Principles of care for adults living with a tracheostomy within a community setting

PRINCIPLES OF CARE FOR ADULTS LIVING WITHIN A COMMUNITY SETTING

NATIONAL TRACHEOSTOMY SAFETY PROGRAMME FOREWORD

I am delighted to provide a short forward to the new Principles of care for adults living with a tracheostomy within a community setting. This important project is long overdue and represents a truly multidisciplinary collaboration between healthcare staff, patients and their families and carers.

Tracheostomies are often temporary, but sometimes, are not. There are many patients discharged into the community with a temporary or permanent tracheostomy who have experienced piecemeal care.

This document focusses for the first time on best practice for community care, bridging the knowledge gap. Whilst many of the recommendations are not based on high-quality evidence, the team that Paul Twose assembled have literally hundreds of years of experience between them of caring for patents with tracheostomies in the community. Where evidence lacks, we fall back to expert opinion, and I cannot think of a more expert group to offer this first national guidance for tracheostomy care outside of hospitals.

Importantly, the project has been endorsed by many of the key organisations involved in training, support and standard setting in tracheostomy care. I hope that this document clarifies best practice, serves to detail what needs to be known, taught and learned by patients, families, healthcare staff and systems, and serves to drive improvements in care for this vulnerable group.

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INTRODUCTION AND PURPOSE

In England and Wales, approximately 15,000 people a year require a tracheostomy. There are many reasons why people may require a tracheostomy tube which include prolonged periods of time on mechanical ventilation (breathing machines), trauma, airway obstruction, burns, and as a consequence of head & neck cancers.

Understandably much of the focus on improving tracheostomy care has been focused on improving tracheostomy care and outcomes within the hospital-based setting. Indeed, most NHS organisations have created or adapted tracheostomy guidelines and policies, designed to improve the care provided for patients within hospitals and to act as a resource for healthcare professionals involved in the provision of care. These policies and guidelines have been supported by the ongoing efforts of the National Tracheostomy Safety Project (NTSP).

Historically few patients with a tracheostomy tube in situ were discharged into the community setting (National Confidential Enquiry into Patient Outcomes and Deaths (NCEPOD) 2014) but the number is rising. The demographics of the long-term tracheostomy population have changed too. This is primarily due to improved treatment and survival from traumatic brain injury, the development of portable ventilators, an increase in the number of infants born requiring respiratory support surviving to hospital discharge, and improvements n the treatment of head & neck cancers.

Given this rise in number and clinical complexity of people living in the community with long-term tracheostomies, there is a need to ensure that there are equivalent resources available as per hospital-based care. These resources will support people to live as independently and fulfilling as possible, and support those providing care for the tracheostomy. As such, this principle of care resource has been created. It has been designed to ensure that the key messages are clear but to allow individual nuances for people with tracheostomies as well as the differing services available to patients with tracheostomies across the United Kingdom.

The purpose of this document is to augment existing guidance as well as to provide support for those NHS organisations who do not have community-based guidance in place. The aim is to support organisations to appropriately plan discharge from hospital and develop community care plans for a person living with a tracheostomy. The contents and themes will also be used to support the creation of educational content.

This is not a guideline that must be adhered to in its entirety, nor has its creation been commissioned by any organisation. It reflects best available evidence and expert opinion from clinicians with vast experience in caring for people in the community that have a tracheostomy. Furthermore, the focus of the document is for people with tracheostomies not those with laryngectomies and should be utilised as such.

We acknowledge the existence of highly developed services that are already in existence across the UK which support people with tracheostomies. Our focus has been to learn from those services and provide information and support for non-specialist services, ensuring the delivery of a safe and sustainable foundation level of care.

We also acknowledge that we focus here on individuals with tracheostomies in situ. In addition to these there are a significant number of individuals living in the community that have required a laryngectomy. Whilst aspects of this document may be relevant, it has not been designed to meet the needs of those with a laryngectomy. As such future principles of care recommendations may be required for this specific purpose.

DISCHARGE PROCESS

The following section focuses on the preparation for discharging a person with a tracheostomy into the community setting. This may be to the person's home but may also include long-term care facilities. The principles remain the same. The focus is on ensuring that all relevant training and equipment has been provided.

Discharging a person home with a long-term tracheostomy tube is not without risks. Therefore, it needs to be coordinated and facilitated by a collaborative multi-professional team within a model of care to enable a safe discharge. Development of a model of care (Figure 1) for people with long term tracheostomy tubes should embrace both hospital and community care with the individual at the centre of that care.

Although there will be local variances across regions, the model aims to create minimum standards to help support, manage, enable and direct the care for this group of patients. Part of the model includes a discharge pathway that needs to be dynamic and fluid to meet the needs of this patient group.

