAS, was managed under the critical care unit for septic shock. All except one baby, whose mum was treated as sepsis, were screened. Only 63% had full screening (including lumbar puncture) and all blood cultures and cerebrospinal fluid cultures showed negative results.

Conclusion Early recognition and treatment of suspected sepsis in pregnant women and in peripartum is vital to reduce the morbidity and mortality for both mother and baby. However, we recommend that all patients should be clinically assessed with commencement of a sepsis pathway only if there is a source of sepsis (despite MEWS >2 on two or more parameters). The sepsis pathway should also be stopped once a patient is deemed not septic – so unnecessary investigations on babies are not carried out.

EP10.101

Unexplained variation in hospital rates of induction of labour among nulliparous women at term **Nippita, TA; Trevena, JA; Patterson, JA; Ford, JB; Roberts, CL; Morris, JM**

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Introduction We aimed to describe variation in hospital rates of induction of labour (IOL) for nulliparous women with singleton cephalic term births, and to determine the extent to which the variation can be explained by case mix and hospital factors.

Methods Linked hospital discharge and birth data were used to identify nullipara with singleton cephalic births at term in 66 hospitals in New South Wales, Australia, 2010–2011. To investigate hospital IOL rates categorised by gestational age (early term, full term and late term births), random effects multilevel logistic regression models were fitted, progressively adjusting for case mix (maternal age, country of birth, socioeconomic status, smoking, public/private care, maternal medical conditions, antenatal pregnancy complications, birthweight) and hospital factors (birth volume, urban/rural location, public/private type, anaesthetic service indicators, neonatal service indicators, instrumental birth rate, prelabour caesarean section rate, labour augmentation rate and level of obstetric training).

Results Of 69 549 nulliparous women with singleton cephalic births, 24 673 had an IOL, with an overall IOL rate of 35.5%, ranging from 12.4% to 48.9% (interquartile range 29.8–40.0%). For early term births (37–38 weeks gestation), adjusting for casemix and hospital factors decreased variation in IOL rates by 7.8% and 38.0% respectively with the resultant adjusted IOL rates varying from 3.3% to 13.9%. Twelve of the 66 hospitals (18%) had rates of IOL that were significantly different from the overall adjusted predicted IOL rate for women with early term births. For women with full term births (39–40 weeks gestation), adjusting for case mix and hospital factors decreased variation in IOL rates by 14.7% and 19.9% respectively, with the resultant adjusted labour induction rates varying from 10.6% to 32.6%. Twenty-nine out of the 66 hospitals (43.9%) had rates of IOL that were significantly different from the overall adjusted predicted IOL rate for women with full term births. In contrast, for women with late term births (≥ 41 weeks' gestation), adjusting for casemix factors decreased variation in labour induction rates by 7.7%, with the resultant adjusted IOL rates varying from 45.1% to 67.5%.

Adjusting for hospital factors did not change the variation in IOL rates for women with late term births. Eleven of the 66 hospitals (16.7%) had rates of IOL that were significantly different from the overall adjusted predicted IOL rate for women with late term births.

Conclusion Inter-hospital IOL rates for nulliparous women with a singleton cephalic term birth had high unexplained variation despite adjustments for case mix and hospital factors.

EP10.102

In-patient cervical priming for postdate induction of labour in low risk women: it is time for a rethink**Okunoye, G¹; Bandyopadhyay, D²; Leigh-Atkins, S²**¹Sidra Medical and Research Centre, Doha, Qatar; ²University Hospital of South Manchester, Wythenshawe, United Kingdom

Introduction Induction of labour is a common obstetric intervention required in up to 20% of pregnancies. It is usually a two phase process involving an initial preparatory phase of cervical ripening (or priming) which typically involves the use of prostaglandins. The traditional inpatient approach to cervical priming is being called into question in the quest to reduce unnecessary hospitalisations and promote the element of choice and patient satisfaction throughout the various stages of birth. However, ongoing questions persist regarding the safety and acceptability of outpatient cervical ripening in low risk pregnancies. This project aimed to assess outpatient cervical ripening using a protocol guided service re-design.

Methods Pregnant women ($n = 41$) with low risk pregnancies who required induction of labour for post-dates were offered outpatient cervical ripening as part of quality improvement and inpatient services redesign in South Manchester, UK. A protocol was designed and agreed for the outpatient cervical ripening with controlled release prostaglandin E2 pessary. Informed consent, liquor volume assessment, maternal observations, cardiotocography and bishop scoring were completed before insertion of prostaglandin. Post insertion maternal and fetal observations and follow-up instructions were completed and a planned review 24 hours later at the Day Assessment unit was arranged. Women with abnormal findings were offered inpatient induction.

Results Out of the 41 women, 80% (33/41) had outpatient cervical ripening. 8 (19.5%) women did not meet the protocol criteria for outpatient cervical ripening and were managed as inpatient. Of those who had outpatient cervical ripening, 63.6% (21/33) returned in spontaneous labour <24 hours, 33.3% (7/21) of whom also had ruptured membranes. Majority of the women (75.8%, 25/33) did not require additional prostaglandin. 9% (3/33) reported prostaglandin fell out. There were no maternal or fetal adverse outcomes. 93.9% reported their satisfaction with outpatient cervical ripening service.

Conclusion Outpatient cervical ripening is a safe and acceptable option in the management of low risk pregnant women who require induction of labour for postdates, within the framework of a protocol guided service. For the pregnant woman, it promotes the element of choice in the birthing process and for many obstetric units, the option of outpatient cervical ripening is an untapped potential for better utilisation of inpatient capacity and resources. Change management amongst obstetricians, midwives and patients is a critical step in moving towards outpatient cervical ripening; hence larger studies are needed to concretise the emerging evidence.

EP10.103

Anaemia at the time of postnatal discharge: how common a problem is it?**Okunoye, G¹; Kirby, N²**¹Sidra Medical and Research Centre, Doha, Qatar; ²University Hospital of South Manchester, Wythenshawe, United Kingdom

Introduction Anaemia in the postnatal period results largely as a consequence of the degree of blood loss associated with childbirth. The true prevalence of anaemia at the time of discharge from the postnatal ward is largely unknown. However, the presence of anaemia has a significant impact on the overall wellbeing of the mother in the first few months postpartum.

Methods This retrospective review was carried out to determine the prevalence of anaemia at the time of post natal hospital discharge. The discharge haemoglobin level of 209 consecutive women was retrieved from the electronic records following childbirth between June and July 2014, in a UK hospital. The British committee for standards in haematology cut-off of haemoglobin of <100 g/L for the postpartum period was used to define anaemia in this group.

Results Anaemia, with a haemoglobin of <100 g/L was present in 27.2% (57/209) of the women at the time of postnatal discharge. A total of 31 women (14.8%) had haemoglobin of <90 g/L at the time of hospital discharge, indicating increasing degree/severity of anaemia. In relation to the proportion of anaemia by mode of delivery; 5% (6/119) of women who had spontaneous vaginal delivery were anaemic at the time of discharge whilst 56.3% (40/71) of those who had caesarean section and 57.9% (11/19) of those who had operative vaginal delivery were anaemic at the time of postnatal discharge.

Conclusion Anaemia is common in postpartum women at the time of postnatal hospital discharge especially in women who had operative vaginal birth or caesarean section. There is a need to define the scale of this problem in a much larger population and perhaps in different geographical populations. Priority should be given to adequate antenatal education on postnatal anaemia, its treatment options and the potential impact on the quality of life in the immediate postpartum period. A structured follow-up plan in primary care is recommended for women with postnatal anaemia to confirm return to normal haemoglobin levels.

EP10.104

Ten-year review of pregnancy outcomes following cervical cerclage in the east of Scotland**Orr, K; McNicol, L; Smith, M; Nicoll, A**

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Introduction Preterm birth (PTB) is the leading cause of perinatal morbidity and mortality. Cervical cerclage is performed to prevent pregnancy loss and PTB due to 'cervical incompetence'. There is limited information about which women benefit most from cervical cerclage. Knowledge of local practice is essential if women are to be counselled appropriately about the procedure-related

risks and pregnancy outcomes. We aimed to identify women who had transvaginal cervical cerclage in Ninewells Hospital, Dundee in order to examine the indications for cervical cerclage, to assess the methods of cervical cerclage and to examine pregnancy outcomes for these women.

Methods All women that had cervical cerclage between 1 January 2004 and 30 September 2013 were identified from the maternity operating theatre log-books. The obstetric case notes and the local maternity database (Torex Protos Evolution) were used to obtain information about the procedures and pregnancy outcomes.

Results 45 women had 48 pregnancies that required cervical cerclage. 3 of these women had 2 procedures in consecutive pregnancies. Complete data were available for 38/45 women and 41 pregnancies. 21/41 (51%) had elective cerclage and 20/41 (49%) required emergency cerclage. The McDonald technique and Mersilene tape were used in all cases. For elective cerclage the median gestation at suture insertion was 14 weeks (range 11 + 4–21 weeks). The median gestation for delivery was 37 + 3 weeks (range 12–38 + 6). 2/21 (9.5%) had spontaneous miscarriage prior to 24 weeks gestation. 16/21 (76.2%) delivered after 34 weeks gestation. 6/21 (28.6%) had caesarean section. For emergency cerclage the median gestation at suture insertion was 20 + 3 weeks (range 13–23 + 6 weeks). The median gestation for delivery was 28 + 5 weeks (range 16 + 1–39 + 6). One attempt at emergency cerclage was associated with membrane rupture and was abandoned. 6/19 (31.6%) had spontaneous miscarriage prior to 24 weeks gestation ($P = n/s$). 6/19 (31.6%) delivered after 34 weeks gestation ($P = 0.01$). 3/19 (15.8%) had caesarean section ($P = n/s$).

Conclusion In our hospital cervical cerclage is performed infrequently. This has implications for the acquisition and maintenance of skills. There is consistency in the surgical techniques used for both elective and emergency procedures. Pregnancy outcomes are improved for elective procedures. For emergency cerclage the majority of women will either miscarry or deliver before term. Nevertheless a number of women will still have a successful pregnancy outcome. We will continue to monitor our practice and outcomes following cervical cerclage.

EP10.105

Prospective series of 53 episiotomies performed with the angled EPISCISSORS-60©

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Introduction Obstetric anal sphincter injuries (OASIs) are the leading cause of anal incontinence in women. Episiotomy suture angles between 37 and 60° are associated with lowest risk of OASIs. Only 13% of clinicians are able to achieve episiotomy suture angles of 40°. Angled EPISCISSORS-60© (Medinvent Ltd, Romsey, England) are new episiotomy scissors designed to cut at 60° by aligning a reference guide-limb to the perineal midline. We present a case series of episiotomy sutured angles with the angled EPISCISSORS-60.

Methods Consecutive patients delivering in two private maternity hospitals in Thane, India, undergoing clinically indicated episiotomies were included. Only patients delivering spontaneously were included. The scissors were introduced vaginally at crowning, and aligned to orient the guide-limb vertically from the posterior fourchette to the anus. While a single cut was preferred, a stagger cut was needed on some women. Post-delivery angles were measured by placing a protractor transparency on the perineum after delivery and the angle marked with an indelible ink pen. Per rectal examination was performed prior to suturing to detect OASIS.

Results A total of 53 women underwent clinically indicated episiotomies. Of these, 28 women were nulliparous. One woman had a vaginal breech delivery (para 2) and the rest were cephalic vertex deliveries. The average age was 27 (range 20–35). The median birthweight was 2960 g (SD = 420, IQR = 2900–3200 g). The median post-delivery suture angle of the episiotomy was 48° (SD = 3.7°, IQR = 47–52°). There were no differences between nulliparous and parous women in birthweights or episiotomy angles. No cases of OASIs were detected in this series.

Conclusion EPISCISSORS-60® angled version demonstrated a post-delivery suture angle of 48° in a cohort of Indian women undergoing spontaneous vaginal deliveries.

EP10.106

Case series: sinusoidal pattern of cardiotocogram and neonatal outcome

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Introduction We had 3 cases of sinusoidal pattern associated with poor fetal outcome in a period of 2 years.

First case 34-year-old lady came in at 36 weeks gestation with first episode reduced fetal movements and spontaneous rupture of membranes and small amount of vaginal bleeding. The CTG showed 7 min of sinusoidal pattern. Patient had urgent caesarean with a suspicion of vasa praevia. Baby was born in poor conditions with a fetal haemoglobin of 5 g/dL. Survived with blood transfusion.

Second case 26-year-old lady at 34 weeks gestation presented with first episode of reduced fetal movements. Otherwise had an uneventful pregnancy. CTG showed pseudo sinusoidal pattern for an hour and the Dawes Readman criteria did not meet on the oxford CTG. Repeat CTG showed similar pattern. Emergency caesarean section performed in view suspected fetal compromise. Baby was born with poor Apgar scores and with a fetal haemoglobin of 5 g/dL. However, baby did well with blood transfusion. On retrospective review of patients previous records, mum reported to GP with h/o exposure to child with slapped cheek but blood results show IgM/IgG negative.

Third case 24-year-old Asian lady 32 weeks gestation presenting with first episode of reduced fetal movements. Measuring 38 cm, symphysis fundal height. Was on ferrous sulphate tablets for anaemia in pregnancy. CTG showed sinusoidal pattern with atypical decelerations. Emergency caesarean section performed in

view of suspected fetal compromise. Difficult delivery of the baby in view of hydropic features of the baby. Baby was born in poor conditions, every attempt to resuscitate was made, but baby did not survive.

Conclusion Sinusoidal fetal heart rate pattern reflects fetal anemia. Fetal anemia is a serious complication of pregnancy that may result from various causes that include fetomaternal haemorrhage, intrauterine parvovirus infection, immune-associated conditions, with rhesus D (RhD) sensitisation being the most common cause. Severe fetal anaemia could cause increased cardiac output, tissue hypoxia, lactic acidosis, fetal hydrops, and eventually intrauterine death. Hence it is critical for obstetric care providers to be vigilant about the possible risk factors for fetal anaemia, early recognition where possible antenatally and appropriate referral and to recognise and distinguish between the sinusoidal and pseudo-sinusoidal pattern of fetal heart trace in acute setting to optimise better fetal and neonatal outcome.

EP10.107

Breeching in the system: expectations and experiences surrounding a planned vaginal breech birth

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Introduction In Australia almost 80% of women carrying a breech baby near term will give birth by caesarean section. This reflects global trends for management of breech birth. Recent policy reform in NSW promotes vaginal breech birth (VBB) as an option for women and recommends women who plan VBB have access to clinicians who support this choice. Despite this, little is understood about the experiences of women who plan a VBB and of the clinicians caring for these women.

Method A qualitative study using descriptive exploratory design was undertaken involving one-to-one in-depth semi-structured interviews with 22 women who planned a VBB in the last 7 years regardless of eventual mode of birth and 10 clinicians working in Level 6 maternity services in NSW.

Results Key findings for women include the significance of the information given to support the decision about mode of birth and the ability to labour with supportive and skilled staff available. Key themes included women 'wanting to have a go' but feeling 'boxed in' by the health system where they were seen to be 'going against the status quo'. Social discourse was also identified as having an impact on women's decision making. Some felt a 'fire in the belly' to attempt a planned VBB despite society and the media making them feel like they were 'putting the baby at risk' for their 'own satisfaction of a birth experience'. Others chose caesarean section for birth as a result of negative social influences questioning the safety of VBB. For clinicians, caesarean section was often seen as the 'safe option' for birth of a term breech baby – 'I'm scared as an obstetrician; you're scared as a woman. Let's just do a caesarean'. Clinician concern around planned VBB focused on how their own fears create tension in the

birthing room that can in turn impact on a woman's progress in labour. Clinicians identified a need for increased access to education and opportunities for skill maintenance for VBB. A team approach was also considered important when assessing a women's suitability for VBB.

Conclusion The findings inform midwives and obstetricians about how best to support women in the decision making process for planned VBB. Women value the chance to try for a VBB in the right situations. Increasing the number of clinicians skilled in VBB will increase the opportunity for women to explore this option for birth of their breech baby.

EP10.108

A 12 L postpartum haemorrhage

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Introduction Postpartum haemorrhage (PPH) is a complication following childbirth where heavy bleeding results in symptomatic hypovolaemia. It is traditionally defined as >500 mL blood loss post-vaginal delivery and >1000 mL blood loss post-caesarean section and while most PPHs are minor it remains a leading cause of maternal morbidity and mortality in Australia and worldwide. It has four causes, known as the 4 Ts of; Tone (uterine atony), Trauma (genital tract trauma), Tissue (retained products of conception) and Thrombin (coagulation abnormalities). The following is a case study of a female sustaining a life threatening PPH due to genital tract trauma and the significant resuscitative efforts conducted to allow her to survive.

Case JV, a 35-year-old 73 kg G₁P₀ female with a singleton pregnancy, presented at 39 weeks gestation for a planned induction of labour secondary to asymptomatic pre-eclampsia. She had a background of diet controlled gestational diabetes mellitus, multinodular goitre, fatty liver disease and query beta thalassaemia trait. She was given prostin and had spontaneous rupture of her membranes with first stage labour lasting 5 hours 30 min. Second stage labour was delayed with no progress for 2 hours so a successful Neville Barnes forceps delivery with episiotomy was performed in theatre under spinal anaesthesia. In this procedure she sustained deep bilateral vaginal gutter tears and a 3c anal sphincter perineal tear. Her uterus was confirmed empty and she was given oxytocin with attempts made to repair her tears. The tears continued to bleed profusely and she decompensated. Obstetricians continued to repair her perineum, placed a Bakri balloon, and applied vaginal packing. Concurrently anaesthetists converted her to general anaesthesia, placed central and arterial lines and activated a massive transfusion protocol giving her 21 units of packed red blood cells, 11 units fresh frozen plasma, 20 units cryoprecipitate, 2 units platelets, 2 units albumin, 5000 mL normal saline and 2000 mL plasmalyte. In addition, ergometrine, tranexamic acid, IV antibiotics and a metaraminol infusion were given. Total blood loss was conservatively estimated at 12 L. She was transferred to the ICU where she remained haemodynamically stable with minimal

ongoing bleeding and was ex tubated. Further ward complications included pulmonary oedema, faecal incontinence, ongoing hypertension and lactation difficulty. She was discharged on day 9 post-delivery with multidisciplinary follow-up.

Conclusion It is hoped this case illustrates how aggressive resuscitation and teamwork in the management of major PPH can ensure optimal patient outcomes.

EP10.109

Study on induction of labour

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Introduction Around one-fifth of deliveries in UK are induced. In Stafford General Hospital, 23.42% of deliveries are induced during the whole year, 2013. This study aims to look at the indications, process and outcome of induction of labour, to gain an appreciation of the efficacy of single-dose and multiple-dose Prostin[®], and also to determine the caesarean section and assisted delivery rates of inductions and review the indications for mode of delivery in these instances.

Methods Retrospective study and sample of 33 patients from those induced at Stafford General Hospital from November to December, 2013. Analysed using SPSS version 16.0 and defined as those administered vaginal prostaglandin and/or those in whom amniotomy was performed when the woman was not in labour.

