P93 A change in clinical practice guideline to improve post caesarean section analgesia with oral oxycodone

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Introduction: It is well recognised that good management of acute pain post caesarean section (LSCS) reduces maternal morbidity and enhances patient experience.¹ Early fixed dose oral opioids provide comparable analgesia to intrathecal morphine with less pruritus but more maternal satisfaction.² Hence this guideline focuses on oral opioid technique in the context of multimodal analgesia.

In 2011, our annual pain management audit demonstrated an increasing trend of patients with moderate to severe pain (from 7% in 2007 to 14% in 2011). This emphasized the need to update our clinical practice guideline (CPG). We changed the initial post-operative analgesia from either 30mg rectal oxycodone controlled release (CR) or 10mg intramuscular morphine to 10mg oral oxycodone CR continued for two days. The aim being to avoid mixing opioids and route of administration and utilise oral analgesia whenever possible.³

Method: Staff were educated about the change in CPG for a month prior to its implementation. A prospective audit was then performed over two months using the same audit tool kit. We also calculated total oxycodone dose used in the first 24hrs post-operatively. A further amendment was made to the CPG to increase the oxycodone CR dose from 10mg bd to 20mg bd, which was re-audited in 2012.

Results: The findings of the audit are summarised in the table below:

<table>
<thead>
<tr>
<th>Audit</th>
<th>Nov-Dec 2011</th>
<th>July-Sept 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR oxycodone PO dose</td>
<td>10mg</td>
<td>20mg</td>
</tr>
<tr>
<td>No. of patients (total)</td>
<td>121</td>
<td>100</td>
</tr>
<tr>
<td>- elective LSCS</td>
<td>34 (28%)</td>
<td>31 (31%)</td>
</tr>
<tr>
<td>- emergency LSCS</td>
<td>87 (72%)</td>
<td>69 (69%)</td>
</tr>
<tr>
<td>Pain score:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 4</td>
<td>4 (3%)</td>
<td>30 (30%)</td>
</tr>
<tr>
<td>5-7</td>
<td>83 (69%)</td>
<td>62 (62%)</td>
</tr>
<tr>
<td>≥ 8</td>
<td>34 (28%)</td>
<td>8 (8%)</td>
</tr>
<tr>
<td>No. of patients using &gt; 60mg oxycodone in 1st 24hrs</td>
<td>51 (42%)</td>
<td>36 (36%)</td>
</tr>
<tr>
<td>Adverse events:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>respiratory depression</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>naloxone used</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Discussion: We have successfully introduced oral oxycodone CR to our CPG. More patients reported low pain scores and the proportion of patients reporting high pain scores is reduced to 8%. By administering 20mg oxycodone CR, an overall reduction in total oxycodone dose used in the 1st 24hrs post-operatively was observed. No adverse events were reported and compliance with observations was maintained.

References

P94 A retrospective study of anaesthetic and obstetric outcome in patients with increased BMI > 50

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Introduction: Obesity is a growing concern in the obstetric population as it impacts on both maternal and fetal health and peripartum management. In our hospital over a 8 year period 2002-2010, there was a 5 fold increase in women with BMI > 50. In the 2003-2005 CEMACH report more than 50% of the maternal deaths were overweight patients (BMI > 50) and 4 out of the 6 anaesthetic deaths were obese patients.¹ Guidelines for the management of the obese patients have been produced by the AAGBI and jointly by CMACE and the Royal College of Obstetrics and Gynaecology.²

Methods: We conducted a retrospective audit of obstetric and anaesthetic outcome in patients with increased BMI >50 in our hospital between October 2005 and May 2011. The standards we set included documentation of weight and BMI both at booking and on admission, documentation of risk assessment for manual handling and equipment purposes, anaesthetic assessment in the antenatal clinic with information given on analgesia and anaesthesia for caesarean section and that anaesthetists should be informed of the patients with BMI >50 on arrival to labour ward. We also looked at both obstetric and anaesthetic outcome data in this group of women.

Results: The total number of patients included in this study was 35. 100% of the patients had documentation of weight at booking. Only 11% had their weight recorded on admission. 77% of the patients were seen in the antenatal clinic by anaesthetists, 69% of the patients had been given appropriate information about epidural analgesia and risks of obesity. On arrival to labour ward, anaesthetists were informed of these patients in only 31% of cases. 38% of women had multiple attempts at regional anaesthesia. An epidural needle > 8cm standard was required in 47% of the patients. 54% of these women had a caesarean delivery. None of the primips had a normal vaginal delivery or an elective section. 21% had a wound infection following caesarean section, 11% had wound dehiscence and 11% of them had sepsis. Fortunately, despite being high risk, none of this group of women developed deep vein thrombosis or a pulmonary embolism. 21%, however, had a post partum haemorrhage.

Conclusion: Women BMI >50 are a huge management challenge for both anaesthetists and obstetricians. We need to ensure that they are all are seen during the antenatal period by anaesthetists and that anaesthetists are informed about their admission to labour ward promptly so they can be re-assessed, cannulated with additional staffing and equipment prepared as necessary. Knowing more about outcome data can help with planning of future deliveries in such challenging women.

References
P95 A service evaluation of the remifentanil patient controlled analgesia (PCA) service for pain relief in labour
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Introduction: Remifentanil is a potent short-acting μ-opioid receptor agonist which is rapidly metabolised in the mother and fetus. It has been growing in popularity as a safe alternative to epidural analgesia for labour. Following a critical incident and withdrawal of our ad hoc remifentanil PCA service in 2009 we reviewed our protocol. A new guideline was formulated based on available evidence and to reduce risk we had one dose for all women. With these safety modifications the service began in December 2011 on the consultant led ward. Remifentanil is initiated by the anaesthetist and subsequently supervised by a midwife who has undergone local training.

Methods: We conducted a prospective audit of all cases lasting one year. Data was collected by the midwife attending delivery using an evaluation form. We could trace all women who used remifentanil from the record of controlled drugs and follow up any missing evaluation forms. The evaluation form was discussed and its use agreed by the Trust’s Caldicott Guardian.

Results: From December 2011 to December 2012, 270 women used a remifentanil PCA for labour analgesia. 24 (8.6%) evaluation forms had incomplete or missing data and so 246 were left for evaluation giving us a response rate of 91%.

<table>
<thead>
<tr>
<th>n=246</th>
<th>Maternal Satisfaction</th>
<th>n=246</th>
<th>Mode of Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very satisfied</td>
<td>NVD</td>
<td>51.22%</td>
</tr>
<tr>
<td></td>
<td>Satisfied</td>
<td>Ventouse</td>
<td>6.1%</td>
</tr>
<tr>
<td></td>
<td>Adequate</td>
<td>Forceps</td>
<td>18.69%</td>
</tr>
<tr>
<td></td>
<td>Dissatisfied</td>
<td>LSCS</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>Very dissatisfied</td>
<td></td>
<td>2.03%</td>
</tr>
<tr>
<td></td>
<td>Not recorded</td>
<td></td>
<td>1.62%</td>
</tr>
</tbody>
</table>

77.6% said they would use remifentanil again. Only 28 women (11.38%) experienced no pain with remifentanil indicating that other side effects such as sedation and anxiolysis contribute to satisfaction scores.

Discussion: Maternal satisfaction was higher than expected with over 80% (80.89%) being either satisfied or very satisfied. The forceps rate in those using remifentanil was higher than the local average (10.9% prior to the remifentanil service). It is suspected that remifentanil in the second stage causes drowsiness and ineffective pushing. Our protocol and training have been modified in this respect and we await results. The LSCS rate remains unaffected by the introduction of remifentanil.

The remifentanil PCA service has been introduced safely into our unit. Anecdotally we note that women are arriving on labour ward having been recommended to use remifentanil by previous patients. Women are regularly admitted with remifentanil PCA forming part of their birth plan and is now included in the antenatal education programme. The remifentanil service, initially a trial, will now continue with more PCA pumps and a new patient information leaflet, directly comparing remifentanil and epidural analgesia.

Reference

P96 A survey of senior Obstetric Anaesthetists’ tranexamic acid use, West of Scotland
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Introduction: Tranexamic acid (TXA) is an antifibrinolytic drug which has been shown to reduce postpartum blood loss.1 TXA is a therapeutic option for either prophylaxis or treatment of postpartum haemorrhage. Despite strong evidence for the benefit of TXA in bleeding trauma patients,2 debate has remained within obstetric practice; TXA can in principal increase thromboembolic events in a population of patients already known to be at higher risk of thromboembolism. The aim of this survey is to determine the current use of TXA by senior obstetric anaesthetists in the West of Scotland.

Method: Anaesthetic consultants and staff grades (n=70) with regular obstetric sessions in the West of Scotland were invited to complete an online survey in December 2012 over a two week period. Questions were posed on indications, prescribing habits and administration of TXA in obstetric anaesthesia. Most data were descriptive, Fisher’s exact test was used for comparative data.

Results: The response rate was 63% (n=44) from seven obstetric centres. One survey was incomplete thus excluded. In the last five years 40% of respondents had used TXA in their obstetric practice. In contrast, 81% used TXA with their obstetric practice. Two obstetric centres had a policy/protocol for the use of TXA. Frequency of TXA use in obstetric anaesthesia: nil weekly, 12% monthly, 59% yearly and 29% less than yearly. Use of TXA in patients with a clinically diagnosed major postpartum haemorrhage (PPH) was varied:

- Frequency of tranexamic acid use in major PPH (n=27; %)
  - Most (majority with clinically diagnosed major PPH): 7 (3)
  - Some (depends on the clinical circumstances): 19 (8)
  - Rarely (once or twice a year): 14 (6)
  - Never: 60 (26)

The majority gave the first dose of TXA as an intravenous 1 gram bolus (82%). A second dose was administered by less than half (41%), the most common regime was a 1 gram infusion. There was minimal statistical evidence of an association between regular use of TXA outwith obstetrics and use within obstetrics (p=0.0). Twenty one percent stated there were reasons preventing their use in obstetric anaesthesia. Most of these respondents commented on concern regarding thromboembolism.

Discussion: There was a good survey response. The majority of Obstetric Anaesthetists in the West of Scotland are not using TXA in their practice despite having general experience of TXA. Obstetric anaesthesia has not embraced TXA to the same extent as other clinical areas managing haemorrhage. Major PPH is not an infrequent event; we hypothesise TXA is often considered in more extreme obstetric haemorrhage. Concerns regarding TXA and thromboembolism remain an important factor for some respondents.

References
1. Novikova N, Hofmeyer GJ. Tranexamic acid for preventing postpartum haemorrhage. Cochrane Database of Systematic Reviews 2010;7: art no. CD007872
2. CRASH-2 trial collaborators, Shakur H et al. Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage (CRASH-2); a randomised, placebo controlled trial. Lancet 2010;376(9734):23-32
P97 A survey of trainees’ perspectives on epidural training in the United Kingdom

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Department of Anaesthesia, Poole Hospital NHS Foundation Trust, Poole, UK, *School of Design, Engineering and Computing, Bournemouth University, Bournemouth, UK

Introduction: NAP3 revealed an incidence of permanent harm of 3.1-6.1 per 100,000 epidurals.1 Gupta et al identified a increasing dural tap rate in the UK and quoted an incidence of 2.8%.2 The substantial cost burden was highlighted by a review of claims handled by NHSLSA from 1995-2007, which revealed that 366 of 841 cases (44%) were related to regional anaesthesia and of these, half arose in obstetrics.3 The current obesity epidemic poses even greater challenges with neuraxial techniques. The aim of this survey was to explore the current UK training structure for learning epidural analgesia, potential difficulties faced and the place of epidural simulation for training.

Methods: We sent a questionnaire to all 452 OAA-trainee members in May 2012. Trainees were targeted since this group comprises those who are either still progressing along the learning curve or those who can clearly remember their own training but are more involved with supervised practice.

Results: There were 207 responses (46%) of which 80% were senior trainees (ST5-7/SpR4-5) and 12% were junior trainees (ST3-4). Over 80% felt ready and prepared and had an awareness of risks and anatomy. The experience was described by 66% as very stressful. 9% felt unsure when to call for help and 25% felt time-pressured. Complications during the initial 25 epidurals were reported in 44%. Of these, 37% had a dural puncture, 3% short-term neuropathy and 4% a high block. Assuming each trainee performed only one dural tap, this equates to a rate of 1.5%, but this may in fact be an underestimate. The most important influence upon technical skill training is the EWTD, with 54% in agreement. 40% believe there are more challenging patients requiring more experienced operators. 53% had used an epidural simulator before, yet 84% would recommend its use. There was an equal divide when asked if simulation should be a compulsory element of training. The top 3 features that a simulator must possess are palpable anatomical landmarks, a realistic loss of resistance and adjustable patient position.

Conclusions: The robustness of the current system in spite of various changes to medical practice is reassuring. However, there still exists the need to reduce trainee stress and improve training opportunities. This may involve increased direct supervision, structured feedback tools to enhance the supervisor/trainee experience or the use of epidural simulation. The novel approach of the latter means that the stressful environment and time-pressure can be controlled and the more difficult insertions, such as in the obese parturient, can be accurately recreated. It is clear though that to serve its purpose, an epidural simulator must be of a high technical fidelity at an affordable price.

References


**P99 A multidisciplinary approach to obstetric anaesthetic handover and documentation with implementation of the recognised "SAFE" tool**

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**Introduction:** Effective handover is part of good professional practice and is a vulnerable time for patient safety. The National Patient Safety Agency (NPSA) state that systems must be in place to facilitate handover and adapted to local needs. In addition, handover tools provide succinct way of consolidating information. This audit compared the quality of obstetric anaesthetic handover in our institution to the current best practice and aimed to implement the "SAFE" tool developed in Northwick Park Hospital, as well as develop a multidisciplinary documentation of handover and improved attendance at handover events.

**Methods:** Over a six week period, fifty handover events were audited against the following standards; multidisciplinary approach, good documentation and 100% attendance at each of four handover times in the department. The anaesthetic registrar also recorded the type of information discussed, whether high risk patients were handed over and the time taken for each event. After implementation of the "SAFE" tool, introduction of a new approach to documentation and emphasis on attendance at multidisciplinary handovers, a re-audit was carried out focusing on these three criteria.

**Results:** All the handovers in our department were verbal with 84% lasting less than five minutes. The majority of handovers were not multidisciplinary, 82% of these occurring between two anaesthetic registrars and in only 10% of cases between obstetric and anaesthetic teams. High risk patients were handed over only 30% of the time and in some patient specific incidents, management could have been better had handover been more effective. This is similar to incidents described in the 2006 National Survey of Obstetric handovers. After implementation of the SAFE tool, the creation of an integrated obstetric and anaesthetic handover detailing anaesthetic risk and assessment, as well as an emphasis put on the importance of multidisciplinary handover at clinical governance meetings, a re-audit was carried out.

**Conclusion:** An overall improvement in handover was demonstrated with the changes made in our department. At re-audit, 100% usage of the SAFE tool and a multidisciplined handover more inclusive of anaesthetic issues can only make for better patient safety. We have successfully integrated anaesthetic and obstetric handover so that each is aware of issues pertaining to the other specialty. With anaesthetic risk documentation on the official obstetric handover sheet, high risk patients are less likely to be missed and a multidisciplinary management plan devised.

**References**

1. GMC Good Medical Practice, http://www.gmc-uk.org/guidance/good_medical_practice/working_with_colleagues_sharing_information.asp

**P100 Acute facial swelling in labour: pushed for a diagnosis**

K Slade, T Dunn, L Millar, P Paisley, E Jarvie, M Patel
Maternity Unit, wishaw General Hospital, Lanarkshire, UK

**Introduction:** Hamman's Syndrome, the development of spontaneous subcutaneous emphysema and pneumomediastinum, is a very rare condition which can present in labour. It occurs during the second stage, although the classification was derived specifically for obstetric anaesthetists or Obstetricians and there is little guidance on management during labour, or indeed of future pregnancies. We present 2 cases occurring during labour in healthy primigravida women.

**Case 1:** A 24 year old presented in spontaneous labour at 39+6 weeks gestation. Her booking BMI was 20kg/m². After 25 minutes of active pushing she developed acute swelling of the right side of her face which was treated as anaphylaxis. She delivered spontaneously soon after symptom onset. However, crepitation was noted in her neck postnatally and chest x-ray confirmed the absence of subcutaneous emphysema. This resolved over 2 days without intervention. She opted for elective caesarean section for delivery of a subsequent pregnancy following multidisciplinary input.

**Case 2:** A 23 year old was induced post dates. Her booking BMI was 30kg/m². Although an epidural was sited during the first stage of labour she continued to use entonox. Labour was augmented with syntocinon. After 55 minutes of active pushing a cracking sound was heard and she developed acute swelling of the chest, neck and face. She complained of sharp, central chest pain and face and neck tightness. Examination revealed crepitis across her chest and neck and a potential difficult airway. Entonox was stopped and she was transferred to theatre and delivered by forceps using existing epidural. Chest x-ray and CT scan confirmed extensive subcutaneous emphysema and pneumomediastinum. Clinical features settled over the next 3 days. There was no neonatal morbidity in either case.

**Discussion:** There is little guidance in the literature on both anaesthetic and obstetric management of Hamman's Syndrome in labour. A high index of suspicion is essential to allow early diagnosis. Signs and symptoms may be worsened by entonox, which should be stopped, and also Valsalva manoeuvres. Therefore operative delivery is advised to prevent further active pushing and expedite delivery of the neonate. General anaesthesia with positive pressure ventilation and N₂O may lead to extension of subcutaneous emphysema, pneumomediastinum, development of pneumothoraces and airway obstruction. The likelihood of recurrence is unknown and there is no consensus on the optimal management of future pregnancies, although early epidural analgesia in labour may facilitate prompt operative delivery and avoid general anaesthesia should the condition recur.

**References**

P101 Airway assessment in obstetric patients: completing the audit cycle.
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Introduction: Airway management in obstetric patients can be challenging. The reasons are multifactorial, with high BMI and presence of multiple comorbidities being the main factors. The incidence of failed intubation in obstetric patients is reported to be around 1:300.² Time available for anaesthetic assessment for emergency caesarean section is often limited due to a perceived need for urgent delivery of the foetus. In this pressure situation, especially when GA is needed, airway assessment, positioning and preoxygenation may be suboptimal and compromised.³ Our first audit (May 2012) demonstrated that the documentation of airway assessments in obstetric patients were inadequate and not uniform. Recommendations were made to utilise the labour epidural event for airway assessment of parturients and to include modified mallampatti(MMP) score, thyromental distance (TMD), neck movement and teeth examination to be assessed before all theatre procedures. Reaudit was done in September-October 2012.

Audit indicators: % obstetric patients in whom airway assessment was performed prior to the theatre procedure or during labour epidural event; quality of airway data recorded :MMP, Neck, Teeth, TMD.

Proposed standards: 100% patients should have airway assessment before any operative intervention in theatre; 100% patients to have all 4 data recorded.

Methods: It was a re-audit with prospective data collected from 246 patients from 10/9/2012 to 10/10/2012 in our hospital maternity units. The data was collected from anaesthetic records and epidural analgesia records.

Results: Of the 246 patients included, 70% of patients had airway assessments done compared to 46% in the first audit. 100% patients who had GA had their airway assessed compared to 66%. 93% patients who had caesarean section under spinal anaesthesia had airway assessment compared to 83% and 100% patients who had instrumental delivery in theatre had airway assessment compared to 50%. 88% patients who had epidural top-up in theatre had airway assessments compared to 75%. Airway assessments were performed only in 21% patients during labour epidural event compared to none in the first audit. Interestingly, 48.5% of patients with labour epidural had operative intervention in theatres under epidural top-up.

Conclusion: Our audit did demonstrate an improvement in our practice compared to the previous audit. There were no critical airway incidents during the audit period. Given the high operative intervention rate in patients with labour epidural analgesia and the availability of time, we recommend to use labour epidural as an opportunity to do a complete anaesthetic and airway assessment so that potentially difficult patients can be flagged up. Following from our audit, the epidural charts in our units are being modified to include a section for airway assessment as well.

Reference

P102 Airway obstruction, thyroidectomy and caesarean section - a case report
M A Hendrie, M M Kumar
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Case Report: A 39 year old primigravida with body mass index (BMI) of 47, essential hypertension, polycystic ovary syndrome and multi-nodular goitre presented to the obstetric services. She developed diabetes early on and blood pressure was labile. At the anaesthetic clinic her husband described stertorous breathing at night, an inability to lie flat and difficulty breathing when distressed. She strongly played down these symptoms and was adamant nothing was to be done about the goitre until after the baby was born. An MRI scan demonstrated a massive colloid goitre 10 cm in diameter, which compressed the trachea 28 mm below the lower margin of the larynx. At its narrowest point the trachea measured less than 7 mm in diameter. She was admitted at 32 weeks gestation with pre-eclampsia. With the enlarged thyroid gland compressing her airway she was extremely distressed and unable to lie down. Her neck was extended and she was unable to flex it or hold it in the neutral position due to the sheer size of the mass. An awake fibre optic intubation was undertaken via the oral route in view of the increased vascularity of the nasal passages exaggerated by pre-eclampsia. She was sedated with remifentanil and propofol. Her oropharynx was prepared with 4% lignocaine wash and 1% lignocaine spray. The fibre optic scope was passed through a Berman airway and the larynx was located with ease. Further aliquots of lignocaine were sprayed onto and beyond the vocal cords. Narrowing of the larynx was obvious and although there was significant narrowing of the trachea a size 6.0 cuffed reinforced endotracheal tube was inserted with ease. Successful placement was confirmed with capnography, anaesthesia commenced and a combined elective operative delivery and total thyroidectomy performed. At the end of the procedure the patient was extubated awake. She was monitored in the surgical high dependency unit and discharged home on day 5.

Discussion: Pregnant patients are at increased risk of airway complications due to the anatomical and physiological changes of pregnancy, among which is thyroid gland enlargement. However it does not usually cause respiratory compromise and airway obstruction in pregnancy is rare.¹² Awake fibre optic intubation is the gold standard in securing anticipated difficult airways.²⁶ We chose to undertake this via the oral route in view of the increased bleeding risk associated with congested nasal mucosa during pregnancy. Whilst it is thought best to delay surgery until post-partum, thyroidectomy can be performed with a reasonable degree of safety during the second trimester. Due to her worsening respiratory symptoms this would have been the preferred option in our patient as it would have helped prevent any airway compromise during the later stages of pregnancy such as further airway oedema associated with the valsalva manoeuvre during delivery. Her pregnancy was further compromised by other medical problems and this combined with her high BMI made management very challenging.

References
P103 An audit of antenatal assessment of morbidly obese parturients.

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Introduction: Obese pregnant women are at more risk of anaesthesia-related complications than women with a healthy BMI. Women with morbid obesity (BMI > 40) are at highest risk and it is recommended that local anaesthetic resources are focused on this group of women. The NICE Antenatal Care guideline (2008) recommends that maternal height and weight should be recorded for all women at the initial booking visit (ideally by 10 weeks gestation) to allow the calculation of BMI. All women with a booking BMI > 40 should have an antenatal anaesthetic consultation with a senior obstetric anaesthetist. University Hospital Lewisham is a busy inner London district general maternity unit with 4000 deliveries per year. We conducted an audit of antenatal identification of morbidly obese women and compared it with the national standards.

Method: We identified women with a booking BMI of >40 over a one year period from April 2011 to April 2012 using our maternity admission database. We then conducted a retrospective case notes review of: correct calculation of BMI, antenatal obstetric anaesthetic review and counselling regarding the risks of obesity. We noted the documented advice given during their anaesthetic antenatal assessment. We also looked at whether documented advice regarding risks of obesity was offered by the midwives during their assessment and if screening for diabetes was carried out.

Results: The median booking BMI in this subgroup was 43 (range 40-55) with 35% of women being primiparous. Half the women had no other co-morbidity other than obesity. We noted that 89% of patients had their BMI correctly calculated. Of these women, 87% were assessed by an obstetric anaesthetist and during this consultation all women seen had a documented discussion regarding venous access, airway assessment, choice of labour analgesia and anaesthesia (regional/general). We also noted that 89% of women were given antenatal counselling on risks of obesity in pregnancy and 79% were screened for diabetes by midwives during their visit.

Conclusions: Our audit shows that a very high proportion of morbidly obese women receive a high standard of antenatal anaesthetic care. We have developed robust referral pathways for midwives to enable easy access to consultant anaesthetic reviews. In addition we have developed a separate pre-anaesthetic assessment sheet for high risk women which is attached to their maternity notes. This documentation has improved communication between the multi-disciplinary team. We intend to disseminate this information to improve our services and then re-audit.

References
2. CMACE/RCOG Joint Guideline: Management of Women with Obesity in Pregnancy, March 2010

P104 Anaesthesia where there is no pressure: a novel set-up for delivering anaesthesia in a remote setting

PD Bonnett, I Wrench
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Introduction: Many anaesthetic machines donated to rural African hospitals remain unused because of a lack of a 4 bar oxygen supply. Staff working at a remote rural hospital in North-West Zambia have developed a novel solution to overcome this problem. An air compressor is utilised to deliver medical quality air at 4 bar pressure to the oxygen supply pipeline of a conventional anaesthetic machine. We describe the anaesthetic set-up and evaluate its suitability for wider use in the resource-poor setting.

Methods: An oil-free air compressor (Clean air) provides compressed air at 7 bar. The air is initially filtered (Hi-line air filter) and then the pressure is reduced to 4 bar. The compressed air is then connected to the oxygen pipeline supply at the rear of the anaesthetic machine (Datex modulus). Oxygen from an oxygen concentrator (Devilbiss) was then connected to the inspiratory limb of a circle circuit (Figure 1).

Results: Since the system has been operational over 500 general anaesthetics have been delivered for a range of procedures. Inspired oxygen concentrations of up to 65% were achieved. As the gas flow through the anaesthetic machine is actually air and oxygen is added to the circuit later some variations in anaesthetic technique are required. When the air flow on the anaesthetic machine is increased the FiO2 decreases: when the FiO2 is increased the vapour concentration is decreased.

Discussion: This novel set-up addresses the major obstacle in utilising donated anaesthetic machines in a rural African setting: the lack of a pressurised gas supply. The essential requirements for this set-up are gas monitoring, a reliable electricity supply and an engineer who is able to service the compressor. This hospital has a 24-hour electricity supply from a nearby hydroelectric plant. However, many resource-poor settings do not have a reliable power supply and this is a major limiting factor in the more widespread introduction of this set-up. Another concern is the potential confusion created by setting up the oxygen rotometer to deliver air rather than oxygen. Despite these limitations, this set-up is an excellent anaesthetic solution where no pressurised gases are available.
P105 Anaesthetic assessment of morbidly obese pregnant women- a useful resource?

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Introduction: Obesity in pregnancy is associated with increased risk of obstetric, neonatal and anaesthetic complications and has featured in recent Confidential Enquiries.1 Both National guidelines and the Clinical Negligence Scheme for Trusts (CNST) advise that all women with a body mass index (BMI) greater than 40 kg/m² have an antenatal anaesthetic assessment. The aim of this audit was to establish whether this expensive resource is useful in predicting adverse outcomes and enhancing safety for morbidly obese women.

Methods: After approval by our Trust audit committee, we conducted a retrospective audit of 120 morbidly obese women who attended the high-risk anaesthetic clinic in 2010 and 2011. Data collection included details of anaesthetic assessment, comorbidities, anaesthetic interventions and delivery outcomes.

Results: Between January 2010 and December 2011, 120 morbidly obese women were seen at anaesthetic high-risk clinic, representing 18% of clinic workload. 119 women delivered at our hospital; there was one antenatal maternal death. BMI’s ranged from 40 – 63 (mean 44), with 39 women with a BMI ≥45. 65% had documented comorbidities. Airway and spine assessment predicted possible difficult airway in 8% of women and possible difficulty with regional techniques in 50%. Management plans included requirement for senior anaesthetic involvement, technical advice (long needle/ultrasound) and guidance on management of anticoagulation. Anaesthetists were involved in the care of 76% of all women, totalling 113 anaesthetic episodes. Most had one anaesthetic intervention; 17% had two or more. 44% received labour epidural analgesia. 32% received regional anaesthesia (RA) for caesarean section (CS), 6% for instrumental delivery. General anaesthesia was given to two women for tear repair and used for CS in four women. Two of these had attempted spinals which were technically impossible, which was predicted by the anaesthetic assessment and senior support was arranged. Epidurals had to be resited in three patients. Overall, difficulty with regional techniques was encountered in 22% of women, this was predicted by examination and documented at clinic assessment in 85%.

Discussion: Our data show that antenatal anaesthetic assessment of morbidly obese women is a useful resource, given that in our institution over 76% of morbidly obese patients require anaesthetic input versus 60% in our overall obstetric population. "Normal" anaesthetic assessment documented in the clinic plan gives reassurance to junior staff working out of hours while predicted difficulties can be highlighted in advance and senior cover arranged. Clinical difficulty was predictable at antenatal review in most cases. Clinic plans have multiple functions and remind teams of the need for senior availability.2 Despite the considerable number of morbidly obese women delivering at our unit no anaesthesia related adverse outcomes were observed. Antenatal anaesthetic review has contributed to ensuring the availability of appropriate clinicians and enhanced safety for morbidly obese women.

References

P106 Anaesthetic management of a parturient with advanced Huntington’s disease

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Introduction: Huntington’s Disease (HD) is a hereditary neurodegenerative condition typically presenting in the 4th and 5th decades of life with progressive motor, cognitive and psychiatric symptoms. We present the management of a parturient with advanced HD and consider the anaesthetic implications of her condition.

Case Report: A 33 year old para 1+1 (spontaneous vaginal delivery 5 years prior) with late stage HD was admitted to a medical ward with swallowing difficulties, poor oral intake and weight loss. She was cachexic, bed bound, with cognitive impairment, poor speech and swallowing and severe choreiform movements. A “Do Not Attempt Cardio-pulmonary Resuscitation” (DNACPR) order was in place. After a full, lumbo-sacral x-ray demonstrated an unanticipated pregnancy, confirmed as viable 21 week gestation on ultrasound. Neuro-psychological assessment concluded she retained some capacity and she was counselled regarding the risks (including death) surrounding continuation of the pregnancy but refused termination. She remained an inpatient, pregnancy progressed satisfactorily and anaesthetic review was carried out and input sought on planning delivery mode and location; planned for elective caesarean at 36 weeks gestation. At 34 weeks gestation she had a spontaneous rupture of membranes and began contracting. On transfer to labour ward she was found to be fully dilated and was brought to theatre for an assisted delivery. Routine monitoring was applied and IV access checked. Despite severe choreiform movements exacerbated by contractions, spinal anaesthesia (10.4mg 0.5% Heavy Bupivacaine with 12.9mcg Fentanyl) was successful. A Phenytoirphenine infusion (100mcg/ml) was commenced to minimise hypotension as per local practice. Forceps delivery of a live female infant was performed. The mother was stable peri-operatively with Phenytoirphenine discontinued approximately 1 hour post-delivery.

