Safe Anaesthesia Liaison Group

PATIENT SAFETY UPDATE

Including a selection of reported incidents relating to anaesthesia

1 OCTOBER TO 31 DECEMBER 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 SALG@rcoa.ac.uk.

LEARNING POINTS FROM REPORTED INCIDENTS

The following extracts are from the eForm and from incidents reported to the Local Risk Management Systems (LRMS) graded as death or severe harm.

Safer obstetric care – need to improve systems for safer practice?

➤ After the delivery of the baby (LSCS under epidural) mother was given thiopentone accidentally instead of co-amoxiclav. Patient became unresponsive but maintained airway... Administration stopped when she became unresponsive...

➤ High-risk mother delivered in obstetric theatres under regional anaesthesia. On transfer to bed I noticed that her 10 u/hour post-partum syntocinon infusion had been disconnected from its syringe driver and that the infusion set had no locking mechanism to prevent inadvertent infusion. At the patient venflon end the 3-way tap was open as well. I alerted the anaesthetist transferring to this and closed the 3-way tap for transfer.

Medication errors are well described in anaesthesia and may arise from latent or active errors, many of which have been described previously.1–3 It is clear from this and previous Patient Safety Updates that thiopentone and antibiotics are easily confused in obstetric anaesthesia, particularly in an emergency or when the anaesthetist is distracted. SALG recommends that local actions are taken to ensure that these drugs are not drawn up and stored in the same area at the same time. If drug infusions are to be paused during transport then the infusion line should be closed to the patient.

2 SALG Patient Safety Update, September 2012.
3 SALG Patient Safety Update, March 2012.
In a similar vein – safe use of local anaesthetics

➤ On checking a 5ml syringe labelled ‘0.9% saline’, noted that ampoule attached was actually 10ml 0.25% chirocaine. The plastic ampoules of both 0.9% saline and 0.25% chirocaine have similar colouring (green). Ampoule and contents of syringe discarded. No harm came to the patient (10kg child) undergoing elective surgery...

➤ Patient undergoing anterior and posterior repair under general anaesthesia. Ventricular fibrillation following injection of bupivacaine/adrenaline into perineum by surgeon. CPR initiated, 200 J DC shock x 1 with return to sinus rhythm within two minutes. Patient transferred to ITU. No apparent sequelae...

The problem of ‘look-alike’ ampoules of local anaesthetic and saline has been highlighted previously. Part B of the NPSA Patient Safety Alert Safer spinal (intrathecal), epidural and regional devices will apply to caudal block in children, but this incident again emphasises the importance of careful checks when drawing up all drugs. Local anaesthetics should be drawn up and kept separately from intravenous drugs.

Anaesthetists should remain vigilant to the possibility of accidental intravenous injection of local anaesthetics, including when administered by others. If you identify a risk relating to look-alike ampoules, please report this to your pharmacists in your local pharmacy department. The pharmacy department then has the opportunity to engage with manufacturers, providers and the MHRA.

More drug errors – a system of double-checking is not infallible

➤ CD check was done by myself and staff nurse and found that there was one syringe of morphine sulphate (50mgs in 50ml) missing. Last check was done by the day staff. The missing syringe was found to be infusing patient... with KCl sticker over it. Patient was not prescribed morphine and should have been on KCl infusion. Patient was closely monitored.

Plan carefully for the (unexpected) high-risk patient

➤ Patient for extra Saturday urology list. Had been inpatient for approx three weeks, but no discussion with anaesthetics prior to surgery. Pre-op assessment on morning of surgery: 60yrs, learning difficulties, AF (rate controlled with digoxin and sotalol); hypertension controlled with ACE inhibitor given on day of surgery – baseline BP 105 systolic; renal impairment, rising creatinine, low albumin 27 (no nutritional optimisation pre-operatively); probable MH – pt not formally tested due to learning difficulties but mother and brother both confirmed MH on muscle biopsy. Informal discussion with surgeon re poor candidate for Saturday surgery but no change made to plan. ITU bed availability confirmed...

➤ Patient admitted to ward for diagnostic CT scan of chest under general anaesthetic. No pre-operative discussion/MDT meeting about the child. On assessment by the anaesthetist, child noted to be extremely high risk for general anaesthetic; congenital diaphragmatic hernia with re-herniation; hypoplastic left lung; right ventricular hypertrophy and dilation and severe pulmonary hypertension on high dose sildenafil. No PICU bed was discussed/booked by admitting team.

It is important to plan carefully for high-risk cases, particularly when relatively short-staffed or when undertaking anaesthesia in remote locations. Delivery of safe care seven days a week is a current priority for the NHS, but this needs to be done in a planned manner with clinical buy-in, understanding the benefits and the risks.

In children, anaesthesia mortality is highest in those with cardiac disease, and in particular those with pulmonary hypertension.1

Rare, unusual and not so unusual airway complications

➤ Patient was admitted urgently... for a thyroidectomy for her benign goitre with associated tracheal stenosis... She was scheduled for surgery four days later, but died within 12 hours of being sent home.

