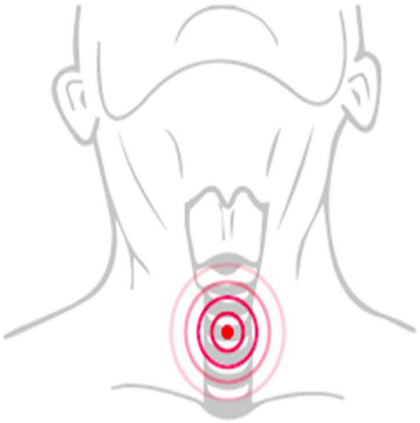


NTSP

www.tracheostomy.org.uk

National Tracheostomy Safety Project

COVID-19 Response: Safe Tracheostomy Care – a toolkit for healthcare staff

7th May 2020, Version 1

This document has been produced by the National Tracheostomy Safety Project in conjunction with the AHSN Network.

Delivered by:
*The***AHSN***Network*

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"The coronavirus pandemic is already putting unprecedented pressure onto healthcare systems globally, with a huge surge in patients becoming critically ill and requiring relatively prolonged mechanical ventilatory support in Intensive Care Units (ICUs). It is likely that an increased number of ICU survivors will need a temporary tracheostomy (estimate 15-20%), and these patients may be managed in makeshift ICUs or ward areas and cared for by staff who are not familiar with the key principles that can keep these complex and vulnerable patients safe. High quality, safe tracheostomy care can be achieved through preparation, planning and education. It is important work that saves lives. This is why the National Patient Safety Improvement Programmes are working to rapidly develop the skills and knowledge of bedside staff to deliver safe tracheostomy care everywhere."

Brendan McGrath – National Clinical Advisor for National Patient Safety Improvement Programmes' COVID-19 Response (Safe Tracheostomy Care); Intensive Care Consultant, Manchester University NHS FT

Introduction

The COVID-19 pandemic is having a significant impact on the delivery of health and social care in the UK. As a result, many healthcare professionals are being asked to look after patients with needs that are outside their usual area of practice, providing care they have never previously delivered, often in unfamiliar environments.

The care of coronavirus patients with tracheostomies is one such area. The surge in patients requiring relatively prolonged ventilatory support in Intensive Care Units (ICUs) due to COVID-19 will lead to a related increase in the numbers of patients requiring temporary tracheostomies, which are used to help wean some patients from respiratory support.

Due to critical care service delivery pressures, many ICU patients, including those with tracheostomies, will be managed outside of established ICUs. These patients are likely to be stepped-down earlier and to clinical environments that are not familiar with the ongoing management of such patients.

This toolkit has been produced by the National Tracheostomy Safety Project in collaboration with the Academic Health Science Networks in response to the COVID-19 pandemic, to support healthcare staff who are looking after this very vulnerable group of patients. Primarily it is for those working in hospitals. However, much of the material is also applicable to primary and community care settings. Wherever it is used, the toolkit's key objective is the same: to ensure that healthcare staff caring for patients with tracheostomies in these challenging circumstances are able to do so safely.

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What's in this toolkit?

This toolkit provides information, practical resources and links to useful online training videos and websites.

Who is it for?

It is for all healthcare staff who are looking after adult patients with tracheostomies in a range of hospital settings (established and novel ICUs, specialist and general wards) and community settings following hospital discharge. The toolkit is also applicable for healthcare staff providing care to adults with established tracheostomies. Whilst this document is aimed primarily at staff working in secondary care, much of the material is applicable to primary care (GPs, community care homes and carers). It is designed to help you provide consistent, high quality care for your patients with a tracheostomy.

Who produced it?

The toolkit has been produced in response to the COVID-19 pandemic by the National Tracheostomy Safety Project (NTSP), the Academic Health Science Networks, Manchester University NHS Foundation Trust, Cheshire and Merseyside Critical Care Network, and East of England Trauma Network. We are very grateful to all contributors for their support.

The toolkit supports NHS England and NHS Improvement's *clinical guide for tracheostomy care during the coronavirus pandemic* CO308 which will be published on the NHS England and NHS Improvement website at **www.england. nhs.uk/coronavirus/secondary-care/other-resources/specialty-guides/**

What support is available on the National Tracheostomy Safety Project website?

The NTSP website **http://www.tracheostomy.org.uk/** contains further guidance and resources for all healthcare staff and students. These include step-by-step emergency management algorithms and information about basic care aimed at preventing "neck-breathing" patients from developing life-threatening emergencies.

NTSP apps are available on iOS and Android for all the emergency algorithms and links to training videos – see links below:

Download on the App Store **itunes.apple.com/gb/app/ntsp/id578430947?mt=8**

GET IT ON Google Play **play.google.com/store/apps/details?id=com.boxsail.ntsp&hl=en_GB**

NTSP's manual "Comprehensive Tracheostomy Care" is available to download at: **www.tracheostomy.org.uk/resources/documents**

All training videos are also available on the NTSP YouTube channel: **www.youtube.com/c/NationalTracheostomySafetyProject**

The NTSP has approved use of their resources for unlimited teaching with staff providing tracheostomy care. However, if using this information, please cite the source, either as the National Tracheostomy Safety Project website www.tracheostomy.org.uk, or the original papers (McGrath et al, Anaesthesia 2012;67(9):1025-41 or Doherty et al, Anaesthesia 2018, doi.org/10.1111/anae.14307)[1]. You only need to ask permission if they are being used in a journal article, textbook, or other commercial resource (apply to the journals via Rights Link).

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How can Patient Safety Collaboratives support healthcare staff?

Patient Safety Collaboratives (PSCs) are working closely with the National Patient Safety Improvement Programmes (NatPatSIP) to support the Safe Tracheostomy Care Toolkit and to help healthcare colleagues across acute and non-acute settings during the COVID-19 pandemic.

The PSCs can offer practical help, guidance on training and support to healthcare colleagues who are or who will be caring for patients with tracheostomies and laryngectomies.