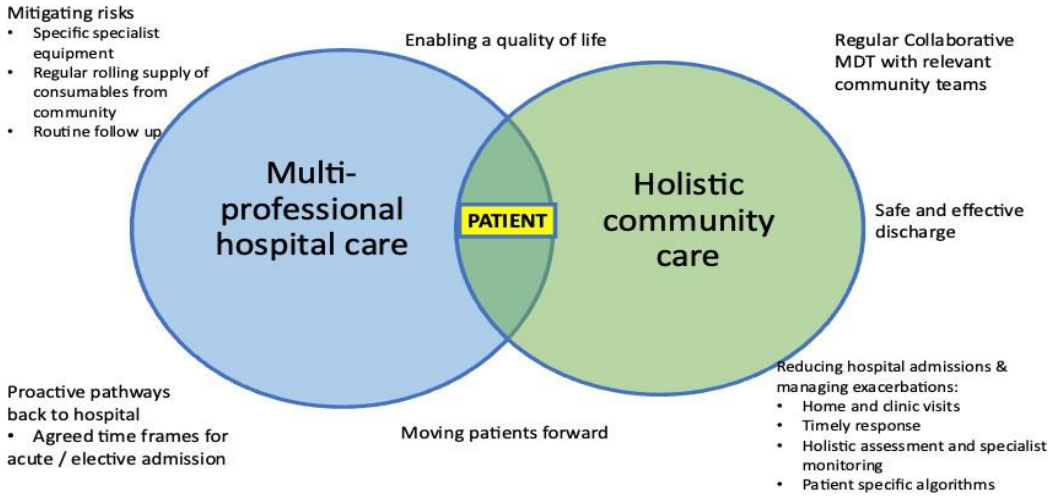


Figure 1: Collaborative model of care

Each patient will need common core elements within the pathway alongside their individual care plan. These include:

- Essential information for discharge
- Funding in place for tracheostomy related care and consumables
- Equipment and disposables identified and ordered to meet lifelong needs

- Training and education
- Emergency management plan
    - Partial or total dislodged tracheostomy tube
    - Blocked tracheostomy tube

An example of a discharge checklist can be found in appendix 1. This should be adapted for local use or specific individuals' needs.

ESSENTIAL INFORMATION

This information is important for all those involved in caring for the patient in hospital and in the community (see Appendix 2).

It must include the following:

- Reasons for a long-term tracheostomy tube and continued need
- Previous weaning attempts and/or decannulation and reasons for failure
- Tracheostomy tube brand / model and size
- Cuffed or uncuffed tracheostomy tube:
    - If cuffed, ability to tolerate cuff deflation
- Fenestrated or unfenestrated tracheostomy tube
- Humidification requirements or equipment
- Upper airway patency
- Last airway scope findings
- Swallow status – including recent Speech and Language Therapy (SLT) review
- Recent Ear, Nose and Throat (ENT) review and findings
- Red flags
- Communication
    - Tolerates one-way (speaking) valve
    - Tolerates finger occlusion
    - Other adjuncts
- Secretion clearance plan
- Future weaning plans e.g., is this a permanent tracheostomy or will future weaning or decannulation be considered
- Tracheostomy tube changes (including confirmation of date and plan for 1st community change):
    - Frequency
    - Location
    - Who by

This essential information should be available to all healthcare professionals involved in provision of care (both planned and emergency). Mechanisms must be in place for this essential information to be updated based on a clinical change. It is suggested that the responsibility for this update lies with those reviewing the patient either for tracheostomy tube changes or via the local ENT service.

FUNDING

This will be based upon whether the individual is eligible for part or full healthcare or social care funding which is dependent upon the persons' needs, and local / regional funding arrangements. Funding provision may vary significantly across the UK. It is usually the responsibility of the hospital discharge team to apply for the most appropriate funding. All discharges must be to safe and sustainable locations.

EQUIPMENT AND DISPOSABLES

An essential list of equipment and disposables should be created by the hospital team. Depending on the funding stream, the list should then be sent to the relevant team or organisation, to procure and set up a rolling system of ordering. A 2-week supply of disposables and the emergency tracheostomy box should be given to the person at discharge. Plans should be in place to ensure the lifelong consumable needs.

The contents of the emergency tracheostomy box (given at discharge from hospital) are:

- Tracheostomy tube same make and size the patient has in
- Tracheostomy tube same make but 1 size smaller
- Lubrication gel
- Syringe (if cuffed)
- Tracheostomy ties
- Suction catheter
- Paediatric face mask

In addition to the emergency tracheostomy box, the following is required:

- Tracheostomy mask
- Tracheostomy ties
- Inner cannula
- Tracheostomy stoma dressings
- Humidification adjuncts:
    - Heat Moisture Exchange (HME) devices e.g., filter, Buchanan protector
    - Nebuliser machine and consumables
- Inner cannula sponge cleaners
- Spare tracheostomy tube inner cannulas

The following items should be considered on an individualised basis dependent on individuals need or circumstances:

- Portable suction machine e.g. Laerdal suction Unit and required consumables e.g., liner (consider 2 machines for those highly dependent on suction)
- Appropriately sized suction catheters – see essential information and passport for sizing
- Yankeur suction catheters
- One-way (speaking) valve
- Syringes for cuffed tubes for both cuff management and subglottic suction
- Manometer (air cuff tubes only)
- Barrier cream for stoma
- Gauze for stoma care
- Shower shield
- Bag mask valve device

Prior to discharge, the hospital team should identify who the on-going provider of consumables will be. This may include a recognised third-party provider or the local district nursing team. Given the volume of equipment required, this may be spread across multiple sources and clear documentation is required. Equipment supplied may include:

- Stoma dressings
- Tracheostomy ties
- HME's
- Tracheostomy cleaning sponges
- Shower shields

For consumables not available via this route, processes must be in place to identify who is responsible for supplying equipment and consumables and the process for doing so. This is frequently done via the local district nursing team and a central procurement process. This may include items such as tracheostomy tubes, inner tubes and suction catheters.

