National Patient Safety Alert

NHS

Interruption of high flow nasal oxygen during transfer

Date of issue:	01/04/2020	Reference no:	NatPSA/2020/002/NHSPS

This alert is for action by: Acute and specialist hospital providers (adult and children's hospitals)

This is a safety critical and complex National Patient Safety Alert. Implementation should be co-ordinated by an executive lead (or equivalent role in organisations without executive boards) and supported by clinical leaders in respiratory and emergency medicine

Explanation of identified safety issue:

Specialised equipment is used to deliver high flow nasal oxygen (HFNO) to babies, children and adults in acute respiratory failure without hypercapnia.[1] **Current national guidance[2]** (see Note) **states that HFNO is not advocated in COVID-19 patients based on lack of efficacy, oxygen use and infection spread; if used temporarily, or for other patients, it must be included as part of the daily count of the number of high flow ventilatory systems in use.[3]**

Some HFNO delivery devices have a transport mode, but most require mains power and will not deliver oxygen during transfer* unless attached to a compatible uninterruptible power supply (UPS) device. We identified four deaths in a recent two-year period from interrupted HFNO during patient transfer; further reports described hypoxia, cyanosis, collapse and respiratory arrest. Our review of these incidents suggests:

- some staff may assume devices have an internal battery
- staff do not realise how rapidly the patient is likely to deteriorate with even brief interruption of HFNO
- a misconception is that less intensive methods of oxygen delivery (eg reservoir masks with an oxygen cylinder on full flow) are an adequate substitute during transfer; however, most patients requiring HFNO need more intensive intervention such as intubation if HFNO is interrupted
- staff have no obvious visual cue to the criticality of HFNO and may confuse it with low-flow nasal oxygen
- emergency departments starting a patient on HFNO then find they have no access to a supplementary battery source or transport mode to move the patient safely out of the department.

In the longer term, purchasing additional equipment supported by the manufacturer of your HFNO device, and redesigning patient pathways, protocols and staff training could address the underlying causes, but the actions in this alert help reduce the immediate risk.

* *'Transfer' in the context of this alert means between wards, departments and rooms within a hospital; HFNO is not used for ambulance transfer between hospitals.*

Actions required

Actions to be completed by 08/04/2020

1. Identify all devices used to provide HFNO that do not have an in-built transport mode.

2. Add clear and visible labels to these HFNO delivery devices stating:
   a. even brief interruptions to mains power supply will lead to interruption of oxygen therapy and subsequent respiratory or cardiac arrest.
   b. do **not** start HFNO in any emergency department or short stay unit without a plan for how to transfer the patient onwards.

3. If your organisation has already purchased UPS device/s to use with HFNO:
   a. identify a storage place for your UPS that can be accessed 24/7
   b. label all HFNO devices with the location of a compatible UPS
   c. allocate responsibility for ensuring the UPS is returned, charged and prepared for next use.

For further detail, resources and supporting materials see: www.england.nhs.uk/2020/04/interruption-of-high-flow-nasal-oxygen-during-transfer

For any enquiries about this alert contact: patientsafety.enquiries@nhs.net

Failure to take the actions required under this National Patient Safety Alert may lead to CQC taking regulatory action

Additional information:

Note: always refer to https://www.england.nhs.uk/coronavirus/ for the most recent version of COVID-19 advice, issued by the organisations listed below, as it is likely to be frequently updated.

Patient safety incident data

A search of the NRLS for incidents reported as occurring on or after 01.10.2017 and uploaded to the NRLS by 06.11.2019 was carried out using a combination of keywords (our reference PS1498). All incidents reported as death, severe harm or moderate harm were reviewed. Extrapolation from review of samples of incidents reported as no or low harm indicated about 150 for this period concerned issues with transferring a patient who relied on HFNO.

Patients affected ranged from age 1 month to 85 years, but most incidents occurred in those aged 1 month to 1 year range and 66 to 75 years. Four deaths appeared to be directly linked to issues with transferring a patient who relied on HFNO. One patient was known to be within hours/days of death and three were critically ill with unknown chances of survival, but the timing and cause of death appeared directly linked to the HFNO interruption. Other reported consequences included hypoxia, cyanosis, collapse and respiratory failure, and respiratory arrest.

References

1. BTS guideline for oxygen use in adults in healthcare and emergency settings. O'Driscoll B, Howard L, Earis J, et al. Thorax 2017; 72: i1–i90. https://www.brit-thoracic.org.uk/document-library/guidelines/emergency-oxygen/bts-guideline-for-oxygen-use-in-healthcare-and-emergency-settings/
2. NHS England and NHS Improvement: Guidance for the role and use of non-invasive respiratory support in adult patients with coronavirus (confirmed or suspected) 26 March 2020 Version 2 https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/CLEARED_Specialty-guide_-NIV-respiratory-support-and-coronavirus-v2-26-March-003.pdf
3. NHS England and NHS Improvement Estates & Facilities Patient Safety Alert 2020/001: Use of hospital CPAP during coronavirus epidemic 31 March 2020 https://www.cas.mhra.gov.uk/ViewandAcknowledgment/ViewAlert.aspx?AlertID=103013

Resources

1. Airway Management. ICM Anaesthesia Covid-19 19 March 2020 https://icmanaesthesiacovid-19.org/covid-19-airway-management-principles
2. Critical Care preparation and management in the COVID-19 pandemic ICM Anaesthesia Covid-19 17 March 2020 https://icmanaesthesiacovid-19.org/critical-care-preparation-and-management-in-the-covid-19-pandemic
3. COVID-19: Guidance for infection prevention and control in healthcare settings. Version 1.1, 27 March 2020 Issued jointly by the Department of Health and Social Care, Public Health Wales, Public Health Agency Northern Ireland, Health Protection Scotland and Public Health England as official guidance. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/874316/Infection_prevention_and_control_guidance_for_pandemic_coronavirus.pdf
4. Clinical guide for the management of critical care patients during the coronavirus pandemic. Publications approval reference: 001559 https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/specialty-guide-itu-and-coronavirus-v1-16-march-2020.pdf

Stakeholder engagement

- National Clinical Director – Respiratory Medicine
- National Patient Safety Response Advisory Panel (for a list of members and organisations represented on the panel, see www.improvement.nhs.uk/resources/patient-safety-alerts/)

Advice for Central Alerting System (CAS) officers and risk managers

This is a safety critical and complex National Patient Safety Alert. In response to CHT/2019/001 your organisation should have developed new processes to ensure appropriate oversight and co-ordination of all National Patient Safety Alerts. CAS officers should send this Alert to the executive lead nominated in your new process to coordinate implementation of safety critical and complex National Patient Safety Alerts, copying in the leads identified on page 1, and your local leads for COVID-19 response.