Please contact your local PSC if you would like further information or advice. You can reach them through your regionally-based Academic Health Science Network. Their contact details are here: **https://www.ahsnnetwork.com/contact-the-ahsn-network**

Background to tracheostomy care

What is a tracheostomy?

A tracheostomy is an artificial opening in the front of the neck into the trachea (windpipe). This can be performed by head and neck surgeons or by intensive care doctors. It allows access to the trachea for a variety of reasons, most commonly to 'secure' a safe airway for patients to breathe or to allow prolonged ventilation. Other indications are when a patient cannot safely manage food, liquid or even oral secretions ('protection' of the airway) or if there is a reduced level of consciousness.

What is a laryngectomy?

This is surgical removal of the larynx (voicebox) usually for throat cancer. There is no longer a connection between the patient's nose and mouth (upper airways) and the lungs. The patient effectively breathes through their neck.

Is it permanent?

Total laryngectomies result in permanent changes to the airway anatomy, although partial laryngectomies are possible. Tracheostomies are often temporary but can be long-term or permanent, depending on why they were inserted in the first instance.

When is a tracheostomy needed?

A tracheostomy is placed for a number of reasons:

- Weaning of patients from mechanical ventilation (or to allow long-term ventilation)
- Creating an open airway in the case of upper airway obstruction (trauma, infection, cancers or extensive head and neck surgical procedures)
- To offer a degree of protection against aspiration into the lungs (acute or chronic neurological or neuromuscular problems affecting the larynx)
- To help to clear the chest of secretions (if spontaneous cough is inadequate).

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Around two-thirds of tracheostomies are performed on the ICU, mostly for weaning from ventilation. The vast majority are temporary and are removed prior to ICU discharge, although some patients may be discharged to the ward with a tracheostomy still in place. Tracheostomies may be long-term or permanent, and hospitals will see patients admitted with a permanent tracheostomy. In the community, some patients with a long-term tracheostomy will lead independent lives at home, but the majority will need assistance, or live in supported accommodation.

Whilst the principles of care are the same for patients with a tracheostomy and laryngectomy, some important differences exist.

What type of care is needed?

While the tracheostomy tube is in place it needs to be cared for to keep the airway clear, maintaining its patency. This prevents and manages complications and ensures the needs of the patient are addressed. Whilst staff and healthcare systems rightly focus on the safety of tracheostomy care, patients typically ask for help with swallowing, eating, drinking and talking – all of which are affected by a tracheostomy.

Management of tracheostomies and laryngectomies

There should be a detailed plan of care for all patients with a tracheostomy and laryngectomy, which should be reviewed on a daily basis and updated if there is any change. The care plan should contain a **daily care bundle** of tasks **(see Safety Intervention One).**

To support communication and emergency situations, every patient with a tracheostomy or laryngectomy should have a **bedhead sign** **(see Safety Intervention Two).**

All patients need to have access to **emergency equipment** at all times **(see Safety Intervention Three).**

Essential details about the tracheostomy or laryngectomy should be recorded including any major incidents, such as decannulation, tube obstruction etc. There should be a record of tracheostomy tube insertion and changes (and how easy or hard these were) and a tracheostomy weaning plan. **Tracheostomy passports are ideal for this.**

Patients with a tracheostomy or laryngectomy need diligent observation and assessment and should be nursed in an observation area in a cohort ward to allow frequent monitoring and observation by the nursing staff. The nurse call bell should always be accessible to the patient.

At the start of each shift the healthcare professional caring for the patient with a tracheostomy should carry out a full assessment of the patient, which should include:

- Why does the patient have a tracheostomy?
- When was the tracheostomy performed?
  - » Was it surgical or percutaneous (may have implications for ease of re-insertion)?
  - » Has the patient had a laryngectomy? (ie do they have a communication between the oral upper airway (nose / mouth) and the lungs?)
- Bedhead signs should be in place by the patient's bed to quickly and easily communicate essential information **(see Safety Intervention Two)**

- Type and size of tracheostomy tube and availability of spare and emergency equipment
- When was the patient last suctioned?
- Check and change inner cannula for any build up of secretions.
- Check tracheostomy tape and ties are secure and clean
- Check stoma dressing is clean
- Cough effort
- Ability to swallow, including any Speech and Language Therapy (SALT) assessments
- Sputum characteristics (Colour, Volume, Consistency, Odour)
- Routine observations.

The patient assessment should be recorded in the care plan **at the start of each shift.**

Care plans and pathways will vary from trust to trust. An example of a care plan is shown in **Appendix 1**.

Safety issues

The National Patient Safety Team have recurrently highlighted avoidable harm to tracheostomy patients, with NCEPOD reporting low quality care and prolonged, uncoordinated, expensive in-patient hospital stays[2]. Landmark studies consistently highlight failings in care provision, with themes relating to inadequate staff training, equipment provision and infrastructure leading to avoidable patient harm, morbidity and mortality[3-6]. Simply requiring a tracheostomy is associated with in-hospital mortality reported from 20-60%, usually due to underlying illness[7,8]. However, institutional harm also occurs, with up to 30% of tracheostomy patients experiencing an untoward incident. Measurable harm occurs in 60-70% of such incidents, ranging from hospital or Intensive Care Unit (ICU) admission or readmission, prolonged in-patient stays, hypoxic brain injury and death[5-6]. Delays in care are common due to the complexities and variety of services accessed by tracheostomised patients[9].

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Three key safety interventions

This toolkit focuses on three key safety interventions for healthcare staff who are looking after patients with tracheostomies:

1. **Standardised tracheostomy daily care bundle** – locally agreed at individual organisation-level, including local / regional Critical Care Network

2. **Bedhead signs for patients** which include patient-specific key details of the tracheostomy along with the emergency care algorithm

3. **Standardised 'bedside' tracheostomy emergency equipment.**

Safety Intervention One: Tracheostomy or Laryngectomy Daily Care Bundle

1

The NTSP have reviewed critical incidents that have occurred involving tracheostomy or laryngectomy care. Recurrent themes and potential solutions were refined by national multidisciplinary consensus into nine key elements to ensure high quality, safe care. Tasks relating to each key element, should be carried out by the healthcare professionals daily (see **Table 1** and **Appendix 2**)

The elements include:

- **T**ube care
- **R**esuscitation (review red flags and know what to do)
- **A**irway
- **C**are of the stoma
- **H**umidification
- **E**nvironment (bedhead sign and equipment)
- **Co**mmunication
- **M**outh care
- **S**wallowing and nutrition.

