

# PATIENT SAFETY UPDATE



April – June 2015



PUBLISHED OCTOBER 2015

## **PATIENT SAFETY CONFERENCE 2015**

The annual SALG Patient Safety Conference will be held on 4th November 2015 at ThinkTank (Birmingham Science Museum) in Birmingham. For more information about event registration and programme, please visit the [RCoA website](#).

## **NEW SALG WEBSITE**

SALG have a new [website](#), with links to our stakeholder organisations, patient safety projects and publications all in one place. The aim of the new website is to facilitate increased engagement with the safety network and improve usability. A key feature of the new website is space for members of the network and others to share projects that have contributed to patient safety or promoted the patient safety agenda in their hospitals. If you would like to submit a project for the website, please email the patient safety administrator at [SALG@rcoa.ac.uk](mailto:SALG@rcoa.ac.uk).

## **ISO NEURAXIAL CONNECTORS – POSITION STATEMENT RELEASED**

NHS England have released a position statement on the expected implementation dates for the new ISO neuraxial connectors. The statement is available on the [NHS England website](#).

## **WARNING ABOUT SIMULTANEOUS USE OF A HME AND A HEATED HUMIDIFIER**

The Safe Anaesthesia Liaison Group wish to warn anaesthetist and intensive care medicine colleagues that simultaneous use of a heat and moisture exchanger and a heated humidifier can cause critical airway occlusion within 24 hours. Therefore precautions should be taken to ensure that both systems are not used together in clinical practice.

As both systems are available for use and each system has a different point of contact with the patient, they could be used together inadvertently despite manufacturer's instructions to the contrary.

## **SALG SURVEY 2015**

In 2015 a subgroup of SALG was asked to design a survey to evaluate the effectiveness of communications in four of the areas that were identified as important patient safety indicators:

- Wrong-side blocks
- Morbidity and Mortality Toolkit
- WHO checklist compliance
- Drug double-checking

The questions were piloted with the wider SALG membership in order to check for issues with question wording and survey design. The full survey was sent to all members of the SALG Safety Network, who were requested to forward the survey to interested colleagues. The survey was open for responses until 1 July 2015. In total, 494 responses were received. SALG would like to thank all of those who responded for their engagement with the survey. The conclusions from the survey will be used to evaluate and improve future communications from SALG. A report of the survey results is available [here](#).

## **NATIONAL SAFETY STANDARDS FOR INVASIVE PROCEDURES (NATSSIPS) RELEASED**

SALG supports the release of National Safety Standards for Invasive Procedures by NHS England in September 2015. This document follows one of the key recommendations in the [Surgical Never Events Taskforce report](#) from February 2014.

The document is available on the [NHS England website](#).



# INCIDENT DATA SUMMARY

April - June 2015

## 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](http://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 emphasise that processes for sharing and learning incidents remain firmly in place. Staff are urged to continue to use the eForm (or their 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)

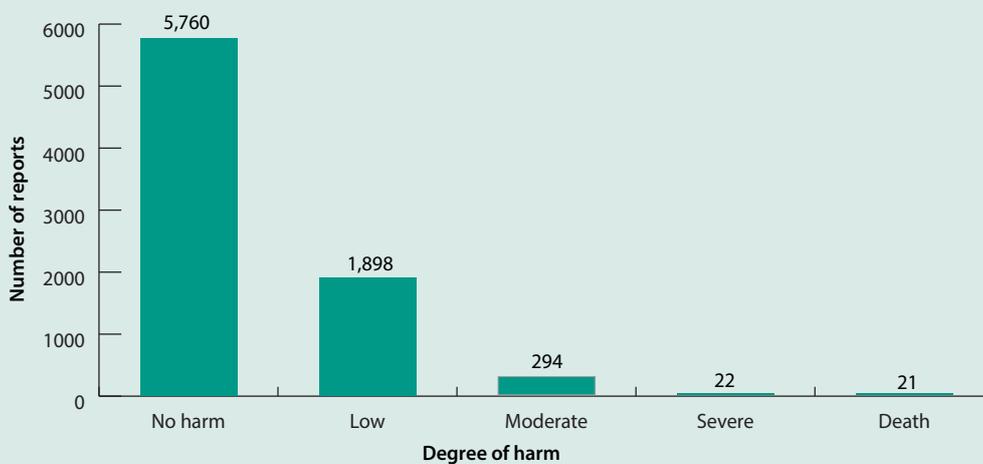


Figure 1 shows the degree of harm incurred by patients within the anaesthetic speciality during the period April – June 2015: 21 deaths were reported though LRMS and 0 via the anaesthetic eForm.

