Safe Anaesthesia Liaison Group

PATIENT SAFETY UPDATE

Including the summary of reported incidents relating to anaesthesia

1 OCTOBER 2011 TO 31 DECEMBER 2011

THIS DOCUMENT AIMS TO ACHIEVE THE FOLLOWING:

➤ Outline the data received, the severity of reported patient harm and the timing and source of reports.
➤ Provide feedback to reporters and encourage further reports.
➤ Provide vignettes for clinicians to use to support learning in their own Trusts.
➤ Provide expert comments on reported issues.
➤ Encourage staff to contact SALG in order to share their own learning on any of the incidents mentioned below.

MORBIDITY AND MORTALITY MEETINGS

The SALG Patient Safety Updates contain important learning from incidents reported to the National Reporting and Learning Service (NRLS). The Royal College of Anaesthetists (RCoA) and the Association of Anaesthetists of Great Britain and Ireland (AAGBI) would like to bring these Safety Updates to the attention of as many anaesthetists and their teams as possible. We would like to encourage you to add this Update to the agenda of your next morbidity and mortality (M&M) meeting and we would also like to hear your feedback on learning points.

Feedback from M&M meetings on how the Patient Safety Update has informed action can be sent to the SALG administrator at salg@rcoa.ac.uk.

SUMMARY

A total of 3,336 anaesthesia related incidents were reported during the specified time period. 58 incidents were reported using the anaesthetic eForm. 40% of these cases were reported as near miss (harm was prevented from reaching the patient). 53% of incidents reported via the eForm were reported to the National Patient Safety Agency (NPSA) within one day of occurrence (Figure 1).

3,278 incidents were reported using Local Risk Management Systems (LRMS). 18% of these cases were reported as near miss. 50% of incidents were reported via LRMS to the NPSA within 30 days of occurrence (Figure 1).

All incidents graded as death or severe were reviewed by the National Patient Safety Agency and, if identified as having potential cause for concern, were reviewed in turn by consultant anaesthetists from the RCoA or AAGBI. This review was carried out in accordance with the NPSA’s data sharing protocol (no information about the Trust is disclosed; only information about the incident). Most incidents were reported by consultant anaesthetists, but the eForm is available to all members of the perioperative team.

As with any voluntary reporting system, interpretation of data should be undertaken with caution as the data are subject to bias. Many incidents are not reported, and those that are reported may be incomplete having been reported immediately and before the patient outcome is known. Clarity of ‘degree of harm’ to patients who experience a patient safety incident is an important aspect of data quality.
ANAESTHETIC eFORM

The anaesthetic eForm was formally launched in England and Wales on 30 November 2009 and can be found at: https://www.eforms.npsa.nhs.uk/asbreport. There have been 913 completed reports submitted up to 31 December 2011. SALG has produced some top tips for use of the eForm which can be downloaded by clicking here.

The NPSA will be closing in 2012 as a result of the Arm’s Length Bodies review in 2010. Responsibility for the NRLS will move to the NHS Commissioning Board. SALG would like to encourage you to continue to use the eForm (or your local reporting systems), and would like to reinforce the importance of continuing to report patient safety incidents during the transition period so that trends and incidents can be acted upon and learning maximised. The eForm is particularly useful as it was designed to allow specific clinical information relating to anaesthetic incidents to be reported by anaesthetists and other members of the anaesthetic team. It provides a mechanism by which high quality information can be rapidly reported and disseminated nationally.

TIMELINESS OF REPORTING

Figure 1 shows the time taken to report incidents via the anaesthetic eForm (directly received into the NRLS) and via LRMS (uploaded to the NRLS periodically via local systems) during the period 1 October 2011 to 31 December 2011.

Figure 1
Reporting timeliness of anaesthetic incidents

DEGREE OF HARM (ACTUAL INCIDENTS)

Figure 2 shows the degree of harm incurred by patients within the anaesthetic specialty during the period 1 October 2011 to 31 December 2011. Twelve deaths were reported through LRMS and three via the anaesthetic eForm.

Figure 2
Reported degree of harm
INCIDENT TYPE

Figure 3 shows the type of incidents that occurred within the anaesthetic specialty that were reported using LRMS or the anaesthetic eForm for the period 1 October 2011 to 31 December 2011. The categories were determined at local level.

Figure 3
Type of incident reported

SUMMARISED EXAMPLES OF REPORTED INCIDENTS FROM ALL CATEGORIES

Cemented joints

➤ 85 year-old lady with fractured neck of femur having hemiarthroplasty. Seven minutes after the cement went in she suffered a cardiovascular collapse (resuscitation unsuccessful). I did not know it was a cemented joint. No discussion about patient risk factors preoperatively... (Orthopaedic) consultant not present at the time out.

➤ Patient (ASA 3–4) undergoing revision of knee replacement for periprosthetic fracture. Cardiac arrest during cementing of femoral component.