Table 1: *Nine key elements of the daily care bundle and associated daily tasks. The frequency of some of these interventions is altered when managing patients with COVID-19.*

		Action	Minimum frequency (hours)
T	**T**ube care	• Secure the tube (tapes / ties) • Inner cannula (check / clean) • Cuff check (pressure) • Sub-glottic secretions (aspirate)	**8** **8** **8** **4-8**
R	**R**esus	• Review red flags • Know what to do	**8** **Per shift**
A	**A**irway	• Suction to keep airway clear	**8**
C	**C**are of the stoma	• Keep skin clean, healthy and dry • Change dressings • Skin care	**Daily** **Daily** **Daily**
H	**H**umidification	• Keep secretions loose • Humidification ladder • Respiratory Physiotherapy	**8** **8** **8**
E	**E**nvironment	• Bedhead sign • Equipment	**Per shift** **Per shift**
C	**CO**mmunication	• Non-verbal communication aids • Augmentative and alternative communication • Vocalisation plan	**Per shift** **Per shift** **Daily**
O	**M**outh care	• Oral secretion management • Clean the teeth	**8** **8**
M			
S	**S**wallowing & nutrition	• Swallowing assessment • Refer to SALT • Adequate nutrition	**Daily** **Daily** **Daily**

A daily care record should include these elements of care. The record should be easily found and facilitate continuity of care.

It should also be easy to locate tracheostomy-specific documentation and instructions relating to:

- SALT: swallowing assessment and instruction
- Plans for cuff deflation, down-sizing and decannulation
- Physiotherapy plans
- Risk assessments (which may alter during the course of the inpatient stay).

NTSP Tracheostomy Care bundle – key elements can be found in **Appendix 2**.

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Safety Intervention Two: Bedhead Signs

2

Bedhead signs communicate essential information about the patient to staff who are caring for them.

An example bedhead sign is shown in **Appendix 3**.

Bedhead signs detail key information about the indication, type and date of a tracheostomy along with details of how to manage the upper airway in an emergency and who and how to call for help. They are an important safety intervention in the daily care bundle. Bedhead signs should be in place for every patient with a tracheostomy or laryngectomy. They should initially be completed by the doctor performing the tracheostomy. The front side (facing out) indicates that the patient has a tracheostomy or laryngectomy, and the reverse side provides relevant airway information which is very important to be aware of in an emergency.

The bedhead signs and algorithms are available as PowerPoint slides for your local systems to adapt. You can download them here: **www.tracheostomy.org.uk/NTSP-algorithms-and-bedheads**

Safety Intervention Three: Bedside Emergency Equipment

3

Any clinical area caring for patients with a tracheostomy must have emergency equipment immediately available at all times.

This is a further important safety intervention in the daily care bundle.

Some routine equipment will be at the patient's bedside as it is required for everyday care, whilst other equipment is provided in a central ward or nursing area.

However, if a patient is transferred to a different location within a hospital, then the accompanying staff must ensure that any equipment that may be required in an emergency is available at the destination and during the journey to it. There have been many incidents recorded in hospital lifts, corridors and remote departments where a blocked or displaced tube could not be managed due to a lack of immediately available equipment. Equipment may be in the form of a dedicated case or box that accompanies the patient or stocked on a 'difficult airway' trolley in a critical care area. This equipment, including suction, should accompany the patient **wherever they go during their hospital stay**. An appropriately trained carer who is competent to use the equipment in an emergency must also accompany them.

Continued over...

Safety Intervention Three continued

Emergency equipment needed in a ward or clinical area

- Basic airway equipment:
  - » Oxygen masks
  - » Self-inflating bags
  - » Oral and nasal airways
- Advanced airway equipment:
  - » Supraglottic Airway Devices (such as Laryngeal Mask Airways)
  - » Laryngoscopes with appropriate tubes (arrest trolley or similar)
  - » Videolaryngoscope
  - » Bougies and/or stilette, relevant to the laryngoscopes available
- Waveform capnography (immediately available in critical care areas and available in designated tracheostomy cohort wards. Most defibrillators have provision for a capnography module)
- An airway endoscope (disposable endoscopes are available with long, sterile shelf lives)
- Tracheal dilators.

3

Waveform capnography and airway endoscopes should be available for all patients with a tracheostomy. In critical care, specialist ward areas (Head & Neck Surgery for example) and areas who look after high volumes of tracheostomy patients these should be immediately available. For other ward areas, availability should be within minutes (eg on a cardiac arrest trolley).

Airway endoscopes should ideally be portable and able to be used quickly without a light source or separate 'stack' system. All staff caring for patients with a tracheostomy and those who respond to emergencies should know how to access and operate these devices around the clock.

There is conflicting opinion on whether tracheal dilators are useful in an emergency. This should be agreed locally, reflecting patient demographics, types of tracheostomy performed and clinician preference.

Continued over...

Safety Intervention Three continued

Equipment for routine care kept at patient's bedside

- Humidification equipment
- Suction with selection of appropriate suction catheters
- Spare tracheostomy tubes
  - » One tube the same size
  - » One tube which is one size smaller
- Clean pot for spare inner cannula
- Sterile water for cleaning the suction tube
- Scissors
- Stitch cutter if tracheostomy tube is sutured
- Water soluble lubricating jelly
- Sterile dressing pack
- Tracheostomy dressings
- Tracheostomy tapes
- Personal protective equipment (gloves, aprons, eye protection)
- Sterile gloves – for performing deep suction
- Nurse call bell: the patient may be unable to verbally call for help
- Communication aids: the patient may not be able to verbalise
- Bedside equipment checklist.

