Safe Anaesthesia Liaison Group

PATIENT SAFETY UPDATE

Including the summary of reported incidents relating to anaesthesia

01 JULY 2014 TO 30 SEPTEMBER 2014

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 and enhance patient safety.

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 (M&M) 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.

ON THE SALG AGENDA

The role of M&M Meetings and ‘Sign up to Safety’

There is evidence that regular, effectively run M&M meetings are an important component in promoting a safer culture by encouraging medical staff to examine incidents in detail and to identify improvements. They should also reduce the requirement for whistle-blowing, by bringing problems to light before they become systemic. SALG has noted with concern that the time allocated for M&M meetings has been decreasing in many hospitals and, in a recent letter to the Secretary of State (Health) the College President has encouraged him to support clinicians in ensuring sufficient time is allocated to these meetings to review errors and adverse events in an open and reflective manner. SALG has also produced guidance and a simple template for the conduct of M&M meetings, which can be found here.

There is currently no route for SALG or its constituent organisations to ‘Sign up to Safety’, however the members of SALG are supportive of any government initiative that focuses attention on the safety of patients’ and have agreed to sign up as individuals in order to remain updated as this initiative progresses.

NAP5 recommendations

SALG have been tasked with taking forward the actions recommended by National Audit Project 5: Accidental Awareness during General Anaesthesia1 in the United Kingdom. SALG are currently prioritising the 64 recommendations contained in the report (published September 2014) as a first step towards identifying national-level actions and then taking these forward. Further details are expected to be available in the first quarter of 2015. This process is intended to facilitate and augment implementation of the NAP 5 recommendations nationally. SALG does not recommend that individual departments delay local implementation plans.

**Button battery ingestion**

The ingestion of small, solid foreign bodies by children, is generally treated by conservative measures, unless there is a risk of intestinal or airways obstruction. However, recent evidence presented to SALG has indicated that ingestion of a **lithium button battery** is an emergency due to the damage that they may cause to tissue by the passage of an electrical current. Therefore, it was agreed that the awareness of those who do on-call duties should be raised to ensure that they treat these particular patients with the appropriate level of urgency.  


**LEARNING POINTS FROM REPORTED INCIDENTS**

**Machine check**

- At the end of surgery, a child was switched from positive-pressure ventilation to manual spontaneous breathing via circle system… not noted that APL valve was screwed completely down – had been left like this after machine check. Reservoir bag was behind me out of sight; no one else noticed either until bag exploded. Child appeared very alert and so was extubated… went into severe laryngospasm and desaturated to 40%. Spasm broke with usual clinical manoeuvres. Clinical picture was clouded as differential could have been tension pneumothorax given the error with the APL valve.

Checking the anaesthetic machine at the beginning of every list, with additional breathing system, ventilator, airway equipment and suction checks between each patient is recommended good practice (AAGBI 2012 machine checklist). 1 Checking the breathing system readiness includes ensuring the APL valve is configured correctly for anticipated next use; this incident serves as a reminder to include this step in the breathing system check.  

2 ASA Recommendations for PreAnesthesia Checkout. 2014 (available here).

**Drug errors – labelling, double-checking and vigilance**

- During emergency caesarean section under epidural anaesthesia, the patient’s blood pressure dropped. Instead of giving a bolus of phenylephrine, a syringe containing 0.5% bupivacaine was picked up and 1ml administered IV. The mistake was recognised. The 20ml syringe containing bupivacaine had been labelled with a handwritten white label; the usual bupivacaine label was out of stock. The syringe had been lying label down on the anaesthetic machine alongside a 20ml syringe containing phenylephrine; this syringe was correctly labelled.

- The patient was having TAP blocks for post-operative analgesia. 20ml of local anaesthetic was drawn up in each of two syringes for injection. Ultrasound guidance was used...The right-sided block was performed successfully, but after performing the left-sided block I observed that I had injected a syringe of metaraminol instead of levobupivacaine on that side. The patient was closely monitored in recovery... aside from transient hypertension, she made an uneventful recovery.

- TURBT for small bladder cancer requiring single intravesical dose of Mitomycin-C (MMC) therapy at the end of the procedure. Procedure carried out in non-urology theatre. Anaesthetic ODP retrieved MMC vial from urology theatre-controlled drug cupboard. Consultant anaesthetist administered intravenously slow infusion 40mg/40ml as per drug information sheet. Surgical team became aware when requesting MMC at the end of the procedure – anaesthetist then informed team that the drug was being injected intravenously. Injection immediately stopped – 20mg/20ml injected only.
Analgesia pre-med prescribed (2g paracetamol). Given but not signed for. I incorrectly assumed it had not been given so gave a further 1g paracetamol IV in theatre resulting in a total of 3g paracetamol being given over a 1.5 hour time period.