Discussion: Pregnancy is rarely seen in HD given the usual age of onset however with advancing maternal age it may be encountered more.1 It presents clinical and ethical challenges. In this case early multi-professional involvement and collaboration and good communication both amongst professionals and with the patient and her family provided a coherent management plan and facilitated expeditious delivery. Anaesthetic assessment and advice/planning was a key part of this process. Key concerns for anaesthesia in this patient were communication difficulties, cognitive impairment and limited capacity, high aspiration risk, general frailty and severe motor symptoms. General anaesthesia would be high risk given aspiration risk, increased sensitivity to drugs and likelihood of post op respiratory failure. Regional anaesthesia was preferred and possible despite her movement disorder. The presence of a familiar nurse in theatre proved valuable in calming her and aiding cooperation. Though the pregnancy was unplanned and delivery preterm, the outcome in this case was successful regional anaesthesia, a vaginal birth and a healthy baby girl with no major maternal deterioration.

Reference
P107 Anesthetic management of a laboring patient with hypertrophic obstructive cardiomyopathy

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Introduction: Regional anesthesia has been used in vaginal delivery for patients with HOCM despite the risks of hemodynamic instability associated with afterload reduction. We describe a case where regional anesthesia was successfully used for management of labor and delivery in a patient with obstructive cardiomyopathy.

Case Report: A 37 year-old woman, primigravida presented at 39 weeks of gestation with a known diagnosis of hypertrophic obstructive cardiomyopathy for an induction of labor. The patient underwent the implantation of a primary prevention ICD device given the presence of a markedly thickened interventricular septum measuring 3cm and for protection against potential life threatening arrhythmia. The patient was treated on oral Toprol 50mg daily and ASA 81mg and remained asymptomatic. At approximately 33 weeks of gestation, the patient developed palpitations and received and ICD shock that was deemed inappropriate therapy for atrial fibrillation with rapid ventricular response. The ICD interval settings were shortened and the Toprol increased to 75mg with no further episodes of palpitations and ICD shocks. Upon admission, the patient was in normal sinus rhythm on electrocardiogram. After the patient achieved 4.5 cm cervical dilatation, she was evaluated for labor analgesia with a combined-spinal epidural (CSE) technique. Prior to anesthesia, the patient received 2 liters of intravenous crystalloid of lactated ringer. In the sitting position, an epidural needle was placed in the L3-L4 interspace using the loss of resistance to air technique. There was no blood, CSF, or paresthesia. A 27 guage pencial point spinal needle was placed through the Tuohy needle with positive CSF flow. Afterward, 20 mcg of fentanyl mixed with 0.6 ml of preservative free normal saline was injected through the spinal needle, a total of 1 ml. The epidural catheter was placed and the patient put in the lateral decubitus position to avoid hypotension from aortocaval compression. After the test dose, an epidural PCEA pump containing 0.0625% bupivacaine and fentanyl 2 mcg/ml with a demand dose of 8 ml with a 10 minute lockout was started. The patient reported adequate labor analgesia and patient's blood pressure was stable and did not require any vasopressor support during the CSE procedure.

Discussion: Regional anesthesia has been used successfully in laboring patients with HOCM. However, regional anesthesia during labor may present a potential risk for hemodynamic instability due to the possibility of a sympathetic block, as a result of vasodilatation associated with the administration of local anesthetics. In this case, the spinal dose of the CSE contained only fentanyl and no local anesthetic. The intrathecal opioid without local anesthetic allowed rapid analgesic onset without the sympathetic block and afterload reduction. The epidural PCEA continued to provide adequate analgesia and maintained hemodynamic stability throughout labor and delivery.

Reference

P108 Assessment of a. et v. ophtalmica hemodynamic state in preeclampsia gravies

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Anaesthesiology, Kulakov's Centre for Obstetrics, Gynecology & Pery, Moscow, Russia

The aim of the study was to evaluate some a. et v. ophtalmica blood flow parameters in mild and severe preeclampsia gravies and in normotensive pregnant.

Methods: After Centre Ethics committee approval a total of 117 women 25-30 years old with singleton 30-40 weeks of gestation pregnancies were recruited. Among them 40 gravies have developed severe preeclampsia, 42 - mild eclampsia, and 35 were normotensive. Using Color flow mapping (CFM) and Puls-wave Doppler imaging (PWI) max blood flow velocity (mFV) in right/left a. et v. ophtalmica along with Gosling's Doppler pulsatility index (Pl) (1) in both a. ophtalmica were evaluated/ Mean blood pressure in all patients was also registered.

Results and discussion: The highest mFV values (59.2,46.1 and 23.6,4.03 cm/sec) were in severe preeclampsia group while in mild preeclampsia group mFV increased slightly or remained normal (35.6,2.97 and 13.6,0.81 cm/sec). There was no mFV increasing in normotensive gravies group (31.5,2.21 cm/sec). No significant correlation between gestation age and mentioned hemodynamics parameters in normotensive gravies group was found. Pl values in a. ophtalmica in normotensive gravidas was 2.92±0.59 and the highest in all groups. In mild preeclampsia group this parameter was 1.47±0.30, and the lowest one in severe preeclampsia group - 1.17±0.08.

Conclusions: In women with preeclampsia significant changes in ophalamic hemodynamics take place - mFV in a. et v. ophtalmica increases while Pl values go down. This might be the evidence of orbital hyperperfusion in preeclampsia gravies. Low PI values may be used as the markers of severe preeclampsia.
P109 Audit of inadvertent hypothermia in obstetric theatres in a large maternity unit
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Introduction: Inadvertent hypothermia has the potential for serious multi system effects and is relatively poorly identified and treated in obstetric units.1 We conducted a two month audit in June and July 2012 to evaluate our practice.

Methods: Data was collected retrospectively from patients' notes. All women undergoing elective and emergency procedures in delivery suite theatres were included. We looked at whether women had their temperature measured intraoperatively and methods of active warming used. NICE guidelines were used as the audit standard.

Results: There were 31 (28%) elective and 48 (44%) emergency caesarean sections (CS), 21 (19%) instrumental deliveries and the remaining 10 (9%) were perineal tear repairs and manual removal of placenta (MRoP). Temperature was measured in the majority of cases (92%) prior to transferring to theatre. None had their temperature measured in theatre or had any documentation of intraoperative warming. Average blood loss was 570ml (100-3000ml) and the average fluid administered was 1415ml (500-3500ml). Temperature was measured postoperatively in 95% of cases.

Table 1. Temperature prior to transfer to theatre and in recovery with number of patients below temperature below the comfortably warm cut off (36.5°C) and those who were hypothermic (<36°C).

<table>
<thead>
<tr>
<th></th>
<th>Average pre-op temp °C (range)</th>
<th>Average post-op temp °C (range)</th>
<th>Pre + post op &lt;36.5°C (%&lt;36°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective CS</td>
<td>36.5(36.1-37.2)</td>
<td>36.1(35.4-37)</td>
<td>10(0)+21(6)</td>
</tr>
<tr>
<td>Emerg CS</td>
<td>36.8(35.8-38.8)</td>
<td>35.8(35.1-38.3)</td>
<td>14(1)+24(7)</td>
</tr>
<tr>
<td>Instrumental CS</td>
<td>36.9(36-38)</td>
<td>36.8(36-37.5)</td>
<td>4(0)+2(0)</td>
</tr>
<tr>
<td>Tear/MRoP</td>
<td>36.5(35.8-37.7)</td>
<td>36.2(35.8-37.3)</td>
<td>4(1)+4(1)</td>
</tr>
</tbody>
</table>

Conclusions: Temperature seems to be measured adequately in the pre and post theatre periods but not intraoperatively. Almost one third of cases were below the NICE guideline's comfortably warm cut off and two were hypothermic prior to transfer to theatre. Postoperatively, almost half of the women were below the comfortably warm cut off and 14 were hypothermic. If temperature is not measured on patient's arrival to theatre and during the procedure, hypothermia will not be identified and treated. Additionally, there is good evidence to show that using warm fluids intraoperatively decreases postoperative hypothermia.3 We aim to implement simple measures to reduce the incidence of inadvertent hypothermia. This includes measuring patient's temperature on arrival to theatre and institute active warming when necessary. We aim to implement routine intraoperative fluid warming especially for women undergoing caesarean section.

References

P110 Audit of knowledge of translation services and resources on the labour suite
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Introduction: The CEMACE report 2006-2008 highlighted the increased risk for non-English speaking expectant mothers. The contributors highlighted it as one of their top ten recommendations. Using family members as translators is inappropriate and may inhibit the discussion of sensitive issues and can be detrimental to the patient care.

Methods: We work in an urban tertiary referral centre serving an ethnically and culturally diverse population with large proportion of non-English speakers. We audited knowledge and opinions of staff working on labour suite (LS). We provided an anonymous questionnaire to obstetricians, midwives, anaesthetists. Results were collected and correlated.

Results: Majority of the respondents (65%) felt that not speaking English is detrimental to a woman's care, yet only 60% regularly used non family translators. Half of the surveyed professionals (52%) felt that family members are not suitable to act as translators, yet 30% of those surveyed thought that the use of family members as translators was appropriate. There is an area of printed information leaflets available for patients, sadly non English speaking patients and those with hearing impairment were only given these regularly by 25% of professionals. This could be due to the fact that 70% of those surveyed did not know where to find written information. Disappointingly the majority (66%) of those working on LS had not heard of the Big Word (local telephone translation service) and majority of respondents (70%) did not know how to contact it. We found that most of the respondents (83%) would find having a file with translation leaflets on the computer helpful.

Discussion: These results show that the majority of staff working on LS are aware of the increased risks for these non English speaking women. A small proportion of respondents give their patients written information and is therefore not surprising that the same proportion know where this information is available. Worryingly only less than half of the members of staff who completed the questionnaire had heard of the Big Word, and only one third knew how to contact them. These results show that more education is required and it was interesting to see how over 80% felt they would find the availability of a file on the computer desktop useful. Based on the results we would recommend a series of teaching sessions about the risks for these women, including the use of family members. We plan to increase the publicity surrounding “The Big Word” and also the availability of written information for such patients. Based on the response to the suggestion of having information to print off on LS computers we will make a computer file containing leaflets for languages that commonly attend our LS. In our unit we have recently introduced “Computers on wheels” - portable laptops that can be taken to the bedside and used to display written information to the patients and their families thus increasing speed of information delivery and saving paper. A reaudit is planned following implementation of these changes.

Reference
P111 Audit of preoperative fasting times for elective caesarean section: Are we compliant with new guidelines?
V Nalwade, RCC Thompson
Anaesthesia, James Cook University Hospital, Middlesbrough, UK

Introduction: Appropriate preoperative fasting reduces the risk of lung damage from regurgitation/aspiration. However, prolonged fasting has a number of detrimental effects. The catabolic response to prolonged fasting includes increased insulin resistance, increased stress response to surgery and delayed wound healing. Dehydration exaggerates the hypertensive response to anaesthesia. Prolonged fasting is distressing to patients and leads to headache, hunger, thirst, nausea and increased anxiety levels. This is especially true in obstetric population. Focus in preoperative fasting has shifted to encourage oral intake for as long as possible so that the minimal fasting times are achieved. The aim of this audit was to establish if our local practice was compliant with recently published international guidelines on the preoperative fasting for women undergoing elective caesarean section.¹

Methods: This audit was registered with and approved by the hospital audit committee. Data was collected prospectively from 50 patients between March 2012 and May 2012 by the anaesthetist or anaesthetic nurse from patients scheduled for elective caesarean section immediately prior to commencing anaesthesia using a standard questionnaire.

Results: Our audit demonstrated an average (mean) fasting time for solids of 15 hours (audit standard 6 - 10 hours) and for clear fluids the average was 13.6 hours (audit standard 2-4 hours). The average thirst score was 6.6 (scale 1-10). 76% of patients would have liked to drink clear fluids on the morning of surgery.

Discussion: This audit identified an area for improvement in our practice by demonstrating that many of our patients were excessively fasted compared to our audit standards. This is both clinically unnecessary and has a negative impact on patient experience. After local presentation of audit results, a new preoperative fasting policy for elective caesarean section has been designed and implemented. This includes guidance for clear fluid intake up to two hours preoperatively. The new guidance has been incorporated into patient information leaflets and the changes have been highlighted to midwifery, healthcare, obstetric and anaesthetic staff. We intend to re-audit in March 2013, to identify whether reduced fasting time have been achieved by these changes and whether this has positively impacted on patient experience.

Reference

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P112 Audit of timing of epidural top-ups prior to delivery: a completed audit cycle
J K Wakeford, MA Stevens
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Introduction: The National Institute of Clinical Excellence (NICE) provides guidelines for the management of epidurals on labour ward. They recommend that “Once established, regional analgesia should be continued until after completion of the third stage of labour and any necessary perineal repair”¹. The NICE guideline also recommends "Hourly assessment of the level of sensory block should be undertaken". We were concerned through our follow-up of women post epidural that these guidelines weren’t being adhered to and midwives were letting epidurals wear off in the mistaken belief that it better enabled women to push.

Methods: For a six week period from January to February 2012, all women who had a labour epidural and a normal vaginal delivery had their epidural chart examined. Time of birth and timings of epidural top-ups were noted. From this was calculated the average time between epidural top-ups and the time from last top-up to delivery. It was also noted whether the sensory level was recorded. The audit was repeated in June to July 2012.

Results: In January to February, 69 women were identified as having vaginal deliveries with epidurals in situ and had notes available. For these women the average time between top-ups was 68 min (SD 19 min) and the average time between last top-up and delivery was 71 min (SD 47 min). Out of 69; 51% had a shorter period of time from top-up to delivery than their average time between top-ups. In June to July 2012, 54 patients were identified. The average time from last top-up to delivery was 68 min (SD 24 min) and the average time between top-ups was 72 min (SD 49 min). Out of the 54 women, 65% had a shorter period of time from last top –up to delivery than the average time to between their top-ups. With regards to documentation the block height in the first cycle 61% had their block documented before each top-up. In July 81% had documentation of block height.

Discussion: Our first audit suggested that many women were giving birth in pain despite the presence of a working epidural. Follow-ups suggested that this was because some of the midwives were purposely letting the epidural wear off for the second stage. In order to re-educate midwives we introduced a period of education. For a two-week period the midwife in charge for the day at shift handover fed back the results of our audit and encouraged the continued use of epidurals during second stage. The results were published in the monthly midwives newsletter and a poster of the audit results was placed in the midwives coffee room. The repeat audit showed that the topping up of epidurals in the second stage is much improved. The mean time from last top-up to delivery, 68 min, was less than the average duration between top-ups, 72 min. There was an increase from 51% to 65% in women who had shorter times from last top-up to delivery than their average top-up duration. Documentation of sensory levels improved from 61% to 81%. Although of note these checks were done before top-up rather than every hour.

Reference
P113 Caesarean Section - An analgesic option?  
TR Patel, A Shonfeld, G Bhatt, F Plaat  
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A 34 year old multiparous woman (P3 G3) presented at 35 weeks gestation complaining of acute severe pain in her back and hips.

She suffered from severe sickle cell disease with frequent crises which had necessitated an emergency section at 33 weeks gestation in her last pregnancy.

In the current pregnancy, she had suffered frequent milder crises that were managed with oral opioids. Due to long-term opioid use and previous substance misuse, she was taking regular methadone (90mg daily) and oral morphine as required. Two weeks previously she had suffered a crisis, requiring an exchange transfusion. She was discharged home after one week, but readmitted within 2 days with worsening crisis. She had severe pain in her back and right leg, that was initially controlled by intramuscular diamorphine and Entonox.

Over the next 24 hours, her pain worsened significantly despite adequate hydration, temperature control and morphine PCA. Fentanyl PCA was no more effective. An exchange transfusion was delayed because the national blood bank was unable to provide any suitable blood (due to multiple antibodies from previous transfusions). Over a 6 hour period the patient had been given 110 mgs of morphine and 20 mgs of ketamine, but still had unbearable pain.

An epidural was sited but failed to control her pain and the patient became increasingly distressed and difficult to manage. Finally, after a multi-disciplinary discussion involving anaesthetists, obstetricians and haematologists, the decision was made to deliver by caesarean section after an exchange transfusion, once blood was available.

Initially a combined spinal epidural was attempted but the patient was unable to stay still so a rapid single shot spinal was performed, followed by epidural catheter insertion. Surgery was uncomplicated, but for the following 12 hours the patient remained very agitated with poor pain relief despite epidural top-ups of 10mg bupivacaine with fentanyl 20mcg, supplemented by oral morphine. A Doppler scan revealed a popliteal vein thrombosis which had not been present on an earlier scan. Her analgesic requirements decreased over the next 2 weeks and she was discharged from hospital 17 days after delivery.

Discussion: Pregnancy complicates the treatment of sickle cell crises as several analgesic options are relatively contraindicated.1 Opioid tolerant patients are a particular challenge. In the extreme case, failure of all analgesic options becomes an indication for delivery, and delivery becomes a part of the analgesic strategy. An added angle to this case was a second cause of pain being a DVT. Dual pathology must always be considered.

Reference

P114 Can a smartphone app be used to communicate with patients who speak no or limited English?  
C E Richards, M Turner, K Woods  
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Introduction: The past decade has seen a rise in the use of mobile phones to aid clinical practise in the UK and in the developing world1. They can be used to help explain medical procedures by using materials available over the internet, downloads, or by one of the many translation applications (apps) available. Furthermore we continue to care for increasing numbers of patients who speak limited or no English2, a sub-group of the population we know to be at increased risk of complications3. At bedside translators or ‘language line’ are available at expense, however in an emergency it can be difficult to utilise these services. So can healthcare professionals safely make use of translation apps to communicate with patients in an emergency situation, and do they have a role to play in the non-emergency situation?

Method: We selected our app ‘Google Translate’ by searching an app store seeking apps that were free and had a high user rating. We chose an assessor for each language; each had to be a healthcare professional and fluent in that language. We identified 15 phrases and 10 words commonly used in urgent/emergency situations on the delivery ward and developed a grading system. After each phrase was translated by the app it was then graded by its assessor to evaluate the success of the translation. The grades ranged from 1-5; 1 being a perfect translation and 5 unable to identify what had been translated. For each of the 10 words we evaluated whether or not they had been translated correctly (yes or no).

Results: To date we have tested 12 different languages; for 10 of these languages we were able to assess both the written and spoken translations. The average grade for written phrase translations is currently 2.29 and for spoken translations 2.31. Some languages fared better than others; the average grade for European languages is 1.53 whereas that for Indian languages is 3.27. 64% of phrases were assessed as translating perfectly or near perfectly, however 22% were graded as either ‘high potential for misinterpretation’ or ‘unable to interpret’. An average of 8 out of 10 words translated correctly both in written and spoken translations.

Discussion: Imperfect translations arose due to very literal translation of words, dual meaning of words and grammatical errors. The results highlight limitations in using translation apps as a way of communicating with patients. As over 1 in 5 phrases were rated as ‘uninterpretable’ or ‘high potential for misinterpretation’ then obtaining informed consent from and providing information to patients using an app could be unreliable. If phrases are indeterminable, difficult to interpret or misinterpreted then this may add to, instead of lessen, a stressful situation. Therefore this method of communicating should be avoided in elective and semi-elective situations and instead assistance sought from professional translators. In emergency situations clinicians may have to evaluate whether some form of communication is better than none at all.

References
2. UK’s ethnic minority numbers to rise by 20% by 2051. BBC News July 2010; www.bbc.co.uk/news/10607480.
P115 Change of policy on initiating epidural top up for emergency Caesarean section - an impact on the rate of general anaesthesia  
S Valap, S Lakhotia, R Vickers  
Anaesthesia, Burton Hospitals NHS Trust, Burton on Trent, UK  

Introduction: Conversion of labour epidural analgesia to caesarean section (CS) anaesthesia is an important strategy in limiting the use of general anaesthesia (GA) in obstetrics. The RCoA audit recipe suggests that an acceptable conversion rate of GA in a parturient receiving labour epidural should not be more than 3%. The place of initiating epidural top-up is controversial. The risk of emergency GA should be balanced against the remote risk of inadvertent high block during transfer to theatre.  

Methods: In our local policy, all labour epidural top-up for CS were allowed only in the theatre. This policy was changed further to the results of audit in 2011 demonstrating failure to meet the standards, CMACE report and local agreement. The initiation of epidural top-up for category 1 and 2 CS were allowed in the delivery suite with anaesthetist present.  

The timing of category of CS in our unit is different from the national standards. Category 1 CS - 20 mins, 2 - 45 mins and 3 - 75 mins. Due to the shortage of time for category 1 CS, this was excluded from the audit.  

A retrospective data collection of all emergency CS done under epidural anaesthesia. And we looked at the successful epidural top-up and GA conversions.  

Results: There was a reduction in the GA conversion rate after the change in practice.  

<table>
<thead>
<tr>
<th></th>
<th>Total no of CS under epidural top-up</th>
<th>Total no of successful epidural top-up</th>
<th>Total no of GA conversion</th>
<th>No of high blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>81</td>
<td>68</td>
<td>13</td>
<td>16.04%</td>
</tr>
<tr>
<td>loop</td>
<td>2011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>56</td>
<td>50</td>
<td>6</td>
<td>10.71%</td>
</tr>
<tr>
<td>loop</td>
<td>2012</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion: The change of practice of the place of initiating the epidural top-up has resulted in the reduction of GA conversion. But we accept that 10.7% is still high. We have now changed the timing of category of CS. We are currently auditing our practice to see whether this has improved our GA conversion rates.  

References  

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P116 Changing (obstetric) anaesthetic job opportunities over the last five years  
N Eltom, J E Petrie, C Fiandeiro, S Yentis  
Anaesthesia, Chelsea and Westminster Hospital, London, UK  

Introduction: Numerous changes in the NHS have occurred over the last few years influencing consultant anaesthetic job opportunities. Despite the drive towards a 24 – 7 consultant led service NHS trusts are under increasing austerity pressure. There has also been a movement towards increasing sub-specialisation within anaesthesia. We aimed to quantify to what extent this has affected anaesthetic job opportunities and particularly obstetric special interest jobs over the last five years.  

Methods: We used the BMJ website to identify archived job advertisements for substantive anaesthetic consultant posts from 12.1.2008 (start of the online system) to 31.1.2012. We carefully examined the job advertisement, eliminating locum and non-NHS posts and noted any special interests identified.  

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Figure 1: Job advertisements in BMJ online archives for NHS Substantive Anaesthetic Consultant posts from 12.1.2008 to 31.12.2013  

Results: Substantive consultant anaesthetic job advertisements have declined in recent years, with a sharp drop in 2011 (total jobs 306). Although there was a subsequent slight increase in 2012 (369 jobs in total) opportunities were still reduced compared with 2008-2010 where total substantive jobs advertised were well in excess of 400 per annum. There has also been a decline in the number of generalist jobs advertised recently. The proportion of jobs with a special interest in 2012 was 70% (110/369), increased from 60% in 2008-2010. However, these jobs have not been special interest obstetric jobs; the proportion of advertised jobs with a special interest in obstetrics has remained fairly constant (approximately 10% of all jobs) over the last five years, thus the number of jobs has declined in parallel with total numbers.  

Conclusions: Opportunities for substantive anaesthetic consultant posts have declined in recent years, likely reflecting increasing austerity pressure. The proportion of jobs specifying an obstetric sub-specialism remains low (10% of all jobs) (especially considering the significant anaesthetic workload it represents) and shows no sign of increasing.
P117 Conversion of regional anaesthesia to general anaesthesia for emergency caesarean section

IJ Carstairs, A Cole, J Duggan
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Introduction: The use of general anaesthesia (GA) for caesarean delivery can be used as a guide to the quality of obstetric anaesthetic care. The Royal College of Anaesthetists (RCOA) set the following targets:

- >85% of category 1-3 caesarean sections (CAT1-3) and >50% of category 1 caesarean sections (CAT1) should have a regional anaesthetic.
- <5% of CAT1-3 sections and <15% of CAT1 sections which have a labour epidural in-situ should be converted to general anaesthesia.\(^1\)

Methods: Wansbeck General Hospital delivers 2500 mothers per year with a 24% section rate and 17.5% labour epidural rate. We offer a 24 hr on demand epidural service with a dedicated labour ward anaesthetist in-hours and a lone trainee out of hours. The Wansbeck Epidural Audit system prospectively collects data on all anaesthetic obstetric workload since 2005. We used this data to determine during the period 2005-2013 whether we met the RCOA targets for emergency caesareans.

Results: This period identified 2562 CAT1-3 and 783 CAT1 sections. Of the CAT1-3 sections 88% had a regional anaesthetic. Of the CAT1 sections, 55% had a regional anaesthetic. Reasons stated for GA were: urgency 55%, poor labour epidural analgesia 20%, failed epidural top up 3%, failed spinal 5%, patient request 8%, regional contraindicated 6%, other reasons 3%. We identified 991 mothers with an epidural in-situ that then had a CAT1-3 section. Of these 66% had an epidural top up, 17% GA, 17% spinal anaesthesia. The reason given for not using the epidural were urgency 73%, poor labour epidural analgesia 20% and patient request 7%. In this epidural group 324 had CAT1 sections, 57% had an epidural top up, 34% had a GA and 9% had a spinal anaesthetic.

Discussion: Our results indicate that a district general hospital can achieve the RCOA targets for regional anaesthesia in emergency caesarean sections. However, we do not meet the targets for the mothers with a labour epidural in-situ. We question if this target is attainable for small units with a relatively low epidural rate. Firstly the number of mothers each year is small. Secondly, units with a higher epidural rate will recruit more low-risk labours into the epidural population. As urgency is an important factor in the decision to not use the existing epidural this may explain the higher general anaesthesia rate. Other possible reasons may include management of the failing labour epidural, the overcalling of CAT1 sections in mothers with an epidural, and out of hours cover by non obstetric anaesthetists.\(^3\) We aim to re-audit prospectively the epidural conversion rate and reasons for non epidural conversions.

References

P118 Conversion rate of anaesthesia for caesarean section: 9 years of audit experience in a teaching hospital

S Hameed, L Hickinbotham, P Makani
Anaesthetics, Hull Royal Infirmary, Hull, UK

Introduction: Current opinion suggests that the use of regional Anaesthesia (RA) should be maximised for Caesarean sections (CS) as almost all maternal deaths have followed general anaesthesia (GA).\(^1\)

Method: We retrospectively analysed the type of anaesthesia for CS for the period from July 2011 to July 12 and compared this against 8 years of our previous audit data.

<table>
<thead>
<tr>
<th>No of LSCS</th>
<th>Elective</th>
<th>Emergency</th>
<th>EL CS</th>
<th>Em CS</th>
<th>Conv</th>
<th>RA to GA for elective (%</th>
<th>Conversion</th>
<th>RA to GA for emergency (%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>04</td>
<td>05</td>
<td>06</td>
<td>07</td>
<td>08</td>
<td>09</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>1055</td>
<td>1048</td>
<td>1159</td>
<td>1088</td>
<td>1231</td>
<td>1261</td>
<td>1304</td>
<td>1201</td>
</tr>
<tr>
<td>LSCS (%)</td>
<td>98.3</td>
<td>99.2</td>
<td>98.4</td>
<td>99.0</td>
<td>98.9</td>
<td>98.4</td>
<td>98.5</td>
<td>99.1</td>
</tr>
<tr>
<td>Conv (%)</td>
<td>1.9</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.4</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>RA to GA</td>
<td>&lt;1%</td>
<td>&gt;1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RA to GA</td>
<td>&lt;3%</td>
<td>1.9</td>
<td>2.5</td>
<td>2.9</td>
<td>3.5</td>
<td>6.0</td>
<td>5.1</td>
<td>4.0</td>
</tr>
</tbody>
</table>

S* - standard

Results: On analysis, failed regional blocks numbered 40. 20 of these were due to failed spinals, 7 were due to inadequate/high spinal block, 13 had technical difficulties. 20 cases were due to failed epidural topups.3 were due to lack of time for topup to work, 14 were due to inadequate block post topup and 3 were under functioning epidurals in labour. Conversion rates for spinals have increased from 20.5% in 2009 -10 to 50 % in 2011-12(p= 0.05). Technical difficulty in siting spinal have increased from 7.6% in 2009-10 to 32.5% in 2011-12 (p=0.02). Epidural conversion rates had dropped from 79% in 2009-10 to 50% in 2011-12 (p= 0.20). Chi square test was used to analyse results.

Conclusions: Our policy of early recognition of failing epidurals and aggressive resuming has led to the continued drop in epidural conversion rates in our unit. The steep rise in failure to site spinals due to technical difficulty in our data may be explained by the rising obesity in the maternal population. But it is important to note that as more CS are performed as emergencies, anaesthetists have to become slicker at the technique or risk conversion. Overall, despite an increase in the total number of CS this year, our conversion rates remain unchanged. However, there is still room for improvement. The reduction in the epidural conversion rates has been due to the introduction of lignocaine to assess under functioning epidurals in labour that can be resited.

Reference
1. IF Russell: Technique of anaesthesia for Caesarean Section, Royal College of Anaesthetists – Raising the standard – A compendium of audit recipes, February 2000, 6.8
P119 Core competencies in obstetric anaesthesia: A pilot study day for trainees in Northern Ireland

YM Nawaz, M Molloy
Royal Jubilee Maternity Hospital, Royal Group of Hospitals, Belfast, UK

Introduction: For core trainees new to labour ward, the practice of obstetric anaesthesia is a daunting challenge for them and their trainers! The Royal College of Anaesthetists acknowledges the value and safety of simulation as part of structured training for core trainees (CTs) new to this discipline. We describe the content of a pilot study day introducing core trainees to the expected competencies in obstetric anaesthesia as outlined in the Basic Level Training document. The content of the study day was mapped to the Initial Assessment of Competence in Obstetric Anaesthesia (IACOA) document and was largely delivered through simulation.

