NHS
Greater Glasgow and Clyde

# CLINICAL GUIDELINE

# 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 Intranet 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.

# *Care of Patients with a Tracheostomy or Laryngectomy Guideline*

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**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.**

## Contents

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## Introduction

This is the updated guideline for care of patients with a tracheostomy or laryngectomy incorporating NHS Greater Glasgow and Clyde (NHSGGC) Adult Acute Services. The purpose of this guideline is to provide information on care and maintenance based recommendations from the National Tracheostomy Safety Project (NTSP 2017). This evidence base is constantly evolving and practitioners should endeavour to use the most up-to-date evidence on which to base their practice.

A patient with a tracheostomy or laryngectomy is at an increased risk of death or harm if not appropriately managed.

Global reports highlight measurable harm in up to 30% of all acute hospital admissions involving temporary or permanent tracheostomy (McGrath and Wilkinson, 2015). Common complications include: blockage, displacement and haemorrhage. The likelihood and nature of harm depends to some extent on the patient's location at the time, reflecting the underlying condition of the patient and the nursing and medical infrastructure available.

An increasing number of patients with tracheostomies and laryngectomies are being cared for outwith specialist clinical areas, such as critical care, ear, nose and throat (ENT), maxillofacial, neurology or neurosurgical wards. This has potential implications for patient safety due to a gap in knowledge, skills, competencies and experience to effectively care and manage this group of patients.

Patients with a **cuffed** tracheostomy tube are at increased risk of complications occurring and should be cared for in a high acuity area. Areas within NHSGGC defined as high acuity areas are identified here. Careful planning should be undertaken if these patients need to move out with the high acuity area for any reason. Robust guidelines and appropriate education needs to be in place to ensure safe and effective routine and emergency care can be provided in other clinical areas (NTSP, 2012).

The National Tracheostomy Safety Project (NTSP) aims to improve the quality of care of patients with a tracheostomy and laryngectomy through education (NTSP, 2017). The organisation has evolved since 2012, with the development of standardised multidisciplinary emergency management guidelines and algorithms to improve patient safety; and a recent focus on the prevention of emergencies occurring through key quality improvement strategies such as the delivery of good basic care and adequate equipment provision (NTSP, 2017).

Patient harm can be reduced through:

- Trained and competent staff
- Adherence to relevant policies and guidance
- Underpinning knowledge of differences between physiology of tracheostomy and laryngectomy patients
- Good care and maintenance
- Appropriate use of care bundles and accurate documentation (e.g. care plans and patient held records)


- Daily checking of equipment and bedside safety checks
- Use of safety briefs and hospital huddles to clearly identify patient safety issues
- Utilisation of emergency algorithms
- Prevention, early recognition and management of complications

Any clinical area where there are patients with tracheostomies or laryngectomies must have access to emergency airway equipment including working suction, oxygen and supra-glottic airways (laryngeal mask or i-gel).

This guideline will outline the key principles of routine and emergency care for patients with a tracheostomy or laryngectomy. Each section will consist of key information and the appropriate link to the relevant NTSP resource / templates for further instruction and advice.

NHSGGC adult acute services have approval from the NTSP to utilise all educational resources / guidance and templates.

**Scope**

This guideline is relevant to all NHSGGC healthcare practitioners and undergraduate learners involved in the care of patients with a tracheostomy or laryngectomy.

Any undergraduate learner providing any aspect of tracheostomy or laryngectomy care (where this is appropriate to their stage of study) must do so under the **direct supervision of a competent registered healthcare practitioner.**

The detailed procedures for formation of tracheostomy or laryngectomy are outside the scope of this guideline. Practitioners involved with formation of these will be informed of where specific insertion procedure guidance can be found.

## Relevant guidelines and standards

This guideline should be used in conjunction with other relevant guidelines and standards:

**Food, Fluid and Nutrition:** **Section 5 of the Nutrition Manual** provides specific guidance for all adults receiving Parenteral Nutrition (home and in-patient).

**Occupational risk:** Appropriate procedures and guidance should be followed to reduce the risk of occupational hazards (e.g. needle stick injuries): specific information can be found here.

**Infection Control:** Standard Infection Control Precautions **(SICPs)**

Practitioners must adhere to all infection prevention and control guidelines when caring for patients with a tracheostomy or laryngectomy. The principles of SICPs should be used **by all practitioners in all care settings at all times for all patients whether infection is known to be present or not.** The application of SICPs ensures the safety of the patients, staff and visitors which is determined by the degree of risk encountered including the task / level of interaction and/or the level of exposure to blood or other body fluids. The National Infection Prevention and Control Manual should also be referred to.

Practitioners in specialist clinical areas caring for particularly vulnerable patient groups may have local standard operating procedures (SOP) in use which should be referred and adhered to.

## Training and education requirements

Healthcare practitioners caring for a patient with a tracheostomy or laryngectomy should be appropriately trained and supervised until considered competent. Education and training requirements will be addressed via recommendations of the current short life working group (SLWG), chaired by Corporate Practice Development. The outcomes of this group are due to be published before the end of March 2023. A practitioner can be described as competent if they have had the necessary training, clinical experience, skills and knowledge to undertake a task safely and without supervision. If a practitioner deems it appropriate to adapt the guidelines, a risk assessment must be undertaken and documented appropriately.

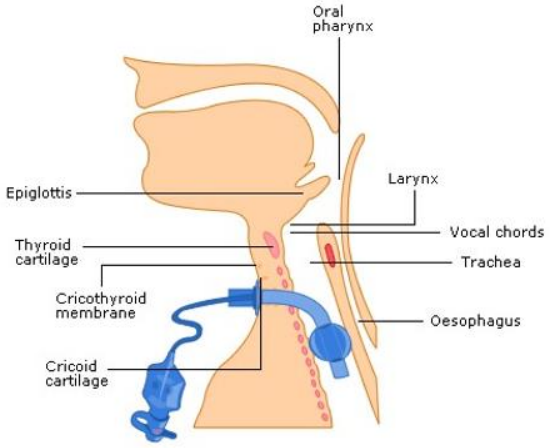
## Review of guideline

This guideline will be reviewed every two years.

## Anatomy and physiology

Patients with a tracheostomy or laryngectomy have a stoma (opening) in the anterior surface of their neck which connects to the trachea and they can therefore breath through this airway at the front of their neck However, there are clear differences in the anatomy, physiology and airflow of these two types of patients.

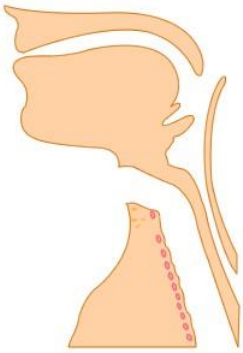
A **tracheostomy** is a surgical opening in the anterior wall of the trachea to facilitate breathing. The opening is maintained using a tracheostomy tube, which enables airflow to enter the trachea and lungs directly, thus bypassing the pharynx and larynx. This is normally a temporary procedure; however, patients can have long term tracheostomies due to their clinical condition to maintain a patent airway. There is a connection between the nose / mouth and trachea. This connection, and airflow, is blocked if the patient has a cuffed tracheostomy tube, with cuff inflated.




Tracheostomy

It is important to highlight that upper airway patency cannot be guaranteed due to actual upper airway difficulties, such as swelling.

A **laryngectomy** is surgical removal of the larynx, which disconnects the upper airway from the lungs. The trachea is brought onto the surface of the skin at the neck. This is a permanent procedure. Once this has been performed, the patient will never be able to breathe or be oxygenated or ventilated through the upper airway again. From an airway management perspective, there is no connection between the nose / mouth and trachea.