➤ 95 year-old patient undergoing emergency right hip hemiarthroplasty under general anaesthesia... sudden cardiopulmonary collapse about 2 minutes after applying cement (resuscitation unsuccessful). Management of case appropriate... third such case we have had recently.

➤ 90 year-old lady (ASA 3) undergoing emergency hip hemiarthroplasty under GA and nerve blocks had a cardiac arrest 2–3 minutes after cementing. Very hypotensive, bradycardic and cyanosed. IV glycopyrrolate given, ventilated with 100% oxygen... remained bradycardic, atropine given... CPR started but stopped after 20 minutes.

Cardiovascular collapse during surgery for hip arthroplasty is well-recognised, possibly due to venous embolism of fat or marrow contents during instrumentation of the femoral canal or cement insertion. Bone Cement Implantation Syndrome (BCIS) has been reviewed in the British Journal of Anaesthesia. Risk factors for severe reaction include older age, significant co-morbidities, impaired cardiopulmonary function, bony metastases, osteoporosis or pathological or intertrochanteric hip fracture and hypotension prior to insertion of bone cement.
The NPSA issued a Rapid Response Report (RRR) in March 2009 which provided advice on how to mitigate the risk of BCIS. Surgeons and anaesthetists are advised to identify patients who are at risk preoperatively and choose the appropriate technique; anaesthetists should maintain normovolaemia throughout and maintain vigilance during instrumentation; surgeons should conduct pressurised lavage of the femoral canal, consider a suction catheter to reduce the pressure in the intramedullary canal, use a cement gun and communicate with the anaesthetist when cement is to be inserted.

Recent NICE guidance on the management of hip fracture in adults suggests that cemented rather than uncemented implants should be used in patients undergoing arthroplasty. There was no clinical evidence of benefit from uncemented arthroplasty and no randomised controlled trials evidence that raised concerns about safety in the use of cement.

The AAGBI has published recent guidance on the management of proximal femoral fractures, including use of monitoring for high-risk patients and treatment of BCIS.

Clinicians are asked to continue to report every incidence of perioperative harm or patient death after total hip replacement and hemiarthroplasty to the NPSA and Medicines and Healthcare Products Regulatory Agency (MHRA), stating use of cemented or uncemented prosthesis, to review local guidelines against best practice, and to submit data to the National Hip Fracture Database.

**It's how you do the checks that matters**

- Wrong patient details entered on emergency list booking form; correct patient was in adjacent bed. Problem identified at anaesthetic pre-op assessment so correct patient was seen without additional delay.
- Wrong patient brought to anaesthetic room and, despite check-in procedure, patient anaesthetised. Patient kept asleep and transferred to appropriate theatre for correct surgery by the correct surgeon...
- 2 year-old dental patient... looked distressed and was making loud obstructive noises... recovered satisfactorily for transport to the ward. Child suddenly in marked respiratory distress with severe sternal recession, tracheal tug and started to retch. A green theatre swab was in his mouth and was occluding the airway. This was extracted by the staff nurse immediately...
- Patient undergoing oral surgery had throat pack. Incorrect procedure used, resulting in failure to remove throat pack before extubation... (no harm).

Human error will always occur and a culture of routine checks by anaesthetists contributes greatly to safe patient care. The WHO checklist was mandated by the NPSA in 2009, and the NPSA issued a Safer Practice Notice in April 2009 that recommended throat packs be included as part of the swab count and the ‘sign out’ of the WHO checklist.

Surgical checklists have been shown to reduce mortality and morbidity in many different settings. The benefit of checklists depends crucially on checklist compliance, but, clearly, effective checks are not always carried out.

These incidents should prompt us to consider the safety culture in our own theatres and how this contributes to compliance with mandatory safety checks. The Manchester Patient Safety Framework (MaPSaF) is a useful tool to help teams to assess their safety culture and has been developed by the NPSA in association with the University of Manchester.

**Equipment problems**

- A box of Sprotte Surety needles (non-Luer lock) had been incorrectly distributed to... obstetric theatre. One of these needles was used to perform a spinal anaesthetic for elective caesarean section. It was only when CSF was obtained that the non-Luer connector was identified... the procedure had to be repeated as there were no syringes available that would connect to the non-Luer connector.
- Braun epidural catheter markings different from Portex epidural catheter markings leading to confusion and risk of inadvertently leaving too much or too little of catheter length in epidural space...
- Obese patient... intubation unexpectedly difficult... McCoy laryngoscope requested. The blade was single use, did not fit the handle in the box, or any other available handle. An LMA was inserted... (anaesthesia uneventful).
➤ Patient vomited on induction, turned on side, attempted to put bed head down but the bed wouldn’t work, not charged and wouldn’t work until it was plugged in... delayed treatment.

The introduction of new equipment into clinical practice to improve patient safety (or reduce cost) may have unintended consequences. The NPSA issued an RRR to alert clinicians to the risk of mismatching spinal, epidural and regional devices. Manufacturers have been alerted and requested to improve packaging design, but clinicians are advised to specifically check that they have compatible needles and syringes when performing spinal anaesthesia.

