SESLHD PROCEDURE COVER SHEET

NAME OF DOCUMENT	Tracheostomy Clinical Management Procedures for Adult Inpatients
TYPE OF DOCUMENT	Procedure
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REVIEW DATE	October 2022
FORMER REFERENCE(S)	SESLHNPD/98 Tracheostomy Clinical Management Policy and Procedures for Adults Inpatients
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KEY TERMS	Trachea, Tracheostomy, Tracheostomy Tube, Stoma, Cannula, Suction
SUMMARY	This document outlines procedures for the tracheostomy management for adult inpatients including (but not restricted to): Tracheostomy Emergency, Changing a Tracheostomy Tube, Removal of Tracheostomy Tube, Suction, Oral Hygiene, Decannulation and Humidification

1. PROCEDURE STATEMENT

SESLHD is committed to ensuring best quality and safety outcomes for patients by implementing best practice recommendations endorsed by relevant health related government bodies.

The recently published Clinical Practice Guideline NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline has set best practice recommendations for health organisations in this specific clinical procedure.

Considering the above Clinical Practice Guideline and existing clinical practice across SESLHD; this procedure aims to provide clinicians a comprehensive understanding, instruction and best practice evidence-based recommendations for the use of Tracheostomy Tube in adult patients.

2. BACKGROUND

This procedure aims to implement best practice recommendations set by ACI's Clinical Practice Guideline in the use of Tracheostomy Tube inserted in a tracheal stoma in adult patients and provides further instruction on clinical practice management of adult patients on:

- Tracheostomy Emergency
- Changing a Tracheostomy Tube
- Removal of a Tracheostomy Tube
- Suction
- Oral Hygiene
- Decannulation
- Humidification

Please note that compliance to this clinical procedure is mandatory.

3. DEFINITIONS

- **Trachea:** The anatomical structure used for breathing
- **Tracheostomy:** An artificial opening in the trachea, which may be permanent or temporary
- **Tracheostomy Tube:** A tube placed through a tracheostomy to provide an airway and to remove secretions from the lungs
- **Stoma:** An opening, either natural or surgically created, which connects a portion of the body cavity to the outside environment
- **Cannula:** A tube that can be inserted into the body, often for the delivery or removal of fluid or air
- **Suction:** The use of devices to clear airways of materials that would impede breathing or cause infections
- **Aseptic non-touch technique:** Prevents microorganisms on hands from being introduced into a susceptible site.

4. RESPONSIBILITIES

4.1 Clinical Staff will:

- Safely manage patients within practice limitations, attend education sessions and maintain competency in tracheostomy management and tracheostomy emergency response, including:
  - Implementing this Clinical Procedure in line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline

4.2 Line Managers will:

- Ensure nursing staff caring for the patient with a tracheostomy have the appropriate skills and experience in tracheostomy management and clinical response to a tracheostomy emergency
- Ensure education resources and clinical protocols are readily available in the clinical environment.

4.3 District Managers/ Service Managers will:

- Ensure provision of clinical education in tracheostomy management and response to a tracheostomy emergency, is available to clinical staff within SESLHD facilities.

4.4 Medical Management will:

- Be responsible for medical orientation and ongoing medical education.

5. PROCEDURE

5.1 Competency of Clinical Staff in Tracheostomy Management and Tracheostomy Emergencies

- All clinical staff providing direct care must be trained and assessed in this tracheostomy management procedure, including the clinical response to a tracheostomy emergency
- Patients with a tracheostomy must be cared for in a clinical environment where staff are competent in the clinical management of tracheostomy and the clinical response to a tracheostomy emergency
- All Registered Nurses (RN) and Enrolled Nurses (EN) caring for a patient with a tracheostomy must be educated in tracheostomy management by a designated assessor (i.e. nurse educator, clinical nurse consultant or senior physiotherapist with the appropriate clinical expertise). Provision of education must include all facets of tracheostomy care, including airway emergencies within practice limitations
- Senior clinicians responding to patients that require airway and/or breathing assistance with an artificial airway must be provided with ongoing education and training to manage difficult airway situations and undertake ‘difficult airway drills’.

