NHS
Greater Glasgow and Clyde

CLINICAL GUIDELINE

Adult Acute Services care of patients with a Tracheostomy or Laryngectomy

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

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Important Note:

The online version of this document is the only version that is maintained.
Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.

Contents

Introduction

This clinical guideline details the requirements for provision of safe, effective and patient centred care of patients with a tracheostomy or laryngectomy within NHS Greater Glasgow and Clyde (NHSGGC) Adult Acute Services.

Patients with a tracheostomy or laryngectomy are often referred to as 'Neck Breathers'. These patients are at increased risk of death or harm if their airway is not appropriately managed.

This guideline is based on recommendations from the **National Tracheostomy Safety Project** (NTSP) and will be reviewed every two years. This evidence base is constantly evolving, and practitioners should endeavour to use the most up-to-date evidence on which to base their practice.

Scope

This guideline is relevant to all healthcare practitioners that care for patients with a tracheostomy or laryngectomy within NHSGGC Adult Acute Services. This includes registered nurses and midwives, medical staff, allied health professionals, undergraduate learners, registrants returning to practice, bank and agency staff.

This guideline should be used in conjunction with other relevant guidelines and policies. A list of **these** is included at the end of this document. Practitioners working in specialist clinical areas e.g. Critical Care/Ear Nose and Throat (ENT), caring for particularly vulnerable patient groups, may have local standard operating procedures (SOPs) in use which should be referred and adhered to.

Role and responsibilities

For the purposes of this guideline, all registered practitioners and healthcare students are accountable for maintaining competence, in accordance with the relevant code of conduct and guidance of their professional body, to ensure they have the knowledge and skills to deliver safe and effective practice (Nursing and Midwifery Council (NMC, 2018), Health and Care Professions Council (HCPC, 2016), General Medical Council (GMC, 2013)).

To be involved in the care of a patient with a tracheostomy or laryngectomy, practitioners should be appropriately trained and supervised until considered competent. A practitioner can be described as competent if they have the necessary

training, clinical experience, skills and knowledge to undertake a task safely and without supervision.

Any undergraduate learner or registrant returning to practice providing any aspect of tracheostomy or laryngectomy care must do so under **direct supervision** by a competent registered healthcare practitioner.

If, following clinical risk assessment, a practitioner deems it appropriate to deviate from this guideline; this must be documented clearly in the patient's notes.

Training and education

learnPro NHS module 'GGC: 306 Acute Services Tracheostomy and Laryngectomy Education' is aimed at registered nurses, midwives and allied health professionals within NHSGGC Adult Acute Services. The module aims to provide the theory knowledge underpinning fundamental care delivery for patients with a tracheostomy or laryngectomy.

Module completion forms part of NHSGGC **essential role specific learning** for registered adult nurses (please note that any exceptions to essential role specific learning can only be made after discussion with the relevant Lead Nurse and Chief Nurse).

Following module completion, it is recommended that practitioners attend the NHSGGC Tracheostomy Workshop (Adult) and/or undertake additional specialist training provided within their clinical area to build upon their knowledge and skills.

Patient placement and transfer

The presence of a tracheostomy or laryngectomy may pose a clinical risk due to the potential unfamiliarity and lack of knowledge of the clinical staff caring for the patient. For this reason, placement and any transfer of a patient with a tracheostomy or laryngectomy must be planned. Decisions on patient placement should only be made following holistic multi-disciplinary assessment of patient's needs. This assessment must include consideration of the patient's clinical stability and/or reason for admission. However, patients with a tracheostomy or laryngectomy must be cared for in a clinical area where staff have the appropriate knowledge, skills, and competencies to safely and effectively care for this patient group. Therefore, the final decision on patient placement and transfer following holistic multi-disciplinary assessment may differ depending upon site/sector.

Patient placement

Patients who have **cuffed** tracheostomy tube in situ are at higher risk of complications and must be cared for in a specialist area. A **table** identifying these specialist areas within NHSGGC Adult Acute Services is included at the end of this document. Careful planning and robust risk assessment must be undertaken if these patients need to move out with the specialist area for any reason, and this reason must be documented clearly in the patient's notes.

Any clinical area caring for neck breather patients must have access to emergency airway equipment including:

- Working oxygen and suction equipment
- Supra-glottic airways e.g. laryngeal mask airway or i-Gel

A box containing emergency equipment, a completed bed head sign (appropriate to the patient) with associated emergency algorithm on reverse must also be immediately available.

All emergency airway equipment, including the emergency equipment box, oxygen and suction should be checked once per shift. A **checklist** that can be used to document this check is located at the end of this document.

It is highly recommended that capnography is available in all clinical areas which look after high volumes of patients with tracheostomies. Staff in these clinical areas should also be aware where to source a fibreoptic scope in the event of emergency.

The patient should always have access to the nurse-call system to aid communication. When a patient has a physical and/or cognitive impairment affecting their ability to use the nurse-call system appropriately, staff must consider alternative or additional arrangements for these patients' call needs to ensure patient safety.

Staff receiving a patient with a tracheostomy or laryngectomy into their clinical area must highlight this at ward safety brief and it is strongly recommended that this is in turn highlighted at hospital site safety huddle.

Patient transfer

Any plan for patient transfer should involve discussion between the nursing **and** medical staff responsible for the patient's care in **both** areas. This discussion should occur in a timely manner, so that any shortfall in clinical competence may be addressed pre transfer, or an alternative clinical area sought for the patient is this is not feasible.

The transferring area must ensure that all the documentation pertaining to the tracheostomy or laryngectomy is fully completed and that the receiving area has all the emergency equipment necessary. Staff in the receiving area must be able to safely and effectively care for the patient and have access to the equipment required to do so. A patient transfer checklist and care plan should be completed when a patient is transferred to another clinical area. A **tracheostomy transfer sheet and care plan** that can be used when transferring a patient with a tracheostomy is located at the end of this document.

Bedhead signs, emergency algorithms and emergency equipment box

Bedhead signs and emergency algorithms

The relevant bedhead sign e.g. tracheostomy or laryngectomy must be immediately available with the patient and displayed on the wall above the patient's bed. The sign should remain here or go with the patient on any transfers, including transfer to diagnostic departments.

The emergency algorithm is printed on the reverse of the bedhead sign and staff should follow the algorithm steps during an emergency situation.

A copy of both the emergency tracheostomy and emergency laryngectomy management algorithms will be kept in the resuscitation trolley folder, alongside all other resuscitation emergency algorithms.

The bedhead sign should be appropriate to each patient (this depends on whether they have undergone a tracheostomy or laryngectomy). The sign must be completed with information regarding the procedure the patient has undergone and size of any tracheostomy tube in situ. The contact numbers of teams to call in the event of an emergency, in addition to a 2222 call, should also be completed on the sign. Images of both signs and associated emergency algorithms can be viewed **here**.

The green bedhead sign is for a patient with a tracheostomy and a possibly patent upper airway. The standard NTSP tracheostomy bedhead sign and associated emergency algorithm can be ordered from Medical Illustration Services using the code: '**MI 265053-2 v1.0 Tracheostomy**'.

The red bedhead sign is for a patient with a laryngectomy who does not have an upper airway that is connected to the lungs and **CANNOT** be intubated or oxygenated via the nose or mouth. The standard NTSP laryngectomy bed head sign

and associated emergency algorithm can be ordered from Medical Illustration Services using the code: '**MI 265053-1 v1.0 Laryngectomy**'

N.B. Some sectors/sites may use bedhead signs that have been adapted to fit local needs, and these will have alternative MI numbers for ordering. Please check with your sector/site Resuscitation Officer if you are unsure what version of the sign should be ordered.

The algorithms are applicable to any emergency airway situation that develops in a patient with a tracheostomy or laryngectomy. In emergency situations, capnography measurement is essential and will give immediate information on expired carbon dioxide and assessment on tube placement to advanced airway practitioners. Capnography equipment is available in critical care and theatre areas and may also be brought as part of the emergency team kit. A Mapleson C circuit is also highly recommended in an emergency situation.

Further information and a video of emergency management of a tracheostomy can be accessed via NTSP.

Further information and a video of emergency management of a laryngectomy can be accessed via NTSP.

A more detailed explanation of emergency management of patients with a tracheostomy or laryngectomy can be accessed via NTSP.

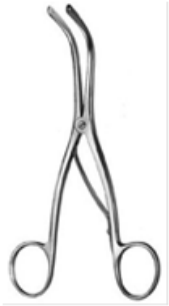
Emergency equipment box

A box containing emergency equipment should be immediately available with the patient and stay with the patient at all times, including during transfers. This emergency equipment box should include:

- 2 spare tracheostomy tubes and inner cannulas: one of the same size and one a size smaller
- Stitch cutter
- White cotton tape or Velcro tracheostomy strap/collar to secure the tube
- 10ml syringe
- Soft suction catheters (size 10, 12 and 14). Use appropriate size – must be no more than ½ diameter of the tracheostomy tube
- Non rebreathing oxygen face mask
- Tracheostomy mask

- Water based lubricant
- Tracheal dilator

It is a recommendation from the NTSP that tracheal dilators are made available in the emergency box. These are only intended for use by staff who have undergone additional specialist training and are competent in using them. The purpose of tracheal dilators is to temporarily dilate or 'hold open' the tracheal stoma until a new tube can be inserted.



Tracheal dilator

The contents of the emergency equipment box should be checked once per shift. A **checklist** that can be used to document this is located at the end of this document.

Safety red flags and bleeding from a stoma

Safety red flags

Safety point: Airflow is different between a patient who has a tracheostomy and a patient who has a laryngectomy. Patients will be managed differently in an emergency using the emergency algorithms which are located on the reverse of the associated bedhead sign. **Patients with a laryngectomy cannot be ventilated via their nose or mouth and must be ventilated via their laryngectomy stoma.**

Like most critical incidents, warning signs often precede tracheostomy and laryngectomy clinical problems. Early recognition and management of clinical deterioration will improve patient safety. Some clinical problems associated with patients who are neck breathers are referred to as 'red flags' and can be divided into four different categories: breathing, tracheostomy specific, laryngectomy specific and general red flags.

Any red flag should prompt immediate A-E assessment of the patient and appropriate escalation. **Always** consider that a neck breather's airway may be the cause of any physiological deterioration.

If there is an airway concern or concern regarding patient deterioration, the resuscitation team should be called on 2222, plus any additional numbers

documented on the patient's bedhead sign, and then staff should follow the emergency algorithm steps.

