

## Tracheostomy Care in ICU Combined Burton & Derby Hospitals Nursing Guideline

Reference no.: CG-CRITCARE/4437/24

**These are nursing guidelines for use within critical care to support best practice. They are not prescriptive and as with all nursing practice should be utilised in conjunction with the registrant's clinical judgement**

### Introduction

A Tracheostomy is a surgical opening in the anterior wall of the trachea to facilitate breathing. This procedure may be carried out for many reasons, most commonly to secure and maintain a clear airway where there is a risk of obstruction.

In Critical Care, tracheostomies are often performed in patients who are mechanically ventilated via an endotracheal tube and require a prolonged weaning time as evidence suggest they enable the reduction of sedation, improve the effectiveness and ability to perform mouth care, facilitate gradual weaning from a ventilator and the possibility of being able to talk and eat.

### Aim and Purpose

The aim of this document is to provide guidance on the insertion, daily care and emergency management of tracheostomies in Critical Care. Airway management in critically unwell patients has long been recognised as a high-risk intervention for patients (Dejong *et al.* 2015). The 4th National Audit Project (NAP4, 2011) estimates 2.9 million general anaesthetics are performed in England each year. The emergency department or the intensive care unit (ICU) are likely to have one out of every four serious airway incidents. Failure to secure a patent airway for patients who are not able to maintain their own airway may result in patients suffering from brain injury, long-term loss of function, decrease in their quality of life or even death (NAP4, 2011).

### Scope / Inclusion

All adult patients in Critical Care with a tracheostomy. This is a local nursing guideline and is not prescriptive. This guideline is for the nursing team on both ICU RDH and ICU QHB sites based on evidence based practice.

The target population for this policy includes all Trust health care staff, bank workers or external agency, who are responsible for the care of patients within Critical Care.

## Exclusion

This guideline is not intended to be applied to paediatric patients and neonates. Normal physiological parameters are different in these patient groups.

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# Intensive Care Society Invasive Procedure Checklist

## Invasive Procedure Safety Checklist: TRACHEOSTOMY

BEFORE THE PROCEDURE	TIME OUT	SIGN OUT
<p>Have all members of the team introduced themselves? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Patient identity checked as correct? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Appropriate consent completed? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Is suitable tracheostomy and equipment available? (difficult airway trolley/bronchoscope) Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Is appropriate monitoring available? (including EtCO2) Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Are there any Contraindications to performing the procedure? (High FIO2, PEEP, anatomical, vascular, coagulopathy) Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Medicines and coagulation checked? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Any Known drug allergies? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Is feed stopped and NG aspirated? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Are spinal precautions required? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Are there any concerns about this procedure for the patient? Yes <input type="checkbox"/> No <input type="checkbox"/></p>	<p>Verbal confirmation between team members before start of procedure</p> <p>Is patient on adequate ventilator settings and 100% FIO2? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Is patient adequately sedated and paralysed? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Is position optimal? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Cuff tested as intact? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>All team members identified and roles assigned? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Any concerns about procedure? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>If you had any concerns about the procedure, how were these mitigated?</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>	<p>Tracheostomy position confirmed with Bronchoscope? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Capnography in situ? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Ventilator settings reviewed post procedure? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Sedation reviewed? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Post procedure hand over given to nursing staff? Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p>Level of difficulty anticipated prior to the start of the procedure</p> <p>None anticipated <input type="checkbox"/> Possibly difficult <input type="checkbox"/> Considerably difficult <input type="checkbox"/></p> <p>If considerably difficult 1. Consider ENT involvement 2. 2 Consultant anaesthetists must be involved</p>	<p>Procedure date: <input type="text"/> Time: <input type="text"/></p> <p>Operator: <input type="text"/></p> <p>Observer: <input type="text"/></p> <p>Assistant: <input type="text"/></p> <p>Level of supervision: SpR <input type="checkbox"/> Consultant <input type="checkbox"/></p> <p>Equipment &amp; trolley prepared: <input type="text"/></p>	<p>Signature of responsible clinician completing the form</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div> <p>Patient Identity Sticker:</p> <div style="border: 1px solid black; height: 100px; width: 100%;"></div>
<p>Names/Registering body numbers of clinicians responsible for tracheostomy</p> <p>1) 2) Bronchoscopist</p>		

**Percutaneous Tracheostomy Procedure Form (Medical team to complete)**

The Procedure			
Personnel			
Bronchoscopy:		Tracheostomy:	
Grade:		Grade:	
Supervising consultant:			
Sterile Scrub/Gown and Gloves?			Yes <input type="checkbox"/>
2X Chloraprep sticks to skin?			Yes <input type="checkbox"/>
Large fenestrated drape Used?			Yes <input type="checkbox"/>
Sedation:		Local Anaesthetic:	
Level of Entry	1-2 Ring		AP Entry Point:
	2-3 Ring		
	Other(Specify)		
Tracheostomy tip is:    Cms from carina as confirmed by endoscope			
Tracheostomy Kit/ Batch No:			
Size/Type Tracheostomy:			
Additional Comments:			
Chest X-Ray Ordered Post Procedure?			Yes <input type="checkbox"/> No <input type="checkbox"/>
Signature:			

Complications			
Correct ventilator settings set post procedure			Yes <input type="checkbox"/>
None <input type="checkbox"/>	Vascular puncture <input type="checkbox"/>	Malposition <input type="checkbox"/>	
2 <sup>nd</sup> person required <input type="checkbox"/>	Unable to place <input type="checkbox"/>	Other <input type="checkbox"/>	

## Percutaneous Tracheostomy Insertion Nursing Guide

- Percutaneous Dilatation Tracheostomy Insertion Kit (take size required from the store room)
- Cutdown set (all instruments from set to be returned to synergy)
- Sterile Gown Pack + Eye Protection and Visors
- Sterile Adhesive Drape
- Suctioning Equipment
- Chloraprep x2
- Syringes 2x5mls, 2x10mls
- Needles 2xGreen, 2xOrange, 2xBlue
- Sutures – 2.0 W791, 2/0 Silk Suture, 2/0 Vicryl Rapide
- Disposable Scalpel Size 10
- 0.9 Sodium Chloride 10ml Amp x4
- Optilube x2
- Medications: Lignocaine with Adrenaline (stored in Stock fridge)
- 100mg Rocoronium (stored in Stock fridge)
- Propofol, Fentanyl or Noradrenaline infusion
- 1% Lidocaine x2
- Emergency Bedside Trache Box
- Bronchoscope (various sizes)
- Bronchoscope swivel connector x1 (green)
- Consent form
- Invasive Procedure Checklist
- Tracheostomy Dressing/Permafoam
- Tracheostomy Inline suction
- Tracheostomy Ties
- Capnography
- Emergency Airway Trolley on standby

### Post Percutaneous Tracheostomy Insertion Guide for Nurses:

Confirm tube is in the airway	End tidal CO <sub>2</sub> (value and waveform) Chest wall movement with ventilation Direct vision with bronchoscope
Check position of Tracheostomy tube (medical team to confirm post Chest Xray)	Tip should be 2-5cm from the carina
Check inner tube in place	Same as the tracheostomy size
Check cuff pressure	20-30cm H <sub>2</sub> O (NTSP, 2020)
Secure tracheostomy	Dressing, ties and sutures
Ventilator settings / patient sedation	Review post procedure
Documentation	Complete Intensive Care Society checklist,

	procedure note, nursing and medical documentation
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## Tracheostomy Daily Care: Safety

- Ensure the bedside nurse has completed the UHDB Tracheostomy workbook and scope of practice found at [derby.koha-ptfs.co.uk/cgi-bin/koha/opac-retrieve-file.pl?id=5656eb6424c55283e86c8d61c9980f9f](http://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-retrieve-file.pl?id=5656eb6424c55283e86c8d61c9980f9f)
- Ensure a critical care airway plan for classification of Red, Amber or Green is completed by the Consultant and reviewed daily (see Appendix 2)
- Ensure a bedhead sign (see Appendix 3) for tracheostomy is completely filled in and visible (NTSP, 2023).
  - Detail key information about the indication, type and date of a tracheostomy
  - Identify how to manage the upper airway in an emergency and who / how to call for help
  - Should be in place for every patient with a tracheostomy or laryngectomy
  - Should initially be completed by the doctor performing the tracheostomy
  - Front side (facing out) indicates that the patient has a tracheostomy or laryngectomy
  - Reverse side provides relevant airway information – vital to be aware of in an emergency
- Ensure a waveform capnography is available for all patients with a tracheostomy. It is mandatory for invasively ventilated patients (FICM, 2020).
- Ensure bedside emergency equipment and a tracheostomy emergency box is available at every bed space (NTSP, 2023).
- Ensure all tracheostomy equipment required to perform routine care is available at the bedside.