5.2 Tracheostomy Plan and Clinical Communication

- All patients with a tracheostomy must have a documented plan for tracheostomy assessment, management and review
- The Tracheostomy Plan should be reviewed by the Tracheostomy Review Team (TRT) or primary care team. If changes are made by the TRT such changes similarly need to be brought to the notice of the nurse caring for the patient
- Patients with a long-term tracheostomy require an appropriate clinical management plan customised to the level of self-care provided and any additional assistance indicated.

5.3 Transfer of Care and Clinical Handover

Note: The following section has been developed in line with SESLHDPR/303 Clinical Handover: Implementation of ISBAR Framework and Key Standard Principles and NSW Ministry of Health Policy - PD2019_020 Clinical Handover - Key Standard Practices.

- The unit transferring a patient with a tracheostomy must notify the ward and relevant clinical support personnel e.g. specialist CNE/CNC, ICU Liaison, to facilitate clinical support and education of staff and the patient.
- The transferring RN must handover clinical information using a handover checklist/ Tracheostomy Management and Observation Chart including: tube size and type, insertion date and method of insertion; method anchored; humidification, secretions and suction requirements
- Written communication and verbal bedside, clinical handover regarding potential risks, relevant respiratory history including baseline respiratory rate, work of breathing, chest sounds, tube patency, cough/swallow reflex, oxygenation and oxygen administered must also be handed over
- Specific information regarding management and nursing care required by the receiving area is to be provided during the transfer of care. The clinical handover process must include a visual check to ensure that the tracheostomy tube is patent, aligned and secure.

5.4 Documentation

- All tracheostomy interventions including assessments and care provided should be documented on the Tracheostomy Management and Observation Chart
- Variances or abnormal findings and management of variances should also be documented in the progress notes.

5.5 Observations

- Vital signs - respiratory rate, respiratory pattern (including auscultation), oxygen saturations, heart rate, blood pressure, temperature and level of consciousness – are monitored in critical care areas at frequency dictated by clinical condition and on the wards at a frequency not less than every 6 hours. Consider continuous pulse oximetry for patients with a new tracheostomy and/or any respiratory compromise

- Patients who require continuous pulse oximetry should be cared for in a suitable clinical environment where staff can continually observe the patient
- Monitor sputum and record amount, colour and consistency on Tracheostomy Management and Observation chart.

IC Manual

ACI NSW Agency for Clinical Innovation

12 Essential Elements of Tracheostomy Care for Adult Patients

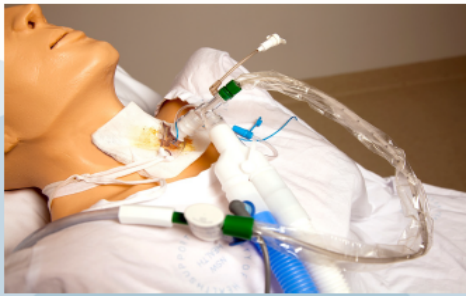
12 Essential Care Elements		
1	Communication	Patient has communication strategy in place AND call bell within reach
2	Tracheostomy plan	Patient has documented Tracheostomy plan in place which has been reviewed within last 24hrs
3	Patient assessment	1. clinical observations have been documented and actioned in accordance with clinical status 2. documentation of evaluation of need for and outcomes of suctioning
4	Nurse	**Nurse** caring for patient is an enrolled nurse or registered nurse AND has or is supervised by a registered nurse who has completed a tracheostomy training program within past 2yrs
5	Safety equipment	All **safety equipment** is available, functional and has been checked within past 24 hours
6	The tracheostomy tube is secure	1. Tapes changed within last 24 hours 2. TT does not move more than 1cm in any direction 3. Able to insert small finger between tapes 4. If Tube is an Adjustable flange • Flange position marked & documented in notes • Inspected & documented within past shift
7	Cuff pressure	Has been checked & documented within last 4 hours AND is between 25-30cmH2O
8	Humidification	• Heat moisture exchanger – clean & checked within last 2hrs OR • Active – Temp > 37 C, H_2O level > 1/3
9	Inner Cannulae	• Where applicable should be cleaned at least 4hrly AND • A spare clean & dry inner cannulae is within bed area
10	Stoma	• Dressing attended within past 24 hours AND Dressing clean & dry OR • No dressing - Stoma clean & dry with no secretions
11	Suction	• Non-sterile gloves should be worn when using closed suction systems • Suction techniques using an open technique must use an aseptic technique
12	Infection prevention	• inner cannulae are <u>not</u> cleaned at hand basins • Tracheostomy care incorporated into hand hygiene education

