



PATIENT SAFETY UPDATE

July–September 2019



LEARNING POINTS FROM REPORTED INCIDENTS

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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 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

Misadministration of potassium

"Crash call was activated at 21:35... The nurse said that patient was arrested and team started CPR... The nurse told me that something wrong happened with the infusion pump, as she set potassium 40 mmol to run over 1 hour. However, the potassium finished within short time less than 10 minutes. So, she had removed the pump as she thought that might be pump faulty. When I have checked the infusion pump machine, I noticed that pump (that designed to be used in ICU only) parameter set on 40 mmol / 1000 ml instead of choosing 40 mmol / 100ml. So 100ml run within less than 7 minutes... There was no 40 mmol / 100 ml option to choose from. There were only two options: 40 mmols / 1000ml and 40 mmol / 500ml which is not likely to see on our ICU pumps that I think it is software error."

As we increasingly rely on electronic systems for prescribing and delivering drugs using programmed recipes, vigilance

against this kind of error will become ever more important. It highlights the importance of robust system design and also of visually checking prescriptions and recipes even when presented from a selection on screen. This is especially important where a particular drug may be prepared and/or administered in very different ways according to the clinical scenario. Potassium, as here, is one example. Whatever the environment, medical devices should only be used by personnel who have been trained in their use. Whenever a device related incident such as this occurs, it should be reported to MHRA using the online [Yellow Card scheme](#) for devices.

Use of incorrect blood test to monitor anticoagulation

"Patient admitted having been found on the floor at home with a "long lie" [long duration before being found]. Found to have an intracerebral haemorrhage and extensive venous sinus thrombosis. Decision to anti-coagulate with a heparin infusion as treatment for venous sinus thrombosis. Overnight monitoring for heparin levels undertaken by measuring anti-Xa levels (reported on e-record as "heparin assay") but the prescription form used had the protocol for APTR monitoring. (There are two different forms - heparin infusion for anti-coagulation uses anti-Xa levels and heparin for renal replacement therapy uses APTR monitoring). Consequently, the heparin dose changes were incorrect as they were using the anti-Xa levels but following the APTR protocol. The patients was over-anticoagulated and had an extension of their intracerebral haemorrhage."

There is a message here about system design. Although the primary error appears to be operator error, the existence of two parallel systems for measurement of heparinisation makes this kind of error a likely eventual outcome. Careful consideration of human factors in the design of the requesting and reporting system could minimise the chance of this kind of error.

Wrong side block

"Wrong site interscalene block was performed using ultrasound on a patient scheduled for left shoulder surgery. I had performed pre-op assessment and explained the risks and benefits of interscalene block... We got patient into the theatre, checked the patient appropriately. I induced the patient, intubated, checked capnograph and tube position. I then positioned the patient for block i.e. head and chest up. I was then awaiting ultrasound machine to come to my

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theatre. During this time I noticed capnograph trace going flat and SpO2 probe had come off. I started bagging the patient to check the tube. I called ODP to sort out machine dysfunction. ODP called for other ODP, decision was taken to change the machine. Second ODP was bagging the patient. As patient was stable, to save further delay, I did the block and this was mistakenly done on wrong side as didn't check correctly."

This story is a potent reminder of the risk of error in the presence of distractions and in chaotic situations. It is not clear whether a 'Stop Before You Block' (SBYB) check was done; the story reminds us that SBYB only helps if it is remembered and is only of value if performed immediately before the block. If distractions occur, SBYB must be repeated. An engineered solution would be the ideal, but designing this is challenging. The Healthcare Safety Investigation Branch has examined the problem of wrong site blocks¹ and as a result of its recommendations, the Royal College of Anaesthetists (RCOA) has established a specialist working group to evaluate the current practices used to reduce wrong site block incidents.