The AAGBI has published a safety guideline Safe Management of Anaesthetic Equipment. More than half the adverse incidents reported to the MHRA do not result from an identifiable equipment fault but are due to ‘user error’. Each department should have an equipment officer who works in close liaison with the procurement officer, particularly when new equipment is purchased. All anaesthetists must be trained and understand the complexities of the equipment that they use.

Anaphylaxis – unusual reactions, unusual presentations, timing of antibiotics

➤ Skin cleaned with 2% chlorhexidine (for CVC insertion). Uncomplicated first pass of CVC with ultrasound guidance. Subsequent sudden desaturation and severe hypotension (no loss of pulse). Wheeze and rash noted. Responded to IV adrenaline. Likely anaphylaxis to chlorhexidine.

➤ Shortly after routine induction of anaesthesia using propofol, remifentanil and atracurium developed rash, hypotension and hypoxia. Suspected anaphylaxis to atracurium. Responded well to IM adrenaline, fluids, steroids and antihistamines. Surgery abandoned.

➤ IV access established for elective caesarean section. Patient was given co-amoxiclav for surgical prophylaxis... developed acute hypotension, rash and difficulty with respiration. Resuscitation of the mother hampered by a term pregnancy... neonate possible severe impairment.

Anaphylactic reactions are uncommon and are most frequently due to neuromuscular blocking agents. Reactions to chlorhexidine are being reported more often in recent years, and the MHRA has published a Drug Safety Update highlighting this.

The AAGBI published a safety guideline Suspected anaphylactic reactions associated with anaesthesia, which recommends that all departments should identify a lead anaesthetist for anaesthetic anaphylaxis, with agreed referral pathways for investigation in a specialist centre (click here for a list of allergy centres).

Reactions should be reported to the MHRA via the Yellow Card System. The timing of antibiotic prophylaxis in caesarean section is controversial.

Always read the label

➤ Category 1 caesarean section (22.00)... anaesthesia by ‘topping up’ the epidural. I asked the anaesthetic nurse to prepare sodium thiopental and suxamethonium should there be an urgent need to convert. ...the epidural was working well... picked up a syringe of sodium thiopental 500mg I mistakenly believed to be 1.2g of co-amoxiclav... confirmed that the patient had no known drug allergies and administered 500mg of sodium thiopental... patient unconscious... anaesthetic nurse asked me where the sodium thiopental was and I realised I had administered it to the patient. I announced to everyone in theatre that I had mistakenly administered a general anaesthetic... cricoid pressure, 100% oxygen, suxamethonium, patient intubated. Rest of the operation was uneventful (baby admitted to NICU).

➤ Wrong order for the administration of anaesthetic resulted in the patient being conscious at the beginning of intubation prior to appendectomy... risk of significant psychological impact...

➤ Patient came to theatre for an LSCS because of failure to progress (01.00)... had an epidural catheter in situ which was used to anaesthetise. Doctor... began giving the patient some oxygen... shouting for a tube... Doctor had administered thiopentone instead of antibiotic.
Drug errors are amongst the patient safety errors most frequently reported to the NPSA and remain a serious cause of harm to patients. There are numerous reasons why drug errors occur in anaesthesia, particularly when the anaesthetist is tired, stressed or distracted.

The NPSA, RCoA and AAGBI have undertaken a feasibility study of confirming drugs administered during anaesthesia, either by double-checking or by new technology involving bar-coding. Both methods are effective but have advantages and disadvantages. Anaesthetists should give serious consideration to implementing methods of confirming the drugs administered during anaesthesia.

Open and honest communication is at the heart of healthcare. Once a drug error has occurred it is essential that the team work together to mitigate the harm to the patient – the first report gives an excellent account of such teamwork.

Discussing errors with patients and their families can be very challenging, but research has shown that being open when things go wrong can help patients and staff cope better with the after-effects of a patient safety incident. The NPSA has published a best practice guide *Being open: communicating patient safety incidents with patients, their families and carers*.

**Using drugs requiring low temperature storage**

The issue of refrigerated drugs has been raised via the SALG safety network. A patient safety incident occurred after rocuronium was given and failed to take effect. A patient coughed during intubation but was unharmed. It was not known for how long the rocuronium had been at room temperature prior to being drawn up. This serves as a reminder that drugs requiring storage at low temperatures may not work as expected if they are not stored appropriately. Do not use these drugs if you are in any doubt as to how long they have been unrefrigerated, and be aware of the manufacturer’s instructions for storage and your local drug refrigeration policy.

**Patient Safety Conference 2012, Glasgow**

The SALG Patient Safety Conference 2012 will be held on Tuesday, 23 October 2012 in Glasgow at the Royal College of Physicians and Surgeons. Please save the date and look out for the programme.