The Guideline can be found at http://intensivecare.hsnet.nsw.gov.au/icwiki/index.php/

Tracheostomy Review Teams	
Who • Specialist nurse • Speech pathologist • Physiotherapist • Medical officer	**What** • Review patients & coordinate care • Provide education enabling clinical staff to become more confident and provide better care • Provide a consultation service especially on: appliances, decannulation, respiratory and physical care, communication and swallow; and diet
↓ time to decannulation ↓ hospital LOS, ↓ adverse events ↓ readmit to ICU	↑ care consistent with protocol ↑ inter-professional decision making ↑ effective and efficient care ↑ transfer to wards ↑ patient outcomes

- Garruba,M. 2009. Critical Care. 13(6): p. R177
- Cameron,T. 2009. Critical Care and Resuscitation, 11(1): p. 14-9.
- LeBlanc,J. 2010. Journal of Head Trauma Rehabilitation, 25(5): p. 362-5.
- Mitchell,R. 2013. International Journal of Nursing Studies, : 50: p. 536-542

- Compare these pictures
- Can you identify the four errors in Picture 2?



Minimum Frequency Tracheostomy Checks & Care

Details of Every Intervention Performed Must be Documented by Clinical Staff.

1-2 Hourly	2- 4 Hourly	6 Hourly	Once per Shift	Daily
Assess adequacy of **humidification**	**Inner cannula** remove, check for secretion build up; clean and replace Check Tracheostomy is secure & **aligned to midline**	Document: **Airway** - skin colour, air entry - bilateral at axilla, expired air felt from tracheostomy tube	**Emergency** bedside **equipment** checked & restocked	**Trache tapes** changed (more frequently if soiled)
Assess need for **suction**. Document amount, consistency and colour of secretions	Sodium chloride **nebulisers** 4 hourly/ prn, (More frequently for patients with thick secretions)	**Breathing** - bilateral chest movement, and depth of respirations	**Cuff pressure** measurement (maintain 25 - 30 cm H_20)	Assess **systemic hydration** (fluid balance)
For adjustable flange tracheostomy tubes – observe and document the position of the flange to the tube at the skin following each suction to detect tube migration	Check Heat Moisture Exchanger **(HME)**	**Vital Signs:** Respiratory rate Oxygen saturation Heart Rate BP Temperature 02 Administered	Clean trache **stoma site**	Change heat/moisture exchanger **(HME)** NB more frequently if soiled.
	Mouth care Check stoma for **pressure injury**		**New Stoma** site - observe for bleeding in new stomas; note crusting, signs of infection, smell, discharge	Change shiley extended length inner tube.

5.6 Newly Formed Tracheostomy

Patients with a newly formed tracheostomy must have continuous pulse oximetry when clinically indicated. Patients requiring this level of observation should be transferred and monitored in an area where staff can constantly monitor.