3

Some of this equipment could be kept in the emergency tracheostomy equipment box with contents as listed below.

It is important to check all equipment is available at the beginning of every shift.

Emergency portable tracheostomy equipment box

A suitable emergency tracheostomy equipment box is useful to keep all emergency equipment together. These can then accompany the patient if they need to be transferred to a different location. Portable suction and a portable oxygen supply also need to accompany the patient.

The emergency equipment box must contain:

- Spare tracheostomy tubes
- Suction catheters
- Scissors
- Stitch cutter (if the tracheostomy tube has been stitched)
- Lubricating jelly
- Tapes
- Dilators (if agreed locally).

An example emergency equipment checklist can be found in **Appendix 4**.

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Additional safety information

Cohort wards and staffing

The National Tracheostomy Safety Project advises that to minimise risks of airway related incidents, the need for cohorting patients with a tracheostomy must take precedence over other clinical diagnoses.

Trusts should ensure that:

- Inpatients with a tracheostomy who do not require a critical care bed, are cared for in designated, tracheostomy cohort wards. This includes:
  - » Patients admitted to hospital from the community with a long-term tracheostomy
  - » Patients with a tracheostomy who are transferred in or repatriated from another hospital
  - » Patients who have had a tracheostomy performed during their hospital stay
- Patients who are stepping down from a critical care area to a ward are transferred to designated tracheostomy cohort wards. Failing that standard, patients should remain in critical care.

The NTSP recommends that at least one member of appropriately trained staff is always available to safely manage tracheostomy problems in each cohort location that patients with a tracheostomy are managed in. This standard should apply around the clock and will likely involve more than one trained staff member being available on a particualr shift to allow for transfers and breaks.

Tracheostomy passports

A tracheostomy passport belongs to and stays with the patient at all times wherever they are. Patients should take it with them on discharge. It provides important at-a-glance information about the patient's tracheostomy. Tracheostomy tube changes and significant changes to care plans should be recorded and communicated via the passport. It should be up to date at discharge.

A number of passports are available, mostly in paper format, from hospitals and manufacturers. One example is here: **https://www.ccs-sth.org/resources/Documents/Tracheostomy%20Care%20Group/Trachi-Pass%20VERSION%202%20July%2015.pdf**

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Other learning resources for healthcare staff

The NTSP has collaborated with the NHS e-Learning for Healthcare (eLfH) and the Royal College of Anaesthetists e-Learning in Anaesthesia project (eLA) to develop four self-directed modules:

NTSP: http://tracheostomy.org.uk/e-learning

e-LA: https://www.e-lfh.org.uk/programmes/anaesthesia/

RCoA link: https://www.rcoa.ac.uk

eLfH link: https://www.e-lfh.org.uk

Training videos and online resources

Follow the quick links below to find out more about key elements of the tracheostomy daily care bundle:

		Resource link (All links)	Video link
T R A C H E C O M S	**T**ube care	• Secure the tube doc • Inner cannula doc • Cuff doc	• Tapes video (kids/universal) • Inner cannula video • Cuff pressure video • Cuff deflation & subglottic video
	Resus	• Red flags doc • Emergency care overview docs & videos	• Red flags video • Emergency care video
	Airway	• Suctioning doc	• Suctioning video
	Care of the stoma	• Stoma care doc	• Stoma care video (kids/universal)
	Humidification	• Humidification doc	• Humidification video
	Environment	• NTSP bedhead sign doc • Bedside equipment doc	
	COmmunication	• Communication overview docs & videos	• Speaking valves video • Above cuff vocalisation video • The gift of speech video
	Mouth care	• Oral care doc	
	Swallowing & nutrition	• Swallowing doc	• Swallowing assessments video

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Non-medical competencies for people caring for patients with tracheostomy

Non-medical competencies for tracheostomy and laryngectomy care can be found here: **http://tracheostomy.org.uk/storage/files/ITC%20basic%20trachy%20competencies.pdf**

Community-based organisations may find some parts of of this helpful.

Consideration for discharge from acute services

NHS England and NHS Improvement will be publishing guidance about the appropriate discharge of patients recovering from COVID-19, including information about the discharge of patients with a tracheostomy. Please check the website at **www.england.nhs.uk/coronavirus/secondary-care/** for details.

Patients going home with a tracheostomy tube have limited support in the community. Therefore, they or their carers must be trained to feel confident in the day-to-day care and management of their tracheostomy tube. Planning their discharge is a complex process, involving close liaison with community teams and ensuring the right specialist equipment is provided for the patient.

Guidelines about care and training for patients going home with a tracheostomy, produced by St George's University Hospitals NHS Foundation Trust, are available here: **https://www.stgeorges.nhs.uk/wp-content/uploads/2013/08/appendix-5.pdf**

Guidelines produced by East of England Trauma Network are available here: **https://www.eoetraumanetwork.nhs.uk/training-resources**

Patient information leaflet, "Living with a Tracheostomy – Patient and Carer Information": **https://ba59446b-d9ca-4eb8-99a4-4054fe530c51.filesusr.com/ugd/1f7548_f0b1b7be7a624bd1913a7abcf3b05e04.pdf**

COVID-19-related information for staff caring for patients with tracheostomies

Some patients who have been infected with coronavirus may have to have their tracheostomies changed or removed during their care.