Results The most common indication (39.4%) was due to postdate (>40 weeks). Membrane sweeping was done in 54%. Low bishop scoring (<5) was found in 73% and 36.4% of the cases did not need prostin. ARM was done in 85% and augmented with syntocinon in 64%. One dose of prostin was required in 24.2%, 2 doses in 18.1% and 3 doses in 21.2% respectively. The outcome was normal vaginal delivery (64%), ventouse (12%), forceps (6%) and caesarean section (18%). Indications for instrumental deliveries were due to suspected fetal compromise in 75%, prolonged second stage in 25% whereas those for caesarean section were suspected fetal compromise in 66.7% and failure to progress in 16.7%. Regarding maternal complications, no complication (76%), PPH (9%), manual removal of placenta (6%), maternal pyrexia, systemic infection and third degree tear with 3% each. Majority (78.8% and 93.9%) were good Apgar scores at 1 and 5 min. Only 6% was needed for SCBU admission. One time sweeping could result in normal vaginal delivery in 87.5% and whereas no sweeping ended up with 43.8% of normal vaginal delivery. Lower caesarean section rate (18.2%) and same instrumental delivery rates (ventouse 12.1% and forceps 6.1%) compared to national average (UK: 21–23% and 16–19% respectively). Mode of deliveries are quite similar to all patients in Stafford hospital. Deliveries occurred after 48 hours in the majority (24.2%).

Conclusion Findings indicate that induction of labour at term gestation can have same mode of delivery, good Apgar scores and same complication rates. One time sweeping is very effective before induction and it should be offered to all patients before induction.

EP10.110

Gestation at elective caesarean section, use of antenatal corticosteroids if <39 weeks of gestation, and the impact these factors have on special care baby unit admissions at Tauranga Hospital **Prentice, L; Chittenden, B**

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Introduction The Royal College of Obstetricians and Gynaecologists (RCOG) recommends that elective caesarean sections are performed at or after 39 + 0 weeks of gestation, and that antenatal corticosteroids should be given if an elective caesarean is planned prior to 38 + 6 weeks of gestation. This study looks at whether Tauranga Hospital is meeting these recommendations and whether this influences neonatal outcomes.

Methods Women undergoing an elective caesarean section at Tauranga Hospital between 23 May 2012 and 28 August 2013 were included; multiple pregnancies were excluded. The hospital's medical records were searched using the codes 'caesarean section' then 'elective caesarean section'. For all singleton elective caesareans gestation at delivery was identified. For those caesareans performed prior to 39 weeks of gestation the following information was gathered: indication for caesarean, validity of indication for early delivery, and antenatal corticosteroid administration. For neonatal data collection, all elective singleton caesareans that resulted in admission to the special care baby unit (SCBU) were identified. Patient files were searched and the following information gathered: gestation at birth, antenatal corticosteroid administration, Apgars, birthweight, indication for admission, and length of stay in SCBU.

Results 26.5% (656/1823) of all deliveries at Tauranga Hospital were caesarean sections. 41% (268/656) of caesareans were elective. Of singleton elective caesareans, 42% (106/252) were performed prior to 39 weeks gestation. The median gestation for elective caesareans performed prior to 39 weeks was 38 + 4 weeks. Of those elective caesareans performed prior to 39 weeks gestation, only 17.9% (19/106) had a reasonable indication for early delivery. Antenatal corticosteroids were given to 19% of patients who underwent elective caesareans prior to 39 weeks gestation. 9.5% (24/252) of singleton elective caesareans resulted in admission to SCBU. Of these, 71% (17/24) were babies born at <39 weeks gestation. Of elective caesareans performed prior to 39 weeks gestation, 16% (17/106) resulted in a SCBU admission. Of elective caesareans performed at or over 39 weeks gestation, 4.8% (7/146) were admitted to SCBU. **Conclusion**

EP10.111

Analysis of obstetric ITU admissions in a London (UK) district general hospital 2007–2014 **Golob, T^{1,2}; Hameed, A^{1,2}; Ramskill, N^{1,2}; Marcus, S^{1,2}**

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Introduction There are over 1500 obstetric admissions to ITU in the UK annually. These represent the most severe cases of

common problems such as pre-eclampsia and obstetric haemorrhage, whilst also highlighting the significant burden posed by rare conditions such as amniotic fluid embolism and acute fatty liver of pregnancy. Over 1/3 of all maternal deaths in the last confidential enquiry had contact with ITU.

Method Data were collected from the hospital database and by reviewing the medical notes of all obstetric patients admitted to the ITU at the Queen Elizabeth Hospital from April 2007 to April 2014. A total of 93 cases were identified; 83 women had been recently pregnant and 10 were currently pregnant at the time of admission. Our objectives were to analyse the incidence of women requiring ITU, the indications for admission, any demographic trends and assess the morbidity and mortality of these patients.

Results Over 7 years the incidence of admissions to ITU was 0.003% of pregnancies in comparison to a national incidence of 0.0023%, the mortality of these admissions was 2.2%. This was equivalent to slightly more than one admission a month in a unit seeing approximately 380 deliveries per month. There were 2 maternal deaths in the series and 5 fetal deaths. 20 women required peripartum hysterectomy and 20 neonates required admission to the neonatal ICU. The average age was 32.5 years (range 17–43), 74% were multiparous and 26% primiparous. Approximately 48% of the admissions were black women who only make up 26% of the local population. 10 women were admitted antenatally and the remaining 83 were postpartum. The majority of antenatal admissions, 60%, were for non-obstetric problems. In contrast the majority of postpartum admissions, 86% were for obstetric causes. Of those who delivered, 72% were by caesarean sections. Most patients were admitted to ITU immediately after delivery or within 72 hours. Most women, 76%, were discharged from ITU after 48 hours and only 11% of patients required a stay of over 1 week. The most common indications for admission overall were obstetric haemorrhage 35% (33/93), pre-eclampsia 16% (15/93) and sepsis 8% (8/93).

Conclusion The overrepresentation of ethnic minority women in this study is noteworthy. Most women became critically ill rapidly and recovered equally fast with appropriate therapy. More work is needed to analyse the long term physical and psychological outcomes for these patients.

EP10.112

Can peri partum hysterectomies be predicted? Audit of hysterectomies in a London district general hospital between 2007 and 2014 **Ramskill, N; Hameed, A; Golob, T; Marcus, S**

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Introduction Peri partum hysterectomy is thankfully a rare event in modern day obstetrics. The most common cause of peri partum hysterectomy is postpartum haemorrhage due to uterine atony and morbidly adherent placenta. We looked at the data of all the hysterectomies performed between 2007 and 2014. We compared our results with the UKOSS data published in 2007.

Methods Data were collected from 2007 to 2014 from electronic maternity records and then case notes were reviewed. We selected women who had an emergency peripartum hysterectomy and were therefore admitted to ITU for recovery. We identified 20 women in our data set. We looked at age, ethnicity, parity, mode of delivery, previous obstetric history and history of detailed antenatal imaging to rule out adherent placenta.

Results 11 out of these 20 women were more than 35 years of age. The average parity was 2 (range 0–5). 4 of them were primiparous. 18 women had hysterectomy due to postpartum haemorrhage while 2 had severe sepsis. Average blood loss was 7.3 L. Of the women who had uncontrolled haemorrhage, 6 women had a morbidly adherent placenta, 3 of them were diagnosed pre-delivery and remaining 3 were diagnosed at the time of delivery. 10 women had at least one previous caesarean section delivery. Only 2 out of the 20 women were white British. 12 women were delivered by caesarean section.

Conclusion Our findings conclude that age over 35, being non white, delivering by caesarean section, multiparity, and history of previous CS are the major risk factors for having a peri-partum hysterectomy. As compared to UKOSS data 2007, our hysterectomy rate due to uterine atony was very low (50% versus 25%) which indicates that lessons have been learnt from UKOSS data to deal with uterine atony. These data can be used to counsel the women who are delivering by caesarean section to warn them about risk of peripartum hysterectomy in the index or future pregnancies.

EP10.113

Fetal outcome in critically ill women – 8 years study

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Introduction The outcome of the fetus in critically ill mothers has been briefly reported as a part of descriptive studies focusing on maternal risk factors for admission to the intensive care unit. We evaluated fetal outcomes in critically ill pregnant women admitted to the intensive care unit. Not many studies have been performed to look into fetal or neonatal outcome of these women.

Methods Retrospective cohort study of all critically ill pregnant patients admitted to intensive care units at the London District General Hospital; during the period of April 2007 to April 2014. Only pregnant women admitted to the intensive care unit in the antepartum period for obstetrical indications were included. Main predictors for fetal outcomes included: gestation, maternal co morbidities, obstetrical history, intensive care unit interventions, and intensive care unit complications. Fetal outcomes were defined as spontaneous abortions, neonatal mortality, stillbirths, admission to the neonatal intensive care unit, neonatal intensive care unit length of stay, and neonatal intensive care unit complications.

Results A total of 89 pregnant women were admitted to ITU in this time period. 3 were admitted in early pregnancy due to

ectopic pregnancy so they were excluded from study. Results showed biggest reason for these neonates to be admitted to special care baby unit was iatrogenic prematurity. Gestation ranged from 26 week to 41 + 5 day, with average gestation of 32 weeks. Their birthweight ranged from 570 to 4190 g with an average of 1250 g. 5 women had stillbirth; 21 babies were admitted to special care baby unit. 60 babies were well and did not need any assistance. 11 out of 21 babies were admitted to NICU due to iatrogenic prematurity, second biggest reason of admission was asphyxia. Length of stay of these babies ranged from 2 to 56 days with mean stay of 12 days. Two women died in ITU, both babies were born with good Apgar and cord pH.

Conclusion Critically ill pregnant women have high perinatal mortality and morbidity rate. Iatrogenic prematurity is the biggest indication of their admission to special care baby unit. It will be interesting to look into breastfeeding rate and patient experience due to separation of mother and baby for non-clinical reasons and length of time apart.

EP10.114

Close monitoring in intrahepatic cholestasis of pregnancy with positive pregnancy outcome following fetal distress in non-stress test Reinecke, I; Uppal, T

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Introduction Intrahepatic cholestasis of pregnancy (ICP) is a rare disorder characterised by onset in second or third trimester and associated with maternal morbidity and fetal morbidity and mortality. ICP causes premature infants, high rates of IOL and C-sections, mainly for fetal distress and IUFD. The aetiology remains vastly unknown, but some reports emerge about genetic and environmental aspects. Clinical presentation singles out patients that need close monitoring or active management. No clear guidelines exist how to manage or when to induce.

Case A 33-year-old primigravida at 37 weeks gestation presents to birthing unit for mild itch in palms and feet and dark urine despite of ample water intake. She attended regular antenatal visits in doctor's and midwife's clinics. As no dermatological symptom could explain the pruritus, liver function tests, fasting bile acids, coagulation studies full blood count and electrolytes were ordered and done the following day 37 + 1/40. The test results were available the following day and showed mildly deranged LFTs and a raised bile acid of 103.4 $\mu\text{mol/L}$ (range: <10), other tests unremarkable (37 + 2/40). On this occasion the mode of delivery was determined as a caesarean section for 39 + 0/40, but also fetal lung maturity course was initiated (Celestone 11.4 mg 24 hours apart) and ursodeoxycholic acid recommended. Furthermore the patient was seen daily for CTG monitoring. For three consecutive days the CTG remained reassuring, on the fourth day the mother reported reduced fetal movements and the CTG revealed a tachycardia at 170 beats/min and variability below 5 with no accelerations or decelerations. A category 1 caesarean section was performed. Section was uncomplicated with increased blood loss estimated at 600 mL. Thick meconium liquor and green stained placenta and membranes were noted. A 3.22 kg live male infant was

born with Apgar scores of 3/6/8 at 1/5/10 min. His venous/arterial cord blood gases were pH 7.29/7.21, base excess of $-1.6/ -0.9$ mmol/L, lactate 3.7/4.5 mmol. Baby and mother have done well in the postnatal period and were both discharged on postoperative day 4.

Conclusion In ICP IUFD is often hard to predict, no hard evidence is available and clinical prudence is of utmost importance.

EP10.115

Preterm caesarean section: variation in clinical practice

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Introduction There is a lack of clear evidence about optimal mode of delivery for women delivering preterm. Variation in preterm caesarean rates may reflect differences in the demographic characteristics and health status of the source population ('casemix') as well as clinical practice and hospital characteristics. Using statewide data, the aim of this study was to examine hospital preterm caesarean section rates and assess whether variation in rates is explained by casemix, labour or hospital characteristics. We also examined the association between hospital preterm caesarean rates and adverse outcomes.

Methods The study population included all women delivering a preterm singleton cephalic-presenting infant in New South Wales, Australia 2007–2011. Births were categorised according to degree of prematurity and analyses were limited to hospitals with the necessary service capability for each category: 26–31, 32–33 and 34–36 weeks. Data were obtained from linked statewide hospital discharge and birth data ($N = 20\ 346$). To investigate hospital preterm caesarean rates, a series of random effects multilevel logistic regression models were fitted, progressively adjusting for casemix, labour management and hospital factors. Hospitals were divided into tertiles based on their caesarean section rates, and severe maternal and neonatal morbidity rates were compared between tertiles.

Results At 26–31 weeks gestation, 1042 (55%) births were by caesarean section (7 hospitals, range 43.4–58.4%); at 32–33 weeks gestation, 1063 (51%) births were by caesarean section (12 hospitals, range 43.4–58.1%); and at 34–36 weeks gestation, 5897 (36%) births were by caesarean section (36 hospitals, range 17.4–48.3%). The contribution of prelabour caesareans to the overall caesarean rate in each gestational age group was 46%, 41% and 23% respectively. At 26–31 weeks, 81% of the variation between hospitals was explained, including 33% by casemix. At 32–33 weeks, 61% of the variation was explained primarily by hospital induction rates and patient financial status. At 34–36 weeks, 59% of the variation was explained mainly by casemix. caesarean section rates were not associated with severe maternal morbidity rates in any gestational age group. At 26–31 weeks medium and high caesarean rates were associated with higher severe neonatal morbidity rates, but there was no evidence of this association after 31 weeks.

Conclusion Variation between hospitals in preterm caesarean section rates was largely explained by differences in casemix and clinical practice. Although the relationship between caesarean section rates and outcomes was variable, low caesarean section rates were not associated with worse outcomes.

EP10.116

Maternal–paternal discordant decision making and its effect on vaginal birth after caesarean section **Robson, S¹; Campbell, B²; Pell, G³; Wilson, A⁴; Tyson, K³; de Costa, C⁵; Permezel, M³; Woods, C⁵**

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Introduction The proportion of women who plan for a repeat elective CS is one of the major determinants of the overall rate of caesarean birth, and programs aiming to reduce the rate of CS have not been greatly successful. To date, there appear to have been no large studies directly addressing paternal influences on decision making regarding vaginal birth after caesarean (VBAC). This study aimed to compare the reactions of fathers and mothers to the prospect of VBAC.

Methods Couples were recruited from three Australian hospitals, and were eligible with a singleton pregnancy, a normal morphology ultrasound, and where there was no condition in the new pregnancy that would preclude a vaginal birth. Questionnaires were scheduled for 20 weeks, 32–36 weeks, and 6 weeks postnatal, and were sent separately to each partner.

Results Seventy-five couples completed the full sets of questionnaires during the study period. In total 31 women (41%) ultimately attempted vaginal delivery, and 44 (59%) were delivered by planned CS. When the paternal rating of risk fell between the second and third trimesters, the couple were likely to attempt VBAC ($P < 0.05$). Where the maternal rating of importance was 3 or less, 92% had a planned caesarean section, compared to 63% for the same paternal scores ($P = 0.02$).

Discussion This study suggests that interventions that improve the paternal perceptions of risk during a pregnancy might increase the chance that a couple will attempt VBAC.

EP10.117

Mast cell distribution in term and preterm birth **Robson, S^{1,2}; Needham, K²; Fadia, M³; Dahlstrom, J³; Shadbolt, B⁴**

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Introduction In Australia the rate of preterm birth has increased from 6.8% in 1991 to 8.3% in 2011. Preterm birth is a major

cause of adverse neonatal and childhood outcomes, affecting not only survival in the short term, but longer-term quality of life for children. Preterm birth in women without risk factors (such as multiple pregnancy or cervical shortening) is commonly associated with inflammatory cytokines in both the cervicovaginal and amniotic fluid, but not necessarily peripheral blood, suggesting that inflammation at the maternal-fetal interface plays a major role. Mast cells (MCs) are plentiful in the reproductive tract, and their concentration is increased in inflammatory conditions of the cervix. It has been proposed that MCs might represent an important link between hormonal influences and local reactions that lead to the onset of labour.

Methods Samples from the placenta and membranes were obtained from a study group of women with spontaneous term and preterm births. The tissues were fixed in 10% neutral buffered formalin. Immunohistochemistry (IHC) assessment were performed using a mouse monoclonal mast cell tryptase, and known positive and negative controls for each antibody were used. The number of mast cells was counted across 10 high power fields both within the decidua and membranes for each patient, and assessment was made as to whether the mast cells showed degranulation or not. A Poisson log-linear model was used in the regressions. A probability of <0.05 was considered significant on two-sided chi-square tests.

Results Based on the generalised linear models, there were significantly more MCs in the decidua for term births than preterm births ($P = 0.03$). In the chorion there were more MCs in the preterm samples than term samples, however the association did not reach statistical significance ($P = 0.06$).

Conclusion This study found that there was a significant difference in concentration of MCs in the placenta and membranes of women with a spontaneous preterm birth compared to women labouring spontaneously at term.

EP10.118

Progesterone improves outcomes in cervical cerclage failure **Roman, A; Sheehan, P**

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Introduction Preterm birth remains one of the leading causes of perinatal morbidity and mortality. Cervical length is an important predictor of preterm birth. The primary interventions used to prevent preterm labour when cervical shortening occurs are the insertion of a cervical cerclage and more recently the use of progesterone pessaries. There are limited data available on use of these interventions together in prevention of preterm birth in the setting of a shortened cervix. This study aimed to evaluate the effect of progesterone pessaries in women with a cervical cerclage.

Methods A retrospective cohort study was performed of women attending the Preterm Labour Clinic at the Royal Women's Hospital, Melbourne between 2003 and 2011. Women with a singleton pregnancy who underwent cervical cerclage were identified. Data on the concurrent use of progesterone pessaries,

cervical lengths, interventions and birth outcomes was collected from patient notes and CLARA clinical results platform.

Results 28 women were identified as having both cervical cerclage and progesterone pessaries and 92 patients were identified who had cervical cerclage alone. The differences in shortest recorded cervical length and birth outcomes were analysed. The cervical cerclage and progesterone group were found to have statistically significantly shorter cervical lengths than the cerclage alone group (mean cervical length 13 versus 22 mm, $P = 0.0002$ Mann–Whitney). There was no difference in the gestational age at delivery (mean gestation 35 versus 35.5 weeks, $P = 0.45$) or birthweight (2577 ± 207 versus 2685 ± 110 g, $P = 0.61$). Cervical length and gestational age at delivery were strongly correlated in both groups. There were no differences in maternal age or smoking between the groups.

Conclusion Despite significantly shorter cervical lengths, women who were treated with both cervical cerclage and progesterone pessaries delivered at similar gestations as those who had cerclage alone. This suggests that women with cervical cerclage failure, as diagnosed by continued cervical shortening despite the presence of a stitch, may benefit from the addition of progesterone pessaries. Further research in this area is required to characterise the potential benefits of the concurrent use of progesterone and cervical cerclage in prevention of preterm birth.

EP10.119

Is there a role for universal umbilical cord gas analysis in a regional hospital?