5.7 Essential Bedside Equipment

NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline

To facilitate optimal clinical care and intervention under emergency circumstances, the following equipment should be available WITHIN the patient's bed space AND must be checked on a shift-by-shift basis to ensure availability:

- Tracheostomy emergency response plan specific to critical nature of patient airway
- High pressure suction equipment including size appropriate suction catheters and oral suction equipment
- Oxygen supply and attachments to apply oxygen to both tracheostomy and face
- Cuff manometer and 10 mL syringe (where a cuffed tracheostomy is in use)
- Spare inner cannula (where dual lumen tracheostomy tubes are in use) the spare inner tube may be located in the unopened spare tracheostomy box at the bedside
- Humidification devices as appropriate
- Personal protective equipment for standard precautions including: gloves, aprons/gowns, goggles and fluid-resistant mask, or full-face visor. The type of mask required may vary if patient under droplet or airborne precautions
- Appropriate waste receptacles for general and clinical waste
- Bottle of sterile water to clean suction tubing after use (labelled with date and changed daily).

Units may choose to keep some equipment on an emergency trolley located within the immediate ward or at the patient's bed space:

- Two spare tracheostomy tubes (one the same size as tube insitu, and one a smaller size). If cuffed TTs are included in emergency equipment, tracheal dilators should be included.

To facilitate optimal clinical care and intervention under emergency circumstances, the following equipment should be available within wards where patient with a tracheostomy are cared for AND checked each shift and after use to ensure availability:

- Emergency trolley including resuscitation bag and airway equipment
- Patient monitor
- Tracheal dilators.

5.8 Tracheostomy Emergency Procedure

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for the tracheostomy emergency procedure (page 58).

Recommendations	Grade of Recommendation

All hospitals are to have documented action plans that identify how tracheostomy emergencies are to be managed. These action plans must include:
• Action/s to be taken especially those of clinicians who are caring for the patient and are not part of emergency teams
• Key personnel at all times of the day
• Emergencies include but are not limited to:
  ○ displaced or dislodged tracheostomy
  ○ blocking or blocked tracheostomy
  ○ airway haemorrhage
  ○ Cuff leak or rupture.
• And be available at point of care.
	Consensus

Elective early tracheostomy tube change, defined as within 72 hours of the formation of the tracheal stoma, may be hazardous and should be avoided, particularly in patients with a history of difficult intubation.	Consensus
Emergency management must be included in education programs to ensure that clinicians who care for patients with tracheostomies are able to provide care in the event of an emergency.	Consensus
Hospitals should include tracheostomy emergency scenarios within education on difficult airway drill.	Consensus
All wards where patients are cared for with a tracheostomy must have emergency airway equipment available in the event of an emergency.	Consensus
The appropriate level of emergency call should be activated if any of the signs and symptoms of respiratory distress are present and are unable to be resolved quickly (SESLHD Code BLUE call).	Consensus
A competent clinician must stay with patient so that interventions can be commenced.	Consensus
A blocked or displaced TT should only be replaced by an experienced clinician.	Consensus
Document any complications in the patient notes. Notify the patient's primary care team and any other associated teams i.e. the tracheostomy review team.	Consensus
Once a complication or emergency has resolved, the TT plan should be reviewed in relation to factors which may have contributed to the emergency. This may include but is NOT limited to the following:	Consensus

Recommendations	Grade of Recommendation
• Type of TT • Whether the TT stabilisation method is appropriate • The patient's current level of supervision and visibility on ward • Use of chemical or physical restraints where appropriate • Humidification method and hydration status.	