Larygectomy

**Physiological changes of tracheostomy and laryngectomy**

A tracheostomy bypasses the upper airway, altering the anatomy and physiology of the airway. The upper airway may be isolated completely, by an inflated cuffed tracheostomy tube. A laryngectomy is a permanent surgical change to the anatomy of the airway.

The following physiological changes can occur as a result of the formation of a tracheostomy or laryngectomy which require additional vigilance and care:

- The natural warming, humidification and filtering of air that usually takes place in the upper airway is lost
- Ability to swallow maybe altered
- The ability to vocalise is altered or removed completely
- Sense of smell is reduced

- Altered body image

**Indications for a tracheostomy or laryngectomy**

Indications for a tracheostomy include:

1. To secure and maintain a patent airway

- In patients with an actual or potential upper airway obstruction due to surgery / trauma / swelling
- In patients who lack airway protective mechanisms or reflexes e.g. due to neurological condition or head injury (swallowing / cough)

2. To facilitate weaning from artificial mechanical ventilation in acute respiratory failure and prolonged ventilation

- Improve patient comfort
- Reduce need for sedation

3. To facilitate the management and removal of airway secretions

4. To facilitate prolonged mechanical ventilation in the acute, critical care or community settings

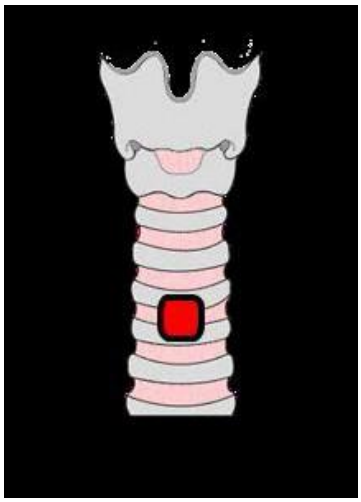
Indications for a laryngectomy include:

1. A surgical procedure to remove carcinoma (pharyngeal / laryngeal, in rare circumstances oral)
2. Severe trauma to the larynx
3. Non-functioning larynx due to radiotherapy or chemotherapy for head and neck cancer

**Procedures used to form a tracheostomy**

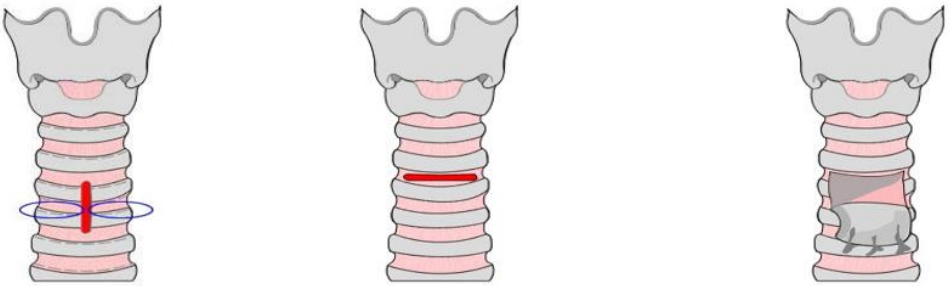
The following procedures can be performed in patients requiring a tracheostomy. The choice of procedure will depend on the clinical condition / anatomy of the patient and local practice.

1. Cricothyroidotomy – generally used to establish an airway in an emergency.
2. Mini tracheostomy – occasionally used to facilitate clearance of secretions; it is not adequate for long term ventilator support.
3. Percutaneous – performed using a guide wire and a process of gradual dilation of the trachea and surrounding tissues. Performed in theatre or in a critical care environment by an anaesthetist.



Percutaneous opening

4. Surgical – An incision is made in the anterior trachea wall and a tracheostomy tube is inserted. The tract from the skin to the trachea is created by a formal surgical procedure. The tracheostomy tube may be sutured to the skin. These skin sutures can generally be removed 5 - 7 days post tracheostomy formation, following discussion with surgical team. This is usually undertaken by the surgical team or senior Ear, Nose & Throat (ENT) / Maxillofacial medical staff. The shape of the stoma created in the trachea may vary from a vertical or horizontal slit, window (small section of trachea removed) or bjork flap.




There may be **stay sutures** present. These are sutures attached to the trachea which allow the surgeon to lift the trachea to the skin and open the stoma. Stay sutures can be used to assist with manipulating the position of the trachea during tube changes and should not be removed without discussion with the surgeon. These should not be confused with wound sutures or the sutures attached to the trachea when a horizontal incision is used or a Bjork flap. This is an anterior flap of trachea sutured to the anterior neck in effort to provide easy access to the trachea. Traction on these sutures could pull through the tracheal flap.

**Complications associated with a tracheostomy**

Complications can be serious and sometimes fatal. They can be divided into immediate complications (associated with insertion), delayed complications (< 7 days post procedure) and

late complications (> 7 days post procedure):

1. Immediate – haemorrhage, misplacement or damage to the surrounding structures (pneumothorax, oesophageal perforation, surgical emphysema)
2. Delayed – tube blockage (secretions or by patients soft tissues), infection, tracheal damage (ulceration and necrosis), tube displacement / migration, trachea-oesophageal fistula formation, accidental decannulation, haemorrhage due to erosion into a blood vessel
3. Late – tracheal dilation or stenosis, scar formation requiring revision, tracheal granuloma (which may cause respiratory difficulty when the tracheostomy tube is removed), blocked tracheostomy tube (which may occur at any time if secretions are not appropriately managed and humidification not utilised), infection, haemorrhage.

***More detailed information on indications / anatomy & physiology / procedures / complications can be accessed via NTSP comprehensive tracheostomy care document:***

**Types of tracheostomy tubes**

There are a variety of tracheostomy tubes available. Tubes can be made from different materials and be different diameters and lengths. Generally, tubes can be described by the presence / absence of:

- A cuff at the distal end of the tube
- An inner cannula
- Holes or fenestrations

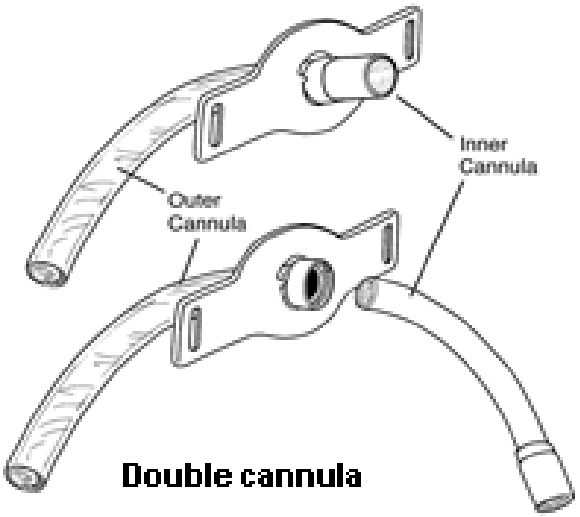

**Safety point:** single lumen tubes **should not** be used as there is an increased risk of tube blockage and occlusion, resulting in clinical emergency.

Smiths Medical Portex tracheostomy tubes have an integral 15mm connector allowing easy connection to oxygen delivery/ventilation systems (e.g. t-piece, catheter mount or Ambu-Bag). Other tracheostomy tubes (such as tracheo twist or shiley) have the 15mm connector on the inner cannula, meaning that the inner cannula must be in place for attachment to oxygen delivery/ventilation systems (e.g. t-piece, catheter mount or Ambu-Bag).