TRAINING AND EDUCATION

All tracheostomy patients living within the community should either have achieved self-caring competencies or have appropriately trained family / carers / nurses always present. Care needs will be assessed on an individual basis. Care competencies for patients and family must be completed by the discharging ward teams prior to discharge into the community and where services exist, be supported by community-based services.

Training and competencies of staff employed by an externally commissioned agency are the responsibility of the employing agency. Support to the external agency may be offered by the acute and community teams (depending on local services and arrangements), but any ongoing training governance remains the responsibility of the employing agency.

An example of care competencies for patients and family members can be found in appendix 3. This document may need to be adapted for local use or for specific individual's needs. Furthermore, this document is not designed to determine the competencies for external agencies as it is outside of the remit. However, common principles should remain and discharging teams must be satisfied that the staff employed by the agency have the relevant knowledge and skills to care for the individual in the community.

TRACHEOSTOMY PASSPORT

The tracheostomy passport must be held by the person with a tracheostomy, and it is strongly encouraged that this passport be available when accessing healthcare e.g., GP visits, hospital clinic appointments and emergency visits.

The passport contains some of the information provided within the essential information for discharge but is more condensed, and meaningful for the individual with the tracheostomy. There are a variety of passports already available (including digital and paper versions) and an example of a passport can be found in appendix 4.

EMERGENCY MANAGEMENT PLANS

All patients with long term tracheostomy tubes must have an emergency tracheostomy box and individualised plans.

These may include the management of the following:

- Sputum plug
- Partial or total dislodged tracheostomy tube
- Blocked tracheostomy tube

All carers involved with the person with a tracheostomy tube must be familiar with the individual's emergency plans and algorithms as they will vary from patient to patient due to their needs. The algorithms should be part of the care plan and easily accessible. See Emergency Care section for further information.

CORE PRINCIPLES OF CARE IN THE COMMUNITY

The goals of all care related to people who have long term tracheostomy tubes are to:

- Mitigate risks
- Ensure safety
- Reduce complications
- Reduce hospital admissions
- Enable the individual to live a life of quality

These goals are achieved through holistic person centred, multi-professional care from hospital to home. The mitigation of risks and focus on safety start in the hospital and continue in the community and is the responsibility of the individual (where appropriate) and those involved in their care.

The following core areas of information and care will direct the person with a tracheostomy and those involved in their care to ensure the goals are met.

WHAT IS A TRACHEOSTOMY TUBE?

A tracheostomy is an artificial opening into the trachea or windpipe that the patient breathes into directly (see figure 2). The hole in the neck is called a **STOMA** and a tracheostomy tube is placed in it to keep it open.

The presence of an inflated cuff and / or the patients' medical condition may affect patients' ability to swallow or use their voice.

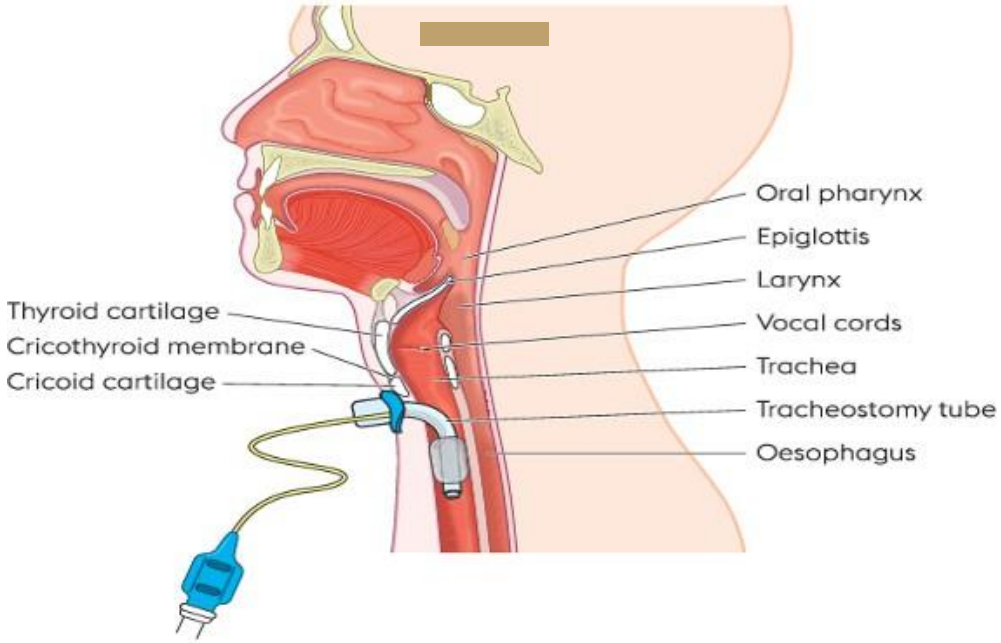


Figure 2: Anatomy and position of tracheostomy tube

TRACHEOSTOMY TUBE PARTS

Tracheostomy tubes can be made from different materials and are different sizes. They can be disposable (thrown away), or they can be re-used according to the manufacturer's guidelines.

