

Safety Action Notice

Reference **SAN(SC)20/07**

Issued **14 September 2020**

Review Date **13 September 2021**

Foreign body aspiration during intubation, advanced airway management or ventilation

Source: This Safety Action Notice is issued in association with NHS Improvement and Healthcare Improvement Scotland. The content is based on Patient Safety Alert NatPSA/2020/006/NHSPS, issued by NHS Improvement on 02 Sep 2020

Summary

Loose items unintentionally introduced into the airway during intubation, ventilation or advanced airway management (known as foreign body aspiration [FBA]) can lead to partial or complete airway blockage or obstruction. If the cause is not identified and rectified, this can be fatal.¹

Action

1. Amend current purchasing^A and introduce ongoing controls on purchasing, to ensure ECG/ECT electrodes have either large sheet backing for multiple electrodes or fully coloured or patterned individual backing in:
 - a) all areas where intubation or advanced airway management regularly occurs (including theatres, emergency departments, ECT suites, and emergency ambulances).^B
 - b) all resuscitation trolleys/emergency response kits containing intubation or advanced airway equipment and containing ECG electrodes.^B
2. Amend current purchasing,^A and introduce ongoing controls on purchasing, to ensure all breathing system components have either ports with tethered caps or no port.
3. Review other equipment used for, or alongside, intubation and advanced airway management during resuscitation, anaesthesia or ventilation, and if any include small loose components, purchase safer alternatives if available.
4. Develop or amend local protocols to include:
 - a) a process step that requires any pre-prepared intubation and advanced airway management devices to be covered or protected until used; this may include reinserting them in their packaging.
 - b) a process step to close the end of the reusable breathing system hose in between patient cases; either using bespoke caps supplied with the system or by attaching to the circuit mount.^C

Action by: All acute, specialist and ambulance service providers, independent providers of NHS-funded surgical or critical care, and mental health providers with electro-convulsive therapy (ECT) suites.

Deadline for action: 01 June 2021

Problem / background

Loose items unintentionally introduced into the airway during intubation, ventilation or advanced airway management (known as foreign body aspiration [FBA]) can lead to partial or complete airway blockage or obstruction. If the cause is not identified and rectified, this can be fatal¹. Complications following FBA may not be immediately recognised due to sedation and anaesthesia and may be postoperatively misdiagnosed as asthma, chronic obstructive pulmonary disease (COPD), or stridor².

An example incident reads: *“patient presented in ED following repeated GP attendance, 4 months post anaesthesia with worsening respiratory symptoms. Symptoms resolved after removal of ECG backing plastic [from the respiratory tract].”*

In a recent six-year period, five incidents were identified where a foreign body (FB) was aspirated, and a further four incidents where the FB was identified during intubation and removed. The most common types of FB identified in incident reports were transparent backing plastic from electrocardiogram (ECG) electrodes and plastic caps of unclear origin. This is likely to be an under-estimate of the true number of incidents as many may go unrecognised.

During their investigation NHS England also identified that:

- some breathing circuit components with untethered caps are still available to purchase,
- airway trays for routine or planned procedures are frequently prepared in advance, but left uncovered, and as a result loose FBs may become attached to breathing system devices,
- the ends of breathing system hoses are not routinely closed between patient cases; allowing the potential for loose plastic objects to enter the breathing hose system.

Notes

A. This Alert does not require changing to the large sheet/coloured/patterned type in areas other than those specified in actions 1a and 1b. However, changing to them across the whole organisation will likely be easier; compared with maintaining ongoing checks and barriers against one type being unintentionally reintroduced into the areas where they should never be used.

B. Caps for breathing system hoses are available, either as a separate item within the system packaging, or pre-attached on a hinge joint for some coaxial systems. The circuit mount on anaesthetic machines should be used in line with manufacturer instructions for use (IFU) and infection control guidance.

Patient Safety Incident Data (England)

The National Reporting and Learning System was searched on 25 August 2020 for incidents reported as occurring on or after 1 April 2014 with keywords relating to ‘cap’ and ‘block’. A further search was performed using the same dates and keywords ‘transparent’, ‘plastic’ and ‘blockage’.

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Eight incidents were associated with FBA:

- four referred to plastic entering the breathing system hose – one IV plastic cap, one unspecified plastic cap and two thin plastic film (potentially electrode backing)
- four involved foreign bodies introduced during intubation – all of which specified ECG electrode backing.

An additional incident reported to the NRLS in 2019 (NHS England ref PSI463) not identified by these keywords described a tear off portion from a sachet of lubricating gel which the patient managed to cough out following extubation of an I-gel[®] device.

This is likely to be an under-estimate of the true number of incidents, as FBs introduced during ventilation, intubation or advanced airway management may not always be recognised at the time. Post-procedure, symptoms are unlikely to be specifically associated with the potential for FBA and, as a result, it is likely that many incidents of FBA go unrecognised. Additionally, it was difficult to identify a comprehensive NRLS search strategy.

While organisations are predominantly using breathing system products (e.g. HME filters) with tethered caps, some products with untethered caps are still available despite recommendations from the Expert Group on blocked anaesthetic tubing (EGBAT) report.¹

Distribution

Ambulance Services	Day Surgery	Maternity
Anaesthetics	Dental	Nursing
Burns Units	Dental Hospitals	Paediatrics
Cardiology	District Nursing	Resuscitation Teams
Cardio-Thoracic Surgery	Emergency Department	Risk Management
Catheterisation Labs	Health & Safety	Sterile Supplies
Coronary Care Units	Hospices	Departments
	Intensive Therapy Units	

References

1. Department of Health. (2004). EGBAT report: Protecting the breathing circuit in anaesthesia
https://webarchive.nationalarchives.gov.uk/20120105190039/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4081826.pdf
2. Justin C. Hewlett, et al. (2017). Foreign body aspiration in adult airways: therapeutic approach <https://www.ncbi.nlm.nih.gov/pubmed/29221325>

Resources

1. Association of Anaesthetists. (2012). Checking anaesthetic equipment
<https://anaesthetists.org/Home/Resources-publications/Guidelines/Checking-Anaesthetic-Equipment>
2. NHS Clinical Evaluation Team. (2018). Clinical Review: adult ECG electrodes
<https://wwwmedia.supplychain.nhs.uk/media/Clinical-Review-for-Adult-ECG-Electrodes-February-2018.pdf>
3. For further detail, resources and supporting materials see:
<https://www.england.nhs.uk/2020/09/foreign-body-aspiration-during-intubation-advanced-airway-management-or-ventilation/>

Stakeholder engagement

- National Patient Safety Response Advisory Panel (for a list of members and organisations represented on the panel, see <https://www.england.nhs.uk/patient-safety/patient-safety-alerts/>)
- The Clinical and Product Assurance ([CaPA](#)) function of NHS Supply Chain
- Safe Anaesthesia Liaison Group ([SALG](#))

Enquiries

Enquiries (and adverse incident reports) in Scotland should be addressed to:

Incident Reporting & Investigation Centre (IRIC)

NHS National Services Scotland

Gyle Square, 1 South Gyle Crescent, Edinburgh EH12 9EB

Tel: 0131 275 7575 Email: nss.irc@nhs.scot

Report options are available on the HFS website: [How to report an Adverse Incident](#)
Further information about reporting incidents can be found in [CEL 43 \(2009\)](#) or by contacting IRIC at the above address.

NHS National Services Scotland is the common name for the Common Services Agency for the Scottish Health Service. www.nhsnss.org

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