## Bedside Emergency Equipment

Any clinical area caring for patients with a tracheostomy must have emergency equipment immediately available (NTSP, 2023). Bedside Emergency Equipment should always be available and sealed if using an emergency box. The contents are as follows:

Tracheostomy Tube (Same Size x1)
Tracheostomy Tube (One Size Smaller x1)
Tracheostomy Inner Tube (Same Size x2)
Tracheal Dilator (RDH site only)
Foam Tracheostomy Dressing
Tracheostomy Tube Holder (neck strap)
Non-Woven Swabs
Clear Film Dressing
Stitch Cutter Blade
10ml Syringe
Tracheostomy Cleaning Swabs



## Tracheostomy Daily Care: Assessment of the Patient

As part of the daily patient assessment at the start of each shift, the tracheostomy should be specifically discussed and important assessments communicated.

When taking over the care of a patient with a tracheostomy: think **TRACHE COMS**  
Increase frequency of suction & inner tube care if lots / thick secretions and humidification may need to be increased (see humidification ladder)

		Action	Minimum frequency (hours)	Links to Written Resources	Link to Training Videos
<b>T</b>	<b>Tube care</b> <ul style="list-style-type: none"> <li>• When was it inserted?</li> <li>• What type of trache? Surgical/perc, adjustable flange?</li> <li>• Why was it inserted? (airway obstruction, slow wean, neuromuscular condition)</li> </ul>	<ul style="list-style-type: none"> <li>• Secure the tube (tapes/ ties)</li> <li>• Inner cannula (check / clean)</li> <li>• Cuff check (pressure)</li> <li>• Sub-glottic secretions (aspirate)</li> <li>• Continuous capnography in place (value + trace)</li> </ul>	4-8 and prn 4-8 and prn 4 and prn 4 and prn Per shift	<ul style="list-style-type: none"> <li>- <a href="#">Secure the tube</a></li> <li>- <a href="#">Inner cannula</a></li> <li>- <a href="#">Cuff check</a></li> </ul>	<ul style="list-style-type: none"> <li>- <a href="#">Tapes video (kids/universal)</a></li> <li>- <a href="#">Inner cannula video</a></li> <li>- <a href="#">Cuff pressure video</a></li> <li>- <a href="#">Cuff deflation &amp; subglottic</a></li> </ul>
<b>R</b>	<b>Resus</b> <ul style="list-style-type: none"> <li>• Do I know who to ask for help?</li> <li>• Do I know what to do in an emergency?</li> </ul>	<ul style="list-style-type: none"> <li>• Review red flags (audible sounds or leak around site, difficulty of breathing, increased respiratory rate, apnea, visibly displaced tracheostomy, etc.)</li> <li>• Know what to do and who to ask for help</li> </ul>	Per shift	<ul style="list-style-type: none"> <li>- <a href="#">Red flags</a></li> <li>- <a href="#">Emergency care overview</a></li> </ul>	<ul style="list-style-type: none"> <li>- <a href="#">Red flags video</a></li> <li>- <a href="#">Emergency care video</a></li> </ul>
<b>A</b>	<b>Airway</b>	<ul style="list-style-type: none"> <li>• Suction to keep airway clear (what are the secretions like?)</li> </ul>	4-8 and prn	- <a href="#">Suctioning</a>	- <a href="#">Suctioning video</a>



<b>C</b>	<b>Care of the stoma</b>	<ul style="list-style-type: none"> <li>• Keep skin clean, healthy and dry</li> <li>• Change dressings</li> <li>• Skin care</li> </ul>	Daily / prn Daily / prn Daily / prn	- <a href="#">Stoma care</a>	- <a href="#">Stoma care video (kids/universal)</a>
<b>H</b>	<b>Humidification</b>	<ul style="list-style-type: none"> <li>• Use of appropriate Humidification</li> <li>• Respiratory Physiotherapy</li> </ul>	Continuous  Daily / prn	- <a href="#">Humidification</a>	- <a href="#">Humidification video</a>
<b>E</b>	<b>Environment</b>	<ul style="list-style-type: none"> <li>• Critical care airway assessment signs displayed (Tracheostomy algorithm and Red, Amber or Green assessments)</li> <li>• Bedside emergency equipment available</li> </ul>	Per shift	- <a href="#">NTSP bedhead sign</a> - <a href="#">Bedside equipment</a>	
<b>C O</b>	<b>COmmunication</b>	<ul style="list-style-type: none"> <li>• Non-verbal communication aids</li> <li>• Augmentative and alternative communication</li> <li>• Vocalisation</li> </ul>	Per shift Per shift Daily	- <a href="#">Communication overview</a>	- <a href="#">Speaking valves video</a> - <a href="#">Above cuff vocalisation video</a> - <a href="#">The gift of speech video</a>
<b>M</b>	<b>Mouthcare</b>	<ul style="list-style-type: none"> <li>• Oral secretion management</li> <li>• Clean the teeth</li> </ul>	4-8 and prn 4-8 and prn	- <a href="#">Oral care</a>	
<b>S</b>	<b>Swallowing &amp; Nutrition</b>	<ul style="list-style-type: none"> <li>• If appropriate, consider swallowing assessment</li> <li>• Consider nutritional needs / referral to speech and language therapists and dietitians</li> </ul>	If appropriate / on request by the medical team	- <a href="#">Swallowing</a>	<a href="#">Swallowing assessments video</a>

## Tracheostomy Daily Care: HUMIDIFICATION

Humidification of an altered airway is essential since the natural mechanisms of humidification, warming and filtration normally provided by the upper airways are bypassed. A lack of humidification will cause drying of the airway, depressed mucociliary function and increased viscosity of mucous secretions (Tortora and Derrickson, 2017). Refer to the UHDB ICU Humidification Guidelines (2024) for more details.

- Inadequate humidification may lead to life-threatening blockage of the tracheostomy tube.
- Increasingly thick secretions may indicate new infection and/or inadequate humidification. Thick secretions may lead to blockage of the tracheostomy so should be managed promptly and appropriately.

Action	Rationale
<ul style="list-style-type: none"> <li>• Assess humidification needs at least daily.</li> <li>• Encourage coughing where appropriate especially self-ventilating patients).</li> </ul>	<ul style="list-style-type: none"> <li>• A tracheostomy bypasses the normal upper airway mechanisms for humidification, filtration and warming of inspired gases.</li> </ul>
<ul style="list-style-type: none"> <li>• Provide sufficient humidification to keep secretions loose and easy to suction.</li> <li>• Consider humidification system to match patient requirements (e.g. heat and moisture exchange, swedish nose, heated water humidification,etc. NTSP, 2023 and ICS, 2014). Refer to the humidification ladder and ICU Humidification guidelines, 2024.</li> <li>• Humidification can be provided to patients using a disposable nebulizer set with sterile 0.9% sodium chloride (approximately 5 mL). It can be delivered using an aerosol-driven nebulizer, or it can be attached to the oxygen or air supply with a flow rate high enough for the liquid to form humidification droplets. The nebulizer is administered using a specific tracheostomy mask every 2–4 hours, or more frequently in patients with more tenacious secretions (Royal Marsden Manual of Clinical and Cancer Nursing Procedures (2020) and NTSP</li> </ul>	<ul style="list-style-type: none"> <li>• To aid removal of secretions</li> <li>• Warm water carries greater relative humidity than cold water.</li> </ul>