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Introduction There is growing evidence to support the practice of universal umbilical cord blood sampling in all deliveries as Apgar score is inaccurate in predicting neonatal outcome. Though severe metabolic acidemia is 2.5% of deliveries however 15% of them could suffer moderate acidemia. This does not translate to the number of HIE related to intrapartum events. We wished to investigate whether the routine analysis cord blood samples following normal vaginal delivery would be useful tool to predict outcome of newborn in a regional hospital.

Method All women who had normal vaginal delivery at the obstetric unit of Hervey Bay Hospital, Queensland between November 2012 and September 2013 had been analysed. The unit had a policy of universal cord blood sampling at birth irrespective of mode of delivery. All those women who had delivered at term, and who had both arterial and venous blood samples as well blood lactate level were included. Those who had preterm delivery and incomplete blood samples were excluded.

Results Total of 228 mothers who had normal vaginal delivery were included in the analysis. 54 of them had antenatal or intrapartum complication and 174 were uncomplicated. Average cord arterial pH was.. Venous .. and Lactate levels were. 45 mothers in the high risk group and 27 from the low risk group had low pH. 33 of the high risk mothers and 36 of the low risk mothers had elevated cord lactate levels. First, fifth and tenth

minute Apgar were low 30, 6, 6 mothers respectively. Low 1 min Apgar and low pH was observed in 24 women both high risk and low risk group sharing equal numbers, However the low 10 min Apgar and low pH were observed in 3 high risk and equal amount in the low risk group. Low 1 min Apgar and high lactate were observed in 18 women and 12 of them were high risk women. Low 10 min Apgar and high lactate were observed in 5 high risk and 4 low risk women. Among the group 8 of the high risk and 5 of low risk babies needed respiratory support after delivery. 3 of them had HIE.

Conclusion There were significant numbers of women who had low cord pH as well as high lactate level following normal delivery in a regional hospital. Though the numbers are very small larger multicentre study should be able to provide evidence to support this theory.

EP10.120

Conservative surgical (myometrial resection) management versus caesarean hysterectomy for patients with placenta accreta

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Introduction The aim was to compare the impact of conservative and caesarean hysterectomy for placenta percreta on maternal morbidity and mortality.

Methods We retrospectively reviewed the medical records of all patients diagnosed with placenta percreta admitted to our tertiary centre from December 2011 to 6 June 2014 at Isra University Hospital Hyderabad Sindh, Pakistan. Patients were divided into two groups. A (caesarean hysterectomy) and B (conservative surgery, myometrial resection), were compared. The following outcomes were compared: need for blood transfusion, intraoperative and postoperative haemorrhage, urinary tract injuries, intensive care admission, duration of stay in intensive care, and maternal death.

Results Total obstetric admissions during the study period were 1712. Out of these, 24 (1.40%) cases were of placenta praevia. 17 (9.92/1000 deliveries) cases of placenta percreta were observed. Out of 17 patients, 6 patients had caesarean hysterectomy while 11 patients had myometrial resection and conservation of uterus. Mean number of blood transfusion in group A was 3200 mL while in group B was 1515 mL ($P < 0.01$). There was 1 case of intraperitoneal haemorrhage, 1 case of urinary tract injury, 1 case of maternal death in group A while none in group B. All patients with placenta percreta required ICU admission, however, in group A, the duration was 5 ± 1.2 versus 3 ± 1 days in group B.

Conclusion Conservative surgical technique of myometrial resection for placenta percreta is comparatively a safer procedure with less morbidity and mortality in comparison to caesarean hysterectomy.

EP10.121

Findings from case review of neonatal encephalopathy (NE) associated with perinatal asphyxia**Sadler, L^{1,2}; Battin, M²; on behalf of the Neonatal Encephalopathy Working Group of the Perinatal and Maternal Mortality Review Committee (PMMRC) NZ**¹University of Auckland, Auckland, New Zealand; ²Auckland District Health Board, Auckland, New Zealand

Introduction The Neonatal Encephalopathy (NE) Working Group, under the auspices of the NZ Perinatal and Maternal Mortality Review Committee (PMMRC), has sought to ascertain all cases of Sarnat stage moderate and severe NE in NZ since 2010. In 2010–2011, 83 (56%) of cases occurred after labour onset and in the absence of a recognised acute event. Review of these cases was undertaken to identify potential areas for quality improvement in maternity care, largely focused on reducing the incidence and severity of NE.

Methods Cases for review were identified from the national NE surveillance database. The case definition was babies born after a period of labour without an identified acute event and who had abnormal (or no) cord blood gas results at birth and an Apgar score at 1 min of <8 (if known), and who were diagnosed with moderate or severe Sarnat stage NE in 2010–2011. The multidisciplinary team included obstetricians, midwives, paediatricians, and neonatal nurse practitioners. Included in the review was an assessment of contributory factors under the headings: organisation and/or management; personnel; and barriers to access and/or engagement with care; plus an assessment as to whether the occurrence and/or NE severity were potentially avoidable. At the end of all reviews, the findings were collated and the reviewers tasked with identifying issues to guide improvement and making recommendations.

Results Eighty three cases were reviewed and 46 (55%) were identified as potentially avoidable with the most common category of contributory factor being personnel (52% of cases). In 36 of the 46 potentially avoidable cases the contributory factor related to fetal monitoring in labour, most often recognition of abnormalities and following of best practice with regard to escalation of care. These cases involved both midwifery and medical caregivers. Other contributory factors in potentially avoidable cases related to up to 8% of cases each and included risk assessment and appropriate place of birth, consultation or transfer of care and/or responsibility, and resuscitation and assessment of the newborn.

Conclusion This study is notable as it includes an in depth multidisciplinary review of an important subgroup of cases derived from a national dataset. Eight key recommendations were made based on review findings, including a mixture of educational and quality initiatives. Furthermore the interdisciplinary relationships, that are an important part of the review, will be leveraged to progress these recommendations.

EP10.122

The use of the fetal pillow to deliver the fetal head at caesarean section at full dilatation**Safa, H¹; Beckmann, M^{1,2,3}; Wight, K¹**¹Mater Health Services, University of Queensland, Brisbane, Qld, Australia; ²Mater Research Institute, University of Queensland, Brisbane, Qld, Australia; ³School of Medicine, University of Queensland, Brisbane, Qld, Australia

Introduction A deeply engaged fetal head that is difficult to deliver complicates 1–2% of caesarean deliveries, and may be associated with adverse maternal and neonatal outcomes. Methods to help dis-impact the fetal head include the hand-push method, reverse breech extraction and more recently the fetal pillow (FP). FP is a disposable balloon device inserted vaginally and deployed prophylactically before the uterine incision is made during a caesarean section in advanced labour before the uterine incision is made. We report the initial Australian experience with the use of the FP to assist with safe delivery of the fetal head at the time of caesarean section.

Methods A retrospective cohort study was undertaken of all women who delivered via caesarean section at full dilatation at term, at Mater Mothers' Hospitals, Brisbane between May 2013 and June 2014. Data were extracted using the electronic maternity record system. Multiple pregnancies, cases of fetal death in-utero and major fetal congenital anomalies were excluded. Cases where the FP method and hand-push method were used were identified, and maternal and neonatal outcomes were compared between these 2 groups. Categorical data were analysed using chi-squared or Fisher exact test and continuous variables analysed using a Student *t*-test.

Results Of 265 caesarean sections performed at full dilatation, FP method was used in 35 cases and 'hand-push' method was used in 29 cases. Compared to those delivered using the hand-push method, women in whom the FP method was used had a shorter postpartum length-of stay (98 versus 78 hours; $P = 0.002$) and a higher cord arterial pH (7.24 versus 7.19; $P = 0.019$). There were no differences in the rates of neonatal nursery admission, need for complex neonatal resuscitation, extensions of uterine incisions, maternal blood loss or blood transfusion.

Conclusion These findings confirm overseas experience with the use of the FP, and demonstrate the FP to be a safe and effective aid in the delivery of the deeply impacted fetal head at caesarean section. Given the rarity of some outcomes, larger studies are needed to further define the clinical and cost-effectiveness of the FP.

EP10.123

Rationale for blood transfusion in obstetrics**Sajjad, N¹; Fakokunde, A¹; Bachmann, T²; Brooke-Williams, F²; Orrell, H²**¹North Middlesex University Hospital, London, United Kingdom; ²University College London, London, United Kingdom

Introduction Following the improvement in maternal mortality rates, now it is time to reduce morbidity in obstetrics. Current

practice to manage massive obstetrics haemorrhage is to transfuse large volumes of red blood cell prior to transfusion of blood products (4:2). Transfusion of clotting factors is driven by the coagulation screen results. Data from trauma patients show that plasma transfusion at 1:1 to red blood cells is associated increased survival of the patients especially within the first 24 hours of the injury.

Method We collected data from the blood bank of all the cases where blood was cross matched and transfused during 1 June 2013 to 5 January 2014. Total cases identified ($n = 144$) and retrieved and reviewed ($n = 112$). The data separated into two groups: A <1500 mL and group B >1500 mL.

Results Group A the number of deliveries with blood loss <1500 mL ($n = 84$). Average blood lost 729 mL. Baseline haemoglobin 10.8 g/dL and before blood transfusion 7.8 g/dL. Haemoglobin after blood transfusion 9.1 g/dL. Ratio of blood and blood products transfused not applicable as mainly red blood cells transfused. Primigravida were identified as the at risk group for blood transfusion. Due to active management of third stage of labour the multigravida are at lower risk of postpartum haemorrhage and blood transfusion. Group B the number of deliveries with blood loss >1500 mL ($n = 28$). Average blood loss 1947 mL. Baseline haemoglobin 11.2 g/dL and before blood transfusion 6.9 g/dL. Haemoglobin after blood transfusion 9.5 g/dL. Ratio of blood and blood products transfused 4:3.

Conclusion PPH <1500 mL should not require blood transfusion due to the haemodynamic changes in pregnancy. Improving the antenatal haemoglobin will reduce the risk of blood transfusion. PPH >1500 mL we noted that there was a large amount of red blood cells transfused before transfusing the blood products. This increasing the risk of disseminated intravascular coagulation and maternal morbidity. Hence if we start the transfusion of the blood and blood products earlier with a ratio of 1:1, this could lead to reduction in disseminated intravascular coagulation and reduce intensive care admission.

EP10.124

Acute puerperal inversion of the uterus: a comprehensive literature review

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Introduction Acute puerperal inversion of the uterus is a rare, serious, life threatening and often unexpected obstetric complication. This condition can result in profuse bleeding and profound shock which requires prompt diagnosis and treatment.

Methods An extensive PubMed database search was conducted on 25 July 2014 for studies describing the aetiology, pathogenesis, complications, treatment and prognosis of acute puerperal uterine inversion.

Results Pathogenesis: Two conditions are necessary for uterine inversion: cervical dilation and uterine wall inertia. Aetiology: Spontaneous inversion has been reported to occur following fundal implantation of the placenta, abnormal placental implantation, congenital predisposition, uterine anomalies,

previous uterine inversion, umbilical cord abnormalities, previous CS, fundal fibroid and precipitate delivery. Inversion has also been described secondary to the mismanagement of the third stage including cord traction while the uterus is lax, Creclé's method, magnesium sulphate, inexperience of personnel and after manual removal of the placenta. Complications: Include mortality (15–40%), shock, bleeding, puerperal sepsis, anuria, Sheehan's syndrome, pulmonary embolism and intestinal strangulation.

Treatment and reposition: Involves resuscitation to be carried out simultaneously with uterine reposition. If recognition of the condition is immediate, the majority of the patients can undergo manual reposition without any uterine relaxant before the formation of contraction ring as this occurs within 30 min. If contraction ring has already formed, general anaesthesia and tocolytic drug are useful adjuncts to repositioning; terbutaline in the absence of hypotension and magnesium sulphate in the presence of hypotension. The best tocolytic is intravenous Nitroglycerin, 50–100 µg IV injection which is a powerful uterine relaxant. Following replacement, tocolytic agents should be stopped and uterotonic drugs should be administered immediately. **Hydrostatic replacement:** Using warm saline, this method is easily applied in cases of partial inversion but it is difficult to get watertight occlusion when the inversion is complete. **Surgical intervention:** Using the silicon cup of the vacuum extractor (ventouse) applied on the uterine fundus after laparotomy. **Prognosis:** The shorter the interval between inversion and replacement, the better the prognosis with the placenta attached at the time of inversion having a protective effect against bleeding and infection. **Prevention:** Counter cord traction should be applied only when the uterus is firmly contracted.

Conclusion Careful management of the third stage of labour and a high index of suspicion should be maintained for the possibility of uterine inversion in all cases of postpartum haemorrhage or shock. With early recognition and prompt therapy mortality can be avoided.

EP10.125

A case of acute uterine inversion of the uterus treated by hydrostatic replacement

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Introduction Acute puerperal inversion of the uterus is a rare, serious, life threatening and often unexpected obstetric complication. This condition can result in profuse bleeding and profound shock which requires prompt diagnosis and treatment.

Case This is a 24-year-old primy gravida at 40 weeks in spontaneous labour. She delivered a male baby weighting 2.9 kg. At the time of delivery of the anterior shoulder 1 mL of Syntometrine was given intramuscularly. The placenta was delivered completely by controlled cord traction with some difficulty. During preparation for repair of the episiotomy, severe bleeding was noticed. On palpation of the abdomen to see if the uterus was contracting well, nothing could be felt. On vaginal examination, a rounded firm mass was felt. The diagnosis of acute

uterine inversion of second degree was made. At that time, the patient was shocked; pulse 149/min and blood pressure 60/40 mmHg. Five hundred milliliters Ringer solution and 250 mL fresh frozen plasma and 2 units of packed RBCs were given. The patient was then put in Lithotomy position in the theater and general anaesthesia was induced and Halothan given to relax the uterus. Manual replacement of the uterus was attempted but failed. Four liters of warm saline were gradually instilled into the vagina by means of douche can and tubing held one meter above the level of the vagina. The assistant was closing the vulva and vagina with a closed fist. The fluid pressure reversed the inversion, and resulted in the uterus being distended. The fluid was then drained slowly and 10 units of Syntocenon were given IV and the hand remained in the uterus until the fluid had escaped and the uterus was contracting well. Five hundred milliliters of 5% dextrose and 30 units Syntocenon infusion was established. Immediately after replacement the patient's condition generally improved. Then the episiotomy was repaired, pulse: 96/min BP 90/60 mmHg; estimated blood loss was 500 mL. The rest of the puerperium was uncomplicated. Hemoglobin was 11 g/dL on the third day. Patient was discharged home on the fourth day. Her general condition was satisfactory. BP 110/70 mmHg. She was seen 6 weeks late, the uterus was well involuted and a well healed episiotomy.

Conclusion Careful management of the third stage of labour and a high index of suspicion should be maintained for the possibility of uterine inversion in all cases of postpartum haemorrhage or shock. Hydrostatic replacement is an effective and safe method for treating this condition.

EP10.126

Intravenous pethidine should not be used as an analgesic in labour: results of a prospective single dose study

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Introduction Although intramuscularly administered pethidine is the standard obstetric analgesic throughout the world, intravenous administration of this medication is common practice in order to achieve a rapid analgesic effect. The aim of this study was to measure the serum concentration of pethidine in the mother and newborn following the administration of intravenous pethidine and to correlate drug concentration with labour progress and fetal wellbeing.

Methods This was an open, prospective, single dose (50 mg intravenous pethidine) study conducted amongst healthy pregnant women booked for labour at Al-Bashir Hospital (Amman, Jordan) in June 2012. A total of 14 women were included. Pethidine concentration was measured in the mother at 0 and 120 min following administration and in the newborn shortly following

delivery utilising a developed and validation of liquid chromatography tandem spectrometry analysis method which was found to be reproducible with R^2 value of 0.999.

Results The median age of study participants was 24 years (16–36). In two women (14.3%), serum pethidine concentration was very high (42 018 and 413 ng/mL); fetal bradycardia rapidly ensured with both women transferred for urgent CS delivery. In the remaining patients, the mean and median maternal concentration of pethidine at 120 min was 196.1 and 196.0 ng/mL respectively. Comparing our results to previously reported pethidine pharmacokinetics ($T_{1/2\beta}$ is 157 min and the maximum concentration is reached within 30 min), 2 of the included women have demonstrated a varying pharmacokinetic profile than the 'normal' intravenous profile. The median Apgar score for newborns following normal delivery was 8 (7–9); none required resuscitation or administration of Nalaxone to reverse pethidine action. Nonetheless, newborn mean pethidine concentration was found to strongly correlate with Apgar score (161.5 ng/mL; Apgar score 7, 146.3 ng/mL; Apgar score 8, 119 ng/mL; Apgar score 9); $P = 0.02$. No relationship was found between mother and newborn pethidine concentration and mother age and weight, newborn sex and weight and time from administration to delivery.

Conclusion According to our knowledge, this is the first study to address the pharmacokinetics of intravenously administered pethidine in the mother and newborn. Two patients had very high serum pethidine concentration with subsequent fetal bradycardia necessitating urgent CS-delivery. As such, we believe that intravenous pethidine should not be used as an analgesic during labour; the intramuscular route should remain the standard route of administration for this medication. Further studies are required to highlight possible similar correlations between pethidine concentration and labour progress and fetal wellbeing following the intramuscular administration of pethidine.

EP10.127

Placenta accreta and percreta: a challenge well accomplished

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Introduction In UK during 2006–2008 there were 9 maternal deaths from obstetric haemorrhage leading to overall mortality of about 0.39 per 100 000 maternities. The rate has reduced from last triennium which were 14 deaths, 0.66/100 000 maternities. Consequently this triennium the obstetric haemorrhage is reduced to being sixth leading cause of maternal deaths, the lowest since 1985. In our experience of 15 cases of placenta accreta and percreta in 2 teaching hospitals we observed that multidisciplinary approach and adapting the guidelines resulted in no maternal deaths and reduced morbidity significantly in successive cases.

Case series In these 15 cases of major placenta accreta 13 were booked and 2 came as emergency diagnosed preoperatively. The booked patients were informed about admitting diagnosis monitoring and haemoglobin level of 12 g was achieved by iron

infusion or transfusion depending on urgency. The anaesthetist, haematologist, cellsaver section and urologist were informed about admissions of such patients and day of operation. The urologist also reviewed the scan and MRI regarding the bladder involvement in major categories. The patient and family were briefed about possibility of hysterectomy, bladder injury need for prolonged catheterisation for 10 days, blood and blood products transfusion and admission to ICU. In successive cases the gynaecologist, urologist and anaesthetist were more confident and surgery time and morbidity reduced markedly. The first case took 6 hours and blood loss about 5.5 L and last one took 1.5 hours and blood loss was 2.5 L. This improvement was because of preplanning of surgical steps and more efficient people involved in surgery. The urologist were also managing stenting of ureters preoperatively smoothly as well as injuries to bladder and securing homeostasis easily. The ICU were also following the MEOWS signs. The duration of stay was also reduced from 8 to 4 days in patient with no bladder injuries. The patient and family were well satisfied.

Conclusion Haemorrhage is a life threatening condition and is catastrophic for women. In series of 15 cases we found that multidisciplinary approach and briefing about the patients before time insinuated the confidence, so that mentally they were ready and gave their best which helped in reducing the morbidity and avoiding the mortality. I felt that that awareness among patients, staff with drills and communications had made a change which made the work smooth with good results. The absence of deaths in relation to elective c-sections for placenta praevia endorses the previous recommendations of senior staff with experience involved in these deliveries.