Figure 2 – Incident types

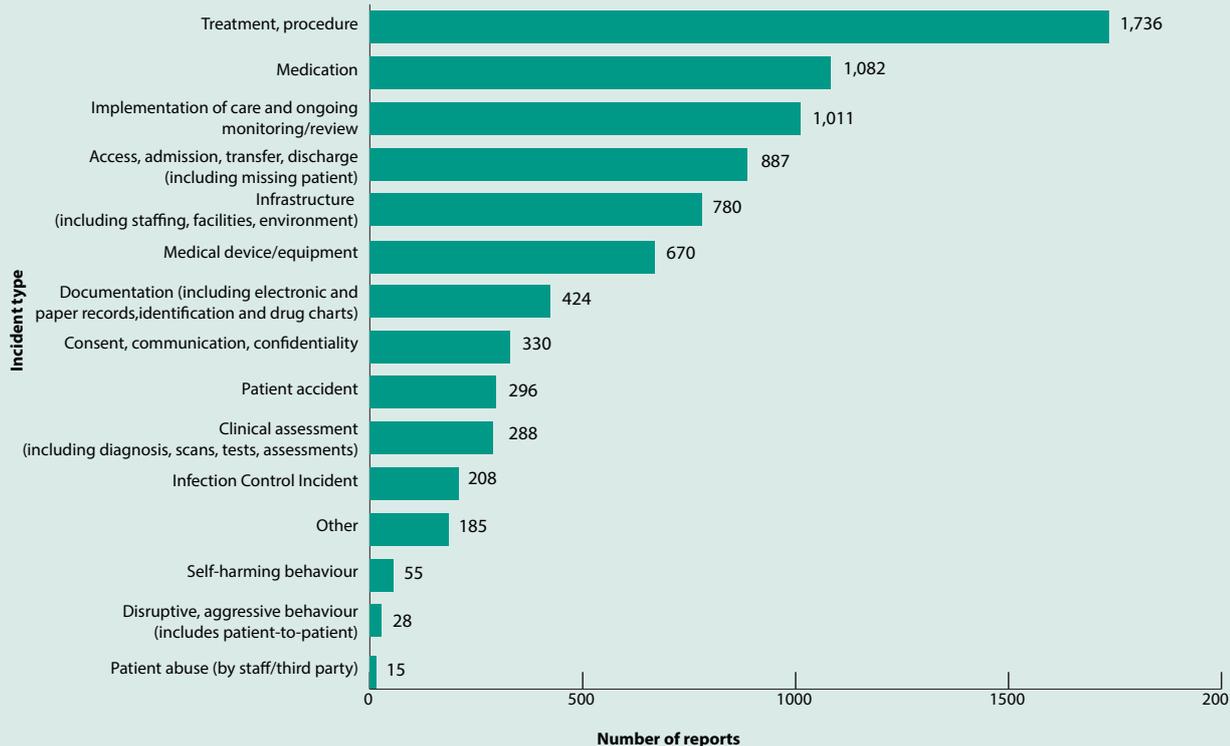


Figure 2 shows the type of incidents that occurred within the anaesthetic speciality that were reported using LRMS or the anaesthetic eForm for the period April – June 2015. The categories were determined at local level.

# LEARNING POINTS FROM REPORTED INCIDENTS

## April 2015 to June 2015

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 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](mailto:SALG@rcoa.ac.uk).

