Safe Anaesthesia Liaison Group

PATIENT SAFETY UPDATE

Including the summary of reported incidents relating to anaesthesia

01 JULY TO 30 SEPTEMBER 2012

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 and boards
➤ 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 System (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 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 3,913 anaesthesia related incidents were reported during the specified time period. Only 53 incidents were reported using the anaesthetic eForm; 51% of these incidents were reported to the National Reporting and Learning System (NRLS) within one day of occurrence. 38% of incidents reported to the eForm were reported as ‘near miss’ (harm was prevented from reaching the patient). 3,860 incidents were reported using Local Risk Management Systems (LRMS); 0.9% of these incidents were reported within one day and 49% were reported more than 30 days after they had occurred. Of the incidents reported via LRMS, 13% were reported as near miss.

All incidents reported via the eForm, and all those reported to LRMS graded as ‘death’ or ‘severe harm’, were reviewed by the Patient Safety Team, now part of the Patient Safety Function within the NHS Commissioning Board (NHS CB). Consultant anaesthetists from the RCoA or AAGBI reviewed incidents identified as having potential cause for concern. No information about the trust was disclosed in this review; only information about the incident. Most incidents submitted via the eForm were reported by consultant anaesthetists, although 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 designed to allow specific clinical information relating to anaesthetic incidents to be reported by anaesthetists and other members of the anaesthetic team, and can be found at: www.eforms.nrls.nhs.uk/asbreport.

The NPSA has now closed. Responsibility for the NRLS has moved to the NHS Commissioning Board and operational management of the NRLS has moved to Imperial College Healthcare Trust. The RCoA and AAGBI continue to work with the NRLS team at Imperial and with the patient safety function of the NHS CB. SALG would like to reinforce that processes for sharing and learning incidents remain firmly in place. Staff are urged to continue to use the eForm (or your local reporting systems) to report patient safety incidents so that trends and incidents can be acted upon and learning maximised. The eForm is particularly useful as it provides a mechanism by which high quality information can be reported rapidly by members of the anaesthesia team and disseminated nationally.

INCIDENT TYPE
Figure 1 shows the type of incidents that occurred within the anaesthetic specialty that were reported using LRMS or the anaesthetic eForm for the period 01 July to 30 September 2012. The categories were determined at local level.
DEGREE OF HARM (ACTUAL INCIDENTS)

Figure 2 shows the degree of harm incurred by patients within the anaesthetic specialty during the period 01 July to 30 September 2012. 17 deaths were reported through LRMS, and one death via the anaesthetic eForm.

LEARNING POINTS FROM REPORTED INCIDENTS

The following extracts are from the eForm and from incidents reported to LRMS graded as ‘death’ or ‘severe harm’.

Power failures and anaesthetic machine battery back up

➤ We were about to induce a patient on the emergency list (RSI). A final check revealed that the gas monitoring module was not working and then noticed that the anaesthetic machine was on battery back-up (not immediately obvious from looking at it)... all the power sockets had failed. Estates were contacted and they corrected the problem within 25 minutes. The case was postponed for that time with no harm to the patient other than an anxious wait in the anaesthetic room.

➤ Anaesthetic machine in theatre checked before list, working correctly. First patient anaesthetised and brought into theatre; machine dead – complete power failure. Machine log revealed multiple AC power failures earlier on in the day, battery thus exhausted, hence failure. Sockets on the gantry in this theatre are unreliable. Patient hand ventilated with Ambu-bag during incident – no untoward effects.

The AAGBI publication Checking Anaesthetic Equipment 2012 highlights the importance of checking the power supply to anaesthesia workstations and ancillary equipment. The anaesthetic workstation must be connected directly to the mains electrical supply, and the anaesthetist should be aware of the back-up power supply in the operating theatres, as faults may occur. A check to ensure that the back-up battery for the anaesthetic workstation is charged is an essential part of the machine checklist at the start of the day. As noted, this may not be immediately obvious, so it is important to know how to check this on the machines in your theatres. The presence of a self-inflating bag is an essential part of the daily machine check, as illustrated. Theatre users should know when generator tests are to be carried out as the equipment may fail if no back-up power is available, or equipment may need to be rebooted after the test to restore normal function.

Lessons from NAP3

➤ Epidural for labour. Returned two days later with back pain, no neurological deficit, infected puncture site. Treated for superficial infection initially. Back pain worsened, MRI showed infected haematoma in epidural space. Now receiving intravenous antibiotics.