➤ Patient for elective gynaec surgery with normal mouth opening and no predicted airway problems was given a general anaesthetic and following induction (including muscle relaxation) I was unable to open the mouth more than 1 cm. Able to ventilate with bag and mask while staff tried to locate a fibreoptic laryngoscope... On further manipulation of the jaw, audible ‘clunk’ and mouth opened normally. Intubated uneventfully but jaw again locked after this. Post-operatively normal mouth opening and denied any previous history other than jaw occasionally clicks.

➤ During endotracheal intubation for elective laparoscopic cholecystectomy using video laryngoscope (GlideScope), trauma sustained to left vocal cord caused by endotracheal tube. Bleeding seen on the left vocal cord... During the operation, repeat inspection with GlideScope revealed clot formation on the left vocal cord and no further bleeding. Decision made to extubate after discussion with ENT consultant. Extubation uneventful, no airway problems. Patient discharged home on same day... contacted by telephone the next day... complained of a hoarse voice and painful swallowing but was able to eat and drink. The events of the intubation were explained to her and we arranged for her to attend ENT clinic the following week. At the ENT clinic one week later, on nasendoscopy, a mucocoele was identified on the left vocal cord. Patient voice remained hoarse. She was given advice to rest her voice as much as possible. She was then followed up in ENT theatre three weeks later. Images of the glottic opening were obtained and showed resolution of mucocoele... but no injury to vocal cords. Patient voice had improved... She has an appointment (with ENT), two months after procedure.

Life-threatening airway obstruction caused by benign thyroid disease is rare. Risk factors for acute airway compromise have been suggested to be chronic obstructive airways disease, substernal extension and long-standing goitre, or respiratory tract infection, or haemorrhage into the goitre. Radioiodine administered to thyrotoxic patients may lead to acute airway compromise from thyroid oedema.1

Temporomandibular joint anterior disc dislocation can cause the mouth to lock in a nearly closed position in the anaesthetised patient. A history of a clicking jaw may be the only symptom, and the pre-operative airway examination is usually normal. A gentle reduction manoeuvre has been described.2

Complications associated with the use of airway devices have been reported previously, probably related to the use of stylets and should be followed up as described in this incident.3 Complications relating to the use of equipment should be reported to the MHRA.

Machine checks are always essential and help identify problems before they occur – learn from the lessons of the past

➤ Routine anaesthetic machine check prior to start of list. Interlock on desflurane vaporiser not functioning correctly. Correct lock out when turned on first prevented second vaporiser being turned on. However, when second vaporiser turned on first the desflurane vaporiser was not locked out and dual volatile agent delivery was possible. Vaporiser replaced before start of theatre list and sent to medical physics department for checking...

➤ Anaesthetic machine checked before list. When first patient anaesthetised (by propofol infusion) large leak apparent in breathing system, unable to generate adequate airway pressure. Cause not immediately obvious, so patient ventilated with Ambu-bag via facemask, and transferred into theatre... patient intubated and surgery proceeded uneventfully. On close inspection of the anaesthetic room machine the soda lime canister was found not to have been clicked into place properly. It is thought that the canister was accidentally unclicked when the anaesthetic machine was moved between checking and induction of anaesthesia.

➤ Second general anaesthetic case on an afternoon orthopaedic list. Fit and well, young, ASA 1 patient for removal of ganglion (refused local anaesthesia). Patient given IV induction. Anaesthetic registrar unable to ventilate patient. Guedel airway placed, still unable to ventilate. Consultant anaesthetist realised there was no terminal gas/oxygen flow. Patient desaturated briefly, lowest recorded SpO₂ 74%, emergency Ambu-bag requested, immediately provided and attached to auxiliary O₂ supply. Patient easy to ventilate and SpO₂ quickly returned to 100%. On inspection of anaesthetic circuit a disposable cap/bung was discovered blocking the angle piece. The angle piece was removed and anaesthesia and surgery proceeded without incident. The patient woke up appropriately and normally in recovery. On immediate investigation it transpired that the offending piece of equipment had been ‘doctored’ for the purposes of a simulator scenario acted out some weeks earlier in the simulation centre for a teaching session. The doctored airway had then been resealed in a disposable wrapper using transpore tape... The simulation centre is separate to the theatre complex but somehow this item was brought over to theatres and restocked in the anaesthetic room...

A routine machine check is essential before every case, but unexpected problems may still occur. Always have a self-inflating bag and always check the breathing circuit before use. The anaesthetic circuit is vulnerable to blockage by extraneous small objects, such as the plastic cap from an IV line, and was the cause of death of a child in 2001. An investigation into this tragic accident was published in 2004.


Bariatric surgery – care with positioning for laparoscopic surgery

➤ A morbidly obese patient (BMI 62) underwent laparoscopic hysterectomy for carcinoma uterus. Consultant surgeon and anaesthetist. Operation took 4½ hours, with head down table tilt and high lung inflation pressures. Gross facial and conjunctival oedema noted, so patient not extubated at end because of risk of laryngeal oedema. Ventilated on ICU overnight, uneventfully extubated next day. Complained of numbness in arm, but no motor weakness brachial plexus traction.

➤ A review of patient safety incidents associated with obesity suggested that the majority relate to infrastructure, but anaesthesia-related incidents (including airway complications) result in the greatest level of harm.