Methods: Approval and funding for this pilot study day was obtained from the Northern Ireland School of Anaesthesia Training Committee. The study day was held in a hospital based simulation suite with a faculty consisting of consultant obstetric anaesthetists and higher specialty trainees. All CT2 trainees in the School of Anaesthesia were invited to attend and participants were sent pre-course preparatory reading material. Knowledge and skills were imparted through interactive lectures, high-fidelity simulation of general anaesthesia for caesarean section (CS), communication skills stations and neuraxial technique practice using an epidural back trainer. The attendees were also made aware of important sources of information including OAA, CEMACE and UKOSS. The core trainees were asked to complete an pre-course questionnaire rating their own current knowledge and skills and a follow-up questionnaire rating the impact and value of the study day.

Results: Six of the ten CT2 trainees within the Northern Ireland deanery participated. All attendees had performed at least one epidural for labour and one spinal for CS however only half had carried out an epidural top-up CS. Four of the six trainees rated their ability to carry out an uncomplicated CS under an epidural top up or general anaesthesia as one on a seven point likert scale (1 = not at all able, 7 = extremely able). When asked to rate how beneficial they found the study day, five of the six trainees (83%) gave a score of 5 or more on a seven point likert scale in all four procedure domains (labour epidural, CS under epidural top up, spinal or general anaesthesia). Free text feedback was invariably positive and suggestions for improvement included using a multiple choice question paper to test knowledge and providing even more simulation.

Conclusion: This pilot study day has proved to be worthwhile. Hopefully it will improve the ability and confidence of CT2 trainees in their first introduction to obstetric anaesthesia and help them to achieve the important milestone of IACOA. We have the support of the Northern Ireland School of Anaesthesia to integrate this study day into the core training teaching program.

Reference

P120 Correlation between the CARE revalidation tool and the efficacy of epidural analgesia

S Munshi, S Young, E McGrady
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Introduction: The consultation and relational Empathy (care) measure is a person-centred process measure that was developed and researched at the departments of general practice in glasgow university and edinburgh university. The care measure has 10 questions clear and easy to complete patient-completed questionnaire. It measures empathy in the context of the therapeutic relationship during a one-on-one consultation between a clinician and a patient. Originally developed and rigorously tested for use by GPs, it is now the recommended patient feedback tool for all doctors in Scotland undergoing revalidation.1,2,3

Methodology: We compared two routinely collected datasets (that were anonymised): 1. CARE measure patient feedback questionnaires from 102 parturients who had received an epidural in labour.(collected post partum in the wards after epidural was removed), and 2. The epidural satisfaction score recorded by the attending midwife on the hospital database PROTOS. Quality of Epidural was recorded on a 0 to 4 scale, with 0 = Failed, 1 = Poor, 2= Adequate 3= Good and 4= Excellent .Quality of Epidural on CARE was recorded by survey, on a similar 0 to 4 scale.

Results: The two datasets- PROTOS and CARE- were correlated. The Pearson correlation coefficient between the 2 scores was 0.721 (significantly correlated) at the 0.01 level. The mean PROTOS score was 3.02 (SD 1.02) and the mean CARE score was 3.35 (SD 1.08).

The CARE measure is designed for GP consultations. Our results suggest that the score an anaesthetist achieves on the CARE measure correlates closely with the quality of the epidural analgesia. It is possible that the CARE result may be influenced by the technical success or failure of the epidural, so may not necessarily be a pure measure of a doctor’s empathy in the context of obstetric anaesthesia.

Comparison between CARE and PROTOS Scores and frequencies (number of patients)

<table>
<thead>
<tr>
<th>score</th>
<th>frequency</th>
<th>care %</th>
<th>protos %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6 / 6</td>
<td>5.9</td>
<td>5.9</td>
</tr>
<tr>
<td>1</td>
<td>3 / 0</td>
<td>2.9</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>3 / 18</td>
<td>2.9</td>
<td>17.6</td>
</tr>
<tr>
<td>3</td>
<td>27 / 39</td>
<td>26.5</td>
<td>38.2</td>
</tr>
<tr>
<td>4</td>
<td>63 / 39</td>
<td>61.8</td>
<td>38.2</td>
</tr>
</tbody>
</table>

Comparison between CARE and PROTOS Scores and frequencies (number of patients)

References
2. Mercer SW and Reynolds W J. Empathy and quality of care. BJGP 2002, 52 (Supplement); S9-S12
P121 Development of a midwife led high BMI clinic: Can midwives safely assess anaesthetic risk?
S F Bell, B Huxtable-goyl, R Collis, S Harries
Departments of Anaesthesia and Midwifery, University Hospital of Wales, Cardiff, UK

Introduction: The Confidential Enquiries and RCOG recommend that women of Body Mass Index (BMI) >40kg/m² should be seen antenatally by an anaesthetist to identify potential problems such as the difficult airway or regional blockade and formulate a management plan. This increased clinic workload has led to the development of midwifery training in anaesthetic antenatal assessment, supported by a proforma. We compared midwife and anaesthetic assessments to evaluate whether midwives can safely assess obese women with the aim of rationalizing clinic attendances.

Methods: Parallel review of patients was undertaken by an anaesthetist antenatally and a midwife in the high BMI clinic. The airway and back assessments were recorded. An abnormal airway feature was defined as excess adipose tissue around the neck, neck movement <90°, small jaw, prominent upper incisors, jaw protrusion at or behind upper incisors, mouth opening <3 fingers and Mallampati score ≥3. Back assessment included ability to palpate spinous processes and previous difficult regional techniques. Demographic data included BMI and mode of anaesthetic.

Results: 50 parallel assessments were reviewed. The BMI at booking was 39.9 kg/m² (4.4) [32-55] and at clinic assessment was 40.4 kg/m² (4.4) [34-61] mean (standard deviation) [range]. None of the patients had a general anaesthetic for delivery.

Table 1: Comparison of anaesthetist and midwife assessment of the airway (n=50).

<table>
<thead>
<tr>
<th>Midwife identified abnormality</th>
<th>Anaesthetist identified abnormality</th>
<th>Anaesthetist identified no abnormality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midwife identified abnormality</td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>Midwife identified no abnormality</td>
<td>2</td>
<td>18</td>
</tr>
</tbody>
</table>

Thirteen patients were thought by the anaesthetist to have a potentially difficult airway, whilst 30 were thought to be difficult by the midwife. Two patients were identified as having abnormal features by the anaesthetist only. This included a patient who was Mallampati 3 and a patient with a number of different signs. This was addressed with immediate additional training. The midwives found 16 patients had ≥1 marker of a potentially difficult back, whilst the anaesthetic assessment identified only 6.

Discussion: We found that midwives can safely assess the airway and back in obese women, but tend to be cautious in their approach. After additional training shortly after introducing the proforma, there have been no missed markers of a potential difficult airway by the midwives. We feel that we can safely allow midwives to assess and advise women with a BMI 35-45 kg/m² and will be introducing a revised antenatal pathway with continuing audit on safety and anaesthetic clinic attendances.

References

P122 Documentation of general anaesthesia for LSCS: would your anaesthetic chart stand up to legal scrutiny?
LJ Hickinbotham, S Hameed, M Purva
Anaesthetics, Hull Royal Infirmary, Hull, UK

Introduction: Maternity cases account for the highest monetary value and second highest number of negligence claims reported. In medico-legal cases an undated, scantly completed chart may be taken as indirect evidence of shoddy or inattentive care. Following modifications to the anaesthetic chart in 2005 which included inclusion of tick boxes, a re-audit (2007) showed improvement in regional blockade documentation. However general anaesthetic documentation had not been re-audited. Many of the caesarean sections under general anaesthesia, are performed out of hours and in emergency settings by junior trainees. With potential for increased complication rates accurate documentation is even more important.

Methods: After local governance approval, retrospective case note analyses of all patients having a general anaesthetic for a caesarean section between July 2011 - July 2012 were completed. Standards used were those of Royal College Of Anaesthetists (RCOA) guidelines for a minimum data set – patient ID, date, names of surgeon(s) and anaesthetist(s), named consultant, preoperative visit findings, equipment and monitoring used, drugs and fluids administered, record of physiological variables, and postoperative instructions as well as space available for documenting adverse events/critical incidents and consent.

Results: Eighty-two cases fulfilled the inclusion criteria for the audit, of which two sets of case notes had missing anaesthetic charts. None of the case notes examined had an anaesthetic chart with a complete data set as per the RCOA guidelines, however, improvements were noted in most sections with the exceptions of time of machine check, height and weight of patient and ASA status. Improvements seen in the 2007 re-audit of regional blockade for LSCS were maintained. The Chi squared test was used for data analysis.

<table>
<thead>
<tr>
<th>Completed data</th>
<th>2005 (%)</th>
<th>2012 (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMH</td>
<td>41</td>
<td>85</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Obstetric History</td>
<td>55</td>
<td>72</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Airway assessment</td>
<td>66</td>
<td>85</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Consent</td>
<td>24</td>
<td>81</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Intubation</td>
<td>71</td>
<td>99</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Ventilation</td>
<td>-</td>
<td>98</td>
<td>-</td>
</tr>
</tbody>
</table>

Discussion: GA documentation had significantly improved since 2005. We believe that the improvements were due to higher use of prompted items reducing the need for freehand text. The Francis et al study noted prompted items were more frequently documented than non-prompted. The electronic patient record appears to be the future and we believe this concept should be applied by creating mandatory text fields which could further improve the documentation to 100%.

References
2. Good Practice: A guide for departments of anaesthesia, critical care and pain management. 3rd Edition. 2006. GMC.
P123 Does remifentanil improve external cephalic version success rates and comfort?

RT George, N Singh*, M Cox, MR Johnson*, SM Yentis
Dept. of Anaesthesia, Chelsea & Westminster Hospital, London, UK, *Dept. of Obstetrics, Chelsea & Westminster Hospital, London, UK

Introduction: External cephalic version (ECV), the manual rotation of breech babies has been shown to increase the likelihood of a normal vaginal delivery. It is successful in ~38% of cases in our unit and an important factor when deciding to abandon ECV is maternal discomfort. Two recent systematic reviews show improved success rates and pain scores with regional anaesthesia; however, this is invasive with significant costs and recovery time. Remifentanil is a potent, ultra-short acting opioid in widespread use as a labour analgesic. We have started using remifentanil boluses to facilitate ECV in our unit and here report the first 13 cases.

Method: With standard ECG, BP and oxygen saturation monitoring, 13 women with breech presentation opting for ECV were given 40-μg boluses of remifentanil intravenously 30-seconds before the ECV and at 2-min intervals until the attempt was completed. Supplementary oxygen was given. The ECV was performed as per usual practice. Data collected included baseline data, remifentanil dosing, VAS pain and patient satisfaction ratings and any unwanted effects.

Results: Mean (SD) age was 32 (6) years and gestation was 38 (1) weeks. 11 were primiparous and 2 multiparous; mean BMI was 24 (5) kg.m⁻². Tocolysis was used in 11 cases. The success rate was 6/13 (46%). The median (IQR [range]) dose of remifentanil was 80 (40-160 [40-200]) μg; overall pain score was 1 (0.7-2.5 [0-6]) out of 10 and satisfaction score 9 (8-9.9 [43-100]) out of 10. 12 women would have remifentanil again and 1 said maybe. 1 patient had mild itching, 1 had mild nausea and 1 moderate nausea.

Discussion: The women in our series reported low pain scores and high satisfaction with remifentanil analgesia for ECV, and there was a subjective marked improvement in abdominal wall relaxation and tolerance of the procedure. Our small series cannot indicate whether success rates might have improved, though it suggests that this is a promising technique worthy of further study.

References

P124 Electronic epidural analgesia charts on a paperless delivery suite

G Gunaratnam, T Reynolds, TA Tanqueray
Anaesthetic Department, Homerton University Hospital, London, UK

Background: Our delivery suite recently became “paperless” when we switched from paper-based notes and observation charts to point-of-care electronic data capture using K2 Medical System’s Guardian software. We had concerns that losing the visual prompt of our epidural chart might worsen our note-keeping, so we carried out a documentation audit comparing the paper system to the electronic system.

Methods: Using our obstetric anaesthesia procedures logbook, we identified 50 consecutive patients who had received epidural analgesia in the month prior to, and 50 in the month following, the switchover date from paper to electronic records. We conducted a notes-based audit for the first group and accessed the electronic files for the latter. We assessed whether certain pieces of data had been recorded regarding epidural insertion, effectiveness and complications.

Results: 42 (84%) of the paper-based notes were retrievable from medical records, off-site storage, antenatal clinic or delivery suite. However, 17 (40%) of these did not include the appropriate set of antenatal notes, and in 2 cases, the epidural chart was missing from the antenatal notes, leaving us just 23 of 50 records to look at. All electronic notes were accessible, but in one case, the epidural record had not been filled in.

Documentation levels for various pieces of data are shown in the table.

<table>
<thead>
<tr>
<th></th>
<th>Paper notes (n=23)</th>
<th>Electronic notes (n=50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time epidural inserted</td>
<td>15 (65%)</td>
<td>50 (100%)</td>
</tr>
<tr>
<td>Aseptic technique</td>
<td>23 (100%)</td>
<td>49 (98%)</td>
</tr>
<tr>
<td>Presence/absence of complications</td>
<td>9 (39%)</td>
<td>49 (98%)</td>
</tr>
<tr>
<td>Block level (first dose)</td>
<td>4 (17%)</td>
<td>6 (12%)</td>
</tr>
<tr>
<td>Pain score (first dose)</td>
<td>20 (87%)</td>
<td>20 (40%)</td>
</tr>
<tr>
<td>Epidural catheter removed</td>
<td>7 (30%)</td>
<td>11 (22%)</td>
</tr>
<tr>
<td>Postnatal follow up</td>
<td>5 (21%)</td>
<td>37 (74%)</td>
</tr>
</tbody>
</table>

Conclusion: It is clear that retrieving data from a paper-based system is difficult and time-consuming. In the 2-week period spent auditing, we could only access 50% of paper records, and the epidural data had been lost in 8% of these. Electronic records allow many people to gain access for incident reports, audits or clinics simultaneously. In general, the data capture was similar for both paper and electronic records. The exceptions were data on presence or absence of complications, which is now mandatory to enter electronically, and pain score, which had previously been well-documented by midwives on our epidural paper charts. Our follow-up data capture has markedly improved. In summary we found that electronic data capture gives us an opportunity to easily audit our epidural documentation and target areas of under-performance by programming in new prompts or mandatory fields.
P125 Emergency lower segment caesarean section in a parturient with narcolepsy

M Callaghan, A Kapoor, R ODowd
Department of Anaesthesia and Critical Care, Cumberland Infirmary, Carlisle, UK

Background: We present the case of a parturient with narcolepsy who presented for emergency lower segment caesarean section. There are two previous reports of elective management, but none describing emergency management of such patients.

Case report: A 37 year old (G0P0) presented to anaesthetic antenatal clinic with a history of narcolepsy, for which she took modafinil prior to pregnancy. She suffered from regular attacks of narcolepsy throughout pregnancy, but did not recall any cataleptic episodes. The patient was keen for minimal intervention and planned for a vaginal delivery. The lady was subsequently admitted at 39+0 weeks for induction of labour. Progress was slow and a decision was taken to progress to category 3 lower segment caesarean section. Anaesthesia was provided via subarachnoid spinal block, with the patient positioned in a sitting position and well supported by several members of staff. Surgery proceeded uneventfully and a healthy 3010g male baby was delivered.

Discussion: Narcolepsy is a chronic disabling neurological condition of unknown cause, associated with excessive day time sleepiness, sleep paralysis, disturbed nocturnal sleep and cataplexy (involuntary loss of muscle tone). Treatment mainly involves pharmacological interventions such as modafinil, a central nervous system stimulant. Such drugs are often discontinued in pregnancy due to potential risk of embryo toxicity, leading to potential deterioration of symptoms.1 In patients with poor symptom control, elective lower segment caesarean section is generally chosen as preferred method of delivery.2 In the emergency situation the parturient is likely to be considerably more tired and stressed than under elective circumstances. This further increases risk of symptom deterioration and the potential of cataleptic episodes occurring. Great care has to be taken in positioning and supporting the patient during central neuraxial blockade administration, as an attack at this moment could lead to complications such as nerve damage and injury. Close one to one care and supervision needs to be continued into the post operative period following delivery, as the patient remains at increased risk of narcoleptic or cataplectic episodes occurring. The availability of an anaesthetic antenatal clinic allows patients with rare but clinically important diagnoses to be seen by a consultant anaesthetist prior to admission for delivery. This helps raise awareness of the presence of such patients and allows a plan to be put in place to help guide management of these patients if they then present in an acute emergency situation.

References

P126 Enhanced recovery after caesarean section: how soon could women go home?

N Usman, F Plaat
Anaesthetics Department, Queen Charlotte’s and Chelsea Hospital, London, UK

Background: Enhanced recovery (ER) in obstetrics has recently been advocated. Following elective surgery for uncomplicated caesarean section (CS), women in our unit stay 48-72 hours. We wanted to discover which elements of current management preclude earlier, (24 hour), discharge.

Methods: We undertook a prospective review of 50 parturients who underwent CS to determine the following: clinical observations, medications and midwifery interventions. The time between end of surgery and transfer to the postnatal ward and to discharge home was calculated.

Results: 64% women were classified as low risk, (breech, maternal request, one previous CS). 63% were multipara. Surgery was described as uncomplicated (blood loss <1L) in 100% of cases.

Combined spinal-epidural was used in all cases. Post-op epidural analgesia was given to 34% women, (range 1-4 top-ups).

Table: Percentage of low risk cases requiring interventions each day (D)

<table>
<thead>
<tr>
<th>Intervention</th>
<th>D1 (0-24hr)</th>
<th>D2 (25-48hr)</th>
<th>D3 (49-72hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple analgesia</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Epidural analgesia</td>
<td>13</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>Antiemetics</td>
<td>22</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Uterotonics</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Blood/ blood products</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VTE prophylaxis</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Urinary catheter removed</td>
<td>3</td>
<td>91</td>
<td>6</td>
</tr>
</tbody>
</table>

In 91% low risk cases the urinary catheter was removed on day 2. Time between end of surgery and removal of urinary catheter ranged from 18-50 hr (mean 26).

Observations were documented 4 hourly after transfer to the postnatal ward until discharge home. None triggered intervention.

Time in recovery ranged from 3-8 hr. 69% were discharged to the postnatal ward by 4-6hr. 9% of women were discharged home by 25-48hr, 89% by 49-72hr and 3% by >73hr. Breastfeeding support, time to first mobilisation or first oral intake could not be accurately ascertained.

Discussion: Some aspects of ER are routine practice in obstetrics. Our results suggest that one obstacle to 24 hour discharge in low risk cases is removal of the urinary catheter. If timing was individualised i.e. 12 hours after surgery regardless of time, this might enable earlier mobilisation and discharge.1 Women already go home with LMWH and oral analgesia. 91% need no other intervention after 24 hours.

Conclusion: The need for midwifery interventions post CS are reduced after the first 24 hours. Appropriate care pathways may reduce time to discharge. The full benefits of ER are unlikely unless elective work is carried out independently to minimise delays in surgery.

Reference
P127 Enhanced recovery after surgery in obstetrics: a regional (west Midlands) survey of current practice
A Bodh, M Ramamoorthy, S Dinesh
Anaesthetics, Heartlands Hospital, Birmingham, UK

Introduction: Enhanced recovery after surgery is a perioperative protocol that can improve individual patient recovery. There is a reduction in length of stay and the associated cost. There is convincing evidence from specialties such as colorectal, orthopaedics and gynaecological surgery. The aim was to explore the role of enhanced recovery in obstetrics.

Methods: An electronic survey questionnaire was distributed to anaesthetists, obstetricians, midwives and operating department practitioners across the West Midlands. Questions were posed on availability of guidelines, applicability in obstetrics, the effect of anaesthetic technique, early post-operative oral intake, early removal of urinary catheter after surgery, and length of hospital stay.

Results: 148 responses were received. There were 108 anaesthetists, 14 midwives, 11 obstetricians and 17 were operating department practitioners. 87% of respondents had more than 5 years of experience.

Survey question | "yes" (%) |
--- | --- |
1. ERAS in obstetric patients as approved by the OAA and RCOA? | 74 |
2. Should ERAS be used for elective LSCS only? | 36.1 |
3. Should ERAS be used for emergency and elective LSCS? | 13.2 |
4. Should ERAS be used for all obstetric procedures? | 49 |
5. Do you have a hospital policy for ERAS available? | 5.4 |
6. Do you feel there is a need for formal guidelines? | 81.5 |
7. Do you feel the choice of anaesthetic influences ERAS outcome? | 81.1 |
8. Do you feel patients should have their first oral intake within 2 hours? | 95 |
9. Do you feel the urinary catheter should be removed within 12 hours? | 83 |
10. Do you feel the average length of hospital stay should be no more than 2 days? | 83 |

Discussion: This regional survey demonstrated that there is a definite role for enhanced recovery in obstetric surgery as long as written guidelines are available. The results show there is a clear desire amongst practitioners for establishing ERAS in obstetrics but a barrier to its implementation is a lack of guidance and evidence from research.

References

P128 Epiregional haematoma and HELLP syndrome
W Mon, A Muddanna, J Scott, D Pasapathy, G O'Sullivan
Anaesthetic Department, Guy's and St.Thomas' NHS Foundation Trust, London, UK

A 26 year old parturient (G3,P2) was admitted with pre-eclampsia at 37 weeks. She was commenced on oral labetolol (200mg tds) with good effect. Forty eight hours later she was transferred to the high dependency unit (HDU) with severe epigastric pain and hypertension (160/115). She was treated with intravenous labetolol and diamorphine. An arterial line was inserted and PET bloods were repeated at 21:24 (Table 1). Labour was induced with an artificial rupture of membrane at 23:00. Following 3 attempts an epidural catheter was sited at 01:30. A venetous delivery was performed at 04:22. PET bloods were then repeated at 07:35 (Table 1). The epidural catheter was left in situ because of severe thrombocytopenia.

<table>
<thead>
<tr>
<th>Day since</th>
<th>HDU admission</th>
<th>Platelet count</th>
<th>Hb</th>
<th>Coagulation</th>
<th>INR</th>
<th>APTr</th>
<th>ALT</th>
<th>LDH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1 21:24</td>
<td>228</td>
<td>10.6</td>
<td>0.9</td>
<td>1.1</td>
<td>171</td>
<td>859</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 2 07:35</td>
<td>43</td>
<td>8.6</td>
<td>146</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 2 12:15</td>
<td>44</td>
<td>8.7</td>
<td>1.1</td>
<td>1.5</td>
<td>137</td>
<td>2922</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 2 18:34</td>
<td>47</td>
<td>8.3</td>
<td>1.1</td>
<td>1.5</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 3 23:51</td>
<td>150</td>
<td>8.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1 Trend of PET blood results

At 12:00 the woman complained of severe low back pain. On examination, there was tenderness at L2/3 and L3/4 area with bleeding. Lower limbs examination revealed motor weakness of knee and ankle flexion and extension (MRC score 4 out of 5) with normal sensation in both legs. Anal tone was preserved whilst urinary retention could not be assessed as she was catheterised.

An MRI, performed at 16:42, showed an epidural haematoma extending from T12 to L5 and an intradural haematoma at L2/3 with an anterior displacement of spinal cord (Fig. 1). She was transferred to the local spinal unit where, after transfusion of platelets and fresh frozen plasma, surgery commenced at 01:00. Laminecetomies were performed at L1/2 and L4/5 and the haematoma was evacuated. She was transferred back to our unit within 48 hours with no neurological deficit.

A systematic review has shown that the incidence of epidural haematoma in obstetrics was 1:168,000, whilst NAP3 reported the incidence of vertebral canal haematoma as 1:140,000. This case highlights that haematological tests need to be more frequent in HELLP syndrome and ideally should be performed within 2 hours prior to lining an epidural catheter.

Fig.1 MRI showing epidural haematoma

References
P129 Evaluation of communication pathways for emergency caesarean sections
K Bauchmüller, V Karthikeyan, I Wrench
Anaesthetic Department, Jessop Wing Obstetric Unit, Royal Hallamshire Hosp, Sheffield, UK

Introduction: Miscommunication regarding the category of urgency of caesarean section during initial referral to the anaesthetist appears to be a common problem in clinical practice. We aimed to establish whether there is a difference in the accuracy of this crucial information between obstetricians or midwives as the source of the referral.

Methods: We compared anaesthetic and surgical databases regarding the category of urgency of non-elective caesarean sections over a 15-month period (September 2010 - November 2011). Anaesthetic data included information on whether the initial referral was made by the obstetrician directly or via a midwife on his or her behalf. The project was registered with the Trust Clinical Effectiveness Unit as a service evaluation.

Results: A total of 269 category 1 caesarean sections were identified for comparison. Of these 59 cases (22%) showed a mismatch in the recorded category of urgency. Overall, obstetricians made the initial referral in 62% and midwives in 30% of cases. There was no difference in this ratio between correctly and incorrectly reported cases, resulting in similar miscommunication rates for both professional groups (see table, p=0.9, Chi-square test).

Table: Communication accuracy regarding the category of urgency of caesarean section for obstetricians and midwives

<table>
<thead>
<tr>
<th>Referral by</th>
<th>Matching data</th>
<th>Mismatched data</th>
<th>% Mismatch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstetrician</td>
<td>128</td>
<td>38</td>
<td>22.9%</td>
</tr>
<tr>
<td>Midwife</td>
<td>64</td>
<td>17</td>
<td>21.0%</td>
</tr>
</tbody>
</table>

Conclusion: The significant rate of miscommunication between obstetric/midwifery and anaesthetic teams does not appear to be due to a loss of information in cases, where the urgency of a caesarean section is communicated to the anaesthetist by an intermediary (the midwife). In an effort to improve communication we have adapted the generic surgical safety checklist to incorporate the category of urgency of caesarean sections according to NPSA and RCOG guidance.

References

P130 Evaluation of ROTEM training for massive obstetric hemorrhage - Experience of Trainee Anaesthetists
D B Jumani, A K Bhalla, P Barclay, C Chevannes
Anaesthetic, Liverpool Women’s Hospital, Liverpool, UK

Introduction: Rotational Thromboelastometry (ROTEM) is a point-of-care testing device which allows goal-directed transfusion of clotting products and thereby improves management in massive obstetric haemorrhage. With any technology, clinicians must first become adept with the theoretical understanding and practical implementation before it can be successfully incorporated into daily practice.

We provide comprehensive training to all trainee anaesthetists during their induction at our tertiary obstetric hospital. This includes power point lecture, video (developed in house) demonstration and working through the local algorithm designed for management of massive haemorrhage based upon ROTTEN. The trainees have unlimited access to these resources and are encouraged to use ROTTEN in elective scenarios thereby enabling them to implement the same during emergency situations. We conducted this study to evaluate the quality of the ROTTEN training provided to analyse if it was beneficial, reproducible and a useful tool in clinical practice.

Method: A web-based survey of 16 questions was sent to all the 40 trainees who worked at our hospital in the last 9 months. The questionnaire focussed on initial training, use in real cases and the ability to retain skills.

Results: 33/40 surveys were completed, response rate 83%. Of these 64% (21/33) had no previous experience with ROTTEN or TEG. 73% of the respondents spent a total of 3 months at our hospital with the reminder currently in placement. With regards training during induction, 97% (32/33) found it moderate to easy to understand the science behind the ROTTEN. Most of the trainees (67%, 22/33) were able to get 2 -3 attempts during the practice sessions. On the Likert scale (1-5), 69% felt either very confident or confident to perform the test independently. With regards ease of use in clinical practice, 61% were able to use the ROTTEN within a week of induction. However 3 trainees could not use it until a month later. On their first attempt clinical practice, 39% felt either very confident or confident (Likert scale), whereas 15% reported lack of confidence. 85% (28/33) were able to use the test between 1-10 times during their placement. Over 69% felt comfortable implementing the algorithm in the management of massive obstetric haemorrhage without senior input. 72% rated the overall experience of training as good or excellent and 85% found it useful in daily practice. Of the 15 trainees who last used the equipment 2 months ago, 13/15 (87%) felt confident to use and interpret the results. Free text was provided to encourage feedback. Majority found the training and the equipment to be very beneficial. Inclinal practice. Around 58% encountered errors occasionally and recommendations were made to populate the list of errors with suggestions to overcome them.

Discussion: ROTTEN is a new point of care testing device – the significant role of which has been readily accepted amongst trainee anaesthetists. With structured training, we have successfully demonstrated that trainee anaesthetists are able to learn easily, use it daily practice and retain the knowledge.
P131 Ever expanding maternity units: a case for two on-call anaesthetists?

RJ Pilling, Y Sennoun, M Doraissami
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In December 2011 our Maternity Unit introduced a 2nd on-call junior anaesthetist in response to issues highlighted with provision of anaesthetic cover, in particular the timely availability of epidural analgesia.

There are no strict rules for the number of anaesthetic staff based on the size of maternity unit. OAA/AAGBI guidelines state only that extra staff should be provided “during periods of heavy workload.” The nature of obstetric practice makes it difficult to predict times of peak activity. Predictors of busy units are suggested as greater than 5000 deliveries per year, 35% epidural rate and 25% caesarean section rate. We aim to provide evidence of the benefits of additional on-call staff in busy maternity units.

**Methods:** We audited the impact of the introduction of a 2nd anaesthetist on our labour ward by comparing workload patterns, recruitment of additional staff, opening of two theatres and epidural waiting times over a 2 month period. We also surveyed the 20 largest maternity units in the UK to compare their staffing levels and workload.

**Audit Results:**
- Pre-increase in staff levels:
  - 70 occasions of recruitment of additional cover from main theatres
  - <30 minute wait for epidural - less than 50% hit target
- Post-increase in staff levels
- Doubling of 2nd theatre opening & increase in simultaneous interventions
- Average overlap of cases 32 minutes (suggesting genuine need for 2 anaesthetists
- 222 epidurals sampled: 30 minute target achieved in 96%

**Survey:** 70% of lead anaesthetists responded. Only 2 units currently had 2 dedicated out-of-hours anaesthetists. Both complied with the 30 minute target in over 90% of patients. Of the remainder, seven units stated they required additional help for their solo anaesthetist most nights of the week. All fulfilled at least 2 out of 3 of the OAA criteria for busy units. Five out of 7 achieved the epidural target in 75% or less. The remaining four units requested help less often but half of these units achieved the epidural target in only 50%. Around 70% of lead consultants felt that units above 6000 deliveries should have 2 dedicated on-call staff as standard.