Tracheostomy Emergency	Immediate Action
Respiratory Distress **Signs of Respiratory Distress Include:** • Increased work of breathing i.e. patient acutely distressed/restless, tachypnoea, stridor, accessory muscle use, diaphoretic, cyanotic • Decreased/gurgling breath sounds • High inspiratory airway pressures/low tidal volumes if mechanically ventilated • O2 desaturation • No breath sounds • Unable to pass suction catheter or inner cannula	• Stay with patient and provide 100% high flow O2 via tracheostomy and/or face mask and manually ventilate if indicated (it may be necessary to deflate trachea cuff) • Check O2 source and connection, cuff inflation, humidifier • Check /change the inner cannula if in situ • Call for assistance – emergency number x2222 **Dislodged tracheostomy tube in situ with suspected obstruction:** • Pass suction catheter and apply suction (change inner cannula if present, using non-fenestrated cannula if possible), if tracheostomy tube obstructed then let down cuff (if present and inflated) • Check tube patency, secretions and patient response to suctioning • If no airflow around/through tracheostomy tube then insert tracheal dilators around tube into stoma, remove tube, insert bougie or suction catheter and maintain oropharyngeal airway to achieve oxygenation • If the patient becomes less distressed, airflow is present and unobstructed and oxygenation is satisfactory, then undertake a full clinical assessment to establish the cause of respiratory distress **Laryngectomy patients**: concentrate all measures on clearing stoma/trachea, as this is the patient's only airway access **Potential Causes** • Airway partially/completely obstructed due to blockage • Tracheostomy dislodgement

	• Persistent cuff leak • Faulty O2 source or ventilation device • Ineffective humidification • Consider non-tracheostomy related causes for respiratory distress.
Patient Distressed with Tube Obstructed, Dislodged Or Cuff Leaking	• 100% high flow O2 via face mask and manually ventilate if indicated, it may be necessary to deflate the cuff **If no tracheostomy tube in place** then clean stoma, open and support stoma with forceps, insert new tube, inflate cuff if present, re-oxygenate and assess air entry, work of breathing and clinical status • If tracheostomy tube in place then prepare for rapid tracheostomy tube exchange/placement (provide brief explanation to patient) • Assemble and check equipment • Position patient supine with head of bed elevated slightly (ensure no clinical contraindication) • Consider the need for sedation – this will be indicated based on individual patient assessment and the senior medical officer orders • Remove pillow and extend neck (ensure no clinical contraindication) • Suction oropharynx. **If tracheostomy tube in place:** • <72 hours post insertion (**new stoma early** change) clean stoma, loosen ties, hold tube in place, insert bougie into tracheostomy tube, assistant deflate cuff, remove tracheostomy tube over bougie while ensuring bougie is held in situ, immediately slide new tracheostomy tube over bougie into the trachea, hold in place, remove bougie, inflate cuff, re oxygenate and assess air entry, work of breathing and clinical status • >72 hours (**formed stoma**) clean stoma, loosen ties, hold tube in place, support open stoma with forceps, assistance deflates cuff, remove tracheostomy tube immediately slide new tracheostomy tube into the trachea soma, hold in place, inflate cuff, re oxygenate and assess air entry, work of breathing and clinical status • Correct tube placement is confirmed by checking air flow, chest auscultation, improved SpO2 and if available ETCO2.

	Successful • Secure tracheostomy tube • Review O2 and ventilation • Reposition patient • Provide education and further reassure the patient and family.	**Unsuccessful** • Maintain oxygenation • Manually ventilate if required • Prepare for intubation or LMA insertion • Intubate or place LMA • Only use stoma if laryngectomy patient.

5.9 Signs of Respiratory Distress

- **Difficult, laboured or noisy breathing** - In complete tracheostomy tube occlusion, there are no breath sounds heard - however in partial obstruction air entry is diminished and often noisy.
- **Use of accessory muscles** - A sign of airway obstruction. In complete airway obstruction patients often develop a see-saw pattern of breathing in which inspiration is concurrent with outward movement of the abdomen and inward movement of the chest wall and vice-versa.
- **No or Limited expired air from the tracheostomy tube. Reduced chest movement or reduced air entry upon auscultation** - All indicate a lack of air movement into and out of the respiratory tract.
- **Pale/cyanosed skin colour** - Central cyanosis is a sign of late airway obstruction.
- **Anxiety / Agitation** - The patient will become anxious and agitated as they struggle to breathe and become hypoxic.
- **Increased pulse/respiratory rate** - Increased respiratory and pulse rate are signs of illness and an indicator that the patient may suddenly deteriorate.
- **Clammy / diaphoretic skin** - Associated with an increased work of breathing from an occluded airway and stimulation of the sympathetic nervous system causing vasoconstriction
- **Stridor** – Is caused by an obstruction above or at the level of the larynx

6. EMERGENCY ALGORITHM

Initiated immediately.