Managing complications of surgery

➤ Patient arrested on induction of anaesthesia, being brought back for intra-abdominal bleeding. Unable to resuscitate (patient died…)

The reporting hospital commented:

➤ Appropriately trained and experienced medical staff should be available to supervise care of patients in recovery. They should be able to attend immediately in the event of an emergency. It should not be assumed that the anaesthetist will always be able to leave theatre to resuscitate a patient in recovery. When operating lists are planned, adequate time should be allowed for induction of anaesthesia, operation and transfer to recovery. These times should be agreed by the surgeon, anaesthetist and theatre staff. An appropriate interview room should be available close to theatres where higher risk surgery is performed. An appropriate area should also be available for next-of-kin to view the deceased in private. Individual team members should be able to call ‘STOP’ before proceeding with next case to allow adequate time for reflection and planning for further deterioration in a patient condition. It is not always possible for an anaesthetist to manage a patient having an anaesthetic in the operating theatre and simultaneously manage a patient whose condition deteriorates in recovery.

Request for information – Alarm Fatigue

Following a query made to SALG, the NRLS is being searched for incidents relating to alarm fatigue. Can you share any experiences relating to alarms being ignored, silenced and any risks that have arisen as a result? Do you have any strategies in place locally to prioritise alarms or ensure that alarm fatigue does not occur? Please send any information to the SALG administrator at SALG@rcoa.ac.uk.

MRI Machines

SALG have received a query regarding safety in the MRI suite. Whilst an NRLS data search has returned few incidents a closer look at mitigating the risks to patients in this area is needed. SALG will liaise with colleagues in the other relevant specialties to find practical ways of reducing risk. If you have any information or local protocols relating to this topic please share them with the SALG administrator at SALG@rcoa.ac.uk.

Thank you

Thank you for taking part in the SALG survey. The responses were encouraging and will be looked at more closely over the coming weeks to identify where improvements can be made.

SUMMARY

A total of 4,057 anaesthesia-related incidents were reported during the specified time period. Only 35 incidents were reported using the anaesthetic eForm; 15 of these incidents were reported to the National Reporting and Learning System (NRLS) within one day of occurrence. Eleven of the incidents reported to the eForm were reported as ‘near miss’ (harm was prevented from reaching the patient). 4,022 incidents were reported using LRMS; 113 of these incidents were reported within one day and 2,000 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 the 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 reported via the eForm were completed by consultant anaesthetists, although the eForm is available to all members of the peri-operative 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 (NHS CB) 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 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.

DEGREE OF HARM (ACTUAL INCIDENTS)

Figure 1 shows the degree of harm incurred by patients within the anaesthetic specialty during the period 1 October 2012 to 31 December 2012. 15 deaths were reported though LRMS, and two deaths via the anaesthetic eForm.

![Figure 1](image-url)
Figure 2 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 2012 to 31 December 2012. The categories were determined at local level.

**Figure 2**

<table>
<thead>
<tr>
<th>Incident Type</th>
<th>Number of Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication</td>
<td>400</td>
</tr>
<tr>
<td>Treatment, procedure</td>
<td>300</td>
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<tr>
<td>Implementation of care and ongoing monitoring/review</td>
<td>200</td>
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<tr>
<td>Medical device/equipment</td>
<td>200</td>
</tr>
<tr>
<td>Access, admission, transfer, discharge (including missing patient)</td>
<td>150</td>
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<tr>
<td>Documentation (including electronic and paper records, identification and drug charts)</td>
<td>120</td>
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<tr>
<td>Consent, communication, confidentiality</td>
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<td>Patient accident</td>
<td>80</td>
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<tr>
<td>Clinical assessment (including diagnosis, scans, tests, assessments)</td>
<td>80</td>
</tr>
<tr>
<td>Other</td>
<td>50</td>
</tr>
<tr>
<td>Consent, communication, confidentiality</td>
<td>50</td>
</tr>
<tr>
<td>Documentation (including electronic and paper records, identification and drug charts)</td>
<td>50</td>
</tr>
<tr>
<td>Infrastructure (including staffing, facilities, environment)</td>
<td>50</td>
</tr>
<tr>
<td>Implementation of care and ongoing monitoring/review</td>
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</tr>
<tr>
<td>Medical device/equipment</td>
<td>50</td>
</tr>
<tr>
<td>Medication</td>
<td>50</td>
</tr>
<tr>
<td>Treatment, procedure</td>
<td>50</td>
</tr>
<tr>
<td>Infection Control Incident</td>
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<tr>
<td>Patient abuse (by staff/third party)</td>
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<tr>
<td>Disruptive, aggressive behaviour (includes patient-to-patient)</td>
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</tr>
<tr>
<td>Other</td>
<td>10</td>
</tr>
<tr>
<td>Consent, communication, confidentiality</td>
<td>10</td>
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<tr>
<td>Documentation (including electronic and paper records, identification and drug charts)</td>
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<tr>
<td>Infrastructure (including staffing, facilities, environment)</td>
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<td>Implementation of care and ongoing monitoring/review</td>
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