## MEDICATION ERRORS

*A patient had his intravenous cannula flushed with 0.25% levobupivacaine instead of normal saline during induction of general anaesthesia... total dose of levobupivacaine given was 3ml. The error was recognised when one of three ampoules of 0.25% levobupivacaine was discovered opened. The patient suffered no untoward effects... In this hospital normal saline for flushes is supplied in 10ml ampoules with green-topped labels... levobupivacaine 0.25% comes in individually wrapped 10ml ampoules with labels featuring a green stripe... two anaesthetists were on the list and one had removed the three levobupivacaine ampoules from the packets and placed them on a counter near to intravenous medications. The other anaesthetist then mistakenly took one of the ampoules, thinking it was normal saline and used it for flush...*

*Patient anaesthetised with TIVA (propofol and remifentanyl)... utilising TCI pumps. Anaesthetist noticed that BIS monitor indicated that the patient was not adequately anaesthetised and increased the effect-site concentration target to a higher level than what normal practice would be to achieve the desired BIS reading. The propofol pump stopped and the audible end-*

*of-infusion alarm sounded when there was still 10 ml propofol left in the syringe... the anaesthetist noticed that it was not the syringe the pump was programmed for... the box containing the 50 ml syringes was stocked up with the wrong type of 50 ml syringes. The ODP had loaded the syringes on the TCI pumps and the anaesthetist programmed the pumps assuming that the syringes were appropriate. The TCI pumps default to the syringe type last used and do not automatically recognise syringe type. The patient received 20% less intravenous anaesthetic agent than intended. The BIS monitor alerted the anaesthetist to this situation even before the error became apparent*

*Cardiovascular collapse/peri-arrest arrhythmias towards the end of an uneventful knee replacement under spinal anaesthetic, while local infiltration at operative site was in progress. Managed successfully as local anaesthetic toxicity as per AAGBI guidelines. On biochemistry later – L-Bupivacaine levels found to be 1.36 mg /L at 35 minutes after the event and 0.76 mg /L at 4 hours after the event... anaphylaxis ruled out... full recovery.*

*Patient (TBW=110 Kg) was on Lidocaine 1% IV at a rate of 18 ml/hr from about 8 hours... It was being used for pain relief for a laparoscopic subtotal colectomy.*

The cases above are examples of common medication errors in anaesthesia: drug swaps, dose-calculation errors and problems with TIVA, and add to the cases previously reviewed in the PSU ([June 2012](#)). In an editorial<sup>1</sup> Professor Mahajan states that drug errors remain in the top ten causes of overall mortality worldwide, and that they occur in approximately 1 in 133 anaesthetics. He identifies three guiding principles to reduce/minimise these errors: (i) reduce the complexity within a system, (ii) bring in redundancy and standardization, and (iii) double-check ampoules, syringes, doses, and equipment before use. Many errors could be avoided if guidance was better implemented.<sup>2</sup>

1. Mahajan RP. Medication errors: can we prevent them? *Br J Anaesth* 2011;**107**(1):3-5 <http://bjaoxfordjournals.org/content/107/1/3.full.pdf+html>.
2. Cousins D, Gerrett D, Warner B. A review of medication incidents reported to the National Reporting and Learning System in England over six years (2005–2010). *Br J Clin Pharmacol*. [www.ncbi.nlm.nih.gov/pmc/articles/PMC3477327/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3477327/)



## EQUIPMENT PROBLEMS

*After induction, patient was transferred from anaesthetic room into operating theatre and connected up to the anaesthetic machine and ventilator. Airway pressures were noted to be high according to the monitor readings, but no patient problems were identified. The soda-lime canister appeared to be wet on external view, and thoughts of it being waterlogged came to mind. The canister was quickly changed, and airway pressures immediately went down to normal range.*

*Neonate with cyanotic congenital heart disease, first day after having an aorto-pulmonary shunt... suffered an unexpected cardiac arrest after being bagged in 100% oxygen for a desaturation episode, possibly as a result of pulmonary over-circulation.*

*Patient anaesthetised for endovascular stenting of thoracic aneurysm with suspected aorto-oesophageal fistula. Intrathecal catheter inserted preoperatively for drainage of CSF... risk of post-operative spinal cord ischaemia. Patient transferred to recovery postoperatively... on arrival in HDU was found to have no sensation or movement below the waist. Neurological observations had apparently not been recorded in recovery due to patients' reduced conscious level and confusion. Intrathecal drain was not draining and appeared to have migrated out of intrathecal space.*



All three cases are disparate in their detail, but they demonstrate some of the risks when using equipment in patient care. In order to ensure safety, we need to understand how the equipment works and what to do when it goes wrong, be aware of the limitations of the equipment and recognise the correct circumstance for use.