The NTSP has developed guides for healthcare staff and patients about this. They can be found here: **http://tracheostomy.org.uk/healthcare-staff/improving-tracheostomy-care/covid-19**

- **NTSP Advice for patients with a tracheostomy in the coronavirus pandemic**
- **NTSP COVID Tracheostomy Guidance (31 March 2020)** – guidance for staff on balancing the risk of infection control caused by aerosol spread of the virus versus the best management of the patient with a tracheostomy.
- **NTSP Tracheostomy in COVID-19: What can we expect?** – information about COVID-19 and tracheostomy management

Global Tracheostomy Collaborative

The Global Tracheostomy Collaborative (GTC) is an international quality improvement collaborative. The GTC hold regular webinars and have forums for discussion and opportunities to connect with international exemplar sites. Further information can be found at **www.globaltrach.org**

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Appendix 1

Tracheostomy Care Plan – example from Cheshire and Merseyside Critical Care Network

NEED	ACTION	RATIONALE
HUMIDIFICATION (TC1)	• Assess humidification needs at least daily. • Provide sufficient humidification to keep secretions loose and easy to suction. • Choose humidification system to match patient requirements (eg water humidification, heat-moisture exchanger). • Consider additional humidification using nebulised normal saline via the tracheostomy.	• A tracheostomy bypasses the normal upper airway mechanisms for humidification, filtration and warming of inspired gases. • Failure to provide adequate humidification can lead to blockage of the tracheostomy tube, with associated risks of hypoxia and cardio-respiratory arrest.
SUCTION (TC2)	• Frequency of tracheal suction should be performed to individual requirements. • Observe patients for clinical signs that may indicate the need for tracheal suction (eg respiratory distress; reduced oxygen saturations; spontaneous coughing; audible or visible secretions from the tracheostomy, chest auscultation suggesting secretion build-up). • Ensure that fenestrated inner tubes are replaced with non-fenestrated inner tubes for suctioning. • Choose suction methods and circuits that meet patient needs (eg closed or open suction techniques).	• Routine suctioning may result in over-suctioning of the patient and increase risk of suction related trauma to the airway. • Tracheal suction based upon clinical need and regular clinical observation is preferred to routine suction practices. • Suction via a fenestrated inner tube can allow the suction catheter tip to come into contact with the trachea, with potential for tracheal trauma and scarring. • Consider frequency of suction requirements and infection status when choosing between suction circuits. Risk of cross infection from tracheal aspirate infections will be reduced when using closed circuit suction techniques.

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NEED	ACTION	RATIONALE
INNER TUBE CARE (TC3)	• Ensure that all patients who are not mechanically ventilated have a double cannula tracheostomy tube (ie a tube with an inner tube), at the earliest opportunity. • Inspect inner tubes as a minimum 4-hourly, to check for patency. • Rinse inner tubes with sterile water and clean the lumen with a tracheostomy inner tube cleaner – leave to air dry.	• Inner tubes reduce the risk of total blockage of a tracheostomy tube. • Regular inspection is required to check from secretion build up on the inner lumen of the inner tube. • Tubes should never be left to soak – this increases risks of infection.
DRESSINGS AND TUBE SECURITY (TC4)	• Ensure that tracheostomy dressings and tube ties or collars are clean and changed at least daily. • Ensure that tube ties or collars are fastened securely but not too tight – allow a finger width space between the tie and the neck. • Check stoma site at least daily for skin integrity. • Tracheostomy dressing and tape change changes require 2 members of staff throughout the procedure.	• To minimise risk of infection. • To enhance patient comfort and appearance. • To hold tube securely in place without restricting blood flow through the vessels in the neck. • To promote patient comfort. • For early identification of pressure related problems from tracheostomy flange or inflammation / infection at the site. • To minimise risk of tube displacement or accidental decannulation during the procedure.

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NEED	ACTION	RATIONALE
CUFF PRESSURE (TC5)	• Multi-disciplinary agreement should be sought on whether the patient is to be nursed with a cuffed / non cuffed tube. • For cuffed tubes: MDT agreement is required for instructions on when / whether the tracheostomy cuff should be inflated or deflated. Ensure that all aspects of cuff status are recorded on the Tracheostomy Care Record chart.	• Prolonged, unnecessary cuff inflation increases the risk of pressure related complications affecting the trachea. • Promotes accurate and consistent approach. • Visible record of cuff pressures / deflations.
COMMUNICATION (TC6)	• Assess the individual patient's communication needs at least daily. • Where patient is able, consider methods to enhance non-verbal communication (eg Letter boards, pen and paper, nodding/ blinking to command). • MDT approach to consider technical methods to facilitate voice production (fenestrated tube occlusion; speaking valves).	• Tracheostomy tubes with inflated cuffs prevent air passing the vocal cords, meaning the patient will be unable to produce an audible voice. • Alternative methods of communication should be sought for conscious patients to help reduce stress / anxiety / frustration at loss of voice production.
PATIENT SAFETY / MENTAL AWARENESS (TC7)	• Ensure that conscious and able patients have access to a working call bell at all times. • Ensure frequent observation and communication with the tracheostomy patient. • Assess staffing ratios in relation to the individual patient's needs, taking into account anticipated frequency of observation / interventions; patient's mental awareness, tendency to confusion / agitation.	• Tracheostomy patients will not be able to summon help verbally. The patient may have an urgent need for staff to attend, eg respiratory distress related to their tracheostomy, or another physical need. • To check on patient's well-being and to reassure the patient. • Patients who are agitated or confused or lack mental awareness are at increased risk of tracheostomy incidents, (eg hypoxia, accidental decannulation, tube displacement / tube blockage, removal of humidification).

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NEED	ACTION	RATIONALE
HYDRATION (TC8)	• Ensure that individual patients have hydration needs assessed each shift. • Observe for clinical signs of under-hydration, (eg thick or sticky tracheal aspirate, dry mucous membranes, oliguria). • Consider intake / output monitoring to help guide fluid requirements. • Ensure supplemental fluids via intravenous / enteral / other routes are prescribed as required.	• Good systemic hydration is essential to keep tracheal secretions loose and easy to remove on suction. • Dehydrated patients are at increased risk of sputum plugs blocking the tracheostomy tube, leading to acute respiratory distress, hypoxia, atelectasis or respiratory arrest.
NUTRITION AND SWALLOW (TC9)	• Refer all tracheostomy patients to a dietitian and a speech and language therapist.	• Tracheostomy patients are at risk of swallow impairment and should not be assessed using a standard nurse-led swallow screen. • Due to potential swallow impairment, dietary and nutritional requirements should be discussed amongst the MDT.