An overview of the different types of tracheostomy tubes commonly used in the acute clinical setting is outlined below:

1. **Double cannula**: There is an outer tube maintaining the airway, and an inner cannula that can be changed or cleaned frequently to reduce the risk of occlusion. Regular care of the inner cannula will decrease the risk of build-up of secretions. Double cannula tracheostomy tubes are inherently safer and their use should be promoted if at all possible.

   The manner that the inner cannula is inserted / removed varies depending on manufacturer (e.g. Smiths Medical Portex tubes have a 'ring pull' and Tracheo Twist and Shiley tubes both require a 'twisting' action).

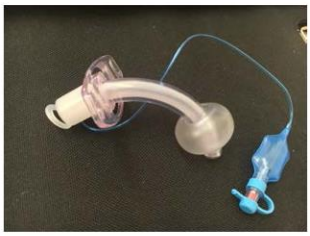


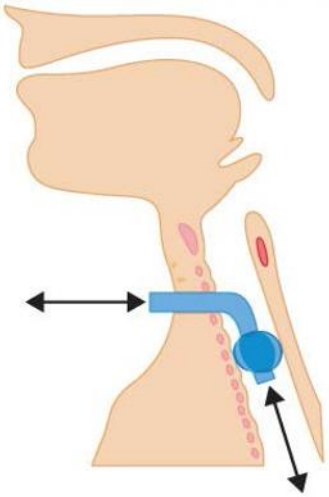
Double cannula

2. **Cuffed**: There is a soft balloon at the distal end of the tube. When inflated, this seals the airway and isolates the nose / mouth from the lungs; inspiration and expiration is solely via the tracheostomy tube. A cuffed tube is nearly always in place initially. A cuffed tube is required when positive pressure ventilation is employed or in patients with bulbar impairment who may be at risk of aspiration of their own secretions.


Tracheo twist cuffed


Shiley cuffed


Portex blue line ultra cuffed

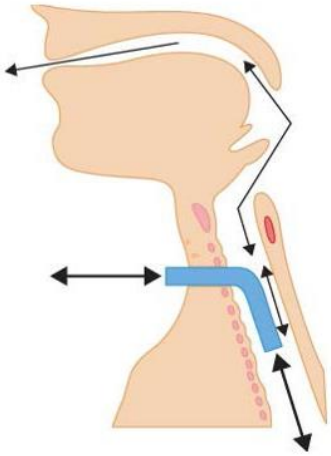


Demonstrating airflow with cuffed tube

3. **Uncuffed:** There is no cuff at the distal end of the tube. These tubes allow respiration partially via the upper airway and partially via the tracheostomy tube. Positive pressure ventilation will not be effective in an emergency situation. These tubes are suitable for patients in the recovery phase of critical illness who require tracheal suction. Patients with uncuffed tracheostomy tubes must have an effective cough and swallow reflex to reduce the risk of aspiration.

Trachoe twist uncuffed tube

Portex blue line ultra uncuffed

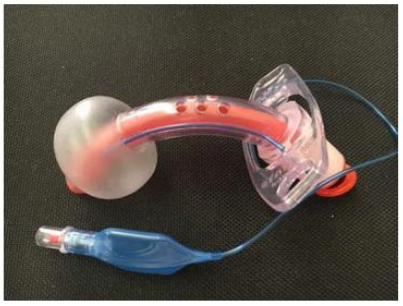


Demonstrating airflow with uncuffed tube*

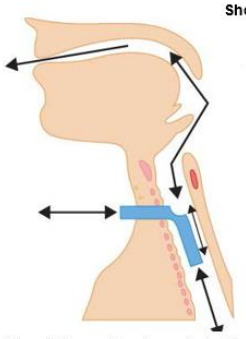
*N.B. Airflow with a cuffed tube when the cuff is **deflated** will be the same as airflow with an uncuffed tube. This may allow for consideration regarding whether the patient can be changed to an uncuffed tube.

4. **Fenestrated**: These tubes have holes on the posterior wall of the tube. There can be several small holes or one large hole. This allows some air to flow from the upper airway (nose / mouth) to lower trachea via the tracheostomy. They can assist in directing airflow to pass through the patient's larynx and upper airway to allow for speech and can be useful in the weaning process.

Showing one large fenestration



Showing cluster of smaller fenestrations



Demonstrating airflow with a fenestrated tube

5. **Adjustable flange**: These tubes are designed for patients who have deep set tracheas or neck swelling where a standard tracheostomy tube would be an inadequate length to sit

correctly in the trachea. The adjustable flange, in conjunction with a longer tracheostomy tube, means the desired length of tube from skin to trachea can be achieved. Adjustment of the flange should only be undertaken by an appropriately trained practitioner. The position of the flange once fitted for the individual patient should be documented. Adjustable flange tubes are available in both cuffed and uncuffed versions. They have a reinforced wire around the tube preventing it from kinking and blocking the airway, this wire is non-ferrous meaning that it does not need to be changed for MRI scanning.

**Portex Uniperc cuffed adjustable flange**

6. **Trachoe twist plus tubes:** A version of the trachoe twist with a longer length tube.

7. **Subglottic drainage tubes**: These tubes have the facility to allow drainage of subglottic secretions which may accumulate above the cuff, which have the potential to cause micro-aspiration past the cuff. Regular drainage of these secretions will reduce the risk of ventilator associated pneumonia.

**Subglottic drainage tube**

***A more detailed explanation, including the advantages and disadvantages of the different tracheostomy tubes & pictorial examples of the tubes, can be accessed via NTSP here***

## Laryngectomy tubes

Patients immediately post laryngectomy formation will have either a laryngectomy tube, tracheostomy tube or alternative device (e.g. base plate and heat / moisture exchange (HME) device) in situ to maintain the stoma opening The choice of device and duration will depend on individual patient condition Some patients will have small stomas that will require long term use of a tube or a stoma button.



Laryngectomy tube

Stoma button

## Humidification & oxygenation

Humidification is essential for patients with tracheostomies and laryngectomies. During normal breathing, inspired air is warmed, filtered and moistened by ciliated epithelial cells in the nose and upper airways. However, these humidifying functions are bypassed by a tracheostomy tube or laryngectomy and air inspired will be cold and dry. Inadequate humidification can result in life threatening blockage caused by tenacious sputum or ulceration of the tracheal mucosa. Patients with tracheostomies must always receive adequate humidification of their inspired gas to lessen the risk of tube occlusion and blockage. Any oxygen being administered to a patient with a tracheostomy or laryngectomy must be humidified. Patients with single lumen/cannula tubes are at particular risk of tube occlusion or blockage.

Severely dehydrated patients will have thicker, more tenacious secretions, therefore overall patient hydration status should be considered for this group of patients.

