



PATIENT SAFETY UPDATE

October – December 2016



LEARNING POINTS FROM REPORTED INCIDENTS

October 2016 – December 2016

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.

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 (M&M) meeting, and we would also like to hear your feedback on the 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

MEDICATION ERRORS

- *Patient nursed in step down bay after thoracic surgery. Patient was receiving a local anaesthetic para-vertebral block and opiate PCA for analgesia. Accidental IV injection of 0.25% Bupivacaine recognised and Bupivacaine immediately stopped.*
- *Patient intubated and ventilated, remained hypotensive despite maximum dose phenylephrine via peripheral cannula, central line inserted by anaesthetist, Noradrenaline 8mg/50mls commenced by anaesthetist via syringe pump.... noted that around 15mls of 50ml syringe had been given, and that rate had been set wrong and patient had received around 15-17mls bolus. Anaesthetist was still with pump, informed and stopped infusion immediately. Patient became hypertensive and bradycardic. A 2nd anaesthetist came into recovery, patient became hypotensive, loss of cardiac output, cardiac arrest call put out.*

- *Elective urology patient underwent robotic assisted cystectomy. Preop renal failure, intraoperative metabolic acidosis and hyperkalaemia. Intravenous infusion of lidocaine running intraop – total approximately 1g administered. Patient post extubation agitated... transferred to ICU... tonic clonic seizure and bradycardia. Noradrenaline dependant, acidotic, diagnosis LA toxicity, treated with intralipid. Rapid improvement in condition within 20 minutes... resolution bradycardia and noradrenaline off plus improvement in acidosis.*

The World Health Organisation launched the Third Global Patient Safety Challenge, Medication without Harm, in March 2017¹. The aim is to reduce by 50% over five years, the severe, avoidable harm related to medications globally.

The first case above describes one kind of medication error and is a never event; the injection of a drug by the wrong route (drug intended for local anaesthetic block but given intravenously). Medication errors are a serious source of avoidable patient harm and are the third most common patient safety incident reported to the NRLS². Checking the five Rs of safe medication practice: right drug, right dose, right route, right time, right patient ahead of drug administration describes the desired behaviour but these safety steps focus on the individual's actions and not on the human factors and system defects that make it possible for error to occur. Human error can arise because of slips, lapses, mistakes and violations³ whilst distraction during preparation, unlabelled syringes, haste and fatigue are among the common predisposing factors⁴. Violations are probably more common than we care to think and their routine occurrence is a key indicator that a system is poorly designed. The introduction of the neuraxial small bore connectors kit which complies with the new ISO standard will hopefully make this type of never event a thing of the past.

Noradrenaline administered in overdose can produce significant adverse effects. It is unclear whether this incident arose because of human error (slip, lapse, mistake, violation) or because of malfunctioning equipment. In the absence of electronic barcode confirmation technology, involving a colleague as a second person to check the pump settings and dose calculations provides another safety barrier⁵.

Lidocaine infusions are being used to supplement perioperative pain management in a variety of surgical procedures. Results of a Cochrane systematic review concluded that there was evidence of a small benefit in immediate post-operative pain control and a reduction in early post-operative nausea and vomiting. There was no evidence of significant adverse events⁶. The rapid response to intralipid therapy suggests that the plasma levels of lidocaine may have been toxic for this patient. The toxic level may have been affected by age, frailty, co-morbidities

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or alternatively the patient may have had an adverse drug reaction. The significance of this first report is unclear and SALG will keep a watching brief.

1. Donaldson et al. Medication Without Harm: WHO's Third Global Patient Safety Challenge. Vol 389, No. 10080, p1680–1681, 29 April 2017.
2. NHS Improvement. National quarterly data on patient safety incident reports: March 2017 (<http://bit.ly/2qY5Ml6>).
3. Reason, J. The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries. 2008. CRC Press.
4. MHRA and NHS England. Stage 3 Patient Safety Alert: Improving medication error incident reporting and learning. 2014 (<http://bit.ly/2q6gTh7>).
5. Evley R, Russell J, Matthew D, Hall R, Gemmell G, Mahajan RP. Confirming the drugs administered during anaesthesia: a feasibility study in the pilot National Health Services sites, UK. *British Journal Anaesthesia* 2010;**105** (3):289-296.
6. Kranke P et al. Continuous intravenous perioperative lidocaine infusion for postoperative pain and recovery. *Cochrane Database of Systematic Reviews* 2015, Issue 7. Art. No.: CD009642 (<http://bit.ly/2pD88YW>).