➤ Fit patient having internal fixation of ankle fracture. Spinal performed at L4/5 with 2.6ml 0.5% bupivacaine and 300mcg diamorphine. Block recorded at T9–10 after 10mins. Patient transferred into theatre and laid flat. Patient became bradycardic and unconscious. Initially responded to atropine 0.6mg but later loss of central pulse required CPR, adrenaline 0.5mg x6, intubation and admission to ICU. Discharged from ICU next day with no sequelae.

Evidence from NAP3 describes risk factors for epidural infection, and suggests that early recognition and treatment are the key to a good outcome. Symptoms that occur after discharge from hospital are a concern, and may occur weeks or even months post procedure. It is suggested that patients are given a letter at discharge indicating what to look out for. An example is available in Appendix 2 of the NAP3 report.

Cardiovascular collapse is a well-recognised complication after spinal anaesthesia, which may occur in young healthy patients, and is often preceded by bradycardia. Patients <50 years with a baseline heart rate <60 may be at increased risk of this complication. When bradycardia is profound, early administration of adrenaline can be critical.


Programming infusion pumps – do a second check!

➤ An infusion pump was incorrectly programmed such that it gave the infusion much quicker than anticipated. The infusion pump asked for the volume of drug per ml and the anaesthetist thought it asked what the total volume for the infusion was.

➤ Incorrect rate of infusion set (out by factor of 10). Was using an infusion rate of 0.0mcg/kg/min, which necessitated the use of a decimal point, which I believe contributed to the error.

Misuse or malfunction of equipment accounted for 26% of drug errors reported according to a report from the Australian Incident Monitoring study. The most frequently cited contributing factors were failure to check equipment, inattention, haste, unfamiliar environment or equipment. The main ways to minimise the effects of these errors were re-checking or detection with monitors.


Anaesthetic cover for patients in remote locations

➤ Patient recovering from AVM embolisation under GA. Became neurologically obtunded and had a respiratory arrest. Recovery staff pulled the emergency buzzer but the anaesthetists who attended only happened to be there by chance – there was no anaesthetic cover on that level [of the hospital].

The AAGBI Guideline Immediate Post Anaesthetic Recovery states: ‘...when there is a patient in the recovery room who does not fulfil the criteria for discharge to the ward... there should be an anaesthetist supernumery to requirements in the operating room, immediately available for the recovery room. All standards and guidelines... must be fulfilled at any site where anaesthesia is administered.’

Managing the theatre workload – design a safe system – ‘stop the line’ if you are concerned

➤ Anaesthetising for in-patient plastics list. No double up in theatre suite. Five patients on list, two coming in at 10–11am. First three patients seen before list start. List busy/full, probably overbooked for a day coinciding with morning meeting. Un-keen to stop list... no availability of any double up to allow to go and see the last two patients, therefore sent for these patients ‘unseen’ (surgeons did not think there were any major problems with the patients). First patient arrived – 175kg, BMI 50 (no preparation made for bariatric patient), nasolabial flap easily performed under LA. Second unseen patient spoke no English and no interpreter present. Attempted to get interpreter, none available. Unable to assess patient therefore no anaesthetic and I suggested re-scheduling. Surgeon attempted procedure under local – procedure unsuccessful.
➤ Insufficient anaesthetic staff – therefore consultant anaesthetist swapped from theatre X to theatre Y without communication as short staffed. Patient already in holding bay… therefore committed to starting. Case was pharyngolaryngectomy and gastric pull through. However, also had to anaesthetise patient with a critical airway and difficult intubation in another theatre, therefore had to leave SpR and supervise from a distance which was inappropriate.

➤ Bilateral nephrostomies required in a patient from another hospital XXX. Intensivist junior from XXX had never worked on this site or in interventional radiology. Sent… to look after patient during case. Patient vomited after being prone with sedation for procedure. Bleeding – no group and save on this site. Patient hypothermic. On-call team called to assist/manager.