All adults who require a long-term tracheostomy tube should have a 'double lumen' tube. This means that the tracheostomy tube is made up of an outer tube / cannula and an inner cannula – see Figure 2. The inner cannula can be removed from the outer cannula and cleaned to reduce the risk of tube occlusions / blockages. There are instances where single lumen tubes (e.g., tubes without an inner tube) may be used. This include where bespoke tubes are required due to anatomical difficulties, or where individuals have transitioned from paediatric services with small tracheal stomas.

Tracheostomy tubes can be:

- Cuffed (Air, foam, or water)
    - With or without subglottic port
- Uncuffed
- Fenestrated
- Unfenestrated

What type of tube the patient has on discharge will have been determined by the hospital team based on the persons need. This will be documented in the persons' tracheostomy passport.

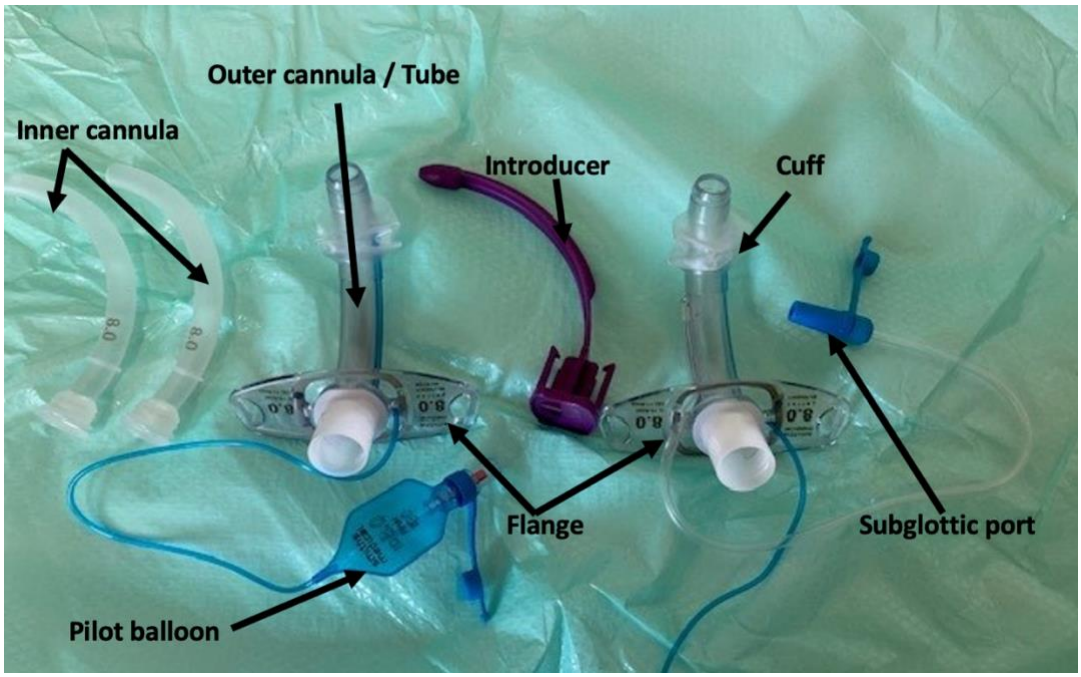
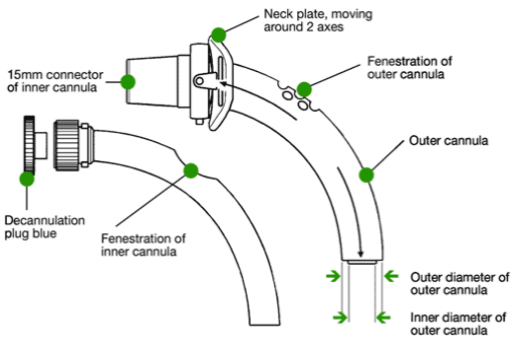


Figure 3: Parts of a tracheostomy tube (THIS PICTURE WILL CHANGE TO A NON-SPECIFIC VERSION)

Glossary of terms	
Outer Cannula	This is the main body of the tube which passes into the trachea. The outer diameter (OD) of this tube determines the stoma size and is stated (in mm) on the flange/neck plate.
Inner cannula	An inner tube is a removable tube which passes into the outer tube and can be removed, cleaned and replaced to ensure a patent airway. The inner tube is narrower and slightly longer than the outer tube. The inner tube may be secured in place by a locking mechanism or may "click into place". 

