The Faculty of Intensive Care Medicine

Safety Bulletin

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Introduction

Through a data sharing agreement, the Faculty of Intensive Care Medicine can access a record of incidents reported to the National Reporting and Learning System (NRLS). Available information is limited and from a single source; all that we know about these incidents is presented in this report. The *Safety Bulletin* aims to highlight incidents that are rare or important, and those where the risk is perhaps something we just accept in our usual practice. It is hoped that the reader will approach these incidents by asking whether they could occur in their own practice or on their unit. If so, is there anything that can be done to reduce the risk?

Case 1 | Empty oxygen cylinder

A ventilated patient suffered a significant period of hypoxaemia, caused by an empty portable oxygen cylinder.

Comment

An empty cylinder at the point of use was one of the issues highlighted in this patient safety alert concerning oxygen cylinder safety. The best practice guidance referenced in the alert was issued by NHS England as a result of pressures on the NHS to support providers to optimise and maintain the safe use of oxygen cylinders.

It is unclear whether the cylinder was empty when connected or ran empty, but when did you last calculate the oxygen requirements for a transfer within the hospital (allowing for double usual transfer time and an fiO2 of 1.0)? For most of us, we know that a full CD cylinder (460L) is more than enough so go with that, but what if a full cylinder isn't available? Would you be happy with half full or a quarter? Do you know what the bias flow is for your transport ventilator, and if it displays oxygen consumption, where to find it?

Case 2 | Misplaced chest drain

A patient became unstable hours after insertion of a right sided chest drain. A CT demonstrated a subcapsular liver haematoma with the drain in the abdominal cavity.

Comment

We continue to see incidents of harm caused by misplaced chest drains. The authors of this BMJ case series interrogated the NRLS (the reporting system also used for the Safety Bulletin) for incidents resulting from pleural intervention in the four years following this safety alert. 17 cases of organ puncture were identified, the majority of which (13) were punctures of the liver. The authors attribute this harm to under-utilisation of ultrasound, which is recommended by the British Thoracic Society for all drainage involving fluid.

If the drain is inserted into the liver, it is possible to canulate hepatic vessels, and even for the drain to reach the right ventricle. Management options vary for this rare complication, but early recognition and drain clamping can be lifesaving.

Case 3 | Transfer delay

A patient was awaiting transfer to another hospital for rib fixation, but no ICU bed was available. Unfortunately whilst waiting for several days, the patient developed a ventilator associated pneumonia and was deemed unfit for surgery.

Comment

Rib fixation is not an emergency procedure (in the RCT supporting the NICE guidance, patients were randomised at five days) but patients requiring urgent procedures can suffer by being unable to wait for an elective procedure, yet not being given the same priority as emergencies. Locally agreed pathways and continued open dialogue are essential, but it is also ideal to set a timetable of agreed actions in case of capacity limitation at the point of acceptance to ensure any delay is actively managed.

Case 4 | Radiofrequency burn

A patient sustained a burn from an arterial line transducer cable in an MRI scanner.

Comment

Radiofrequency burns are the most common harm associated with MRI scanning. Padding was placed, but it was deficient. The report also highlights a doctor "insisting" on placement of the arterial transducer on the arm, where it would not normally be. It may be that when stressed in an unfamiliar environment, the doctor became less able to be open to suggestion or advice; something we should all be aware of.

In 2019, guidelines for the care of the anaesthetised patient in MRI were produced by the Association of Anaesthetists and the Neuro Anaesthesia and Critical Care Society of Great Britain and Ireland. The supplement includes a modifiable checklist for use in critical care.

Case 5 | Unfamiliar equipment

A defibrillator was used for attempted DC cardioversion. The second shock was delivered unsynchronised. None of the team members present (two nurses, one CCOT nurse and four doctors) were aware that the defibrillator deactivates the sync function after a shock is delivered.

Comment

Nearly 30 years ago, variation in defibrillator function after a syncronised shock was highlighted as a potential hazard. The industry standardisation that was suggested has not happened, so whilst some defibrillators remain in synchronised mode after a shock is delivered, many do not.

This report highlights the need to be familiar with all equipment used, particularly in an emergency. Perhaps more so, however, it highlights that having more people doesn't always make a situation safer. Perhaps everyone thought someone else was responsible for checking that synchronisation was selected? Or did someone want to speak up but didn't feel able to?

Case 6 | Ventilator circuits

When replenishing the fluid in a humidified ventilator circuit, the nurse found that the completed fluid was 0.15%KCl in 0.9%NaCl rather than water. The patient had been noted to experience hiccups.

Comment

This incident is a manifestation of Murphy's Law, and a reminder that care must be taken when administering drugs via any route. The FICM has recently published 'Breathing circuits: A resource for designing local guidance' to guide improvements in ventilator circuit safety.

Case 7 | Calcium prescribing

A dialysis machine was programmed for an infusion of calcium gluconate but calcium chloride was given, resulting in persistent hypercalcaemia.

Comment

We have previously highlighted the risk of underdosing in severe hyperkalaemia if calcium gluconate is used. This issue highlights an opposite issue. Calcium scores a near full house in terms of potential error when prescribing. Firstly, as with this error there is the hazard of different salts. In addition, we also commonly refer to a volume rather than a dose, and different concentrations are available. It is little wonder confusion and errors occur. The following table compares the available intravenous preparations:

Preparation	Calcium content (mmol) per 10ml	Calcium content (mg) per 10ml
Calcium Chloride 10%	6.8	273
Calcium Chloride 14.7% (Prefilled syringe)	10	401
Calcium Gluconate 10%	2.2	93

Case 8 | Retained swab

A swab used for cleaning tracheostomy inner cannulas was identified during a bronchoscopy. The swab was subsequently removed.

Comment

This patient had a variable flange tracheostomy in situ, with a non-transparent inner cannula. A retained swab would not therefore be visible (the swab was also shorter than the inner cannula). Once the cannula had been placed, it is likely that a suction catheter displaced it further into the airway.

In response to this incident, existing swabs were removed from stock and replaced with swabs longer than the inner canulae. Awareness was also raised amongst the team.

Safety News

In Safety Bulletin 11, we reported on the work being done by the Faculty of Pain Medicine regarding the risks of prolonged risk opioids being used for acute pain. The MHRA have released a drug safety update, highlighting that the indication of the treatment of post-operative pain has been removed from the licences of all prolonged release opioids. This is due to an increased risk of persistent post-operative opioid use (PPOU) and opioid-induced ventilatory impairment (OIVI).

The MHRA have published a Class 2 Medicines Recall regarding some units of BD ChloraPrep Clear - 1mL applicator that exhibited an open seal on the packaging of the applicator. This defect could increase the risk of the applicator device being contaminated with pathogens.

Updated LocSSIPs Published

The FICM and ICS have published revised Local Safety Standards for Invasive Procedures (LocSSIP) checklists.

The checklists focus on those procedures, which are commonly performed in ICUs and have been designed to enable departments to use and adaprt them to make them unit specific. The procedures include:

- bronchoscopy
- central venous catheter insertion
- intercostal chest drain insertion
- intubation
- tracheostomy insertion

First produced in 2017, these updates take into account learning from reported patient safety incidents, some of which have been associated with considerable morbidity and mortality. The publication of NatSSIPs 2 has been acknowledged during the update.

Get involved

We also invite you to submit anonymous summaries of incidents or near misses that have lessons that we can learn from. If you wish to do so, please get in touch via contact@ficm.ac.uk.