1. hsib.org.uk/investigations-cases/administering-wrong-site-nerve-block

Intravenous injection of bupivacaine

"While attempting to cannulate patient in theatre anaesthetic room, the cannula was partly in the vein and the anaesthetist manoeuvred the cannula to get it in the vein. To confirm its location the anaesthetist got a full 20ml syringe and injected into the cannula. It was in the vein and [anaesthetist] proceeded to empty the syringe into the vein. Within a very short time the patient began to fit, at first it was unclear why. The ODP got some midazolam at the request of the anaesthetist. Then the anaesthetist said it was a drug error and the emergency button was pressed. The anaesthetist was thinking they had inadvertently injected bupivacaine into the vein. Help arrived and the local anaesthetic overdose protocol was initiated"

Always keep local anaesthetic syringes segregated from those containing intravenous drugs. Always label syringes carefully and clearly.¹ Always read the label on the syringe before injecting. When NRFit systems are available for all neuraxial applications (which is expected to be imminently), this will offer an engineered barrier to this kind of syringe swap error.

1. rcoa.ac.uk/gpas/chapter-3#section-2.5

Tracheal tube change in intensive care #1

"[Out of hospital] VF arrest. 6 days into admission. Clinical parameters and early investigations suggestive of poor neurological recovery. MRI brain was requested to help aid neuro-prognostication. To facilitate MRI, it was deemed that the PneuX endotracheal tube required changing. A decision to electively change this tube was made during the day, but unfortunately this was unable to be performed until later that night. The patient at this time was on FiO2 0.65, and was being treated for a worsening Klebsiella [ventilator associated pneumonia]. The tracheal tube change was performed by intermediate and senior intensive care trainees, under local consultant supervision. It was performed utilising a bougie for 'rail roading'. Unfortunately there was a delay in being able to secure a new definitive airway. The patient rapidly desaturated, and had a subsequent hypoxaemic arrest, lasting circa 10 mins. ... Following this event, the LV was again severely impaired on bedside echo - worsening gas exchange. Ultimately resulting in proning... Worsening vasopressor requirement - it is unknown what further effect this had on underlying hypoxaemic ischaemic encephalopathy. This patient failed to improve, slow insidious increase in vasopressor requirements. Oligoanuric renal failure. Ultimately [withdrawal of life-sustaining treatment]..."

Given the patient's clearly poor condition, there are questions around the timing of the tube change and around the skill mix employed. It is not stated whether a direct laryngoscopy was performed first; a poor view would be a strong reason for planning for a difficult airway or considering a different approach. Although the ultimate outcome would not clearly have changed, it may have been better to adhere to the original plan of an elective daytime tube change and to have senior staff directly present

Tracheal tube change in intensive care #2

"The patient had one week of a sore throat... had known diabetes mellitus, but [was] not compliant with prescribed medication, so diabetes was poorly controlled... presented after vomiting and being generally unwell in emergency department, admitted with neck necrotising fasciitis and later required surgical treatment for extensive resection of muscles and skin. Since first surgery... was in the intensive care unit, ventilated and with supported blood pressure... had another 3 surgeries, another debridement, then tracheostomy and finally reconstruction surgery in the left side of neck and upper chest. Stabilised and ventilator support was improving. Had a partially dislocated tracheostomy tube, so the air was leaking and it was not possible to suction airways properly. Change of the tracheostomy was difficult, for a period of time

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the access to airways was lost and the patient [developed] pulseless electric activity cardiac arrest. During resuscitation the access to airways was established and returned to spontaneous circulation. But after 10 minutes had another cardiac arrest not responding to prolonged resuscitation (50 minutes) despite secured airways. After 50 mins the CPR was ended and the patient confirmed dead."

NCEPOD's review *On the Right Trach?* and The National Tracheostomy Safety Project (tracheostomy.org.uk) have provided guidance on all aspects of tracheostomy care, including on change of tracheostomy.^{1,2} Given the patient's background and history, perhaps the tracheostomy change would have been better done in the operating theatre with the presence of an ENT operating team.

1. ncepod.org.uk/2014report1/downloads/OnTheRightTrach_Summary.pdf
2. tracheostomy.org.uk/storage/files/Tube%20changes.pdf

Misplaced naso-gastric tube

"Patient admitted acutely unwell to emergency department. Past medical history of learning difficulties. NG tube inserted in ED - documentation regarding this poor. Patient transferred to CCU for respiratory support for aspiration pneumonia... NG tube incorrectly positioned in left main bronchus with perforation of pleura."