- **Tracheostomy specific red flags:**
  - Grunting, snoring or stridor are signs that there is an airway problem
  - Dry sounding breathing: consider whether the patient needs increased humidification
  - A visibly displaced tracheostomy tube. If the tube has an adjustable flange, check to see where it was last positioned
  - If the patient has a cuffed tracheostomy correctly sited in the trachea, no air or gas should escape through the mouth. If the patient is talking to you, or audible air leaks or bubbles of saliva are seen or heard at the mouth or nose, gas is escaping past the cuff. This may mean that the cuff is damaged or the tube tip is not correctly sited
  - Inability to pass a suction catheter may mean that the tube is blocked or displaced: potentially the airway is now blocked
  - Blood or blood-stained secretions around the tube (a recently performed or changed tracheostomy bleeds a little, but if in doubt, it should be assessed)
  - Patient reports increased discomfort or pain related to the tracheostomy
  - A lot of air, or repeated inflation, is required to keep the tracheostomy tube cuff inflated. This may be because:
    - The cuff is damaged or has a leak (if so, it needs to be replaced)
    - The tube may be displaced, and the cuff now needs hyper-inflation to keep it 'sealed'

- **Laryngectomy specific red flags:**
  - Dy sounding breathing: consider whether the patient needs increased humidification
  - Laryngectomy stoma visibly congested/blocked by (hardened) secretions
  - Inability to pass a suction catheter may mean that the airway is blocked
  - Inability or difficulty reinserting a laryngectomy tube/button, or the patient's normal device, into a laryngectomy stoma may mean that the stoma is shrinking or the airway is blocked

- Evidence of small laryngectomy stoma, evidence of shrinkage or any measurement less that 10mm horizontally/vertically should be assessed as this may also indicate stoma shrinkage
- Blood or blood-stained secretions in or around the stoma (a recently performed laryngectomy bleeds a little, but if in doubt, it should be assessed)
- Patient reports increased discomfort or pain relate to the laryngectomy
- Suspected leaking tracheoesophageal voice prosthesis, and/or evidence of food/fluids in suction return potentially causing aspiration: keep the patient Nil by Mouth and seek assistance from Speech and Language Therapy (SLT)

- **Breathing red flags:**
  - Not breathing (apnoea) is detected clinically or by capnography when available
  - Use of accessory respiratory muscles
  - Increased respiratory rate
  - Cyanosis clinically, low oxygen saturations, low oxygen levels on arterial blood gas or increasing oxygen requirements
  - Shallow breathing
  - Noisy breathing or making whistling noises
  - High airway pressures when mechanically ventilated
  - Low tidal volumes when mechanically ventilated

- **General red flags:**
  - Any physiological change in a neck breather can be due to an airway problem:
    - Respiratory rate
    - Heart rate
    - Blood pressure
    - Level of consciousness

    Changes in any of these parameters can be due to an airway problem.
  - Anxiety, restlessness, agitation and confusion may also be due to an airway problem

A more detailed explanation on safety red flags can be accessed via NTSP

Bleeding from a stoma

A patient with bleeding from an airway stoma can constitute a medical emergency. The management of this emergency situation will vary depending on the location of the patient at the time. An example of a 'Management of a Bleeding Tracheostomy Algorithm' can be found in the appendices **here**.

A more detailed explanation on bleeding from a stoma can be accessed via NTSP

Essential care equipment

Patients with a tracheostomy or laryngectomy must have equipment available at the bedside for performing essential care (in addition to oxygen, suction, emergency airway equipment, bed head sign, associated emergency algorithm and the emergency equipment box).

Essential care equipment should include:

- Suction catheters (appropriate size – no more than ½ diameter of the tracheostomy tube)
- Sterile water for irrigation and sterile foil bowl for cleaning the tube or inner cannula
- Container for storing spare tracheostomy tube inner cannula when not in use
- Tracheostomy cleaning swabs for cleaning the tracheostomy tube inner cannula
- Sterile non-woven swabs for cleaning the stoma site if required
- Spare tapes or Velcro tracheostomy strap/collar
- Manometer to measure cuff pressure (if tube is cuffed)
- Spare humidification devices e.g. Heat and Moisture Exchange (HME) Filter

The essential care equipment should be checked once per shift. A **checklist** that can be used to document this is located at the end of this document.

Patients with tracheostomies or laryngectomies are at high risk of developing complications such as blockage, displacement or haemorrhage. To prevent some of these complications arising, and to be able to deal with them quicky should they arise, it is recommended that standard equipment is kept in clinical areas. Standard equipment should be:

- Equipment for providing humidification, oxygen and nebulisers (including elephant tubing, tracheostomy masks, t-pieces, variety of HME filters, humidification units, sterile water)
- Variety of tracheostomy tubes and inner cannulas
- Sundries such as foil bowls and suction catheters, suction tubing, Personal Protective Equipment (PPE)

There should be a daily plan of care for all neck breathers. When caring for a patient with a tracheostomy tube in situ, the **record of tracheostomy tube care** must be completed. Critical care areas may have locally approved alternative documentation to record tracheostomy tube care.

Additional documentation, where appropriate to the patient must also be completed e.g. tracheostomy transfer sheet and care plan, Screening Tool for Oropharyngeal Swallow Symptoms (STOPSS), weaning plan record of care and/or decannulation safety checklist.

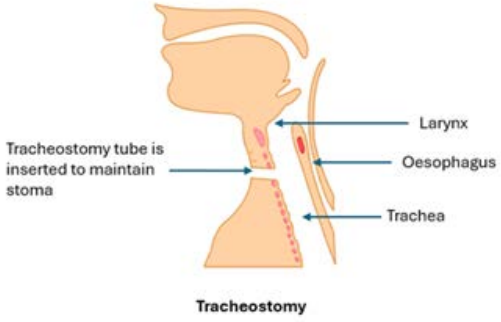
Further information on equipment and daily checks can be accessed via NTSP.

Understanding tracheostomies and laryngectomies

Anatomical differences and changes to airflow

Neck breathers have an opening in the front of their neck which connects directly to the trachea. This opening is called a stoma. There are important anatomical differences in the airways of neck breathers, depending on whether they have a tracheostomy stoma or a laryngectomy stoma.

A tracheostomy is an opening through the neck into the anterior wall of the trachea.

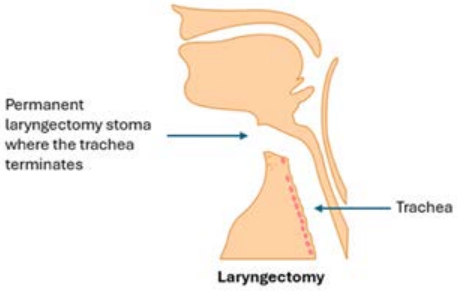


Tracheostomy

The stoma must be maintained with a plastic or silver tracheostomy tube. A tracheostomy is normally temporary. However, some patients require long term tracheostomies because of their clinical condition. On formation of a tracheostomy, airflow can enter the trachea and lungs directly, bypassing the pharynx and larynx. Neck breathers with a tracheostomy still have a larynx. They **may** still be able to breathe through their nose and mouth as there is still a connection between the nose/mouth and trachea, but this route may be compromised. Patients **cannot** breathe through their nose and

mouth if their tracheostomy tube **has a cuff and this cuff is inflated**. This blocks the connection to the trachea from the nose and mouth.

A laryngectomy stoma is formed after the larynx is surgically removed.



The top of the trachea is then brought to the front of neck as a stoma. This is a permanent procedure. The patient will **never** be able to breathe or be ventilated through their nose or mouth again. There is **no** connection between the nose / mouth and trachea.

Neck breathers have lost all or some of the natural warming, humidification and filtering of air that takes place in the upper airway. Their ability to swallow and cough may be altered and the ability to vocalise is altered or removed completely. Sense of smell is reduced.

Indications

Indications for formation of a tracheostomy include:

- Obstruction of the upper airway, either acutely or anticipated post-surgery
- Prolonged mechanical ventilation
- Inability to independently maintain a patent airway
- Inability to clear bronchial secretions independently

Indications for formation of a laryngectomy include:

- Cancer of the larynx
- Trauma to the larynx
- Poor function of the larynx after radiotherapy or chemotherapy

Tracheostomy procedures

Tracheostomies are formed either percutaneously, when an opening in the trachea is created by dilatation over a wire or alternatively formed during a surgical procedure. Percutaneous tracheostomies are the usual method in Intensive Care.

Bjork flap

Surgeons perform surgical tracheostomies via an incision in the skin and an incision in the trachea. This is normally done in an operating theatre. Sometimes the opening in the trachea may be used to form a flap (known as a Bjork flap).

There may be **stay sutures** visible in the wound after the procedure. These are sutures attached to the trachea, lifting the trachea to the skin and opening the stoma. Stay sutures can be used to assist with manipulating the position of the trachea during tube changes. Consult the surgeon on their function and do not remove without discussion with the surgeon.

The tracheostomy tube may be sutured to the skin. Sutures securing the tracheostomy tube to the skin can generally be removed 5 - 7 days later, after discussion with surgical or critical care medical staff.

Tracheostomy and laryngectomy complications

Neck breathers can develop complications which can be serious and can cause death. Complications can be immediate, delayed or late in their presentation.

Tracheostomy complications:

- **Immediate:**
  Haemorrhage, misplacement or damage to the surrounding structures (pneumothorax, oesophageal perforation) positional airway obstruction, airway obstruction due to secretions and dried blood.
- **Delayed:**
  Tube blockage (caused by secretions or by patients' soft tissues), infection, tracheal damage (ulceration and necrosis), tube displacement / migration, trachea-oesophageal fistula formation, accidental decannulation, haemorrhage.
- **Late:**
  Tracheal dilation or stenosis, scar formation, tracheal granuloma (which may cause breathing difficulties when the tracheostomy tube is removed), blocked

tracheostomy tube (may occur at **any time** if secretions are not appropriately managed and humidification is not provided), infection, haemorrhage.

Laryngectomy complications:

- **Immediate:**

  Haemorrhage, misplacement or damage to the surrounding structures (pneumothorax), positional airway obstruction, airway obstruction due to secretions and dried blood.

- **Delayed:**

  Infection, delayed wound healing, trachea-oesophageal fistula formation, haemorrhage.

- **Late:**

  Stomal stenosis, tracheal granuloma, blocked stoma or laryngectomy tube/button (which may occur at **any time** if secretions are not appropriately managed and humidification is not provided), infection, haemorrhage.

More detailed information on anatomy, indications, procedures and complications can be accessed via NTSP document: Comprehensive Tracheostomy Care.

Tracheostomy tubes

There are a variety of types of tracheostomy tubes available and the tubes come in different sizes. The size of tracheostomy tube in use is specific to the patient. The tube size is usually located on the flange of the tube. If a cuffed tube is in use, the size might also be noted on the pilot balloon. The size of the tube refers to the inner diameter of the tracheostomy tube.

Generally, tubes can be described by the presence/absence of the following features:

- A removable inner cannula
- A cuff at the end of the tube
- Holes or fenestrations in the body of the tube
- An adjustable flange
- Extra length
- A subglottic suction port

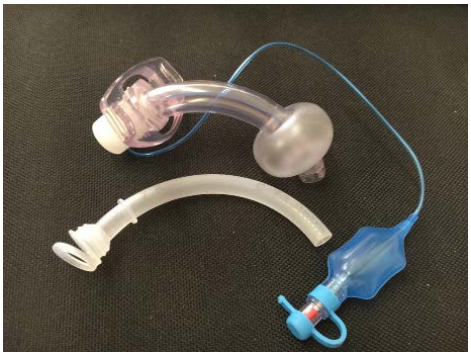
Some patients have customised tubes specifically made for their needs.