**Discussion:** We have demonstrated a significant improvement in our own service with the introduction of a 2nd anaesthetist, in particular the provision of timely analgesia and emergency theatre access, as well as more comprehensive involvement within obstetric HDU. It also eases the burden on other anaesthetic services within the hospital. This is reinforced by the experience of other hospitals with 2 dedicated obstetric anaesthetists. Our aim should be to deliver optimal service 24 hours a day and the epidural target should be the gold standard across all units. We would recommend that in maternity units over 6000 deliveries that the presence of 2 dedicated obstetric anaesthetists should be the standard.

**Reference**
1. OAA/AAGBI Guidelines for obstetric anaesthetic services (2005)

P132 Expectant mothers’ perceptions of obstetric anaesthetic clinics

RJ Daly, MD Wittenberg*, AJ Wickham*, BA Loughnan*, PN Robinson*
*Anaesthetics, Northwick Park Hospital, London, UK, School of Medicine, Imperial College, London, UK

**Introduction:** The OAA/AAGBI Guidelines for Obstetric Anaesthetic Services state that antenatal anaesthetic assessment services should be provided for expectant mothers who are at high risk of obstetric or anaesthetic complications. Most discussions of anaesthetic assessment clinics have focused on their medical importance without reference to mothers’ views. The current survey was undertaken to assess the parturients’ perceptions of this intervention.

**Methods:** A survey was undertaken over five consecutive weeks from the beginning of October 2012 as part of a service review of our consultant-led antenatal anaesthetic clinic. Immediately after their consultation, expectant mothers were interviewed by a member of the anaesthetic team who asked if they felt that attending the clinic had been helpful, whether it answered any queries they had and whether they were now better informed about their anaesthetic options. Respondents not scheduled for elective caesarean section were also asked whether they were more likely, as a result of clinic attendance, to request an epidural for labour analgesia. The number of participants who said they were more likely to request an epidural after the consultation was compared with the number who thought they might have requested an epidural before their clinic appointment using the Chi-squared test.

**Results:** 50 clinic attendees were interviewed of whom 6 were scheduled for elective caesarean section. All potential participants agreed to participate (response rate 100%). Results are shown in Table 1.

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was attending today’s clinic a good use of your time?</td>
<td>94%</td>
<td>6%</td>
</tr>
<tr>
<td>Has attending clinic satisfied your queries?</td>
<td>86%</td>
<td>14%</td>
</tr>
<tr>
<td>Do you feel well-informed about your anaesthetic options?</td>
<td>86%</td>
<td>14%</td>
</tr>
<tr>
<td>Before attending clinic, did you think you were likely to request an epidural during labour?</td>
<td>43%</td>
<td>57%</td>
</tr>
<tr>
<td>After attending clinic, do you feel more likely to request an epidural in labour?</td>
<td>70%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Table 1: survey responses

Expectant mothers were more likely to request an epidural for labour after attending the clinic ($x^2 = 5.604$, with Yates correction $p=0.01$; odds ratio: 3.14, 95% CI = 1.2-7.7).

**Discussion:** Our survey suggests that women generally found the anaesthetic antenatal clinic offered useful information and they felt better informed regarding anaesthetic options. Immediately after the clinic appointment, the expectant mothers were significantly more likely to want an epidural for labour. If our findings are confirmed by larger studies, they may have implications for obstetric anaesthetic resource allocation.

**Reference**
P133 Factors causing anxiety around general anaesthesia for caesarean section
MD Wittenberg, RL Rogers, PN Robinson, DN Lucas
Department of Anaesthesia, Northwick Park Hospital, London, UK

Introduction: Anxiety has been identified as a factor that can contribute to error and failure to safely manage a patient’s airway. A wide variety of factors may contribute to the anaesthetic anxiety when administering general anaesthesia for caesarean section. We were interested in establishing what were the most important factors that cause anxiety in this setting.

Methods: An online survey was distributed to trainee anaesthetists within the North Central and Imperial Schools of Anaesthesia in November 2012. Respondents were asked to rate their anxiety related to ten factors that are commonly encountered around the administration of general anaesthesia for caesarean section. In addition, information about training grade and recent obstetric experience was collected.

Results: 70 responses were received representing a response rate of 58.3%. The majority of respondents (58.6%) were post-fellowship registrars. Responses to the factors causing anxiety are shown in figure 1. A weighted rating average was used to rank the factors in order of those causing most anxiety.

Figure 1: Weighted rating average of factors causing anxiety amongst anaesthetists.

Conclusion: The most important factors causing anxiety were related to a fear of worse neonatal or maternal outcome if delivery was delayed and fear of failure to successfully intubate the patient’s airway. The least important factors causing anxiety related to lack of supervision and recent experience of obstetric anaesthesia. A greater understanding of these factors can facilitate a strategy to reduce trainee anxiety, inform trainers and improve performance in this setting.

Reference

P134 Failed neuraxial blockade in a patient with neurofibromatosis type 1 undergoing elective caesarean section
R Gatherer, S Leonardi
Anaesthetics, University Hospital Lewisham, London, UK

Introduction: Patients with neurofibromatosis type 1 (NF1) may have spinal or intracranial tumours without neurological symptoms or signs.1,2 Epidural or spinal anaesthesia on these patients can cause life threatening complications. We report a patient who did not have spinal lesions on MRI but who had partial neuraxial blockade with spinal anaesthesia.

Case report: A 32 year old gravida 6 para 3 woman with NF1 and scoliosis presented for elective caesarean section. There was no evidence of hypertension, neurological or renal sequelae. Her last spinal imaging had been at the age of 16.

For her first term pregnancy she had an epidural but underwent an emergency caesarean section for foetal distress. The epidural was topped up and the surgery was uneventful. For her second term pregnancy a spinal failed and conversion to general anaesthesia was made for caesarean section. For her third pregnancy a spinal failed, with bilateral sensory block to T4 but pain on forceps testing. Two attempts at combined spinal epidural (CSE) were made but both resulted in bloody taps and a GA performed.

In this pregnancy she presented at 39+4 weeks. As the only previous complete success had been with epidural top-up a CSE was planned. Multiple attempts to locate the epidural failed and a spinal was performed. Only a partial block resulted with the patient responding to painful stimulus bilaterally between T8 and T12. A GA was performed and the caesarean proceeded without complication. An MRI later showed no cord abnormalities, no obvious neurofibroma within exit foramina with only mild circumferential bulging seen with anterior thecal contact at L3/4 and L4/5.

Discussion: Type 1 neurofibromatosis has an incidence of 1 in 3000 live births,1,3 despite this there have only been two previous case reports relating to this topic.2,3 Doukas et al comment that epidurals can be performed in NF1 patients with oropharynx and laryngeal involvement, in whom airway management may be difficult. Esler et al reported a case of an epidural haematoma in a parturient with NF1, in their case as with ours, no neurofibromas were seen on MRI.

Our case highlights the importance of awareness amongst obstetric anaesthetists of the potential hazards of neuraxial blockade in NF1 patients Pre-assessment of these patients by a consultant obstetric anaesthetist is essential and thorough baseline neurological examination and imaging should be performed late in pregnancy as there is potential for rapid neurofibroma growth during pregnancy.3

References
3. Esler MD, Durbridge J, Kirby S. Epidural haematoma after dural puncture in a parturient with neurofibromatosis. BJA 2001; 87:932–4
P135 Feasibility and initial results of the implementation of a validated patient satisfaction with regional anaesthesia questionnaire for elective caesarean sections in a UK anaesthetic department

A Pathmanathan, A Mehta, S Barnett, R Moonesinghe
Anaesthetics, University College Hospital, London, UK

Introduction: Patient satisfaction is an important measure of the quality of healthcare. Satisfaction with anaesthesia is used as an outcome measure in clinical trials and considered to be an integral part of service quality. Its measurement is also required to fulfill performance improvement and revalidation agendas. Appropriately developed or validated instruments are not widely used in the assessment of maternal satisfaction, despite a number of suitable questionnaires being available.

In Obstetric anaesthesia there is only one questionnaire extensively psychometrically developed, involving patients in the design and development. The aim of this project is to measure patient satisfaction and feedback results to provide meaningful data and facilitate quality improvement.

Methods: The study was approved as service evaluation by the local Research Ethics Committee. A psychometrically developed and validated written questionnaire was distributed and collected from all elective caesarean section patients day one post-operatively. The questionnaires were anonymous but the name of the anaesthetist was recorded to facilitate high quality and detailed feedback to individual consultants.

Results: There were a total of 71 elective caesarean sections over a one month period under regional anaesthesia. The questionnaire response rate was 85%. Initial analysis highlighted that 70% of patients were pain free throughout surgery; 80% of mothers feeling that the anaesthetic was safe for them; 79% feeling it was safe for their baby. 60% of the mothers recovered quickly after the surgery. However, 40% of the women experienced itching and 27% had significant shivering during the operation. The most important item contributing to maternal satisfaction during operative delivery is a sense of control; 70% of the women felt in control.

Discussion: This study is important, as it uses a validated, psychometrically developed questionnaire to report a patient-centred outcome, therefore recording results which should be reliable, reproducible and which can be a focus for quality improvement. The response rate of 85% indicates that implementation is feasible for the department, and acceptable to patients. A potential weakness is the questionnaires' development in Canada. Sociodemographic and cultural issues specific to the UK are not necessarily considered. Further formal validation of this questionnaire in other UK centres would be of value. Initial results highlighted several potential areas for quality improvement (symptoms of pruritus) which will lead to service changes and which we hope will lead to an improvement in maternal satisfaction when re-audited.

References

P136 Global Trigger Tool- an adaptation relevant to maternity service

DYK Tong, R Hartopp
Anaesthetics, St George’s Hospital, London, UK

Introduction: Global Trigger Tool (GTT) is a widely used method in UK hospitals to retrospectively review patient records, in order to identify adverse events, measure the overall level of harm in a healthcare organisation and to improve patient safety. Obstetric patients are a specific group of patients who are usually young, fit and healthy, have undergone great physiological changes during pregnancy and face specific challenges relating to childbirth. Therefore it is important to devise a means to identify potential adverse events in this group of patients and modify the GTT accordingly.

Methods: After hospital audit committee approval, obstetricians, midwives (including risk midwife) and anaesthetists in our tertiary centre were interviewed between October to December 2012, shown an existing copy of UK Global Trigger Tool and asked to contribute their ideas to the development of a trigger tool specifically relevant to the obstetric patients.

Results: 32 triggers spread across 5 categories are used in the UK Global Trigger Tool. Following interviews with members of the multidisciplinary team, we have added triggers that we thought were particularly relevant to the maternity population in our hospital and removed triggers that were deemed irrelevant or already overlapped by factors that could be identified by our existing audit programme.

Factors added to the maternity trigger tool included:
- Return to obstetrics emergency theatre
- Return to gynaecology emergency theatre
- Unplanned admission to Neonatal Intensive Care

Factors removed from the maternity trigger tool included:
- Decubiti
- Vitamin K
- Flumazenil
- High INR (>5)
- Transfusion
- Raised Troponin (>1.5ng/ml)

Conclusion: Taking a multidisciplinary approach enabled us to develop a Maternity Global Trigger Tool particularly relevant to our hospital, and enabled us to identify relevant factors and trends that would lead to adverse events in the maternity population in our hospital, in addition to the comprehensive audit programme that already existed in our hospital. The Maternity Global Trigger Tool is constantly under review and can be adapted according to our needs in the future to reduce the risks posed to our patients and improve safety.

References
2. Classen DC, Resar R, Griggin F et al. ‘Global Trigger Tool’ shows that adverse events in hospital may be ten times greater than previously measured. Health Affairs 2011; 30(4), 581-589.
P137 Hepatic rupture associated with HELLP syndrome

EMA O'Shea, E Mahmuza, M Girgis
Anaesthetic Department, Poole Hospital NHS Foundation Trust, Poole, Dorset, UK

Case report: A 34 year old multigravida of 39/40 gestation was admitted to labour ward with a 4 day history of feeling unwell, indigestion and intermittent epigastric pain. The patient's antenatal history was unremarkable. Her blood pressure was 81/52 mmHg. CTG showed a foetal heart rate of 50 beats per minute. A category 1 caesarean section and major obstetric haemorrhage were called. Intravenous access was established and rapid sequence induction of general anaesthesia was performed. A lower midline abdominal incision was made and 2000mls of fresh blood was seen in the peritoneum. The uterus had not ruptured, and there was no evidence of retroplacental clot. A live male infant was delivered. Initially the patient's uterus was atomic, but responded well to 5IU Syntocinon bolus followed by an infusion. The patient's initial blood results revealed a haemoglobin of 88 g/dL, platelets 34 x 10^9/L, ALT 393 iu/L and ALP 174 iu/L. The on call general surgeon performed a midline laparotomy which revealed tears on the anterior and inferolateral surfaces of the liver. The patient received 8 units packed red cells, 4 units fresh frozen plasma, 2 pools of platelets and 1g Tranexamic acid. The patient's spleen and liver were packed achieving haemostasis, and the patient's abdomen closed following advice from a consultant hepatobiliary surgeon. She was transferred to Intensive care in a tertiary centre under the care of the hepatobiliary surgeons. The abdominal packs were removed the following day. She was extubated uneventfully and the patient and her baby made a full recovery.

Discussion: HELLP syndrome consists of haemolysis, elevated liver enzymes and low platelets, and is a recognised risk factor for subcapsular hepatic haematomata formation and hepatic rupture.1 Hepatic rupture occurs in 2% of pregnancies complicated by HELLP syndrome, and has an incidence of between 1 in 40 000 and 1 in 250 000 pregnancies.2 Despite surgical intervention, hepatic rupture has a mortality rate of 39%.3 The pathogenesis of liver involvement in HELLP syndrome is unknown, although intravascular fibrin deposition and sinusoidal obstruction are thought to be involved. Hypervolaemia leading to hepatic ischaemia causes infarction, subcapsular haematomata and intraparenchymal haemorrhage which may result in liver rupture.4 There are no cases of recurrent liver rupture reported in the literature, and subsequent pregnancies do not appear to carry an increased risk of liver rupture. This case highlights the importance of effective multidisciplinary team working, prompt decision making and the early involvement of hepatobiliary surgeons.

References


T Husain, YMLiu*, R Fernando, M Sodhi†, M Columb§
Department of Anaesthesia, University College London Hospitals NHS Foundation, London, UK, *Department of Anaesthesia, Royal Free London NHS Foundation Trust, London, UK, †Department of Anaesthesia, Barnet & Chase Farm Hospitals NHS Trust, Enfield, UK, §Acute Intensive Care, University Hospital of South Manchester, Manchester, UK

Introduction: Neuraxial anaesthesia is the preferred mode of anaesthesia for caesarean delivery. As complications from neuraxial block are the predominant cause for complaint against anaesthetists,1 there is interest in the best method of assessing the adequacy of anaesthesia prior to caesarean delivery. Although cold sensation is commonly used, evidence suggests the risk of intra-operative pain may be reduced by assessment of light touch.2 We aimed to determine how neuraxial anaesthesia was being assessed, and whether changes in clinical practice reflected the differing evidence in the literature, over a six-year period.

Method: Both surveys were approved by the OAA Audit subcommittee (No. 42 & 106). The first survey was sent to UK consultant OAA members in 2004 asking how neuraxial anaesthesia was assessed prior to caesarean delivery, and what was documented. The survey was repeated in 2010.

Results: There was a response rate of 733/1045 (70%) and 549/1219 (45%) in 2004 and 2010, respectively.

The majority of anaesthetists tested more than one sensory modality in both surveys. The proportion of anaesthetists testing three modalities increased by 20% (95% CI 14-25, P < 0.0001).

Cold was the most commonly used modality in both surveys. There was a trend towards increased assessment of light touch, and testing of motor blockade increased by 23% (95% CI 17-28, P < 0.0001). The number of anaesthetists checking puprick fell by 20% (95% CI 14-25, P < 0.0001).

The upper level of anaesthesia accepted was dependent on the modality being tested. Testing to T4 with cold was the most common assessment in both surveys, and increased by 13% (95% CI 7-18, P < 0.0001) between surveys. There was also an increase in the testing of light touch to T5 by 18% (95% CI 11-25, P < 0.0001).

In both surveys, the extent of block to cold was the most commonly documented modality (98.9% & 90.0%). Documentation of light touch and motor block both increased (P < 0.0001).

Conclusions: Our surveys showed that methods of assessing neuraxial anaesthesia differed from those advocated in the literature. The wide range of modalities, methods of testing and targeted sensory levels suggest that clearer recommendations on best practice for assessment and documentation of neuraxial anaesthesia prior to caesarean delivery are required.

References
P139 Impact of multidisciplinary education on intratere resuscitation

S N Phillips, V Cowie*, M Mackenzie*
*Anaesthetics, East Surrey Hospital, Redhill, UK, Anaesthetics, Frimley Park Hospital, Frimley, UK

Introduction: Effective management of fetal distress requires a multidisciplinary effort. There are established resuscitative techniques as well as discussion on more controversial methods. The underlying pathophysiology needs to be understood to implement correct treatment. We carried out multidisciplinary teaching sessions, produced educational posters and distributed action plan cards. Our aim was to promote the underlying pathophysiology of fetal distress and corrective treatment measures. We audited resuscitative measures that were being used in cases of fetal distress prior to lower segment cesaran section (LSCS) before and after our intervention.

Methods: Data was collected over a 6 month period from all category 1 and 2 LSCS where fetal distress was present. We asked: was the mother tilted? were IV fluids running? and was oxygen being administered? During the last 8 weeks of the audit cycle we also collected data on the use of syntocinon. We asked: If syntocinon was administered, and there was now the presence of fetal distress, was it still running? We re audited after our education program for a further 6-month period.

Results:

<table>
<thead>
<tr>
<th>Resuscitative measure</th>
<th>Pre education (No of cat 1 or 2 LSCS = 94)</th>
<th>Post education (No of cat 1 or 2 LSCS = 151)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother tilted</td>
<td>38.3%</td>
<td>48.3%</td>
</tr>
<tr>
<td>IV fluids running</td>
<td>81.9%</td>
<td>90.7%</td>
</tr>
<tr>
<td>Oxygen administered</td>
<td>4.3%</td>
<td>11.2%</td>
</tr>
<tr>
<td>If syntocinon had been running, was it still running</td>
<td>7.4%</td>
<td>8.6%</td>
</tr>
</tbody>
</table>

χ²=2.368, p=0.12
χ²=4.072, p=0.04
χ²=3.625, p=0.057

Discussion: Through multidisciplinary teaching we have demonstrated an improvement in knowledge and clinical skills when dealing with intratere resuscitation. Placing mothers in a tilted position is a simple and effective maneuver but is still poorly done. In our first audit we only had partial data with regard to the ongoing use of syntocinon during fetal distress and this may have affected our results, as no improvement was seen. Oxygen administration is a moot point within intratere resuscitation. Our hospital guidelines state oxygen should be “considered” rather than universally administered, however post education it was used more often during fetal distress. In our second audit cycle 11.7% of category 1 LSCS were down graded to category 2 LSCS. This will impact the anaesthetic technique offered to the mother, allowing time for regional anaesthesia thus providing benefits to the mother and fetus.

References

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P140 Interventional radiology for postpartum haemorrhage in a district hospital

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Introduction: Placenta praevia is a major cause of haemorrhage causing direct maternal death at delivery. Selective arterial embolisation has been successfully used to control postpartum haemorrhage. Experience of interventional radiology in UK maternity units is limited. We report two cases of postpartum haemorrhage and their outcomes following interventional radiology.

Case report 1: A 37 year old gravida 4, para 3 who had three previous caesarean sections had antenatal diagnosis of placenta increta covering internal os. It was planned for her to have an elective caesarean section and preoperative internal iliac artery catheterisation at term. Key personnel comprised of obstetricians, anaesthetists, intensivists, radiologists, haematologists, neonatologist and lead midwife. On the day of surgery, she had trans-catheter balloons inserted but not inflated, in the radiology suite, before transfer to obstetric theatres. General anaesthesia was administered with full invasive monitoring and a cell saver. Balloons were inflated for 35 minutes after delivery of the baby but before the placenta was delivered. Embolisation was performed after the balloons were deflated, on the advice of the surgeon. Estimated blood loss was 4 litres. She developed ischaemia of the left leg during the postoperative period and was transferred to a local tertiary hospital. She had an embolectomy and stenting of her internal iliac artery and was discharged after 2 days.

Case report 2: A 35 year old gravida 3, para 2 with a history of two previous caesarean sections was diagnosed antenatally with major placenta accreta covering internal os. She was booked for an elective caesarean section at term, with planned preoperative internal iliac artery catheterisation. However, she presented at 35 weeks gestation with contractions and ante partum haemorrhage. She was deemed unsuitable for preoperative balloon catheter placement. She had a general anaesthetic with full invasive monitoring and a cell saver. Bleeding was uncontrollable and a subtotal hysterectomy was performed. She was admitted to the intensive care unit where she bled further. She was transferred to the radiology suite and bleeding was controlled following embolisation of the obturator artery and coiling of a pseudoaneurysm. Estimated blood loss was 10 litres. She was discharged four days later.

Discussion: Although in our institution we have a vascular interventional radiologist with a special interest in embolisation techniques, lack of on site vascular services mandated the transfer of our first patient who developed limb ischaemia. We suggest that planned interventional radiology in patients thought to be at high risk of post partum haemorrhage should be undertaken in hospitals where all the supporting services are on site.

References

P141 Is an Epidural top up possible in the most urgent caesarean section

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Background: Regional anaesthesia is the preferred method for caesarean sections both in the elective and emergency situations. Top-up of an epidural placed for vaginal analgesia is commonly used. Still, general anaesthesia seems to be preferred in parturients proceeding to the most urgent Caesarean sections (Cs)

Aim of the study: In this retrospective study we wanted to evaluate if topping up an epidural for vaginal delivery possibly could be an adequate anaesthetic method for the most urgent Cs (no time delay).

Methods: Parturients, having an epidural in situ for vaginal delivery proceeding to Cs epidural top up is the first choice anaesthetic choice according to the guidelines in the obstetric department at Haukeland University Hospital. In this retrospective study, we examined if we were able to use an epidural top up in the most urgent Cs (no time delay) during one year (2009).

Results: The total number of birth was 5104 and 583 Cs were performed (11.4%). Emergency Cs were 433(74%) and grade 1a Cs (immediate no delay) were 131 (31%). In 88 (67%) an epidural was in place for a vaginal delivery. A top up epidural anaesthesia was successfully achieved in 69 of the 88 women (78%). In 18 of the 88 women (20%) parturients general anaesthesia were needed.

Fig 1. Sectio (all) 2009:

Conclusion: The use of an epidural top up anaesthesia should be preferred to general anaesthesia also in the most urgent Cs. Guidelines and educated personal are needed in order to succeed.

References

P142 Knowledge of and views on classification of caesarean section and assisted vaginal delivery

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Introduction: Lucas et al.’s four-grade classification of caesarean section (CS) developed within our maternity unit and has been standard at this hospital since 2000. Its application to assisted vaginal deliveries (AVD) has been described, although the classification was derived specifically for CS and not AVD. Further, its use beyond CS risks increasing confusion, as illustrated by a recent case in which a ‘grade-1 delivery’ was presented to an anaesthetist without defining the intended mode of delivery. We surveyed staff in our unit for their knowledge of, and views on, the CS classification and its possible use in AVD.

Methods: Questionnaires were given to 50 staff, asking about their knowledge of the CS classification and how useful they found it, whether they knew of any classification for AVD, and whether they thought one might be useful.

Results: 30 staff (60%) responded: 11 midwives (hands 6/7); 11 obstetricians (ST2 to consultant); 7 anaesthetists (ST3 to consultant) and one operating department practitioner (permanently based on labour ward). All were aware of the CS classification, though 18 (60%); half of these midwives) could not define its grades correctly. The classification was rated useful to extremely useful by 29 (97%) for general use, guiding practice and audit, and by 26 (87%) for improving communication. Only 7 (23%) had heard of a classification for AVD, of whom 4 could give any details (describing the same system as for CS). 17 (57%) thought a classification for AVD might be useful.

Discussion: Despite use of the CS classification in our unit since inception, many staff are unable to define the grades, though almost all find the classification useful. The usefulness of a classification for AVD is yet to be determined, and we remain cautious about encouraging its adoption for fear of increasing confusion and detracting from the support for the original CS classification until further evidence is available.

References
P143 Low dose epidural mixture for caesarean section

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Introduction: We describe a case of an epidural being sited for labour analgesia, administration of a test dose, and subsequent category 1 caesarean delivery with no further top-up required.

Case Report: A primiparous with a BMI of 23 who had an uneventful pregnancy requested an epidural for the first stage of a spontaneous onset labour. Her cervix was 6cm dilated twenty minutes earlier and there had been two non-pathological fetal decelerations in the last hour. Informed consent was obtained, intravenous access and monitoring established. The epidural was sited in the sitting position using 1% lidocaine to anaesthetise the skin. Loss of resistance to saline with an 18G Tuohy needle was at 5.5cm through which an epidural catheter was passed without resistance. After observing a falling meniscus and negative aspiration, it was secured at 10.5cm at the skin and a test dose of 15mls of 0.1% levobupivacaine with 2mcg/ml fentanyl was administered. The patient mobilised without assistance on the bed and sat reclined at 45 degrees. Haemodynamic observations were stable at five (BP 129/50, HR 68) and ten minutes (BP 130/65, HR 70) after test dose. At fifteen minutes prolonged fetal bradycardia was recorded. Maternal haemodynamic observations remained stable in the left lateral position with oxygen and intravenous fluids. The patient then developed a dense bilateral lower limb motor block (Bromage scale Grade IV). The level of sensory block, tested with ethyl chloride spray, was noted at T12, but on repeat evaluation had progressed to T8, T6 and finally stabilised at T2 twenty minutes after the test dose. Meconium was noted by the obstetric team and a decision for category 1 caesarean section made. In theatre the patient had an adequate block and surgery proceeded without delay with the patient comfortable throughout. Baby was delivered with APGAR scores of 8 and 10. Three hours after the test dose the patient had no residual motor block.

Discussion: As far as we are aware, this case is the first reported in literature where a caesarean delivery has been completed on a single dose of low dose epidural mixture. Epidural catheter placement can be complicated by dural puncture, unrecognised placement of a spinal catheter or rarely by subsequent migration of the catheter into the subarachnoid space. In addition, false negative safety checks leading to inadvertent spinal administration and rapid onset of a high block should not be forgotten. The ideal spinal anaesthetic is a function of baricity, concentration and volume and should provide minimal sympathetic and motor blockade with a sensory block level to T4. The minimum effective anaesthetic concentration has been hypothesised to be as low as 0.1% levobupivacaine.1 In view of this single dose of 0.1% levobupivacaine mixture providing adequate surgical anaesthesia, and minimal maternal haemodynamic compromise, we propose that there is further scope for studies looking at low concentration, higher volume intrathecal protocols for safer Caesarean delivery.

Reference

P144 Management of massive obstetric haemorrhage at a large teaching hospital

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Introduction: Massive obstetric haemorrhage is a major cause of maternal mortality and management is often substandard.1 This study was conducted to evaluate management within a large teaching hospital.

Methods: A retrospective review of 67 cases identified from theatre logbooks with EBL>1500mls during January to November 2011.

Results: The study group were largely aged 20-39 (93%), BMI 20-30 (67%), and primiparous (62%). Risk factors included previous APH (3%; n=2) or PPH (4%; n=3), clotting abnormality (3%; n=2); fibroids (3%; n=2); placenta praevia (9%; n=6), multiple pregnancy (6%; n=4) and P&T (9%; n=6). Of 55/67 who laboured, 49% (n=27) had IOL, 40% (n=22) augmentation, 15% (n=8) protracted labour, and 15% (n=14) prolonged 2nd stage. Nineteen percent (n=13) gave birth to a baby weighing over 4kg. Fifty-five percent of haemorrhage occurred intraoperatively, 42% postpartum, and 3% antepartum. Most (87%; n=58) was unanticipated and due to atony, and sutureing of tears was associated with a high incidence of haemorrhage (15%). Thirty-one percent underwent GA, 57% spinal and 12% epidural top-up. Consultant anaesthetist and obstetrician were present in 49% (n=33) cases, but not informed in 22% (n=15) of cases and 19% (n=13) of cases with EBL>2000mls despite unit guidelines recommending this. Cell saver was used in 9% (n=6) of all cases and 22% of anticipated cases. The massive haemorrhage protocol was documented as activated in only 15% (n=10), Haemocue was used in 40% (n=27), 12% (n=8) had arterial lines, and 7% (n=5) CVcs. One third (30%; n=20) received blood, 18% (n=12) FFP, 15% (n=10) platelets, and 3% (n=2) cryoprecipitate. Only one received anti-fibrinolytics. All received oxytocin and 85% (n=57) an infusion, one third received ergometrine (34%; n=23) and carbo progast (31%; n=21) and Misoprostol was used in 10% (n=7). Haemorrhage control procedures were necessary in 22% (n=15): 33% (n=5) of which involved balloon tamponade, 27% (n=4) B Lynch suture, 20% (n=3) surgical packing, 13% (n=2) hysterectomy and 7% (n=1) internal artery ligation. Most (85%) were managed in recovery post-operatively, 9% in HDU and 6% in ITU.

Discussion: Haemorrhage most frequently occurred intraoperatively and was unanticipated, with repair of tears associated with a high incidence of haemorrhage and staff should be vigilant to this potential. Consultants were not informed in around 20% of cases; consultants should be informed of all cases with EBL>2000mls as per local guideline. Activation of the massive haemorrhage protocol was not routinely documented. Cell saver use was low, even in anticipated cases and further staff training may be required in its use. Consideration should be given to the value of antifibrinolytics - only 1 patient received these. The need for specific haemorrhage control procedures was rare but recognised in those with considerable blood loss. Early interventions should always be considered if ongoing blood loss.

Reference
P145 Management of patient presenting with thrombotic thrombocytopenic purpura (TTP) and an intra-uterine death
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Introduction: Thrombocytopenia can present in pregnancy as a consequence of several conditions, most commonly pre-eclampsia and HELLP syndrome. Here we present a case of thrombocytopenia due to Thrombotic Thrombocytopenic Purpura (TTP) and discuss the patient's management in ICU.