<p>(2023)</p> <ul style="list-style-type: none"> <li>• For all ventilated patients consider changing from a dry circuit with HME to a humidified circuit after 7 days unless specifically requested sooner by a senior member of the nursing or medical team. Wet circuits or active heated humidifiers are recommended to be changed every 7 days (Intersurgical Ltd, 2022).</li> <li>• Once off the ventilator, a heat and moisture exchange or a swedish nose can be connected onto the tracheostomy tube for humidification.</li> <li>• If self-ventilating via a tracheostomy mask, ensure inspired oxygen is humidified.</li> </ul>	
<ul style="list-style-type: none"> <li>• If secretions remain a concern consider nebulisation of saline or salbutamol.</li> <li>• Early referral to physiotherapy if indicated</li> </ul>	<ul style="list-style-type: none"> <li>• Failure to provide adequate humidification can lead to blockage of the tracheostomy tube, with associated risks of hypoxia and cardio-respiratory arrest.</li> </ul>

**The Tracheostomy humidification ladder (NTSP, 2023 and ICS, 2014)**

Level	Humidification Method	Equipment Available	Patient Group
Lowest	Heat and Moisture Exchange filters + Add saline nebulisers or mucolytics and ensure adequate hydration if secretions aren't improving. (Royal Marsden Manual of Clinical and Cancer Nursing Procedures (2020) and NTSP (2023))	Swedish nose Saline nebuliser	Self-ventilating patients who do not require oxygen
Second	Cold water bath	*Not used in RDH & QHB ICU*	Self-ventilating patients on oxygen
Third	Heat and moisture exchange on breathing / ventilator circuits. Change the heat and moisture exchange for a minimum of 24 hrs and prn. (Intersurgical limited, 2023)	Intersurgical Heat & Moisture Exchange Filters	Ventilated patients with minimal secretions.
Highest	Heated water bath. Active humidification increases heat and water vapour inhaled.  Consider changing from a dry circuit with HME to a humidified circuit after 7 days unless specifically requested sooner by a senior member of the nursing or medical team.  Wet circuits or active heated humidifiers are recommended to be changed every 7 days.	<b>MR850</b> (Invasive Ventilation, Non-invasive Ventilation, Nasal High Flow and Low Flow Oxygen Therapy)  <b>MR810</b> (Warmed Low Flow Oxygen Therapy)  <b>Airvo2</b> (Warmed High Flow Oxygen)	Ventilated or self-ventilating patients requiring oxygen, who have thick secretions.

Refer to the UHDB ICU Humidification Guidelines (2024) for more details.

## Tracheostomy Daily Care: CARE OF THE INNER CANNULA

- The inner cannula must be removed, inspected and cleaned at least 4-8 hours and as necessary to prevent narrowing and blockage.
- Blockage of the inner tube may be caused by respiratory secretions – this may be a complete or partial blockage and may lead to respiratory distress.
- Signs of respiratory distress includes:
  - Unexplained increased respiratory rate
  - Use of accessory muscles
  - Unexplained fall in tidal volumes
  - Higher airway pressures
  - Falling saturations
  - Change in end tidal CO<sub>2</sub> value or trace
  - Patient Indicating they cannot breathe properly

Action	Rationale
<ul style="list-style-type: none"> <li>• Ensure that all patients have an inner cannula with the same size as the tracheostomy tube.</li> </ul>	<ul style="list-style-type: none"> <li>• Inner tubes reduce the risk of total blockage of a tracheostomy tube.</li> </ul>
<ul style="list-style-type: none"> <li>• Inspect inner tubes 4-8 hours and as necessary to check for patency (NTSP, 2020)</li> </ul>	<ul style="list-style-type: none"> <li>• Regular inspection is required to check from secretion build up on the inner lumen of the inner tube.</li> </ul>
<ul style="list-style-type: none"> <li>• Explain the procedure to the patient.</li> <li>• Consider pre—oxygenating the patient as appropriate.</li> <li>• Wash and dry hands, consider appropriate personal protective equipment</li> </ul>	<ul style="list-style-type: none"> <li>• To gain verbal consent, cooperation and reassure the patient.</li> <li>• To prevent hypoxia.</li> <li>• To reduce cross infection.</li> </ul>
<ul style="list-style-type: none"> <li>• With one hand stabilize the tracheostomy tube and with the other hand remove the inner cannula and insert a new clean inner cannula.</li> <li>• Ensure that the new clean inner cannula is locked in position.</li> </ul>	<ul style="list-style-type: none"> <li>• To maintain airway, prevent early build-up of secretions and to maintain oxygenation.</li> </ul>
<ul style="list-style-type: none"> <li>• If the inner cannula is reusable: Clean the reusable inner cannula with sterile water/saline, use cleaning swab if heavily soiled on a separate receptacle. Dry and store in a dry clean container. Do not leave the inner tube to soak. If heavily soiled then dispose of and replace with a new inner cannula to store at the bedside.</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce infection risk. Inner tubes should not be left to soak in water as it increases the risk of infection. Soaking tubes in stagnant cleaning solutions may cause bacterial colonization and subsequent cross-infection (Cosgrove and Carrie, 2015).</li> </ul>

<ul style="list-style-type: none"> <li>• Continuously monitor the respiratory status throughout the procedure.</li> </ul>	
<ul style="list-style-type: none"> <li>• Remove personal protective equipment and wash hands.</li> </ul>	<ul style="list-style-type: none"> <li>• To maintain infection control standards (NHS England, 2023).</li> </ul>
<ul style="list-style-type: none"> <li>• Document the procedure noting the assessment (strength of the cough, volume of secretions, colour and consistency / tenacity).</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitate communication, ensuring clear and accurate records are maintained (Nursing Midwifery Council 2018).</li> </ul>

## Tracheostomy Daily Care: SUCTIONING

- Any difficulty in passing the suction catheter should lead to consideration that the tube may be partially blocked or misplaced and requires immediate attention. Blood on suctioning requires assessment and urgent attention (NTSP, 2020).
- For self-ventilating patients on a tracheostomy mask, if the patient is able to cough secretions to the opening of the tracheostomy then a Yankeur sucker can be used to suction the secretions from the opening rather than perform a deep suction.
- Refer to the UHDB ICU In-line / Closed suctioning guidelines (2024) for more details.

### IN-LINE SUCTIONING / CLOSED SUCTIONING

Action	Rationale
<ul style="list-style-type: none"> <li>• Explain the procedure to the patient</li> </ul>	<ul style="list-style-type: none"> <li>• To obtain consent, co-operation and reassure the patient (Nursing Midwifery Council, 2018 and Royal Marsden, 2020).</li> </ul>
<ul style="list-style-type: none"> <li>• Wash hands and don appropriate PPE.</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce the risk of cross infection.</li> </ul>
<ul style="list-style-type: none"> <li>• Consider pre-oxygenating the patient as appropriate.</li> </ul>	<ul style="list-style-type: none"> <li>• To minimise the risk of hypoxia (NTSP, 2013 and Blakeman <i>et al</i>, 2022).</li> </ul>
<ul style="list-style-type: none"> <li>• Ensure correct inner cannula is in place (not a fenestrated inner cannula). Ensure head is in neutral alignment.</li> </ul>	<ul style="list-style-type: none"> <li>• To provide patient comfort and ease in the procedure. Fenestrated inner cannula cannot be used for suctioning as this can cause trauma to the tracheal wall (NTSP, 2013).</li> </ul>
<ul style="list-style-type: none"> <li>• In line suctioning should be used for all mechanically ventilated patients. Ensure the suction catheter is the correct size, and correct length for a tracheostomy and in date. Currently, UHDB use TrachSeal™ which can be used for up to 72 hours as per manufacturers recommendations (Intersurgical Limited, 2022).</li> <li>• Ensure the suction unit is set to the correct pressure up to -150mmHg or -20kPa and check that on vacuum occlusion the recommended pressure is not exceeded, and the machine is functioning properly (NTSP 2013, Royal Marsden Manual 2020).</li> </ul>	<ul style="list-style-type: none"> <li>• A catheter that is too small a diameter may not be effective in removing thick secretions. A catheter that is too big will occlude the tube, cause hypoxia and distress the patient (NTSP, 2013).</li> <li>• High suction pressure can cause mucosal trauma, hypoxaemia and atelectasis. (ICS, 2014 and NTSP, 2013).</li> </ul>