Further information, including advantages and disadvantages of different tracheostomy tubes and more images can be accessed via NTSP.

Patients with a laryngectomy may use a range of devices specifically for their needs.

Tracheostomy tube with a removable inner cannula

A double cannula tracheostomy tube has an outer cannula which is inserted into the stoma and a removable inner cannula. The inner cannula is changed or cleaned frequently to reduce the risk of occlusion.



Double cannula tracheostomy tube

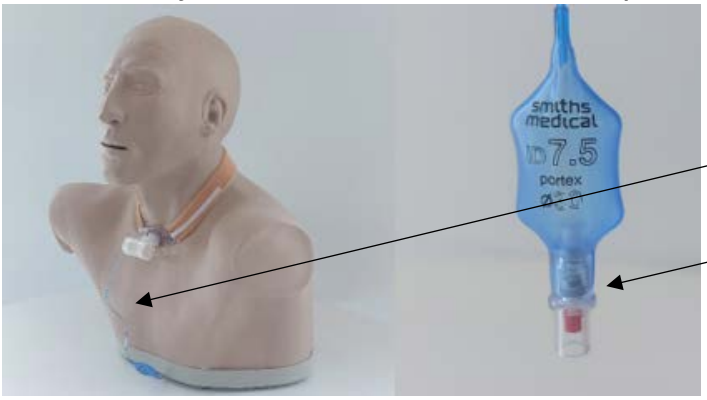
The way the inner cannula is inserted and removed varies by manufacturer. Some inner cannulas have a 'ring pull' and others require a 'twisting' action.

A bag valve (Ambu bag) or breathing circuit can be attached to some types of double cannula tubes (Smiths Medical Portex) directly in an emergency with the inner cannula in or out. Other types (Shiley and Tracoe Twist) **require the inner cannula to be in place** as an Ambu bag or breathing circuit will not connect to the outer cannula alone.

Single lumen tubes without an inner cannula **should not be used** as there is an increased risk of tube occlusion which may cause airway obstruction and a clinical emergency.

Cuffed and uncuffed tracheostomy tube

A **cuffed** tracheostomy tube has a soft balloon at the end of the tube. When inflated, this cuff isolates the nose / mouth from the lungs: breathing is solely via the tracheostomy tube. A cuffed tube is nearly always the first tube placed when the tracheostomy is made. An inflated cuff is required to allow mechanical ventilation and



When a cuffed tub is in situ. It can be identified as a cuffed tube by the presence of the pilot balloon.

may also be necessary for patients at risk of aspiration. When the cuff is deflated airflow follows the same path into the lungs as an uncuffed tube. **Tracheostomy masks must not be used when the tube's cuff is inflated**.

An **uncuffed** tracheostomy tube has no cuff at the end of the tube. This means the patient can breathe partially via their nose and mouth and partially via the tracheostomy tube. Mechanical ventilation in an emergency situation through this type of tube is likely to be less effective at directing all of each breath into the lungs.

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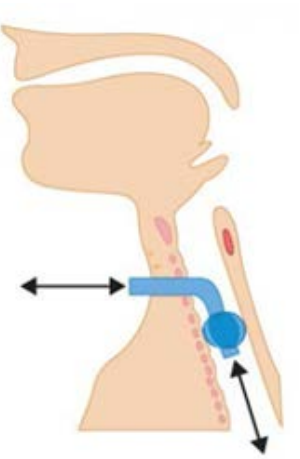
<td> 
Image of a cuffed tube</td>
<td> 
Image demonstrating airflow with a cuffed tube when the cuff is inflated (arrows depict airflow)</td>
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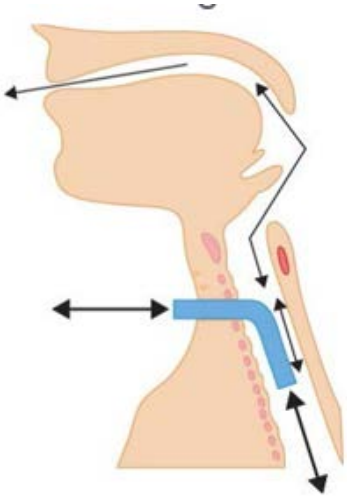
<td> 
Image of an uncuffed tube</td>
<td> 
Image demonstrating airflow with an uncuffed tube, or with a cuffed tube when the cuff is deflated (arrows depict airflow)</td>
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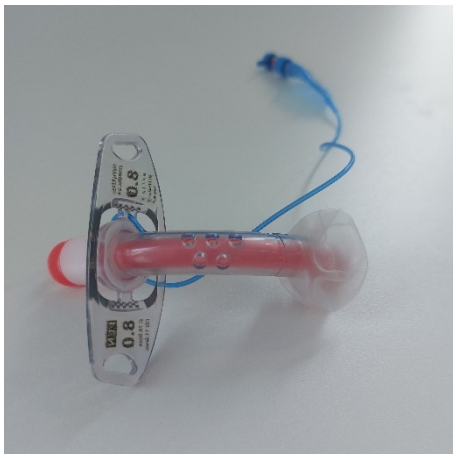
Fenestrated tracheostomy tube

Fenestrated tubes have holes in the body of the tube. They can be cuffed or uncuffed. There can be several small holes or one large one. The holes allow air to flow between the nose/mouth and the lungs via the tracheostomy tube. This can allow the patient to vocalise. There are usually two types of inner cannula: one has fenestrations, the other does not. **Suctioning of a fenestrated tube requires the inner cannula with no holes to be in place**. Mechanical ventilation will be more effective using an inner cannula with no fenestrations.



Fenestrated tracheostomy tube

Adjustable flange tracheostomy tube

These tubes are used when a standard tracheostomy tube would be too short to sit in a good position in the trachea. The adjustable flange, and a longer length, means a good position can be achieved. The position of the flange, once fitted for the individual patient, must be documented and adjustment of the flange should only be undertaken by an appropriately trained practitioner. Adjustable flange tubes can be cuffed or uncuffed. These tubes have a reinforced wire around the tube preventing it from kinking. This wire is non-ferrous meaning it is compatible with MRI scanning.

Adjustable flange tracheostomy tube

Longer length tracheostomy tube

Tracheostomy tubes are made with different diameters. Some manufactures offer these diameters with a standard length and a longer length. Tracoe tubes have a standard length and a ‘plus’ length. This longer length can be used to provide a more suitable placement in the neck and trachea in appropriate patients.

Subglottic tracheostomy tube

Subglottic tracheostomy tubes are often used in Intensive Care Units. These cuffed tubes have a port that allows aspiration of any secretions which may accumulate on top of the inflated cuff. These secretions have the potential to cause micro-aspiration. Regular suctioning of these secretions will reduce the risk of ventilator associated pneumonia.

Subglottic tracheostomy tube

Laryngectomy devices

Patients immediately post laryngectomy formation will always have a device in or around the stoma to keep it open. This will be a type of laryngectomy tube, a tracheostomy tube or alternative device (e.g. base plate and HME device). The choice of device and how long the device is used will depend on individual patient condition.

Some patients post laryngectomy will have laryngectomy stomas that require long term use of a laryngectomy ('lary') tube or a stoma button. A device may be required long term due to personal preference or **crucially, because of clinical need, such as to maintain stoma patency**.

	Laryngectomy tubes
	Laryngectomy stoma buttons

	Baseplate and HME

Delivery of essential care

The NTSP states “basic care, done well, keeps our patients safe”. There are several essential care activities which, when performed correctly, can greatly reduce some of the complications that can occur with patients who are neck breathers.

Promoting the independence of an individual while they are an inpatient is central to delivery of patient -centred care. **However, the term "self-caring" for a neck breathing patient in a hospital environment should be very carefully considered. Ongoing continuous assessment should take place to determine whether a patient is, or remains self – caring, on admission and during their inpatient stay.**

Neck breathers’ ability to remain self-caring is impacted by several factors, including:

- Acute clinical need for admission
- Mobility status
- Hydration status
- Development of delirium
- Access to own personal supply of care equipment
- Availability of support structures e.g. if a relative/carer supports aspects of care delivery

Humidification

Provision of adequate humidification is essential at all times for all neck breathers.

In addition, **any supplemental oxygen being administered to a neck breather MUST be humidified.**

Inadequate humidification can result in life threatening airway blockages caused by thick sputum. Poor humidification can also result in ulceration of the tracheal mucosa.,

Severely dehydrated patients will have thicker, more tenacious respiratory secretions: overall hydration status should therefore be optimised for neck breathers.

The level of humidification required by neck breathers will change depending on their condition. The NTSP refers to a humidification ladder that patients can step up or step down, depending on their increasing or decreasing clinical need for humidification. The chosen method of humidification should provide adequate humidification and allow the patient to maintain their body temperature. It should be physically suited to the patient's needs.

An example humidification ladder for patients in emergency departments and inpatient wards can be viewed **here**.

An example humidification ladder for patients in critical care areas can be viewed **here**.

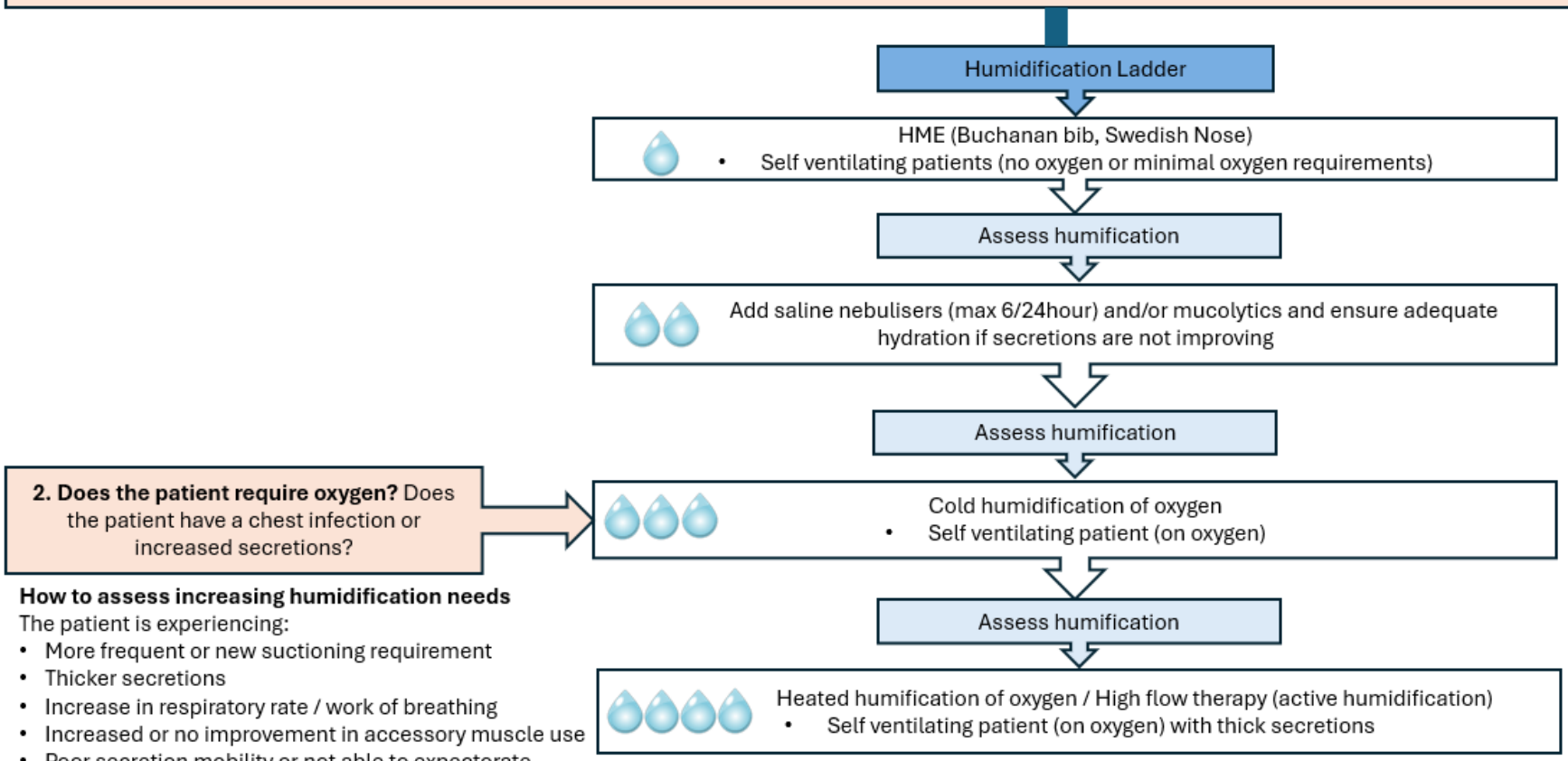
A table with pictorial examples of some of the devices that might be used at each stage of the humidification ladder can be viewed **here**.