Analysis of reports of medication incidents identifies wrong dose, omitted or delayed medicines and wrong medicine as being the most frequent errors made. The acute care sector is the highest reporter of medication errors, and the most serious incidents are caused by errors of administration rather than prescribing. Incidents involving injectables accounted for 62% of all reported incidents leading to death or severe harm in an analysis of reports to the NRLS in 2007 – 2009.1 NHS England Patient Safety Division provides useful information and guidance on medication safety, as well as links to important signals and alerts.2 Updated guidance on the safe labelling of syringes is available on the AAGBI3 website.

Serious complications from routine procedures – local anaesthesia blocks, central venous catheter insertions and epidurals (revisited)

The patient was due to undergo a procedure for a scleral buckle under GA. It was noticed that the patient had a hyphaema and a very soft eye. An indirect exam showed no fundal view with intraocular haemorrhage. A B-scan was performed on the table... total retinal detachment with suprachoroidal haemorrhage was noted consistent with a penetrating injury from a peribulbar injection... Exploration of the ST quadrant showed a 1cm Y-shaped laceration that was sutured.

Unintended cannulation of the right carotid artery during an attempt to insert a central venous catheter as part of resuscitative measure of an haemodynamically unstable patient with new onset fast atrial fibrillation, low blood pressure and intra - abdominal sepsis... to have an emergency laparotomy. The intra-arterial catheterization was realised when blood pressure improved following fluid resuscitation and transcuding of the line. The noradrenaline was therefore not given… transferred to ICU post-op where was noted to have developed left-sided hemiparesis with ischaemic findings on brain CT on the right side.

Extravasation following Broviac line insertion into SVC resulting in torn SVC and haemothorax leading to cardiac arrest and resuscitation… transferred to cardiac theatres… admission to PICU.

Postoperative epidural haematoma. Patient had an uneventful combined spinal epidural in theatre for femoral endarterectomy, and was discharged from recovery without any specific issues. Post-op, the anaesthetic registrar saw the patient for severe back pain. At that point the patient was able to move both lower limbs. Nine hours later the surgical team noted that the patient had some difficulty in moving the left leg but managed to lift it… right side normal. At mid-day it was noticed that the patient had developed dense paraplegia… an urgent MRI was requested and performed.

Reports of adverse outcomes following invasive procedures feature regularly in the Patient Safety Updates. The risks of retrobulbar eye blocks are well known and a peribulbar block is usually accepted as a safer option. The Joint Royal College of Anaesthetists and Royal College of Ophthalmologists guidance outlines the safe approach to local anaesthesia for ophthalmic surgery.1

In a now historical review of CVC insertions, McGee et al2 highlighted the need to confirm catheter placement before use in patients where doubt might exist over the vessel cannulated (in cases of severe arterial hypotension for example).3,4 The NRLS has received several reports of severe harm or death related to inadvertent carotid artery cannulation and administration of drugs via the cannulae leading to cerebral infarction. 2-D imaging ultrasound guidance is now widely used for internal jugular CVC insertion but does not prevent inadvertent arterial cannulation.5,6 A chest X-ray will confirm catheter tip position, blood gas analysis, and pressure measurement will add support to correct placement and should be considered if doubt exists.
As highlighted in the last Patient Safety Update,7 delay or failure to recognise the cardinal signs and symptoms of epidural haematoma will reduce a patient’s chance of a good neurological outcome. The ongoing reports to the NRLS suggest an on-going need for education and training of the multidisciplinary team. NAP3 provides important detail of the risks and sample flowcharts for detection and management of such complications.8

1 Local anaesthesia for ophthalmic surgery. Joint guidelines from the Royal College of Anaesthetists and the Royal College of Ophthalmologists February 2012 (available here).
7 Patient Safety Update – April to June 2014. RCoA (available here).

The deteriorating patient – monitoring, recognition and escalation

➤ Patient reviewed by Crit Care team having been found lying face down on floor with temp of 34°C. Deteriorated. Hugely swollen R lower leg. Hb dropped from around 140 to 55. Advice given to Medical Team (SpRs). Not for ICU at that time as did not require additional support and needed surgical input/plan to resolve underlying condition. Patient deteriorated further therefore admitted to the Critical Care Unit as Level 2 patient. Reviewed for 2nd time by Orthopaedic SHO – calf pressures high. D/W Consultant Ortho Surgeon – and reviewed by him – for fasciotomy (Cat 1). Ortho Surgeon from theatre X had to return to his theatre. Unable to locate on call SpR or Consultant (mobile phones or answer phone). Theatre X Surgeon later able to attend again by this time… managed to find free theatre after around 60 min. By this time patient deteriorated further - not appropriate for theatre. Patient comfort now main priority; no prospect of survival. Patient chances were poor to start with but as day wore on they disappeared completely.