Efficient use of low-flow anesthesia may lead to considerable water accumulation within the breathing system. This can cause obstruction to gas flow producing high airway pressures. Having a strategy to deal with such adverse events reduces stress and improves outcome<sup>1</sup>.

High concentrations of oxygen for cyanotic defects can cause an increase in pulmonary blood flow-leading to pulmonary overcirculation and right-heart failure. Targeted saturations for this type of patient are between 75% and 85%. A useful resumé of congenital heart disease and anaesthesia is referenced for further reading<sup>2</sup>.

Complex surgery often involves a multiplicity of post-operative supporting systems; cerebrospinal fluid drains (CSFD) are one such system used in neurosurgery and thoracic aortic surgery. Given the infrequent use of CSFDs, it is a challenge to ensure all care providers know and understand what to expect and look for<sup>3,4</sup>.

1. Arriaga AF et al. Simulation-Based Trial of Surgical-Crisis Checklists *N Engl J Med* 2013;**368**:246–53.
2. White MC, Peyton JM Anaesthetic management of children with congenital heart disease for non-cardiac surgery *Contin Educ Anaesth Crit Care Pain* 2012;**12**(1):17–22 <http://ceaccp.oxfordjournals.org/content/12/1/17.full.pdf+html>.
3. Field M et al. The safe use of spinal drains in thoracic aortic surgery *Interactive Cardiovascular and Thoracic Surgery* 2011;**13**:557–565. <http://icvts.oxfordjournals.org/content/13/6/557.full.pdf+html>.
4. Fedorow CA et al. Lumbar Cerebrospinal Fluid Drainage for Thoracoabdominal Aortic Surgery: Rationale and Practical Considerations for Management. *Anesthesia & Analgesia* 2010;**111**(1):46–58.

## EXPECTING THE UNEXPECTED

*Patient became acutely hypoxic, hypercapnic and acidotic despite optimal respiratory care with facemask CPAP. pH 6.97... proceeded to intubate... removed upper false teeth plate... inserted CMAC to attempt intubation... noticed a white material in the pharynx. After intubation, retrieved this object with Magill forceps. It was the adhesive tape that was used to secure the false teeth in place... it had become dislodged and caused airway obstruction.*

Inhaled foreign bodies are more commonly seen in children, although there are reports of inhaled /swallowed dentures in adults. Poorly-fitting dentures can be secured by additional fixative as described above. The adhesive requires to be actively wiped away on removal of the denture otherwise residue may be left in the mouth. Interestingly, Conlon's short study suggested that keeping dentures in place was better for face-mask anaesthesia. Perhaps pre-operative assessment questions about dentition should include one about fixative.<sup>1</sup>

1. Conlon NP et al The effect of leaving dentures in place on bag-mask ventilation at induction of general anesthesia. *Anesthesia and Analgesia* 2007;**105**(2):370-3.

## NEVER EVENTS

*Elderly gentleman admitted to A&E with abdominal and back pain... had a large pulsatile mass in the abdomen and CT angiogram confirmed a large abdominal aortic aneurysm... urgent open repair of abdominal aortic aneurysm... patient went to HDU. Three days later, patient noted to have increasing*

# LEARNING POINTS FROM REPORTED INCIDENTS

*abdominal pain and rising inflammatory markers... repeat CT scan carried out. Images reviewed... likely foreign body... swab left insitu. Booked for an urgent laparotomy. In hindsight, noted Signout of WHO checklist not done. However, on the register, documented swab counts correct.*

WHO form completed at each stage. Correct notes, x-ray and consent for the patient. Surgeon stated correctly which teeth to be removed. Incorrect tooth removed.