A more detailed explanation of humidification and the humidification ladder, including pictorial examples, can be accessed via NTSP.

A more detailed explanation of different methods of humidification specifically for laryngectomy patients, including pictorial examples, can be accessed via NTSP.

Humidification Ladder (with flow chart) for Neck Breathers – Emergency Department and Inpatient Wards

1. Is the patient able to maintain self care of their tracheostomy or laryngectomy? Ask the patient what they normally utilise and continue with this



How to assess increasing humidification needs

The patient is experiencing:

- More frequent or new suctioning requirement
- Thicker secretions
- Increase in respiratory rate / work of breathing
- Increased or no improvement in accessory muscle use
- Poor secretion mobility or not able to expectorate
- Increasing oxygen requirements

Move up the humidification ladder, at any time saline nebs can be considered over and above improving humidification for patients

No evidence of airflow via tracheostomy or laryngectomy stoma – **INITIATE EMERGENCY ALGORITHM**

Humidification Ladder (with flow chart) for Neck Breathers – Critical Care Areas

1. Is the patient able to maintain self care of their tracheostomy or laryngectomy? Ask the patient what they normally utilise and continue with this

2. Does the patient require oxygen? Does the patient have a chest infection or increased secretions?

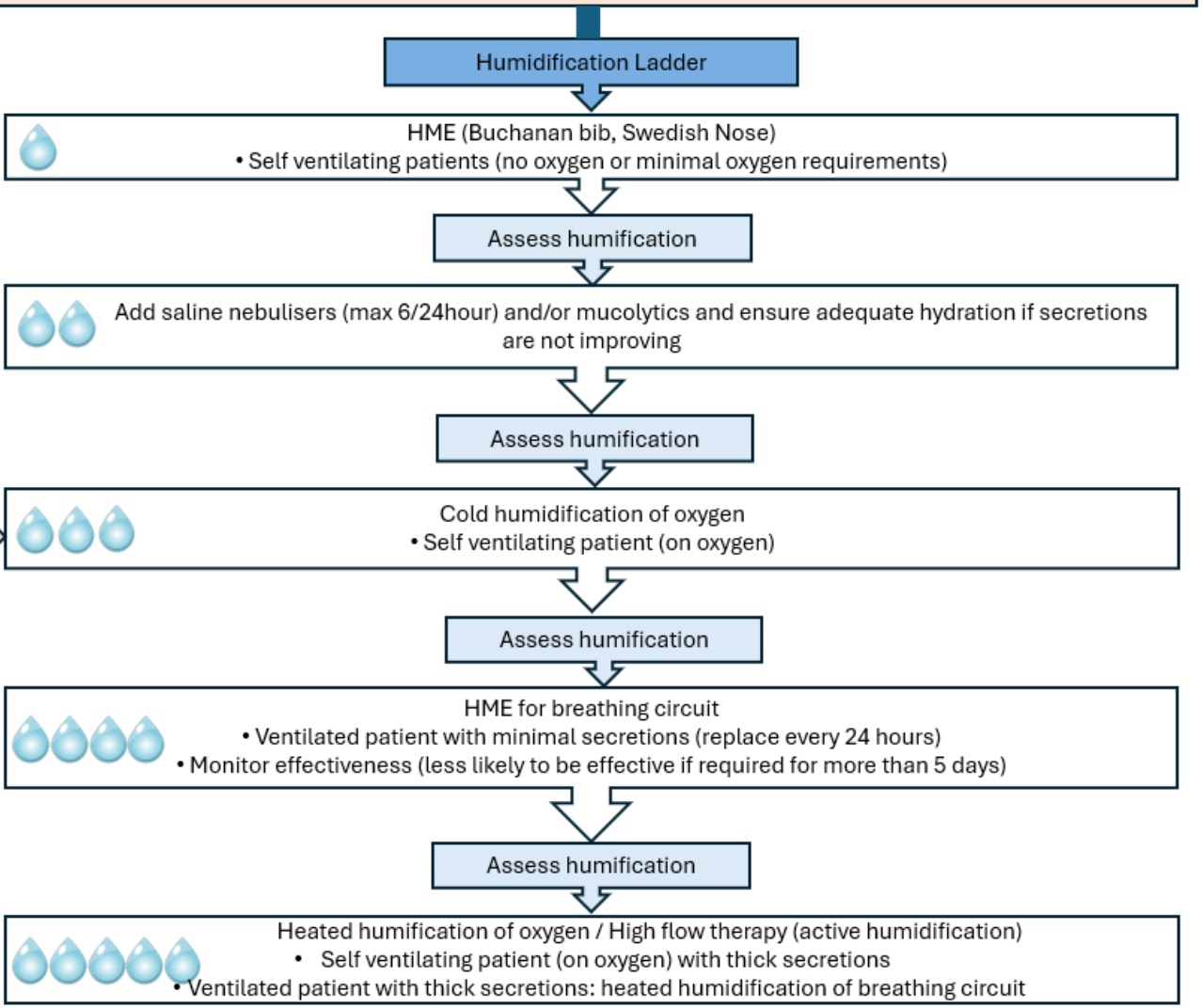
How to assess increasing humidification needs

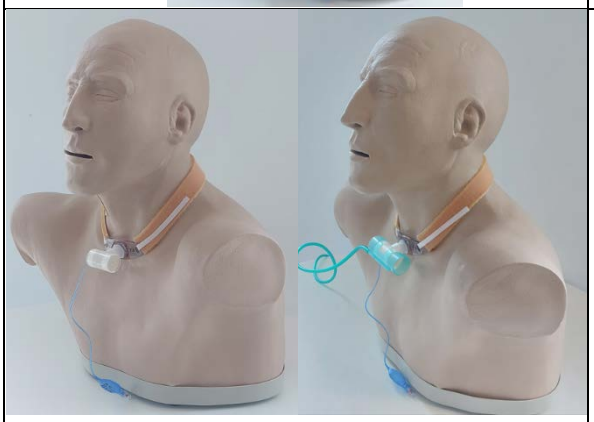
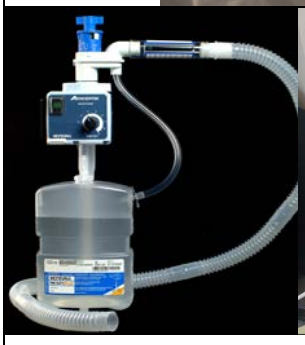
The patient is experiencing:

- More frequent or new suctioning requirement
- Thicker secretions
- Increase in respiratory rate / work of breathing
- Increased or no improvement in accessory muscle use
- Poor secretion mobility or not able to expectorate
- Increasing oxygen requirements

Move up the humidification ladder, at any time saline nebs can be considered over and above improving humidification for patients

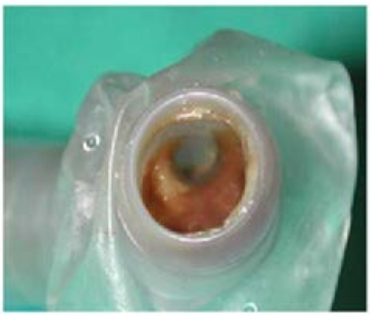
No evidence of airflow via tracheostomy or laryngectomy stoma – **INITIATE EMERGENCY ALGORITHM**



	HME (Buchanan Bib)
	HME (Swedish Nose)
 	Cold humidification of oxygen (using T-piece or tracheostomy mask
 	Heated humidification of oxygen (using heated interface and T-piece/tracheostomy mask, or using AIRVO and tracheostomy connector)

Cleaning or changing inner cannula

Secretions can adhere to the internal lumen of the tracheostomy tube and severely reduce the inner lumen diameter over time. Regular care and maintenance of the tracheostomy inner cannula will prevent accumulation of secretions and reduce the risk of tube occlusion / blockage. The rationale for cleaning the inner cannula is to remove debris which may physically obstruct a patient's airway**.**



Secretions blocking the tracheostomy tube

The inner cannula should be removed and cleaned in sterile water a minimum of every 4 hours, using a tracheostomy cleaning sponge, then left to dry in a suitable container. Inner cannulas must not be left in water as this may result in bacterial growth. Abrasive wire brushes may cause scratch marks on the inner cannula and increase the risk of bacterial colonisation. The inner cannula should be cleaned more frequently if there are a lot of secretions. As some patients will be highly oxygen dependant, the frequency of cleaning and changing the inner cannula should always represent the best balance of risks to the patient. If the inner cannula is not changed, it must be clearly documented and communicated.

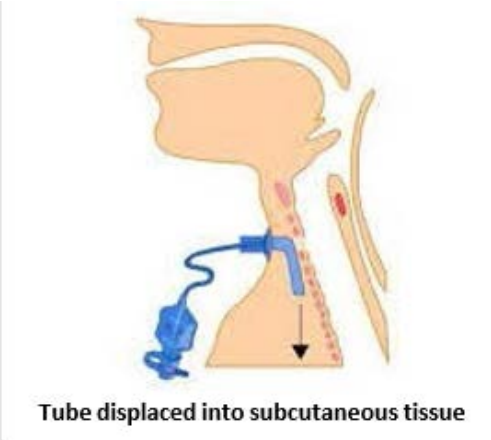
A spare inner cannula must be kept in a clean container at the patient bed space.

A bag valve (Ambu bag) or breathing circuit can be attached to some types of double cannula tubes (Smiths Medical Portex) directly in an emergency with the inner cannula in or out. Other types (Shiley and Tracoe Twist) **require the inner cannula to be in place** as the Ambu bag will not connect to outer cannula alone.