This case has been reported in previous issues of PSU and has been the subject of an NHS Alert¹ and a recent Report to Prevent Future Deaths, published by the Chief Coroner.² There need to be clear procedures in place in organisations for checking placement of NG tubes before they are used. It is not stated whether or not this NG tube was used before detection; if so, this would have constituted a Never Event (specifically, misplacement of a naso- or oro-gastric tube in the pleura or respiratory tract that is not detected before starting a feed, flush or medication administration).

1. england.nhs.uk/publication/patient-safety-alert-nasogastric-tube-misplacement-continuing-risk-of-death-and-severe-harm/
2. judiciary.uk/wp-content/uploads/2020/01/Colin-BEAUMONT-2019-0449_Redacted-1.pdf

Transfer

"Patient transferred from [district general hospital] to [referral unit] for permanent pacemaker. Isoprenaline running prior to transfer. I was contacted as non-interventional consultant on call that the patient had arrived moribund and [was] peri-arrest on arrival and a [medical emergency team] call was put out. The isoprenaline is reported as being capped at the wrist and NOT running on arrival to CCU. The patient was resuscitated. The nurse transferring the patient was unable to give a handover and repeatedly stated that she knew nothing about the patient. It transpired that a [do not resuscitate] form was in place. ABGs showed a lactate that would not support life and the isoprenaline was restarted but with a plan that if the patient deteriorated further, they were for palliation. Unfortunately, the patient passed later in the early morning."

Although not strictly related to anaesthesia, it is possible that in some smaller units, members of the anaesthesia or critical care team may be used to prepare or accompany such patients for transfer. There are questions in this story about the appropriateness of transfer and around the lack of familiarity of the escort with the patient. The Intensive Care Society has produced guidance on transferring critically ill patients in *Transfer Of The Critically Ill Adult*¹ that could have helped guide the team in this case.

1. ics.ac.uk/ICS/ICS/GuidelinesAndStandards/ICSGuidelines.aspx

Reliable communication of abnormal test results

"Patient underwent a routine stage 1 combined approach tympanoplasty for cholesteatoma. The disease was extensive and the surgery was difficult and long, but no untoward introp complication was noted... Patient re-presented to A&E with confusion and agitation on the evening... underwent a CT head and mastoid on [day 1]... This was reported by... consultant radiologist... there is no comment on any intracranial complication, just a small skull base defect... [Review by treating team] suggested likely cause is possible meningitis or meningoencephalitis and following discussion with microbiology, appropriate antibiotics were commenced... Patient became increasingly agitated and was admitted to ITU on [day 2]. A repeat CT head was performed... and reported as follows 'The previously noted left temporal haematoma shows increase in size...' I telephoned to explain that no such previous comment had been made in the report, nor had the ENT or any other teams treating patient. Therefore, the first we were aware of any haematoma was at time of second scan... [Radiologist] explained that an additional report had been generated commenting on the finding. When I explained that no one in the trust had received this report or had been informed

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verbally or by email, he suggested that there must be a problem of IT and to enquire with them as to why this report was not made available... My concern is that the failure to provide information on the subtle temporal bleed... has resulted in a 48-hour delay in transfer of care to neurosurgery at [referral centre]."

The closing sentence encapsulates the concern here. HSIB have examined the issue of the communication and follow up of unexpected findings¹ and has recommended that the Royal College of Radiologists, working with others, works to develop: principles upon which findings should be reported as 'unexpected significant', 'critical' and 'urgent'; a simplified national framework for the coding of alerts on radiology reports and a list of conditions for which an alert should always be triggered, where appropriate and feasible to do so. The Royal College of Pathologists has also examined the issue.² In the coming era of widespread electronic communication of patient information, it is likely that systems will evolve to ensure safe delivery of vital updates.

1. hsib.org.uk/investigations-cases/communication-and-follow-up-unexpected-significant-radiological-findings
2. rcpath.org/asset/BB86B370-1545-4C5A-B5826A2C431934F5

Hydrogen peroxide

"Patient had a cardiac arrest on – table possibly secondary to air embolus from hydrogen peroxide."