<ul style="list-style-type: none"> <li>• Pass the suction catheter down the artificial airway, without applying suction, until a cough response is stimulated, or you feel resistance; if resistance is felt withdraw the catheter 1-2cm before applying suction to reduce the risk of trauma (Royal Marsden Manual, 2020 and Greenwood and Winters, 2014).</li> <li>• Ensure that suctioning is only applied on removal of the suction catheter to minimise the risk of mucosal trauma (NTSP 2013).</li> <li>• The entire process should not exceed 10-15 seconds. Repeat as clinically indicated but no more than 3 successions in a row to allow the patient to recover between each suction - unless there is an airway emergency (NTSP, 2013).</li> </ul>	
<ul style="list-style-type: none"> <li>• Ensure the suction catheter is withdrawn until the black marker is visible, a click is felt, and the isolation valve is locked on the Trachseal™ (Intersurgical Limited, 2022)</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure the suction catheter is fully withdrawn and will not cause any obstruction.</li> </ul>
<ul style="list-style-type: none"> <li>• Observe the patient throughout the procedure to identify any deterioration in the patient's condition, ensuring any concerns are escalated and procedure is aborted immediately (Irajpour <i>et al</i> 2014).</li> </ul>	<ul style="list-style-type: none"> <li>• Tracheal suction may cause vagal stimulation (leading to bradycardia), hypoxia and stimulate bronchospasm.</li> </ul>
<ul style="list-style-type: none"> <li>• Ensure the inline suction catheter is cleaned with the sterile water for suctioning ampoules and that the suctioning valve lock is in place to avoid continuous suction being applied (Intersurgical Limited, 2022).</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce the risk of secretions adhering to the inside of the suction tubing. (Intersurgical Limited, 2022)</li> </ul>
<ul style="list-style-type: none"> <li>• Remove personal protective equipment and wash hands.</li> </ul>	<ul style="list-style-type: none"> <li>• To maintain infection control standards (NHS England, 2023).</li> </ul>
<ul style="list-style-type: none"> <li>• Document the procedure noting the assessment (strength of the cough, volume of secretions, colour and consistency / tenacity).</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitate communication, ensuring clear and accurate records are maintained (Nursing Midwifery Council, 2018).</li> </ul>



## OPEN SUCTIONING

It is recommended that in-line suctioning should be used for all mechanically ventilated patients (NTSP, 2013). Open suctioning can be used for weaning patients that are off the ventilator (i.e. high flow oxygenation, or patients without any oxygen support).

Action	Rationale
<ul style="list-style-type: none"> <li>• Explain the procedure to the patient</li> </ul>	<ul style="list-style-type: none"> <li>• To obtain consent, co-operation and reassure the patient</li> </ul>
<ul style="list-style-type: none"> <li>• Wash hands and don appropriate PPE.</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce the risk of cross infection</li> </ul>
<ul style="list-style-type: none"> <li>• Consider pre-oxygenating the patient as appropriate.</li> </ul>	<ul style="list-style-type: none"> <li>• To minimise the risk of hypoxia (NTSP 2013 and Blakeman <i>et al</i>, 2022)</li> </ul>
<ul style="list-style-type: none"> <li>• Ensure correct inner cannula is in place and ensure head is in neutral alignment.</li> </ul>	<ul style="list-style-type: none"> <li>• To provide patient comfort and ease in the procedure. Fenestrated inner cannula cannot be used for suctioning as this can cause trauma to the tracheal wall (NTSP, 2013).</li> </ul>
<ul style="list-style-type: none"> <li>• Ensure the suction catheter circuit is the correct size.</li> <li>• Ensure the Suction unit is set to the correct pressure up to -150mmHg or -20kPa and check that on vacuum occlusion the recommended pressure is not exceeded, and the machine is functioning properly (NTSP 2013, Royal Marsden Manual 2020).</li> <li>• Pass the suction catheter down the artificial airway, without applying suction, until a cough response is stimulated, or you feel resistance; if resistance is felt withdraw the catheter 1-2cm before applying suction by occluding the suction port with the gloved thumb (Royal Marsden Manual, 2020 and Greenwood and Winters, 2014).</li> <li>• Ensure that suctioning is only applied on removal of the suction catheter to minimise the risk of mucosal trauma (NTSP 2013).</li> <li>• The entire process should not exceed 10-15 seconds. Repeat as clinically indicated but no more than 3 successions in a row</li> </ul>	<ul style="list-style-type: none"> <li>• A catheter that is too small a diameter may not be effective in removing thick secretions. A catheter that is too big will occlude the tube, cause hypoxia and distress the patient (NTSP, 2013).</li> <li>• Too much suction pressure can cause mucosal trauma, hypoxaemia and atelectasis. (ICS, 2014 and NTSP, 2013).</li> </ul>

to allow the patient to recover between each suction - unless there is an airway emergency (NTSP, 2013).	
<ul style="list-style-type: none"> <li>Remove glove from dominant hand by inverting over used suction catheter, dispose both gloves and suction catheter in clinical waste bag.</li> </ul>	<ul style="list-style-type: none"> <li>To prevent cross contamination and reduce the risk of infection.</li> </ul>
<ul style="list-style-type: none"> <li>Reattach oxygen within 10 seconds.</li> </ul>	<ul style="list-style-type: none"> <li>Too much suction pressure can cause mucosal trauma, hypoxaemia and atelectasis.</li> </ul>
<ul style="list-style-type: none"> <li>If another suction is needed a new sterile catheter and clean glove must be used.</li> </ul>	<ul style="list-style-type: none"> <li>To prevent cross contamination.</li> </ul>
<ul style="list-style-type: none"> <li>Flush through the connection tubing with sterile water.</li> </ul>	<ul style="list-style-type: none"> <li>To reduce the risk of infection.</li> </ul>
<ul style="list-style-type: none"> <li>Observe the patient throughout the procedure to identify any deterioration in the patient's condition, ensuring any concerns are escalated and the procedure aborted immediately (Irajpour <i>et al</i>, 2014).</li> </ul>	<ul style="list-style-type: none"> <li>Tracheal suction may cause vagal stimulation leading to bradycardia, hypoxia and stimulate bronchospasm.</li> </ul>
<ul style="list-style-type: none"> <li>Remove personal protective equipment and wash hands.</li> </ul>	<ul style="list-style-type: none"> <li>To maintain infection control standards (NHS England, 2023).</li> </ul>
<ul style="list-style-type: none"> <li>Document the procedure noting the assessment (strength of the cough, volume of secretions, colour and consistency / tenacity).</li> </ul>	<ul style="list-style-type: none"> <li>Facilitate communication, ensuring clear and accurate records are maintained (Nursing Midwifery Council, 2018).</li> </ul>

## Tracheostomy Daily Care: DRESSINGS AND TUBE TIES

- This is a **two person** procedure which needs to be performed at least once per 24 hour period and as needed. The tracheostomy should be adequately secured to prevent displacement.
- Consider reviewing Tracheostomy sutures (external) and discuss this with the medical team, consider removal in 5-7 days and clearly document in the notes if it is due to be removed. However, for patients at high risk of decannulation, this can stay longer. (Alsunaid *et al.*, 2021).

