

Safety Action Notice

Reference **SAN(SC)20/04**

Issued **03 April 2020**

Review Date **02 April 2021**

Blood control safety cannula & needle thoracostomy for tension pneumothorax

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/2020/003/NHSPS, issued by NHS Improvement on 02 April 2020.

Summary

New blood control (closed system) intravenous cannulas will not decompress a tension pneumothorax. Actions are recommended for clinical areas and teams likely to undertake needle thoracostomy

Action

1. Identify if your organisation purchases blood control (closed system) safety cannula.
2. If it does, for all clinical areas and teams likely to undertake needle thoracostomy, including ambulances, emergency departments (EDs), intensive care units, respiratory units or any unit providing invasive or non-invasive ventilation, including units for COVID-19 patients:
 - a) Provide standard safety cannulas* for needle thoracostomy in appropriate trays, drawers, pockets, within emergency workspaces, emergency kit bags, and resuscitation trolleys, and clearly label '*For use in tension pneumothorax*'.
 - b) Attach visible warnings/notices to cupboards, drawers, etc. in these emergency workspaces, emergency kit bags, and resuscitation trolleys where blood control (closed system) cannula are stored stating: '*Do **not** use for tension pneumothorax*', with a direction to where standard safety cannulas can be found.
 - c) Amend labelling/checklists in store cupboards used to restock these resuscitation areas, emergency kit bags and resuscitation trolleys to ensure clear distinction between standard safety cannula and blood control (closed system) cannula.
 - d) Inform clinical and materials management staff who restock these resuscitation areas, emergency kit bags and resuscitation trolleys of these changes.

*A minority of units may already have switched to specific thoracostomy/decompression kits and trained all local staff in their use. They can continue using them, but other units where staff may be unfamiliar with these kits should not introduce them at this time.

Action by

- Acute and specialist hospital providers (adult and children's) and ambulance trusts.

Deadlines for action

Actions complete: 10 April 2020

Problem / background

Tension pneumothorax can occur following chest trauma, respiratory disease and infection, or during resuscitation requiring invasive or non-invasive ventilation. It is a life-threatening condition resulting from a collapsed lung when air trapped in the pleural cavity compromises cardiopulmonary function.^{1,2}

Immediate temporary decompression is required to prevent cardiac arrest.^{1,2,3,4,5} This is commonly done by inserting a needle and cannula, usually used for intravenous access, through the chest wall into the pleural cavity (needle thoracostomy) – see Note 1. The needle is withdrawn, and the cannula left in place to allow the trapped air to flow out.

New blood control (closed system) intravenous cannulas are increasingly used in the NHS; at least 130 trusts bought a total of three million of them in the last year (see Note 2 for suppliers). They look very similar to both traditional and standard safety cannula (with needle guard or shield) but have an extra integral septum which closes when the needle is withdrawn and stops free flow in or out of the cannula. Flow is only possible once an intravenous line or Luer-lock syringe is attached to the hub, which opens the septum.

Blood control (closed system) cannulas help prevent blood spillage, exposure and contamination when used for their intended intravenous purpose, but they cannot be used to decompress a pneumothorax without additional equipment.

The main patient safety risks are:

- staff may select a blood control (closed system) cannula not realising its limitations for this procedure
- a blood control (closed system) cannula may wrongly be assumed to be functioning in a patient who is deteriorating rapidly
- a second needle might be introduced risking very significant damage to the lung as it re-inflates.

Note

The decompression technique using an intravenous cannula is widely taught to medical staff, paramedics and healthcare professionals in acute emergency care roles, and is supported by NICE and national professional guidelines.^{1,2,3,4,5} Most guidance does mention some limitations of using intravenous cannulas, but specially designed tension pneumothorax decompression needles and the open thoracostomy technique requires additional training.

Patient safety incident data and other information

Via the Royal College of Emergency Medicine Safer Care Committee an ED alerted NHS Improvement to their concerns about mistaken use of blood control (closed system) cannula for needle decompression. As clinical staff are unlikely to realise their selected cannula is a blood control (closed system) safety cannula, or that it will not decompress a tension pneumothorax, any impact on the patient is unlikely to be identified from reported incidents. However, specialist thoracic staff, medical device safety officers, acute and emergency frontline staff and ambulance networks confirm variation in local training and equipment and that the risks of using closed system cannula for this tension pneumothorax are poorly understood.

Distribution

Ambulance Services	Health & Safety	Respiratory Medicine
Anaesthetics	Hospices	Resuscitation Teams
Cardio-Thoracic Surgery	Maternity	Risk Management
Emergency Department	Nursing	Sterile Supplies
General Medical Practitioners	O.D.P.s	Departments
	Operating Departments	Supplies/Procurement

References

1. British Thoracic Society (2010) Management of spontaneous pneumothorax https://thorax.bmj.com/content/thoraxjnl/65/Suppl_2/ii18.full.pdf
2. Royal College of Emergency Medicine (2017) Spontaneous pneumothorax e-learning module <https://www.rcemlearning.co.uk/reference/spontaneous-pneumothorax/#1571135501541-a9a7e58a-fd9d>
3. Resuscitation Council UK (2015) Resuscitation guidelines <https://www.resus.org.uk/resuscitation-guidelines/>
4. NICE (2016) Major trauma: assessment and initial management <https://www.nice.org.uk/guidance/ng39/chapter/recommendations>
5. Joint Royal Colleges Ambulance Liaison Committee, Association of Ambulance Chief Executives (2019) JRCALC Clinical guidelines 2019. Bridgwater: Class Professional Publishing

Resources

1. NHS England (2020) Guidance for the role and use of non-invasive respiratory support in adult patients with coronavirus (confirmed or suspected) 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

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.net

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.

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