Standard new tracheostomy care

Appendix 2: NTSP Tracheostomy Daily Care Bundle: Key Elements (Adults)

		Action	Minimum frequency (hours)	Resource link (All links)	Video link
T	**T**ube care	• Secure the tube (tapes / ties) • Inner cannula (check / clean) • Cuff check (pressure) • Sub-glottic secretions (aspirate)	**8** **8** **8** **4-8**	• Secure the tube doc • Inner cannula doc • Cuff doc	• Tapes video (kids/universal) • Inner cannula video • Cuff pressure video • Cuff deflation & subglottic video
R	**R**esus	• Review red flags • Know what to do	**8** **Per shift**	• Red flags doc • Emergency care overview docs & videos	• Red flags video • Emergency care video
A	**A**irway	• Suction to keep airway clear	**8**	• Suctioning doc	• Suctioning video
C	**C**are of the stoma	• Keep skin clean, healthy and dry • Change dressings • Skin care	**Daily** **Daily** **Daily**	• Stoma care doc	• Stoma care video (kids/universal)
H	**H**umidification	• Keep secretions loose • Humidification ladder • Respiratory Physiotherapy	**8** **8** **8**	• Humidification doc	• Humidification video
E	**E**nvironment	• Bedhead sign • Equipment	**Per shift** **Per shift**	• NTSP bedhead sign doc • Bedside equipment doc	
C	**CO**mmunication	• Non-verbal communication aids • Augmentative and alternative communication • Vocalisation plan	**Per shift** **Per shift** **Daily**	• Communication overview docs & videos	• Speaking valves video • Above cuff vocalisation video • The gift of speech video
O	**M**outh care	• Oral secretion management • Clean the teeth	**8** **8**	• Oral care doc	
M	**S**wallowing & nutrition	• Swallowing assessment • Refer to SALT • Adequate nutrition	**Daily** **Daily** **Daily**	• Swallowing doc	• Swallowing assessments video
S					

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COVID-19 new tracheostomy care

The risk of transmission of the SARS-CoV-2 virus that causes COVID-19 decreases over time and is low by the time tracheostomy is performed, reducing as patients recover. However, modifications to usual care are recommended to protect staff.

Review the frequency of these actions daily:

- Increase frequency of suction & inner tube care if lots / thick secretions
- Humidification may need to be increased (see humidification ladder)

		Action	Initial post-trachy frequency
T	**T**ube care	Secure the tube (tapes / ties) Inner cannula (check / clean) Cuff check (pressure) Sub-glottic secretions (aspirate)	Daily Daily Daily (check if signs of leak) 4 hourly
R	**R**esus	Review red flags Know what to do in an emergency	Start of every shift
A	**A**irway	Suction to keep airway clear	4-8 hourly
C	**C**are of the stoma	Keep skin clean, healthy and dry Change dressings Skin care	Daily Daily Daily
H	**H**umidification	Keep secretions loose Humidification ladder Respiratory Physiotherapy	8 hourly 8 hourly 8 hourly
E	**E**nvironment	Bedhead sign Equipment	Check at the start of every shift
C o	**Co**mmunication	Non-verbal communication aids Communication plan Discuss with SLT	Per shift Per shift
M	**M**outh care	Oral secretion management Brush the teeth Saliva replacement / oral gel	8 hourly 8 hourly 8 hourly
S	**S**wallowing & nutrition	Discuss: SLT & nutrition teams Swallowing assessment? Adequate nutrition?	Daily (if condition changes) Daily Daily

Humidification ladder: (review daily)

1. Start with a 'dry circuit' HME filter (changed weekly)
2. Add mucolytics if necessary
3. Add saline / hypertonic saline nebulizers
4. Consider changing to a 'wet circuit' (active humidification)

Check HME filter daily for waterlogging if using saline or a 'wet circuit'

Suspend ventilation if possible when breaking the circuit for inner tube or HME changes. Check you are familiar with how to do this on that particular ventilator.

Weaning: (have a clear plan, reviewed daily: involve nursing, physio, SLT, ENT, ICU)

- Keep the cuff inflated initially
- Increase duration of spontaneous breathing & reduce support slowly / 'sprints'
- Cuff deflation when the patient can tolerate ventilator-free periods
- Cuff deflation with pressure support is aerosol-generating (consider environment)

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Appendix 3

Bedhead Signs and Algorithms for emergency laryngectomy and emergency tracheostomy management – examples

(materials kindly provided by the National Tracheostomy Safety Project)

A) Front of laryngectomy bedhead sign:

This patient has a

LARYNGECTOMY

and CANNOT be intubated or oxygenated via the mouth

Follow the LARYNGECTOMY algorithm of breathing difficulties

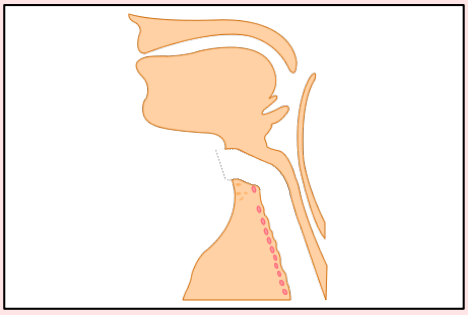
Performed on (date) .....

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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B) Front of tracheostomy bedhead sign:

This patient has a

TRACHEOSTOMY

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

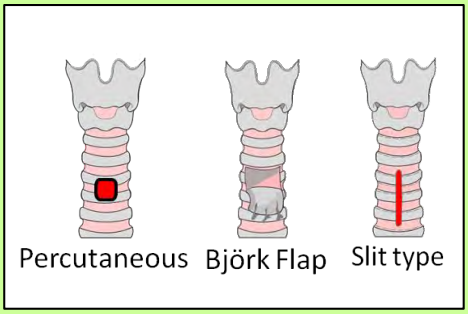
Surgical / Percutaneous

Performed on (date) .....