➤ Patient requiring level 3 care cared for in theatre for 4 hours due to lack of ICU bed. Care in theatre by junior anaesthetist appears sub-optimal; hypoglycaemia and hypokalaemia not treated… bradycardic on transfer to ICU. Patient died next day.

➤ Patient with haemorrhagic shock nursed in Recovery after an OGD diagnostic procedure took place at 3am. The patient was waiting for an ICU bed to be freed-up by the bed manager. This was going to be done by discharging a patient from ICU who had been waiting for a ward bed for over 24 hours. The incidented patient developed severe respiratory failure with pO2 of 6kPa.

➤ Patient presented with severe abdominal pain. Sent home after IV morphine. No arterial blood gas done. Known to have had previous weight-loss surgery. Not referred to surgeons for opinion. Patient re-presented 36 hours later with pain and vomiting blood. Taken to theatre. Most of small bowel removed as ischaemic.

➤ Young female in resusc. A&E with Arterial pH 7.01, lactate 15, pCO2 2.7. A&E Reg asked for Med Reg and ITU review. ITU advice was to give more fluids and repeat the ABG 1 hour later. There was no documentation of the ITU review on the notes… this patient was clearly extremely sick. The next ITU input came from the Anaesthetic Reg covering maternity when the patient had a cardiac arrest. Patient had 2 arrests in A&E and a further 2 in ITU before being transferred to the regional centre with acute liver failure secondary to staggered paracetamol overdose and died the following day.
Headlines for the launch of the NCEPOD review\(^1\) of in-hospital cardiorespiratory arrest were:

- patient assessment on admission was deficient in 47% of cases
- there were warning signs that the patient was deteriorating and might arrest in 75% of cases
- the warning signs were not recognised in 35% of those patients, not acted on in 56% and not communicated to senior doctors in 55% of cases
- NCEPOD Advisors found a lack of input from senior clinicians in the 48-hours prior to cardiac arrest.

Organisations have described toolkits and standards of care to support the care of patients at risk of deterioration.\(^2,3\) The fact that cases are still reported as causing death or severe harm would suggest that further action is required. A recent Healthcare Failure Modes and Effects Analysis (HFMEA) found that outdated communication technologies, lack of adequate staff and hierarchical/cultural barriers in communicating the need for escalation are root causes of safety problems\(^4\) – and hence risk factors to be aware of. The scenarios outlined above identify aspects of non-technical skills as potentially lacking: communication, decision making, situation awareness, team working and task management. The \textit{ANTS taxonomy}\(^5\) offers a framework to develop these skills further.

1 Time to Intervene? A review of patients who underwent cardiopulmonary resuscitation as a result of an in-hospital cardiorespiratory arrest. NCEPOD 2012 (available here).
2 Acute Care Toolkit 6 The medical patient at risk: recognition and care of the seriously ill or deteriorating medical patient. The Royal College of Physicians May 2103 (available here).
5 Framework for observing and rating anaesthetists’ non-technical skills. University of Aberdeen June 2012 (available here).

\textbf{Timely transfer}

\begin{itemize}
  \item This patient had a drop in Glasgow Coma Scale whilst on medical assessment unit… required intubation and ventilation prior to CT scan. The scan showed a large intracranial bleed and hydrocephalus. The images were sent to xxx… neurosurgery team scrubbed in theatre; they would not be able to look at the scans for 45 minutes where upon they would call back… agreed that this patient required an EVD… some issues over the availability of a critical care bed which led to a discussion between medical registrar, neuro at xxx and neuro at yyy about where this patient would go. Over 2 hours after the CT the team at xxx decided they would accept the patient… and asked us to transfer the patient… the decision to accept the patient seemed to hinge on whether they had a critical care bed and not the urgent need for surgery… referral, acceptance, and transfer of brain injured patient’s needs to be smoother and more efficient.
  