Action	Rationale
<ul style="list-style-type: none"> <li>• Explain the procedure to the patient</li> </ul>	<ul style="list-style-type: none"> <li>• To obtain consent, co-operation and reassure the patient</li> </ul>
<ul style="list-style-type: none"> <li>• Wash hands and don appropriate PPE.</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce the risk of cross infection.</li> </ul>
<ul style="list-style-type: none"> <li>• One practitioner should hold the oxygen (if required) and tracheostomy tube in place by the flange with gloved hands while the other removes tapes and dressings to discard.</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce the risk of dislodgement.</li> </ul>
<ul style="list-style-type: none"> <li>• Assess tracheostomy site for signs of trauma, infection or maceration at least once per shift. Take a swab if there are clinical signs of infection (e.g. purulent discharge, odour, cellulitis and discolouration). Observe the back of the neck for signs of redness/soreness from tapes.</li> </ul>	<ul style="list-style-type: none"> <li>• For early identification of pressure related problems (inflammation, infection, pressure, etc).</li> </ul>
<ul style="list-style-type: none"> <li>• Gently clean around stoma using sterile gauze squares soaked in saline and then pat dry. Apply new tracheostomy dressing starting from below the stoma with absorbent pad side to skin.</li> <li>• If unable to apply new dressing due to the tracheostomy sutures, discuss this with the medical team and ensure it is clearly documented.</li> </ul>	<ul style="list-style-type: none"> <li>• To remove debris while not causing irritation. To protect area around stoma.</li> </ul>
<ul style="list-style-type: none"> <li>• Secure tracheostomy in place with tracheostomy ties/holder.</li> <li>• Check how secure the ties feel. Ensure you can fit one finger between the tie and</li> </ul>	<ul style="list-style-type: none"> <li>• To hold tube securely in place without restricting blood flow through the vessels in the neck (NTSP, 2020).</li> </ul>

<p>the patient. The tie should be tight enough to keep the tracheostomy tube securely in place but loose enough to allow a finger to fit between the tie and the neck.</p>	
<ul style="list-style-type: none"> <li>• Dispose of all soiled dressings as per trust policy.</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce infection risk.</li> </ul>
<ul style="list-style-type: none"> <li>• Remove personal protective equipment and wash hands.</li> </ul>	<ul style="list-style-type: none"> <li>• To maintain infection control standards (NHS England, 2023).</li> </ul>
<ul style="list-style-type: none"> <li>• Document the procedure noting your assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitate communication, ensuring clear and accurate records are maintained (Nursing Midwifery Council 2018).</li> </ul>

## Tracheostomy Daily Care: CUFF PRESSURE CHECK

- The cuff pressure should be checked a minimum of 4 hourly and as needed.
- An ongoing/worsening cuff leak despite continual inflation of air to maintain adequate pressures should raise the possibility of tube movement, cuff herniation or integrity.

Action	Rationale
<ul style="list-style-type: none"> <li>• Explain the procedure to the patient</li> </ul>	<ul style="list-style-type: none"> <li>• To obtain consent, co-operation and reassure the patient</li> </ul>
<ul style="list-style-type: none"> <li>• Wash hands</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce the risk of cross infection</li> </ul>
<ul style="list-style-type: none"> <li>• Check pressure in cuff using cuff manometer, cuff pressure should be 20-30 cmH<sub>2</sub>O - below the green zone (Safdar <i>et.al.</i>, 2005).</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure cuff is not over or under inflated and minimise the risk of tracheal pressure damage (Pierce, 2006).</li> </ul>
<ul style="list-style-type: none"> <li>• Wash hands</li> </ul>	<ul style="list-style-type: none"> <li>• To maintain infection control standards (NHS England, 2023).</li> </ul>
<ul style="list-style-type: none"> <li>• Document the procedure noting your assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitate communication, ensuring clear and accurate records are maintained (Nursing Midwifery Council, 2018).</li> </ul>

## Tracheostomy Daily Care: COMMUNICATION

Action	Rationale
<ul style="list-style-type: none"> <li>Assess the individual patient's communication needs at least daily (NTSP, 2020)</li> </ul>	<ul style="list-style-type: none"> <li>Tracheostomy tubes with inflated cuffs prevent air passing the vocal cords, meaning the patient will be unable to produce an audible voice.</li> </ul>
<ul style="list-style-type: none"> <li>Where patient is able, consider methods to enhance non-verbal communication (e.g. letter boards, pen and paper, nodding/ blinking to command).</li> <li>Multi disciplinary approach to consider technical methods to facilitate voice production i.e. speech and language therapist, speaking valves, etc. (NTSP, 2020).</li> </ul>	<ul style="list-style-type: none"> <li>Alternative methods of communication should be sought for conscious patients to help reduce stress / anxiety / frustration at loss of voice production.</li> </ul>



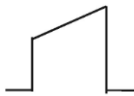

## Tracheostomy Daily Care: HYDRATION, NUTRITION & SWALLOW

Action	Rationale
<ul style="list-style-type: none"> <li>• Ensure that individual patients have hydration needs assessed each shift. (NTSP, 2020).</li> <li>• Observe for clinical signs of under-hydration, (e.g. thick or sticky tracheal aspirate, dry mucous membranes, oliguria).</li> <li>• Consider intake / output monitoring to help guide fluid requirements.</li> <li>• Consider supplemental fluids via intravenous / enteral / other routes are prescribed as required.</li> </ul>	<ul style="list-style-type: none"> <li>• Good systemic hydration is essential to keep tracheal secretions loose and easy to remove on suction.</li> <li>• Dehydrated patients are at increased risk of sputum plugs blocking the tracheostomy tube, leading to acute respiratory distress, hypoxia, atelectasis or respiratory arrest</li> </ul>
<ul style="list-style-type: none"> <li>• Consider referral to a dietitian and a speech and language therapist. (NTSP, 2020)</li> </ul>	<ul style="list-style-type: none"> <li>• Tracheostomy patients are at risk of swallow impairment and will need specialist input, these patients should <b>not</b> be assessed using a standard nurse-led swallow screen (NTSP, 2020).</li> </ul>

## Tracheostomy Daily Care: CONTINUOUS CAPNOGRAPHY

- For all ventilated patients with a tracheostomy in situ, continuous capnography should be in place with the waveform and the value displayed on the monitor in order to identify early tube displacement (NAP4, 2011) and enable continuous assessment of ventilation.
- Capnography during intubation, and for the period a patient remains dependent on an artificial airway, was cited as being the single most effective way of reducing morbidity and mortality surrounding airway and ventilator management (NAP4, 2011).
- An unexplained loss of End-Tidal CO<sub>2</sub> waveform or change in value may indicate a blocked or displaced tracheostomy. It should be investigated urgently.
- The number derived is called capnometry, which is the partial pressure of CO<sub>2</sub> detected at the end of exhalation, ranging between 35 - 45 mm Hg or 4.0 – 5.7 kPa (Sullivan, 2019). It is important to note the value as well as the waveform displayed on the monitor.

Kerslake and Kelly (2017) states that a deviation from such a square wave trace suggests one of the following:

Good	Bad
 <p>Top hat – good</p> <p>Indicates:</p> <ul style="list-style-type: none"> <li>• clear unobstructed airway</li> </ul>	 <p>Dunce hat – bad</p> <p>Indicates :</p> <ul style="list-style-type: none"> <li>• significant leak</li> </ul>
 <p>Ascot hat – OK</p> <p>Indicates:</p> <ul style="list-style-type: none"> <li>• bronchospasm</li> <li>• partially obstructed airway</li> </ul>	 <p>No hat – very bad</p> <p>Indicates:</p> <ul style="list-style-type: none"> <li>• dislodged/displaced tracheal tube or tracheostomy</li> <li>• oesophageal intubation</li> <li>• lack of ventilation</li> </ul>



## Tracheostomy Daily Care: REPOSITIONING

- Any patient with a Tracheostomy Tube (or any artificial airway, i.e. endotracheal tube) needs very careful repositioning to ensure the airway does not become dislodged or to prevent it from falling out.
- All patients being repositioned needs to have a critical care airway assessment and signs displayed in the bed space and for high risk airways, consider the support of an airway trained doctor to be readily available. Refer to the UHDB ICU Care of the Ventilated Patient (2024) for more details.
- All patients with an artificial airway such as a tracheostomy or an endotracheal tube that requires a reposition needs a **minimum of three members** of the healthcare team. However, more staff maybe required to perform this safely (i.e. patient's stability, increased body mass index, additional medical device such as a chest drain etc).
- All staff performing the repositioning (moving up and down the bed/side to side) needs to be made aware of the tracheostomy in situ (bedhead sign and emergency algorithm) and ensure trache ties are secured prior to mobilising the patient.
- A competent registered professional must be responsible for the patient's airway and hold the endotracheal / tracheostomy tube while also coordinating the turn.