A more detailed explanation of changing and cleaning the inner cannula, including a procedural guide, and a video can be accessed via NTSP.

Securing a tracheostomy tube

If the tracheostomy tube is inadequately secured it may become partially or completely displaced leading to airway obstruction. The tube may move when the patient coughs, because the patient pulls on it or due to the weight of any attachments. Partial tube displacement should always be considered if the patient deteriorates or becomes distressed; it may not always be obvious that the tube has moved.



Tube displaced into subcutaneous tissue

The tracheostomy tube should be secured with a Velcro tracheostomy strap/collar or white cotton tape. Care should be taken to regularly inspect the back of the patient's neck for signs of pressure damage. One finger should be able to be inserted between the tape and the patient's skin to ensure the tube is adequately secured**.**

Stoma care

The management of a tracheostomy stoma depends to some degree on the type of surgical procedure used to create the tract. Secretions may ooze out of a newly formed surgical excision and stoma site, which may cause irritation of the skin and lead to skin excoriation / maceration. The moist environment may also increase risk of bacterial growth and prevent the stoma site from healing. The aim of stoma care is to keep the area clean and dry, reducing the risk of skin irritation and infection. Cotton wool or woven gauze swabs should not be used around the stoma as fibres may enter the airway. Any dressing placed around a tracheostomy tube should always be designed for use specifically on a tracheostomy and pre-cut by manufacturers to prevent loose fibres entering the airway. Routine use of dressings around the stoma site are not recommended and should only be used when clinically indicated. The tracheostomy wound should be inspected daily and appropriate action

taken if signs of infection are suspected. Wound degradation will occur if the moist / wet dressings remain in contact with the surrounding skin.

Suctioning

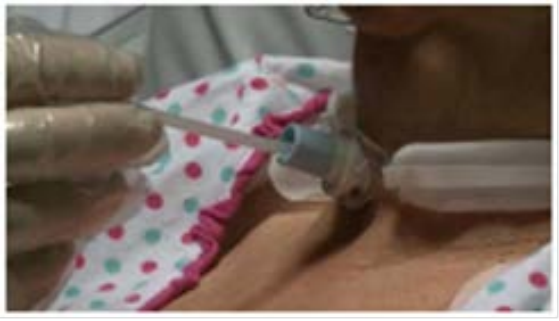
Neck breathers often require suctioning to maintain a patent airway. Each patient requires individual assessment and constant re-assessment to ascertain the frequency of suction required. Suction should be performed when necessary. Patients should be encouraged to take deep breaths, cough and expectorate in order to determine if suction is required.

Indications for suctioning include:

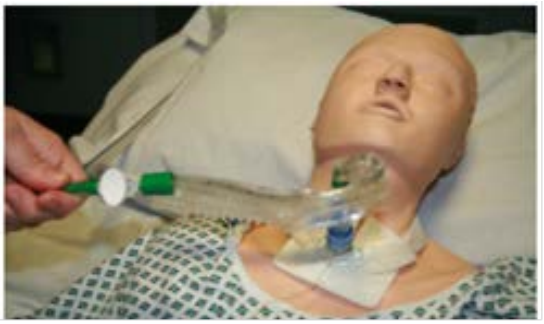
- Coarse breath sounds on auscultation or “noisy” breathing
- Patients’ inability to generate an effective spontaneous cough secondary to changes in neurological and cognitive status, the influence of medication or general weakness
- Visible or audible secretions in the airway
- Suspected aspiration of gastric or upper airway secretions
- Clinically apparent increased work of breathing (raised respiratory rate, accessory muscle use)
- Deterioration of arterial blood gases or oxygen saturations
- Radiological changes consistent with retention of pulmonary secretions
- The need to maintain patency and integrity of the artificial airway
- Presence of pulmonary atelectasis or consolidation, presumed to be associated with secretion retention
- During cuff deflation

If suction is required a suction catheter no greater than ½ the diameter of the inner lumen and a vacuum pressure of 13.5 – 20Kpa should be used. If a fenestrated tube is in situ, the inner cannula must be changed to a non-fenestrated version prior to suction. Period of suction should not exceed 10 seconds. Any difficulty in passing the suction catheter should lead to consideration that the tube may be partially blocked, badly orientated or misplaced and this requires immediate attention - **this is an emergency situation. The resuscitation team should be called on 2222, plus any additional numbers documented on the patient’s bedhead sign, and then staff should follow the emergency algorithm steps.**

Suctioning can be performed using an open or closed suction unit.



Open suction unit



Closed suction unit

The risks associated with suctioning must be considered:

- Hypoxia (in particular where oxygen therapy delivery is interrupted for procedure)
- Tissue trauma to the bronchial and tracheal mucosa
- Cardiac dysrhythmia
- Pulmonary atelectasis
- Bronchoconstriction / bronchospasm
- Infection
- Pulmonary haemorrhage / bleeding
- Elevated intracranial pressure
- Interruption of mechanical ventilation

A more detailed explanation of suctioning, including a procedural guide and a video, can be accessed via NTSP.

Checking cuff pressure

The initial tracheostomy tube inserted on formation of a tracheostomy will usually be a cuffed tube. The cuff provides a sealed airway. A cuffed tube is normally a temporary measure until a patient is weaned from a ventilator and can control their secretions. A cuffed tube may be required long term if the underlying condition does not improve sufficiently, for example:

- patients requiring long term mechanical ventilation
- patients that have excessive oral secretions that cannot be managed by their own efforts
- patients that have a reduced conscious level neuromuscular / mechanical problems affecting the pharynx as these patients are at risk of aspiration of

gastrointestinal contents: cuffed tube can provide a degree of protection against this

Cuff manometer

Recommendations are that cuff pressure should be maintained between 15 and 25 cmH_2O (10-18mmHg). Cuff pressures should be undertaken twice daily (using an appropriate cuff manometer) unless there is a clinical indication for more frequent checks. A cuff pressure that is too low will lead to ineffective positive pressure ventilation and increases risk of micro-aspiration of secretions and nosocomial pneumonia. An overinflated cuff can cause impairment to tracheal capillary blood flow and further complications.

A more detailed explanation of cuff management and a video, can be accessed via NTSP.

Changing a tracheostomy tube

Tracheostomy tubes are usually changed every 28 days (or as per manufacturer's guidance) or when there is a clinical indication. Tracheostomy tube changes must be undertaken by experienced and competent staff following discussions with the multi-disciplinary team. The timing of tube changes should be carefully considered and planned to ensure that there is appropriate support available in the event of complications arising. It is essential that all appropriate and emergency equipment is available for the tracheostomy tube change procedure, including the tracheostomy introducer which allows a smooth insertion of the new tracheostomy tube without damage to the trachea.

A more detailed explanation of changing tracheostomy tubes, including a video, can be accessed via NTSP.

Communication, oral care and swallowing

Communication

The impact of the change to normal, verbal communication following tracheostomy or laryngectomy cannot be underestimated. Alternative means of communication should be sought. For patients with a tracheostomy, consider use of fenestrated tubes, downsizing, use of speaking valves (also known as one-way valves), or

alternatively non-verbal methods such as writing, gesture or alphabet / picture boards.

Patients should have access to an appropriate nurse call system.

Speech and Language Therapists can be contacted for advice and referral made for full communication assessment.

Further information on communication strategies for non-verbal patients, including a video, can be accessed via NTSP.

Above cuff vocalisation (ACV)

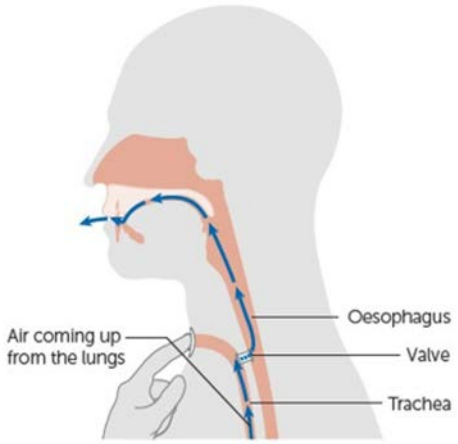
ACV is a technique that can be used for patients with a subglottic port tracheostomy tube who cannot tolerate cuff deflation, including patients still requiring ventilation. The subglottic port is used to direct air up through the vocal cords to facilitate voice. Early use of ACV may also have a role in rehabilitation of the larynx. ACV should not be attempted by practitioners untrained in its use.

In intensive care units, ACV may be directed by competent members of the multidisciplinary team. Other areas should refer to Speech and Language Therapy, if ACV is being considered.

A video demonstrating the use of the subglottic port to facilitate speech can be accessed via NTSP.

Communication following laryngectomy

The larynx (voice box) has been removed so normal voice production is lost. Many patients will have a valve (tracheoesophageal voice prosthesis (VP)) inserted into the back wall of the trachea, visible through the stoma. When the patient occludes the stoma, air flows through the VP to the top of the oesophagus and the tissues here vibrate. The resultant vibration passes up to the mouth and is shaped into speech. If a VP is present, it should not be removed without discussion with the Speech and Language Therapist (SLT) or ENT surgeons.



Demonstrating the TEP

The VP can dislodge and be swallowed or aspirated: this must be investigated urgently with SLT and ENT involvement. The patient should be Nil by Mouth until the dislodgement is addressed as there is now an open connection between the oesophagus and trachea. Valves can also leak, causing aspiration. If this is suspected (e.g. the patient is coughing on drinks and/or secretions from stoma are stained with drinks), SLT review should be requested. Until this time, the patient should be made Nil by Mouth.

Some patients with laryngectomy use writing and/or mouthing as well as, or instead of, voicing with a VP. Other communication methods include oesophageal speech and electrolarynx use. **A more detailed explanation of different methods of communication following laryngectomy can be accessed via NTSP.**

Oral care and swallowing

Regular mouth care is important to reduce the risk of health care associated infection. Regular oral hygiene using toothbrush and a mouthwash should be encouraged to reduce the risk of oral secretions and accumulation of oral bacteria.

Most patients with a new tracheostomy / laryngectomy will have a naso-gastric tube or alternate enteral feeding tube and are fed via this tube for the initial post operative period.

Tracheostomy placement is often associated with co- morbidities such as respiratory failure, head and neck cancer, trauma, stroke, neurological conditions and reduced

functional reserve that may predispose patients to dysphagia and aspiration. The high rates of aspiration among this patient group may be due to an underlying medical condition and not the presence of the tracheostomy itself. Any general muscle weakness may manifest as swallowing difficulties.

Complications associated with swallowing difficulties can be particularly severe in patients with a tracheostomy due to frequently associated complex medical needs, particularly in critical care. Careful assessment of the swallow is required. As a result, all patients with a tracheostomy require swallow screening prior to the commencement of oral feeding using the Screening Tool for Oropharyngeal Swallow Symptoms (STOPSS).

Screening Tool for Oropharyngeal Swallow Symptoms (STOPSS)

In NHSGGC, the '**STOPSS for tracheostomy**' is used to guide practitioners. This 3-part screening tool highlights considerations necessary to decide whether a patient is ready and able to start oral intake or whether immediate referral to SLT for specialist swallowing assessment is indicated.