Cuff	The tracheostomy cuff is an internal balloon which surrounds the outer tube (cannula) or body of the tracheostomy tube. When the cuff is inflated it blocks off the trachea below the cuff from the airway above the cuff. It therefore prevents the passage of air passing down the side of the tracheostomy tube from the upper to the lower airways and ***reduces*** the risk of aspirated material entering the trachea. In patients needing mechanical ventilation, an inflated cuff may allow improved tidal volumes with lower ventilator pressures. 
Pilot Balloon	Is an external balloon connected by an inflation line to the internal cuff. When the internal cuff is inflated the pilot balloon is also inflated. 
Flange/Neck plate	The neck plate supports the main tube structure preventing it from descending into the trachea and allowing the tube to be secured with tapes/ties/sutures. The tube's make, code, size and type is displayed on the neck plate. 

15mm Adaptor	A 15mm hub, which may form part of the outer or inner tube permits the attachment of hand or mechanical ventilation equipment. 
Subglottic Suction Line	This tracheostomy tube has a suction line which allows secretions to be removed from above the inflated cuff. Subglottic suction tracheostomy tubes should be considered for new tracheostomies, or in an individual who remains 'cuff dependent' due to high levels of aspirated saliva. 

EFFECTIVE HUMIDIFICATION

In normal breathing, without a tracheostomy tube, the nose and mouth warm and humidify / moisten the air breathed in. Warm and humidified/moistened air helps keep the airway healthy and enables effective clearance of secretions.

Breathing through a tracheostomy tube bypasses the body's natural warming and humidification of the air breathed in. Therefore, it is important to ensure effective humidification through other methods.

Without effective humidification secretions may become thick and hard to clear. This will eventually make breathing become more difficult. A sputum plug may develop with the potential to completely block the tracheostomy tube. Furthermore, a dry airway will increase the risk of infections and will become painful.

AIDS TO HUMIDIFICATION

- Adequate fluid intake
- Passive humidification devices: (Figure 4)
    - Heat moisture exchange (HME) filters or protectors
- Active humidification devices (rarely used in community settings unless the patient is using invasive ventilation):
    - High flow oxygen therapy
    - Heated wire humidification
- Nebuliser devices to administer nebulised saline to loosen secretions

Figure 4: Heat and moisture exchange devices (passive)

DAILY TRACHEOSTOMY STOMA CARE, TAPES, AND DRESSINGS

The tracheostomy site should be assessed, and stoma cleaned at least once in every 24 hours. Cleaning will keep the area clean and dry, thereby reducing the risk of infection and skin irritation. Secretions collecting above the tracheostomy cuff may ooze out of the stoma and this increased moisture can act as a medium for bacterial growth. Early recognition of developing redness or sores must be recognised, and appropriate action taken.

The persons' tracheostomy tube is likely to be secured in place by either Velcro ties or cotton twill ties. These should be changed at a minimum of every 7-days or more often if wet, soiled or Velcro appears loose. The tracheostomy tube must be positioned midline with no pulling to either side.

The tracheostomy stoma dressing needs to be changed daily or as required if it

becomes wet or dirty. Tracheostomy tube care is a clean technique and requires those involved in the individual or those providing care to wear gloves as a minimum or other PPE depending on the persons' medical condition.

Those people who are self-caring of their tracheostomy, and have been deemed competent, may undertake single person tie changes themselves. This should be considered on case-by-case basis by the discharging hospital team or appropriate community staff. Supportive pathways must be followed to ensure patient safety. These pathways should be individualised for each patient identified dependent on their airway status, confidence, capacity, reliability, dexterity, and self - ability. If any parties have concerns about self-tie changes, this should not be recommended / offered and alternative options sought.

If the person cannot manage their own daily tracheostomy tube care, then this must be carried out by carers familiar with the individual and their needs.

- Cleaning and inspecting the tracheostomy stoma may be completed with the tracheostomy tapes in situ, reducing the risk of accidental decannulation.
- Requires 2 people to ensure the safety of the tube - this may include the person with a tracheostomy if able to assist.
- Ensure that the tracheostomy stoma is thoroughly cleaned and inspected under the flange of the tracheostomy tube. Look for any signs of redness or infection.
    - Use sterile water or normal saline to clean the stoma
    - Ensure the stoma is completely dry before placing a new stoma dressing
    - A barrier cream can be applied to the skin around the stoma before the dressing is put on. This may help with any irritation or redness.
- If the stoma looks red, infected, or inflamed inform the patients GP.
- Tracheostomy tapes / ties changes must be completed by 2 people, although if the individual is able to assist by holding the tube, then only one care giver may be required.
- One carer (or individual with the tracheostomy) will hold the tracheostomy tube in place whilst the other carer will change the ties.

INNER CANNULA CARE

Inner cannulas are an important component of tracheostomy safety management. They ensure that the tracheostomy airway is clear and free of secretions. Inner tubes may be reusable or disposable. Either way, they should be changed and cleaned (if re-usable) as needed (minimum suggested frequency of 3 times per day) without having to change the entire tracheostomy tube. The patient should have at least 2 inner cannulas. 1 inner cannula already in the patient's tracheostomy tube and a spare inner cannula close at hand when there needs to be a change.