Action	Rationale
<ul style="list-style-type: none"> <li>• Explain the procedure to the patient</li> </ul>	<ul style="list-style-type: none"> <li>• To obtain consent, co-operation and reassure the patient.</li> </ul>
<ul style="list-style-type: none"> <li>• Wash hands, don appropriate personal protective equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce the risk of cross infection.</li> </ul>
<ul style="list-style-type: none"> <li>• Alert staff to any difficult airway issues, cardiovascular instability, etc. Ensure the tracheostomy bedhead signs, critical care airway assessments and emergency algorithm are easily accessible.</li> </ul>	<ul style="list-style-type: none"> <li>• Raise awareness of possible risks when repositioning.</li> </ul>
<ul style="list-style-type: none"> <li>• Check tracheostomy is secure by checking tracheostomy ties are secure and ensuring cuff pressure is monitored (cuff maybe deflated if a patient is on a speaking valve or weaning).</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure cuff is not over or under inflated.</li> </ul>
<ul style="list-style-type: none"> <li>• A competent registered professional must be responsible for holding the tube securely in place when repositioning.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the staff has had training in the care and management of tracheostomy patients and manual handling training.</li> </ul>

<ul style="list-style-type: none"> <li>• Explain the plan for reposition and proceed. The competent registered professional holding the tracheostomy needs to be the one leading and coordinating every step of the movement/reposition.</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure communication is clear.</li> </ul>
<ul style="list-style-type: none"> <li>• Once the reposition is complete, ensure patient is ventilating and tracheostomy remains correctly positioned.</li> </ul>	<ul style="list-style-type: none"> <li>• Re-assessment is essential post repositioning to ensure the tracheostomy is not displaced.</li> </ul>
<ul style="list-style-type: none"> <li>• Remove personal protective equipment and wash hands.</li> </ul>	<ul style="list-style-type: none"> <li>• To maintain infection control standards (NHS England, 2023).</li> </ul>
<ul style="list-style-type: none"> <li>• Document the procedure noting your assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitate communication, ensuring clear and accurate records are maintained (Nursing Midwifery Council 2018).</li> </ul>

## Tracheostomy Daily Care: DECANNULATION

- Discuss plans for decannulation with the multidisciplinary team. Ensure the multidisciplinary team agree to the patient being decannulated and are readily available if required.
- The decision to decannulate needs to be clearly documented in the patient's notes.
- This procedure requires **two registered** professionals.

Action	Rationale
<ul style="list-style-type: none"> <li>• Explain the procedure to the patient and gain consent to proceed</li> </ul>	<ul style="list-style-type: none"> <li>• To obtain consent, co-operation and reassure the patient.</li> </ul>
<ul style="list-style-type: none"> <li>• Wash hands, don appropriate personal protective equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce the risk of cross infection</li> </ul>
<ul style="list-style-type: none"> <li>• Assist the patient to a semi-recumbent position. Encourage the patient to cough and suction any secretions as required.</li> </ul>	<ul style="list-style-type: none"> <li>• Extending the neck will make the removal of the tube easier (NTSP, 2013).</li> </ul>
<ul style="list-style-type: none"> <li>• Consider pre-oxygenating the patient for 3-4min, either through the tracheostomy tube, nasal cannula or a face-mask (if required).</li> </ul>	<ul style="list-style-type: none"> <li>• To prevent hypoxia.</li> </ul>
<ul style="list-style-type: none"> <li>• While one registered professional holds onto the tracheostomy tube, the second registered professional removes the tapes and any sutures present at the flange, and deflate the cuff (if still inflated).</li> <li>• If the cuff is still inflated, consider aspirating the subglottic port prior to deflating the cuff.</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure tube is not accidentally dislodged.</li> <li>• To aid in the removal of secretions.</li> </ul>
<ul style="list-style-type: none"> <li>• Remove the tube on maximal inspiration.</li> </ul>	<ul style="list-style-type: none"> <li>• To reduce the risk of alveolar collapse (Global Tracheostomy Collaborative, 2013).</li> </ul>
<ul style="list-style-type: none"> <li>• Clean the stoma site using normal saline 0.9% soaked gauze then allow it to air dry. Show</li> <li>• Bring together the top and bottom of the stoma to ensure an optimal seal is achieved. Secure with gauze and an occlusive dressing. Encourage the patient</li> </ul>	<ul style="list-style-type: none"> <li>• To encourage the stoma to close and ensure all ventilation takes place via the upper airways</li> </ul>

<p>to hold their hand over the stoma dressing when they speak or cough. The stoma may take 7-14 days to heal and close.</p>	
<ul style="list-style-type: none"> <li>• Monitor respiratory status. Document date and time of decannulation. Renew dressing every 24 hours and keep emergency box at the bedside for a further 48 hrs post decannulation.</li> <li>• Consider applying oxygen support if appropriate.</li> </ul>	<ul style="list-style-type: none"> <li>• To facilitate communication and To allow easy access to the emergency equipment if the patient deteriorates and requires emergency recannulation (Global Tracheostomy Collaborative, 2013).</li> </ul>

**Documentation Controls**

<b>Reference Number</b> CG- CRITCARE/4437/24	<b>Version: 1</b>		<b>Status</b>  Final	
<b>Version / Amendment History</b>	<b>Version</b>	<b>Date</b>	<b>Author</b>	<b>Reason</b>
	1	03.2024	Lovely Ann Sorianosos	Brief reference / description as to why an amendment has been made
<b>Intended Recipients:</b> This guideline is for the nursing team on both ICU RDH and ICU QHB sites. The target population for this policy includes all Trust health care staff, bank workers or external agency, who are responsible for the care of patients within Critical Care.				
<b>Training and Dissemination:</b> Cascaded electronically through lead sisters/nurses/doctors/outreach. Published on Intranet, Article in ICU newsletter; emailed via NHS.net				
<b>Development of Guideline:</b> Lovely Ann Sorianosos <b>Job Title:</b> Senior Clinical Educator				
<b>Consultation with:</b> Outreach, Unit Lead Sister, ICU Sisters/Manager, ICU Consultants, ICU Educators (RDH & Burton), Critical Care Matrons				
<b>Linked Documents:</b> (see references)				
<b>Keywords:</b>				
<b>Business Unit Sign Off</b>			<b>Group: Critical Care Governance</b> <b>Date: June 2024</b>	
<b>Divisional Sign Off</b>			<b>Group: Surgery DQRG</b> <b>Date: 25/6/2024</b>	
<b>Date of Upload</b>			28/8/2024	
<b>Review Date</b>			September 2027	
<b>Contact for Review</b>			Lovely Ann Sorianosos	

## APPENDIX 1

### Definitions:

**Tracheostomy** is a procedure where an artificial airway is established surgically or percutaneously in the cervical trachea.

**Surgical tracheostomy** is performed in an operating theatre under a short general anaesthetic, usually by an Ear, Nose and Throat (surgeon). This technique has an advantage of a wider exposure of the structures of the neck which may allow easier haemostasis; it may be suitable for patients with recent neck surgery, or cervical spine injuries (FICM, 2020).

**Percutaneous tracheostomy** is an alternative to a surgical tracheostomy and is oftentimes performed by intensive care doctors on the ICU bedside. This involves a smaller incision and potentially less tissue trauma (FICM, 2020).