Case Report: A 32 year old primigravida presented at 32 weeks to her community midwife complaining of feeling generally unwell with a rash and spontaneous bruising to her lower legs. Her pregnancy had been uncomplicated to this point and she was normally in good health. BP was 120/80 mmHg and urinalysis revealed 4+ protein and 1+ blood. Blood samples were taken for FBC and U&E but the samples were clotted and she was advised to re-attend for further sampling. Fetal movement was present and confirmed on ultrasound scanning. 2 days later she attended her local maternity unit in a collapsed state. She had become drowsy and confused at home and had been unwell for several days. Bloods revealed Hb 3.8g/dL and platelets were <10x10^9/L. Her LFTs, Uand E and coagulation screen were all within the normal range. Her case was discussed with Consultant Haematologist and TTP was diagnosed. At this point examination also revealed the absence of a fetal heartbeat and the patient hadn’t felt any fetal movement since the previous evening. She was transferred to a tertiary ICU for joint ICU, Obstetric and Haematology management. On arrival in ICU plasma exchange was commenced along with high dose steroids and folic acid. Routine bloods were sent as the patient had been transfused at her local hospital. The platelet count was 11 after 1 unit and her Hb had risen to 9g/dL after 5 units RBC. Assessment by US revealed an appropriately grown fetus with no fetal heartbeat. There was no retroplacental clot and no Spalding’s sign. After her first plasma exchange her platelet count rose to 22x10^9/L. A multidisciplinary meeting was held to determine the timing and mode of delivery. The decision was made to allow vaginal delivery. Labour was induced according to local guidelines and when the cervix was fully dilated a unit of platelets was transfused to cover the delivery. IM medications were avoided. A slow IV bolus of Syntocinon 5iu was administered and a Syntocinon infusion of 10iu/hr ran for 4 hours. There was minimal blood loss and the patient was stable post-partum. She was transferred to the Labour ward 24 hours post-partum and then to the haematology unit for continuing care.

Discussion: Although guidelines exist for the management of TTP in pregnancy, none relate to the management of the patient with an intra-uterine death. This case highlights the need for early diagnosis and treatment of TTP and for a multi-disciplinary approach to timing and mode of delivery.

Reference

P146 Management of post-dural puncture headache in obstetric patients: an audit of current practice
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Introduction: Post-dural puncture headache (PDPH) is of particular significance in the obstetric patient as it impacts on the new mother’s ability to care for and bond with her baby. It increases healthcare costs by prolonging hospitalization, is a potential source of litigation and reduces patient satisfaction with anaesthetic service. We evaluated our management and follow up of PDPH cases over an 18 month period (Jan 2010-July 2011).

Method: Using the Ciconia Maternity Information System (CMIS) possible PDPH cases were identified by the presence of recognised dural tap at the time of the procedure and/or presence of subsequent headache. Case notes were reviewed to identify confirmed PDPH cases. We evaluated mean time to recognition of PDPH, type of procedure causing PDPH, documentation (confirming clinical diagnosis in the notes and recording a management plan) as well as follow up to resolution of symptoms. Where a blood patch was performed we additionally assessed documentation of discussion and consent, patient temperature before procedure, post blood patch care advice and prescription of laxatives. Time after diagnosis of PDPH to performing blood patch was also assessed, aiming for between 24-72 hours.

Results: 15 cases were identified (incidence <1%). The mean time after procedure to recognition of PDPH was 1.46 days. 47% of PDPH was due to epidural, 20% spinal and 33% combined spinal epidural (CSE). Documentation was complete in 47% of cases. 73.3% of cases had documented follow up to resolution of symptoms. 11 of 15 (73.3%) PDPHs received blood patches. Our findings for blood patch documentation were: discussion and consent (73%), temperature prior to procedure (0%), advice on post blood patch care (82%), prescription of laxatives (18%), follow up until resolution of symptoms (55%). Mean time from diagnosis of PDPH to performance of blood patch was 48 hours.

Conclusions: The findings of our audit showed that management of PDPH and its documentation was suboptimal. Interestingly and contrary to some papers reporting no increased risk of PDPH following CSE1, we noted a disproportionate frequency of PDPH associated with this technique. This has prompted us to perform further studies into safety and complications of CSE. As part of service improvement new guidelines for management of PDPH and a structured proforma have been implemented in our department, ensuring consistently higher standards of care can be achieved. These support tools should facilitate management of all PDPH cases promptly and safely with an informed patient at the center of the pathway, thereby improving patient satisfaction and reducing length of stay.

Reference
P147 Midwifery training for invasive monitoring in obstetric HDU on the labour suite

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Introduction: Critically ill women receiving level 2 care provided by midwives in Obstetric HDU in labour suite (L/S) merit the same standard of critical care nursing as they would receive in a general HDU.1 Busy L/S and tight staffing budgets can delay midwives taking up training opportunities despite an ever-increasing need for midwifery training in HDU care.

Aim: This project set out to provide invasive monitoring training workshops on the labour suite during routine working shifts as part of the core training for midwives providing HDU care on the L/S.

Methods: Following consultation with L/S midwifery team co-ordinators, clinical practice development midwife, training and development nurse lecturer and duty consultant anaesthetist, 4 training days were allocated in October 2012. The workshops ran from 10.00hrs to 16.00hrs in a L/S office. Midwives attended “drop-in” sessions lasting approx 40 - 60 minutes, according to their availability on L/S. Following a slide presentation, arterial and central venous pressure (CVP) line simulators provided practical experience of line zeroing, arterial and CVP measuring and blood sampling. Training included line maintenance and recognition of complications of damping, hazardous line obstruction or disconnection, and inadvertent injection. The workshop content met the standard of the Scottish Maternity REACTS Course.2

Results: During the 4 study days spanning 4 weeks, 54 midwives completed the invasive monitoring workshop, receiving their clinical practice development certificates. Over the years some midwives had taken part in ad-hoc invasive line training but none had received formal standardised certificated training.

Discussion: On the training days, input from the clinical development midwife was crucial in co-ordinating midwife release from clinical duties to ensure as many midwives as possible could attend. While a small number of midwives are attending the Scottish Maternity REACTS courses to provide a HDU trained midwife on each shift, the Obstetric HDU service also depends on support from the L/S midwives during periods of leave and shift breaks. Workshops are no substitute for clinical training and experience, but they can provide the much needed core training for our midwives before they gain clinical exposure in HDU.

Conclusion: The “drop-in” workshops sessions proved popular, effective and achievable in the busy L/S setting without requiring release from a whole shift to attend a course.

Recommendations: We plan to run a similar selection of “drop-in” workshops for ECG monitoring, maternal acid base balance/ interpreting maternal arterial blood gases, oxygen therapy and pulse oximetry, and early recognition of the critically ill pregnant woman.

References
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P148 Monitoring of LMWH in pregnancy
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Introduction: Pulmonary embolism is a leading cause of maternal death in the UK.1 Many women who develop thromboembolic disease have identifiable risk factors and are preventable with thromboprophylaxis. Hospital guidelines stipulate monitoring of platelet count for thromboprophylaxis and anti factor Xa levels for therapeutic doses.

Method: Retrospective audit using the thromboprophylaxis register over 1 year. Blood results accessed via the hospital computer system. Data collected: - doses of LMWH, frequency/number of platelet counts, frequency of anti factor Xa levels, abnormal results and number of thrombotic events on LMWH.

Results: 50 women, 42 on prophylactic doses - 1 on 20mg OD, 19 on 40 mg OD and 22 on 40mg BD. 8 on therapeutic doses.

<table>
<thead>
<tr>
<th>Dose of LMWH</th>
<th>Prophylactic (n=42)</th>
<th>Therapeutic (n=8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platelet count done monthly (number)</td>
<td>48% (20)</td>
<td>75% (6)</td>
</tr>
<tr>
<td>Platelet count done at 1 wk, booking, 24 weeks and 36 weeks.</td>
<td>98% (41)</td>
<td>100% (8)</td>
</tr>
<tr>
<td>Abnormal platelet count</td>
<td>7% (3)</td>
<td>13% (1)</td>
</tr>
<tr>
<td>Anti factor Xa checked ever</td>
<td>-</td>
<td>50% (4)</td>
</tr>
<tr>
<td>Anti factor Xa checked monthly</td>
<td>-</td>
<td>25% (2)</td>
</tr>
<tr>
<td>Anti factor Xa level abnormal</td>
<td>-</td>
<td>13% (1)</td>
</tr>
<tr>
<td>Venous thrombotic event</td>
<td>5% (2)</td>
<td>0%</td>
</tr>
</tbody>
</table>

Table: Percentage of monitoring completed

Discussion: Monitoring was poor for monthly platelets and anti factor Xa levels. The lowest platelet level was 105. National guidelines state platelet count is only required if previous exposure to unfractionated heparin has occurred as heparin induced thrombocytopenia with LMWH alone is rare.2 Anti factor Xa levels are required in women weighing <50 kg/>90 kg or with complicating factors e.g. renal failure. Many women are >90 kg and may need anti factor Xa monitoring – the guidelines are equivocal about this.3 The hospital guidelines need to be updated to reflect national guidelines. This would reduce the number of unnecessary tests and represent a substantial saving cost. The 2 thrombotic events could represent none compliance or inadequate dosing as the patient’s weight is not on the register.

References
P149 Neurological complications following central neuraxial block in obstetrics

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Introduction: Neurological injury is a recognised complication of central neuraxial block although no clear management system existed at our institution, prompting the authors to institute a guideline, proforma, patient information leaflet and GP letter 1 year ago. This review was conducted to examine 1 year data and current practice, and identify areas for improvement.

Results: A total of 2774 patients received central neuraxial block (1068 epidurals, 1699 spinalis, and 7 CSEs) over a 1 year period and 23 reported neurological symptoms, 15 post epidural, 4 post spinal and 4 had both epidural and spinal separately. This represents an incidence of neurological complications of 0.8%, equivalent to 1 in 120 patients. Epidurals were most associated with neurological complications (83%, n=19).

There was no correlation with BMI, grade of anaesthetist, procedural factors, or case of procedure, with 56% of procedures documented as easy (n=13), and the remaining 44% associated with difficulty locating space (n=6), multiple attempts at different levels (n=5), multiple attempts at same level (n=2), and bloody tap (n=1). Only 2 were associated with nerve root irritation during siting.

Referral method was largely by ward staff (n=11) or routine anaesthetic review (n=10), and occasionally by community midwife (n=1) or patient directly (n=1). Primary complaint was reduced sensation (15), paraesthesia (n=6), or motor weakness (n=2), affecting most commonly the thigh (n=9), buttock (n=6), whole leg (n=3) or foot (n=5). Symptoms were usually unilateral (n=20). A dermatomal distribution was recognised in 12/24. Three patients had symptoms consistent with a lateral cutaneous neuropathy, 3 had non-specific symptoms and in 5 no pattern was documented. Patient information leaflets and GP letters were distributed in only 13 and 9 patients respectively. One patient was referred to neurology, 3 were reassured and discharged, 1 was referred to obstetrics, and the remaining 19 were monitored by anaesthetic staff. A further 2 were discharged at 1 week, 9 at 6 weeks, 4 at 12 weeks, and 1 at 16 weeks. 52% (n=12) had either improved or resolved by 1 week, and all by 12 weeks. 21/23 patients have now been discharged. No patients have suffered permanent neurological injury.

Discussion: This study revealed the high incidence of neurological complications post neuraxial block at our institution. This highlights the importance of the postoperative review, and steps are currently underway to generate computerised review lists to streamline this process at our institution. A proportion of these may be obstetric in nature and the local guideline suggests patients with isolated neuropathies should be managed by obstetricians, although this was often not the case. The difficulty lies in distinguishing cause as anaesthetic or obstetric in nature, and management of patients with no clear neurological pattern is more difficult, and it is reasonable that these were managed by the anaesthetic team. Documentation was often incomplete despite concise record keeping forming an essential component of good medical practice.

References

P150 Nonobstetric pain in pregnancy: a survey at Royal Free Hospital

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Introduction: Despite the common occurrence of pain during pregnancy, major textbooks in both pain and anaesthesia lack any concentrated discussion of the topic1. Poorly controlled pain during the pregnancy is associated with self medication behaviour and may induce pre term labour. The aim of this survey was to study the incidence of non obstetric pain during the pregnancy at our hospital.

Methods: After ethics committee approval, all pregnant females who attended the antenatal anaesthetic pre assessment clinic over a period of one month were requested to fill in a questionnaire. Verbal consent was taken and females were asked to fill in details about any non obstetric pain during their pregnancy. They were also asked to fill in details about the severity of the pain and its impact on daily quality of life. Information was also requested about the duration of the pain and any analgesics taken. The severity of pain was assessed by visual analogue scale.

Results: A total of 64 females agreed to fill in the questionnaire. There was no significant statistical difference with regards to age and duration of pregnancy. 22 (34%) females reported non obstetric pain at some point during the pregnancy. The most common areas involved were lower back (81%; 18/22), head (45%;10/22), hip (27%; 6/22), wrist (9%; 2/22) and legs (4%; 1/22). The average severity of pain on numerical scale was 6. None of the females reporting pain were taking any analgesics or were referred for any specialist help, even though 14 out of 22 females (63%) reported significant interference with daily activities of life due to the pain. 2 females were using back belts for their low back pain. All the 22 females reported that their pain was not well managed and would have liked specialist help.

Discussion: The survey has demonstrated an overall incidence of pain at 34% of the population presenting in pre assessment clinics. The incidence of back pain was 81%, which is similar to that observed by Kristiansson et al2. The incidence of pelvic pain was 27% which is less than that observed by Wu et al3. Incidence of headache was at 45% which is higher than observed by Maggioni et al4. The difference in various incidences as compared to other studies could be due to the small sample size of our survey but overall the survey has highlighted the significant problem of non obstetric pain during the pregnancy and its inadequate management. It is important to systematically enquire about the pain during the antenatal visits and offer adequate management.

References
P151 Nutritional advise for labouring women with epidurals
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Introduction: Previously there have been strict policies with regard to nil by mouth during labour on the delivery suite. Changes in anaesthetic practice and research into the effects of nutrition during labour have led to the production of national guidelines on this subject.1 Nice guidance states that isotonic drinks maybe more beneficial during established labour than water. Our trust has adopted this and also states that post epidural insertion women should no longer eat food. We looked at women in labour with epidurals and noted poor uptake of this advice. We heightened awareness of guidelines by giving nutritional advice when consenting the parturient for an epidural. We also increased availability of isotonic drinks in the hospital and used educational posters in areas where they were being sold. Adherence to guidelines was audited pre and post intervention.

Methods: Over a 5 week period all women who had a labour epidural were followed up regarding nutritional intake. We ascertained duration of labour and information on types of food and drink consumed pre and post epidural insertion. After increasing the availability of isotonic drinks and the awareness of nice guidelines on intrapartum nutrition we then re-audited.

Results: In the first audit cycle 20% (13/64) of women ate after their epidural insertion. No woman drank isotonic drinks during their labour. Some women were drinking nothing at all pre (3%, 2/64) or post (3%, 2/64) epidural insertion. In the second audit cycle 13% (4/31) of women ate after their epidural was sited. One woman drank nothing pre epidural and 13% (4/31) drank nothing post epidural. 35% (11/31) of women drank isotonic drinks after their epidural was sited and 61% (19/31) stated they were aware that isotonic drinks were available in the hospital.

Discussion: We have shown an improvement with compliance of our trusts (and national) guidelines regarding intrapartum nutrition. More women are using isotonic drinks and less women were eating food after epidural insertion. This may have benefits to the high risk parturient by providing a caloricic source, which is rapidly absorbed by the stomach, thereby reducing ketosis and aspiration risk.2

References
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P152 OAA information for mothers leaflets: awareness and usage amongst midwives
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Introduction: The OAA publishes information leaflets on labour analgesia and anaesthesia in up to 37 languages1. These were developed to provide written information for the mother in her own language to make a fully informed decision and these have been found to be useful by mothers. The information is available in leaflet format or in video or DVD format for order from the OAA or printed from the OAA website. More recently, access has been made freely available via WebApps or Apps on smart phones. Antenatally, midwives play an important role in educating and providing written information to mothers in whichever way is most appropriate. We did a snapshot survey to look at awareness and usage of this information, which format they were being accessed in and whether the midwives felt this information was useful.

Methods: A survey using SurveyMonkey weblink was sent to midwives in 4 teaching hospitals (Leicester Royal Infirmary, North Staffordshire University Hospital, Southampton General Hospital and Hull and East Yorkshire Hospital) and to midwives within the Royal College of Midwives (RCM).

Results: 201 replies were received (Leicester-69, North Staffs -35, Southampton -30, Hull -55 and RCM -12). The majority of midwives (66%) had > 10yrs experience and 11 replies were from student midwives. 125(62%) of the respondents work on the delivery suite, 53(26%) on antenatal and postnatal wards and 57(28%) in the community. 38(19%) midwives had used OAA leaflets provided in their units, 52(26%) used printed material from the internet and only 4 had used a smartphone App. The most commonly used translations were: Polish (62), English (39), Hindi (23), Arabic (22), Punjabi (17), Gujarati (16), Urdu (15), Russian (12), Somali (9) and Cantonese (8). Although only 76 midwives had used the leaflets themselves, 93% of those who had used the leaflets found them useful.

<table>
<thead>
<tr>
<th>Yes (%)</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aware of IMF leaflets</td>
<td>110(55)</td>
</tr>
<tr>
<td>Had used the leaflets</td>
<td>76(38)</td>
</tr>
<tr>
<td>Aware of availability via internet</td>
<td>94(50)</td>
</tr>
<tr>
<td>Aware of availability via WebApp</td>
<td>18(10)</td>
</tr>
<tr>
<td>Aware of availability via Apps for Iphones</td>
<td>26(14)</td>
</tr>
<tr>
<td>Aware of availability via Apps for android phones</td>
<td>16(9)</td>
</tr>
<tr>
<td>Aware of availability via online video or as DVDs</td>
<td>12(7)</td>
</tr>
</tbody>
</table>

Discussion: There is an urgent need to increase midwives’ awareness of the information leaflets. Despite advertisement via the OAA website and with posters, few are aware of the access via free Apps on smart phone although this is potentially the easiest way to access the information in the community. Thanks to Ms J Gerrard from the RCM for her help with survey of midwives within the RCM.

Reference
1. http://www.oaa-anaes.ac.uk
P153 Patients and midwives happy but pain scores worse - implementing a new pain relief protocol in a tertiary referral centre
C Meer, R Goyal, B Kasa, I Wrench
Anaesthetics, Sheffield Teaching Hospitals, Sheffield, UK

Introduction: We have previously reported that our subcutaneous morphine regime for post caesarean section pain control resulted in pain and inflammation related to the subcutaneous cannula. As a result of our findings we changed to an oromorph regime for post caesarean section analgesia. Oromorph is not a controlled drug and is therefore easier and quicker for midwives to administer. We now report a service evaluation of this new regime seeking to establish what effect its introduction has had on pain scores, patient satisfaction and midwifery workload.

Methods: Patients were asked to rate their pain as nil/mild or moderate/severe and to rate how satisfied they were with their pain control (unsatisfactory/fair or good/excellent) at a 24-48 hour follow-up visit post caesarean section. 128 women were interviewed. The results were compared with data collected before the introduction of oromorph. 49 midwives were surveyed to ask about their satisfaction with the introduction of oromorph.

Results: Pain scores were statistically significantly worse following the introduction of oromorph (p<0.0376, Fisher's exact test) however the percentage of women who rated their pain control as good/excellent remained the same (94%).

Table: Number and percentage of women experiencing nil/mild or mod/severe pain post caesarean section before and after the introduction of oromorph for breakthrough pain.

<table>
<thead>
<tr>
<th>Verbal pain score</th>
<th>Before oromorph regime introduced [n (%)]</th>
<th>After oromorph regime introduced [n (%)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil/Mild</td>
<td>106 (78.5)</td>
<td>85 (66.4)</td>
</tr>
<tr>
<td>Mod/Severe</td>
<td>29 (21.5)</td>
<td>43 (33.6)</td>
</tr>
</tbody>
</table>

98% of midwives felt the new oromorph regime had made a positive impact on their workload.

Discussion: If pain scores are worse following the introduction of a new protocol, but patient satisfaction remains as good, which method of assessment should we use to guide our pain management post caesarean section? The Royal College of Anaesthetists no longer suggests collecting pain intensity scores for audit purpose but have set a target of maternal satisfaction above 95%. Verbal rating scales for pain are well established and in the past were considered more suitable than satisfaction scores, as it was argued that maternal satisfaction is multidimensional. The RCOA now recognises that maternal satisfaction is not compromised by less than perfect analgesia. We have continued with the oromorph regime as patients remain satisfied and midwives find it much easier to administer.

References
1. Kanellopoulos I, Wrench IJ. Subcutaneous cannula for morphine administration after lower segment caesarean section - more trouble than it's worth. OAA poster presentation 2012.
2. Raising the standard: a compendium of audit recipes. RCOA 2012.

P154 Peripartum Cardiomyopathy
S Botros, A Haroun*
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Introduction: We present a patient who developed peripartum cardiomyopathy (PPCM) soon after delivery. PPCM is a rare condition with an incidence between 1:1500 to 1:4000 live births.

Case report: A 21 year-old Caucasian primiparous with twin pregnancy was diagnosed with pre-eclampsia at 36 weeks gestation and was admitted to the hospital for induction of labour. Apart from raised BMI (34) she had no medical problems. Pathological CTG warranted a category 2 LSCS which was done under spinal anaesthesia. Intra-operatively a drop in her oxygen saturation to 90% was noted and this quickly responded to face mask oxygen.

Three hours postoperatively, she became pyrexic, tachypnoeic and her saturation dropped to 87% with a heart rate of 180 beats/minute. Her blood pressure was not recordable. On auscultation there was bilateral basal crepitations and gallop rhythm with no accentuation of second heart sound. ECG showed supraventricular tachycardia and chest X-Ray showed cardiomegaly and pulmonary oedema. Echo showed massively dilated left ventricle with an ejection fraction (LVEF) of 20-25%. She deteriorated rapidly and was ventilated in ICU. She required cardiac and renal support as she developed acute renal failure. She was extubated by the third postoperative day. Subsequently by day eight, her LVEF had improved to 55% and she was discharged from the hospital with advice to follow up in cardiology clinic.

Discussion: PPCM was defined as heart failure between the last month of pregnancy and six months postpartum. It is elusive as there is absence of prior heart disease and no apparent cause. Echocardiographic evidence shows that of left ventricular dysfunction (LVEF less than 45%, LVFS less than 30% and end-diastolic dimension index of greater than 2.7 cm/m2 BSA).

Risk factors include multiparity, multiple gestation, pre-eclampsia, hypertension, black race, malnutrition, alcohol and advanced maternal age.

Signs and symptoms are of left ventricular failure. Diagnosis is mainly clinical but ECG, chest radiography, echocardiography and MRI are used. Treatment is mainly supportive as bed rest, salt and fluid restriction, digoxin, diuretics, vasodilators and bromocriptine. Heart transplant and intra-aortic balloon pump are occasionally be used.

Two thirds of the patients show improvement of ventricular function on echocardiography, 45% returns to normal LVEF while 10% require heart transplant. Even if the LVEF completely recovers, there is a high incidence of recurrence of PPCM in subsequent pregnancies.

References
P155 Phenylephrine in obstetric anaesthesia - a survey of UK practice
L Webster, L Allman*, S Iqbal*, A Carling
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*Anaesthetics, Neville Hall Hospital, Abergavenny, UK

Introduction: Phenylephrine has become the standard vasopressor in use during caesarian section. It is an effective alpha and beta agonist, and has the flexibility of being used both as an infusion or as boluses to maintain maternal and placental perfusion. Risk assessments of injectable medicines was a key recommendation in NPSA’s patient safety alert “Promoting the safe use of injectable medicines” issued on 28 March 2007.

In an attempt to bring our department in line with common practice in the UK, we designed a survey of all lead obstetric anaesthetists, asking for their practices regarding the use of phenylephrine in obstetrics.

Method: A n e-survey was sent to all lead obstetric anaesthetists in the UK via the OAA.

Results: 208 invited participants with 161 completed responses. Results include partially completed responses. 144 centres (89%) routinely use phenylephrine, 17 (11%) do not. Of the latter, mostly ephedrine and metaraminol are used as the anaesthetists felt that they are more familiar with these drugs and/or feel that they are safer.

<table>
<thead>
<tr>
<th>Concentration of neat phenylephrine available</th>
<th>Number of centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>10mcg/ml x 1ml</td>
<td>122 (75%)</td>
</tr>
<tr>
<td>1mg/ml x 1ml</td>
<td>8 (5%)</td>
</tr>
<tr>
<td>1mg/ml x 10ml</td>
<td>2</td>
</tr>
<tr>
<td>200mcg/ml x 1ml</td>
<td>1</td>
</tr>
<tr>
<td>10mcg/ml x 20ml</td>
<td>6 (4%)</td>
</tr>
<tr>
<td>100mcg/ml x 10ml</td>
<td>12 (7%)</td>
</tr>
<tr>
<td>50mcg/ml x 10ml</td>
<td>4 (2%)</td>
</tr>
<tr>
<td>12.5mcg/ml x 10ml</td>
<td>2</td>
</tr>
<tr>
<td>1mcg/ml x 100ml</td>
<td>1</td>
</tr>
</tbody>
</table>

Table: Availability of phenylephrine ampoules in UK
80% of units using phenylephrine, used bolus regimes, with bolus solution concentrations ranging from 5-100mcg/ml (mode 50mcg/ml). The mode dilution for infusion (used by 90% of units) was 100 mcg/ml in a single step, however the dilutions ranged from 1-200mcg/ml

A variety of methods are employed to obtain the appropriate concentration for administration. Infusions were administered by drip rate, infusion pump or syringe driver. 23% (15%) units reported critical incidents relating to the administration of phenylephrine. Of these, 15 were related to drug dilution/calculation errors.

Discussion: The wide variety of phenylephrine concentrations and preparation techniques is reflected in the survey. The frequent rotation of anaesthetic trainees between different units increases the likelihood of drug error related to administration or preparation, particularly when working with a drug used infrequently outside the obstetric unit.

Serial dilution techniques are particularly prone to calculation errors, and the storage of high concentration ampoules makes the inadvertent administration of an overdose more likely.

Reference
1. Promoting the safe use of injectable medicines NPSA alert 28 March 2007 http://www.nrls.npsa.nhs.uk/resources/type/alerts/?entryid45=59812&p=3

P156 Post operative analgesia and pain scores for elective caesarean section under spinal anaesthesia
CE Izod, VE Bythell
Anaesthesia, Royal Victoria Infirmary, Newcastle, UK

Introduction: At our institution 834 elective caesarean sections (CS) were performed in 2012 under spinal anaesthesia. The Royal College of Anaesthetists1 and NICE2 have both published standards relating to post operative analgesia. Another specific recommendation was that hourly pain scores should be measured for all patients receiving subarachnoid diamorphine – not a current practice at our institution. This audit was undertaken to see if our institution met these standards and whether there were unmet analgesia requirements in this patient subgroup in the first 12 hours.

Methods: Data was collected for all elective Class 4 CS performed under spinal anaesthesia for a five week period. Patients who underwent subsequent general anaesthesia or received combined spinal and epidural were excluded from the analysis. Data was collected at time of surgery by the anaesthetist responsible and at follow up on day one. Patients were asked to give their pain a score using a verbal score from 0 (no pain) to 10 (worst pain) from various times following their operation. They were asked to describe when their worst pain had been and rate the level of satisfaction with their analgesia.

Results: There were 70 Class 4 CS in this time period which met the entry criteria. Completed forms were received for 51 patients (a response rate of 73%), mean parity 1.4 (0-3), mean number of previous CS 0.9 (0-3). Central neuraxial blockade was achieved with a mean dose of 2.7mls 0.5% hyperbaric bupivacaine (range 2.4-2.8mls) and 300 micrograms of diamorphine. All were given 100mg diclofenac by suppository at the time of surgery unless contraindicated. All women were prescribed multimodal postoperative analgesia of regular paracetamol and diclofenac (unless contraindicated) with par codeine for breakthrough pain. Patients were “satisfied” or “very satisfied” with their analgesia in 96% of cases. The mean pain score while in theatre recovery was 0.5 (0-7). Patients scored their worst pain since the operation as mean 5.8 (0-10). At the time of the day one post operative visit mean pain scores were 2.9 (0-7) at rest and 4.9 (0-8) on movement. 54% (28/51) described their pain as being greater than or equal to 5/10 on the first postoperative day. Only 9/51 patients described their worst pain as occurring within the first 12 hours, the rest described a time period overnight or on the morning of the first post operative day.

Conclusions: In this patient subgroup of elective CS our institution achieved the audit standards for use of subarachnoid diamorphine, prescription of post operative NSAIDS and maternal satisfaction. Hourly pain scores were not taken for the first 12 hours following surgery however the time for greatest analgesia need would appear to be well outside this time frame for most patients. Our findings in this patient subgroup did not support the case to follow the NICE recommendation of hourly measurement of pain scores for the first 12 hours post operatively but did highlight an unmet analgesia need later in some patients’ hospital stays despite the high levels of maternal satisfaction.

References
P157 Postdural puncture bacterial meningitis after spinal anaesthesia: a cause of concern!

J Gleavebrook, M Chong, I Ahmed, F R Russell
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Introduction: PPBM is a very rare complication of spinal anaesthesia; with a reported incidence of 1:50001 to 1:200000.2

Despite rarity, its importance to obstetric anaesthetists can't be overemphasized for three reasons: (1) the disease may be fatal or could cause permanent neurological sequel, (2) clustered cases suggest poor aseptic technique3,4 (3) it may be difficult to differentiate PPBM from a PDPH.2 We report a case of postpartum PPBM to emphasise the reality of its occurrence, and precautions to be taken to prevent reoccurrence.

Case report: A 31 year old G2P1 with uneventful pregnancy & past medical history, scheduled for elective LSCS for breech presentation, presented in labour. She underwent grade II LSCS under spinal anaesthesia performed with full asepsis: cap, mask, gloves, gown, drape, and 0.5% chlorhexidine. A healthy baby was delivered at 14:10 hours, followed by an uneventful postoperative course. Next morning at around 09:00 am, she complained of moderate/severe frontal-headache, photophobia and nausea. Anaesthetic review at 10:30 am noted a slightly feverish (39°C) confused patient (GCS 13/15), with neck rigidity, hyper-reflexia, but haemodynamically stable. A provisional diagnosis of meningitis was made with immediate neurological review followed by CT scan head. Cefotaxime 2gm was given IV at 11:00 am, prior to CT scan and admission to HDU at 13:00 pm, for an overnight level II stay. Her CT head and CT venogram were negative but CSF showed polymorphs >5000 cell/mm³. Although, her CSF culture was negative, blood culture grown S. salivarius. She continued on intravenous cefotaxime 2gm for 10days before being discharged. Her CSF PCR/16S rDNA sequence analysis was positive for S. salivarius. At two week follow-up she continued to have mild headache but otherwise, she made a full recovery with no neurological sequel.