➤ Patient referred to acute anaesthetist by orthopaedic surgeon for MUA hip at 19.15, the surgeon agreed to send for patient as operation deemed urgent, patient chatty and stable in anaesthetic room – induction of anaesthesia performed with no complications. Patient care handed over to night anaesthetist @ 20.00. Total anaesthetic time <20 minutes. Patient hypotensive in theatre, transferred to recovery – hypotensive and hypoxic in FiO\textsubscript{2} 1.0. Fluids and ephedrine given, not much response. Blood gases showed severe acidosis with negative base excess and raised lactate. Intubated – cardiac arrest – CPR 1 cycle – adrenaline infusion – cardiac arrest team involved.

The Royal College of Anaesthetists Guidelines for Provision of Anaesthetic Services states: ‘All patients requiring the services of an anaesthetist must undergo appropriate preoperative assessment and be seen by an anaesthetist before the operation’. The AAGBI Safety Guideline Preoperative Assessment and Patient Preparation states: ‘This [visit] should take place before arrival in the anaesthetic room in all but exceptional circumstances.’

The risks associated with anaesthesia and sedation in the non-theatre environment are well described. The RCoA Guidance on the provision of anaesthetic care in the non-theatre environment states: ‘If a radiology department provides an emergency interventional service for which general anaesthesia may be required, plans for staffing this anaesthetic service should be made, particularly outside normal working hours.’

The RCoA document Anaesthetic services in remote sites provides clear guidance on the risks, assistance, supervision and familiarisation required to provide safe anaesthesia and sedation services in remote locations.

Handovers are a well-recognised risk for patients. A tool for handover Situation-Background-Assessment-Recommendation (SBAR) has been recommended by the NHS Institute for Innovation and Improvement. A ‘handover protocol’ is suggested when one anaesthetist hands over to another during a case, to ensure that errors of omission or commission do not occur (see AAGBI: Fatigue and Anaesthetists). Careful thought should be given to starting a short case around handover time.

If you have concerns about patient safety, any member of staff should be able to ‘stop the line’ to prevent harm; this principle has been adopted from the Toyota Production System, which empowers any employee to stop the assembly line if he or she sees a problem that might affect quality or safety. ‘Stop the line’ has been adopted by the Virginia Mason Medical Center in Seattle and Hinchingbrooke Health Care NHS Trust, and was described in a recent webinar organised by Patient Safety First.


Difficult intubation – plan for recovery

➤ Known critical airway and difficult intubation. Had a panendoscopy and laser debulking. Initially fine on extubation and taken to recovery. In recovery, airway became obstructed, needed an emergency airway – reintubated, no capnography available. After significant period of time offered indicator capnograph.

The Difficult Airway Society guidelines for the management of tracheal extubation, NAP4 and the AAGBI addendum to the Safety Guideline Standards of Monitoring During Anaesthesia suggest that: ‘…continuous capnography… should be available wherever any patients undergoing anaesthesia or moderate or deep sedation are recovered’.

Think about indications and contraindications

➤ Administered dexamethasone as antiemetic to a type II diabetic… Recommend that take more time to check indications/contraindications when preparing drugs.

➤ Elective surgery for breast cancer. Patient had had bleomycin as part of chemotherapy a few weeks previously. Patient unaware of potential oxygen toxicity/pulmonary fibrosis risk so had not highlighted it. Not picked up at preoperative assessment clinic or pre-op visit, but highlighted by surgeon. Precautions taken, no immediate adverse effect.

Remember – dexamethasone is a potent antiemetic, but it is also a potent corticosteroid with a long half-life and important side effects. There are certain situations where an alternative antiemetic may be more appropriate, for instance in diabetic patients (effect on control of blood sugar), or in a patient with newly diagnosed lymphoma or leukaemia (danger of tumour lysis syndrome).

Bleomycin is used in the treatment of Hodgkin’s lymphoma, germ cell tumours and other cancers; it may cause an inflammatory pneumonitis and progressive pulmonary fibrosis which limits therapy. The risk factors for bleomycin toxicity are increasing age, dose, radiotherapy and renal impairment. Evidence from case reviews suggests that hyperoxia should be avoided after recent exposure to bleomycin.


PATIENT SAFETY CONFERENCE 2012

The SALG Patient Safety Conference 2012 was held on Tuesday, 23 October. In addition to the varied and stimulating programme, nine posters were displayed and their content has been summarised below. If you would like any further information on any of the topics covered, or would like to get in touch with any of the authors, please do so via the SALG administrator at SALG@rcoa.ac.uk. Please note that these summaries are provided for information only and SALG does not necessarily encourage the replication of the proposed practices below.