## APPENDIX 2

### RDH ICU Bedhead Airway Signs & Algorithm

#### Known or Predicted High-Risk Airway

Reason and nature:

Expected deviation from Difficult Airway Society (DAS) algorithm/recommendations?  
Yes / No

If yes provide detail:

*Experienced trained airway personnel required to perform or directly supervise*

Patient:

Bed-space:

Date reviewed:

#### Risk Factors Present for Airway Difficulty

Concerns and reasons:

Expected deviation from the Difficulty Airway Society (DAS) algorithm/recommendations?  
Yes / No

If yes, provide detail:

*Experienced trained airway personnel required to perform or directly supervise*

Patient:

Bed-space:

Date reviewed:

## **No Specific Airway Concerns Except ICU Location**

Plan: Difficult Airway Society (DAS) check-list and algorithm

- A. Direct or Video Rapid Sequence Intubation
- B. Oxygenate: Bag-Valve-Mask
- C. Oxygenate: Supraglottic Airway Device (SAD) 2 / Laryngeal Mask Airway (LMA)
- D. Front-of-Neck Airway (FONA)

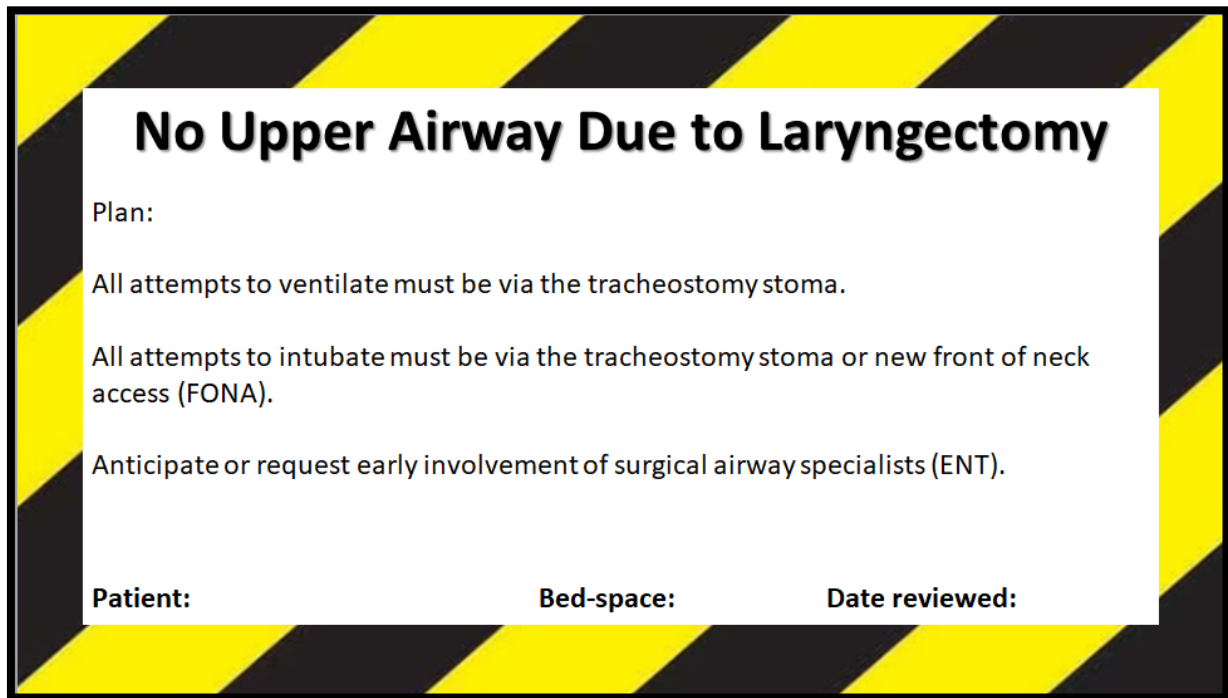
*Appropriately experienced airway personnel required to perform or directly supervise*

**Patient:**

**Bed-space:**

**Date reviewed:**





**No Upper Airway Due to Laryngectomy**

Plan:

All attempts to ventilate must be via the tracheostomy stoma.

All attempts to intubate must be via the tracheostomy stoma or new front of neck access (FONA).

Anticipate or request early involvement of surgical airway specialists (ENT).

**Patient:** **Bed-space:** **Date reviewed:**

**QHB ICU Critical Care Airway Plan**

**CRITICAL CARE AIRWAY PLAN**  
(SEE OVERLEAF FOR DEFINITIONS)

(Patient Label)
Name:
Unit Number: B
Date of Birth:

Date:

**RED Airway**

**AMBER Airway**

**GREEN Airway**

**RED PLAN** WILL MOST LIKELY NEED CONSULTANT HELP.  
Special equipment/techniques/drugs/assistance likely to be needed – record what in each plan box.

Theatre ODP Bleep:

<b>REASONS FOR DIFFICULTY</b>	BRIEF DESCRIPTION OF PROBLEMS WITH INTUBATION AND MEANS OF SUCCESS
<b>PLAN A</b>	
<b>PLAN B</b>	SUGGESTED ALTERNATIVES IF ABOVE FAILS

**AMBER PLAN** MAY NEED CONSULTANT HELP. Record any equipment needed (especially any not already in ITU intubation trolley) in each plan box.

<b>REASONS FOR DIFFICULTY</b>	BRIEF DESCRIPTION OF PROBLEMS WITH INTUBATION AND MEANS OF SUCCESS
<b>PLAN A</b>	
<b>PLAN B</b>	SUGGESTED ALTERNATIVES IF ABOVE FAILS

**GREEN AIRWAY** No special difficulties anticipated. (Usual precautions/equipment)

Name and grade of Doctor making plan (print).....

Signed.....

**APPENDIX 3**

**Tracheostomy/Laryngectomy Bedhead Airway Signs & Algorithm**

This patient has a

# TRACHEOSTOMY

There is a potentially patent upper airway (Intubation may be difficult)

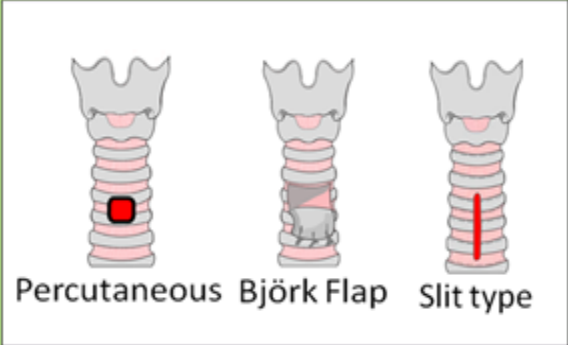
Surgical / Percutaneous

Performed on (date) .....

Days on post insertion .....

Tracheostomy tube size .....

Notes/Plan:



Percutaneous   Björk Flap   Slit type

**Emergency Call / Bleep Numbers:**

Anaesthesia      ICU      ENT      MaxFax      Emergency Team

PTO

This patient has a

# LARYNGECTOMY

and CANNOT be intubated or oxygenated via the mouth

Follow the LARYNGECTOMY algorithm of breathing difficulties

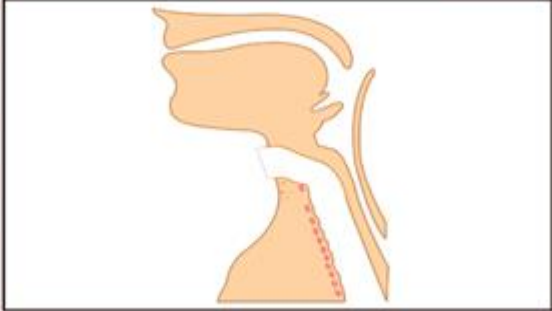
Performed on (date) .....

Tracheostomy tube size (if present) .....

Hospital / NHS number .....