Discussion: S. salivarius, is part of the normal mouth flora, was isolated in 4 of the 5 cases of PPBM reported in an obstetric population3, and was also implicated in 22 of 179 PPBM cases reviewed by Baer1 of which five were obstetric patients. Ours is the first case of a confirmed S. salivarius PPBM from UK. In 2 of the 5 Fijter3 of which five were obstetric patients. Ours is the first case of a confirmed S. salivarius PPBM from UK. In 2 of the 5 Fijter3 of which five were obstetric patients. Ours is the first case of a confirmed S. salivarius PPBM from UK. In 2 of the 5 Fijter3 of which five were obstetric patients. Ours is the first case of a confirmed S. salivarius PPBM from UK. In 2 of the 5 Fijter3 of which five were obstetric patients. Ours is the first case of a confirmed S. salivarius PPBM from UK. In 2 of the 5 Fijter3 of which five were obstetric patients. Ours is the first case of a confirmed S. salivarius PPBM from UK. In 2 of the 5 Fijter3 of which five were obstetric patients. Ours is the first case of a confirmed S. salivarius PPBM from UK. In 2 of the 5 Fijter3 of which five were obstetric patients. Ours is the first case of a confirmed S. salivarius PPBM from UK. In 2 of the 5 Fijter3 of which five were obstetric patients.

References

P158 Post-dural puncture meningitis in an obstetric patient following difficult combined spinal-epidural for elective LSCS.

EG Owen, JA Holland, A Carling
Anaesthetics department, Royal Gwent Hospital, Newport, UK

Introduction: A patient presented 16 hours post difficult CSE for elective LSCS with a headache and sudden drop in GCS requiring intubation. The subsequent lumbar puncture suggested a case of post-dural puncture meningitis.

Case report: A previously well 34 year-old with an uneventful pregnancy had a CSE performed under full asepsis for elective LSCS. The initial attempts by a trainee were unsuccessful, and the consultant was successful with 2 further attempts. 2.5ml 0.5% heavy marcaine, 15mcg fentanyl and 100mcg morphine were injected. The surgery was uneventful and the epidural catheter removed at the end. There were no immediate post-operative concerns. 16 hours post spinal she complained of a frontal, postural, non-radiating headache with photophobia. Neurological examination was unremarkable. Fluids and analgesia were advised, with the possible diagnosis of post-dural puncture headache. 2 hours later she suddenly became agitated, and then unresponsive with a GCS of 6. Pupils were equal and reactive, with upgoing plantars. She was intubated, and the CT/venogram was unremarkable. A lumbar puncture suggested meningitis (WCC 1080/mm³, Glc 0.4, protein 8.17g/L). She was treated with broad spectrum antibiotics and extubated 16 hours later. At this stage the patient was meningitic, pyrexial, and hyperreflexic, with rising inflammatory markers (normal pre-op). She remained confused for a further 4 days, with on-going but improving headaches. On day 3 she was transferred to the ward, apyrexial, but with no growth in the CSF cultures. Blood cultures were also negative. She is still suffering with intermittent headaches 1 month post event. The most likely diagnosis was post-dural puncture meningitis.

Discussion: Post-dural puncture meningitis is a serious complication of dural puncture. The incidence ranges from 1/10,000 to 1/53,000, with on-set of symptoms 12-36 hours post procedure. Strep Viridans was the predominant organism grown in 38% of 107 cases reported between 1978 and 2007,1 and 49% of 179 cases between 1952 and 2005.2 It is a commensal organism found in the oropharynx, GIT and female genital tract. It has a low virulence, but multiplies rapidly in spinal fluid. This along with the clustering of some cases, and of DNA fingerprinting linking isolates of throat swabs of health care provider to the CSF of patients, may indicate that droplet contamination from the the upper airway is the most likely source of infection.2 This highlights the requirement for strict asepsis, including the wearing of masks. As in our example, no organism was grown in 36-38% of these cases,1,2 Post-dural puncture meningitis should remain a possible diagnosis for obstetric headache even with negative cultures.

References
P159 Postnatal obstetric transfusions – A survey into variability of practice
LA Lee, E Harvey, J Drake
Department of Anaesthetics, Stoke Mandeville Hospital, Aylesbury, UK

Introduction: Postpartum haemorrhage is still a significant contribution to maternal morbidity and mortality as recognised in the last CMACE report. Despite the RCOG Green-top Guideline “Blood transfusion in Obstetrics” postnatal transfusion advice is limited. There is potentially a wide variation of practice, dependant on the individual practitioner’s opinion of risk vs benefit of blood transfusion.

Methods: A 9-question SurveyMonkey survey was sent to the anaesthetic and obstetric departments of a district general hospital (DGH), and a tertiary obstetric unit (TOU). Along with demographic data, questions relate to usage of transfusion trigger and the trigger level, the need to transfuse a stable symptomatic postpartum patient with Hb>8.0g/dl, and the transfusion target if transfusing a fit healthy lady with a postpartum Hb of 7.0 g/dl and no ongoing bleeding.

Results: The total number of responses was 117 (50%) out of 235 eligible to complete the survey. The anaesthetic response rate was 79/135 (59%) (DGH 69%, TOU 50%). The obstetric response rate was 38/100 (38%) (DGH 60%, TOU 22%). Transfusion trigger - Most (86% anaesthetists, 89% obstetricians) aim for <8g/dl. However 9% of anaesthetists, but no obstetricians, had a transfusion trigger of >9 g/dl. Symptomatic postpartum patient - 61% anaesthetists and 43% obstetricians would transfuse the stable symptomatic postpartum patient. Transfusion targets – 84% responders (84% anaesthetists, 82% obstetricians) would transfuse a postpartum Hb of 7g/dl with no active bleeding. There is an overall tendency for obstetricians to aim for a higher target.

Table: Specialty-specific postpartum transfusion targets

<table>
<thead>
<tr>
<th>No target</th>
<th>8-9</th>
<th>9-10</th>
<th>10-11</th>
<th>Abstain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Anaes</td>
<td>26.6%</td>
<td>46.8%</td>
<td>19.0%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Total Obs</td>
<td>25.7%</td>
<td>8.6%</td>
<td>40.0%</td>
<td>11.4%</td>
</tr>
</tbody>
</table>

Discussion: There seemed to be an overall consensus between the specialties to transfuse Hb <8 g/dl as recommended in the green-top guidelines. We acknowledge that the evidence base behind the transfusion guidelines stems from ICU research and thus may not be applicable to postpartum patients. The choice of the different target levels clinicians choose is interesting especially as we can find no evidence of the ideal target level. We postulate that anaesthetists aim for a lower level due to our familiarity with blood transfusions and the practice to transfuse one unit of blood, a practice encouraged by our haematologists, who dismiss the traditional teaching that one unit of blood transfusion is unnecessary. Given the potential risk that we expose young healthy patients to with a blood transfusion, we feel that this is an area that warrants further research and discussion.

References
   http://www.nice.org.uk/nicemedia/live/11038/30690/30690.pdf
2. The Association of Anaesthetists of Great Britain and Ireland, safety guideline: blood transfusion and the anaesthetist.
   Intraperoperative cell salvage:

P160 Postpartum haemorrhage: an audit of risk of haemorrhage, allogenic blood and cell salvage use in caesarean sections.
M Jaffer, R Swanton, J Wilson
Anaesthetic, Dorset County Hospital, Dorchester, UK

Introduction: Obstetric haemorrhage is the leading cause of maternal death worldwide and the commonest cause of morbidity in developed countries. The use of allogenic blood in this population is high and carries associated risk. Alongside risk reduction, cost saving could be an additional advantage of cell salvage in those with risk factors for haemorrhage.

Method: After gaining permission from the hospital’s audit committee, a retrospective audit was conducted. The notes of all 152 patients that undergone a caesarean section between September 2011-January 2012 were reviewed. The following were noted: risk factors for having a postpartum haemorrhage, intra-operative blood loss, the use of allogenic blood, and use of the cell saver. These were compared to local protocols for blood transfusion, and the criteria of risks for the use of cell salvage.

Results: Of the 152 patients, we found that 56 had no significant blood loss; 66 had minor haemorrhage of which 2 required allogenic blood post-operatively; 15 had major haemorrhage of which 5 patients required blood post-operatively; 9 had severe haemorrhage of which 4 patients required blood post-operatively and 1 had blood intraoperatively and the cell saver was used. In terms of risk factors we found that in all group sets of haemorrhage the number of risk factors patients had ranged between 0-4. 12 out of 13 cases that required blood were given by the obstetric team the next day post-op and all met local criteria for blood transfusion. The one case given blood intra-op was done so according to local protocol and had 3 risk factors for haemorrhage and met the criteria for cell salvage use.

Discussion: Predicting postpartum haemorrhage is difficult; as demonstrated by the range of risk factors for the differing sets of haemorrhage in our results. Some units have demonstrated risk reduction and economic benefit through it’s high use. In a unit like ours that has only 2200 deliveries annually, this would not prove economical. Instead we feel a change of culture/thinking is needed by ourselves and our obstetric colleagues, to consider cell salvage more often, on an individual basis pre and peri-operatively.

References
P161 Postural orthostatic tachycardia syndrome and caesarean section: A heart racing case

J Ghoshbastidar, BS Baytug, M Doraiswami
Anaesthetics and ITU, Queen’s Hospital, Romford, UK

Introduction: Postural orthostatic tachycardia syndrome (POTS) is an autonomic disorder causing orthostatic haemodynamic instability. It can lead to nausea, anxiety, uncontrolled tachycardia, extreme hyp and hypertension and syncope. It primarily affects young women and can be triggered by the stresses of labour and the use of regional anaesthetics [1]. Few case reports exist involving parturients, especially in the emergency setting. We present the management of one such case using a combined spinal and epidural (CSE) technique, which to our knowledge has not been previously described.

Case Report: A 30 year old with a known history of POTS presented in active labour at 38 weeks, prior to a planned elective caesarean. Normally she was controlled with propranolol, but this had been stopped due to concerns about the foetus after a previous miscarriage. She had been experiencing regular palpitations and dizziness, as well as occasional syncope. As she was a breech presentation, and to prevent the stress of labour precipitating her POTS, a category 2 emergency caesarean section was commenced. She was fluid loaded with 1000mls of crystalloid whilst an arterial line and central line were inserted. A CSE was then inserted in the lateral decubitus position with a conservative dose of 1.5mls of heavy bupivacaine and 20mcg of fentanyl in the spinal component to help preserve haemodynamic stability. A phenylephrine infusion was started. A CSE was chosen over a slowly titrated epidural in order to quickly relieve her labour pain, and prevent cardiovascular instability associated with straining (valsalva manoeuvre). Caution was used when positioning her in the supine position with left lateral tilt. During the procedure her heart rate and blood pressure remained extremely stable, and she had no symptoms of POTS. She received two 5ml boluses of 0.5% bupivacaine to prevent a diminishing block, and a further 1000mls of crystalloid and 500mls colloid. The baby was delivered in good condition 13 minutes after insertion of the spinal. Post-operatively she was nursed in the high dependency unit and the phenylephrine continued until the anaesthetic block had completely worn off. She remained cardiovascularly stable and resumed taking her propranolol, leaving hospital 48 hours after delivery.

Discussion: Detailed assessment with carefully planned delivery is essential to avoid precipitating POTS. In labouring women an early effective epidural with instrumental delivery can prevent haemodynamic instability [2]. For a planned caesarean section a slowly titrated epidural is the method of choice. In the emergency situation we have shown that a CSE can be given successfully provided there is meticulous attention to fluid balance, positioning, level of anaesthetic block and vasoconstrictor administration. Invasive monitoring and high dependency care also helped ensure the patient did not suffer any symptoms of POTS during her hospital stay.

References

P162 Practice of patient controlled epidural analgesia (PCEA) in obstetric units: A national survey of current practice.

B Shukla, A Singh, K Jani
Anaesthetics Department, Lister Hospital, Stevenage, UK

Introduction: PCEA has increased in popularity over the last two decades with ever more variability in its use. A previous survey showed only a fifth of respondents used PCEA with variations in protocols and programming of the pumps. The main aim of this survey is to establish current practice in the use of PCEA in obstetric units in the UK in order to provide optimum labour analgesia.

Methods: All UK lead obstetric anaesthetists were invited to participate in an electronic survey into the use of PCEA. Several questions regarding the use of PCEA in their respective units were asked including PCEA modes, bolus/lockout and infusion rates and methods for controlling breakthrough pain.

Results: 207 invitations were sent out with 141 unit responders (68.1%). 50% of units used PCEA (with/without continuous background infusion). The majority epidural drug of choice was Levobupivacaine 0.1% (37%) with 47% using Fentanyl 2mg/ml. In those using PCEA, there was a lot of variation in the bolus dose, lockout time and infusion rates (Fig. 1).

![Figure 1: Bolus dose, lockout time and infusion rate](image-url)

The 1st/test dose was administered manually in 70% and 18% were bolused from PCEA pumps. There was variability in the initially loading dose with 73.6% favouring 0.1 Levobupivacaine/Fentanyl 2mg/ml. For breakthrough pain, 91% administered a manual top up, 6.9% increased the background bolus while 2.1% increased the bolus dose.

Conclusion: The results have shown a wide variation in PCEA settings and use. 74% of units use a low dose mixture, but surprisingly 1.5% are using up to 15mls 0.5% Levobupivacaine. PCEA has its use however must be tailored to suit the obstetric unit and patient population individually.

References
Pre-filled Thiopental Syringes – Are they cost effective? Our Practice
R Khirwadkar, EA Djabatey, J Toft*
Anaesthetic Department, Liverpool Women's Hospital, Liverpool, UK, *Pharmacy, Liverpool Women's Hospital, Liverpool, UK

Introduction: There has been a lot of interest in the use of pre-filled thiopental syringes in obstetric settings. Many hospitals are now contemplating a switch over to using pre-filled thiopental syringes. There are many advantages of using these syringes and is in accordance with NPSA guidelines. We in our hospital conduct on an average 25 General Anaesthetics (GA) a month. We conducted a joint survey with our pharmacy department to look into the benefits of using the pre-filled thiopental syringes over the last 2 months with an intention to switch over if appropriate.

Methods: There are 3 obstetric theatres in our unit. Our standard practice is to reconstitute one thiopental ampoule under asepsis. The syringe is appropriately labelled with thiopental, the date and time of reconstitution. This is kept at 3 degree Celsius in our theatre fridge and rotates between our 3 theatres as needed. The pharmacy department provided us with the information regarding the supplies of thiopental vials to our obstetric theatres and suppliers and costings of the pre-filled thiopental syringes. One out of the three potential suppliers had the best option with a price of £13.06 for each syringe with a 90 day shelf life.

Costings of reconstituted vs. pre-filled thiopental syringes

<table>
<thead>
<tr>
<th></th>
<th>Reconstituted thiopental (cost £4.76 each)</th>
<th>Pre-filled thiopental syringe (cost £13.06 each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAs in 2 months</td>
<td>48×4.76≈£228.48</td>
<td>48×13.06≈£626.88</td>
</tr>
<tr>
<td>Ampoules</td>
<td>42×4.76≈£199.92</td>
<td>0×13×£0</td>
</tr>
<tr>
<td>Total cost</td>
<td>£428.40</td>
<td>£626.88</td>
</tr>
</tbody>
</table>

Discussion: Pre-filled thiopental syringes are an economical and a functional implementation in some hospital set ups but in a tertiary centre such as ours we found reconstituted thiopental to be more serviceable and cost-effective with a potential savings of £1190.88 per annum, due to our high GA turnover. We have a robust system in place with a good communication during handover, strict aseptic techniques during reconstitution of the drug and compliance to our manufacturers guidelines. Reconstituting a thiopental vial takes about 15-20 seconds and the supply is guaranteed. Hence, we still continue to use the reconstituted thiopental.

We have come up with written guidelines to reduce our wastage further and continue to evaluate our costs.

References

Pregnancy and Beta Ketothiolase deficiency
M Kayani, S Botros, P Moore
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Introduction: We present a pregnant patient with a very rare metabolic disorder - Beta Ketothiolase deficiency. Only 70 cases have been reported with this condition worldwide in the last four decades and only one pregnancy.

Case Report: A 32-year-old primiparous woman was admitted to the hospital at 40 weeks gestation for induction of labour. She was diagnosed with Beta Ketothiolase deficiency at the age of 18 months. She also suffered with hypothyroidism and gestational diabetes. Her medications include thyroxine and L-carnitine.

As labour can lead to metabolic decompensation in patients with this condition and in view of limited literature a detailed plan for her delivery was made by a multidisciplinary team. The plan included early epidural analgesia, invasive blood pressure monitoring with close observation of ketones, urea, electrolytes, bicarbonates and ammonia.

Unfortunately, due to severe fetal bradycardia she underwent category 1 caesarean section under spinal anaesthesia. Intraoperatively her blood pressure was very labile but responded well to vasopressor boluses. She was moved to the high dependency unit postoperatively where she spent two days and then discharged home two days later from the ward.

Discussion: Beta Ketothiolase deficiency is an autosomal recessive condition first described in 1971 due to a defect in the mitochondrial acetyl-CoA thiolase (T2) enzyme. This leads to disturbance in ketone body metabolism and isoleucine catabolism.

Patients experience episodes of ketoacidosis crises precipitated by stress, increased dietary protein intake, fasting, acute illness and infection (e.g. gastroenteritis)2. Symptoms include vomiting, dehydration, polypnea and/or dyspnoea, hypotonus and lethargy leading to coma3.

Diagnosis depends on the analysis of urinary organic acid and blood acylcarnitine.

General management includes restriction of protein intake, avoidance of prolonged fasting, intravenous glucose in patients with vomiting or febrile conditions and L-carnitine supplementation. However during an acute attack, it is important to suppress ketogenesis, give bicarbonate to treat acidosis and if necessary implement mechanical ventilation for severe dyspnoea and coma.

References
P165 Presentation and management of post-dural puncture headache over ten years

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Introduction: Post-dural puncture headache (PDPH) can be a debilitating complication of neuraxial anaesthesia. Its presentation is variable and best management still to be defined. The aims of this retrospective study were to review the characteristics and subsequent management of PDPH.

Methods: Following Trust Caldicott Guardian approval, we obtained the notes of women with suspected or definite accidental dural puncture (ADP), PDPH or epidural blood patch (EBP) from 1/1/2000 to 1/1/2010. Notes were located for 114 of 134 patients (85%).

Results: The number of PDPHs after epidural, spinal and combined spinal-epidural (CSE) blocks were 85, 14 and 15, respectively. Mean time to first documentation of PDPH after all types of neuraxial block was 41 h [range: 2-144 h]. Time to first presentation was longer after dural puncture with 25-G Whitacre-point needles used for single-shot spinal, than after dural puncture with 16-G Tuohy needles used for epidural and CSE. Presentation was with a frontal (46%), occipital (25%) or generalised headache (18%). Site of headache was not documented in 11%. Neck stiffness and nausea and vomiting were the most common headache associations (40% & 17%, respectively). One patient presented with a collapse. In nine cases there was no documentation of initial conservative management. Eighty-nine patients (79%) had an EBP. Mean time from first headache to EBP was 51 h [range 5-176 h]. Failure of EBP and risk of further ADP were only documented in 78% & 69% of cases, respectively. Mean volume of blood for EBP was 20 mL [range 6-30 mL]. All the blood obtained at venepuncture was used in 55% of cases. Due to development of back pain or pressure, injection of blood was stopped before the total volume had been used in the remaining 45%. Only 10 patients received a second EBP. In four cases the initial EBP had been performed within 24 h of first headache. In seven cases the initial volume of blood injected had been < 20 mL.

Discussion: Although mean time to PDPH presentation was in accordance with other studies,1,2 the range was very wide. Clinicians, GPs and patients must be aware of the potential for PDPH to develop after discharge from hospital. Few patients required a second EBP, but of these, 40% had the initial patch performed within 24 h of headache. Further studies are needed to determine the optimum time from headache presentation to performance of EBP, and to examine in more detail factors affecting its success rate.

References

P166 Prospective caesarean section GA audit: Are we compliant with revised RCOA standards?

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Introduction: The reports of the confidential enquiry into maternal deaths in the U.K. clearly demonstrate that direct deaths related to anaesthesia are usually attributable to emergency general anaesthesia (GA).1 Regional anaesthesia (RA) for caesarean section (CS) has a considerable chance of failing especially when performed under stressful conditions of an emergency CS particularly a category 1. The RCOA has recently revised the recommended standards for percentage of caesarean sections carried out under RA and those requiring RA to GA conversion separately for category 1, 1.3 and 4 CS.2 The aim of our on-going prospective audit is to see if we are compliant with the revised RCOA audit standards.

Methods: After gaining approval from the hospital audit committee data was prospectively collected over two years [Jan2011-Dec2012]. This included CS category, grade of anaesthetists, indication for primary GA and details of epidural in-situ which included top up started in room or theatre, top up drugs used, use of a single shot spinal (SSS), height of block with testing modality and timing of GA (before or after delivery).

Results: There were 1511 caesarean sections during above two year period. The following table shows the comparison of RA CS rates and RA to GA conversion rates at our hospital against proposed standards (Std.) by RCOA.

<table>
<thead>
<tr>
<th>CS Category</th>
<th>Cat 1</th>
<th>Cat 1-3</th>
<th>Cat 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our percentage (RCOA Std.)*</td>
<td>74.4%</td>
<td>87.9%</td>
<td>99.1%</td>
</tr>
<tr>
<td>under RA</td>
<td>(&gt; 50%)*</td>
<td>(&gt; 85%)*</td>
<td>(&gt; 95%)*</td>
</tr>
<tr>
<td>RA to GA conversion</td>
<td>9.5%</td>
<td>4.9%</td>
<td>0.4%</td>
</tr>
<tr>
<td>(&lt; 15%)*</td>
<td>(&lt; 5%)*</td>
<td>(&lt; 1%)*</td>
<td></td>
</tr>
</tbody>
</table>

The most common reasons for GA were urgency of CS due to fetal compromise followed by sepsis, APH, low platelets and maternal request. 34.7% (17) failed spinal and 65.3% (32) failed epidural top-up contributed towards RA to GA conversion. The reasons for conversion to GA were: insufficient analgesia intra-operatively (n=27), insufficient time to top-up the existing epidural (n=6), inadequate block height (n=6) and failed spinal due to technical difficulty (n=10). Other contributory factors were not topping up epidural in room leading to insufficient time for top up to work and failure to identify non-working epidurals beforehand.

Discussion: This prospective audit demonstrates that our GA CS rate and RA to GA conversion rates are compliant with standards proposed by the RCOA in 2012. Strategies to further reduce the RA to GA conversion may include earlier recognition of inadequate labour epidural analgesia, starting top-ups in labour room and reliable assessment of adequacy of block height.

References
P167 Reducing starvation times and improving the patient experience in elective caesarean section patients: preoperative isotonic drinks
M H Davies, K V Bosworth, J Marriott, S Millett
Department of Anaesthetics, Worcestershire Royal Hospital, Worcester, UK

Introduction: Women awaiting elective lower segment caesarean section (LSCS) are commonly delayed by emergency cases from the delivery suite unnecessarily prolonging starvation times. The concentration of maternal urinary ketones increases with duration of starvation which leads to longer hospital stay and prolonged recovery. It has been recommended that preoperative administration of carbohydrate rich beverages 2-3 hours before anaesthesia may improve patient wellbeing and facilitate recovery from surgery. This audit aimed to determine the impact of preoperative isotonic drinks for elective LSCS patients. It examined the effect of the drinks on fasting times, the presence of ketones in maternal urine and the patient experience.

Methods: An initial audit was performed to find baseline results. Following change of protocol, a re-audit was then performed. Data was collected from patients undergoing elective LSCS at a UK district general hospital. Data was collected from patients preoperatively using a questionnaire concerning fasting times and satisfaction with preoperative nutrition and hydration. On arrival to theatre, maternal urine was tested for ketones. Following the initial audit, an isotonic drink protocol (500ml still orange carbohydrate drink, costing £0.50) was introduced and given two hours preoperatively to patients having elective LSCS. A re-audit was then carried out examining fasting times, presence of urinary ketones and patient satisfaction.

Results: Data was collected from 36 patients. The implementation of a preoperative isotonic drink for patients undergoing elective LSCS reduced the fasting time for fluids from 11.25 hours (interquartile range (IQR) 10.5-12.25 hours) to 5.5 hours (IQR 4-6.5 hours). The presence of ketones in maternal urine was also reduced from 43% to 25% of patients after implementation of a preoperative isotonic drink. All of the pre-intervention patients said that they would have accepted a preoperative drink if offered. All of the post-intervention patients were very satisfied having received a preoperative isotonic drink.

Discussion: This project demonstrates that an inexpensive, simple preoperative isotonic drink protocol reduces fasting times and presence of biochemical markers of starvation in patients undergoing elective LSCS. The new protocol also achieved 100% patient satisfaction scores.

References

P168 Referrals to an antenatal anaesthetic clinic: epidemiology and outcomes
AJ Wickham, MD Wittenberg, K Rao, PN Robinson
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Introduction: Women are referred to the antenatal anaesthetic clinic (AAC) for an increasingly diverse group of reasons. There are no nationally agreed referral criteria available in the UK. We aimed to evaluate the current reasons women are referred to the AAC and assess the anaesthetic interventions, delivery method and complications.

Method: Following Caldicott guardian approval, data was extracted from the AAC case record book and computerised maternity records system for all women seen in an eight month period in 2012. Data was collected on referral reasons, mode of labour analgesia, delivery method and any complications.

Results: A total of 229 women aged between 18 to 50 years old, were assessed in 32 clinics, of whom 218 went on to deliver at our hospital. 76.1% of women required anaesthetic intervention of some sort at the time of delivery. 45.9% of women referred had more than 1 medical problem. Of those who entered labour, 53.9% achieved a vaginal delivery. 60.4% of caesarean sections were unscheduled.

Table 1: Reasons for referral and outcomes.

<table>
<thead>
<tr>
<th>Referral reason</th>
<th>Detail</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td></td>
<td>49.3</td>
</tr>
<tr>
<td>Musculoskeletal disease</td>
<td></td>
<td>22.7</td>
</tr>
<tr>
<td>Endocrine disease</td>
<td></td>
<td>17.5</td>
</tr>
<tr>
<td>Haematological disease</td>
<td></td>
<td>14.4</td>
</tr>
<tr>
<td>Obstetric problem</td>
<td></td>
<td>12.7</td>
</tr>
<tr>
<td>Anaesthetic problem</td>
<td></td>
<td>11.7</td>
</tr>
<tr>
<td>Number of medical problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>4.3</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>49.8</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>32.8</td>
</tr>
<tr>
<td>≥3</td>
<td></td>
<td>13.1</td>
</tr>
<tr>
<td>Delivery Method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spontaneous vaginal delivery</td>
<td></td>
<td>44.0</td>
</tr>
<tr>
<td>Caesarean section</td>
<td></td>
<td>44.0</td>
</tr>
<tr>
<td>Instrumental delivery</td>
<td></td>
<td>11.9</td>
</tr>
<tr>
<td>Anaesthetic interventions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General anaesthesia</td>
<td></td>
<td>46.1</td>
</tr>
<tr>
<td>General anaesthesia</td>
<td></td>
<td>6.4</td>
</tr>
<tr>
<td>Complications</td>
<td>Haemorrhage &gt;500mls after vaginal delivery</td>
<td>18.8</td>
</tr>
<tr>
<td></td>
<td>Haemorrhage &gt;1000mls during CS</td>
<td>19.8</td>
</tr>
<tr>
<td></td>
<td>Perineal trauma</td>
<td>11.5</td>
</tr>
</tbody>
</table>

Conclusions: The burden and spectrum of obstetric problems seen in AACs has significantly changed since 1993. In 1993, musculoskeletal disease was the most common reason for referral, whilst no women were referred for obesity or endocrine disease. By contrast, obesity is now the most frequently assessed problem in our AAC. Women assessed in the AAC require significant anaesthetic input: of those who enter labour more than 50% will request an epidural and more than 50% will require operative or instrumental delivery. Finally complication rates in this group of women are significant.

References
P169 Remifentanil use for breakthrough pain during lower segment caesarean section under central neuroaxial block

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Introduction: Remifentanil is a potent opiate with rapid onset, titratable levels when given by infusion and a predictable offset in the mother and fetus. This pharmacokinetic profile suggests it is an ideal agent to treat breakthrough pain during lower segment caesarean section (LSCS) under central neuroaxial block (CNB). We have been using remifentanil to manage breakthrough pain in our unit for some time and wished to evaluate our practice and formulate guidelines to standardise its use by means of service evaluation.

Methods: Cases were identified from the controlled drug book and obstetric anaesthetic database. A standard dataset was retrieved from the case notes. Following initial review, we developed guidelines recommending remifentanil use for breakthrough pain with CNB in obstetric anaesthesia where gestation was 36 weeks or more if used prior to delivery. General anaesthesia should be offered and oxygen administered. A bolus of 20 to 40 μg may be given up to every 2 minutes followed by infusion of 0.05–0.2 μg/kg/min. The indication, dose, effectiveness and side effects should be recorded. A further review of cases was then carried out.

Results: In the first part of our service evaluation, 32 cases were identified over 14 months (notes available for 30). In 19 patients with an indication of breakthrough pain remifentanil achieved partial relief in 73%, there was full relief in 57% (no documentation of effect in 10%) and conversion to general anaesthetic (GA) was required in 3 cases. There were other indications (including anxiety and hypertension) in 7 patients. There was no record of indication in 4 patients. Following guideline introduction, 8 cases were identified over a 5 month period (notes available for 7). The indication was breakthrough pain in 5 patients achieving partial relief in 100% full relief in 60% and there was 1 conversion to GA. In 2 cases other indications included anxiety and control of sympathetic response to surgery in tetraplegia. All patients had indication and effectiveness documented. All who had breakthrough pain were offered GA. Dosing was as per guidelines. Remifentanil use was associated with maternal SpO2 less than 95% in 13% (part 1), systolic blood pressure dips to <90mmHg in 10% (part 1), 14% (part 2) and heart rate dips to <60 bpm in 7% (part 1). Side effects included dizziness (1 patient) and drowsiness (2 patients). Remifentanil was given prior to delivery in 21 patients (27-41 weeks gestation). Appar were 7 or over at 1 minute and time to spontaneous respirations were of less than 1 minute in all neonates over 33 weeks.