One of the actions from the Surgical Never Events Taskforce Report was to develop national standards for operating department practice which would support the development of local standardised practice. The National Safety Standards for Invasive Procedures (NatSSIPs) were published in September 2015 and are endorsed by the RCoA and AAGBI<sup>1,2</sup>.

1. NHS England Patient Safety Domain. Summary of the report of the NHS England Never Events Taskforce. February 2014 <http://bit.ly/1KvJ8VN>.
2. NHS England Patient Safety Domain National Safety Standards for Invasive Procedures. 07 September 2015 <http://bit.ly/1WdA3sW>.

## TRANSFERS – A HIGH RISK TIME<sup>1</sup>

*Patient arrived on transfer from acute medical unit; monitoring on though not attached to patient. Patient was unresponsive with no respiratory effort. Patient had no palpable pulse. Escorting staff nurse failed to notice patient was in cardiac arrest.*

1. Intensive Care Society Guidelines for the transport of the critically ill adult (3rd Edition 2011) [www.ics.ac.uk/ics-homepage/guidelines-and-standards/](http://www.ics.ac.uk/ics-homepage/guidelines-and-standards/).

## ROOT CAUSE ANALYSIS - IDENTIFY THE LEARNING

*Patient had an epidural in labour... some difficulty positioning for the epidural... had a spinal for LSCS (failure to progress). LSCS was uneventful. Three days later, informed that patient needed follow-up as she was dragging her right leg while walking. The case was discussed and presented at Clinical Governance meeting... Outcomes considered were: consideration of reviewing anaesthetic interventions, follow-up after patient mobilisation at Clinical Governance meetings, raise awareness and remind the anaesthesia team regarding skin antisepsis for central neuraxial blockade. Develop guideline for management of patients with neurological symptoms following obstetric neuraxial procedures.*

*I was asked to help in securing the airway as the anaesthetist had failed... informed by the anaesthetist that he had failed to intubate due to some obstruction at the glottic level and the patient had been hypoxic for more than 20 minutes and had a cardiac arrest... patient was being resuscitated and another anaesthetist was trying to secure the airway by a percutaneous tracheostomy... eventually I did a crash tracheostomy in the anaesthetic room. Patient had been seen in the ENT clinic and had been diagnosed with a growth in the glottis which was evident on the CT scan confirming a very narrow airway (notes available on the e track) thus making this case a typical difficult*

*airway which needed to be managed through a Difficult Airways Protocol – which involves:*

1. *Recognising the problem before induction is attempted.*
2. *Involving ENT team at the pre-set.*
3. *Making sure proper equipment is available, including ventilating bronchoscopes, laryngoscopy and tracheostomy sets.*
4. *Discussing the matter at the pre-op briefing meeting.*
5. *Anaesthetising the patient in the theatre with the airway team present to deal with any eventualities, rather than attempting to intubate in the anaesthetic room by the anaesthetist on his own.*
6. *Recognising the airway problem in the pre op visit. Such situations could be avoided in the future by early recognition and proper communication between the various teams.*

Incident reporting to the NRLS is one step in addressing patient adverse events. There is opportunity to update the information by adding detail of local event analysis. This can be further information from department case review or Morbidity and Mortality meetings, or from more formal significant event analysis. In all these processes, root cause analysis (RCA) can provide a structured approach to help identify learning. NHS England Patient Safety Domain provides a link to an RCA resource centre.<sup>1</sup>

1. [www.england.nhs.uk/ourwork/patientsafety/root-cause/](http://www.england.nhs.uk/ourwork/patientsafety/root-cause/).

## ADAPTING TEAM BRIEF

*Unable to admit patient to critical care post op due to lack of critical care capacity. Immediate need for renal replacement therapy, and unable to deliver outside of unit in theatre recovery. Patient too unstable for transfer.*

*Historically, patient's name spelt incorrectly on all notes. On this admission name spelling was corrected, but notes not changed and documents for this admission had a mix of spellings. Full WHO check list followed, discrepancy found at check of blood products. Policy followed and blood returned to lab with samples with original spelling. Delay in obtaining new blood products, no flying blood available in department as fridge not in use, delay in treatment of blood loss and coagulopathy.*

Use of the surgical patient safety checklist is an established part of theatre working today<sup>1</sup>. The original document serves as a template for local adaptation and implementation. When resources are anticipated to affect patient care it may be useful to raise this pre-emptively during the team brief.