It is not stated where the hydrogen peroxide was being used. Gas (not air) embolus is a recognised complication of its use. The MHRA has issued very clear advice: "Do not use hydrogen peroxide during surgery - it is contraindicated for use in closed body cavities or on deep or large wounds due to the risk of gas embolism". Sometime it falls to the anaesthetist to remind theatre teams of this occasionally forgotten advice.¹

1. gov.uk/drug-safety-update/hydrogen-peroxide-reminder-of-risk-of-gas-embolism-when-used-in-surgery

Retained guidewire

"Contacted by anaesthetic consultant - informed that patient has had insertion of a right femoral line in ITU 2 days ago. A day later, had insertion of naso-gastric tube - chest X-ray showed a retained wire (presumably the introducer wire from the femoral line procedure) across the heart in the SVC. Now, two days later patient had CXR and pelvic X-ray which show retained foreign body, appearing to be the whole wire extending from the right side of the neck to part of the right femoral line. He wanted to have patient retained wire removed"

This is a reminder of the continuing need for effective barriers to the Never Event of retained guidewire, which

remains an issue in clinical practice. A true barrier would be an engineered solution, a physical constraint that prevents the guidewire being fully threaded. Other 'barriers' maybe effective, but it must be recognised that they may only alert to the retention of the guidewire after it has been retained (although they may permit immediate rather than delayed measures to retrieve the guidewire). NHS guidance on National Safety Standards for Invasive Procedures (NatSSIPs)¹ says: "Organisations must have LocSSIPs in place to ensure the accurate reconciliation of items used during all invasive procedures". Reconciliation of items during central venous line insertion should be subject to the same standard as, say, a swab count in theatre. This story also reminds us that a retained guidewire may go un-noticed on x-rays that are taken for other purposes: you may only see what you are looking for.

1. england.nhs.uk/wp-content/uploads/2015/09/natssips-safety-standards.pdf

Important omission in handover

"Received patient back from theatre and commenced post-operative observations by day staff. I then took over the patient's care as part of the night team, another set of obs were commenced at 20:15. It had taken 15 minutes to obtain obs. This is when I noticed the deterioration in the patient and followed the escalation policy due to the patient's NEWS score of 7. Patient deteriorated again, became unresponsive so a HIT call was put out. After this event had taken place, I overheard anaesthetic doctor saying patient had peri-arrested in theatre. This information was never handed over from theatre staff to myself. I had no idea how poorly the patient was and the event that had taken place during theatre."

Recovery and ward staff rely on clear and full information to help them interpret patient physiology in context and make the right decisions during the post-operative phase. Clear guidance as to what information should be included at post-procedure handover, is given in the NHS's NatSSIPs safety standards¹ and in the RCoA's Guidelines for the Provision of Anaesthesia Services (GPAS).² This includes routine information as well as information on 'Any patient safety incidents', which would surely include this patient's peri-arrest state in theatre. It is not clear whether the delay mentioned in obtaining observations was because of staffing, workload, or because of difficulty and persistence in trying to obtain vital signs in the presence of poor peripheral perfusion; each one of these carries its own message.

1. england.nhs.uk/wp-content/uploads/2015/09/natssips-safety-standards.pdf
2. rcoa.ac.uk/gpas/chapter-4

Timely discussion of results

"... patient admitted to [district general hospital]. CT brain showed a large MCA infarct, after developing unilateral dilated pupil. CT showed midline shift, mass effect and progression of ischaemia. This patient was not considered a candidate for thrombolysis or thrombectomy, therefore intubated, ventilated and transferred to [referral centre] for decompressive craniectomy. CT scan reported at 01:30 but not discussed with [referral centre] until mid-morning. Arrived [referral centre] mid-afternoon. Transferred to theatre on arrival but noted to have fixed dilated pupils. Decision taken not to proceed with craniectomy. Treatment withdrawn 24 hours later after discussion with the family. Family were not happy with the care and requested referral to the coroner. Post mortem undertaken. Possible missed opportunity to discuss with [referral centre] after the initial CT at 01:30. The case was referred to the Coroners officer at the request of the family."

Whilst it is not known whether earlier transfer would have affected the outcome, there seems little argument for performing imaging at 01:30, with all of the organisational and workforce impact that implies, only to wait nine hours before discussion with the referral centre.