There should be multidisciplinary agreement prior to assessment of swallowing to confirm that the patient's medical and weaning status indicates they are ready to be considered for oral intake.

It is advisable that oral intake is only considered and offered when the cuff is fully deflated and a speaking valve or decannulation cap is in place. This helps to restore more normal physiology to the upper airway, making it possible to observe vocal quality and attempts to cough, both of which are critical clinical indicators of swallow safety.

In special circumstances (e.g. to improve quality of life), a multi-disciplinary team, with the necessary competencies, may decide to allow small amounts of oral intake with partial cuff deflation with full awareness of the potential risk for secondary complications.

Criteria for immediate referral to SLT (rather than nurse led swallow screen) are outlined in Part 2. These are:

- Persistent wet, weak or absent voice when cuff deflated and speaking valve on (e.g. lower cranial nerve palsies, after head and neck surgery)

- Patients with a pre-existing swallowing difficulty before tracheostomy tube placement
- Patients with a long-term tracheostomy tube where the patient is established on oral intake but is experiencing new swallowing difficulties
- Patients with a long-term tracheostomy tube, where the patient is established on oral intake but has recurrent unexplained chest infection

N.B. Part 3 STOPSS for tracheostomy - **the Blue Dye Water Swallow Test**. It is essential that practitioners carrying out a blue dye test are aware of the need to monitor for all signs of dysphagia and that blue dye test results are interpreted with caution as part of the broader medical picture. Studies have found an incidence as high as 50% for false negative results i.e. no blue seen in the tracheostomy tube or returned in suction despite aspiration having occurred. Therefore, practitioners must closely observe for the broader signs of dysphagia. These are:

- Coughing/choking
- Change in voice quality e.g. gurgly/wet/hoarse
- Increased work of breathing
- Reduced oxygen saturation
- Evidence of aspirated material on suctioning
- Patient reporting difficulty in swallowing

If signs of dysphagia are observed over two assessments using the STOPSS for tracheostomy, referral for detailed swallow assessment by SLT should be made.

Specific swallow considerations for patients with a laryngectomy

Due to the nature of laryngectomy surgery, changes to swallow function are expected post operatively. Dysphagia post-laryngectomy may range from mild to severe depending on the extent of surgery however, this normally manifests as a sensation of sticking and/or regurgitation; there is less risk of choking or aspiration post laryngectomy than there is post tracheostomy due to the altered anatomy following the surgery. When healing from the laryngectomy surgery is deemed to be complete (normally following radiological assessment), the patient is usually able to swallow liquids and then to progress to diet as tolerated.

The initiation of oral intake post-laryngectomy does not routinely require prior assessment by SLT.

Tracheoesophageal voice prostheses (see Communication following laryngectomy **above**) can also leak causing aspiration. If this is suspected SLT review should be requested.

More severe, long-term swallowing difficulties can occur in laryngectomy patients. A referral to SLT may be appropriate if the swallowing difficulty has not been previously reported or is getting significantly worse. Worsening swallow function can be a sign of a recurrence of the cancer and should not be ignored.

Weaning, speaking valves and decannulation

Weaning from a tracheostomy tube

A tracheostomy tube should be removed when no longer required. To facilitate this, several different methods of weaning exist. Consideration should be given to individual patients to ensure that the safest and most appropriate method of weaning is identified. Local advice should be sought from the physiotherapist, specialist nurse, speech and language therapists or medical staff responsible for the patient as needed. This includes seeking advice on down-sizing of the tracheostomy tube.

Weaning times can vary due to the original reason for insertion of the tracheostomy and length of time on mechanical ventilation. Prior to weaning, consideration should be given to the following:

- The need for positive pressure ventilation (there may be an exception to this if specialist devices are used to enable speech in long term ventilated patients)
- Oxygen requirements
- Haemodynamic stability
- Ability to cough and volume of chest secretions
- Neurological status

The patient should be placed in an appropriate position to ensure that optimum lung expansion is obtained. These patients are still at high risk of a complication occurring and consideration should be given to the visibility and observation of the patient by members of staff.

Throughout the weaning process patients should be observed for signs of clinical deterioration e.g. respiratory distress, increasing National Early Warning Score (NEWS) and secretion retention.

If evidence of clinical deterioration is present, the patient should be reassessed. Early intervention and management may prevent an emergency occurring. The process of weaning must be planned and documented on a **weaning plan record of care**. Critical care areas may have locally approved alternative weaning documentation.

The first step in the weaning process is to carry out a cuff deflation trial.

The decision to trial cuff deflation should be undertaken by appropriate members of the multidisciplinary team; and carried out / monitored by appropriately trained staff. Patients who have a limited respiratory reserve or any bulbar impairment may not tolerate cuff deflation well, despite not requiring ventilatory support for some time. Patients must be adequately monitored during a cuff deflation trial.

Any secretions that may have collected above the cuff will require gentle oral, pharyngeal and sub-glottic suction with a soft catheter. Any secretions require to be removed prior to a slow, staged, cuff deflation.

A more detailed explanation of cuff management and cuff deflation, including a procedural guide and video, can be accessed via NTSP.

Tracheostomy speaking valves and decannulation caps

During the weaning process, one of the benefits that can be achieved for the patient is the ability to speak for short periods of time.

If a patient has a fenestrated tube in place or is able to breathe around the tube (i.e. uncuffed tube or cuffed tube with cuff deflated), they have some ability to vocalise, and their voice may be improved by the use of a speaking valve. A speaking valve is a one-way valve that allows the patient to inhale via the tracheostomy, redirecting the air on exhalation and forcing it up through the larynx and past the vocal cords to the nose and mouth, allowing voicing and speech. **If a patient has passed a cuff deflation trial and the cuff is fully deflated**, a speaking valve may be attached.

Speaking valves increase work of breathing and therefore should only be used after careful consideration. They are usually trialled for short periods of time, building up to longer periods and it is usually inappropriate to leave them in place overnight. The speaking valve should be removed if the patient demonstrates increased respiratory workload (respiratory rate and use of accessory muscles), problems with secretion management, decreased oxygen saturation levels, increasing NEWS or if they

appear distressed. **Humidification must continue to be provided / considered** whilst speaking valves are in use. Practitioners should visually inspect the speaking valve regularly for secretions and change the speaking valve, if required.

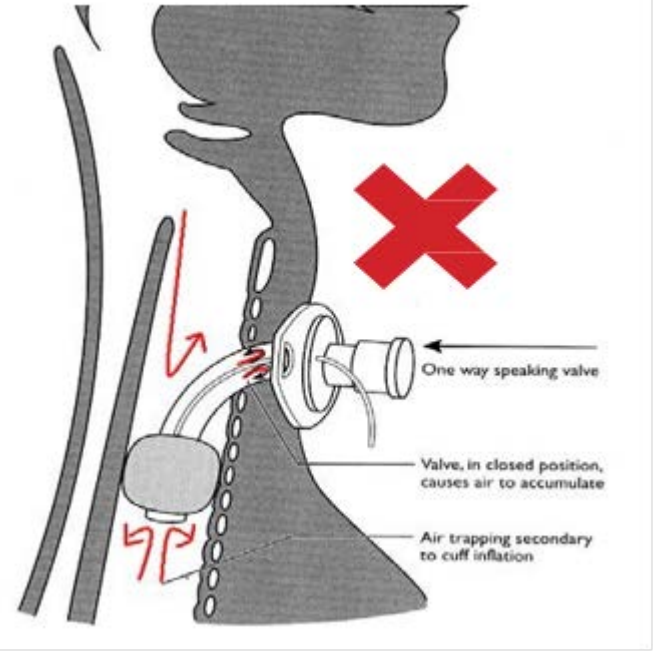
Tracheostomy speaking valves

During the weaning process, in preparation for removal of the tracheostomy tube (decannulation), a decannulation cap may be used.

A decannulation cap is a solid cap that is placed over the open end of the tracheostomy tube visible at the patient's neck wall. Decannulation caps completely obstruct inspired and expired airflow via the tracheostomy, meaning the patient must be able to inhale and exhale via their nose and mouth. **Therefore, they can only be used on patients with either an uncuffed tube or a cuffed tube where the cuff is deflated**.

Decannulation caps also increase work of breathing for the patients and similar to speaking valves should only be used after careful consideration and assessment of patient condition. The decannulation cap should also be removed if the patient demonstrates increased respiratory workload (respiratory rate and use of accessory muscles), problems with secretion management, decreased oxygen saturation levels, increasing NEWS or if they appear distressed.

A speaking valve or decannulation cap must never be placed on a cuffed tracheostomy tube when the cuff is inflated.



This picture shows the airflow in a patient who has a speaking valve attached to a non-fenestrated cuffed tracheostomy tube with the cuff inflated. This patient is unable to breathe out and is therefore at high risk of hypoxia, pneumothorax and cardiac arrest.

A more detailed explanation of the weaning process and speaking valves/decannulation caps, including a video, can be accessed via NTSP.

Decannulation

The process of removing a tracheostomy tube is referred to as decannulation. The ability of the patient to maintain their own airway without a tracheostomy tube will depend on whether the initial requirement for the tracheostomy tube has resolved. The removal of a tracheostomy tube should occur as soon as there is no further need for it to remain in situ and should only be considered when a patient has successfully progressed through a structured weaning programme. The use of standardised multidisciplinary processes will reduce the risk of complications following the removal of the tracheostomy tube. An appropriate and safe occlusive dressing should be applied over the tracheostomy stoma site following decannulation to promote wound healing.

Practitioners should be aware of potential complications that may arise during/following decannulation. A decannulation safety checklist can be useful for practitioners to refer to and is useful in some clinical areas.

Acknowledgements and review group

Acknowledgements

NHS Greater Glasgow and Clyde would like to acknowledge the kind permission granted by the National Tracheostomy Safety Project to utilise and reproduce their resources in the development of this guideline.

Review group

The responsible review group for this guideline content is the NHSGCC Acute Services Tracheostomy and Laryngectomy Safety Committee. Current committee membership at time of guideline review can be viewed **here**.