- Cleaning and changing the inner cannula is a clean technique.
- Re-usable inner cannulas should be cleaned with warm tap water, with or without a gentle detergent, using a single use tracheostomy cleaning sponge, (Figure 5)
- The re-usable inner cannula should then be thoroughly rinsed in clear water and the inside dried with a clean dry tracheostomy cleaning sponge.
- Spare clean inner cannulas should be kept in a lidded dry container and be always with the patient.
- Except for silver tracheostomy tubes **DO NOT USE BRUSHES TO CLEAN INNER CANNULAS**. Brushes scratch and damage the material of the inner cannula which may increase the risk of infection.

Figure 5: Tracheostomy tube inner cannula sponge cleaners

TRACHEOSTOMY CUFF MANAGEMENT

Some individuals may have a cuffed tracheostomy tube. This will depend on the individual's medical condition and why they need a cuffed tracheostomy tube. The cuff may be deflated for part of the day depending on the individuals care plan. Those with a cuffed tracheostomy tube (with the cuff inflated) will be unable to vocalise and shout for help if required. Alternative methods for the individual to

raise awareness or call for help must be in place, or they may require increased levels of supervision to ensure safety.

The cuffed tracheostomy tube maybe inflated with either air (most common) or sterile water. What needs to be remembered is that having a cuff inflated **DOES NOT STOP ASPIRATION neither will it stop the tracheostomy tube from become partially or totally dislodged**.

There are 2 methods to measure whether the cuff is adequately inflated:

1. Minimal occlusion pressure using audible cues
2. Cuff manometer

MINIMAL OCCLUSION PRESSURE

This is a simple measure to ensure that the tracheostomy tube cuff is adequately inflated by listening to whether you can hear any audible leak from the mouth, nose or around the tracheostomy tube, or asking the patient to try and talk. If you can hear air escaping, the patients voice, or secretions then the cuff probably needs to be inflated further.

Depending whether the cuff is air or water:

- Take a 5ml syringe of air or sterile water
- Attach the syringe to the pilot balloon of the tracheostomy tube
- Slowly introduce more air or water into the cuff until you cannot hear any more sounds.
- Disconnect the syringe from the pilot balloon.

CUFF MANOMETER

The cuff manometer measures the pressure of the air in the cuff via the pilot balloon. If the patient's tracheostomy tube cuff is filled with water the cuff manometer cannot be used.

The manometer has a green triangle on its gauge to guide the carer to the optimum pressure the cuff should be inflated to. However, for many patients with long term

tracheostomy tubes alongside their medical condition they often require higher pressures to ensure an effective seal from their tracheostomy cuff. Therefore, not inflating the cuff above the recommended pressure may be detrimental to the patient with increased risk of aspiration. Conversely, excessive pressures may result in damage to the tracheal mucosa. It is therefore critical to refer to the tracheostomy passport (appendix 4) to know the required cuff pressure for the individual.

Figure 5: Cuff manometer

The cuff manometer should only be used to check the cuff pressure. If there is a need to either increase or decrease the pressure, this should be completed using a 5ml syringe. There is no recommended frequency of cuff pressure checks and should be guided by the individuals care plan or in response to signs of unintended cuff deflation.

SECRETION MANAGEMENT

Controlling oral secretions is beneficial for mouth care, for reducing aspiration risk and associated pulmonary infections, and may help progress a patient towards cuff deflation. Copious oral and/or pulmonary secretions require multidisciplinary input. Strategies for managing excessive secretions include use of pharmacological drugs such as systemic anticholinergics (hyoscine, glycopyrronium bromide), sublingual atropine, or Botox injections to the salivary glands. Where pharmacological management is required, there must be close monitoring of changes to chest secretions, particularly increases in tenacity which could increase risk of tracheal plugging.

Secretion management includes:

- Effective humidification and hydration (already discussed)
- Suctioning down the tracheostomy tube

- Subglottic suction
- Nebulisers
- Pharmacological management
- Other methods
    - Breathing and cough exercises
    - Cough assist devices
    - Swallowing exercises

SUBGLOTTIC SUCTION

It is important that the patient and/or carers monitor secretions daily. This will include:

- The amount
- Colour
- Consistency
- Smell

If there is any acute or sustained change in these, the patients GP and /or community team (if available) should be informed.

SUCTION

Portable suction devices must be provided for individuals where there is a clear clinical indication to do so. For example, those with an ineffective cough or inability to manage oral secretions.

Where required, both tracheal and oral suctioning may be used by patients daily as part of their routine care, or may only be used to manage emergency scenarios, (e.g. sputum plugs). Suction devices in the community must be licenced to deliver enough pressure to effectively remove secretions via the tracheostomy tube in adult patients.

For individuals requiring suction, care givers should be trained in effective tracheal suction and effective oral suction. Suctioning in the community should be at least a clean non-touch technique using disposable gloves and any other appropriate PPE depending on the patients' medical condition. Tracheal suction catheters are single use only and must not be re-used.