AT RISK AIRWAYS – PLANNING AHEAD

- *Patient admitted to unit, required intubation but difficult procedure. ENT surgeons treated patient with difficult tracheostomy procedure in theatre. Patient returned to ITU, tracheostomy tube dislodged and patient suffered massive dense surgical emphysema. Drs called ENT surgeons back to unit. Patient eventually re-intubated and tracheostomy removed. Patient continued to deteriorate and died.*
- *Patient arrested in nuclear medicine department following loss of airway. Patient transferred to nuclear medicine for scan of left kidney. Stable on transfer, deeply sedated on propofol and fentanyl, good gas exchange on PCV mode and good oxygenation and CO2 trace during transfer. Minimal norepinephrine requirements. Following transfer from bed to the scanner, cuff leak from the ETT was noted associated with significant reduction in minute volume and desaturation. Attempts to reposition the ETT and increase cuff pressure were not successful. Patient became bradycardic rapidly and an arrest call was put out.*

The two airway scenarios are examples of the at-risk-airway. NAP4 made comment: *When potential difficulty with airway management is identified, a strategy is required and failure to plan for failure leads to unstructured management*

*approaches*¹. When a tracheostomy provides the only safe definitive airway, any threat to the integrity of the tracheostomy must be considered life-threatening. Planning and preparing for such an event ensures that the team have rehearsed the options, and the risks and benefits. The National Tracheostomy Safety Project has clinical and educational resources free to download and ready to adapt to local situations. Guidance on reproduction and permission requirements are highlighted on the website [NTSP algorithms](#).

Transfer of the intubated sedated/anaesthetised patient is a significant challenge and means that the airway is always at risk. Safe and effective task management requires well developed and rehearsed technical and non-technical skills. The Association of Anaesthetists of Great Britain's guidance on anaesthesia and MRI is being updated and will include advice co-written with SALG on the safe transfer of critically ill patients to and from the MRI suite. A prospective multicentre observational study from China suggests that critical illness severity is a better predictor of adverse outcome during intra-hospital transfer than artificial airway management².

1. Cook TM, Woodall N, Frerk C. Major complications of airway management in the United Kingdom. 4th National Audit Project of The Royal College of Anaesthetists and The Difficult Airway Society. Report and findings. RCoA, London 2011 (www.rcoa.ac.uk/nap4).
2. Jia et al. High incidence of adverse events during intra-hospital transport of critically ill patients and new related risk factors: a prospective, multicenter study in China *Critical Care* 2016 20:12.

PRE-OP OPTIMISATION – DOTTING AND CROSSING...

- *Patient was undergoing eye examination under a general anaesthetic. He suffered a sudden desaturation, and required transfer to critical care...now ventilated and sedated... required emergency placement of chest drain which drained large volumes of pleural fluid. A CT scan that was performed and reported prior to eye examination, revealed a large pleural effusion with mediastinal shift.*

Improving reliability in an organisation like the NHS is extremely difficult. Local preoperative assessment clinics should have robust processes in place to ensure that investigations are reviewed and considered in context before anaesthesia proceeds. In practice this means that the clinic needs to ensure the relevant anaesthetist has the detail from pre-operative investigations and vice versa,

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the relevant anaesthetist needs to pro-actively seek this information. This introduces redundancy into the system making it more likely that the information will be seen in good time. The AAGBI in their guidance on preoperative assessment comments: *Effective communication and a team approach are vital in the pre-operative period. Complications and malpractice lawsuits are often attributable to poor preparation and failures in communication. The guidance also states that: lists should be planned to allow anaesthetists enough time to access their patients preoperatively*^{1,2}.

1. Association of Anaesthetists of Great Britain and Ireland 2010 Pre-operative Assessment and Patient Preparation The Role of the Anaesthetist 2 (<http://bit.ly/2q5RsfA>).
2. Greenberg CC, Regenbogen SE, Studdert DM, et al. Patterns of communication breakdowns resulting in injury to surgical patients. *Journal of the American College of Surgeons* 2007; 204: 533-40.

COMMUNICATION

- *ITU assessment that morning revealed distended tender abdo... plan for theatre later that day for review of fasciotomy. ITU plan for NGT in theatre... patient on venturi mask on ITU - not intubated. Very little written on anaesthetic pre - op sheet... no comment about needing NGT... WHO checklist 'low risk of aspiration' despite issue of distended tender abdomen. Patient vomited on induction, aspirated and became progressively hypoxic.*
- *A patient was admitted to the respiratory ward with a myasthenia gravis crisis and was transferred to ITU over the weekend after developing increasing breathing difficulties. He was being managed with steroids and intravenous immunoglobulin including respiratory and neurology input. In ITU plan was to "discuss with neurology on Monday" but as the patient deteriorated with breathing difficulties a discussion with neurology did not take place. Neurology input would very likely have led to a decision to intubate if he required it. The ceiling of care was made for non-invasive ventilation by ITU alone (no medical input found in notes) without clear documentation as to the reasons why. Myasthenia gravis is normally a reversible condition even in crisis if given full respiratory support including intubation. Death from respiratory failure is seldom seen due to this condition now. The cause of death was recorded as respiratory failure secondary to myasthenia gravis.*

Sending, receiving and confirming understanding are the basics of communication. When patients with complex clinical conditions pass through multiple services (as in the scenario above, ICM, anaesthesia, orthopaedics/vascular and potentially general surgery) it is important that the understanding is shared and understood by everyone

involved. Vital information can get lost, forgotten or be misinterpreted. Robust handover processes and effective use of the WHO Checklist can help¹.