Notes:

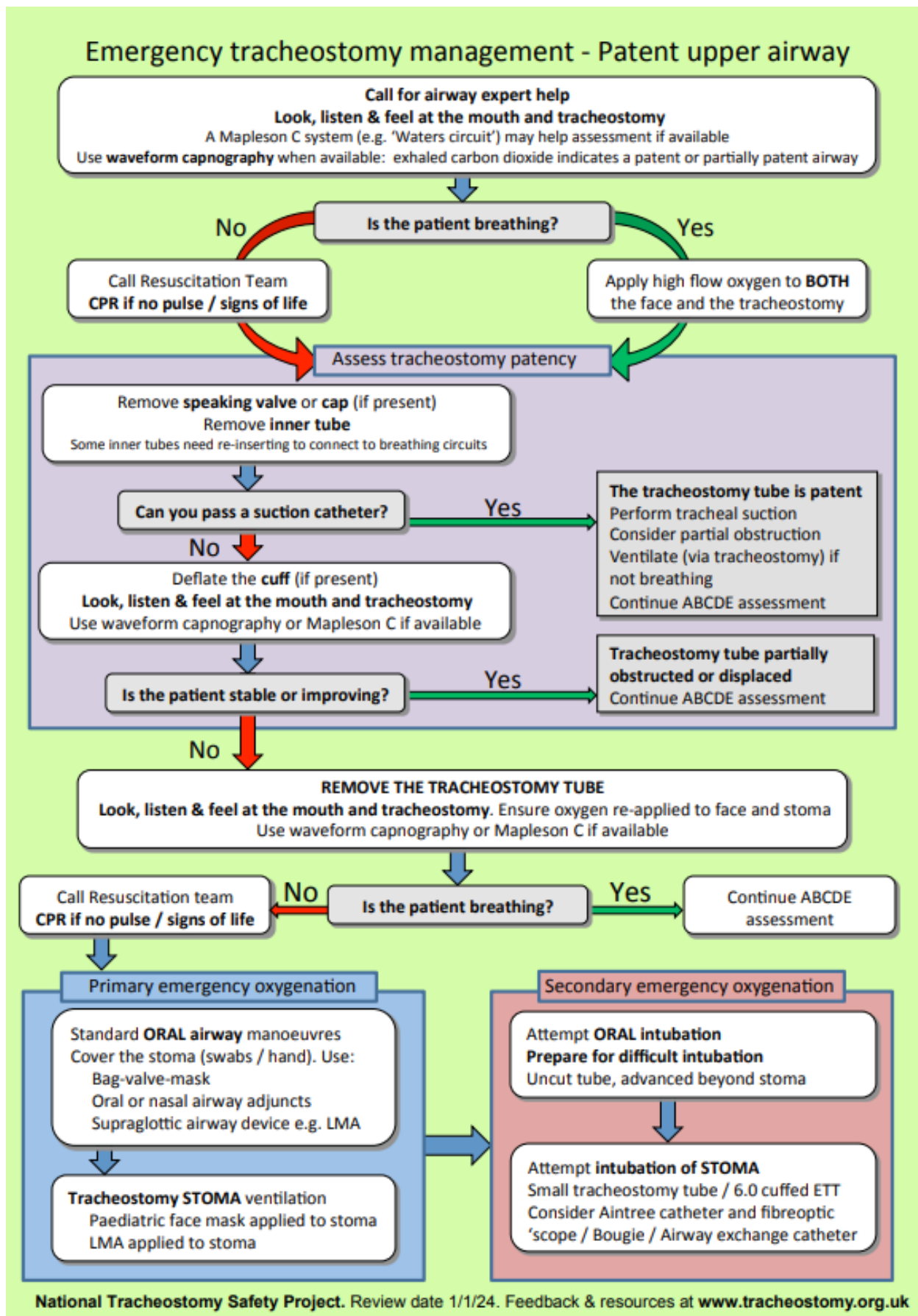
There may not be a tube in the stoma.  
The trachea (wind pipe) ends at the neck stoma

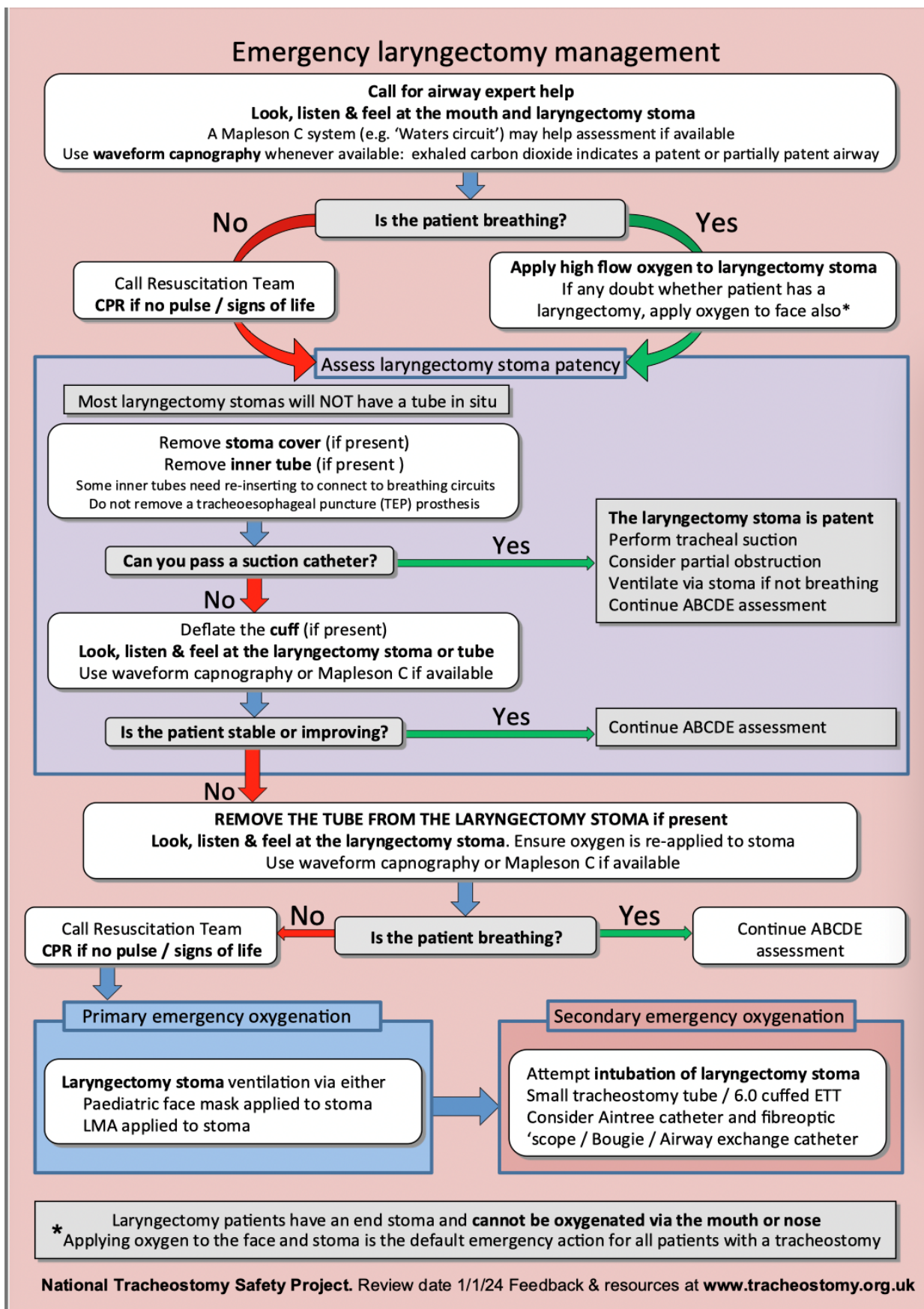


**Emergency Call:**    Anaesthesia      ICU      ENT      MaxFax      Emergency Team

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PTO





**Primary emergency oxygenation**

**Laryngectomy stoma ventilation** via either  
 Paediatric face mask applied to stoma  
 LMA applied to stoma

**Secondary emergency oxygenation**

**Attempt intubation of laryngectomy stoma**  
 Small tracheostomy tube / 6.0 cuffed ETT  
 Consider Aintree catheter and fiberoptic 'scope / Bougie / Airway exchange catheter

\* Laryngectomy patients have an end stoma and **cannot be oxygenated via the mouth or nose**  
 \* Applying oxygen to the face and stoma is the default emergency action for all patients with a tracheostomy

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