Other relevant guidelines and policies

- Standard Infection Control Precautions (including Occupational Safety Prevention and Exposure Management): **National Infection Prevention and Control Manual: Chapter 1 – Standard Infection Control Precautions (SICPs)**
- Aseptic Non Touch Technique (ANTT): **NHSGGC ANTT Guideline**
- Food, Fluid and Nutrition: **Clinical Nutrition - Enteral/Parenteral Nutrition**
- Pressure Ulcer Prevention and Management: **NHSGGC Pressure Ulcer and Preventions and Management Policy**
- Patient Escort: **NHSGGC Acute Services – Adult Patient Escort Policy**

Specialist areas within NHSGGC Adult Acute Services

Sector	**North**		**South**		**Clyde**		**Regional Services**	
Site	Glasgow Royal Infirmary	Intensive Care	Queen Elizabeth University Hospital	Critical Care Ear, Nose & Throat (ENT) – Ward 11b	Royal Alexandra Hospital	Critical Care	The Beatson West of Scotland Cancer Centre	High Acuity Unit (within ward B5)
	New Stobhill Hospital	n/a	Gartnavel General Hospital	n/a	Vale of Leven Hospital	n/a	Institute of Neurological Sciences and Spinal Unit (QEUH site)	Critical Care – Wards 60 & 61 Wards 62, 63, 64, 65, 66 & 67 Edenhall Philipshill
	Lightburn Hospital	n/a	New Victoria Hospital	n/a	Inverclyde Royal Hospital	n/a		

Tracheostomy Transfer Sheet and Care Plan

NHS Greater Glasgow and Clyde

Name: .....
Address: .....
.....
DoB: .....
CHI number: .....
Affix patient data label

Date tracheostomy performed:	
Date tracheostomy tube changed:	
Date tracheostomy tube next due changed:	
Type of formation of tube (circle as appropriate)	Surgical / Percutaneous

Reason for tracheostomy (more than one answer may be required)			
Airway maintenance	Yes / No	Risk of aspiration	Yes / No
Secretion clearance	Yes / No	Reduced GCS	Yes / No
Other reason:		Is the upper airway patent?	Yes / No

Type of tracheostomy (circle)	Size:	
Cuffed / uncuffed	Cuff inflated Yes* / No If Yes state reason as it is unsafe to have patients with inflated cuffs on a general ward:	
With inner cannula / without inner cannula	Fenestrated / unfenestrated	Other:

Emergency equipment transferred with patient?	
Type of inner cannula supplied?	
Size of inner cannula supplied?	
Two spare tracheostomy tubes supplied?	
Sizes of tracheostomy tubes supplied?	
Tracheostomy collar supplied?	Yes / No
Speaking valve required?	Yes / No / NA
Does the patient tolerate the speaking valve?	
Describe problem if speaking valve not tolerated?	

Patient's requirements	
Method of humidification (circle as appropriate)	Swedish nose / water bath / Buchannan bib / Saline nebulisers
Percentage of oxygen required?	%
Size of suction catheters required?	CH
Frequency of tracheal suctioning required?	
Description of tracheal secretions? (More than one answer can be circled).	Mucoid / Purulent / Bloody Minimal / Moderate / Copious Other:

Blue dyed water swallow test passed?	Yes / No	Date:

ICU nurse's signature: Print name: Date:

This patient has a

TRACHEOSTOMY

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

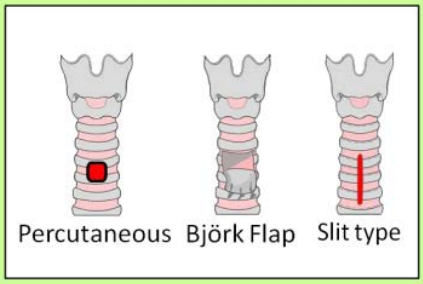
Surgical / Percutaneous

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

www.tracheostomy.org.uk

mi • 265053-2 v1.0 Tracheostomy

Emergency tracheostomy management - Patent upper airway

Call for airway expert help
Look, listen & feel at the mouth and tracheostomy
A Mapleson C system (e.g. 'Waters circuit') may help assessment if available
Use **waveform capnography** when available: exhaled carbon dioxide indicates a patent or partially patent airway

Is the patient breathing?

No → Call Resuscitation Team **CPR if no pulse / signs of life**

Yes → Apply high flow oxygen to **BOTH** the face and the tracheostomy

Assess tracheostomy patency

Remove **speaking valve** or **cap** (if present)
Remove **inner tube**
Some inner tubes need re-inserting to connect to breathing circuits

Can you pass a suction catheter?

Yes → **The tracheostomy tube is patent**
Perform tracheal suction
Consider partial obstruction
Ventilate (via tracheostomy) if not breathing
Continue ABCDE assessment

No → Deflate the **cuff** (if present)
Look, listen & feel at the mouth and tracheostomy
Use waveform capnography or Mapleson C if available

Is the patient stable or improving?

Yes → **Tracheostomy tube partially obstructed or displaced**
Continue ABCDE assessment

No → **REMOVE THE TRACHEOSTOMY TUBE**
Look, listen & feel at the mouth and tracheostomy. Ensure oxygen re-applied to face and stoma
Use waveform capnography or Mapleson C if available

Is the patient breathing?

No → Call Resuscitation team **CPR if no pulse / signs of life**

Yes → Continue ABCDE assessment

Primary emergency oxygenation

Standard **ORAL airway** manoeuvres
Cover the stoma (swabs / hand). Use:
- Bag-valve-mask
- Oral or nasal airway adjuncts
- Supraglottic airway device e.g. LMA

Tracheostomy STOMA ventilation
Paediatric face mask applied to stoma
LMA applied to stoma

Secondary emergency oxygenation

Attempt **ORAL intubation**
Prepare for difficult intubation
Uncut tube, advanced beyond stoma

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

National Tracheostomy Safety Project. Review date 1/1/22. Feedback & resources at **www.tracheostomy.org.uk**

This patient has a

LARYNGECTOMY

and CANNOT be intubated or oxygenated via the mouth

Follow the LARYNGECTOMY algorithm of breathing difficulties

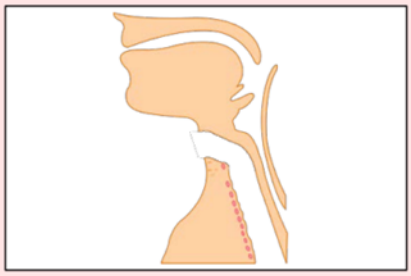
Performed on (date) .....

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**

www.tracheostomy.org.uk

m • 265053-1 v1.0 Laryngectomy

Emergency laryngectomy management

Call for airway expert help
Look, listen & feel at the mouth and laryngectomy stoma
A Mapleson C system (e.g. 'Waters circuit') may help assessment if available
Use **waveform capnography** whenever available: exhaled carbon dioxide indicates a patent or partially patent airway

Is the patient breathing?

No → Call Resuscitation Team **CPR if no pulse / signs of life**

Yes → **Apply high flow oxygen to laryngectomy stoma**
If any doubt whether patient has a laryngectomy, apply oxygen to face also*

Assess laryngectomy stoma patency

Most laryngectomy stomas will NOT have a tube in situ

Remove **stoma cover** (if present)
Remove **inner tube** (if present)
Some inner tubes need re-inserting to connect to breathing circuits
Do not remove a tracheoesophageal puncture (TEP) prosthesis

Can you pass a suction catheter?

Yes → **The laryngectomy stoma is patent**
Perform tracheal suction
Consider partial obstruction
Ventilate via stoma if not breathing
Continue ABCDE assessment

No → Deflate the **cuff** (if present)
Look, listen & feel at the laryngectomy stoma or tube
Use waveform capnography or Mapleson C if available

Is the patient stable or improving?

Yes → Continue ABCDE assessment

No → **REMOVE THE TUBE FROM THE LARYNGECTOMY STOMA if present**
Look, listen & feel at the laryngectomy stoma. Ensure oxygen is re-applied to stoma
Use waveform capnography or Mapleson C if available

Is the patient breathing?

No → Call Resuscitation Team **CPR if no pulse / signs of life**

Yes → Continue ABCDE assessment

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 fibreoptic '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

National Tracheostomy Safety Project. Review date 1/1/22 Feedback & resources at **www.tracheostomy.org.uk**

Management of a Bleeding Tracheostomy Algorithm

NHS Greater Glasgow and Clyde

This is an Airway Emergency CALL for HELP

1. ENT Surgeon (82782)
2. Senior ICU Trainee (83092)
3. Senior anaesthetic trainee (83463)

** Call for Consultant help early

Management of Haemorrhage

Activate major haemorrhage protocol if ongoing severe bleeding

Liaise with Haematologist to correct coagulopathy

Give 1g IV Tranexamic Acid

Consider surgicel dressings or subcutaneous adrenaline injection

Other considerations:

Bleeding may be caused by haemoptysis

Palliation for upper airway tumours may be appropriate

STOP Has this patient had a laryngectomy?

If yes, oral intubation and facemark oxygen not an option

Acute bleeding from tracheostomy?

Give oxygen
- High flow via trauma mask if patent upper airway
- High flow via tracheostomy mask

Hyperinflate Tracheostomy Cuff
- Use up to 50ml air

Sit patient upright and apply suction

Pressure and packing
- Digital pressure at sternal notch + any bleeding points
- Consider packing oropharynx

Insert Bronchoscope (from ICU) to assess for bleeding

Bleeding Persists
- Oral intubation; then apply digital pressure against posterior manubrium via stoma
- Hyperinflate cuff in distal trachea using bronchoscope to aid position

Bleeding controlled
- Liase with ENT, IR and theatres to facilitate control of bleeding

NHS
Greater Glasgow and Clyde

Record of Tracheostomy Tube Care

Type of Tracheostomy Tube (circle as appropriate)	Size	Cuffed	Fenestrated (outer)	Date inserted: Date changed:	Name: Date of Birth: CHI: Ward: *Affix patient ID label*
Tube with inner cannula Tube without inner cannula		Uncuffed	Non-fenestrated (outer)	Due changed: By who:	

Care of inner cannula: Remove, clean and replace 2-4 hourly. Increase frequency if lumen appears narrowed or occluded by secretions. Occluded (0) Partly occluded (PO) Clear (C)	Date / Time																
	Condition of inner cannula	O PO C	O PO C	O PO C	O PO C	O PO C	O PO C	O PO C	O PO C	O PO C	O PO C	O PO C	O PO C	O PO C	O PO C	O PO C	O PO C
	Next due																
Humidification: Replace/Renew as required. W – Water H – HMEF B – Buchanan Bib N – Nebuslised Saline	Date / time																
	W/H/B/N																
Suction: Open/Closed Circuit Secretions 1 - Minimal M - Mucoid 2 - Moderate P - Purulent 3 - Profuse B - Blood	Date / time																
	1/2/3 M/P/B																
Safety Checks Each shift: • Check Essential Equipment • Check Cuff Pressure is 15-30 cms H_2O (If no cuff is present or cuff deflated record X)	Date / time																
	Equipment present																
	Pressure																
Signature																	

See guidelines for completion overleaf

Addressograph Label

Daily Equipment Checklist

Month _____

NHS Greater Glasgow and Clyde

Date																														
Tracheostomy box																														
Spare tubes and inner cannulas																														
Tracheal dilators																														
Stitch cutter (if appropriate)																														
Something to tie the tube in with																														
10ml syringe (if a cuffed tube)																														
2 x Suction catheters																														
Non-rebreathing O2 face mask																														
Tracheostomy mask																														
Bedside equipment																														
Suction equipment																														
Humidification equipment																														
Foil bowl																														
Trache swabs																														
Manometer																														
Call bell																														
Bedhead sign																														
Documentation																														
Safety checks																														
Suction																														
Oxygen																														
Initials																														

Daily Equipment Checklist

The National Tracheostomy Safety Project (NTSP) identified that patients with tracheostomies or laryngectomies are at high risk of developing complications such as:

- Blockage
- Displacement
- Haemorrhage

Patients with a tracheostomy or laryngectomy should always have working oxygen and suction available and the appropriate bedhead sign (with emergency algorithm) at the bedspace.