## Humidification ladder

The level of humidification required by patients will change depending on their clinical condition. Humidification devices are:

- Heated water bath (active humidification)
  - Ventilated patient with thick secretions
  - Self-ventilating patient (on oxygen) with thick secretions
- HME for breathing circuit
  - Ventilated patient with minimal secretions (replace every 24 hrs)

- Monitor effectiveness (less likely to be effective if required for more than 5 days)

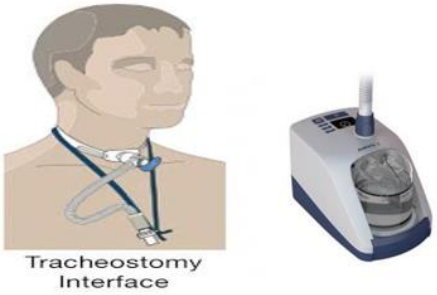
- Cold water bath
  - Self-ventilating patient (on oxygen)

- Heat and moisture exchange (HME) e.g. Buchanan bib, Swedish nose
  - Self-ventilating patients (no oxygen)

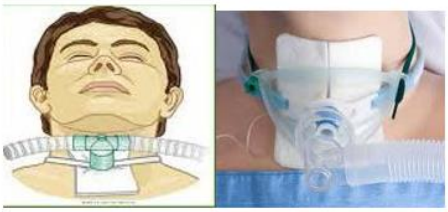
Add saline nebulisers or mucolytics and ensure adequate hydration if secretions aren't improving.

There are various humidification devices pictured below:

Airvo humidification system (tracheostomy connector available)




Humidified oxygen via a T-piece or tracheostomy mask



Heat and moisture exchange (HME) filter

Heat and moisture exchange (HME) bib (Buchanan bib)

Saline nebulisers. Can be delivered via trache mask or t-piece.

NB Ensure it is delivered via stoma and not via nose / mouth.

The chosen method of humidification will:

- Provide adequate humidification of chest secretions
- Help maintain body temperature
- Be convenient and cost effective
- Be physically suited to patient needs


**Safety point:** tracheostomy masks should only be used in conjunction with uncuffed or deflated cuffed tubes to reduce the risk of accidental occlusion.

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

Humidification is also essential for patients with a laryngectomy; devices such as stoma covers with heat and moisture exchange (HME) filter or bib (buchanan bibs or similar) can be utilised.

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

**Communication**

The impact of loss of normal voice should not be underestimated and an alternative means of communication should be provided. Strategies may include maximising oral communication by using fenestrated tubes, speaking valves and the use of non-verbal aids. Patients should always have access to the nurse-call system; use of light touch buzzers may also be of assistance. Where patients have a physical and/or cognitive impairment affecting their ability to use the nurse-call system appropriately, consideration must be made by practitioners regarding alternative or additional arrangements for these patients to ensure patient safety.

Speech and Language Therapy can be contacted for advice and referral made for full communication assessment if patients have additional communication needs resulting from a range of conditions including stroke, head injury, motor neurone disease.

Non verbal communication such as writing or alphabet / picture boards can be useful; more advanced alternative communication aids are available. Coded eye blinking can also be used

e.g. one blink for yes, two blinks for no. Speech and Language Therapy can help and advise regarding this.

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

Oral communication is the preferred method as this most closely mirrors normal communication. Strategies to increase the intelligibility of speech may include mouthing, exaggeration of normal articulatory movements, speaking slowly, utilising short, simple phrases and avoiding complex words.

Speaking valves.can be utilised in patients with a tracheostomy. Further explanation can be found in the relevant section **here**.

An electro larynx can be used to produce speech which is similar to vocalization. An electrolarynx is a device which, when held firmly against the skin of the neck or cheek, sends a vibration into the oral cavity. This vibration, which is heard as a low pitched sound, is 'shaped' by the movement of the articulators of the mouth to resemble speech. There is limited use of these devices in practice as the technique can be difficult to grasp, and the resulting speech can vary enormously in terms of how easy it is to understand. Speech and Language Therapists can help in assessing whether this is a suitable option for a patient.

**Sub glottic tube with oxygen/air for vocalisation**

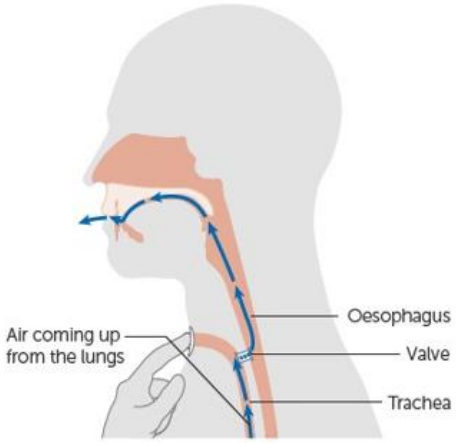
Another area of development is above cuff vocalisation (ACV). This technique can be used with ventilated patients who are unable to tolerate cuff deflation. Using a subglottic tracheostomy tube a retrograde flow of air / oxygen via the tube is directed to exit above the cuff and through the glottis thus enabling voice as a result of the air creating a vibratory source for the vocal cords. ACV should not be attempted by practitioners untrained in its use and limitations, and is not appropriate for all patients with a tracheostomy.

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

**Additional information for patients with a Laryngectomy**

As the larynx (voice box) has been removed and the vocal cords are no longer present, the normal function of voice production is lost. Many patients will have a valve (Transoesophageal voice prothesis (TEP)) inserted into the back wall of the trachea, visible through the stoma. This

will allow some air to pass out of the mouth when the patient occludes the stoma, so that speech is produced. If this valve is present it should not be removed without discussion with the Speech and Language Therapist (SALT) or ENT surgeons. The TEP prosthesis can dislodge and be swallowed or aspirated, this must be investigated urgently and will include SALT and ENT. TEP valves can also leak causing aspiration, if this is suspected SALT review should be requested.



Demonstrating the TEP

***A more detailed explanation of different methods of communication patients with a laryngectomy, including pictorial examples, can be accessed via NTSP here:***

**Weaning, speaking valves and decannulation**

*Weaning from a tracheostomy tube*

A tracheostomy should be removed when no longer required. To facilitate this, a number of 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 advice related to the 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 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.

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

*Cuff deflation*

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. Secretions require to be removed prior to a slow staged cuff deflation.

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

*Tracheostomy speaking valve*

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 (e.g. uncuffed or deflated cuffed tube), 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 the workload 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 (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 speaking valve if required.

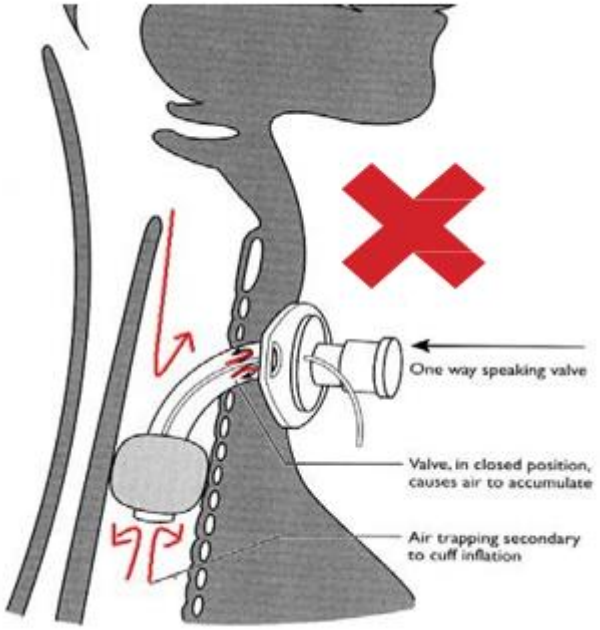
- *<u>Decannulation cap</u>*

During the weaning process and 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 (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 nonfenestrated 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.

The cuff **must always** be deflated prior to attaching a speaking valve or decannulation cap.

***A more detailed explanation of vocalisation and speaking valves, including a video, can be accessed via NTSP here.***

*Decannulation*

The process of removing a tracheostomy 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 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 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. An example can be found in the appendices at the end of this

document.