An audit of cleaning practices of laryngoscope handles at the Royal Marsden Hospital
E J Todman, M Malik, M Hacking, Royal Marsden Hospital

We performed a prospective audit of the cleaning practices of laryngoscope handles in use in theatres and the critical care unit at our institution. This was in response to an MHRA report issued in September 2011 which proposed a review of practice for the cleaning of re-useable laryngoscope handles, after failure to decontaminate one properly had led to a patient death. Samples were obtained from laryngoscope handles on two separate occasions at the end of the working day. Each handle was swabbed with a sterile cotton swab, before being sent for analysis of bacterial isolates and number of colony forming units. On both occasions very low numbers (one colony forming unit) of environmental organisms were present on 4/24 handles in cycle one and 1/32 handles in cycle two. This audit found that the current practice of cleaning with a Sani-Cloth®DUO wipe between patient use was appropriate to prevent cross contamination, and our trust is now reviewing the need to change to single use devices.

Audit of knowledge of location of protocol for the management of malignant hyperpyrexia
A Gooding, K Rouse, T Poulton, A Lloyd, M Allan, T Meek, James Cook University Hospital, Middlesbrough

In 2012 a ‘Quick Reference Handbook’ was introduced at James Cook Hospital. These handbooks are displayed prominently in the anaesthetic rooms and provide guidelines for rare, life-threatening emergencies. We completed an audit cycle that investigated the time taken for anaesthetists to locate a randomly selected emergency protocol. The protocol for the management of malignant hyperpyrexia was used in the second round of the audit (2012). We compared these results to those from 2011 (prior to the introduction of the Quick Reference Handbook). The mean time taken to locate the protocol fell from 54 seconds to 19 seconds. This 35-second time saving could reduce morbidity and mortality in an emergency situation. Quick Reference Handbooks are widely used in the aviation industry; they have not yet been incorporated into any anaesthetic guidelines. We believe that patient safety would be improved if they were.
Audit of preoperative fasting duration for patients undergoing elective surgery at City Hospitals Sunderland
S Law, F Hunt, M Millar, City Hospitals, Sunderland NHS Foundation Trust
An inappropriate prolonged fasting period, especially from clear fluids, has been shown to have detrimental
effect to patients’ wellbeing during the perioperative period. This audit was conducted to determine the fasting
duration of patients undergoing elective surgery. This snapshot audit over five consecutive working days (in
a week) showed that the median fasting time for food and clear fluids were 13.05 hours and 10.54 hours
respectively. We also found out that there was a range of fasting instructions as perceived by patients (6–22
hours for food, and 2–20 hours for clear fluids), with only 79% stating they had received written instructions. The
two main issues identified in this audit that require further attention are:
1. Determining reasons for prolonged fasting by patients, and
2. Improving communication between hospital and patient.

Handover of patient care in the adult Cardiac Intensive Therapy Unit, Aberdeen Royal Infirmary
A P Botello, J Macdonald, Aberdeen Royal Infirmary
Little is known about the quality of handover of patient care after cardiac surgery to the Cardiac Intensive
Therapy Unit (CITU). Evidence suggests that a standard tool/checklist for handover of these patients to the CITU
may reduce missed information thereby improving patient safety. We aimed to evaluate the verbal handover
of patient care after cardiac surgery at Aberdeen Royal Infirmary. Data collection was undertaken using a form
developed following suggested indicators by the Royal College of Anaesthetists (RCoA), and piloted in a previous
handover of care audit. All outcomes were compared to this standard, which details 100% compliance. We
identified that compliance with all outcomes fell short of this standard. Therefore, scope for improvement has
been identified, and patient safety may currently be compromised. Further evaluation would need to look at the
reasons behind this low compliance, and evaluate the introduction of a safety checklist.

How clean is your anaesthetic room?
A Jennings, J Berlet, Worcestershire Royal Hospital
Our local policy is for all anaesthetic room clinical surfaces to be cleaned daily with an alcohol-based wipe.
Anaesthetic machines and other equipment are cleaned weekly. We sought to assess cleanliness using the 3M™
Clean-Trace™ system. This utilises an ATP bioluminescence assay to provide quantitative test scores in proportion
to the amount of organic matter present on surface swabs. Results showed high levels of biocontamination
compatible with a ‘clear fail’ in nearly all areas tested, despite macroscopic cleanliness. The only clear pass
was a surface recently cleaned with a sanitising wipe. The most contaminated result (50x the ‘pass’ threshold)
was an anaesthetic machine work-surface which had not been cleaned that day. We suggest there is a risk of
cross-contamination between patients from invisible biocontamination in the anaesthetic room. Diligent infection
control standards should be enforced. At minimum, sanitising wipes should be used to decontaminate all
touched surfaces/equipment between every patient.