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

Hospital / NHS number .....

Notes: Indicate tracheostomy type by circling the relevant figure.
Indicate location and function of any sutures.
Laryngoscopy grade and notes on upper airway management.
Any problems with this tracheostomy.

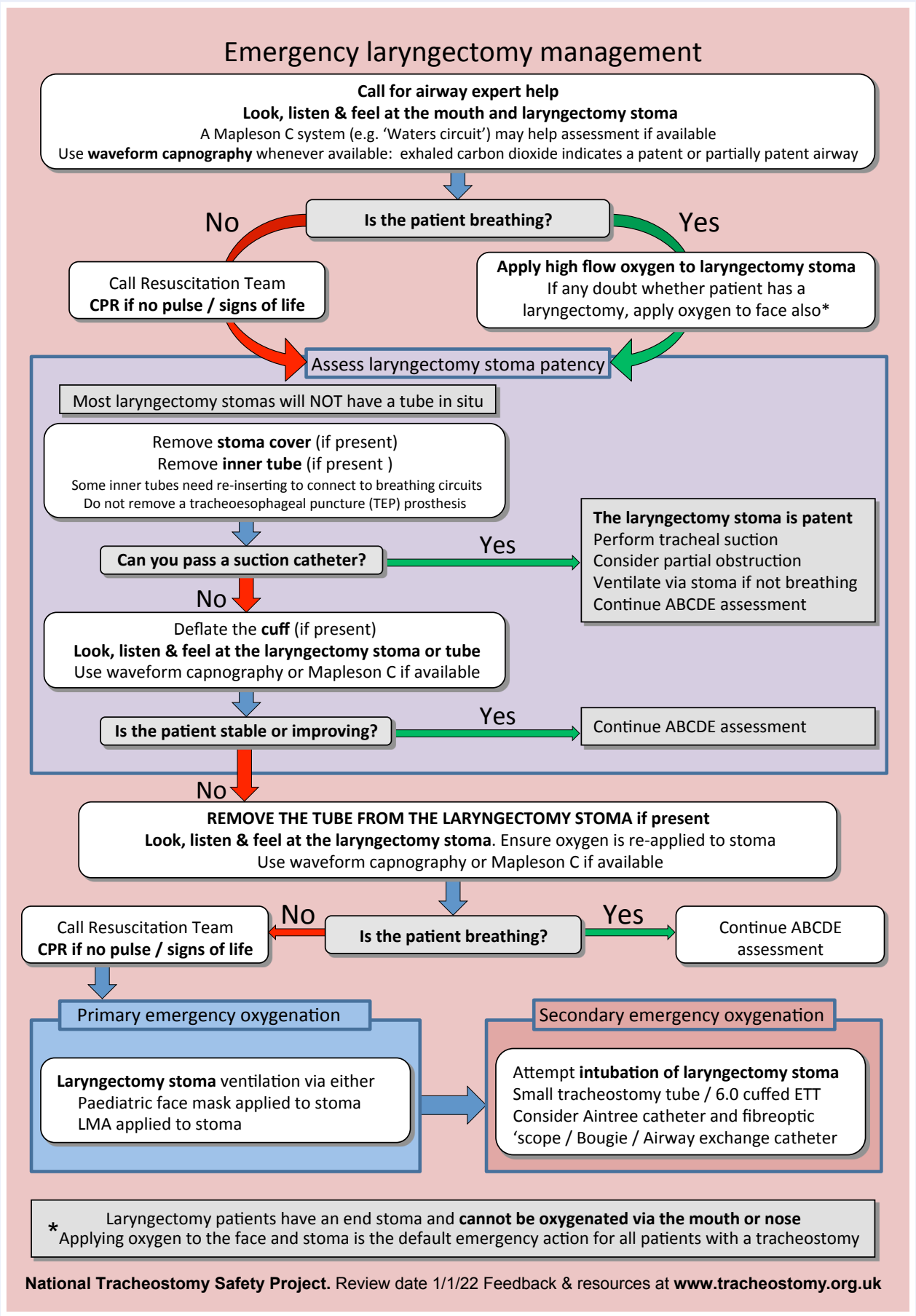


Emergency Call: **Anaesthesia** **ICU** **ENT** **MaxFax** **Emergency Team**

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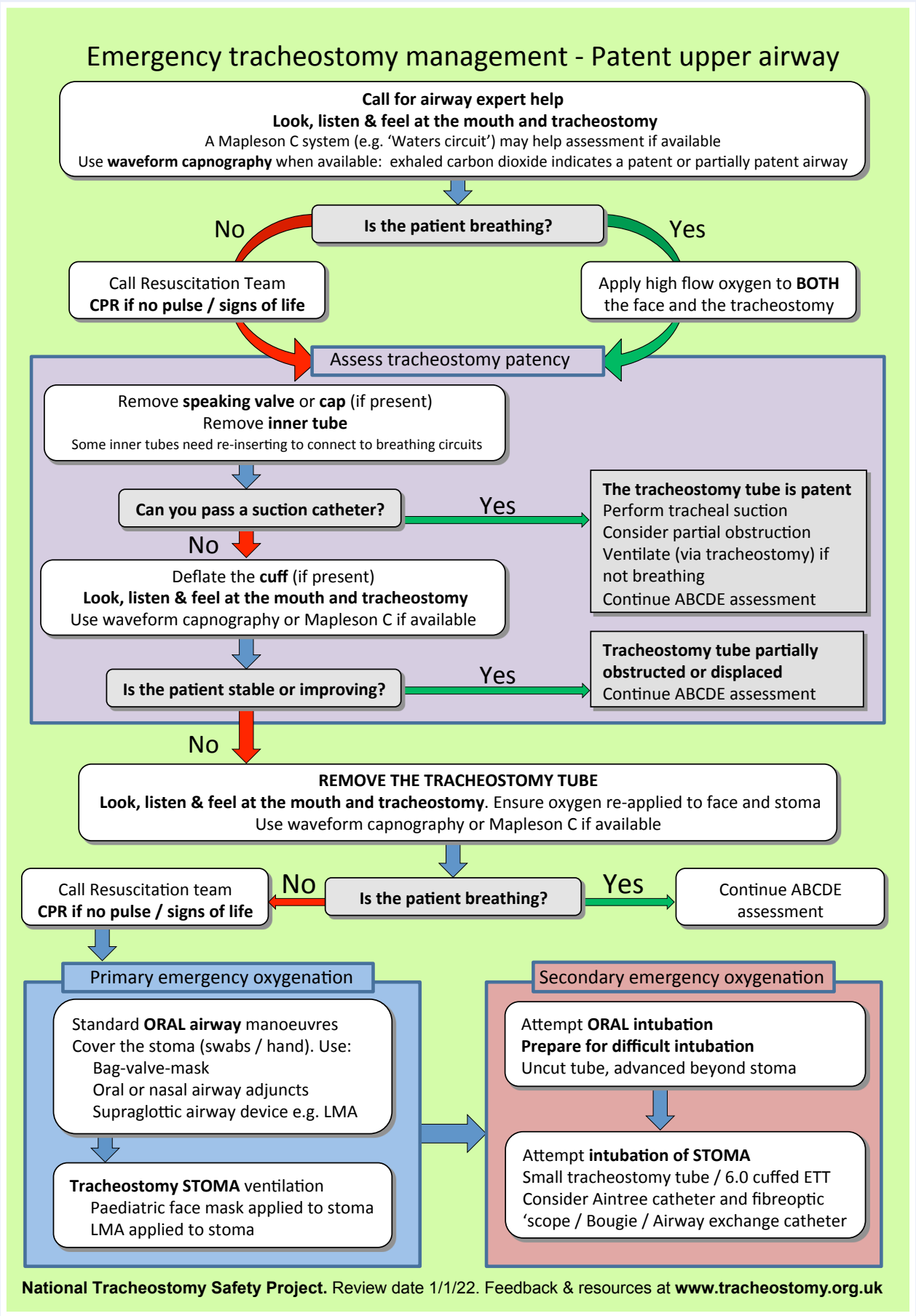
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C) Back of laryngectomy bedhead sign:



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D) Back of tracheostomy bedhead sign:



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Appendix 4 Emergency Equipment Checklist to be completed on EVERY shift – example

Date								
Time								
Protective equipment – gloves, aprons, eye protection								
Humidification +/- oxygen								
Functioning suction facilities (where centralised suction is not available, as is often the case in the community, independent portable suction units should be used)								
Appropriate-sized suction catheters (one which is the same size as the tracheostomy and one which is a size smaller)								
Yankauer sucker								
Non-rebreathe circuit and/or adult bag-valve-mask with reservoir with tubing								
Size zero paediatric mask (for patients with a laryngectomy)								
Spare tracheostomy tubes (one of the same size and one a size smaller) usually the same type but must be a type that can easily be inserted in an emergency situation								
Tracheal dilators								
Tracheostomy disconnection wedge								
Stitch cutter (if sutures present)								
Catheter mount								
Water soluble gel								
Tracheostomy tapes								

Initials								
Signature								

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Acknowledgements

We would like to thank the team who worked long hours to assemble this toolkit on safe tracheostomy care in a matter of days for the National Patient Safety Improvement Programmes' COVID-19 response.