Health
South Eastern Sydney
Local Health District

Facility:

TRACHEOSTOMY MANAGEMENT & OBSERVATION CHART

FAMILY NAME | MRN

GIVEN NAME | ☐ MALE ☐ FEMALE

D.O.B. _____/_____/_____ | M.O.

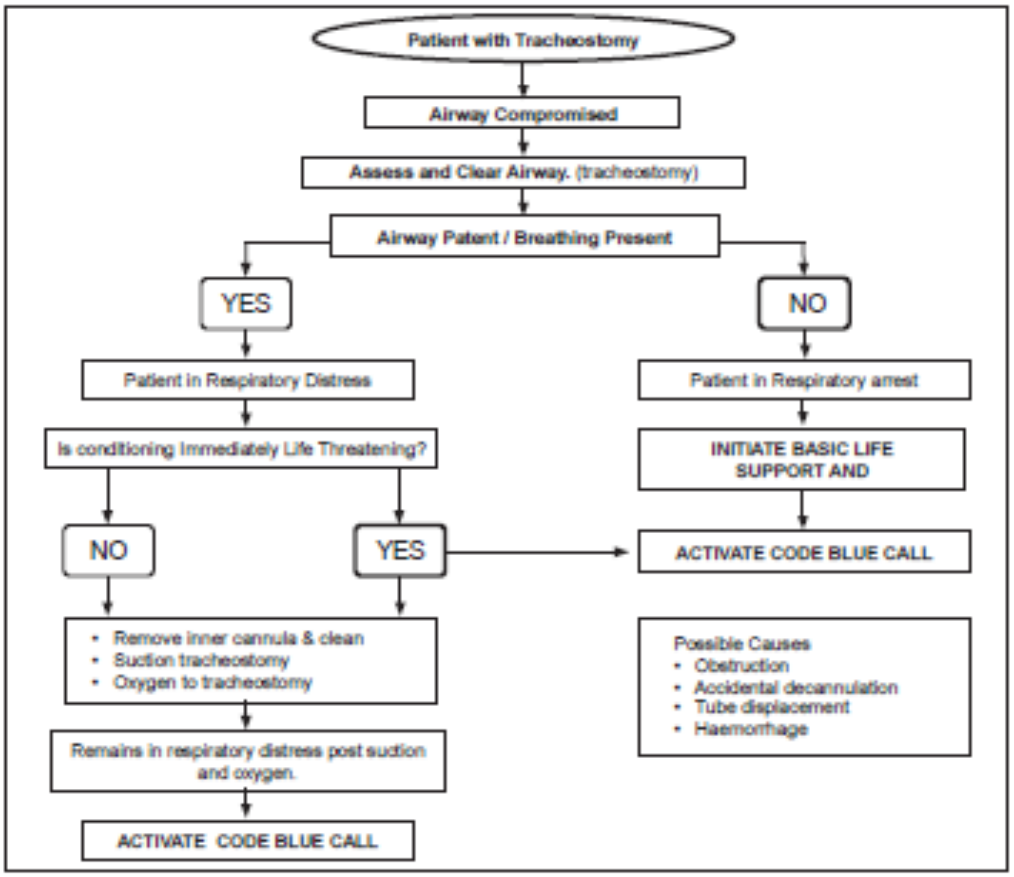
ADDRESS

LOCATION / WARD

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

Emergency Algorithm

The emergency algorithm has been designed for clinicians dealing with emergencies in non-critical care areas. Each situation should be assessed and managed on an individual basis. As with any emergency, protocols should be immediately initiated.