Conclusion: Our service evaluation has shown that remifentanil can be used safely and effectively with minimal side effects for the relief of breakthrough pain in LSCS under CNB. Anaesthetists in the unit have followed the guidelines developed to guide dosing and record keeping.

References

P170 Safer surgery: Improving teamwork and communication through briefing and debriefing

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Introduction: The National Patient Safety Agency (NPSA) in 2007 supported the patient safety first campaign. This campaign laid down a set of recommendations to promote and support the implementation of interventions that were known to improve the safety of patient care. At the heart of providing safe surgical care lies effective teamwork and communication. A five step approach to safer surgery was advocated (Briefing, 3 stages of the WHO Surgical Safety Check List and Debriefing) 1. The conduct of our elective caesarean section list included excellent compliance with the three stages of the WHO surgical safety check list, but team briefing and debriefing were not always conducted. Our aim was to investigate how often team briefing and debriefing was being performed and implement any necessary interventions to ensure there performance at every operating list.

Methods: Initially we observed our routine caesarean section list over a one month period to investigate how frequently the team briefing and debriefing were being performed. Our initial observations showed compliance was poor. We raised awareness amongst team members as to the need and importance of these activities as part of the stepwise approach to safer surgery. Compliance was observed over a subsequent one month period.

Results: Over the initial one month period we observed that the team briefing took place only twice out of 20 lists; equivalent to 10% compliance. Team debriefing did not occur. Over the second one month period; following our awareness drive; we observed that the team briefing took place 18 times out of 20 lists; equivalent to 90% compliance. The team debriefing took place once in this period; equivalent to 5% compliance.

Discussion: Improving team work and communication in perioperative practice is known to have significant improvements in patient outcomes as well as a better and more effective working environment for staff. Team briefing is an important part of this and we have demonstrated a significant improvement in this activity by raising awareness amongst team members for its need and importance. However we were unable to demonstrate an improvement in team debriefing. Many theatres find debriefing difficult and allow this activity during final wound closure, but during routine caesarean section list this is difficult as surgery is often performed under regional anaesthetic neuraxial blocks. Debrief is a valuable opportunity to allow the team to evaluate the list, learn from, resolve and remedy issues that have occurred. We would advocate the need for additional time at the end of the list to allow the team time to debrief.

The patient safety first campaign facilitates a cohesive approach to safer surgery. By implementing some of its methodology we have seen improvements in our practice. The patient safety first campaign facilitates a cohesive approach to safer surgery. By implementing some of its methodology we have seen improvements in our practice. Our future goals include sustaining the team brief and further improvements of our team debrief.

Reference
1. www.patientsafetyfirst.nhs.uk
P171 Sepsis in pregnancy: Compliance with RCOG guidelines in mothers admitted to a tertiary referral hospital obstetric HDU

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Introduction: Sepsis in pregnancy remains a significant cause of maternal morbidity and mortality.1 The Royal College of Obstetricians and Gynaecologists recently published guidelines to improve standards; 2 we compared our delivered care to these Green-top guidelines (No. 64 a/b: Bacterial sepsis in/following pregnancy) in the septic obstetric patients admitted to our maternity HDU in 2012.

Method: All HDU admissions at the Princess Royal Maternity Hospital were screened for features suggestive of maternal sepsis. A case note review of all identified patients was undertaken.

Results: There were 196 HDU admissions over the 12-month period of 2012; 24 (12.2%) with the diagnosis of sepsis. 13 (54%) of the sepsis patients were primigravidae with a mean age of 29.9 (SD 5.3). Sepsis occurred in 16.6%, 50%, 33.3% in the ante, peri and postpartum periods respectively. The incidence of maternal sepsis was 3.8 per 1000 live birth. The median stay in HDU was 1 day (IQR 1–3). The median hospital stay 7.5 days (IQR 4–10). There were two admissions to ICU (median stay 1.5 days).

Median SIRS score on admission was 3 (IQR 2–3) in 21 patients. All patients had their observations recorded on a MEOWS chart. 23 patients (95.8%) had samples sent to microbiology; in 22 (91.6%) patients this included blood cultures. In 16 patients an organism was isolated; most commonly beta haemolytic streptococcus. 19 (79%) had appropriate broad spectrum antibiotics within the first 4 hours, 10 (41.6%) of which were within the first hour of diagnosis. In three (13.6%) patients it took more than 4 hours to administer IV antibiotics. Median time to antibiotic administration was 1:37 hr (IQR 1:00–3:42).

Lactate was checked in 14 (58%) cases, 13 were within the first 6 hours. 2 (14.2%) had a lactate above 4 mmol/l. 12 (50%) patients had invasive arterial monitoring. 7 (29.3%) had a central venous catheter placed. 15 (62.5%) had a review by anaesthetic staff in HDU. 3 (12.5%) patients were reviewed by ICU medical staff.

Discussion: The RCOG has set auditable standards to guide management of sepsis in pregnancy. Our care showed good compliance with some of those highlighted; specifically blood culture sampling and MEOWS charting. Our compliance with one hour time to antibiotics and recording of serum lactate can be improved; however these are guidelines for patients with severe sepsis and our patient cohort included all patients with a presumed diagnosis of sepsis. We plan to continue a programme of education and audit to improve compliance with these guidelines.

References

P172 Severe needle phobia- A survey of treatment options throughout maternity units within the North East of England

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Introduction: Needle phobia has a prevalence of 7.2% amongst pregnant women.1 Severe needle phobia is a debilitating condition posing a real problem in the pregnant population.2 It impacts on pre to post natal care with the potential for major consequences during labour and delivery, especially in the high-risk population. Despite this, it is under-recognised and its impact often under valued by health care professionals.

Methods: A telephone survey was conducted to all maternity units in the North East of England. A series of five set questions regarding services available to women with severe needle phobia were asked to the midwife in charge of antenatal clinic/ delivery suite. Details of referral pathways, multidisciplinary help available and any past adverse outcomes from patients suffering with needle phobia were documented.

Results: Thirteen units were contacted and participated. All units recorded needle phobia at booking (a CNST requirement) but only 15% (2) had a formal referral pathway. Nine units (69%) referred to consultant anaesthetists/ obstetricians, one accessed GP services and 2 did not commonly refer patients. Services available ranged from counselling sessions, hypnotherapy, and cognitive behavioural therapy (31%) to formal psychiatric help (22%). No units reported significant mortality or morbidity as a direct result of needle phobia.

Discussion: Needle phobia is a real and present problem in the pregnant population which can lead to serious morbidity. Despite this, the help available within the North East is inconsistent and can be difficult to access. Some units have no access to multidisciplinary services thus potentially endangering the lives of pregnant women. We suggest each unit should establish a care pathway for these patients.

References
P173 Sevredol is as effective as Oramorph for rescue analgesia in the first 24 hours post Caesarean Section

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*Anaesthesia, Guy's and St Thomas' Hospitals, London, UK

Background: Oramorph 10-20mg (2 hourly pm) was replaced by Sevredol 10-20mg (2 hourly pm) as the first line immediate-release morphine preparation in the trust. Product data sheets report that Sevredol has a slower time to peak action than Oramorph (60 minutes vs 15 minutes)1,2. The aim of the current study was to evaluate the effect of this formulary change on analgesia post Caesarean Section.

Methods: After power analysis, 52 patients undergoing Caesarean Section were included in the study. Baseline characteristics such as mode of delivery, use of a regional technique and other confounders including pre-existing chronic pain or intra-operative complications were equal between the two groups. In addition to an immediate release morphine preparation as required, patients were given regular Paracetamol and Diclofenac. Patients were asked to rate their pain control as Poor, Moderate, Good or Excellent 24 hours post-operatively.

Results: Data were analysed using the Chi-squared test. More patients reported that they had moderate or poor pain control in the group given Sevredol compared to Oramorph (21.8% vs 8%) but this was not statistically significant (p=0.0525). There was no difference in the amount of opioid administered.

Conclusion: Despite Sevredol having, in theory, less favourable characteristics for an immediate release analgesic, the delay in reaching peak plasma levels does not appear to be of any clinical significance. Although more women reported inferior pain control with Sevredol than with Oramorph, this difference was not statistically significant. A subsequent, larger study assessing pain with a VAS or five point scale may be more powerful. Residual concerns regarding time to peak drug effect may in some way be allayed with the introduction of patient self-administered analgesia, thus decreasing the time taken for dose administration.

Figure 1: Rating of analgesia provided by Oramorph and Sevredol

References

P174 Simulation of failed intubation in obstetrics; a training improvement project

NJ Boniface, A Darwesh, E Clow, NA Muchatuta
Department of Anaesthesia, St Michael's Hospital, Bristol, UK

Introduction: Provision of training in general anaesthesia (GA) for caesarean section in the context of declining numbers of GAs in obstetric practice is an ongoing cause of concern.1 Failure to ventilate the lungs continues to be a cause of maternal mortality.2 CMACE has recommended the regular rehearsal and assessment of the management of failed tracheal intubation3 and evidence suggests that simulating failed intubation improves subsequent performance.3,4 We introduced a programme of simulation training for intermediate trainees to enable rehearsal of failed intubation scenarios using the equipment and in the environment that they would encounter in a real emergency.

Methods: We invited ST3-4 registrars rotating through the intermediate obstetric anaesthesia module to participate in an in-situ simulation session in the obstetric operating theatre. 100% agreed to participate. Each registrar performed either a "can't intubate, can't ventilate" or a "can't intubate, can ventilate" scenario. The authors ran the simulations and took the roles of theatre staff and obstetricians. Prior to each scenario, candidates completed a questionnaire that included scoring their level of confidence in managing failed intubation at GA caesarean section on a scale of 1 to 10. Following each scenario, candidates debriefed with the faculty, had the opportunity to discuss any issues arising from the scenarios and filled in another questionnaire scoring their confidence levels post simulation.

Results: 14 registrars participated and completed both questionnaires.

<table>
<thead>
<tr>
<th></th>
<th>Pre-simulation (1-10)</th>
<th>Post-simulation (1-10)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failed intubation</td>
<td>5.89 (2.28)</td>
<td>6.57 (1.95)</td>
<td>P&lt;0.01</td>
</tr>
</tbody>
</table>

Table: Values are mean confidence scores (SD). P value is from Student's paired t-test.

Conclusions: Participation in this simulation increased candidates' confidence in the management of failed intubation at GA caesarean section. Being in-situ, the location and usage of the local airway rescue equipment was also learnt. The experience was acceptable to the participants, and all said that they had found the experience useful. We intend to continue this programme of simulation and aim to extend the scope to become a multidisciplinary programme of emergency drills.

References
P175 SPOILT audit - in utero resuscitation for category 1 caesarean sections

I Saule, D Bogod
Department of Anaesthesia, Nottingham City Hospital, Nottingham, UK

Introduction: Intrauterine resuscitation (IUR) of the fetus is aimed at improving fetal condition during labour and/or before an emergency delivery. Our departmental guidelines suggest that IUR should be attempted before all category 1 caesarean sections (CS). Our unit uses an acronym - SPOILT - to describe IUR measures. It stands for: Syntocinon infusion discontinued, Pressure (hypotension) corrected, Oxygen applied, Intravenous fluid infusion (IVI) started, mother in Left lateral position, Tocolysis. We aim to improve oxygen delivery to the fetus so that 1) it is delivered in best possible condition, 2) we gain time to deliver the safest anaesthetic.

Methods: We audited our practice to see if SPOILT principles were applied in category 1 CS. We designed a questionnaire, forms were kept on the anaesthetic machine in both maternity theatres. Anaesthetists completed a form for each category 1 CS, and collected data for 2 months (06-07/2011). We acquired a total of 17 responses; data were collected and correlated.

Results: In all cases where syntocinon was infused (35%), it was discontinued appropriately. 65% of the patients arrived in the theatre in left lateral position. Only 35% of the women had oxygen administered. IVI was started in 65% of patients. One patient had tocolysis initiated, 76% did not have tocolysis in place. Most of the cases (82%) were done by ST3-4 grade anaesthetists, 12% by consultants. There were 35% of general anaesthetics (GA), 35% of labour epidural top-ups, 18% de novo spinals. 2 cases were converted to GA. Most of the newborns had Apagar scores of 9-10 in minutes 1 (9 newborns) and 5 (11 newborns). Sadly there was one stillbirth.

Discussion: This baseline audit shows that we could improve our compliance with SPOILT principles for category 1 CS. Unfortunately our numbers are small, which we attribute to the stressful environment related to emergency CS. We would have expected more than just 65% of patients to arrive in the theatre whit left lateral tilt in place. Only 35% of parturients had oxygen applied on arrival to theatre. This is most likely due to the fact that portable oxygen is not routinely available in our labour rooms. There is a pipeline supply to each room and a large portable cylinder on wheels for the LS. However, often it is quicker to move the patient to theatre than wait for the cylinder to arrive. IVI was started in 65% only, possibly some cases had difficult IV access and cannulation was left to anaesthetist in theatre. There was a rather large number of GA (35%). In view of recent CMACE report we should emphasize the importance of early labour epidural top-up for conversion to anaesthesia, which, where appropriate, should start in the LS and might reduce the number of unnecessary GA. More education is needed and all specialties should feel responsible for initiating SPOILT manoeuvres. A small (size C or D) oxygen cylinder could be kept in each room. Emphasis on IV access in the room is important and would allow early fluid resuscitation. A reaudit should be performed.

References

P176 Stress Urinary Incontinence (SUI). Who is responsible? Obstetric, Anaesthetic or Maternal risk factors

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Introduction: Stress incontinence symptoms have significant socioeconomic and medical impact. The aetiology of SUI is not fully understood, hence we conducted a study to identify and evaluate obstetric, anaesthetic and demographic risk factors responsible for causing SUI.

Method: Questionnaire was sent to women who had surgery for stress incontinence including trans-obturator and trans-vaginal tape procedures. The control group comprised of women who had child birth but did not have symptoms of SUI and had no surgeries as stated above. Data for this group was collected from the medical notes. Statistical analysis was done using the Mann-Whitney, Fisher extract test and P values as appropriate.

Results:

<table>
<thead>
<tr>
<th>Age at delivery</th>
<th>Control</th>
<th>Incontinent</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.05 (0.7)</td>
<td>30.90 (0.6)</td>
<td>0.664</td>
<td></td>
</tr>
<tr>
<td>Birth weight (Kg)</td>
<td>3.56 (0.07)</td>
<td>3.41 (0.07)</td>
<td>0.112</td>
</tr>
<tr>
<td>BMI</td>
<td>23 (21-26)</td>
<td>27 (24-31)</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Parity</td>
<td>1 (0-1)</td>
<td>2 (2-3)</td>
<td>&lt;0.001*</td>
</tr>
</tbody>
</table>

The results gave no significant evidence of difference in the age at delivery of the patients that developed incontinence, compared to the control group (p=0.664). There was no evidence that incontinent patients produced babies with different birth weights to the control patients (p=0.112).

However incontinent patients were found to have significantly higher BMIs (27) than the control cases (23). Parity was also found to be significantly higher in incontinent patient, median of 2 compared to 1 in the control group (p<0.001). There is no evidence that the position of the baby. Oxytocin, duration of second stage of labour episiotomy and tears have a statistically significant effect in the likelihood of incontinence. For babies delivered by NVD, 53.7% were in the incontinent group (p=0.017). This rate increased for instrumental deliveries to 75%. All 6 caesarean patients were in the incontinent group. 84% of women who had epidurals developed perineal tears/lacerations but no symptoms of SUI. All women (31.2%) who had enonox developed SUI.

Discussion: The study concluded that incontinent patients had higher BMI and parity. Significant effect was detected for the mode of delivery where 53.7% of NVD patients were in the incontinent group. 84% of women who had epidurals developed tears/lacerations but no symptoms of SUI. All women (31.2%) who used enonox developed SUI.

Reference
1. PERSSON, JAN MD; WOLNER-HANSSSEN, PÅL MD, PhD; RYDHSTROEM, HAKAN MD, PhD Obstetric Risk Factors for Stress Urinary Incontinence: A Population-Based Study Obstetrics & Gynecology: September 2000 - Volume 96 - Issue 3 - p 440–445
P177 Survey of obstetric epidural anaesthetic practises in Scotland

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*Anaesthetics, Southern General Hospital, Glasgow, UK,
†Anaesthetics, Crosshouse Hospital, Kilmarnock, UK

Introduction: Epidural services are widely available in maternity units across Scotland. However, choice of drug and doses used in epidurals for obstetric interventions vary widely among anaesthetists. We decided to explore these variations through an online survey.

Methods: An online survey link was sent to obstetric anaesthetist in all hospitals across Scotland. Questions included years of experience, the local anaesthetic drug, concentration and any additive used for establishing anaesthesia for common procedures in the labour ward.

Results: Out of a total 148 completed responses, 109 (74.4%), 33 (22.3%) and 6 (4%) had more than 7 years, 3-7 years and 2 years or less of anaesthetic experience respectively. The local anaesthetic used for test dose was 0.25% L-Bupivacaine by 80 (54%), 0.5% L-Bupivacaine used by 30 (20.3%), 2% Lignocaine used by 24 (16.2%) and 0.1% L-Bupivacaine used by 13 (8.7%). 15 (10%) used Fentanyl and 5 (3.4%) used Epinephrine as additives for test dose. The most frequently used local anaesthetic to establish labour analgesia was 0.1% L-Bupivacaine by 50 (33.8%), 0.25% L-Bupivacaine by 48 (32.4%), 0.125% L-Bupivacaine by 39 (26.6%). 114 (77%) used Fentanyl as an additive to establish labour analgesia. The local anaesthetic used for a missed segment was 0.25% L-Bupivacaine by 104 (70.3%), 0.1% L-Bupivacaine by 15 (10.1%) and 0.5% L-Bupivacaine by 12 (8.1%). 114 (77%) used Fentanyl and 12 (8.1%) used Clonidine as an additive for missed segment. 89 (60%) used 0.5% L-Bupivacaine and 79 (53.4%) used 2% Lignocaine for LSCS under epidural. 104 (70.3%) used Diamorphine, 43 (29%) used Epinephrine and 39 (26.4%) used Fentanyl as an additive for LSCS 81 (54.7%) used 0.5% L-Bupivacaine, 36 (24.3%) used 0.25% L-Bupivacaine and 26 (17.6%) used 2% Lignocaine for instrumental delivery in the labour room under epidural. 65 (43.9%) used Fentanyl, 9 (6%) used Epinephrine and 6 (4%) used Diamorphine as an additive for instrumental delivery in the labour room.

Discussion: This survey shows considerable variation and a lack of consensus in the use of local anaesthetics and additives in obstetric epidurals in Scotland. Our findings are similar to those of a Belgian study. Most responders had more than 7 years of anaesthetic experience. We noticed a high proportion of anaesthetists used 0.5% L-Bupivacaine for instrumental delivery in the labour room. It may be useful to have a guideline on epidural drugs and doses in obstetric practice.

References

P178 Survey of test doses used following epidural placement for labour analgesia

GB Kitchen, VK Melachuri
Anaesthetics, Tamside General, Ashton, UK

Background: We wanted to examine the evidence and current practice for test doses used following epidural placement for labour analgesia

Method: Electronic survey after approval by OAA using the OAAs survey tool was sent to all OAA members. Data was collected from January 2012 to April 2012. We used kendalls tau rank correlation coefficient, to determine the significance of the increase in numbers of anaesthetists using low dose mixtures, comparing the raw data from three previous surveys.

Results: There was a 52% response rate. 68% of respondents had local guidelines in place with 35% saying they would like national guidelines. 97% of anaesthetists used the aspiration test to check for intravascular and intrathecal placement of catheter with 79% of anaesthetists also checking for a falling meniscus. 69% of anaesthetists used low dose mixture (0.1% Bupivacaine + 2mg.ml fentanyl) compared to 37% in 2005. 9% in 1999 and no anaesthetists using the technique in 1993. The kendall tau rank correlation coefficient for this trend is -0.553 giving a p value of 0.001. The local anaesthetics used as epidural test doses are illustrated in the pie chart below.

Following test dose 54% of anaesthetists asked about perioral anaesthesia, 50% assessed the level of sensory block and 38% enquiring about tinnitus.

Conclusion: There is an evolving consensus for the use of low dose epidural test doses following epidural placement for labour analgesia. A national guidance on use of low dose mixtures for epidural test dose would be beneficial as it would avoid use of stronger local anaesthetic solutions on labour ward.

References
Needle phobia is a real and present problem in the postnatal period. Unpublished Posters: Obstetric Anaesthesia 2013 (Bournemouth)  

Introduction: The incidence of cardiac arrest is estimated to be 1 in 30000 pregnancies. The 2006-2008 CMACE report highlighted that sub standard care was contributing to majority of the deaths and recommendations to improve quality of care included improvement of knowledge and skills including that of life support skills. It is necessary that health care professionals caring for mothers to be should be well trained and knowledgeable in maternal resuscitation skills.

Methods: Survey was conducted by sending questionnaires to 120 midwives working in Leeds Teaching Hospitals NHS Trust in June 2012. Questionnaire was regarding midwifery experience, resuscitation knowledge and skills, resuscitation courses attended, resuscitation experience and their thoughts on need for development of resuscitation skills.

Results: The response rate was 69/120. Most of the midwives were hospital based. Nearly three quarters had less than 10 years of experience. About 90% had recently attended Basic Life Support course but 83% had never attended Intermediate Life Support/Advanced Life Support course .Though 72% had knowledge of the recent guidelines, nearly half of them weren’t comfortable in an arrest situation and wanted more training with 50% confident of using a defibrillator. 64% wanted resuscitation course to be made mandatory.

<table>
<thead>
<tr>
<th>Years of midwifery experience</th>
<th>(number of midwives)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5 yrs</td>
<td>30 (32)</td>
</tr>
<tr>
<td>5-10 yrs</td>
<td>8 (15)</td>
</tr>
<tr>
<td>10-20 yrs</td>
<td>14 (10)</td>
</tr>
<tr>
<td>&gt;20yrs</td>
<td>10 (12)</td>
</tr>
</tbody>
</table>

Discussion: The experience of cardiac arrest resuscitation would be limited due to low incidence. Studies have demonstrated that CPR training of midwives is poor both during and after midwifery training. Previous surveys and studies have shown poor knowledge of resuscitation guidelines and skills among health care professionals caring for the parturients. Survey among midwives has shown that without frequent training retention of skills is poor and hence resuscitation training should be made more regular to improve the standards of care. Our study has similarly demonstrated that poor resuscitation skills and lack of exposure to cardiac arrest can make midwives under confident to deal with such situations. Hence regular training in the form of ILS/ALS course and assessments can help in retention of skills.

References

P180 Survey on the knowledge of cardiopulmonary resuscitation in pregnant women
S Botros, S Valap, C Srivastava
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Introduction: Between 2000 and 2002, 15 deaths in early pregnancy were recorded in the UK; over 50% had some aspect of substandard care that could have been prevented. We conducted a survey (adopted after Carvalho 2008 with permission) to access the knowledge of resuscitation of parturient amongst health care providers. This survey was conducted in Birmingham Women’s Hospital and the University Hospital of North Staffordshire.

Methods: over a period of three months, we conducted this survey among obstetric anaesthetists, obstetricians, midwives and ODPs in delivery suite. We used a questionnaire of 11 questions designed by anaesthetists from US during the original survey. The questionnaire was designed to access the knowledge in four critical areas: need for left uterine displacement (LUD), advanced life support algorithms (ALS), physiologic changes of pregnancy (PHYS) and the need to perform caesarean section in parturient (>20 weeks) after 4-5 minutes of unsuccessful resuscitation for cardiac arrest (5CD). Time allowed was up to 45 minutes during which the investigators accompanied the participants who were not allowed to consult any reference source. All participants were approached during their routine working hours.

Results: Breakdown of scores in the different subgroups assessed, scores are presented in percentages (%):

<table>
<thead>
<tr>
<th>Referral reason</th>
<th>Anaesthetists</th>
<th>Obstetricians</th>
<th>Midwives</th>
<th>ODP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>82</td>
<td>77</td>
<td>55.5</td>
<td>52</td>
</tr>
<tr>
<td>LUD</td>
<td>81.5</td>
<td>76</td>
<td>67.5</td>
<td>61</td>
</tr>
<tr>
<td>ALS</td>
<td>100</td>
<td>92</td>
<td>60</td>
<td>64</td>
</tr>
<tr>
<td>PHYS</td>
<td>75</td>
<td>63</td>
<td>35</td>
<td>31</td>
</tr>
<tr>
<td>5CD</td>
<td>76</td>
<td>84</td>
<td>57.5</td>
<td>50</td>
</tr>
</tbody>
</table>

Discussion: causes of cardiac arrest during pregnancy are varied and can be related to pregnancy or due to other cause and can occur in any place in the hospital. As this is quite rare and a variety of medical professionals can be involved in resuscitation so a rapid recognition and response are critical to improve the outcome. Our survey showed a deficit in knowledge especially among midwives and ODPs in the four main resuscitation areas assessed. We recommend increase training and regular updates among health care professionals involved in the care of pregnant women in the areas discussed. As recommended after the original survey, we recommend that the basic ALS algorithms should be modified to include reference to resuscitation of the parturient in hospital and out-of-hospital.

References
P181 Survey on the usage of non-luer spinal needles: departmental experience and opinion

N Rao, P Singh
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Introduction: In response to the NPSA Patient Safety Alert concerning the use of spinal and epidural needles in the UK, we adopted the non-luer spinal needles from April 2012 in our hospital. We are using the 25-G Sarstedt needles with a Surety connector all throughout the trust.

This survey was undertaken at six months after the introduction of the non-luer needles.

Methods: A standard survey sheet was used and the anaesthetists of all grades were contacted in person to generate a better response. The questions ranged from ease of setting up to their opinion about the feel and flexibility of the needle. User satisfaction and block adequacy was also explored.

Results: Total of 50 responses were obtained of which 44% were consultants and rest of them were trainees and speciality grade doctors. Majority of the participants found the setting up to be easy but some reported increased leakage whilst injecting the drug. 43 of the 50 responders thought the needle was too flexible and felt unsure about its use in a category I caesarean section due to the altered feel during the passage of needle through the tissues. 13 responders thought that the expected block level wasn’t achieved with the new needle in some cases. User satisfaction overall was near average to poor and only 3 consultants graded the needle as excellent.

Discussion: Whilst some of the poor user satisfaction could be due to the change in equipment but there is definitely some significant issues that our survey highlights. The increased flexibility of the needle is also supported by the comparative clinical evaluations from Bristol. The flexibility can be due to two possible reasons either due to the shorter length of the introducer needle or due to the smaller outer diameter of the needle in comparison to the previous needles that we were using.

The issues have also been fed back to the manufacturers and they are in the process of developing a new needle with a thicker outer diameter.

Reference

P182 Takayasu's disease: specialist knowledge of an obstetric anaesthetist preventing termination

G Keightley, H Davis, Y Fong
Anaesthetic Department, Royal Glamorgan Hospital, Llantrisant, UK. *Department of vascular surgery, Royal Glamorgan Hospital, Llantrisant, UK

Introduction: Takayasu's Disease (TD) is a rare large vessel granulomatous vasculitis and mainly affects the aorta, its major branches and pulmonary artery. Women are affected more than men with a prevalence of 9:1. Stenosis, occlusion and aneurysms cause ischaemic symptoms. We report a case of a lady with a thoracic aortic diameter of 1.2 cm secondary to TD who delivered a healthy baby by caesarean section (CS).

Case Report: A 29 year old primiparous woman, who in 2009 was counselled and advised against pregnancy, presented in August 2011 at 5 weeks gestation. Five years previous she presented with lower limb erythema nodosa, worsening migraines, backache and shortness of breath on minimal exertion. She had no palpable pulses in her left upper limb but was hypertensive in the right. A CT thoracic aortogram suggested TD due to an equal circumferential distribution of diffuse thickening in the aortic arch and descending aorta. Most significant was a stenosis in the inferior aspect measuring 1.2 cm and significant narrowing of the infra-renal aorta. The left subclavian and brachial arteries were occluded. She developed claudication in her buttocks and thighs on minimal exertion and cushingoid symptoms with significant sleep apnoea secondary to prednisolone. In January 2009 aortic angioplasty was attempted. A 10 mm balloon was extremely uncomfortable and a localised dissection with intimal flap followed. Due to the high risk of aortic dissection or rupture a cardiologist and rheumatologist advised that this was a non-viable pregnancy. A maternal decision to terminate the pregnancy soon followed. At a multidisciplinary meeting just a day before an elective termination, evidence presented to the patient by the obstetric anaesthetist resulted in her continuing with the pregnancy. She experienced increased shortness of breath, raised inflammatory markers, and became dependant on walking aids and a wheelchair. At 34+ weeks gestation, an elective CS was carried out in the main theatre of our district general hospital with a multidisciplinary team including a senior consultant vascular surgeon. The patients blood pressure was invasively monitored. A spinal consisting of 2.2 ml 0.5% heavy bupivacaine, 100 mcg morphine and 15 mcg fentanyl was administered. The blood pressure remained stable throughout with a prophylactic phenylephrine infusion. The CS and post-partum period was uneventful.

Discussion: A recent review of literature identified 137 cases of TD in pregnancy and 40.8% had spontaneous vaginal deliveries and 37.6% by CS(1). A CS should be reserved for obstetric indications(2). This lady had uterine insufficiency due to the aortic stenosis and the risk of intimal flap rupture. A CS was the safest mode of delivery. Successful pregnancy is possible, even in severe TD, with careful antenatal care and preferably vaginal delivery plus effective epidural anaesthesia and a shortened second stage(2).