**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 may have a naso-gastric tube or similar feeding route and regime established. 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. 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.

*Screening Tool for Oropharyngeal Swallow Symptoms (STOPSS)*

In NHSGGC, the 'STOPSS for tracheostomy' is used to guide practitioners (see appendix). This screening tool supports the necessary considerations required to decide whether a patient is ready and able to start oral intake or whether immediate referral to Speech and Language Therapy for specialist swallowing assessment is indicated.

It must be completed for the following patients:

- All patients who have a tracheostomy tube and are being considered for oral intake for the first time following tracheostomy tube placement
- All tracheostomy patients who are being considered for referral to the Speech and Language Therapy department for swallowing assessment

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. quality of life issues), a multi-disciplinary team decision for small amounts of oral intake with partial cuff deflation may be indicated following multi-disciplinary discussion. The competent healthcare practitioner must be fully aware of the potential risk for secondary complications.

**There are three parts to the 'STOPSS for tracheostomy':**

**PART 1** – Is the patient fit for screening? The following criteria must be met prior to considering part 2. The ability to:

- 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

If the answer is 'no' to any of the above, the patient should remain nil by mouth and the medical team alerted. A further 'STOPSS for tracheostomy' form should be started when oral intake is being reconsidered.

**PART 2** - Provides clear criteria for when immediate referral to Speech and Language Therapy rather than proceeding with the nurse led blue dyed water test (part 3) is indicated.

The criteria for immediate Speech and Language Therapy referral 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

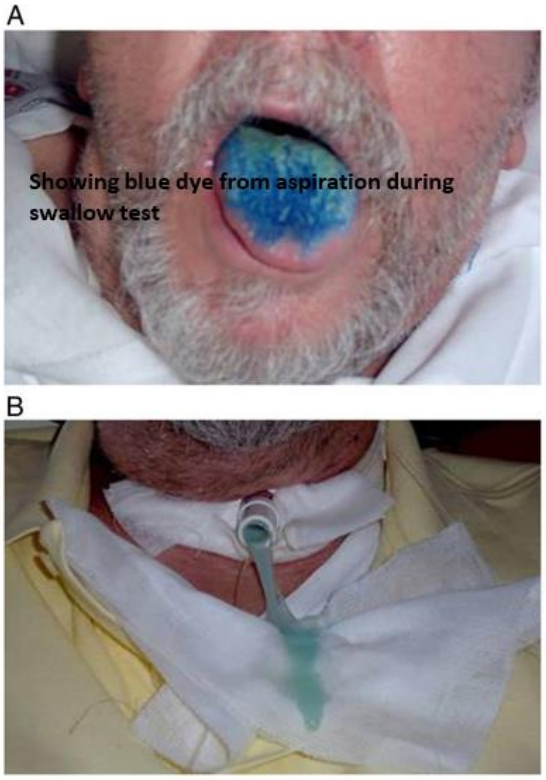
If criteria for direct referral to Speech and Language Therapy are not met proceed to part 3.

**PART 3** - 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 to ensure that blue dye test results are interpreted with caution as part of the broader medical picture rather than focusing solely on the presence or absence of blue dye on tracheal suctioning.

Broader signs of dysphagia to be aware of are:

- Choking




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

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

Patients who pass the 'STOPSS for tracheostomy patients' will be started on either their pre admission modified diet, IDDSI Level 7 (Regular Easy to Chew) or will follow agreed local policy following head and neck surgery, spinal injury or neck trauma.

*Specific swallow considerations for patients with 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.

When healing from the laryngectomy surgery is deemed to be complete, the patient is usually able to swallow liquids and then to progress to diet as tolerated. The initiation of oral intake post-

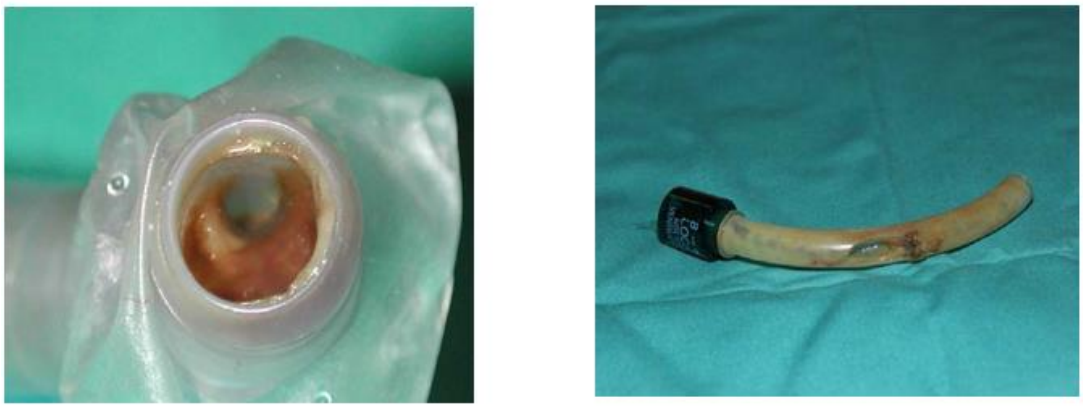
laryngectomy does not routinely require the prior assessment of a Speech and Language Therapist.

More severe, long-term swallowing difficulties can also occur in laryngectomy patients. A referral to Speech and Language Therapy 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.

**Other care and maintenance issues for patients with a tracheostomy and laryngectomy**

*Cleaning the 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 internal lumen

The inner cannula tube 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 documented and communicated, with the rationale.

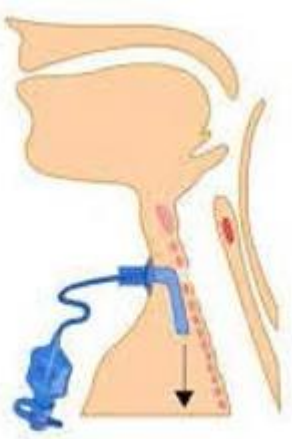

A spare inner cannula should be kept in a clean container at patient bed space.

It should be noted that some manufacturer's of tracheostomy tubes require the inner cannula to be in situ before the tracheostomy can be connected to oxygen delivery devices, ventilation circuits or bag valve mask e.g. Ambu Bag.

***A more detailed explanation, including pictorial images and a video of changing and cleaning an inner cannula from NTSP.***

*Securing tracheostomy tubes*

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 commercial tracheostomy holder (Velcro straps) or cotton tape (india 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.

*Suctioning*

Patients with a tracheostomy or laryngectomy 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 require immediate attention – **this is an emergency situation and a peri-arrest 2222 call should be made urgently.** Suctioning can be performed using an open or 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, with pictorial images and a video, can be accessed via NTSP.***

*Checking cuff pressure*

It is usual that the initial tracheostomy that is inserted will 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 and a cuffed tube can provide a degree of protection against this

Recommendations suggest that cuff pressure should be maintained between 15 and 25 cm H2O (10-18mmHg). Cuff pressures should be undertaken twice daily (using an appropriate cuff manometer) unless there is a clinical indication for more frequent checks. Too low a cuff pressure will cause an air leak and 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, with pictorial images and a video, can be accessed via NTSP.***

**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 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. Any dressing placed around the tracheostomy site should always be designed for use specifically on a tracheostomy and pre-cut by manufacturers in order 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.