  \item Called to review a patient in xxx ward. I decided that the patient needed to come ASAP. Informed ITU nurse in charge and I was told that there was a bed available. ITU nurse in charge then informed me after an hour that they rang xxx ward… they were told the patient was on their way. I was then busy seeing other patients/ referrals and 2 hours later I went back to xxx ward to see why that sick patient was still there. They told me they only received the call shortly before and they were trying to arrange a porter. By then the patient was moribund…
\end{itemize}

A key message in the \textit{NHS London review of critical care services} was that a whole-hospital approach to critical illness should be a foundation stone of critical care.\(^1\) The report also states that ‘poor hospital flow and poor capacity management need to be addressed to ensure effective and timely discharge. This requires a whole-hospital approach and is not solely within the gift of Intensive Care Units and their staff’. It would be reasonable to suggest that patient transfer/admission as well as discharge should be included in the statement. Standards for the safe transfer of patients were featured in the PSU published in \textit{September 2014}.\(^2\)

1 Quality and safety programme: Critical care Case for change. NHS London February 2013 (available here).
Patient had intra-uterine death two weeks earlier, and had retained placenta accreta. Admitted to labour ward where she rapidly developed overt sepsis presumed placental focus. Noted to be pancytopaenic (Hb 87 plts 37) - and blood and platelets ordered. Sudden massive and uncontrollable haemorrhage - 2000mls. Taken to theatre where bleeding continued despite uterine massage. Major obstetric haemorrhage call put out during transfer to theatre. When porter sent to blood bank only packed cells given to him - and lab technician stated clotting products not routinely given in Pack 1. Request for clotting products made. FFP/cryo arrived 40 mins later and 1 pool platelets. Request for more products (Pack 2) made as bleeding remained uncontrolled. Great difficulty in securing more products with requests for further tests of clotting prior to release of products etc. Haematology cons called early during proceedings. The patient continued to bleed during this time and required hysterectomy to gain control of this… bleeding persisted beyond this time as the platelets had still not been corrected. In total it took almost 2.5 hours for platelets to arrive; when they were transfused together with fibrinogen concentrate bleeding ceased.

Following reports of 11 deaths and 83 incidents related to delay in the provision of blood and blood products, the NPSA published a rapid response report highlighting the need for staff familiarity with the local protocol and that knowledge of the protocol should be supported with training and regular drills.1

1 The transfusion of blood and blood components in an emergency. NPSA 2014 (available here).

Patient positioning and pressure sores

Patient returned from theatre to ICU with a 2.5cm x 1cm area of non-blanching discolouration with suspected deep tissue injury to left buttock. Patient already had moderate severity moisture lesions from faecal incontinence to buttocks and sacrum. Patient in theatre from about 9am until 7pm.

The ‘Stop the Pressure’ campaign was launched by NHS Midlands and East as part of their ambition to make life better for patients. The campaign is now being rolled out nationally, with NHS England, NHS Improving Quality and Haelo joining forces with other partners to support a 50% reduction in incidence of pressure ulcers throughout winter 2013/2014.

A suite of resources to support hospitals to reduce the incidence of pressure ulcers are available on the Patient Safety First website. With an estimated 180,000 newly acquired pressure ulcers developing each year (NHS Safety Thermometer 2012), and 91,810 patient safety incident reports received by the National Reporting and Learning System in 2011, this is one of the biggest patient safety challenges facing the NHS.

There is evidence to indicate that up to 95% of pressure ulcers may be avoidable.1 There is also a good evidence base for methods of preventing pressure ulcers developing.1

The Royal College of Nurses provides guidance on ‘Pressure ulcer risk assessment and prevention: Recommendations 2001’2 citing immobility, malnutrition, acute illness and previous ulceration as intrinsic risk factors whilst the potential for ulceration is exacerbated by moisture to the skin. The philosophy of care calls for collaborative inter-disciplinary approach to pressure ulcer assessment and care. NICE updates this guidance in their 2014 publication: Pressure ulcers: prevention and management of pressure ulcers.3

2 Pressure ulcer risk assessment and prevention. Royal College of Nursing, 2001 (available here).
3 Pressure ulcers: prevention and management of pressure ulcers. NICE 2014 (available here).
APPENDIX: INCIDENT DATA SUMMARY

A total of 6,064 anaesthesia-related incidents were reported during the specified time period. Seven incidents were reported using the anaesthetic eForm; three (43%) of these incidents were reported to the National Reporting and Learning System within one day of occurrence. Three (43%) of the incidents reported on the eForm were reported as ‘near miss’ (harm was prevented from reaching the patient). 6,057 incidents were reported using Local Risk Management Systems (LRMS); 29 (0.5%) of these incidents were reported within one day and 2,225 (37%) were reported more than 30 days after they had occurred. Of the incidents reported via LRMS, 798 (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, part of the Patient Safety function within NHS England. 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 incident reports via the eForm were submitted 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 over ‘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 here.

The RCoA and AAGBI continue to work with the NRLS team at Imperial and the patient safety function of NHS England. SALG would like to emphasise that processes for sharing and learning incidents remain firmly in place. The staff is 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 July 2014 to 30 September 2014. Thirteen deaths were reported though LRMS and none via the anaesthetic eForm.
INCIDENT TYPE

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 July 2014 to 30 September 2014. The categories were determined at local level.