Signs of respiratory distress (Adapted from AlertTM 2000/St. George's Healthcare NHS Brochure)

- **Difficult, laboured or noisy breathing** - In complete tracheostomy tube occlusion, no breath sounds will be heard - however in partial obstruction air entry is diminished and often noisy
- **Use of accessory muscles** - A sign of airway obstruction. In complete airway obstruction patients often develop a see-saw pattern of breathing in which inspiration is concurrent with outward movement of the abdomen and inward movement of the chest wall and vice-versa.
- **No or Limited expired air from the tracheostomy tube. Reduced chest movement or reduced air entry upon auscultation** - All indicate a lack of air movement into and out of the respiratory tract.
- **Pale/cyanosed skin colour** - Central cyanosis is a sign of late airway obstruction.
- **Anxiety / Agitation** - The patient will become anxious and agitated as they struggle to breathe and become hypoxic.
- **Increased pulse/respiratory rate** - Increased respiratory and pulse rate are signs of illness and an indicator that the patient may suddenly deteriorate.
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- **Stridor** - Is caused by an obstruction above or at the level of the larynx

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6.1 Humidification

Education Note:
A tracheostomy bypasses the normal mechanisms for humidification. Failure to provide adequate humidification contributes to tube blockage and subsequent airway obstruction. Adequate systemic hydration via oral, nasogastric and/or intravenous is required to ensure secretions remain easy to suction or expectorate. (Burgess 1999, Clark 1995, St Georges Healthcare NHS trust, Harkin 1998)

6.1.1 Symptoms of insufficient humidification include:

- Shortness of breath and decreased oxygen saturations (indicative of mucus plugging or micro atelectasis)
- Increased, unproductive cough
- Change in mucous colour (clear to pale), amount or increased viscosity (i.e. a change from thin to thick, sticky consistency)
- Increased temperature (indicative of infection and impaired secretion removal)
- Blood-streaked mucous
- Noisy laboured respirations.

6.1.2 Care of the Heat Moisture Exchange (HME) includes:

- Educate patient to remove the HME before coughing.

6.1.3 Policy Alert:

- An HME must be used for patients with a tracheostomy tube with an inner cannula (inpatients)
- Patients with single lumen adjustable flange tracheostomy tube or foam cuff tracheostomy tube must have continuous warm humidification with connector directly attached to the tracheostomy tube
- Continuous warm humidification via water bath and heated base should be considered where an HME is not providing effective humidification
- Monitor the patient for signs of adequate humidification every one to two hours (see symptoms above)
- Check disposable HME two hourly and change daily or whenever soiled
- Patients with sputum plugging or blood stained sputum require warm humidification
- Contact CNC Respiratory/ENT or equivalent person (educator) if unfamiliar with equipment
- Nebulisation with normal saline may be prescribed by the primary care team if indicated and should be considered in all patients using an HME
- Condensation in the circuit must be avoided as it is a medium for bacterial growth.

6.1.4 Humidification Recommendations

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for humidification:

Humidification Recommendations (ACI)	Grade of Recommendation
Inspired gases must be humidified to maintain effective mucociliary function and gas exchange and prevent complications.	Consensus
Patient's systemic hydration must be assessed and maintained to reduce the viscosity of sputum and prevent complications.	Consensus
The choice of humidification method should be made on an individual patient basis, be assessed at least daily and documented.	Consensus
HMEs are suitable for patients with all of the following: • Stable respiratory function • Volume of secretions is moderate or less • Double lumen tracheostomy tube • FiO_2 < 40%.	Consensus
Active humidification is required for adult patients with: • Hypothermia • FiO_2 ≥ 0.4% • Thermal injury to airway • Single lumen, adjustable flange or foam tracheostomy tubes • Large volume or purulent secretions • Irritable airways • Airway bleeding • Where a speaking valve is in the ventilator circuit • As clinically indicated.	Consensus
Where active humidification is used, the temperature of inspired gases must be 37° to ensure 100% relative humidity.	Evidence - B Recommendation B
HME should be checked every one to two hours for patency.	Consensus
HME should be changed • When soiled • Per manufacturer's guidelines • At least daily where patients are receiving ventilator support.	Consensus
Water-bath humidifiers must not be left to run dry due to the risk of airway burn.	Consensus
Active humidification circuits should be changed at least weekly or if soiled.	Consensus
Only sterile water-for-irrigation can be used in water-bath humidifiers.	Consensus
Humidification circuit must be lower than the level of the TT at all times to prevent aspiration of condensation from the tube (rain out).	Consensus