EP10.128

Identification of patient at high risk for pre-eclampsia with the use of uterine color Doppler and placental growth factor **Satmah, S**

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Introduction Pre-eclampsia has been proposed to be an anti-angiogenic state that may be detected by the determination of the concentrations of the placental growth factor (PIGF) in maternal blood which decrease before the clinical development of the disease. The purpose of this study was to determine the role of uterine artery Doppler velocimetry (UtA DV) and maternal plasma PIGF concentrations in the second trimester for the identification of patients at risk for pre-eclampsia.

Methods A prospective cohort study was conducted between July 2011 and December 2013 to pregnant women between (20 and 24) weeks visited University Hospital of Obstetrics and Gynaecology, Patients with chronic hypertension, multiple pregnancies, fetal anomalies, chronic renal or cardiac disease were excluded. Plasma samples were obtained at the time of ultrasound examination. Abnormal UtA DV was defined as the presence of bilateral uterine artery notches and/or a mean pulsatility index above the 95th percentile for the gestational age, PIGF was

analysed using Elisa and considered abnormal when PIGF < 100 pg/mL. The primary outcome was the diagnosis of pre-eclampsia, its severity and onset. The statistical packages used were SPSS ver19, we used square or Fisher's exact test, Receiver operating characteristic (ROC) curves, Logistic regression analysis, A probability value of <0.05 was considered significant.

Results This study included 954 patients, UtA DV was performed to all of them, plasma PIGF concentrations were determined in 241 (134 patients were lost to follow-up evaluations), so the study included 820 patients. An abnormal UtA DV was present in 16.7% (137) of the study population, abnormal PIGF in 36.9% (89), both of them abnormal in 6.2% (15). The prevalence of pre-eclampsia was 10.6% (87), severe pre-eclampsia 31% (27), and early onset pre-eclampsia 46% (40). An abnormal UtA DV with, the maternal plasma PIGF concentration contributed to the identification of patients destined to have pre-eclampsia, when combined abnormal UtA DV and maternal plasma PIGF the sensitivity was 44% but the specificity improved 89% and the positive predictive value 73.3%, and positive likelihood ratio 23.7. The odds ratio of abnormal Doppler in the identification of pre-eclampsia was OR = 9.2, 95% CI (5.5–15.1), $P = 0.000$. The odds ratio of PIGF <100 pg/mL in the identification of the pre-eclampsia was OR = 7, 95% CI (2.3–20.8), $P = 0.001$. ROC curves were analysed and areas under the curve (AUC) was 0.724, 59% CI (0.660–0.789), $P = 0.00$, for uterine artery mPI, and AUC was 0.719, 95% CI (0.619–0.819), $P = 0.000$ for PIGF.

Conclusion The results of this study indicate that an abnormal UtA DV and a maternal plasma PIGF concentration of <100 pg/mL, between 20 and 24 weeks of gestation, identifies patients at a very high risk for pre-eclampsia.

EP10.129

Prospective comparative study comparing episiotomy suture angles with Braun–Stadler episiotomy scissors and EPISCISSORS-60 **Kumar, D; Sawant, G**

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Introduction Episiotomy angle is a crucial factor in causation of Obstetric anal sphincter injuries (OASIs). A 25° post-delivery episiotomy suture angle has a 10% risk of OASI while 45° episiotomy is associated with 0.5% risk. A 60° episiotomy incision results in 43–50° suture angles. Asian women are believed to be at higher risk for OASIs due to short perineal body length (PL), and the episiotomy apex needs to be angled further away from the midline to reduce OASI risk. We aimed to compare episiotomy suture angles with commonly used Braun–Stadler (BS) episiotomy scissors with the new fixed angled EPISCISSORS-60 (E60).

Methods Ethical approval was obtained. Obstetricians from one unit used E60, while others continued using BS. 2-tailed *t*-tests were used to compare the 2 groups. Sutured episiotomy angles and post-delivery linear distance from caudal end of the sutured episiotomy to the anus were measured. Protractors and rulers were used to measure angles and distances.

Results Twenty women had episiotomies with E60 and 21 with BS scissors. Mean age (E60 = 25.3, BS = 24.2 years), and operative vaginal deliveries (OVD) in both groups were similar (2 each). Mean post-delivery suture angles (degrees) were statistically different (E60 = 39; 95% CI \pm 4.9, IQR 35–45 versus BS = 27; 95% CI \pm 3.8, IQR 25–30, $P = 0.0002$); as was the post-delivery linear distance from caudal end of the sutured episiotomy to the anus (mm) (E60 = 33; 95% CI \pm 4.6, IQR = 30–39 versus BS = 17.6; 95% CI \pm 3.6, IQR = 13–20, $P < 0.0001$). There were no OASIs cases in the E60 group versus 1 in the BS group.

Conclusion This original study showed a significant difference of 12° in sutured episiotomy angles achieved between the fixed angle EPISCISSORS-60© (39°) and BS episiotomy scissors (27°). The EPISCISSORS-60 sutured episiotomies are much further away from the midline in angular and distance measures, hence at lower OASI risk.

EP10.130

Maternal physical morbidity associated with denial of pregnancy

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Introduction Denial of pregnancy, an inappropriate reaction where the woman does not consciously recognise her pregnancy, necessarily results in the woman receiving little or no antenatal care. This has been widely shown to be associated with poor outcomes for the woman's mental health, the events of labour and the newborn's health. The psychosocial aspects contributing to denial of pregnancy have also been thoroughly investigated in the literature. However, reports of maternal physical complications are rare. The impetus for this study was a woman with denial of pregnancy who was brought to hospital by ambulance, after what was later determined to be an eclamptic seizure. The aim of this study, therefore, was to evaluate the physical morbidity associated with denial of pregnancy.

Methods Birth records from 2007 to 2013 at a level four hospital in New South Wales were searched for women who did not receive any antenatal care. The medical records of women with denial of pregnancy were then examined in detail. The primary outcome measure was physical morbidity directly resulting from pregnancy, in women with denial of pregnancy. The hospital's general obstetric population was used as a comparator. Maternal sociodemographic characteristics and fetal morbidity and mortality were also examined.

Results Six cases of denial of pregnancy (involving five women) were identified, a rate of 1:1420 births. All characteristics and complications were in keeping with previous studies, except regarding maternal physical morbidity. Three of the five women experienced pre-eclampsia. More concerning, one of these women experienced severe pre-eclampsia and another eclampsia, both requiring admission to the Intensive Care Unit. These rates of pre-eclampsia, eclampsia and ICU admission were significantly higher than in the hospital's wider obstetric population (all $P < 0.001$).

Conclusion Although this study was small, the increased rates of pre-eclampsia, eclampsia and ICU admission among women with denial of pregnancy were significant. It appears likely that previous reports of low maternal physical morbidity associated with denial of pregnancy are a reflection of low rates of diagnosis, rather than an accurate indicator of this population. This is in keeping with broader studies on women with no antenatal care. Given the serious physical morbidity experienced by these women and that pre-eclampsia may have serious implications for the woman's future pregnancies and general health, further investigation on this subject is warranted.

EP10.131

Elevating fetal head prior to performing a caesarean section at full dilation using fetal pillow: a prospective randomised trial

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Introduction Caesarean section at full dilation (CSFD) is often a technically demanding procedure and has a consistent association with intraoperative trauma (laceration injuries to uterus, cervix and vagina) leading to increased blood loss and need for transfusion, admission to intensive care unit, increased operation time and hospital stay. This is often accompanied by increased neonatal morbidity. Use of fetal pillow (FP) to elevate the fetal head prior to a CSFD has been reported by us recently in a case controlled study.

Methods A prospective randomised trial conducted in a teaching hospital in West of India during a 14-month period. Patients requiring a CSFD were randomised either to delivery using a FP ($n = 119$) or delivery without FP use ($n = 121$). Ethical approval was obtained prior to performing the study. All patients gave an informed consent to take part in the study. The primary end point was uterine incision extensions, secondary endpoints were intraoperative blood loss, need for blood transfusion, incision to delivery and total operating time, length of hospital stay and fetal morbidity like trauma, Apgar scores and admission to the neonatal intensive care unit (NICU).

Results Both groups were similar as regarding gestation, parity, age, length of labour, indication for CS and fetal weight. Patients in the FP arm had significantly lower uterine extensions than no FP arm (0.001) along with a lower incidence of blood loss more than 1 L (<0.001) and need for blood transfusion (0.007), patients in the fetal pillow arm also had a shorter total operating time (<0.001) and incision to delivery interval (<0.001). Apgar scores <3 at 5 min and admission to NICU was significantly lower in the fetal pillow arm. There was trend towards increased fetal injury in the control arm but this did not reach statistical significance.

Conclusion FP use to elevate the fetal head before performing a caesarean section at full dilation in this prospective randomised study shows improvements in maternal and fetal outcomes in our setting.

EP10.132

A 5-year review of conservative management of placenta accreta in a university hospital in Hong Kong

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Introduction The incidence of placenta accreta has increased with the rate of caesarean section over the last 50 years. Conservative management by leaving the placenta in-situ is becoming more popular to conserve fertility and possibly reduce immediate intraoperative blood loss.

Methods A retrospective chart review was performed on patients with placenta accreta from July 2009 to June 2014. Patients were identified from the operative record listing from the Hospital Authority Clinical Management System and the case list in the labour ward record. Management and outcome of patients with confirmed placenta accreta having placenta left in-situ were analysed.

Results Thirty patients were identified with placenta left in-situ, which ranged from 2 cm to whole placenta. Median intraoperative blood loss for primary surgery was 3450 mL (range 500–20 000 mL). Ten of 30 patients (33.3%) had immediate hysterectomy performed, while five (16.7%) had delayed hysterectomy performed, two performed on the same day and three on day 54, 3 and 10 months respectively postoperatively. Embolisation was done in 13 of 30 patients (43%). Of the 18 patients without hysterectomy done on the same day, ultrasound scan was arranged postoperatively to monitor the regression of placental tissue. Initial ultrasound scan was performed on day 18 to day 42 postoperatively. Median time of resolution of placenta is 5 months (range: 1–19 months). Prophylactic broad-spectrum antibiotics were given to all patients.

Conclusion Our reported primary hysterectomy rate and delayed hysterectomy rate after conservative management of placenta accreta by leaving placenta in-situ was 33.3% and 16.7% respectively, which is similar to the reported literature (ranging 10.8–40%). This review provides more information for counselling on the postoperative course and success rate of conservative management of placenta accreta.

EP10.133

A case of previous six caesarean sections with placenta praevia/percreta with history of ruptured uterus twice

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Introduction This case report is aimed at re-emphasising the importance of early multidisciplinary management as a predictor of good outcome for the patient with minimal morbidity. Also, it proves that good clinical acumen is most important in reducing morbidity of placenta praevia/accrete where MRI and interventional radiology facilities are still not easily available to obstetrics department.

Case The following case report describes the rare occurrence of pregnancy in a woman with previous six caesarean sections, who had twice ruptured her uterus with repair done for same. She also underwent laparotomy for ectopic pregnancy in the third pregnancy. She wanted to conserve her uterus and despite all advice to avoid pregnancies, she came to us in her last pregnancy, when she had her seventh caesarean hysterectomy with us. She was a known case of placenta praevia, that was suspected to be accrete in antenatal period and confirmed to be percreta during surgery. This patient refused hospital stays after all seniors were involved in advising her and underwent her seventh caesarean delivery at 30 weeks with us and was actively managed by a team of 5 surgeons involving two consultant gynaecologists and two urologists. She was found to have a placenta percreta invading bladder wall. She had postpartum haemorrhage which could not be managed medically and hysterectomy had to be resorted to. To dissect the adherent bladder was challenging which ended in bladder injury and repair. Internal iliac artery ligation had to be done to reduce blood loss for completing the hysterectomy. Patient received 10 units of blood, 6 units of cryo-precipitate and 10 units of fresh frozen plasma during surgery. She was then shifted to ICU and later had good recovery thereafter. Her urinary catheter was kept in till day 11 when it was removed and she passed urine with no problems and went home happily.

Conclusion It is interesting to note that in UAE where large families are a norm, even ruptured uterus and its repair does not in many cases limit the number of pregnancies. It is a very challenging practice as MRI is still not an accepted necessary investigation for suspicion of accreta, so most of anterior placenta praevia with previous caesarean sections are treated as potential accretas till definitive diagnosis at surgery.

EP10.134

How well are we documenting instrumental vaginal deliveries?

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Introduction Instrumental vaginal deliveries (IVD) account for approximately 11% of deliveries in Australia. A standardised form becomes an invaluable tool to provide clinicians with a systematic approach to accurately chart IVD, which may be difficult in a high stress setting. In order to identify and overcome inadequacies in documentation for IVD, we aim to collect data on the completeness and accuracy of the documentation. Additionally, we aim to improve the quality of documentation by the introduction of a new pro forma to be utilised as a training tool and aid in potential auditing processes.

Methods The project was divided in two phases – a primary review of 50 cases evaluating the completeness of documentation, followed by a secondary review of 100 cases after the introduction of a new standardised form. Statistical analysis was performed

comparing the rate of documentation in the primary and secondary reviews.

Results There was significant improvement in documentation rates in the secondary review compared to the primary noted for moulding sutures, total time of application, liquor, abdominal palpation, time of delivery with statistically significant results across all parameters ($P < 0.001$). The greatest difference in documentation rate was in pelvic examination, which increased by 83% ($P < 0.001$). The documentation rate of a number of parameters including indication, position/presentation and station were adequate and not affected by the introduction of the form. An electronic survey was conducted to evaluate clinicians' opinion on the new standardised form in our department. 94.96% of clinicians believed the form to be beneficial in terms of completeness. 81.82% indicated that the form reduced the amount of time required for documentation, with 85.72% stating that the time taken was < 3 min. 77.27% of clinicians replied that the standardised form was easier to use compared to free-hand documentation of the procedure and that it was in keeping with their clinical practice.

Conclusion RCOG recommends a standardised form to aid accurate record of IVD and adds an example pro forma of which there is no published audit. The RANCOG statement on IVD does not specify any form of recommended charting. Analysis of our data show that using a standardised form, to record instrumental vaginal deliveries, increases the rate of documentation across parameters that demonstrate examination, procedural and outcome details. This can be beneficial as an educational tool, source of audit and reduction in vulnerability to litigation due to poor documentation.

EP10.135

Driving a car after surgery – a survey of Australian midwives and Australian and New Zealand obstetricians' knowledge, advice and attitudes about women driving post caesarean section and gynaecological abdominal surgery

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Introduction Women are given variable information about when to resume driving a car after a caesarean section (CS). Specific timing and counselling may be influenced by training and/or expertise of care provider, differences in knowledge and expertise or type of abdominal surgery performed. We aimed to assess knowledge, attitudes and advice provided by clinicians about driving after abdominal surgery.

Methods In November 2013, accredited trainees and Fellows of the Royal Australian and New Zealand College of Obstetricians

and Gynaecologists (RANZCOG), and midwives registered with the Australian College of Midwives were invited, by email, to participate in an anonymous online survey. Respondents were surveyed about whether they routinely recommended driving after CS or hysterectomy, the timing and reasons for their advice and evidence that informed their recommendations.

Results Overall, 977 (16.3%) clinicians responded to the survey: 555 (35.8%) midwives, 92 (9.4%) RANZCOG trainees and 330 (33.8%) RANZCOG Fellows. Although 95% of respondents provided advice about driving after surgery, only 14% indicated their advice was based on guidelines or recommendations. Over one-third (38%) believed that insurance companies specified a time women could not drive after a CS. Almost three-quarters (71%) of respondents, always/usually gave women a specific time not to drive after CS. After an uncomplicated CS, 20% said they would advise a well woman that she could drive < 4 weeks post-surgery, 18% advised to wait 4 weeks, 35% to wait 5–6 weeks; while 27% did not give a specific time. Trainees (42%) and midwives (48%) were more likely to advise waiting until 6 weeks, compared to Fellows (28%) ($P < 0.0001$). Similarly, Fellows were more likely to advise women to drive earlier after hysterectomy: 35% recommending < 4 weeks compared to 9% of trainees ($P < 0.001$). One in five (19%) clinicians were worried about repercussions to themselves if the woman had an accident. Given the uncertainty related to advice regarding driving after CS, two-thirds of respondents thought further research should be undertaken about testing a woman's capacity to drive after surgery.

Conclusion Clinicians frequently gave advice about resuming driving after surgery. Many clinicians advised women not to drive for significant periods of time and many recommended women should contact their insurance companies prior to recommencing driving. However, few clinicians based their advice on evidence-based guidelines or recommendations. Further education and research is required to inform both clinicians and women of the optimal and safest time to resume driving after CS or abdominal surgery.

EP10.136

Stillbirth: raising awareness, why aren't we routinely discussing it with women?

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Introduction 5.2/1000 pregnancies after 24 weeks in England and Wales will end in a stillbirth (SB), even with advancements in maternity care this rate remains unchanged since the 1990s. Norway and the Netherlands have significantly reduced their SB rate by raising professional and public awareness of SB. Why then is an individualised SB risk reduction strategy not an essential part of all women's antenatal care? The aim of this study was to explore the knowledge and views of midwives about SB, at a 5000 delivery obstetric unit [1000 at community based midwifery led units and 4000 at the Royal United Hospital (RUH)].

Methods A web-based survey was emailed to all hospital and community-based midwives, working in the RUH, Bath.

Results 66 midwives responded. While, SB was recognised as a risk if antenatal smoking (100%) or raised maternal BMI >30 (96%), midwives routinely reported not discussing SB (15%), only mentioning SB (24%), highlighting risk factors (RF) non-specifically (41%), discussing modifiable RF (79%) and discussing non-modifiable RF (35%). SB was discussed if women asked (95%), RF were present (61%), smoking (77%), raised BMI >30 (31%), development of intrauterine growth retardation (IUGR) (70%), greater than one episode of reduced fetal movements (RFM) (76%) and with every woman (20%). It was thought that SB should be discussed if any booking RF (73%), smoking (79%), raised BMI >30 kg/m² (65%), development of IUGR (77%), greater than one episode of RFM (77%) and with every woman (59%). 80% felt a combined approach; via antenatal classes and midwife-led patient information on RFM and RF with personalised written risk reduction strategies, was the best approach to raising women's awareness.

Conclusion This study showed that the midwives have a good knowledge of the antenatal RF of stillbirth, however did not routinely discuss SB, even in those with risk factors. Anecdotally, they reported a fear of raising anxiety and to being ill equipped with the ability to bring up the sensitive discussion. We believe a programme of midwifery education, with supportive patient information, which we are implementing, should be implemented in all maternity units. If we want to reduce our stillbirth rate; allow women to make informed decisions to protect the life of their unborn child, we should be having an honest discussion about a women's RF and give targeted risk reduction strategies, not shy away from using the word 'stillbirth' because of our own personal insecurities.

EP10.137

Ethnic differences in women attending preterm clinics in the UK

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Introduction Preterm birth (PTB) remains the most significant cause of neonatal mortality worldwide. The multifactorial aetiology of PTB means that an individual approach to management is required. Steps towards risk stratification may improve identification of those at risk. The aim of this study was to determine whether the risk factors prompting referral to high-risk preterm clinics, the interventions used and the subsequent pregnancy outcomes vary between different ethnic groups.