Special thanks to Dr Brendan McGrath, National Clinical Advisor for National Patient Safety Improvement Programmes' COVID-19 Response (Safe Tracheostomy Care); Katie Whittle and Andrew Cooper, North West Coast Patient Safety Collaborative; Wendy Stobbs and Jay Hamilton, Health Innovation Manchester Patient Safety Collaborative; Dr Cheryl Crocker, AHSN Network Patient Safety Director; Paul Wastell, Communications and Engagement Lead, NatPatSIP; Sarah Papworth-Heidel, Senior Improvement manager, NatPatSIP; and the National Tracheostomy Safety Project (NTSP) for making their materials freely available. Layout by NEL Design Solutions.

The National Patient Safety Improvement Programmes can be contacted by email at **nhsi.PSimprovement@nhs.net**

A summary of this guidance will be available for download from the NHS England website: **https://www.england.nhs.uk/coronavirus/secondary-care/**

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References

1. McGrath et al, Anaesthesia 2012;67(9):1025-41 or Doherty et al, Anaesthesia 2018, doi.org/10.1111/anae.14307
2. McGrath BA, Wilkinson K. The NCEPOD study: on the right trach? lessons for the anaesthetist. British Journal of Anaesthesia 2015; 115: 155–8
3. Martin IC, Freeth H, Kelly K, Mason M. NCEPOD: On the right Trach? [Internet]. A review of the care received by patients who underwent a tracheostomy. 2014. Available from: **www.ncepod.org.uk/2014tc.html**
4. Thomas AN, McGrath BA. Patient safety incidents associated with airway devices in critical care: a review of reports to the UK National Patient Safety Agency. Anaesthesia 2009; 64: 358–65
5. McGrath BA, Thomas AN. Patient safety incidents associated with tracheostomies occurring in hospital wards: a review of reports to the UK National Patient Safety Agency. Postgrad Med J 2010; 86: 522–5
6. Cook TM, Woodall N, Harper J, Benger J. Major complications of airway management in the UK: results of the Fourth National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society. Part 2: intensive care and emergency departments†. British Journal of Anaesthesia 2011; 106: 632–42
7. Halum SL, Ting JY, Plowman EK, et al. A multi-institutional analysis of tracheotomy complications. Laryngoscope 2012; 122: 38–45
8. Shah RK, Lander L, Berry JG, Nussenbaum B, Merati A, Roberson DW. Tracheotomy outcomes and complications: a national perspective. Laryngoscope 2012; 122: 25–9
9. Eibling DE, Roberson DW. Managing tracheotomy risk: time to look beyond hospital discharge. Laryngoscope 2012; 122: 23–4s