**Patient placement and transfer**

Patients with tracheostomies or laryngectomies are relatively rare and therefore 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 any transfer of a patient with a tracheostomy / laryngectomy between clinical areas must be planned. The plan should involve discussion between the nursing and medical staff responsible for the patient's care in both areas. This discussion should occur in such a timely manner that any shortfall in clinical competence may be addressed, or an alternative clinical area be sought for the patient. Patients with a **cuffed** tracheostomy tube are at increased risk of complications occurring and should be cared for in a high acuity area. Areas within NHSGGC defined as high acuity areas are outlined here. Careful planning should be undertaken if these patients need to move out with the high acuity area for any reason and this practice should be considered high risk in nature.

The transferring area must ensure that all the documentation pertaining to the tracheostomy / laryngectomy is fully completed, that the receiving area has all the emergency equipment necessary and that staff in the receiving area are able to safely care for the patient and have access to the equipment required to do so. A patient transfer checklist and care plan should be accurately completed when a patient is transferred to another clinical area.

The receiving area also has a responsibility to ensure that the patient is placed in a bed space with working oxygen and suction, that they have a fully completed head of bed sign (and associated emergency algorithm) and a tracheostomy / laryngectomy box containing all emergency equipment. The receiving area must also have access to resuscitation equipment, including supra-glottic airways (laryngeal mask or i-gel).

The patient should always have access to the nurse-call system to aid communication. Where a patient has a physical and/or cognitive impairment affecting their ability to use the nurse-call system appropriately, consideration must be made by staff regarding alternative or additional arrangements for these patients to ensure patient safety.

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

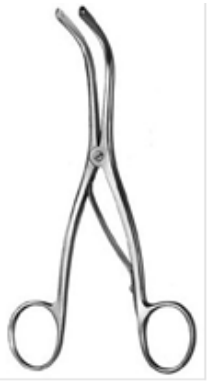
**Changing tracheostomy tubes**

There may be a clinical requirement to change the outer tracheostomy tube. They are usually changed every 28 days (as per manufacturer's guidance) or if there is a clinical indication prior to this. 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 tube changes, including a video, can be accessed via NTSP.***

**Tracheal dilators**



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 (normally ENT surgeons). The purpose of tracheal dilators is to temporarily dilate or 'hold open' the tracheal stoma until a new tube can be inserted.

**Equipment and daily checklist**

Patients with a tracheostomy or laryngectomy should always have working oxygen and suction available at their bedspace. Checking of emergency equipment; including tracheostomy box, oxygen and suction, should be undertaken once per shift.

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

- Spare tracheostomy tube and inner cannula, same size + 1 size smaller
- Tracheal dilators
- Stitch cutter (if appropriate)
- India tape or Velcro strap to secure the tube
- 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
- Trache mask
- Aquagel lubricant

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
- Tracheostomy cleaning swabs (for cleaning inner cannula and/or stoma)
- Manometer to measure cuff pressure (required if a cuffed tube is present)
- Call bell for patient
- Appropriate bedhead sign with emergency algorithm

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 fibre optic scope in the event of emergency.

There should be a daily plan of care for a patient with a tracheostomy. Appropriate documentation must be completed and updated to improve patient care. These include the tracheostomy care plan including daily safety check and weaning care plan. Other assessment documentation must also be completed if appropriate to the patient.

**Further information on daily checklist / equipment can be accessed via NTSP:**

**Emergency management of a patient with a tracheostomy or laryngectomy**


**Safety point –** Tracheostomy and laryngectomy patients have different airflow mechanisms. These patients are managed differently in an emergency using the algorithms detailed below. **Patients with a laryngectomy cannot be ventilated via their nose and mouth and must be ventilated via the stoma.**

Similar to most critical incidents, warning signs often precede tracheostomy clinical problems. Early recognition and management of clinical deterioration will improve patient safety. Tracheostomy related clinical problems are referred to as 'red flags'. Some of these 'red flags' are applicable to laryngectomy patients. These red flags can be divided into four different categories: airway, breathing, specific tracheostomy flags and general flags.

**Airway red flags:** 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, the gas is escaping past the cuff. This may imply that the cuff is damaged or the tube tip is not correctly sited. Grunting, snoring or stridor are also signs that there is an airway problem.

**Breathing red flags:** Listening to the patient, or observation of the patient or instrumentation, may show that the patient:

- Is not breathing (apnoea), which is detected by capnography or clinically
- Has difficulty in breathing (or with ventilation), which may be reported by the

patient or observed clinically:

- Accessory muscle use
- Increased respiratory rate
- Higher airway pressures
- Lower tidal volumes
- Has hypoxia
- Is making whistling noises or has noisy breathing

**Specific tracheostomy red flags:** Careful observation may show that the patient:

- Has a visibly displaced tracheostomy tube. If this is an adjustable flange tube, check to see where it was last positioned
- Has 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
- Reports increased discomfort or pain
- Requires a lot of air to keep the cuff inflated, which may be because:
  - The cuff is damaged or has an air leak (in which case, it needs to be replaced)
  - The tube may be displaced and the cuff needs hyper-inflation to keep it 'sealed'

**General red flags:**

Any physiological changes can be due to an airway problem. Specifically, changes in:

• Respiratory rate

• Heart rate

• Blood pressure

• Level of consciousness

Anxiety, restlessness, agitation and confusion may also be due to an airway problem.

***A more detailed explanation on 'red flags' can be accessed via NTSP***:

The NTSP have developed bedhead signs and emergency algorithms to improve patient safety.

The correct bedhead sign should be placed above the patient's bed, the emergency algorithm can be found on the back of the bedhead signs. A copy of these bedhead signs / emergency algorithm should be kept on the emergency trolley in every clinical area.

The green bedhead sign is for a patient with a tracheostomy and an anatomically possible patent upper airway.

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

The red bedhead sign is for a patient with a laryngectomy who does not have an upper airway that is connected to the lungs.

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

The algorithms are applicable to any emergency 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 anaesthetists. Capnography equipment is available in critical care and theatre areas and may also come as part of the emergency team kit.

A mapleson C circuit is also highly recommended in an emergency situation.

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

**Bleeding from a stoma**

A patient with bleeding from a stoma can be classed as 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 Tracheotomy algorithm' can be found in the appendices here.

## Appendices

## Resources

## Care Plans

## Defined 'high acuity' areas within NHSGGC Adult Acute Services

| **Sector** | **North** | | **South** | | **Clyde** | | **Regional Services** | |
|---|---|---|---|---|---|---|---|---|
| **Site** | Glasgow Royal Infirmary | Intensive Care | Queen Elizabeth University Hospital | Critical Care<br><br>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 | Gartnaval General Hospital | n/a | Vale of Leven | n/a | Institute of Neurological Sciences (QEUH site) | *TBC* |
| | | | New Victoria | n/a | Inverclyde Royal Hospital | J Centre | | |

# Record of Tracheostomy Tube Care

NHS Greater Glasgow and Clyde

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

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

*See guidelines for completion overleaf*

MIS 266229

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

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

NHS Greater Glasgow and Clyde

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

## 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**

**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: _____

**No – Proceed to Part 3** ✓

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

**PART A:** (with cuff defl 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** ✓ **Yes**

**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:_____

**PART B:** (with cuff defl 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 fl and Level 7- Easy to Chew or pre-admission modifi diet+fl (local protocol applies for initial intake post head and neck cancer surgery and in Spinal units)**

- Supervise the fi 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:** _____

MIS 257805 v2.0

# 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<br>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<br>Minimal / Moderate / Copious<br>Other: |

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

ICU nurse's signature: Print name: Date:

Ward nurse's signature: Print name: Date:

MIS 266231

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

| Weaning Criteria Indications<br><br>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**<br>If present, deflate cuff, either completely or in small stages as the patient tolerates.<br>When cuff deflation tolerated attach weaning device (decannulation cap or speaking valve).<br>If the tube is fenestrated ensure that the fenestrated inner tube is inserted.<br>Ensure patient can be observed and monitored closely for signs of respiratory distress.<br>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 |
|---|---|---|---|---|---|---|---|
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| | | | | | | | |
| | WEANING DEVICES MUST BE REMOVED OVERNIGHT | | | | | | |

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



MIS 266232

# 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 Emergency 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 (required if cuffed tube is present)
- 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 which can be found on StaffNet

NHS Greater Glasgow and Clyde

# Daily Equipment Checklist

Month _____

Addressograph Label

| 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 (for cuffed tube) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Call bell | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bedhead sign | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Documentation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Safety checks** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Suction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oxygen | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Initials** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

This patient has a

# TRACHEOSTOMY

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

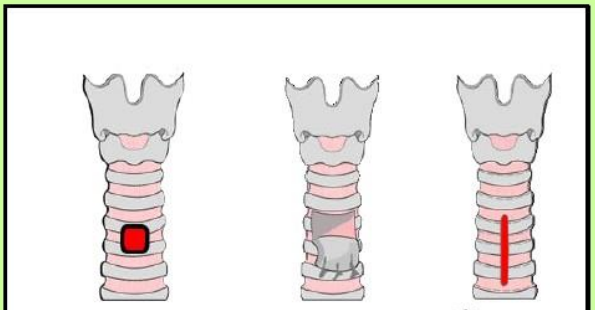
## Surgical / Percutaneous

**Performed on (date)** .....

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

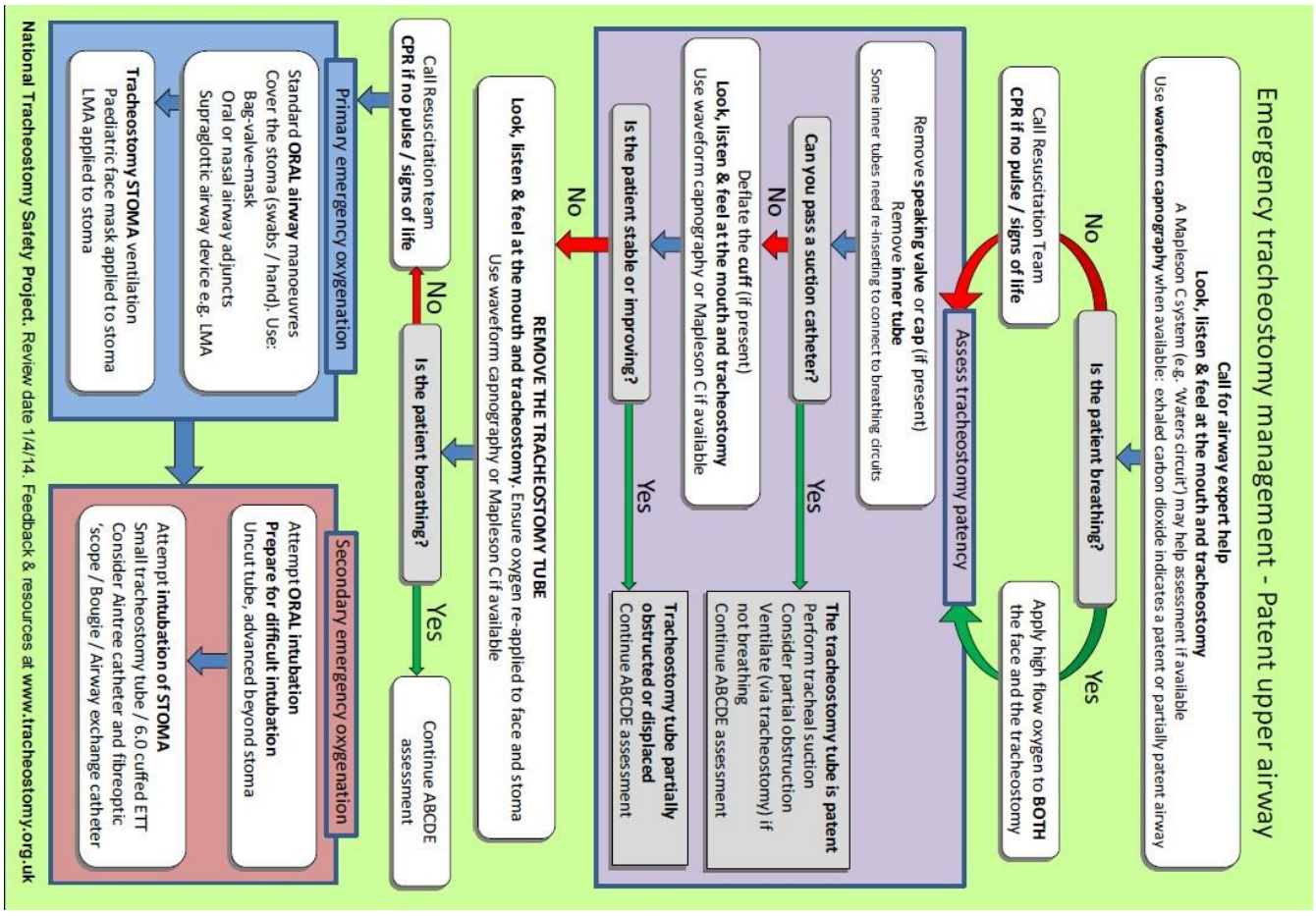
**Hospital / NHS number** .....

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



This patient has a

# LARYNGECTOMY

**and CANNOT be intubated or oxygenated via the mouth**

Follow the LARYNGECTOMY algorithm of breathing difficulties

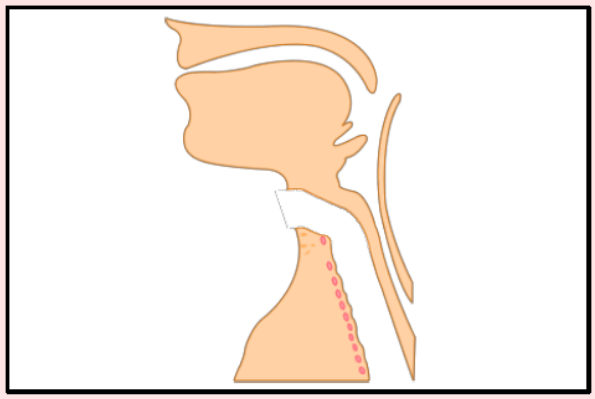
**Performed on (date)** .....