Methods Analysis was performed from a prospectively collected dedicated online database for women at high risk of PTB from 15 hospitals across the UK. We compared risk factors for PTB in women of White ethnicity (WE) and Black ethnicity (BE). We

also compared the rates of use of interventions (elective, emergency and abdominal cerclage) and of spontaneous PTB at <34 weeks' and second trimester miscarriage. Analysis of a matched cohort of women with one previous pregnancy ending between 14 + 0 and 36 + 6 weeks was performed and logistic regression used to investigate the strength of associations.

Results Overall, 2769 high-risk women attended preterm birth clinics between October 2010 and January 2014. Of these: 1833 (66%) were of WE, 656 (24%) BE. The groups had similar rates of previous spontaneous PTB (35% versus 38%, $P > 0.05$). The BE group were significantly more likely to have had a previous late miscarriage (31% versus 9% $P < 0.001$, risk difference 22%) and to present with a cervix measuring <25 mm (15% versus 9%, $P < 0.001$, risk difference 6%) while the WE group were more likely to have had previous cervical surgery (46% versus 8%, $P < 0.001$, risk difference 38%). The BE group were more likely to receive either an elective or emergency cerclage (20% versus 5%, $P < 0.001$, risk difference -15%; 12% versus 3%, $P < 0.001$, risk difference 9% respectively). Despite this the BE group had significantly higher rates of spontaneous PTB <34 weeks and late miscarriages (9% versus 6%, $P = 0.0057$, risk difference 3%; 1% versus 3% AC, $P < 0.001$, risk difference 2% respectively). Cervical shortening was a good predictor of outcome in both groups. All findings remained valid even when patients are matched for obstetric history.

Conclusion Marked differences exist between women of different ethnicities presenting to preterm clinics in the UK. Previous obstetric history varies significantly, but even when this is taken into account the course their pregnancies follow differs. We suggest that ethnicity be taken into account in future research in risk stratification for PTB.

EP10.138

A critical review on clinician and service user involvement in setting research priorities for preterm birth: methodological challenges

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Introduction In England and Wales, 7.2% of live births are born preterm (<37 weeks). Infant health outcomes are closely linked to measures of social disadvantage, hence it is important to address service users concerns. The research questions for preterm birth have been determined primarily by researchers, and the processes often lack transparency. A Preterm Birth Priority Setting Partnership (PSP) was established to identify unanswered questions about preterm birth from service users and clinicians, and to prioritise those that they agreed to be most important. The PSP prioritised a top 15 research questions including antenatal

topics such as the most effective interventions to predict/prevent preterm birth, prevention of early onset pre-eclampsia, treatments for preterm premature rupture of membranes, optimal timing of umbilical cord clamping, and the effectiveness of specialist antenatal clinics. In this study we critically review the process of the partnership working.

Methods The PSP used a revised version of James Lind Alliance (JLA)'s approach: gathering uncertainties, refining and checking them for genuine uncertainty followed by a public online vote to determine the 30 interim priorities to take to the final prioritisation workshop that included stakeholder groups, service users and clinicians. After the process the steering group critically reviewed the methodological issues around partnership working.

Results The critical review raised the following issues: (i) a possible unequal spread of participants, (ii) losing/changing original meanings by the need to reformat and reword questions, (iii) unsatisfactory prioritisation of topics for some participants and (iv) missing/merging top priorities during the prioritisation process. Some topics were included for the final prioritisation workshop but not selected for the top 15 even though they attracted a large number of public online votes. Examples include the contribution of stress, trauma and physical workload to preterm birth risk and lifestyle changes to prevent preterm birth, screening of cervical length, cervico-vaginal infection or the placenta to predict preterm birth and the best information provision for parents at risk of having preterm infants.

Conclusion There was prospective agreement about the process but some limitations were identified on review. Solutions for discussion include involving more service users, different weighting system for voting, and pre-scheduling steering group meetings. Nevertheless the PSP was the first large service user consultation in preterm birth in the UK and Ireland, successfully achieving representation from 26 relevant organisations and more than 1000 participants over 3 years.

EP10.139

Women's understanding and perceptions of induction of labour

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Introduction Induction of labour (IOL) is a very common obstetric intervention performed for medical, obstetric and social reasons. There are a variety of pharmacological and mechanical methods available for IOL and cervical ripening procedures can be undertaken in either an inpatient or home setting. Despite being so common, research into the psychosocial aspects of IOL is lacking. This study explores women's understanding and perceptions of IOL including their preferences for methods and settings.

Methods An exploratory qualitative analysis using a prospective audit tool was undertaken. Women booked to undergo IOL at a major tertiary institution were invited to participate in a

structured phone interview including both closed and open-ended response items. Women being induced for preterm indications or fetal death in utero and those from a non-English speaking background were excluded. We performed a Grounded Theory qualitative analysis of concepts and themes plus a univariate analysis of quantitative measures.

Results Preliminary results from a pilot study of 25 surveys conducted between July and September 2014 found the majority of women (93%) understood the reason for their induction. However, they were not informed in regards to the planned process of induction (67% could not explain or only partially explain their method of IOL) nor the associated risks and benefits of IOL. If given the option, only 27% of women would prefer to go home between commencing induction and contractions starting. Reluctance to leave the hospital setting was mostly related to concern that baby would be born. 27% preferred the option of Prostin gel, 27% a balloon catheter and 46% either. Key themes for preferring different methods included wanting no medication, the most common or the least painful option.

Conclusion IOL is an important obstetric event for many women, however they report feeling uninformed in regards to the process, risks and benefits. When presented with alternative options for methods and settings for IOL women tend to be accepting of both pharmacological and mechanical methods yet are undecided on the option of undertaking cervical ripening in the home setting.

EP10.140

Assessing the efficacy of labour ward handover rounds in KK Women and Children's Hospital **Sim, WS; Mathur, M**

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Introduction Labour ward handover rounds started on 6 January 2014 in KK Women's and Children's Hospital with the aim of improving patient safety under a consultant-led care and has been ongoing for 8 months. The weekday morning meetings involve a multidisciplinary team comprising obstetricians, anaesthetists and neonatologists of different ranks, using electronic CTG tracing and patient bio-data as the material for discussion. The meeting is followed by a consultant-led ward round. This study attempts to assess the quality of the labour ward handover by establishing the perception of improvement of communication, training and patient care among healthcare workers across different disciplines and across different ranks.

Method An anonymous standardised questionnaire is created based on the hypothesis that labour ward handover rounds improve communication, training as well as patient safety. The questionnaire is distributed among all nurses and doctors from different disciplines (anaesthetists, neonatologists and obstetricians) as well as doctors from different ranks (starting from House officers to senior consultants) who are on shift during office hours over a 1 month period. This study hopes to capture both staff that had been serving the institution prior to the introduction of labour ward handover rounds as well as new

staff that have joined after labour ward handover rounds has commenced. Participants are asked a series of questions in relation to improving communication, training and patient safety. Feedback is standardised on a 5-point Likert scale. A free text entry is available for comments and suggestions as part of a clinical improvement survey. Data will be analysed for subjective improvement in patient care and safety. This study will also help to qualify if labour ward handover rounds should be extended to other timings of the day as well as weekends.

Results In process of data collection to complete by end of October 2014.

Conclusion This study hopes to reflect a positive impact on communication, training and patient safety and to invite feedback on how to improve the current handover system.

EP10.141

A rare case report of concomitant intrauterine and synovial joint group B streptococcal sepsis Khemkaa, K; Singh, T; Blumenthala, N; Al Muderisa, M

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Introduction Colonisation by Group B Streptococci (GBS) in the birth canal of pregnant women is well known. Incidence and recognition of infections caused by these organisms in non-pregnant and elderly adults are increasing.

Case A 34-year-old woman, booked in for antenatal check-ups in her first pregnancy at 9 weeks of gestation. Her bloods and routine antenatal screening tests at booking were unremarkable, including a normal morphology ultrasound scan. The patient did not report any history of smoking, alcohol or illicit drug use. At her 34 week visit, she gave history of reduced fetal movements since one day. A fetal heart rate was inaudible as a result of which an Intra Uterine Fetal Death was documented, subsequent to which she had a vaginal delivery of a moderate to severely macerated female baby with a normal morphology and a weight of 1770 g, measurements consistent with a gestation of 32–33 weeks. The post mortem examination of the baby showed the most likely cause of death was concluded to be an infection with Group B Streptococcus, which was grown from fetal blood, stomach contents and placental sub amniotic swab. Several days after her delivery, this patient presented to hospital with an acutely sore right hip. At this juncture, a joint aspiration was performed arthroscopically and the joint was thoroughly washed out. The hip yielded a straw coloured thick exudate which was sent for analysis. The cultures grew GBS. She was treated with parenteral antibiotics for 2 weeks followed by a course of oral antibiotics for 4 weeks. Her recovery from this point onwards was uneventful.

Conclusion Stillbirth is a common adverse pregnancy outcome with a rate of 3–8 per 1000 live births in developed countries and 20–40 per live births in developing countries. GBS rarely causes invasive infection and the most likely spread is by an ascending route across the membranes; however haematogenous and trans-

fallopian routes have been reported as well on fewer occasions. GBS is an established as a well-known cause of septic arthritis accounting for 10–20% of all septic arthritis cases. However, if misdiagnosed it can lead to very destructive changes within the affected joint. In summary, GBS associated septic arthritis of the hip post a premature FDIU is a rare entity. Although such infection is more common in a predisposed patient, it must not be overlooked as a serious cause of postpartum morbidity.

EP10.142

Postpartum blues and cortisol hormone in the vacuum extraction delivery

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Introduction Vacuum birth extraction is a stressor onset of postpartum distress that can lead to postpartum blues. This situation is caused by maternal psychological stress beside the result of adaptation to the pregnancy, childbirth and due to the situation of the vacuum extraction room. Psychological Stress stimulates the hypothalamic-pituitary-adrenal axis (HPA axis) the impact of increasing secretion of the adreno cortico tropic hormone (ACTH) by the anterior pituitary, which stimulates the adrenal cortex secreting cortisol. To determine the relationship between cortisol level and the incidence of postpartum blues vacuum extraction delivery.

Methods An observational cohort analytic design prospective. Research was conducted in Moewardi Hospital Surakarta. The subjects of the research; 30 people consisting of 15 subject mothers postpartum vacuum extraction and 15 subject of normal individuals who classified to inclusion and exclusion criteria. Of two groups of study subjects have blood drawn, examined using methods immulite cortisol (normal = 5–25 µg/dL) and then fill the questionnaire blues. The data were processed using Kolmogorov–Smirnov *Z* and logistic regression.

Results There was significant difference of cortisol between postpartum vacuum extraction normal delivery (average 45.10 and 33.59 µg/dL). *t* test showed significant differences in the increase in cortisol serum in these two groups ($t = 2.208, P = 0.036$). Logistic regression analysis demonstrated an association of cortisol level with the incidence of postpartum blues vacuum extraction delivery, $P = 0.039$ power of 38% ($R = 0.38$).

Conclusion There is a relationship between cortisol level and the incidence of postpartum blues of vacuum extraction delivery.

EP10.143

Vaginal delivery of dichorionic diamniotic twins beyond 32 weeks gestation is associated with poorer neonatal outcomes**Soong, S¹; Greer, R²; Gardener, G^{1,2}; Flenady, V²; Kumar, S^{1,2}**¹Mater Mothers' Hospital, Brisbane, Qld, Australia; ²Mater Research Institute, University of Queensland, Brisbane, Qld, Australia

Introduction The aim of this study was to assess the impact of mode of delivery on perinatal outcomes in dichorionic diamniotic (DCDA) twins delivered after 32 weeks at a major maternity centre in Australia.

Methods This was a retrospective study of DCDA twins delivered at the Mater Mothers' Hospital in Brisbane, Australia, from January 1997 to November 2013. Data were collected from the hospital's maternity, maternal fetal medicine and neonatal databases. Exclusion criteria included non-DCDA twins, higher order multiples, known single fetal demise at any gestation or confirmed aneuploidy.

Results A total of 1261 women delivered 2522 twin babies during the study period, of which 2090 (82.9%) were delivered at >32 weeks gestation. Four hundred and seventeen (39.9%) women delivered both twins via elective caesarean section, 318 (30.4%) via emergency caesarean section, and only 155 (14.8%) women successfully delivered both babies via normal vaginal delivery (NVD). The remaining 155 (14.8%) women required an intervention (instrumental or emergency caesarean section), for at least one of the twins. Babies delivered by emergency caesarean sections or instrumental vaginal delivery had worse outcomes, highlighted by more Apgar scores <7 at 1 min (20.1% 128/636 and 27.5%, 22/80, respectively), and increased neonatal intensive care unit (NICU) admissions (43.4%, 276/636 and 43.8%, 35/80, respectively). In contrast, the lowest complications were seen in the NVD and elective caesarean section cohorts, with less Apgar scores <7 at 1 min (13.9%, 43/310 and 12.1%, 101/834, respectively), and fewer NICU admissions (29.4%, 91/310 and 28.2%, 235/834, respectively). A composite outcome score, calculated from Apgar scores, need for neonatal resuscitation, NICU admission and neonatal death, also demonstrated a similar trend with lower scores, indicating better outcomes, in the NVD (1.23) and elective caesarean groups (1.52), compared to the babies delivered via instrumental (1.90) or emergency caesarean sections (1.97) ($P < 0.001$).

Conclusion The results presented in this retrospective study from a single tertiary centre demonstrate that overall neonatal outcomes for DCDA twins delivering via emergency caesarean section or instrumental vaginal delivery are worse than those delivering by elective caesarean section or uncomplicated normal vaginal delivery. Our results also demonstrate that only approximately 1:7 women (14.8%) have uncomplicated vaginal delivery of both twins. Women should be advised of local intrapartum outcomes for DCDA twins as this may likely influence their choice of mode of delivery.

EP10.144

Increased weight discordance in dichorionic diamniotic twins is associated with a greater need for operative delivery and worse perinatal outcomes**Soong, S¹; Greer, R²; Kumar, S^{1,2}**¹Mater Mothers' Hospital, Brisbane, Qld, Australia; ²Mater Research Institute, University of Queensland, Brisbane, Qld, Australia

Introduction Inter-twin weight discordance (ITWD) in twin pregnancies is associated with greater perinatal complications. The aim of this study was to assess the intrapartum and neonatal outcomes of ITWD >30% in dichorionic diamniotic (DCDA) twins delivered at a major maternity centre in Australia.

Methods This was a retrospective study of DCDA twins delivered at the Mater Mothers' Hospital in Brisbane, Australia, from January 1997 to November 2013. Data were collected from the hospital's maternity, maternal fetal medicine and neonatal databases. Exclusion criteria included non-DCDA twins, higher order multiples, known single fetal demise at any gestation or confirmed aneuploidy.

Results Of the 1261 women with 2522 DCDA twin babies during the study period, ITWD >30% was present in 108 (8.6%) women. There was no difference in maternal age, BMI or medical comorbidities in this cohort of women compared to those with an ITWD of ≤30%. The median gestation at delivery (35 versus 33 weeks; $P < 0.001$), and birthweights (2351 versus 1614 g; $P < 0.001$), were however significantly greater in ITWD ≤30%. Women with an ITWD >30% were more likely to deliver by caesarean section (69.1%, 1594/2306 versus 78.7%, 170/216), with higher rates of elective caesarean section (34.0%, 392/1153 versus 42.6%, 46/108; $P < 0.001$), and have lower rates of uncomplicated vaginal delivery of both babies (16.0%, 184/1153 versus 12.0% 13/108; $P = 0.12$). More women with an ITWD >30% had babies with lower Apgar scores at 1 min (22.2%, 511/2306 versus 36.6%, 79/216; $P < 0.001$), and 5 min (6.1%, 141/2306 versus 16.2%, 35/216; $P < 0.001$). Admissions to the neonatal intensive care unit (NICU), were also increased when the ITWD was >30% (50.0%, 108/216 versus 36.5%, 842/2306; $P < 0.001$). A composite outcome score calculated from perinatal complications (Apgar scores, neonatal resuscitation, NICU admission and neonatal death), demonstrated an increased rate of complications in the cohort of women with ITWD >30% (2.54), compared to the ITWD ≤30% group (1.93) ($P < 0.001$).

Conclusion Mothers with DCDA twins are more likely to deliver both babies via caesarean section, in particular electively, if the weight discordance is >30%. Regardless of the mode of delivery, these babies are associated with worse perinatal outcomes compared to twins with ITWD ≤30%.

EP10.145

Elective caesarean section does not improve neonatal outcomes in dichorionic diamniotic twins with severe weight discordance**Soong, S¹; Greer, R²; Kumar, S^{1,2}**¹Mater Mothers' Hospital, Brisbane, Qld, Australia; ²Mater Research Institute, University of Queensland, Brisbane, Qld, Australia

Introduction Inter-twin weight discordance (ITWD) in dichorionic diamniotic (DCDA) twins is associated with greater perinatal complications. Elective caesarean section has been shown to improve perinatal outcomes, particularly for the second twin, in twins with significant weight discordance. The aim of our study was to evaluate perinatal outcomes associated with different modes of delivery for DCDA twins with varying degrees of ITWD.

Methods This is a retrospective study of DCDA twins delivered at the Mater Mothers' Hospital in Brisbane, Australia, from January 1997 to November 2013. Data were collected from the hospital's maternity, maternal fetal medicine and neonatal databases. Exclusion criteria included non-DCDA twins, higher order multiples, known single fetal demise at any gestation or confirmed aneuploidy.

Results A total of 2522 DCDA twins (1261 women) were delivered during the study period. Of this cohort both babies were delivered by emergency caesarean section in 444 (35.2%) women, 438 (34.7%) women had elective caesarean section, 197 (15.6%) delivered both babies via normal vaginal delivery (NVD) without any intervention, and the remaining 364 (14.4%) women required some form of intervention for one of the babies (instrumental delivery or emergency caesarean section for the second twin). Of these 1261 twin pairs, 614 women had ITWD $\leq 10\%$ (48.7%), 379 had ITWD of 10–20% (30.0%), 160 had ITWD of 20–30% (12.7%), and 108 had ITWD $>30\%$ (8.6%). The rates of elective caesarean section increased with greater ITWD [ITWD $\leq 10\%$: 40/1228 (32.6%), ITWD 10–20%: 250/758 (33.0%), ITWD 20–30%: 134/320 (41.9%), ITWD $>30\%$: 92/216 (42.6%); $P < 0.001$]. A composite neonatal outcome score derived using the Apgar scores, need for neonatal resuscitation, neonatal intensive care unit admission and neonatal death, worsened as the ITWD increased for all delivery groups: elective caesarean group (ITWD $\leq 10\%$ 1.26, ITWD 10–20% 1.42, ITWD 20–30% 1.84, ITWD $>30\%$ 2.59; $P < 0.001$), emergency caesarean section group (ITWD $\leq 10\%$ 2.29, ITWD 10–20% 2.40, ITWD 20–30% 2.42, ITWD $>30\%$ 2.81; $P = 0.044$), and NVD group (ITWD $\leq 10\%$ 1.8, ITWD 10–20% 1.71, ITWD 20–30% 1.68, ITWD $>30\%$ 2.04; $P = 0.83$), although the later was statistically insignificant.

Conclusion Our study shows an increasing rate of elective caesarean section with greater ITWD. Neonatal outcomes worsened with increasing ITWD without any clear benefit associated with caesarean delivery.

