

# Safety Incidents in Critical Care

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## Introduction

Through a data sharing agreement, the Faculty of Intensive Care Medicine (FICM) 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 | Imaging

A patient on the ICU had a CT scan due to a distended abdomen and fevers. No abnormality was identified. Three days later, a CXR was performed for nasogastric tube (NGT) confirmation. There was air under the diaphragm, which was not noticed. The next day, free air was identified on a repeat CT. The patient underwent a laparotomy for an ischaemic perforation of the colon. Re-review of the initial CT suggested findings in keeping with large bowel ischaemia.

### Comment

There is always a risk that we raise the accuracy of an imaging opinion to an unrealistic standard. Particularly in cases of possible ischaemic bowel, a 'negative' CT report unfortunately cannot rule out pathology if clinical concern remains. [Click here for a review of the radiological challenges in the diagnosis of ischaemic bowel.](#)

The interpretation of the CXR was possibly an example of inattention bias (essentially, not seeing something when you're looking for something else). This is well reported in radiology; in this [classic study](#), radiologists failed to notice gorillas hidden within CT images. Clinically relevant findings can also be missed, as shown by [this study](#), and [we are not immune](#) when reading reports.

## Case 2 | Central Venous Access

A central line was inserted under ultrasound guidance into the right internal jugular vein. A CXR was not immediately performed, nor was the line transduced. A later CXR, performed for a different indication, showed the line crossing the midline. When subsequently transduced, the pressure waveform as well as blood gas analysis, confirmed intra-arterial placement.

### Comment

Confirmation of adequate line placement can be performed by [ultrasound](#) or CXR, and a debate will no doubt continue for many years about which is better. The use of ultrasound to aid insertion has been [recommended by NICE](#) since 2002.

With regards to CXR, a right sided central line should not cross the midline. A left sided line should always cross the midline unless there is a [left sided SVC](#). A tip approximately [7mm above the carina or 16mm below](#) is likely to be sited in the SVC, and the CXR should be inspected for a pneumothorax.

Transducing the line and/or performing a blood gas analysis are low cost and straightforward interventions to improve safety.

## Cases 3 and 4 | Nasogastric Trauma

Difficulty was encountered siting an NGT, requiring several attempts. It was noted at endoscopy that the NGT had perforated the oesophageal wall. The tube was repositioned, antibiotics and antifungals prescribed and TPN ordered.

An NGT was inserted, but identified to be misplaced into the right lung on CXR. The tube was removed, but there was respiratory deterioration (nothing had been administered via

## Comment

Nasogastric tube insertion is an extremely rare cause of oesophageal perforation in adults; the most recent [case report](#) is from 2014. In terms of management, the World Society of Emergency Surgery published [guidelines on esophageal emergencies in 2019](#).

In [this](#) prospective single centre study, 2% (14/740) of NGTs were within the respiratory system on CXR, with five resulting in a pneumothorax. Interestingly, prior to the CXR a 'whoosh test' was routinely performed; perhaps contributing to the trauma. Of note, the MHRA highlight that a 'whoosh test' must never be performed in [this patient safety alert](#).

Both cases remind us that an NGT might not be where you think it is; confirmation of position is vital. If a misplacement has occurred, it is important to identify it early. The relevant case reports highlight that misplacement often followed several attempts at insertion. Should difficulty be a prompt to change technique, equipment, or operator?

## Case 5 | SGLT-2 Inhibitor Associated Diabetic Ketoacidosis

A patient with type 2 diabetes was admitted to critical care after undergoing a Whipple procedure (pancreaticoduodenectomy). Canagliflozin had been omitted on the day of surgery and the first two postoperative days. On day four diabetic ketoacidosis was diagnosed, thought to be due to the combination of Canagliflozin and major surgery.

## Comment

The [European Medicines Agency](#) and the [MRHA](#) both recommend withholding SGLT2 inhibitors ('flosins') during major surgery or severe illness due to the risk of euglycaemic or hyperglycaemic ketoacidosis. An additional risk factor in this patient may have been reduced insulin secretion [due to the nature of the surgery](#) (type 3c diabetes). In general terms, the MRHA advise re-starting SGLT-2 Inhibitors once the patient's condition has stabilised, but also to monitor ketones. Any adverse reaction should be reported via the [yellow card system](#).

## Case 6 | Chest Drain Clamps

A patient suffered a cardiac arrest. During advanced life support, it was noted that the chest drain that had been inserted that morning had been clamped. The clamp was removed, and a return of spontaneous circulation was achieved soon after.

## Comment

Whether a chest drain should be clamped before removal remains controversial. The revised British Thoracic Society guidelines on pleural procedures are due to be published soon, but the consultation document raised the issue as a research question. The risk is that a patient deteriorates due to re-accumulation of a pneumothorax, but the clamp is not removed. The clamp is usually well below the eyeline so is easily missed. This risk is avoided if drains are not clamped, however by definition these are the same patients in whom a removed drain would need to be reinserted. Perhaps, [as with the presence of a throat pack](#), a visual prompt would be useful?

## Case 7 | Where's the drain?

A postoperative surgical drain had been shortened and covered with a stoma bag. On inspection, the drain had retracted into the abdomen. There was no mention in the patient record that a safety pin was used to prevent retraction as would be usual practice.

## Comment

Best practice would be for the length of drainage tubing to be recorded and regularly checked. Particular care should be taken with any patient movement to prevent dislodgment, and patients should be informed of the need to be careful of their own drains where possible.

The use of a safety pin could have presented its own issues, so a suture is preferable. Safety pins can cause pressure damage and risk a sharps injury. The drain could also be damaged if punctured by the pin.

**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](mailto:contact@ficm.ac.uk).**

## News from the MRHA

The MHRA has issued [updated advice](#) that Philips Respironics V60 and V60 Plus non-invasive ventilators must be permanently removed from use.

The MRHA also wished to remind healthcare professionals that [accidental use of glucose-containing solutions as flush fluid for arterial lines may contaminate blood samples](#) and result in falsely high glucose readings. They suggest the use of 0.9%NaCl as flush fluid, and that pressure infusion bags with clear panels are used to ensure that the fluid label is visible at all times.

Finally, we are also reminded that 3x10ml vials of calcium gluconate are required to reach the dose equivalent to 1x10ml vial of calcium chloride. This is in response to the potential risk of [underdosing with calcium gluconate](#) in severe hyperkalaemia.