1. World Alliance for Patient Safety. WHO surgical safety checklist and implementation manual <http://bit.ly/1fHMDZm>

## SWISS CHEESE – CONSERVATIVE FLUID MANAGEMENT IN THE SEATED ANAESTHETISED PATIENT

*The operating surgeon had completed the bone cuts and was trialling the prosthesis for a shoulder replacement when more bleeding than expected occurred. The surgeon managed to stop the bleeding... following a total blood loss of 1200-1600 mls a large bore cannula was inserted and conservative fluid balance was commenced. However the patient continued to deteriorate, with a drop in saturations and blood pressure. Emergency medications could not raise the patient's blood pressure, which was followed by a loss of cardiac output.*

The physiology and risks of the anaesthetised sitting patient are well recognised<sup>1</sup>. Permissive hypotension has been shown to be an effective management technique to manage hypovolaemic hypotension in the trauma setting<sup>2</sup>. Additional risk may be encountered when extrapolating study findings beyond the study population.

1. Beecroft CL, Coventry DL. Anaesthesia for shoulder surgery *Contin Educ Anaesth Crit Care Pain* 2008;8(6):193-198. <http://bit.ly/1QvKXX2>.
2. Morrison CA et al. Hypotensive resuscitation strategy reduces transfusion requirements and severe postoperative coagulopathy in trauma patients with hemorrhagic shock: preliminary results of a randomized controlled trial. *Journal of Trauma* 2011;70(3):652-663.

## NCEPOD GUIDANCE – GI HAEMORRHAGE

*Patient admitted to A&E with history of melaena and collapse... known alcoholic liver disease. Hypotensive, lactate of 12... referred to medical team. SHO review 2 hours later. Likely upper GI bleed diagnosed. Patient given omeprazole and scope requested for the next day. UGI bleed pathway not found in notes. Patient transferred to EAU. MEWS 7 on arrival. Next medical SHO review 6 hours later. Reviewed again 5 hours later by which time the MEWS was between 9 and 19. First senior input (medical registrar) 14 hours after admission. Lactate now 22 and MEWS consistently over 10. ITU contacted and attended in 15 minutes. Patient accepted for stabilisation but no beds on critical care. Patient had cardiac arrest 1 hour later. Resuscitated and transferred to theatre. Major haemorrhage protocol activated during arrest - offered 2 units o-neg, further phone calls required to arrange products. Surgical SPR cannot scope... second surgical SpR identified bleeding duodenal ulcer... injected, haemostasis achieved. Patient acidotic with pH 6.9, lactate 19, hyperkalaemic, in AKI. Patient went into DIC... decision made that further treatment was futile. Patient died...*

NCEPOD have published the report of the GI haemorrhage study entitled 'Time to get control'. The report has six principle recommendations that acknowledge the less-than-satisfactory care afforded to many such patients<sup>1</sup>.

1. National Confidential Enquiry into Patient Outcome and Death. Time to Get Control? A review of the care received by patients who had a severe gastrointestinal haemorrhage. 2015 <http://bit.ly/1V87sD0>.

## APPENDIX: INCIDENT DATA SUMMARY

A total of 7995 anaesthesia-related incidents were reported during the specified time period. Nine incidents were reported using the anaesthetic eForm; two (22%) of these incidents were reported to the National Reporting and Learning System (NRLS) within one day of occurrence. Zero (0%) of the incidents reported to the eForm were reported as 'near miss' (harm was prevented from reaching the patient). 7986 incidents were reported using Local Risk Management Systems (LRMS); 168 (2%) of these incidents were reported within one day, and 4265 (53%) were reported more than 30 days after they had occurred. Of the incidents reported via LRMS, 1213 (15%) 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.*

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