Suction devices in the community differ from piped suction units in hospital. The suction pressure on a portable suction device in the community will require higher pressures to effectively clear tracheal secretions.

The key actions for the completion of suction are:

- Selection of appropriately sized suction catheter (based on individualised care plan)
- Selection of adequate suction pressure to ensure clearance of secretions (minimum 20 kPa or 150mmHg)
- Introduction of suction catheter via the tracheostomy tube to at least 2cm beyond the length of the tracheostomy tube (inner tube to be used as guide for length) or as per individualised care plan
- Followed by continuous suction and catheter withdrawal, lasting no longer than one breath cycle
- Reassessment of patient and need for additional suction.

Some patients who require a cuffed tracheostomy tube may benefit from those with a sub-glottic port. This allows the removal of secretions that have penetrated the trachea and are resting above the inflated cuff, hence reducing the risk of aspiration of salivary content and may aid tracheostomy weaning. The removal of these secretions can be carried out with a syringe.

Subglottic suction (when appropriate) should be completed in line with the persons' individualised care plans. Ensure subglottic volumes are being recorded with daily totals to monitor effectiveness.

Key actions for the completion of subglottic secretion aspiration:

- Use a 10mls syringe
- Connect to subglottic port
- Aspirate the port with the syringe.
- If resistance is felt STOP aspiration

NEBULISATION

Most patients with long term tracheostomy tubes will need a nebuliser device to deliver medications such as normal saline, hypertonic saline, antibiotics, or bronchodilators. Normal or hypertonic saline will help loosen secretions so that they are easier for the patient to cough up or ensure effective clearance of secretions via deep tracheal suction.

Nebulisers can be delivered via a tracheostomy mask, mouthpiece pr mechanical ventilator (if using at home). The patients care plan will direct which interface should be used.

If patients are using a one-way (speaking) valve this should be removed prior to any nebulisation to reduce the risk of the valve becoming blocked.

COMMON COMPLICATIONS AND TROUBLESHOOTING

Complication	Symptoms	Likely cause	Initial response
Blood-stained chest secretions	Fresh bleeding from around or inside tracheostomy	1. Trauma from suctioning or knocking the tube and / or dry chest secretions causing tracheitis. OR 2. Respiratory infection.	1. Assess need for increased humidification If not resolving refer to ENT for investigation 2. Send a sputum specimen and inform patients' GP or local services
Granulation tissue	Bleeding or pain as the tube moves – this can cause difficulty with tube changes	Friction of tube against stoma edges OR Fenestration causing friction on tracheal wall	Secure tube to prevent movement. Refer to GP or local services for topical treatment e.g., silver nitrate. If not resolving, then refer to ENT
Wound infection	Exudate, redness, pain or pyrexia	Chest secretions and tube increasing migration of organisms	Swab for microbiology, culture, and sensitivity. Increase stoma cleaning and offer pain relief. Refer to the patient's GP for antibiotics.
Cuff 'failure'	Increased secretions from tracheostomy or salivary appearance or a wet, gurgling voice	Fluid within the pilot line may prevent cuff measurement. Each cuff pressure check (using a manometer) allows a small volume of air to escape so frequent readings increases the air leakage and can lead to a false cuff 'failure'.	Withdraw air from cuff and re-inflate with new syringe. Recheck as per normal. If persists, consider changing tube or referring to local ENT or tracheostomy service for urgent tube change.

ROUTINE TRACHEOSTOMY TUBE CHANGES

Recommendations for the frequency of changing tracheostomy tubes are unsupported by the literature. A European Economic Community Directive[1] states that surgically invasive devices intended for short-term use are in Class IIa and therefore, normally intended for continuous use for no more than 30 days. This is for regulatory purposes opposed to clinical guidance.

In practice the frequency of tracheostomy tube change should be assessed on an individual patient basis taking in consideration their:

- Upper airway and dynamic airway patency
- Medical condition
- Psychological status
- Airway secretions
- Manufactures instructions for use (IFU) for specific tracheostomy tube

Routine tracheostomy tube changes can take place in either the community or in a hospital setting depending on the complexity of the patient and if there are appropriately skilled personnel to undertake routine tracheostomy tube changes in the community. A proposed risk assessment for determining professions involved in the process is shown below.

Grade	Difficulty of change	Where and by who?
1	**Low risk** for self-ventilating patients with no RED FLAGS	Lead: Community RN / Level 3 Carer Support: Untrained carer or HCP
2	**Medium risk** for patients who have some RED FLAGS e.g., known granulation tissue on outside of stoma	Lead: Community RN Support: Tracheostomy trained carer or HCP
3A	**High risk** for any patient with RED FLAGS e.g., tracheal bronchial malacia / tracheal stenosis but able to maintain airway for > 15 minutes with trache tube removed.	Lead: Community / Hospital Specialist Tracheostomy Practitioner Support: Tracheostomy trained carer or HCP
3B	**Critical risk** for any patient with severe RED FLAGS e.g., severe dynamic airway collapse / tracheal bronchial malacia. Unable to maintain any airway without tracheostomy tube in situ.	Lead: Hospital based ENT or tracheostomy specialist team Support: Hospital based ENT or tracheostomy specialist team

Note:

Tier 3 Carer: Refers to health, social care and other professionals with a high degree of autonomy, who are sufficiently trained to be able to provide care in complex situations.