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

**Hospital / NHS number** .....

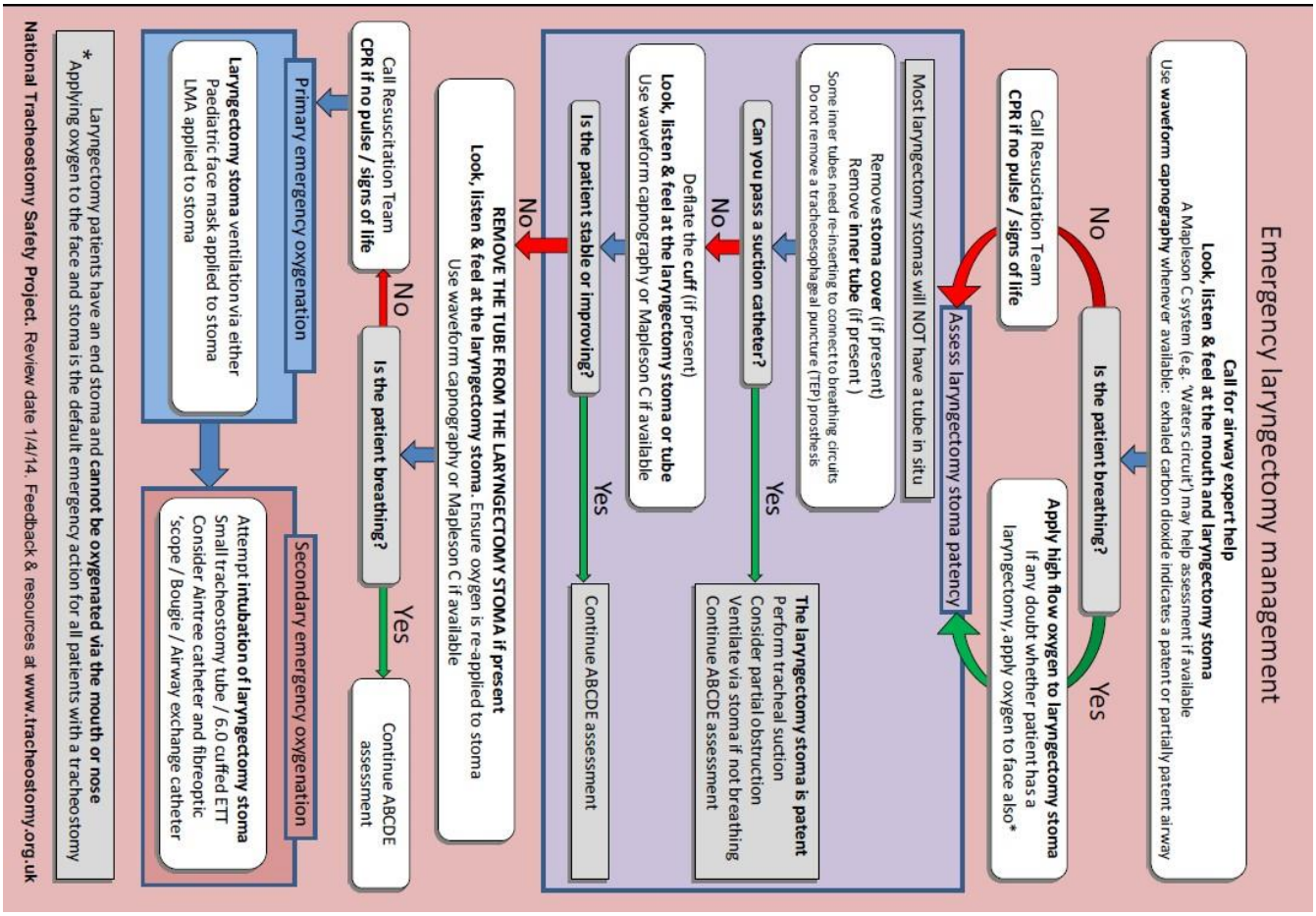
Notes:

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



Addressograph Label

## Decannulation Safety Checklist

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 ($FiO_2 \leq 40\%$) |
| | 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 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**

Addressograph Label

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

# Management of a Bleeding Tracheostomy Algorithm

## 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

# Tracheostomy Red Flags

**Airway red flags:** If the patient has a cuffed tracheostomy correctly sited in the trachea, no air or gas should escape through the mouth.

- Is the patient talking?
- Audible air leaks?
- Bubbles of saliva are seen or heard at the mouth or nose
- Grunting, snoring or stridor?

**Breathing red flags:**

- Is the patient breathing?
- Has difficulty in breathing (or with ventilation)
  - Accessory muscle use
  - Increased respiratory rate
  - Higher airway pressures
  - Lower tidal volumes
  - Has hypoxia
  - Is making whistling noises or has noisy breathing

**Specific tracheostomy red flags:**

- Has a visibly displaced tracheostomy tube
- Has blood or blood-stained secretions around the tube
- Reports increased discomfort or pain
- Requires a lot of air to keep the cuff inflated

**General red flags:**

Any physiological changes can be due to an airway problem. Specifically, changes in:

- Respiratory rate
- Heart rate
- Blood pressure
- Level of consciousness
- Anxiety, restlessness, agitation and confusion

**If concerned with airway or deterioration - call 2222**

# Individuals contributing to review and current SLWG members

Individuals providing feedback for incorporation into guideline review:

| Name | Dept | Role |
|---|---|---|
| Katherine Stewart | Practice Development | Practice Development Nurse NHSGGC |
| Lynne Robertson | Practice Development | Practice Development Nurse NHSGGC |
| Katherine Hill | Critical Care | Lead Practice Educator |
| JulieAnn Rodger | Ear, Nose and Throat | Senior Charge Nurse |
| Julie Reid | Surgical and Maxillo Facial | Senior physiotherapist |
| Denise Anderson | Surgical and Critical Care | Highly specialist physiotherapist |
| Euan Black | Anaesthesiology | Consultant Anaesthetist |
| Lesley Sabey | Ear, Nose and Throat | Clinical Nurse Specialist |
| Frances Campbell | Beatson WoS Cancer Centre | Clinical Nurse Specialist |
| Jane Howie | Emergency Care and Medical Services | Practice Development Nurse |

Current 'Tracheostomy and Laryngectomy Education' SLWG members:

| Katherine Stewart | Practice Development | Practice Development Nurse NHSGGC |
|---|---|---|
| Lynne Robertson | Practice Development | Practice Development Nurse NHSGGC |
| JulieAnn Rodger | Ear, Nose and Throat | Senior Charge Nurse |
| Lesley Sabey | Ear, Nose and Throat | Clinical Nurse Specialist |
| Cairstiona O'Rourke | Speech and Language Therapy | Clinical Specialist Speech and Language Therapist |
| Judith Roultson | Critical Care Outreach and High Acuity Service | Team Lead |
| Tom Alexander | Resuscitation | Resuscitation Officer |
| Teri Johnstone | Critical Care | Advanced Nurse Practitioner |
| Alice Hopper | Respiratory | Senior Charge Nurse |
| Dawn Adamson | Respiratory | Senior Charge Nurse |
| Greig Morrison | Physiotherapy | Team Lead Physiotherapist |
| Emma Monachello | Critical Care | Senior Charge Nurse |
| Lisa Gemmell | Anaesthesiology | Consultant Anaesthetist |
| Russell Allan | Critical Care | Consultant |
| Louise Melia | Ear, Nose and Throat | Consultant |
| Omar Hilmi | Ear, Nose and Throat | Consultant |
| Lindsey McLure | Respiratory | Consultant |

| | | |
|---|---|---|
| Chris Carlin | Respiratory | Consultant |
| George Chalmers | Respiratory | Consultant |
| Joyce Gray | Paediatrics | Complex Airway Nurse Specialist |
| Susan Craig | Respiratory and Learning Disabilities | Clinical Nurse Specialist |
| Isobel Law | Bed/Site Management | Lead Nurse |

Other individuals consulted via email:

- All members of SLWG involved in development of version 2 (2020) 'Care of Patients with a Tracheostomy or Laryngectomy Guideline'
- NHSGGC Corporate Practice Development Team
- Sector Chief Nurses (via Margaret Connolly – Associate Chief Nurse)