EP10.146

Audit of the third and fourth degree perineal tears in St Johns Hospital between January 2011 and May 2014**Spyroulis, C**

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Introduction Third and Fourth Degree Perineal Tears is a known obstetric complication post-delivery and may involve either the anal sphincters (third degree) or even anal mucosa (fourth degree) perineal tear. Third degree tears can be classified into: (i) 3a ($<50\%$ of the external anal sphincter is torn), (ii) 3b ($>50\%$ of the external anal sphincter is torn) and (iii) 3c (when the internal anal sphincter) is torn. Proper repair and follow-up 3 months after repair are vital factors of proper obstetric care for these women. In St John's hospital, we audited 135 women who sustained third or fourth degree perineal tear. The audit period was January 2011–May 2014; during this period there were 6561 deliveries.

Methods We audited 135 women by using both the electronic (TRAK) and paper notes. The criteria that we introduced for this audit were: (i) if the repair was done in theatre or in the room, (ii) designation of the person who repaired the tear, (iii) material used for the repair, (iv) follow-up appointment, (v) intraoperative and postoperative antibiotics plus post-repair laxatives, (vi) DATIX (incidence form completed or not), (vii) patient debriefing post repair, (viii) birthweight of the baby, (vix) type of anaesthesia during labour, (vx) parity, (vxi) method of repair (end–end versus overlapping), (vxii) type of episiotomy, if any and (vxiii) physiotherapy referral

Results (i) 135/135 of perineal tears (third or fourth degree perineal tear) repaired in theatre, (ii) In 90/135 of cases repaired by ST3–ST7, 25/135 by staff grade and 20/135 by consultant, (iii) in 118/135 repaired with PDS and 17/135 with Vicryl 1.0, (iv) 130/135 were followed-up 3–4 months after the repair. From these, only 1/130 sustained persistent faecal incontinence despite proper repair in theatre and normal endo-anal ultrasound, (v) 134/135 had antibiotics (intra- and postoperative) and laxatives (post-repair), (vi) in 125/135 cases we had an incidence form completed, (vii) in 20/135 of cases we debriefed the patient, (viii) 85/135 babies weighted 3500–5000 g, whereas 55/135 weighted 2000–3500 g, (vix) 25/135 had an epidural during labour, (vx) 115/135 of women were primiparous and 20/135 were multiparous, (vxi) 80/135 repaired via overlapping and 55/135 via end–end technique, (vxii) 61/135 had a medio-lateral episiotomy and (vxiii) 135/135 had a physiotherapy referral.

Conclusion We respected the RCOG guidelines and in 99.8% of cases we had no post-repair complaints. We need further improvement in patient debriefing.

EP10.147

Management of atypical abdominal pain involving the multidisciplinary team

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Introduction This case will explore the management of atypical abdominal pain in a multiparous woman following conservative management of retained tissue following manual removal of placenta. The multidisciplinary team incorporates a range of different specialist who can harness their expertise in their respective field to provide holistic care for the individual. This case will highlight the benefits and obstacles a multidisciplinary team can yield. The final diagnosis was placenta accreta and endometritis. Placenta accreta is the abnormal invasive implantation of the placenta to the myometrium. It has had a significant effect on fetal and maternal mortality and morbidity. The incidence of placenta accreta has increased to 1 in 2500, with an increasing rate of risk factors such as caesarean sections and maternal age. This case studies the presentation of placenta accreta in a multiparous woman. Historically a similar case is reported in Canada. The current literatures have highlighted good outcomes on a set number of individuals treated conservatively.

Case A 32-year-old, G5P4, 22 + 4 weeks gestation with DCDA twins presented with history of draining liquor. She was treated as being in preterm labour. She was pyrexial during labour and then delivered the twins 2 days after admission. She had a manual removal of placenta in theatre where the placenta was found to be very adherent to the uterus. The placenta was removed in fragments and a scan identified negligible retained placental tissue which was treated conservatively. Postnatally she was readmitted with pyrexia, generalised abdominal, back and thigh pain. She was seen by general surgeons, anaesthetists, orthopaedic surgeons, medical doctors, who all had different diagnosis ranging from a psoas abscess, cholangitis, meningitis, septic arthritis, pelvic abscess, nerve entrapment, and endometritis. She had a range of investigations performed including MRI, arthroscopy of the hip and laparotomy. She underwent a hysterectomy after which her pain and pyrexia resolved. Histology revealed placenta accreta and endomyometritis.

Conclusion This case illustrates how multiple specialties can be involved in the care of an individual and the scope of investigations that can be carried out to assist in a diagnosis. It also highlights how the most obvious of diagnosis can be overlooked when there are many specialties participating in the management. It is important to be vigilant of placenta accreta in multiparous woman.

EP10.148

Audit of steroid administration in pregnant women according to RCOG standards in Mafraq Hospital

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Introduction Antenatal administration of steroids in premature labour reduces the incidence of Respiratory distress syndrome

(RDS), intraventricular haemorrhage in neonates thereby reducing the perinatal morbidity and mortality. RDS is known to affect 40–50% babies before 32 weeks. Indication of Antenatal corticosteroid therapy: Antenatal corticosteroid therapy in patients should be initiated between 24 and 34 + 6 weeks of gestation with any of following: threatened preterm labour; ante partum haemorrhage if considered to be at risk of preterm delivery; premature rupture of membranes. The objectives were to assess and review the administration of antenatal corticosteroids in pregnant patients in accordance with the RCOG guidelines in Mafraq hospital, to compare the performance of the Mafraq Hospital with the standards set by RCOG Guidelines no 7 and to implement changes in clinical practice in order to improve the outcome and to assess the outcomes.

Methods An initial retrospective audit was conducted on the practice of antenatal steroid prescription; Data were collected over a period of 6 months prospectively from March 2014 to August 2014. Deviations from compliance with guidelines published by Royal College of Obstetricians and Gynecologists were identified and a report highlighting the audit findings was disseminated to all departmental staff. A repeat audit will be conducted prospectively over a 6 month period.

Results During this period there were 1126 deliveries. Of these 62 patients were preterm. 31 patients were between 24 and 34 + 6 weeks gestation and were candidates for steroid administration. 31 patients were between 35 and 37 weeks gestation. Out of the 31 patients 9, did not receive steroids. 7 of these patients had imminent delivery they were either in active labour or had an emergency caesarean section for fetal distress. During this period there were 201 cases of caesarean section. 133 were emergency and 71 were elective. Of the elective section 36 were done at >39 weeks gestation and 35 at <39 weeks. However of these 35 patients were not offered steroid.

Conclusion Incidence of prematurity was 5.1% and NICU admissions were high among these groups up to 70% and steroid administration reduces the respiratory morbidity. There is a clear need to give Steroid patients with Elective caesarean section prior to 39 weeks steroids as per the RCOG guidelines. We found that we are adhering to the RCOG guidelines at present. This report highlights the high quality of maternity care in Mafraq, when benchmarked internationally.

EP10.149

Venous thromboembolic prophylaxis following massive postpartum haemorrhage

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Introduction Thromboprophylaxis, by means of pharmacological antithrombotics such as low molecular weight heparin (LMWH), is a cornerstone in the prevention of deep vein thrombosis (DVT) and any potential sequelae, including pulmonary embolus (PE), following childbirth. However, postpartum haemorrhage (PPH) is a known risk factor for these

thrombotic events and antithrombotics use appears contradictory. Despite clear guidelines in non-PPH cases on the use of pharmacological thromboprophylaxis, the use of LMWH following PPH is controversial.

Method A retrospective review for a twelve month period (2012), was conducted at the Royal Hospital for Women (Sydney, NSW), investigating thromboprophylaxis including the use of LMWH, in women who experienced a PPH of more than 1500 mL.

Results In the period January–December 2012 there were a total of 2997 births. From these births, there were in total 91 (3.03%) cases of PPH >1500 mL. The PPH ranged from 1500 to 6000 mL. The data demonstrate that patients received some form of thromboprophylaxis including TED stockings and LMWH (Clexane), variation in practice existed in the PPH (>1500 mL) group. There was a range in the time of initially commencing LMWH administration from 9 to 57 hours (mean 21.1 hours). This was despite a clear guideline for the commencement of LMWH in women who did not experience a PPH, within 6 hours of birthing. However, despite these variations only 3 cases (3.2%) of this patient cohort was readmitted in the following 6 months to the Prince of Wales emergency department, with a differential diagnosis including pulmonary embolism. This specific thrombotic diagnosis was subsequently, not confirmed.

Conclusion This study demonstrates that there is wide variation in the use of pharmacological thromboprophylaxis in the form of LMWH, in cases of PPH >1500 mL. It is uncertain whether this has potential long-term consequences following discharge from the respective maternity unit.

EP10.150

Intrauterine growth restriction: the role of vascular endothelial growth factor and soluble FMS-like tyrosine kinase-1 in its pathogenesis

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Introduction Intrauterine growth restriction (IUGR) remains a major cause of perinatal morbidity and mortality in developing countries. Lack or decreasing angiogenic factor of Vascular Endothelial Growth Factor (VEGF) and increasing of antiangiogenic factor of Soluble Fms-Like Tyrosine Kinase-1 (sFlt-1) are predicted involving the role in IUGR pathogenesis. This study aims to analyse the difference of VEGF and sFlt-1 levels in IUGR and normal pregnancy.

Methods This research was a quantitative research using cross sectional observational approach. This study was conducted at Obstetric and Gynecology Department in Dr Moewardi regional hospital Surakarta and Prodia laboratory from August 2013 to July 2014. The samples of this study were 30 pregnant women divided into 15 pregnant women with IUGR and 15 normal pregnancy. All samples were tested for VEGF and sFlt-1 using ELISA. The data were analysed by using *t*-test.

Results The mean of VEGF serum levels in IUGR was (9.4 ± 0.40 ng/mL) and in normal pregnancy was (11.04 ± 1.77 ng/mL) with $P = 0.003$. The mean of sFlt-1 serum levels in IUGR was (7000.79 ± 2850.80 ng/mL) and in normal pregnancy was (3550.95 ± 1109.34 ng/mL) with $P = 0.000$.

Conclusion In IUGR, serum levels of VEGF is lower, but sFlt-1 is higher than in normal pregnancy.

EP10.151

Pregnancy in a non-communicating rudimentary horn: an interesting case report

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Introduction Congenital uterine anomalies affect 10% of the unselected population and are associated with two-fold increased risks of first and second trimester miscarriages. Pregnancy in the rudimentary uterine horn is extremely rare and usually terminates in rupture during first or second trimester with fetal demise. It can be missed on routine scans and requires a high index of suspicion. We report a case of unruptured rudimentary horn pregnancy at 20 weeks, misdiagnosed as intrauterine pregnancy in a bicornuate uterus, with attempted termination for fetal demise.

Case A 19-year-old Caucasian primigravida, known to have congenital meningocele and a bicornuate uterus, had two unsuccessful attempts of medically and surgically terminating an intrauterine pregnancy at 7 weeks. She then decided to continue her pregnancy. Her 18-week anomaly scan was normal with features of SGA and a subsequent amniocentesis excluded any chromosomal abnormalities. At 20 weeks, she presented with unprovoked vaginal bleeding. Ultrasound scan confirmed an intrauterine fetal demise. She was counselled for termination of pregnancy by medical management. However, no products of conception were passed after 24 hours of observation. She had two further cycles of misoprostol regime, but without any success. With a high index of suspicion of an abdominal pregnancy, a pelvic MRI scan was requested, which showed a single cervix communicating to a left-sided non-gravid uterine horn without any connection to the right-sided gravid uterine horn. Senior obstetricians unanimously decided a midline laparotomy as the most appropriate management and this confirmed a unicornuate uterus with a right rudimentary non-communicating, unruptured gravid horn. The fetus with intact sac was removed from the rudimentary horn by hysterotomy with minimal blood loss. Postoperative recovery was uneventful. A postmortem report confirmed signs of delayed intrauterine demise of an idiopathic cause without any congenital anomalies. The patient was subsequently counselled on further surgery to restore the uterine architecture and delivery options via caesarean section only in future pregnancies.

Discussion Unicornuate uterus with rudimentary horn results from incomplete fusion of the Mullerian ducts. In 85% of cases, the rudimentary horn is non-communicating with cavity. Pregnancy can occur due to transperitoneal migration of sperm or fertilised ovum. Bicornuate uterus, interstitial pregnancy and

abdominal pregnancy are common sonographic misdiagnoses. Primary strategy of management of rudimentary horn is surgical removal.

Conclusion Despite advances in ultrasound and other diagnostic modalities, prenatal diagnosis remains elusive, with confirmatory diagnosis being laparotomy.

EP10.152

An unexpected outcome of a high-risk twin pregnancy in a primigravida: an interesting case report

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Introduction Twin pregnancies account for 1 in 90 pregnancies and generally have higher risk of antenatal complications than singleton pregnancies including preterm delivery, pre-eclampsia and growth restriction.

Case A 39-year-old Caucasian primigravida with a BMI of 30 kg/m² booked late at 14 weeks gestation and opted to have an amniocentesis at 17 weeks that excluded any chromosomal abnormalities. She had a longstanding history of primary infertility and she successfully conceived after three cycles of in-vitro fertilisation. She was readmitted at 20 weeks with vaginal loss and an anomaly scan confirmed a viable dichorionic diamniotic twin pregnancy with normal placenta location but there was an absence of liquor around the leading twin baby. She was immediately admitted to the ward and upon examination, there were signs of clear liquor pooling in the vagina with a closed internal os. The patient was counselled about the inevitable loss and was expectantly managed with prophylactic antibiotics. After 72 hours of observation, the first twin baby was miscarried. She was subsequently commenced on nifedipine to reduce further uterine contractions. The residual stump of the umbilical cord and placenta of the miscarried twin was left in-utero and the patient had an emergency cervical cerclage at 21 weeks to avoid comprising the viable second twin baby. The patient was counselled on red flag signs such as chorioamnitis, threatened miscarriage and preterm delivery of the second twin baby of in view of the exposed placental tissue of the miscarried twin baby. Subsequent four weekly fetal growth scans were arranged at 24, 28 and 32 weeks and she was commenced on steroids after 24 weeks. Her inflammatory markers (WCC and CRP) on each antenatal visit were normal. However, she was readmitted at 30 weeks with diminished fetal movement and threatened antepartum haemorrhage. Speculum examination showed a closed internal os with blood stained discharge. Fetal cardiotocography showed persistent typical variable decelerations that did not improve with various maneuvers. A decision to deliver the baby at 30 weeks was made by a senior obstetrician and she had an uneventful emergency caesarean section and delivered a baby boy. The baby's weight was slightly below the 50th centile on the growth chart and histopathology of the placental tissue showed thickened amnion basement membrane with neutrophilic infiltrate, thereby confirming severe chorioamnitis.

Conclusion A multidisciplinary approach is required to optimise the maternal and fetal wellbeing and the patient should be effectively counselled on red flag signs.

EP10.153

Vaginal birth after caesarean with induction of labour

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Introduction Women with one previous caesarean section have choices of attempting vaginal birth after caesarean (VBAC) or planned repeat caesarean. VBAC is associated with the risk of uterine rupture, a rare complication that can result in significant maternal and neonatal morbidity. Induction of labour (IOL) in VBAC is associated with an increased risk of uterine rupture and lower VBAC success rate. Decision-making is therefore challenging for both women and their treating obstetricians. The aim of this study is to identify the success rate for VBAC and risk of uterine rupture in women who attempt VBAC with IOL.

Methods A 5-year retrospective cohort study from January 2007 to December 2011 was carried out for women with one previous caesarean section who required IOL when attempting VBAC. Women were categorised into three groups based on the initial method of IOL: women with a favourable cervix had artificial rupture of the membranes (ARM); Cooks catheter was utilised as the initial method of IOL for women whose cervix was not favourable; and in the third group, women who spontaneously ruptured the membranes but did not develop contractions were induced with syntocinon infusion.

Results Overall success rate for VBAC in this study period was 73.7% (524 out of 711 women). Of these, 95 out of 170 women who required IOL (55.9%) had successful VBAC. Main indications for IOL include prolonged pregnancy (60 women), gestational or pre-gestational diabetes (40 women), and prolonged rupture of the membranes or rupture of the membranes with meconium stained liquor (28 women). There was no significant difference in terms of indication for IOL between women who had successful and unsuccessful VBAC. The ARM group was shown to have the highest successful vaginal delivery rate of 72.7% (48 out of 66 women). Of the 77 women who initially required Cooks catheter, 34 (44.2%) successfully delivered vaginally. Syntocinon infusion group showed 48.1% (13 out of 27 women) VBAC success rate. There was no uterine rupture in all three groups.

Conclusion Women who attempt VBAC and require IOL generally have a lower success rate. However if they have a favourable cervix and require ARM as their initial method of induction with or without subsequent syntocinon infusion, their success rate is comparable to the overall VBAC success rate. Women who wish to attempt VBAC and need IOL should be counselled on an individual basis with their likelihood of successful VBAC.

EP10.154

Decision to delivery time interval in emergency caesarean section – let's step for success

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Introduction The clinical governance and standard clinical assessment are the basics of good health care service. The standard of ≤ 30 min from decision to delivery time interval for fetal intolerance to labour is very challenging. The aim of this clinical audit is based to assess decision to delivery time interval for emergency section, to identify the factors in delay and the impact of delayed decision to delivery time interval on neonatal outcome.

Methods This clinical audit was designed to assess the quality of care given to woman, who gave birth via emergency caesarean section in our hospital. Three audit cycles were carried out over a period of three years, each of three months duration from 2011 to 2013. 250 women were recruited for study with acute fetal distress or umbilical cord prolapse. Main outcome was to measure decision to delivery time interval, causes in delay and association between decision to delivery time interval and neonatal outcome in term of Apgar score <7 or <4 at 5 min and stillbirth.

Results In the initial retrospective survey of 88 emergency caesarean section, decision to delivery time interval <30 min were achieved in 27% cases. The main factors in delay were; delay in shifting the women from delivery suite to Operation Theatre, shortage of operation theatre staff, poor communication in delivery team and technical problems included intraperitoneal adhesion, regional anaesthesia, and maternal obesity. After the implication of improvement strategies, the maximum achievement of decision to delivery time interval was 60% by the audit of final cycle. Neonate who delivered within 20 min and those who took decision to delivery time interval from 20 to 60 min, in both evaluations neonatal outcome were found same. But decision to delivery time interval more than 60 min was associated with poor neonatal outcome in term of low Apgar score and still birth.

Conclusion A successful emergency caesarean section requires well-coordinated and cooperative team work. Though the standard target of decision to delivery time interval of ≤ 30 min was not achieved 100%. But the factors in its way suggest how to pave the condition for the best outcome.

EP10.155

Exogenous oxytocin modulates human myometrial microRNAs

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Introduction MicroRNAs (miRNAs) are small, non-coding RNA molecules which regulate gene expression at the post-

transcriptional level. MiRNAs play a modulatory role in pathways leading to labour onset, whilst oxytocin is known to alter gene expression within the myometrium. We aimed to identify miRNAs whose expression is regulated by oxytocin in pregnant human myometrium.

Methods Myometrial miRNA expression profiles were compared between samples collected from women at term before the onset of labour ($n = 8$) and after labour onset following early exogenous oxytocin treatment ($n = 8$). Multivariate modelling was used to assess differences in miRNA profiles. Biological validation was undertaken on three independent patient cohorts (no labour (NL), $n = 10$; labour induced using oxytocin (LOxy), $n = 8$; and spontaneous labour with no oxytocin treatment (LSpon), $n = 10$). In vitro studies using primary myocytes were undertaken to assess target miRNA expression following oxytocin treatment. Target genes of candidate miRNAs were identified in silico, and cross-referenced with genes known to be associated with labour or expressed in myometrium.