In-situ simulation; the patient’s perspective
C A Bygrave, L Ng, Sir Charles Gairdner Hospital, Perth, Western Australia
Despite the emerging benefits of in-situ simulation, there is the concern that running simulated scenarios in
patient areas may be disruptive, although we could find no examples of this in the literature. We have been
conducting multidisciplinary simulation workshops for six months within the Post Anaesthetic Care Unit (PACU),
using a mobile SimMan® 3G and a dedicated monitored bay. We conducted a survey of patients passing
through PACU over an eight-week period. Fifty-five patients met the inclusion criteria, and we achieved an 80%
response rate. Only 25% of patients were even aware of the session taking place during their recovery, and none
of them felt that their care was compromised. All 44 patients were supportive of the sessions. The concerns that
we initially identified from our nursing staff have not been confirmed by the results of our patient survey. The
results are reassuring and we continue to provide workshops with support from patients and staff.
Pre-List Briefing (PLB): A multidisciplinary perspective
U Bashir, I Foo, F Arnstein, Western General Hospital/St John’s Hospital

We conducted a cross-specialty multidisciplinary survey to gain a wider perspective on various aspects of PLB. Responses from a total of 160 staff were analysed (61 anaesthetists, 73 theatre staff and 26 surgeons). We found that although the majority of staff believed in the value of PLB and wanted to practise it, there were organisational and logistical barriers in the work place environment making it difficult to achieve. The predominant factor preventing its routine implementation was difficulty in getting all the team members together. The majority of surgeons cited workload pressure and time constraints as reasons for not joining the PLB. The process not being formally introduced by the organisation was another main factor. To circumvent these barriers we suggest an individually tailored approach to each theatre team with support and encouragement from management and professional bodies to ensure routine implementation of PLB for the benefit of patients, staff and the health service.

Preoperative fasting – are we complying with best practice?
T Carter, C Skouras, R Falconer, L Greenway, A Paisley, Royal Infirmary Edinburgh

Preoperative fasting aims to increase patient safety by reducing the risk of adverse events during general anaesthesia. The audit investigated compliance with current best practice guidelines, which recommend fasting for six hours from solids and two hours from clear fluids preoperatively. Data on 292 elective and emergency surgical patients were collected using a standardised questionnaire over three months. The audit highlighted that both emergency and elective patients are over fasted. Emergency patients fast for longer than elective patients and do not receive written fasting information. Generic fasting advice contributes to prolonged fasting time in elective patients. Additional factors affecting fasting times are physiological parameters and patient choice. Recommendations for improvement include provision of written and verbal information to all patients, staff education and effective clinical communication.

The value of multidisciplinary simulation training in obstetric emergencies
P Patel, V Fox, M Kitching, H Kaskos, R van Hoogstraten, M Calvin, I Sockalingam, Lister Hospital, Stevenage

The latest Confidential Enquiry into Maternal Deaths addressed the need for improved knowledge, skills and interdisciplinary communication in the management of severely ill obstetric patients. We have conducted regular multidisciplinary simulation training in the management of obstetric emergencies. Data were collected retrospectively from obstetricians, midwives, anaesthetists and anaesthetic assistants. The scenarios were universally rated relevant and realistic. All but one participant enjoyed the session. The most valuable learning outcomes were improved teamwork and insight into roles of other disciplines. All participants except one felt better able to manage obstetric emergencies in the future as a result of the session. All agreed that patient safety and interdisciplinary working relationships would be improved through such sessions and all felt simulation should become mandatory for their discipline. Our data suggest that multidisciplinary training in obstetrics is enjoyable and perceived to be important in improving patient safety and interdisciplinary communication.

FEEDBACK

SALG would like your feedback. We aim to improve the information we provide in terms of relevance, timeliness, presentation and usability. Please let us know which SALG work you have engaged with, what works well and what we could do better. We welcome feedback at any time, but are running a specific feedback consultation until 2 January 2013. All comments can be sent to SALG@rcoa.ac.uk.