NAP4 made the observation that aspiration was *the single commonest cause of death in anaesthesia events. Poor judgement was the likely root cause in many cases which included elements of poor assessment of risk (patient and operation) and failure to use airway devices or techniques that would offer increased protection against aspiration. Several major events occurred when there were clear indications for a rapid sequence induction but this was not performed*².

The management of critically ill patients is complex and often requires the input from multiple healthcare disciplines. The impact of weekend working on this scenario is uncertain but should be a discussion point in the local review process. Domain 1 of the GMC guidance on Good Medical Practice outlines the standard required for adequate communication³.

1. Nagpal K et al Postoperative Handover: Problems, Pitfalls, and Prevention of Error *Annals of Surgery* 2010; 252 (1): 171-176.
2. Cook TM, Woodall N, Frerk C. Major complications of airway management in the United Kingdom. 4th National Audit Project of The Royal College of Anaesthetists and The Difficult Airway Society. Report and findings. RCoA, London 2011 (www.rcoa.ac.uk/nap4).
3. General Medical Council Good Medical Practice 2013 (<http://bit.ly/2qvSBOC>).

INVASIVE LINES AND IATROGENIC INJURY

- *Cardiac arrest in anaesthetic room during insertion of CVP line. ROSC following resus and blood transfusion. Transfer to CT scan... further arrest... continued resus back to theatre for insertion of radiologically guided balloon to subclavian artery tear. Massive transfusion, right chest drain. Resus unsuccessful.*

SALG has reported on iatrogenic injury from cvc insertion in several issues of the PSU. Difficulty in insertion of a cvc should alert the clinician to the possibility of future complications. The scenario does not mention the use of ultrasound to aid line insertion. The AAGBI guidance on safe vascular access provides detail on insertion and complications and their initial management¹.

1. Bodenham A et al Association of Anaesthetists of Great Britain and Ireland: Safer vascular access Anaesthesia 2016; 71:573-585 (<http://bit.ly/2r5OLIZ>).

INCIDENT DATA SUMMARY

July–September 2016

APPENDIX: INCIDENT DATA SUMMARY

A total of 10,720 anaesthesia-related incidents were reported during the specified time period. Two incidents were reported using the anaesthetic eForm; 1 (50%) of these incidents were reported to the National Reporting and Learning System (NRLS) within one day of occurrence. 0 (0%) of the incidents reported to the eForm were reported as 'near miss' (harm was prevented from reaching the patient). 10,718 incidents were reported using Local Risk Management Systems (LRMS); 64 (0.6%) of these incidents were reported within one day. Of the incidents reported via LRMS, 1151 (11%) 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 NHS England (formerly the NHS Commissioning Board). 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 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:

<https://www.eforms.nrls.nhs.uk/asbreport>.

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 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.

Figure 1 – Degree of Harm (actual incidents)

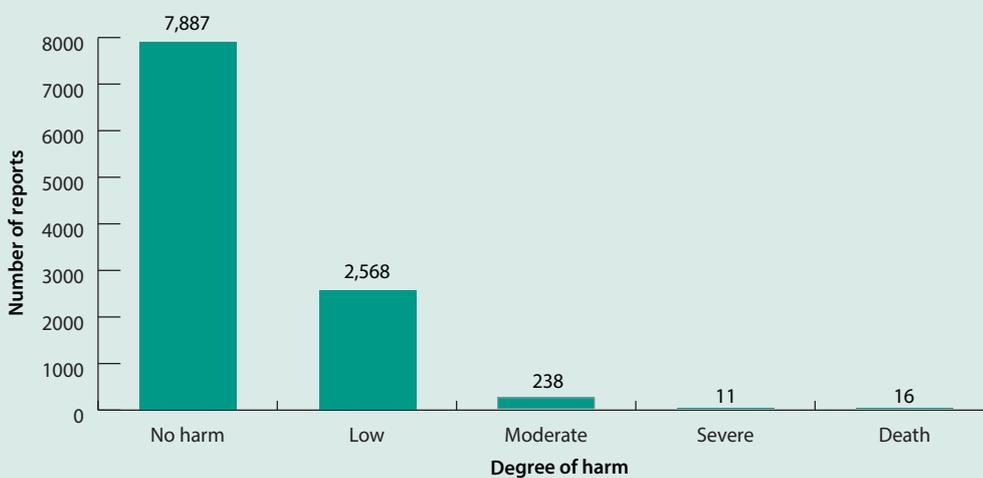


Figure 1 shows the degree of harm incurred by patients within the anaesthetic speciality during the period July– September 2016. 16 deaths were reported though LRMS and none via the anaesthetic eForm.

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