Tracheostomy Box:

A set of emergency equipment should stay with the patient at all times and during transfers. This **emergency box** should include:

- Spare tube and inner cannula, same size + 1 size smaller
- Tracheal dilators
- Stitch cutter (if appropriate)
- Something to tie the tube in with
- 10ml syringe (if a cuffed tube)
- 2 x Suction catheters (appropriate size - no more than ½ diameter of the tracheostomy tube)
- Non-rebreathing O_2 face mask
- Tracheostomy mask

Other equipment to have at the **patients' bedside**, but this should be kept to a minimum:

- Suction and appropriate size suction catheters (no more than ½ diameter of the tracheostomy tube)
- Humidification spares
- Sterile water for irrigation, Foil bowl
- Container for spare inner cannula to be stored
- Trache swabs (for cleaning inner cannula and / or stoma)
- Manometer to measure cuff pressure
- Call bell for patient
- Appropriate bedhead sign with emergency algorithm

To prevent some of these complications arising, and being able to quickly deal with them should they arise it is recommended that standard equipment is kept in **clinical areas**. This should include:

- Equipment for providing humidification, oxygen and nebulisers (including elephant tubing, trache masks, t-pieces, variety of Heat and Moisture Exchange (HME) filters, humidification units, sterile water)
- Variety of tracheostomy tubes and inner cannulas
- Sundries such as foil bowls and suction catheters, suction tubing, PPE
- Nursing documentation for patients with tracheostomy (tracheostomy care plan, weaning chart, blue dye swallow test, transfer checklist/care plan)

More information is available in the NHSGGC Guidelines for the Care of Patients with a Tracheostomy or Laryngectomy.

Screening Tool for Oropharyngeal Swallow Symptoms (STOPSS) for Patients with Tracheostomy Tubes

NHS Greater Glasgow and Clyde

Name: .....
Address: .....
.....
DoB: .....
CHI number: .....
Affix patient data label

(Do not repeat STOPSS if inpatient Speech and Language Therapy management is ongoing)

Part 1: Is the patient fit for screening?

Can the patient:
- Maintain an upright position in bed or chair (excluding spinal patients)
- Stay awake and alert for a minimum of 15 minutes
- Maintain oxygenation on air or O2 therapy < 40%
- Maintain stable vital signs for 24 hrs
- Satisfy criteria for cuff deflation and tolerate cuff deflation for one hour
- Attempt swallowing without undue associated pain

No ✓

Keep Nil By Mouth and alert medical staff.
- Implement and maintain full oral hygiene.
- Document plan for patient's medication route, hydration and nutritional status.
- **Recommence STOPSS** (new form) when oral intake is being reconsidered.

Sign: _____ Print: _____ Grade: _____
Date: _____ Time: _____

Yes – Proceed to Part 2 ✓

Part 2: If the patient meets any of the criteria below DO NOT water swallow test ✓

Persistent wet, weak or absent voice when cuff deflated and speaking valve on (e.g. lower cranial nerve palsies, after head and neck surgery)	
Patient had a known swallowing difficulty before tracheostomy tube placement	
Patient has a long term tracheostomy, is established on oral intake but is experiencing new swallowing difficulties	
Patient has a long term tracheostomy, is established on oral intake but has recurrent unexplained chest infections	

NB: Exclude aspiration resulting from vomiting, seizures, oesophageal stricture

No – Proceed to Part 3 ✓

Yes – Alert medical staff. Do NOT proceed to Water Swallow Test (Part 3) Refer to Speech and Language Therapy through trakcare.
Sign: _____ Print: _____ Grade: _____
Date: _____ Time: _____

Part 3: Blue Dyed Water Swallow Test – using blue dye (add 4 drops to 75mls/half cup sterile water)

PART A: (with cuff deflated and if patient using speaking valve, attach to tracheostomy tube) Can the patient take 3 x 5ml teaspoons of water **WITHOUT** coughing **OR** choking **OR** becoming breathless **OR** hoarse **OR** gurgly **OR** blue dye visible in secretions?

No

1st Attempt – FAIL – Keep nil by mouth and **alert medical staff**. Repeat Part A within 12-24 hours. ✓
Sign_____ Print: _____Grade:_____
Date: _____Time:_____

2nd Attempt – FAIL – Keep nil by mouth and **alert medical staff**. Refer to Speech and Language Therapy ✓
Sign_____ Print: _____Grade:_____
Date: _____Time:_____

Yes ✓

PART B: (with cuff deflated and if patient using speaking valve, attach to tracheostomy tube) Can the patient drink 50 ml of water from a glass at a comfortable pace **WITHOUT** coughing **OR** choking **OR** becoming breathless **OR** hoarse **OR** gurgly **OR** blue dye visible in secretions?

No

1st Attempt – FAIL – Keep nil by mouth and **alert medical staff**. Repeat Part B within 12-24 hours. ✓
Sign_____ Print: _____Grade:_____
Date: _____Time:_____

2nd Attempt – FAIL – Keep nil by mouth and **alert medical staff**. Refer to Speech and Language Therapy ✓
Sign_____ Print: _____Grade:_____
Date: _____Time:_____

Yes - PASS ✓

Commence normal fluids and Level 7- Easy to Chew or pre-admission modified diet+fluids. (local protocol applies for initial intake post head and neck cancer surgery and in Spinal units)
- Supervise the first mealtime and note any problems.
- If no problems observed proceed to previous oral intake
- If problems develop e.g. cough, gurgly voice, moist chest or chest infection consider a nil by mouth regime, **alert medical staff** and refer to Speech and Language Therapy to discuss.

Sign:_____ **Print:** _____ **Grade:** _____ **Date:** _____ **Time:** _____

MES 257805 v2.0

PATIENT DETAILS Attach patient ID label here	**Weaning Plan Record of Care** (Tracheostomy patients ONLY) NHS Greater Glasgow and Clyde

Weaning Criteria Indications If Yes to all (or after discussion with the MDT:	Oxygenation requirement not increasing	Early warning score not increasing	Spontaneous Cough using vocal cords	Able to sit upright for 15 minutes and remain alert (For neuro patients MDT decision of readiness)	Coping with secretions no sign of drooling/ aspiration of secretions	Occasional suctioning required

Weaning If present, deflate cuff, either completely or in small stages as the patient tolerates. When cuff deflation tolerated attach weaning device (decannulation cap or speaking valve). If the tube is fenestrated ensure that the fenestrated inner tube is inserted. Ensure patient can be observed and monitored closely for signs of respiratory distress. In certain situations in conjunction with SLT blue dye may be used to test for aspiration of saliva.	Date	Cuff deflated Y / N	Weaning Device Cap (C) speaking valve (SV)	Time on / deflated	Time off / inflated	Comments	SIGN
	WEANING DEVICES MUST BE REMOVED OVERNIGHT						

Decannulation	If Yes to all: There is normal respiratory rate and breathing pattern If the upper airway is unobstructed and surgical issues resolved If the Healthcare team agree patient fit to decannulate	Decannulate Continue to monitor patient for signs of clinical deterioration	Date of decannulation: Sign: MIS 266232

NHS Greater Glasgow and Clyde

Decannulation Safety Checklist

Addressograph Label

Date Completed: _____

Completed by: _____
(sign and print name)

Tick if Present	**Tracheostomy Decannulation Checklist**
	Agreement within the MDT (Critical Care Consultant, Nursing, Physiotherapist, Speech & Language Therapist) to decannulate
	Reason for tracheostomy resolved
	No planned interventions that would require an artificial airway for 5 days
	Minimal oxygen requirements for >24 hours (FiO2 ≤ 40%)
	Respiratory rate <30
	Tolerating cuff deflation for 24 hours
	If speaking valve present – tolerating for> 2 hours
	Minimal secretions
	Ability to cough and expectorate secretions independently
	Alert and obeying commands
	Haemodynamically stable
	Staff trained in advanced airway management (Critical Care Doctor or Anaesthetist) available in the unit, or at bedside if previous complications with tracheostomy

Consideration should be given to the time of day when decannulation is planned to ensure competent practitioners with airway management skills and supporting services are available.

If the patient does not fulfill all the above criteria, but the responsible consultant elects to proceed with decannulation, please ensure the reasons for this decision are clearly documented.

NHS Greater Glasgow and Clyde

Decannulation Safety Checklist *(continued)*

Addressograph Label

Equipment	Procedure
Airway trolley Replacement tracheostomy tube and one size smaller (not opened) O2, facemask Suction available and switched on Dressing pack, gauze Sterile water Occlusive dressing PPE – gloves, apron	2 staff technique Check equipment Confirm with Charge Nurse ok time to proceed Explain procedure to patient Patient in semi-recumbent position Supplemental O2 via facemask Suction via tracheostomy tube Ensure cuff deflated Remove tracheostomy tube on expiration Inspect stoma site and clean with sterile water Ensure patient comfortable Apply occlusive dressing over stoma site Advise patient to apply pressure to stoma when coughing and talking Document decannulation in notes Monitor post-decannulation for signs of airway obstruction

Monitoring of Patient Post-Decannulation

Airway obstruction and respiratory distress are main concerns.

Record NEWS every 15 mins for first hour, then hourly for 2 hours, then to 4 hourly if no signs of distress.

Clinical features indicating deterioration – inform Critical Care Unit Doctor:

- Increased respiratory rate
- Use of accessory muscles
- Laboured breathing
- Breathlessness
- Stridor, wheeze
- Tachycardia
- Agitation
- Oxygen desaturation

If concerned with airway or deterioration post-decannulation – inform CRITICAL CARE DOCTOR

CALL PERI ARREST 2222 IF IMMEDIATE HELP REQUIRED

NHSGCC Acute Services Tracheostomy and Laryngectomy Safety Committee Membership		
Name	Role	Site/Sector
Barbara Miles (Co-chair)	Clinical Director, ICU	North
Ruth McLaughlin (Co-chair)	Lead Nurse, General Surgery/ ENT/ Urology	QEUH
Thomas Alexander	Resuscitation Officer	Clyde
Jacqueline Byrne	Resuscitation Officer	North
Judith Roulston	Team Leader, Critical Care Outreach and High Acuity Service	BWoSCC
Russell Allan	Consultant Critical Care, ICU	QEUH
Anne Hitchings	Consultant Otolaryngologist	QEUH
Michael Kerr	Consultant Anaesthetist	RAH
Elisabeth Rowe	Charge Nurse/Practice Educator, Emergency Department	RAH
Joseph Walker	Nurse Educator, Medical Specialties	GRI
Aileen McKenna	Clinical Practice Educator	GRI
Cairstiona O'Rourke	Clinical Specialist, Speech and Language Therapy	QEUH
Dawn Adamson	Senior Charge Nurse	GRI
JulieAnn Rodger	Macmillan Head and Neck Cancer Nurse Specialist	Acute Services
Joyce Gray	Team Lead, Complex Airway Nurse Specialist	RHC
Karen McGugan	Senior Charge Nurse	INS
Laurie Duffy	Respiratory Sister	SIU
Katherine Stewart	Practice Development Nurse	Corporate