Results 1309 miRNAs were analysed by microarray of which 494 were detected in human myometrium. Multivariate modelling identified 12 target microRNAs whose differential expression was most responsible for the observed separation of the two patient populations in the primary discovery cohorts. Biological validation in the independent secondary sample cohorts showed that oxytocin independently regulated five miRNAs (hsa-miR-146b-3p, hsa-miR-196b-3p, hsa-miR-223-3p, hsa-miR-873-5p and hsa-miR-876-5p). Additionally, hsa-miR-146b-3p was increased in both LOxy and LSpon myometrium compared with NL samples. Four of the validated miRNAs (hsa-miR-146a-5p, hsa-miR-146b-3p, hsa-miR-196b-3p and hsa-miR-876-5p) were expressed in primary human myocytes and oxytocin treatment of these cells replicated the directional changes observed in vivo. Potential gene targets of these miRNAs include genes already implicated in parturition.

Conclusion Oxytocin alters the expression of a unique set of myometrial miRNAs. These results suggest a further role for oxytocin as a signalling molecule involved in the regulation of gene expression during parturition and identifies a potential area for future research to identify novel compounds to induce or delay labour.

EP10.156

Pregnancy outcome following the indication of cerclage

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Introduction Cervical incompetence is an important cause of late miscarriage and extreme preterm labour. It is unclear why dilatation and effacement of the cervix occurs prematurely, but it is thought that the forced mechanical closure of an 'incompetent' cervix with a suture maintains the cervical length as well as the mucus plug, both of which have a role in preventing labour.

However, the lack of good large randomised controlled trials has hindered clinicians and patients to make an informed decision regarding insertion of cervical suture.

The aims of this study were: (i) To assess cases of history-indicated and ultrasound-indicated cerclage, and to examine the pregnancy outcomes and compare them; (ii) To describe pregnancy outcomes following the background indications for the cerclage.

Methods We conducted a retrospective study in Chelsea and Westminster hospital of all women with singleton gestation who were reviewed in the Specialist Prematurity Antenatal Clinic and required cerclage between January 2011 and December 2013.

Results Over the 3 year period, 415 high risk for preterm delivery women were reviewed in the Prematurity Clinic and 1275 transvaginal scans were performed. The main 3 reasons for referral to the prematurity clinic were: previous poor obstetric history (POH of late miscarriage or preterm delivery <34 weeks), previous deep cervical treatment and uterine anomalies. Sixty-three women required cerclage; 44 women had ultrasound-indicated cerclage, 19 women had history-indicated cerclage. Twenty-two women had Shirodkar cerclage, 39 women had McDonald cerclage, and two women had transabdominal cerclage. Twenty-five women (40%) who required cerclage had background of POH, 27 women (43%) had previous deep cervical treatment and, five women (8%) had uterine anomaly. The overall preterm delivery for the 415 patients seen the prematurity clinic was 8%. The preterm delivery outcome in 63 women with cerclage was 16%. Preterm delivery outcome in women with history-indicated cerclage and ultrasound-indicated cerclage were 5% and 11% respectively. Women who had cervical cerclage with POH had a poorer outcome and higher rate of preterm delivery (30% deliveries <37 weeks) compared to women who had the cervical cerclage inserted due to previous cervical treatment or uterine anomalies.

Conclusion Women with history of previous late miscarriages or preterm delivery have a higher rate of preterm delivery following ultrasound-indicated or history-indicated cerclage in comparison to other high-risk for preterm delivery women. This information is helpful in decision making and counselling patients regarding the likely outcome.

EP10.157

Condom balloon tamponade in management of postpartum haemorrhage Thin, KM

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Introduction Obstetric haemorrhage is estimated to cause 25% of all maternal deaths and is the leading direct cause of maternal mortality worldwide. It is also the leading cause of maternal mortality in Myanmar as women in low-resource settings may not have timely access to standard care and treatment. Uterine balloon tamponade (UBT) has been recognised as a relatively easy-to-use and effective second-line option for managing severe postpartum haemorrhage (PPH) by reducing blood loss until the woman can be transported to a facility with surgical management and other treatment options. The objective was to study the condom balloon

tamponade in the management of postpartum haemorrhage due to uterine atony.

Methods Prospective study done within a year period (2011–2012) at Minbu District Hospital, Magway Division, Upper Myanmar. Thirty-three women with PPH after vaginal deliveries were included. Uterine balloon tamponade using a condom was applied to cases after failed medical treatment and prior to surgical intervention. A condom balloon connected with an indwelling catheter was inserted under aseptic condition. The balloon was filled with 400 mL of normal saline, and oxytocin 10 units infusion was continued. If bleeding settled within 20 min, the balloon catheter was left in situ for 12 hours. Surgical intervention was initiated in case of uncontrolled bleeding (Failed Tamponade test). If bleeding ceased, half amount of saline was released and remaining was drained out 4 hours later (2 stages removal). Success rate of the condom balloon in arresting haemorrhage. The need for additional measures, use of anaesthesia and complication rates were recorded.

Results Among 33 women who had placement of condom catheter, 27 cases (81.8%) haemostasis was achieved, while six cases (18.2%) were failed to control bleeding. No one needed anaesthesia nor analgesia. Among 6 failed cases, the balloon was expelled out in two cases. Hysterectomy was required in five cases (15.2%) and one case (3.0%) was managed with compression sutures. There was no maternal death but one case (3.0%) was referred for coagulopathy after hysterectomy. In cases of successful Tamponade test, no further bleeding nor complication was detected.

Conclusion Effective interventions for PPH are undoubtedly required to reduce maternal mortality worldwide and UBT appears to have great potential. It is simple and safe with low cost. Condom balloon insertion treats atonic PPH refractory to medical management in more than 80% of cases. This method is a promising intervention for management of postpartum haemorrhage in limited-resource settings.

EP10.158

Spontaneous delivery through the rectum Tibbott, JMW¹; Barnett, A²; Harrison, J²

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Introduction Childbirth can be a traumatic time both physically and psychologically. In recent years the incidence of obstetric anal sphincter injuries (OASIS) has increased. Some risk factors have been identified such as macrosomia, nulliparous women and prolonged second stage of labour. Para vaginal delivery is rare, with <100 cases described, all of which have had disruption to the perineum. Spontaneous delivery through the rectum without disruption to the perineum has not previously been described.

Case A 22-year-old primigravid patient at term presented with spontaneous onset of labour. She progressed quickly to full dilatation. She pushed well for 40 min. Just as the head was visible at the introitus it suddenly disappeared backwards and delivered through her rectum. There was no disruption to her perineum. She had a primary repair of her posterior vaginal wall,

anal sphincter and a defunctioning colostomy was formed. The patient made a slow recovery suffering setbacks including dyspareunia secondary to a vaginal band as well as poor stomal output which required faecal disimpaction. 18 months after primary surgery her colostomy was reversed, she had normal anal sphincter function and had normal sexual functioning.

Unfortunately over this period her personal relationship with her partner broke down and the couple are now separated.

Conclusion The aetiology behind the rectal deliver is uncertain. The patient had never had any sort of anorectal or gynaecological surgery and she does not suffer from any congenital connective tissue disorder. We can assume that the baby took the path of least resistance. Could the patient have had a congenital posterior vaginal wall defect? Or could trauma, perhaps rupture of the posterior vaginal wall, alone be the cause or a combination of the two.

EP10.159

Theoretical and practical evaluation of a new device for delivery of the impacted fetal head at caesarean section

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Introduction Caesarean section in the late first or second stage can be associated with a fetal head deeply impacted in the maternal pelvis. Delivery can be aided by elevation of the fetal head by an assistant's fingers during vaginal examination. Occasionally this can result in serious adverse sequelae including fracture of the fetal skull. We have designed a novel device (Tydeman Tube: TT) to release vacuum and elevate the fetal head as well as a simulator of full dilatation caesarean section (Desperate Debra: DD). The aim was to assess the elevation achieved using digital technique compared to the TT and the forces applied to the fetal head. We describe the first cases using this device in clinical practice.

Methods Digital technique and TT were each used five times on four different difficulty settings on DD with increasing degrees of impaction. The elevation achieved at each attempt was recorded. For each setting a variable force was applied to the simulator axis to achieve the same amount of elevation. The area applied to the head was assessed by calculation from the design drawings for the TT but by experimentation for the digital method.

Results For both the digital technique and TT, the degree of elevation and the required force correlated to the difficulty setting. For all difficulty settings greater elevation was achieved using the TT than digitally with a mean of +9.1 mm (range 26–48 mm $P < 0.001$). Greater force was applied to the head using the TT to achieve this elevation (0.42 kgf $P < 0.001$). The mean pressures applied were 0.81 kg/cm² using the TT and 2.25 kg/cm² digitally on the least difficult setting compared to 1.21 and 4.12 kg/cm² on

the most difficult setting. However, the force was spread over a total area of 6.97 cm² on the TT compared to 2.0 cm² digitally. This represents an average reduction of 2.3 kg/cm² with the TT compared to digital technique ($P < 0.001$). The TT has now been used in clinical practice and was noted to significantly ease disimpaction.

Conclusion We describe for the first time an estimation of the force and pressure applied to a fetal head during disimpaction. The use of the TT was associated with lower pressure and therefore likely to be associated with a lower risk of fetal injury. Greater elevation was achieved which is likely to lead to fewer complications for mother. The TT has been used successfully in clinical practice. We will proceed to clinical trials.

EP10.160

Full dilatation caesarean section and risk of subsequent preterm birth: a case series

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Introduction Preterm birth (PTB) or mid-trimester loss is rare following term pregnancy. Caesarean section carried out at full dilatation (FDCS) is associated with increased clinical challenges. The integrity of the cervix may be affected by the uterine incision performed late in labour, however, there are few reports of clinical outcome in subsequent pregnancies following this scenario.

Case(s) We report a case series of twelve women with experience of late miscarriage or PTB after term FDCS who attended a specialist preterm surveillance clinic for care in their subsequent pregnancy or pre-pregnancy counselling. Assessment and preterm surveillance included cervical measurement by transvaginal ultrasound scan (TVS) and fetal fibronectin testing from 18 weeks' gestation. All of the seven women presenting for pregnancy care subsequently had live term births, 5 after cervical cerclage (4 × vaginal, 1 × transabdominal) and 2 with surveillance alone. Of those attending for pre-pregnancy counselling, an anterior cervical defect was seen on TVS and transabdominal cerclage was offered in 3 cases. Elective vaginal cerclage was deemed appropriate in the other two.

Conclusion FDCS may be a risk for subsequent PTB and pregnancy loss, particularly following failed instrumental delivery. Aetiology may be inadvertent cervical incision or tear. Cervical surveillance plus/minus cerclage may be beneficial, and the traditional threshold for using cerclage (3 prior PTB events) may be inappropriate in this group. More research is needed into the mechanism behind premature cervical dilatation in this group and the use of ultrasound indicated cerclage for subsequent pregnancies. Clinicians should be made aware of this risk factor and the likely importance of higher uterine incisions when performing FDCS.

EP10.161

An audit into the management of obesity in pregnancy at a major London teaching hospital

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Introduction Obesity is a growing medical health issue. In the UK, it is estimated that 16–19% of adults are obese, with a BMI of 30 or greater. The 2010 CMACE (Centre for Maternal and Child Enquiries) reported that 5% of the UK maternity population were severely obese (i.e. a BMI >35 kg/m²). Furthermore, according to the 2005 Confidential Enquiry into Maternal and Child Health (CEMACH) report, approximately one third of maternal deaths occurred in women who were classed as obese. Obesity is associated with several antenatal, intrapartum, and postpartum complications which have a great impact on maternal and fetal health. There are therefore huge financial and resource implications associated with it. A joint guideline by CMACE and the RCOG was published in 2010 with the aim of providing guidance on how these high risk women should be managed at various stages of their pregnancy.

Methods A retrospective audit was conducted over a 3-month period (20 cases). Case notes from the postnatal ward at Queen Charlotte's and Chelsea Hospital were screened and any woman with a booking BMI of 30 and over was included. Various antenatal, intrapartum and postpartum standards were audited for all women including special considerations for those with higher BMIs (i.e. 35 and above) as set by CMACE/RCOG. The audit was repeated 6 months later (67 cases) and antenatal, intrapartum and postpartum complications were recorded, as well as length of hospital stay.

Results All women were counselled regarding folic acid, vitamin D, and appropriate thromboprophylaxis. All severely obese women were appropriately referred to a consultant-led clinic. However, only 33% of women had a GTT recorded. Furthermore, only 66% underwent an antenatal anaesthetic review. Intrapartum, all women had continuous EFM, but only 66% of severely obese women were reviewed by an anaesthetist on admission. All women received active management of the third stage of labour. Upon re-auditing, 90% had a GTT and all severely obese women were reviewed by an anaesthetist antenatally. However, only 33% were seen by anaesthetist in labour. Complications included GDM (10%), PET (12%), sepsis (19%) and PPH (12%). Average postnatal stay was 2 days (range 1–7 days).

Conclusion Overall, the management of these women was satisfactory. However, a major hindrance which has a great impact on the care we deliver to this group of women is the problem of late-booking. These women are often high risk as they have not had appropriate antenatal follow-up.

EP10.162

Shoulder dystocia – can we predict severity and neonatal outcome?

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Introduction Shoulder dystocia (SD) is recognised to carry significant potential for neonatal injury. It is however difficult to predict, with the majority of cases occurring in women without acknowledged risk factors. This audit assessed presence of risk factors in true SD, persistence of neonatal morbidity and adequacy of documentation.

Methods All cases of SD were identified via the maternity unit database (CMIS) for a 3 year period (August 2011–July 2014). Case-notes were reviewed for presence of risk factors for SD, specific diagnosis of SD, use of obstetric manoeuvres, neonatal outcome and adequacy of documentation. Exclusion criterion was use of 'prophylactic' McRobert's only. The data were divided into two subsets, those requiring first-line manoeuvres only (McRobert's and/or suprapubic pressure) and those requiring second line manoeuvres (delivery of posterior arm and/or rotational), reflecting severity of the SD.

Results There were 167 cases of shoulder dystocia. 134 cases had complete data available. There were 14 injuries (10%), of which 2 had a persistent Erb's palsy at 18 months and 2 years (1.4%). There were 2 cases of mild HIE. Second line manoeuvres were used in 35% of cases. The head-body delivery interval increased from an average of 2.5–3.1 min in these cases compared to first line manoeuvres only ($P = 0.016$, unpaired t -test). These cases accounted for 67% of SCBU admissions and 86% of injuries, including both cases of persistent Erb's palsy. There was suggestion of correlation with increasing BMI but this was not statistically significant. The strongest predictor of a significant SD was instrumental delivery with 47% versus 35% requiring second line manoeuvres ($P = 0.0175$, Fisher's exact test). The reason given for diagnosis of SD was the 'turtle sign' or 'after routine axial traction' in 58% of cases; 25% documented no reason. The standard SD pro forma was present in 72% of all case-notes, but 100% of those where injury/HIE occurred.

Conclusion Injury rate for the unit in this period was in line with that published in the literature. Use of second line manoeuvres was strongly associated with neonatal morbidity, despite only a small increase in head-body interval. These cases showed increased presence of risk factors for SD. Identification of SD using specific diagnostic criteria and use of the pro forma is improving, but documentation varies with perceived severity of the event.

EP10.163

Maternal and fetal outcomes following prolonged fetal bradycardia

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Introduction Prolonged fetal bradycardia in labour is an obstetric emergency about which there is little published literature to guide

practice. There are limited data on the incidence of fetal bradycardia or outcomes for women and babies. Current management recommendations are based on expert opinion. RANZCOG and NICE guidelines both identify this as an emergency situation with potential for significant fetal compromise, however differ in their terminology and definitions.

Methods A retrospective cohort study was undertaken at the Mater Mothers' Hospital, Brisbane between March and August 2014. Data for all women who laboured and gave birth in that time frame were extracted from the hospital's electronic maternity record system. Births by elective caesarean, multiple gestation, congenital anomalies and preterm deliveries (<37 weeks) were excluded. Cases of prolonged fetal bradycardia (reduction in fetal heart rate <100 bpm for >5 min) were identified, and maternal and neonatal outcomes were compared to those who did not experience prolonged fetal bradycardia. Categorical Data were analysed using Chi squared or Fisher's exact test and continuous data analysed using the Student t-test.

Results Amongst 3030 women who laboured, 91 cases of prolonged fetal bradycardia were identified, resulting in an incidence of 3%. Women whose babies experienced a prolonged fetal bradycardia were more likely to experience an instrumental birth or caesarean than those who did not ($P < 0.001$). Neonatal outcomes were different between the two groups, with babies experiencing a prolonged fetal bradycardia more likely to have Apgar scores of <7 at 5 min ($P = 0.002$) and admission to the nursery ($P < 0.001$). There was a trend towards increased rates of intubation ($P = 0.130$) and external cardiac compression ($P = 0.087$) in the prolonged fetal bradycardia group, but these did not reach statistical significance.

Conclusion Prolonged fetal bradycardia is associated with adverse neonatal outcomes. It is a common intrapartum event occurring with a similar frequency to other obstetric emergencies such as postpartum haemorrhage or shoulder dystocia. Despite this, there is a paucity of research and a lack of evidence-based protocols and procedural drills for responding to a very common obstetric emergency.

EP10.164

A threat to the fetal lifeline: a case of an umbilical artery aneurysm

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Introduction An umbilical artery aneurysm is a rare abnormality of the umbilical cord commonly associated with chromosomal anomalies and fetal demise. While the pathogenesis of umbilical artery aneurysms is poorly understood, the association with aneuploidy is thought to be due to increased vascular pressure of the trisomic placenta. This case is remarkable, in that it documents a case of an umbilical artery aneurysm occurring in a fetus of normal karyotype.

Case A 26-year-old, Gravida 2, Para 0, Miscarriage 1, Zimbabwean woman presented to the Rockhampton Hospital at

34 + 2 weeks gestation with abdominal pain. The morphology scan at 20 weeks was normal with a bulky anterior placenta. The patient was also having serial ultrasound scans after the detection of intrauterine growth retardation. The patient was assessed in short stay for her pain, presumed to be from red degeneration of known fibroids, and sent home later that day. Growth ultrasound at 37 weeks revealed a 28 × 33 mm vascular dilatation at the placental cord insertion, containing both arterial and venous flow. The amniotic fluid index was 22. A repeat scan at 38 weeks revealed a focal dilatation of the umbilical artery near the placental insertion site, consistent with an umbilical artery aneurysm. In view of the high risk of rupture and intrauterine death, the patient was admitted and underwent a caesarean section the next day. A female infant was delivered and karyotyping performed postnatally revealed no abnormalities. Histology revealed a broadened and oedematous three-vessel cord, with an umbilical artery aneurysm. The aneurysm was associated with an attenuated wall, reduced elastic fibres, fibrin accumulation and degenerative calcification. The neonatal course was uneventful and the patient and newborn were discharged home on day three.