References
P183 TEG demonstrates that tinzaparin 4500 units has no reliable anticoagulant activity after caesarean section

V Mansoubi, C Woo, A Sabharwal, S Napier, A Riccoboni, M O Columb*, M Laffan†, G Stocks
Anæsthesia, Queen Charlotte’s and Chelsea Hospital, London, UK, *Anaesthesia, South Manchester University Hospital, Manchester, UK, †Haematology, Imperial College Healthcare NHS Trust, London, UK

Background: Low molecular weight heparin (LMWH) is commonly used for thromboprophylaxis in pregnancy. Consensus guidelines recommend a 10-12 hour window between LMWH and any regional procedure. Anti-factor Xa assay detects LMWH effect but is impractical. By using plain and heparinase sampling, 4 hours after administration, thromboelastography (TEG®) has been shown to be sensitive to the effects of enoxaparin in women post caesarean section (CS).1 This prospective observational study used TEG® to study coagulation changes in the first 10 hours after tinzaparin dosing with the aim of ratifying current consensus guidelines.

Methods: After ethical approval and written informed consent, women post CS were enrolled. Blood samples were taken at baseline prior to s.c. tinzaparin 4500 units, and at 4, 8 and 10 hours post administration. Full blood count, standard coagulation, anti-Xa assay and kaolin activated TEG analyses were performed. A thromboelastograph (Haemostasis Analyser 5000) was used with plain and heparinase cuvettes. Sample size calculations suggested n=24 patients to find a difference of 20% in r time as significant at P<0.05 and 90% power. Data were analysed using general linear models (GLM), Tukey-Kramer and linear trend post-tests.

Results: Interim analysis of 11 patients with GLM has shown no significant differences in r time, alpha angle or MA between plain and heparinase samples at any time point, suggesting that TEG® was unable to detect an effect of tinzaparin. However there were significant trends to increasing coagulation with time for alpha angle (increase 6.6%, P=0.00444), k time (decrease 20.7%) and MA (increase 2.4%, P=0.002). Anti-Xa levels were virtually undetectable, with the highest median [interquartiles] levels detected at 4 hours (0.03 [0.00-0.09] units.ml⁻¹) with only 2 of 11 patients reaching the thromboprophylactic level of 0.10 units.ml⁻¹.

Conclusions: Preliminary results suggest that 4500 units of prophylactic tinzaparin given post CS has no reliable clinical effect on coagulation as assessed by TEG® or anti-Xa levels, contrary to findings using enoxaparin. However both LMWHs have different proportions of anti-IIa and anti-Xa activity. We are unable to comment on consensus guidelines regarding the timing of regional anaesthesia in relation to LMWH dosing.

Reference

P184 The accuracy of documentation of obstetric anaesthetic procedures

Y Ahmad, M Kai
Department of Anaesthetics, Queen Alexandra Hospital, Portsmouth, UK

Introduction: The Royal College of Anaesthetists has clear guidelines regarding acceptable rates of caesarean section (CS) performed under general and regional anaesthesia. The OAA collects annual data from each lead obstetric anaesthetist regarding types of anaesthetic given. This data is also entered into our hospital maternity data collection system, PROTOS, by midwifery staff. PROTOS interfaces with the patient administration system (PAS) through which coding takes place, and also generates the patient’s discharge summary. Precise data collection therefore, has a number of implications. The purpose of this audit was to assess discrepancies between anaesthetic procedures entered into PROTOS and those recorded on the anaesthetic chart. A difference between these figures raises concerns regarding all data collected on the unit.

Methods: 300 sets of case notes were examined and 100 women were found to have undergone an anaesthetic procedure other than an epidural for labour. The data entered on each woman’s anaesthetic chart was compared with that recorded on the PROTOS discharge summary. A 100% concordance rate was taken as the audit standard.

Results: 76 of the 100 procedures requiring anaesthetic intervention were CS. The other 24 included instrumental delivery, repair of tear, removal of placenta and evacuation of haematomata. 25% of women had the wrong anaesthetic or no anaesthetic at all recorded on PROTOS. The most common error was recording a spinal as an epidural and vice versa (24%).

Conclusions: A significant number of anaesthetic procedures are incorrectly recorded on the maternity data collection system, affecting unit statistics and thus having probity, governance and potential patient safety issues. Increased awareness of the importance of accurate data collection and education of the entire multidisciplinary team is required. A simple solution would be to incorporate coding of the anaesthetic as well as the surgical procedure into the final part of the WHO surgical safety checklist. This audit has been extended to look at data collection in main theatres, where inaccuracies may also have financial implications.
P185 The use of combined spinal-epidural anesthesia utilizing intrathecal morphine for labor pain.
M Girshin, A Shilkrut, E Kuklina, C Xenakis, M Inchiosa Jr., S Nitz
Anesthesiology, Metropolitan Hospital Center, New York, USA

Introduction: There is a long history of the intrathecal use of morphine for intrathecal anesthesia for labor pain. Unfortunately the majority of the studies were done on the small patient cohorts. Our goal was to evaluate the incidence of respiratory depression in pre-selected laboring patients who received low dose intrathecal morphine as part of the regional anesthesia.

Method: After obtaining the IRB approval retrospective observational study of 205 laboring patients who delivered at a large community hospital between January 2006 and December 2009. All patients received Duramorph 250mcg and fentanyl 25mcg intrathecally. Primary adverse outcome was delayed maternal respiratory depression. Secondary adverse outcomes included high pain scores, low Appgar scores, and postpartum hemorrhage.

Results: No cases of respiratory depression requiring naloxone administration were reported during the study. No infants had Appgar scores less than 7 at five minutes for reasons related to anesthesia, 25% of patients (N=53) underwent cesarean section, and less than 1% of deliveries (N=2) were complicated by postpartum hemorrhage. Among all study participants, only about 4% of them (N=9) had pain scores greater than 4.

Discussion: This study demonstrates that regional analgesia utilizing intrathecal morphine and fentanyl in selected laboring patients is safe and effective. Further studies are required to identify the optimal dose of intrathecal morphine, the patient selection and the time of administration in relation to labor.

References

P186 Total recall and satisfaction guaranteed? Consent for central neuraxial blockade in labour and elective caesarean sections
E L Taylor, K Subramanian, K Dasgupta*, S Francis, F Webster
Anaesthetics Department, Leicester Royal Infirmary, Leicester, UK, *Anaesthetics Department, Leicester General Hospital, Leicester, UK

Introduction: Studies have shown that patient recall and consent satisfaction can be improved by providing written information. Recent guidelines state that women should have antenatal (AN) access to such information. We performed an extensive re-audit examining success of patient consent for labour epidurals, patient satisfaction and documentation. In addition, we included consent for regional anaesthesia in elective caesarean section (CS) as a comparative group and audited all obstetric units across the city.

Methods: Over a 3 month period, patient’s having a regional anaesthetic for labour or elective CS were asked to fill in a questionnaire within 4 hours of delivery. Questions related to antenatal information provided, recollection of risks of the procedure (with visual prompting) and satisfaction. Notes were subsequently reviewed for evidence of documentation of verbal consent and risks discussed.

Results: 234 patient episodes were examined

<table>
<thead>
<tr>
<th>Labour epidurals n=136</th>
<th>Elective CS (2009 audit n=150)</th>
<th>2012 n=98</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed information given AN</td>
<td>54% (53%)</td>
<td>35%</td>
</tr>
<tr>
<td>Printed information given at time of consent</td>
<td>38% (22%)</td>
<td>16%</td>
</tr>
<tr>
<td>Anaesthetist explaining risks and benefits</td>
<td>100% (100%)</td>
<td>100%</td>
</tr>
<tr>
<td>Patient satisfaction (consent process and info provided)</td>
<td>98% (95%)</td>
<td>98%</td>
</tr>
<tr>
<td>≥ 5 complications noted</td>
<td>93% (71%)</td>
<td>93%</td>
</tr>
<tr>
<td>≥ 5 complications recollected</td>
<td>68% (59%)</td>
<td>38%</td>
</tr>
</tbody>
</table>

In both groups, 100% patients recalled the anaesthetist explaining risks and benefits but only 29% recalled getting a leaflet. All 5 patients who were dissatisfied, however, were non-English speaking. Only 28% of patients with limited/no understanding of English got a leaflet in a language they could understand. There was a significant reduction in risk recollection in the CS group (38%) vs. the labour epidural group (68%).

Discussion: Documentation of verbal consent/discussion was excellent in all cases. In comparison with the previous audit, a higher number (89% cf. 59%) received AN verbal information but those receiving printed information remained similar at 54%. Provision of written information at time of consent improved from 18% to 29%, leaving room still for improvement especially for non-English speakers. Satisfaction with consent was well above national targets. Surprisingly, the elective CS group had poor recollection of complications given the perception that a pain-free patient and “calmer environment” is more conducive to valuable consent. This warrants further investigation.

References
P187 Trial of scar: a 5 year review of anaesthetic interventions and outcomes
A Dharmadasa, K Gough, T McAree, M Wittenberg, DN Lucas, PN Robinson
Dept of Anaesthetics, Northwick Park Hospital, London, UK

Introduction: Minimal data exists on anaesthetic intervention rates and outcomes in women who attempt a vaginal birth after caesarean section (VBAC). Evidence suggests that it may be successful in a carefully selected subgroup of women, but if it fails there is increased maternal and neonatal morbidity compared to an elective caesarean section.1 The effects of an early epidural in these patients is also debated.2

Methods: The Circiona Medical Information System was used to identify women who underwent trial of scar over a five-year period at a single maternity unit. During this time there were 25,070 deliveries, of which 3112 women had at least one previous caesarean section. Of these, 45% opted for an elective caesarean section. We analysed the outcomes of the remaining 1705 women who attempted a VBAC.

Results: Thirty-one percent of women attempting a VBAC required a category 1 caesarean section (CS). Of these, 14% received a general anaesthetic (GA) as the first-line anaesthetic intervention. Where regional anaesthesia had been attempted in the first instance for a category 1 CS, the subsequent conversion rate to a general anaesthetic was 4%. Twelve percent of women who had an epidural-top up for a category 1 CS required conversion to a GA.

Table 1: Outcomes of women attempting a VBAC

<table>
<thead>
<tr>
<th>% (actual number)</th>
<th>SVD</th>
<th>Cat 1 CS</th>
<th>Cat 2&amp;3 CS</th>
<th>Instrumental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall outcome</td>
<td>40%</td>
<td>31%</td>
<td>18%</td>
<td>11%</td>
</tr>
<tr>
<td>(688)</td>
<td>(528)</td>
<td>(302)</td>
<td>(187)</td>
<td></td>
</tr>
<tr>
<td>Labour epidural rate</td>
<td>20%</td>
<td>28%</td>
<td>19%</td>
<td>52%</td>
</tr>
<tr>
<td>First line anaesthesia/ analgesia for delivery:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GA as first line</td>
<td>n/a</td>
<td>14%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>Epidual top-up</td>
<td>20%</td>
<td>23%</td>
<td>17%</td>
<td>52%</td>
</tr>
<tr>
<td>CSE</td>
<td>0%</td>
<td>24%</td>
<td>49%</td>
<td>0%</td>
</tr>
<tr>
<td>Spinal</td>
<td>0%</td>
<td>38%</td>
<td>29%</td>
<td>6%</td>
</tr>
<tr>
<td>New epidural in theatre</td>
<td>n/a</td>
<td>0%</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
<td>2%</td>
<td>2%</td>
<td>39%*</td>
</tr>
</tbody>
</table>

Conversion to GA after initiation of RA:

| Epidual top-up → GA | n/a | 12% | 2% | n/a |
| CSE → GA | n/a | 2% | 1% | n/a |
| Spinal → GA | n/a | 1% | 0% | n/a |

Discussion: Women who attempt VBAC have an increased risk of requiring an emergency CS and anaesthetic intervention. Anaesthetists must therefore be informed of all patients attempting a VBAC. They should be reviewed and counselled early about the possibility of an emergency CS, and where an epidural is sited its efficacy must be monitored closely throughout labour. Local guidelines should be established for the anaesthetic management of these cases.

References
1. National Institute of Health and Clinical Excellence. CG132 Caesarean Section

P188 Unusually immediate onset post-dural puncture headache (PDPH) following combined spinal-epidural (CSE) for lower segment caesarean section (LSCS)
A Lakhar, G Massolini
Department of Obstetric Anaesthesia, Milton Keynes NHS Foundation Trust, Milton Keynes, UK

Introduction: Spinal or CSE is an established technique for LSCS. PDPH is a well-known complication following accidental dural puncture (ADP). The incidence varies depending on the size of the needle. We report a case of PDPH with atypical presentation occurring within minutes of performing a CSE technique for LSCS.

Case report: A 30-year-old woman, G2 P2, three previous LSCS, presented for an elective LSCS. Past medical history included migraine not requiring regular medications. Under strict aseptic conditions and local anaesthetic infiltration, a needle-through-needle CSE was performed at L-3-L-4 space in the sitting position with a 16G Tuohy needle and a 26G Spotters spinal needle. During epidural needle insertion, the patient complained of paraesthesia in the left leg. The needle was withdrawn and redirected until no paraesthesia was elicited. The CSE technique was otherwise uneventful. The patient was rested supine on the operating table with a left lateral tilt. Within 4 mins of the CSE, she complained of sudden onset severe occipital headache with neck stiffness. Visual analogue pain score (VAS) was 10/10. The patient reported it was unlike her usual migraine headache. Blood pressure (BP) dropped to 70/50 mmHg and pulse rate (PR) was 80 beats/min. Ephedrine 6 mg, intravenous paracetamol 1 g and Alfentanil 500 mcg were administered with good effect. She remained haemodynamically stable thereafter. When her VAS improved to 4/10, the surgery was allowed to proceed and was uneventful. An immediate CT scan was reported as normal. A neurology consultation established a likely diagnosis of PDPH based on the fact that the headache was now postural and was associated with neck stiffness and nausea. She was prescribed regular analgesia, remained afebrile and routine investigations and examination were normal. The patient repeatedly declined epidural blood patch. The headache persisted for 40 days and she recovered completely.

Discussion: Such an early onset of headache after CSE is rare and we believe this is one of the first reported cases to occur within minutes. Lomax et al1 reported a patient in whom headache occurred 20 minutes after spinal anaesthesia using a 27-Gauge Whitacre needle. Most studies measure the incidence of PDPH at 24 hours onwards and no other reports have been found as early as 4 min or even 20 min using this or other gauges of needle. In view of the clinical signs and symptoms we believe we are reporting the first case of PDPH to occur within 4 min of performing a CSE. Lack of any published cases reflects the novelty of this case report or a possible reflection of underreporting.

References
4. Chestnut’s Obstetric Anaesthesia-principle and practice 2009
P189 Uptake of patient controlled epidural analgesia in obstetric units: a national survey of current practice
B Shukla, A Singh, K Jani
Anaesthetic Department, Lister Hospital, Stevenage, UK

Introduction: PCEA has been increasingly popular and widely used since its introduction over two decades ago. A previous survey showed that only a fifth of respondent units used PCEA. Some units had even withdrawn the use of PCEA. The main aim of this survey is to establish current practice in the use of PCEA in obstetric units in the UK and identifying potential limitations in its use.

Methods: Background information and an electronic survey were sent to 207 lead UK obstetric anaesthetists in October 2012. Several questions regarding the use of PCEA were asked including PCEA use if applicable and and problems experienced and whether national guidelines would be useful.

Results: The response rate was 68% (141 replies). 42% had >5000 deliveries per year. 50% of units did not use PCEA for various reasons including cost, no perceived benefit and complexity. Some problems encountered are summarised in table 1.

Table 1: Problems encountered with the use of PCEA.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unscheduled clinical interventions</td>
<td>24.1%</td>
</tr>
<tr>
<td>Inadequate analgesia</td>
<td>26.1%</td>
</tr>
<tr>
<td>Frequent motor block</td>
<td>3.8%</td>
</tr>
<tr>
<td>Pump shortage</td>
<td>8.5%</td>
</tr>
<tr>
<td>Lack of drug/provisionation</td>
<td>2.5%</td>
</tr>
<tr>
<td>Anaesthetist unavailable</td>
<td>26.4%</td>
</tr>
<tr>
<td>Other</td>
<td>15.6%</td>
</tr>
</tbody>
</table>

The problems were however not serious enough as 94% would not change/modify practice. The majority (61%) would not favour the introduction of national guidelines on PCEA for various reasons including not in favour of protocolisation, hindering innovation and variations in patient populations and unit set up.

Conclusion: PCEA use has increased from 20% to 49% since the previous OAA survey with more supporting evidence and better understanding into PCEA. There are still some concerns regarding equipment and clinical priorities including midway and equipment failure. Most would prefer guidelines and knowledge into what other institutions were implementing. PCEA has its use: however, it must be tailored to suit the obstetric unit and patient population individually.

References

P190 Video laryngoscopes- Do they have a place in obstetric anaesthesia?
R Khirvadkar, H McNamara, P Barclay
Anaesthetic, Liverpool Womens Hospital, Liverpool, UK

Introduction: Airway management in obstetric anaesthesia is potentially challenging. In a recent article regarding obstetric general anaesthesia, the authors suggested video laryngoscopy (VL) as one of the alternatives. By viewing the glottic image on the screen, the distance between the anaesthetist’s eye and the glottis is effectively shortened. Also there is an added benefit that the person applying cricoid may adjust their pressure to give an optimal view, as they can also see the screen. Obstetric general anaesthesia involves a true rapid sequence induction (RSI) technique. Cricoid pressure not applied optimally due to inexperience of the assistant or use of excessive pressure can make laryngoscopy difficult. This can be minimised if the assistant is afforded the same view as the anaesthetist. We carried out a survey in our department, as a part of a service evaluation of video laryngoscopes, with a view to introducing these devices in our obstetric theatres.

Methods: We carried out a survey questionnaire as a part of our service evaluation of the video laryngoscope in women scheduled for gyneacology surgery needing intubation. Anaesthetists >2 years experience were included. They carried out induction of anaesthesia according to their usual practice. When the patient was ready for intubation the operating department assistant (ODA) was then asked to apply cricoid pressure so as to mimic the conditions present during a RSI. The anaesthetist then used a video laryngoscope to perform a conventional laryngoscopy (ie. the blade used in the conventional manner with the video screen turned off) and their view according to Cormack-Lehane grade was noted. The screen was then switched on, and the anaesthetist and ODA were asked to view the screen and re-grade their view. In addition, we surveyed opinion of the ODA and anaesthetists.

Results: 30 anaesthetists were included (Consultants and trainees). Ease of use: 27 anaesthetists found the VL similar to the conventional laryngoscope with remaining 3, finding it moderately difficult. View: 18 anaesthetists found a marked improvement in the grade of their view when they could see the screen along with the ODA who then adjusted the cricoid. 12 anaesthetists found that their view remained the same. Overall: All anaesthetists thought that the VL has great potential in obstetric general anaesthesia. All ODAs thought that this device enabled them to adjust their cricoid pressure, allowing them to assist the anaesthetist with an optimal view.

Conclusions: VL are easy to use with a minimal learning curve. The contribution of the ODA is also invaluable. The survey done on gynaecology patients has convinced our department of the benefits of the VL and we think that they should be available on all obstetric difficult airway trolleys.

References
P191 Walking with epidurals, a prospective audit into the current practices on our labour ward

K Livingstone, G Peters
Anaesthetics, Wishaw General Hospital, Lanarkshire, UK

Introduction: Traditional labour epidurals can result in longer labours and increased rates of instrumental delivery. A low dose epidural limits these effects, helping to preserve numbers of spontaneous vaginal deliveries. A factor contributing to this is reduced motor block and maintenance of maternal mobility, which enhances the effects of gravity, promoting descent of the fetal head. Our labour ward employs a low dose PCEA for maintenance of epidural analgesia, with a midwife led protocol on the safe mobilisation of parturients with these in use. We prospectively audited the numbers of women with labour epidurals who fulfilled criteria for mobilisation and those who were actually mobilised.

Methods: The audit was approved by the Health Board’s audit service. Over a 4 week period the labour records and epidural observation charts for 50 patients were reviewed on the ward. Duration of epidural, physiological parameters, pain, sedation, motor and sensory scores were documented to elicit suitability for mobilisation according to protocol and these were compared to actual episodes of mobility which included walking, kneeling, squatting, elbow/knee and sitting upright. Doses of local anaesthetic administered for these periods were also documented.

Results: A total of 50 cases were reviewed. 49 (98%) women met the criteria allowing mobilisation. 1 woman did not meet the criteria at any stage as she delivered rapidly following epidural insertion. Only 9 (18%) parturients were mobile at any stage after epidural insertion with 13 separate periods of mobilisation. The episodes of mobility following epidural insertion occurred at 4 to 7.59 hours (46.1%), 2 to 3.59 hours (15.4%), 1 to 1.59 hours (30.8%) and 0 to 0.59 hours (7.7%). The range of doses of levobupivacaine administered prior to the episodes of mobility was 22.5mg to 115mg with a mean of 62.5mg. The lowest dose of levobupivacaine administered before a woman failed to meet criteria to mobilise was recorded at 22.5mg.

Discussion: The vast majority of patients fulfill criteria allowing mobilisation but few patients actually mobilise despite the potential benefits of this. Reasons for this may include lack of midwife awareness and/or confidence in the selection and management of appropriate women. Patients may not be aware of the benefits of remaining mobile following epidural insertion or they choose not to mobilise. Duration of PCEA and cumulative dose of local anaesthetic do not appear to influence the ability to allow mobilisation. We intend to emphasise these results and the advantages of ‘walking epidurals’ during midwife epidural teaching and highlight their benefits in patient information pamphlets prior to reaudit.

References
1. Anim-Samia M, Smyth RMD, Jones L. Epidural versus non epidural or no analgesia in labour. Cochrane Database of Systematic Reviews 2011; Issue 11 Art no: CD000331

P192 Waste not, want not: an audit of blood product wastage on delivery suite

AJ Whelan, E Evans
Anaesthetic Department, St Georges Hospital, London, UK

Introduction: Blood product wastage, particularly from “out of temperature control outside the laboratory” wastage is a recognised problem and this has cost and staff implications for NHS Trusts. In addition every unit of wasted blood generates an incident form which then has to be investigated by a transfusion practitioner. This audit was prompted by a discussion between the obstetric department and blood transfusion services about how best to reduce wastage of blood products on delivery suite.

Methods: After approval by our Trust audit committee, we conducted a retrospective audit of 294 parturients who had a blood loss >1000mls during 2011 using the Maternity database. The transfusion database was then examined for each patient to evaluate whether blood products had been ordered for these patients and, if so, how many of each type had been transfused, returned to blood bank or wasted. The cost of these wasted units was then estimated.

Results: The unit cost of blood products in our Trust is as follows: Red blood cells = £123.31, Platelets = £209.30, Fresh frozen plasma = £27.46, Cryoprecipitate = £31.70.

<table>
<thead>
<tr>
<th>Red Cells</th>
<th>Number of Units</th>
<th>Number of Patients</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units transfused</td>
<td>284</td>
<td>96</td>
<td>£35,020.04</td>
</tr>
<tr>
<td>Units wasted</td>
<td>32</td>
<td>15</td>
<td>£3,945.92</td>
</tr>
<tr>
<td>Units returned</td>
<td>364</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In addition to red cells, 21 units of FFP were wasted out of a total of 161 units (cost £576.66) and 11 pools of platelets were wasted out of a total of 73 pools issued (cost £2,302.30). There were no units of cryoprecipitate wasted. The total cost of wasted blood products in this audit was £6,824.88 out of a total of £54,332.24. Neither cost calculation reflects transfusion practitioners’ time needed to investigate wasted products.

Discussion: On delivery suite there will always be wastage of blood products, given the difficulties in predicting which patients are likely to bleed. Wasted blood products accounted for 12.5% of the total cost of all blood products used in this audit and this needs to be improved. Activation of “major obstetric haemorrhage” protocols - automatically providing multiple blood products, which often arrive on delivery suite simultaneously - contributes to this problem. In an emergency these may be left out of the blood fridge for an extended period and become unreturnable. It is worth noting that, of the 32 units of red cells wasted, only 9 of these units were in patients who had less than 2000mls blood loss recorded, making this explanation likely. It was not possible to scrutinise the blood transfusion database for all products issued by ward and date, which would have improved the accuracy of results. In an effort to reduce costs we plan to include anaesthetists on blood administration training at Induction, to use information posters in clinical areas and to re-audit again in Feb 2013.

Reference
P193 When is the best time to disseminate information about epidurals to mothers? A survey into mothers experiences and preferences.
M Khan, D Rangarajan, S Kynastan, H Bojahr
Obstetrics, Royal London Hospital, London, UK

Introduction: Our inner city maternity unit is a tertiary referral centre catering for a diverse ethnic community with around 5000 deliveries annually and over 50% of mothers in our area coming originally from outside the UK. The epidural uptake rate in our unit is 23% (national average of 33%-1). We set out to ascertain how well antenatal information regarding labour analgesia is accessed in this population, as we felt this was generally poorly understood.

Methods: We interviewed women face to face within 24 h of delivery, using a specialist advocate to assist with English when necessary. We used a structured questionnaire evaluating whether epidural analgesia had been considered ant-natally and if the source of information was formal (anaesthetist, NCT classes) or informal (internet, friends, magazines). Women’s opinions were sought regarding the quality of this information, the discussion they had with the anaesthetist before sitting of an epidural, and their overall satisfaction with the epidural service.

Results: 70 patients who had epidurals were interviewed 1 day post natal. 56% did not have an epidural included in their birth plan and 44% did. Overall 87% thought good quality information regarding epidurals was important. Of women who did not consider epidural analgesia in their birth plan, only 68% actively sought information before admission, and this was in the form of formal labour analgesia classes in just 58% of this group. 32% therefore did not seek any information pre-admission. Of the women who included epidurals in their birth plan, 97% had access to antenatal information and 79% attended a class. 96% of women overall recollected receiving information from the anaesthetist at time of insertion, the quality of which was considered good or excellent by 92% and average by 8%. Despite this level of satisfaction 34% still felt the dissemination and timing of information given could be improved.

Discussion: Surprisingly our survey revealed the majority of labour epidurals were sited in women who hadn’t primarily considered this option. Many had no prior knowledge about epidurals and only considered one during labour. Almost all who included an epidural in their birth plan had received antenatal information, suggesting potentially higher uptake of epidurals in our population if antenatal education was improved. In our hospital, all women are given OAA leaflets in the early stages of pregnancy as well as an invitation to an obstetric anaesthetist led evening in the third trimester. These classes are not well attended by ethnic minorities. There is still room for improvement despite a high number of women remembering information given by the anaesthetist at the time of epidural insertion. We feel this may be achieved by actively discussing labour analgesia and providing written information (in appropriate languages) at the time of early labour if possible. We have now introduced detailed OAA information sheets in a number of different languages for each labour room. We are pleased to report also that 99% of all patients in our survey were either satisfied or extremely satisfied with the information given by the anaesthetists at the time of insertion.

Reference

P194 Women seen in the antenatal anaesthetic clinic with thrombocytopenia
AJ Wickham, MD Wittenberg, V Sathanathan, PN Robinson
Department of Anaesthesia, Northwick Park Hospital, London, UK

Introduction: Thrombocytopenia is a source of anxiety for obstetric anaesthetists due to the increased risk associated with neuraxial techniques and obstetric haemorrhage. We aimed to evaluate anaesthetic interventions and labour outcomes in women presenting to the antenatal anaesthetic clinic (AAC) with thrombocytopenia.

Methods: Following Caldicott guardian approval, women seen in the AAC over an 8 month period in 2012 with thrombocytopenia were identified from the AAC record book. Data was collected on platelet counts, anaesthetic intervention, mode of delivery and any complications.

Results: 229 women were seen in the AAC, of whom 21 (9.2%) were referred with thrombocytopenia. Platelet count improved between AAC appointment and delivery in 12 (57.1%) cases.

Table 1: Platelet count at time of delivery, delivery method and anaesthetic interventions

<table>
<thead>
<tr>
<th>Platelet Count (x 10^9/L)</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;80</td>
<td>4</td>
</tr>
<tr>
<td>80-100</td>
<td>4</td>
</tr>
<tr>
<td>&gt;100</td>
<td>13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Delivery</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caesarean section</td>
<td>1</td>
</tr>
<tr>
<td>Instrumental delivery</td>
<td>1</td>
</tr>
<tr>
<td>Spontaneous vaginal delivery</td>
<td>0</td>
</tr>
<tr>
<td>Neuraxial technique used</td>
<td>1</td>
</tr>
<tr>
<td>Non-neuraxial technique used</td>
<td>3</td>
</tr>
<tr>
<td>General anaesthesia</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Complications</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemorrhage &gt;500mLs</td>
<td>2</td>
</tr>
<tr>
<td>Symptomatic postpartum patient</td>
<td>1</td>
</tr>
<tr>
<td>Emergency delivery</td>
<td>1</td>
</tr>
</tbody>
</table>

Women with platelet counts <100 x 10^9/L were less likely to have neuraxial procedures and were more likely to have general anaesthesia. In 2 cases, platelet count was unknown prior to delivery; neuraxial techniques were not used in these women. Most thrombocytopenic women (52.4%) deliver vaginally. Compared with the general AAC population, haemorrhage (1000-1500mLs) rates doubled, 19.0% compared with 9.1% respectively.

Conclusions: Women assessed in the AAC with thrombocytopenia can be reassured that their platelet count is likely to improve before labour and that a spontaneous vaginal delivery is achievable. However, they should also be counselled about the increased likelihood that central neuraxial analgesia and anaesthesia may not be possible if their platelet count does not improve.
Postural orthostatic tachycardia syndrome

Case Report:

A 29-year-old woman was transferred to our hospital in the late third trimester of pregnancy from her local hospital. The patient had postural orthostatic tachycardia syndrome (POTS) for which she was prescribed a beta-blocker. She was well-controlled and had been able to do most of her daily activities. However, she was admitted to hospital due to a severe pre-eclampsia exacerbation. During her admission, she developed severe hypotension and tachycardia. A consultation was undertaken with the obstetrical team, and a decision was made to deliver the baby by cesarean section (CS). The baby was delivered via an emergency CS due to continued severe pre-eclampsia and fetal distress. The patient recovered well postpartum and was discharged home with her beta-blocker medication.

Discussion:

The patient's case highlights the importance of recognizing and managing symptoms associated with POTS during pregnancy. It is crucial for obstetric teams to be aware of potential complications in patients with POTS and to develop a comprehensive management plan. Early intervention, such as beta-blocker therapy, and close monitoring of maternal and fetal well-being are essential to ensure a safe delivery.

References

1. Anesthesiology 1988; 69: 998
2. International Journal of Obstetric Anaesthesia (2007) 1 , S1
3. Available at: http://www.rcog.org.uk/womens
4. AL_PROPS