Untrained Carer or HCP: Refers to any carer or healthcare professional that has not received specific tracheostomy training including changing tracheostomy tubes.

Routine tracheostomy tube changes should be undertaken by an appropriately skilled nurse, medical doctor, allied health professional, carer, or family member, who has been trained in and is deemed competent to change a tracheostomy tube. Low risk tube changes may be undertaken by one person (with the individual with a tracheostomy helping as able). For higher risk changes, there should be a minimum of 2 people to undertake the tube change.

When planning a tracheostomy tube change always consider:

- Is this the best time to be doing this?
- Is this the best time to be doing this?
- Am I the best person to do this?
- Is the patient adequately/appropriately prepared?
- Have I got all the essential/appropriate equipment?
- Is there adequate support?

TRACHEOSTOMY TUBE CHANGES IN THE COMMUNITY

Changing a long-term tracheostomy tube in the community differs from changing a tracheostomy tube in hospital. It is a clean non-touch technique using the 'blind exchange' technique. (See Appendix 6 on changing a long-term tracheostomy tube).

The person:

- Does not need to stop eating or drinking or have their PEG feed paused prior to the tracheostomy change unless clinical indication of increased risk e.g., known reflux in the presence of vocal cord paresis
- Can be either in bed or sitting up in a chair

COMMUNICATION

The presence of a tracheostomy may affect the patient's ability to use their voice. Significant obstacles to communication include underlying medical conditions such as a brain injury, an obstructed upper airway, bilateral vocal cord palsies or the presence of an inflated cuff.

Voice is produced by airflow around the tracheostomy over the vocal cords and out through the mouth (with a deflated cuff or cuffless tube) or through use of above cuff vocalisation. Voice is most effective with a one-way (speaking) valve on the tracheostomy tube. A one-way valve can ONLY be used if the cuff is fully deflated. Other methods of communication are described below.

Communication may be:

- Verbal e.g. patient's voice
- Non-verbal e.g. gesture, pointing
- Communication aids e.g. ABC charts, pen/paper, or high-tech computerised systems such as eye gaze
- Electrolarynx

It is vital to know how to communicate effectively with the patient to meet their needs and what is needed to support the patient to do this. Any change in the patient's ability to communicate effectively, should be escalated to the appropriate healthcare team, e.g. Speech and Language Therapists (SLT).

EMERGENCY CARE

Emergency algorithms must be provided to all patients living with a tracheostomy in the community. These algorithms must cover the actions required in the event of either a suspected tracheostomy tube blockage or displacement.

It is recommended that algorithms be bespoke to individual's needs, based on their clinical presentation. This includes recognition of potential ventilation requirements (e.g., those receiving mechanical ventilation), upper airway patency and stoma stability.

Training must be provided to all relevant individuals that may be involved in the management of an emergency including the person with the tracheostomy, carers and family members as appropriate. The overarching principle is to deliver a stepwise process with constant reassessment of the patients breathing.

To support the emergency algorithms, appendix 5 provides an overview of emergency care considerations. This should be used in conjunction with the bespoke algorithms but provides a more overarching guide to managing any deterioration related to the tracheostomy.

ADMISSION TO HOSPITAL

A person with a tracheostomy may require admission to hospital either because of a problem with the tracheostomy tube or another medical reason. To aid the provision of care, the tracheostomy emergency box and tracheostomy passport should be brought to the hospital. This should then stay with the person throughout the admission.

Prior to discharge from hospital, any updates must be made to the essential tracheostomy information and tracheostomy passport (if any required) and availability of consumables must be ensured. This may include the requirement of provision of stock from the hospital e.g., tracheostomy ties and dressings.

Updates should be provided between available hospital and community care teams ensuring continuity of care and provision of essential information or advice.

ADDITIONAL RESOURCES

Additional tracheostomy resources are available via the following organisations. Note some of these resources may only be available in certain regions of the UK:

- National Tracheostomy Safety Project (https://tracheostomy.org.uk/)
- Global Tracheostomy Collaborative (https://www.globaltrach.org/)
- Institute of Clinical Science and Technology (https://icst.org.uk/toolkits/tracheostomy-toolkit/)
- ATOS care (https://www.atos-care.co.uk/)
- Local healthcare organisation websites

FEEDBACK

If you wish to provide any feedback on this document or supporting appendices, please do so via the below QR code.
Any feedback will be used as part of ongoing evaluations of the usability of this document and will aid future iterations and revisions.

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National Tracheostomy Safety Project (NTSP)

Association of Physiotherapists in Respiratory Care (ACPRC)

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British Association of Head & Neck Oncology Nurses (BAHNON)

British Association of Oro Maxillofacial Surgeons (BAOMS)

College of Paramedics

ENT-UK

Royal College of Speech and Language Therapy Tracheostomy

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The Institute of Clinical Science and Technology (ICST)