Conclusion The association of umbilical artery aneurysm with trisomy 18, single umbilical artery, and fetal demise has been well documented in the literature. However, the pathogenesis behind the formation of umbilical artery aneurysms remains unclear. This report demonstrates a case of umbilical artery aneurysm in a fetus of normal karyotype, incidentally discovered at 37 weeks during a serial scan for growth restriction. The bulky placenta noted at the 20-week morphology scan may have contributed to the development of an aneurysm by increasing resistance to umbilical artery flow. More research is needed into the cause of umbilical artery aneurysms so that appropriate antenatal management, including early detection and delivery, may be employed to minimise the risk of fetal demise.

EP10.165

A review and thematic analysis of attitudes and positions of professional organisations to planned home births in the USA, Canada, the UK, Australia and New Zealand

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Introduction Despite multiple large observational trials providing evidence to support or refute the safety of planned home birth (PHB), professional organisations (POs) of obstetricians and midwives remain divided on its safety and advisability. This lack of consensus means that midwives often practise home births without the support or regulation of a medically orientated hospital system, creating significant legal vulnerability. Furthermore, many women are unable to access home birthing services, and are unable to make informed decisions around home

birth. We wished to better understand this divide in professional attitude by reviewing official positions of POs and their responses to key pieces of literature.

Methods Current official position statements and media responses to key studies were sought from documents produced by or available from colleges of obstetricians and gynaecologists and colleges of midwives in the UK, USA, Canada, and Australia and New Zealand. Documents that were publically available between January 2014 and April 2014 were reviewed. These official statements and responses were reviewed to determine reasons for position on home birth, and common patterns and contradictions between positions. These were then grouped into emergent themes.

Results All midwifery POs supported planned home birth in low risk women. RANZCOG and ACOG did not, citing safety as the key concern. RCOG, in a joint statement with RCM, supported PHB. Whilst these opinions were based upon the same published literature, themes that emerged were: differing meanings of safety and seeing childbirth as a normal physiological process compared with a potential pathology; the importance of childbirth as a process as well as an outcome; autonomy; and factors specific to the region represented by the PO, such as geography and existing antenatal models of care. POs either dismissed studies based on methodology or relevance, or ignored studies that contradicted their positions, although RCOG was more embracing of conflicting studies.

Conclusion Despite the shared goal of a healthy mother and baby and the same literature set for guidance, POs had very different positions on PHB. This review highlighted shared goals between POs and differing interpretations of these goals. Themes from this review may provide common ground and discussion points for POs. Further evaluation is underway into the factors that influence professional opinion formation.

EP10.166

Outpatient compared to inpatient cervical ripening with a double balloon catheter. A pilot randomised controlled trial

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Introduction Recent evidence shows that balloon catheter cervical ripening is just as effective as prostaglandins, but does not cause uterine stimulation. For women with low risk pregnancies, this offers the possibility of undergoing the overnight ripening process in their own home. We conducted a pilot randomised trial to assess the outcomes, clinical pathways and acceptability to both women and clinicians of outpatient balloon catheter ripening compared with usual inpatient care.

Methods Forty-eight women with low risk term pregnancies were randomised (2:1) to either outpatient ($n = 33$) or inpatient double-balloon catheter ($n = 15$) cervical ripening. Although not powered for statistically significant differences, the study explored potential

direction of effect for key clinical outcomes such as oxytocin use, caesarean section and morbidities. Feedback on acceptability was sought from women at catheter insertion and 4 weeks after the birth, and from midwives and doctors, at the end of the study.

Results Clinical and perinatal outcomes were similar. Most women required oxytocin (77%). The outpatient group were 24% less likely to require oxytocin (risk difference -23.6% , 95%CI -43.8 to -3.5). There were no failed inductions, infections or uterine hyperstimulation attributable to the catheter in either group. Most women in both groups reported discomfort with insertion and wearing the catheter, but were equally satisfied with their care and felt the baby was safe (91% both groups). Outpatient women reported feeling less isolated or emotionally alone. Most midwives and doctors ($n = 90$) agreed that they are more comfortable in sending home a woman with a catheter than prostaglandins and 90% supported offering outpatient ripening to eligible women.

Conclusion Outpatient balloon catheter ripening should be further investigated as an option for women in an adequately powered randomised trial.

EP10.167

Outcomes for women with a short cervix and extended hospital admission

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Introduction Many women undergo transvaginal ultrasound scanning (TV-USS) of cervical length during their pregnancy. If a woman is diagnosed with a short cervix this poses a challenge for the clinician due to the paucity of evidence available to guide management. Approaches include progesterone, cerclage, recommended bed rest and even hospital admission. An extended hospital admission (>5 days) is not only costly but difficult for patients to be away from home and family. We hypothesise that in women with a known short cervix, an extended hospital admission does not improve maternal or neonatal outcomes.

Methods A retrospective case-controlled cohort study was undertaken using routinely collected obstetric data from our institution over a 2-year period from 2012 to 2014. Women with a live singleton pregnancy and a short cervix (<25 mm) on TV-USS at any gestation were initially included. Those who had a hospital admission of >5 days were matched to those without an extended admission for cervical length, gestation at diagnosis of short cervix, parity, risk of preterm birth (either history of preterm birth or previous cervical surgery), and treatment with progesterone or cerclage. The matched cohorts were compared on a range of maternal and neonatal outcome measures.

Results Forty-two women with a cervical length of <25 mm who had an extended hospital stay of >5 days were able to be precisely matched with 42 controls who did not have an extended hospital stay. Women with an extended hospital stay were more likely than those without to deliver preterm (88.4% versus 42.5%, $P < 0.001$),

deliver before 34 weeks gestation (58.1% versus 30.2%, $P = 0.016$), deliver before 32 weeks gestation (41.9% versus 16.3%, $P = 0.017$), and have a neonatal nursery admission (65.1% versus 32.6%, $P = 0.003$). They were less likely to achieve a normal vaginal delivery (18.6% versus 44.2%, $P = 0.011$). There was no significant difference between the cohorts in regards to maternal venous thromboembolism (VTE), cord prolapse, arterial cord gas pH <7.1 , Apgar score <7 , stillbirth or neonatal death.

Conclusion At our institution an extended hospital admission of >5 days for women with a short cervix did not improve maternal or neonatal outcomes. It was associated with a greater likelihood of preterm birth and nursery admission, and the woman was less likely to birth vaginally. Given the increasing practice of measuring cervical length in both low and high risk pregnancy, controlled studies are needed to demonstrate the benefit or otherwise of admitting women with a short cervix to hospital.

EP10.168

Transvaginal caesarean section for an incarcerated gravid uterus – an unexpected complication of fibroids

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Introduction An incarcerated retroverted gravid uterus in the third trimester is a rare but significant complication of leiomyoma in pregnancy.

Case A nulliparous woman presented with a large cervical fibroid on antenatal ultrasound. At 36 + 5 weeks gestation she went into preterm labour. At caesarean section the anatomy was markedly distorted. A transvaginal incision was inadvertently performed with delivery of the baby through the posterior uterine wall. The uterus was acutely retroverted and deeply incarcerated in the pouch of Douglas secondary to a large fundal fibroid.

Conclusion The case illustrates an unusual presentation of fibroids in pregnancy and discusses the importance of early recognition of location and size of fibroids. A pre-operative awareness of the retroverted incarcerated gravid uterus and possible distortion of anatomy may prevent complications at caesarean section.

EP10.169

Pocket ultrasound machine translabial/transperineal ultrasound versus conventional transvaginal ultrasound in the measurement of cervical length in pregnancy

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Introduction The study aims to investigate feasibility and accuracy of measuring cervical length by translabial/transperineal

sonography with a pocket ultrasound machine (PUM) and compare measurements obtained with conventional transvaginal ultrasound (TVUS) on high specification ultrasound machines (HSUM). TVUS cervical length measurement is a clinically useful and established method in predicting preterm birth. Identifying women at increased risk of preterm birth potentially improves outcomes as prompt transfer to a tertiary centre can be organised. TVUS on HSUM is current industry gold standard.

Methods A prospective, blinded study comparing cervical length measurements of pregnant women obtained with PUM and HSUM was carried out. Women were between 11 and 40 weeks gestation, clinically required transvaginal ultrasound and were consented. HSUM TVUS was performed by experienced sonographers. PUM translabial/transperineal ultrasound performed by one of the study investigators, blinded to TVUS result. Identical scan techniques used. Data were analysed to determine if PUM measurements were feasible and similar to those obtained using HSUM.

Results Primary analysis calculated the correlation between cervical measurements made by HSUM versus PUM. Study population of 70 patients provided over 80% power to distinguish a correlation of ≤ 0.8 from a correlation of ≥ 0.9 at 5% level of statistical significance. Correlation above 0.8 would suggest PUM showed good agreement with HSUM. Our study results showed a correlation of 0.67 with a 95% confidence interval between 0.52 and 0.78. This suggests translabial/transperineal PUM cervical length measurement lacks accuracy compared to HSUM. This is an important finding with major clinical significance. Results suggest study investigators' measurements improved with practice. There was a correlation of 0.59 from the initial 35 patients which improved to 0.74 for the next 35.

Conclusion PUM translabial/transperineal technique is feasible but in our hands at present appears to lack accuracy. Ultimately, the accuracy and performance of a new machine is dependent on the users' experience.

EP10.170

'Sepsis six' – adaptation of a trust innovation in maternity

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Introduction Sepsis was the leading cause of maternal death in the 2006–2008 Confidential Enquiry into maternal deaths, which led to the subsequent development of the RCOG Green Top Guideline, identifying that severe sepsis with organ dysfunction has a 20–40% mortality rate, with survival rates dependent on early identification and management. Following a death from severe sepsis at the Royal Free Hospital in 2009, the 'Sepsis Six' Protocol was designed and implemented by the Trust Board. An 8% reduction in mortality, with 20% increased survival secondary to sepsis in other hospital departments, inspired an adaptation of this protocol in maternity and was subsequently introduced in October 2013.

Method Patients requiring implementation of 'Sepsis Six', *trigger* if two or more objective parameters are abnormal (Temp $< 36^{\circ}\text{C}$

or $>38^{\circ}\text{C}$, SBP < 90 mmHg; HR ≥ 125 bpm; RR ≥ 25 bpm, GCS < 15 ; oliguria (<0.5 mL/kg over 2 hours); pH < 7.25 ; lactate > 4). This prompts a care package of six interventions (oxygen, IV antibiotics, IV fluid challenge, septic screen, venous lactate and fluid balance monitoring), all of which need to be implemented within 1 hour. For improved efficiency in delivery, this is packaged in a 'Sepsis Six' pack, an 'app' was also developed with a prompts and a timer to help to improve compliance. A multi-disciplinary team, adapted 'Sepsis Six' for obstetric patients to include recognition of obstetric sources of sepsis, a restricted fluid resuscitation for pre-eclamptic women and the introduction of an obstetric specific antibiotic guideline.

Results Results of this pilot were audited on a monthly basis. Patients who met the criteria for initiation of 'Sepsis Six' management, notes were reviewed. From initially very poor compliance (50%), in month 11 we achieved 100% of all interventions being implemented within 1 hour. All women were managed appropriately by the multi-disciplinary team and discharged home.

Conclusion Poor initial compliance data were identified early on and through varied methods of team education and awareness, we have managed to emulate the compliance rate achieved in other areas of the hospital, leading to improved morbidity for our patients. This pilot reflects lessons learnt from elsewhere in the hospital can lead to innovations in maternity.

EP10.171

A case report on severe idiopathic fetomaternal haemorrhage

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Introduction Fetomaternal haemorrhage (FMH) is the entry of fetal blood into maternal circulation before or during delivery. While a small amount of leaks of 2 mL is commonly detected in up to 98% of pregnancies, massive FMH is rare and can be a cause of intrauterine death in up to 0.04% of all births. The incidence of FMH of >80 and 150 mL is estimated to be 1 in 1000 and 1 in 5000 deliveries respectively.

Case We report a case of severe idiopathic FMH in Mrs J, a 32-year-old woman in her second pregnancy. She self presented to the Medical Assessment Unit with reduced fetal movements at 39 + 4 weeks of gestation. Her antenatal course had been uneventful until her last 2 weeks of gestation, where she presented twice with reduced fetal movements and had reassuring cardiotocography (CTG) results and a normal Doppler's ultrasound scan then. At presentation, no fetal movements were felt and she had a pathological CTG trace showing unprovoked decelerations and an episode of fetal bradycardia. An emergency lower segment caesarean section was performed and a female baby was delivered in good condition, requiring no initial resuscitation but noted to be markedly pale. The birthweight was 2.385 kg with Apgar scores of 8, 8 at 1 and 5 min respectively. A bedside test of

the cord blood haemoglobin measured 4.1 g/dL, later confirmed by a lab result of 5.4 g/dL. The neonate was given emergency transfusion support. A Kleihauer–Betke test followed by flow cytometry subsequently performed confirmed FMH of 94 mL. Mrs J, who was Rhesus negative eventually received a total of 12 500 international units of Anti-D, as her neonate was found to be Rhesus positive. Both mother and child were later discharged in stable conditions.

Conclusion Manifestation of FMH depends on the acuity and magnitude of blood loss. Most cases are idiopathic, often spontaneous and involve uncomplicated near term pregnancies. However, it may also result in neonatal complications such as neurological injury and stillbirth as a result of fetal anaemia. The most common antenatal presentation is reduced or absent fetal activity as in this case, or with other signs such as abnormal fetal heart rate pattern and fetal demise. As FMH can occur without antecedent risk factors, a heightened index of suspicion should be warranted in cases of maternal perception of reduced fetal movements.

EP10.172

Can we standardise the active management of third stage of labour (AMTSL)?

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Introduction Primary postpartum haemorrhage is defined as 500 mL or more blood loss in the first 24 hours following birth. National WHA 2012 benchmarks indicate rates of 2.7% (1000 mL up to 1500 mL) and 1.8% (1500 mL or more). Previous retrospective audits at the Royal Hobart Hospital (RHH) reported a higher prevalence of PPH in vaginal births as compared with caesarean sections and varying practices of AMTSL. A standardised guideline for AMTSL and trial PPH documentation tool was introduced in July 2013. Our objective was to compare the incidence and management of postpartum haemorrhage, specifically in singleton vaginal births at RHH before and after the introduction of tools to improve the standardisation AMTSL practices.

Methods A prospective audit of singleton vaginal births at RHH from July to September 2013 to compare the incidence of PPH following standardisation of AMTSL in our unit (University of Tasmania HREC Project No: H0013112) was conducted. Data were obtained from the PPH Documentation Tool (PPHDT), Obstetrix (maternity database) and the Digital Medical Records (DMR). These data were compared with the results of a previous audit (April to June 2013) prior to the introduction of tools to improve standardisation of AMTSL practices.

Results The incidence of PPH (July–September 2013) was 12.2% (1.08% 1000–1500 mL, 1.35% >1500 mL). There was a trend towards a reduction of incidence in the total number of PPH as compared to previous audit (14%, OR 0.84, $P = 0.65$). There was also a trend towards reduction in PPH in singleton vaginal births (11.6%) as compared to previous audit (13%, OR 0.91, $P = 0.83$).

There was an improvement in the use of the protocol recommended Syntometrine, This was used in 72.1% singleton vaginal births where PPH had occurred (previously 60.4%, OR 1.7. $P = 0.074$). The mean time of administration was 2.29 min from the time of birth (TOB) (mean of 2.26 min in the previous audit). Improvement in uterotonic administration was seen in singleton live vaginal births where PPH occurred. The average time was 1.4 min from TOB compared to previous audit (1.9 min).

Conclusion The introduction of tools to standardise AMTSL have resulted in a trend of improvement in the choice of uterotonic and incidence in postpartum haemorrhage at the Royal Hobart Hospital. There is still some variation of practice in AMTSL (including the timing of uterotonic) and therefore some scope for further improvements in the reduction of PPH rates.

EP10.173

Is South Asian ethnicity a risk factor for adverse outcomes in the post-term period?

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Introduction Maternal ethnicity is an emerging risk factor for adverse perinatal outcomes. South Asian women in particular are 2.4 times more likely to have a late-pregnancy antepartum stillbirth than Australian-born women, with the relative risk increasing progressively with gestation. The underlying mechanisms remain unclear but may involve 'accelerated placental ageing'. Whether the risk of other perinatal complications increases earlier in Asian women is not known. Our aim was to determine if post-term South Asian-born women were more likely to demonstrate abnormalities suggesting fetal compromise in later pregnancy compared to Australian-born women.

Methods A retrospective cohort of singleton births in nulliparous women from 2009 to 2011 at ≥ 10 days post-term (41 weeks and 3 days gestational age) with available surveillance records was conducted. A total of 145 South Asian-born (SA) and 272 Australian-born were studied. Differences in amniotic fluid index (AFI), CTG, intrapartum fetal compromise, mode of delivery and perinatal outcomes were compared between the two groups. The relationship between maternal ethnicity, intrapartum fetal compromise and emergency caesarean delivery was assessed by logistic regression, adjusting for potential confounders.

Results SA women were more likely to have an abnormal CTG (10.3% versus 3.3%, $P = 0.004$), but not a significantly lower AFI (14.5% versus 9.9%, $P = 0.11$) compared with Australian born women. Consequently SA women were more likely to undergo an induction of labour (70.3% versus 59.2%, $P = 0.020$), and after

adjustment for confounders, SA women were 65% more likely to have an emergency caesarean (95% CI 1.07–2.53, $P = 0.02$). SA women were also more likely to demonstrate intrapartum fetal compromise (55.9% versus 44.5%, $P = 0.017$), however this association did not persist after adjusting for confounders. There was a higher rate of Special Care Nursery or Neonatal Intensive Care Unit admission in babies born to SA women (28.5% versus 20.6%, $P = 0.047$), but no significant difference in Apgar scores or cord lactates.

Conclusion These findings suggest that SA women are at higher risk of markers of fetal compromise post-term. This supports the hypothesis that risk of perinatal complications may increase earlier in SA women than in Caucasian women as a result of 'accelerated placental ageing'. Given the increasing proportion of overseas-born women receiving obstetric care in Australia, the possible ethnicity-related differences in perinatal outcomes warrant further study so that tailored improvements to care can be developed.

EP10.174

Acute axial torsion of gravid uterus at term: an unusual complication of pregnancy[†]

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Background Acute axial torsion of uterus at term is an unusual complication of pregnancy and probably represents as a 'once in a life time' diagnosis. Uterine torsion can be a great mimic masquerading as different maternal – fetal pathologies. This is one such patient where torsion of the uterus presented as unexplained feto-maternal tachycardia at term.

Case A 25-year-old third gravida with previous two normal deliveries presented at 38⁺¹ weeks of gestation with mild pain abdomen for 2 hours. She had no urinary complaints, no bleeding or discharge P/V. On examination, there was persistent unexplained maternal as well as fetal tachycardia, uterus was relaxed and non tender and she was not in labour. All her investigations including USG and ECG were normal. An emergency caesarean section was performed for fetal indications after ruling out all causes of maternal tachycardia. On caesarean, uterus was found to be rotated on its axis, which could not be de-rotated. Uterus came back to its normal anatomy after delivery of baby. Baby was vigorous and mother recovered well.

Conclusion The signs and symptoms being non specific, uterine torsion can mimic many other conditions. This case report is presented to highlight the fact that uterine torsion should be kept in mind in unexplained feto-maternal tachycardia, and if timely diagnosed, it can prevent adverse fetal maternal outcome.

[†][This abstract was added 8 August 2015 following initial online publication]