Humidification Recommendations (ACI)	Grade of Recommendation
Ongoing humidification should be considered post decannulation to maintain airway integrity.	Consensus
Humidification equipment utilised (HME or active circuits) should be used as per manufacturer's instructions to prevent complications such as rain out (for the later device) that may impact ventilation and respiratory function.	Consensus

6.1.5 Provision of Humidification

• For all patients with loose or no evidence of secretions or in longer term patients use an HME • Replace HME daily or more frequently if contaminated by secretions. Patients on BIPAP may require HME changes more frequently	To moisten inspired gases by trapping and re-breathing humidity; to prevent inhalation of particulate matter To maintain effectiveness and reduce infection risk
• For patients with thick/dry secretions, ensure 4 hourly prescription of normal saline nebulisers • Administer 5mls of normal saline via nebuliser every 4 hours and PRN to provide fully saturated air with fine mist of moisture • Increase frequency of nebulised normal saline if sputum thickness/tenacity impairs suctioning • Assess systemic hydration daily – inform medical staff of inadequate fluid intake (especially if patient is NBM)	• To loosen and thin secretions, to prevent atelectasis and sputum thickening • To reduce unnecessary interventions and to assess whether present level of humidification adequate • To highlight potential issues and instigate early intervention if required

6.1.6 Inner Cannula Maintenance

Practice Limitations:
Registered Nurses who are deemed competent by a designated assessor
Enrolled Nurses who have achieved 'Extended Practice Skill' in Tracheostomy Maintenance of an Inner Cannula and been deemed competent by a designated assessor.

6.1.7 Policy Alert

- All ward patients with a tracheostomy tube must have an inner cannula in situ.
- The inner cannula must be removed two to four hourly to check for patency and secretion build up. It must be immediately replaced with a clean inner cannula. More frequent checks will depend on viscosity and volume of secretions
- All patients with a tracheostomy will require four hourly normal saline nebulisers
- This procedure is a clean procedure which requires hand hygiene before and after donning appropriate PPE e.g. gloves, apron, full-face visor.

6.1.8 Equipment

- Clean gloves
- Facial protection and plastic apron
- Clean dry replacement inner cannula
- Sterile pipe cleaners (may be required) or tracheal cleaning brush.

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for Inner-Cannula

Inner Cannula Recommendations (ACI)	Grade of Recommendation
The inner cannula must be checked for patency, cleaned and replaced two to four hourly. More frequent checks will depend on the volume and viscosity of secretions.	Consensus
The inner cannula should be cleaned and dried according to manufacturer's guidelines and stored in a clean dry container.	Consensus
Under most circumstances the inner cannula can be cleaned with sterile water with a tracheostomy cleaning brush or a pipe cleaner (with the end turned over). Where secretions are tenacious, alternative solutions can be used; however, the tube should not be soaked for more than 15 minutes.	Consensus
This procedure is a clean procedure which requires hand hygiene before and after donning appropriate PPE e.g. gloves, apron, full-face visor.	Consensus
It is inappropriate to clean or rinse the inner cannula at hand basins used for hand washing because of the risk of contaminating the basin with organisms or contamination of the inner cannula.	Consensus

Inner Cannula Recommendations (ACI)	Grade of Recommendation
When placing a clean inner cannula into a TT tube it should be rinsed with sterile water immediately prior to insertion.	Consensus

	Procedure: Changing an Inner Cannula	Key Notes
1	Perform hand hygiene before and after donning appropriate PPE e.g. gloves, apron, full-face visor	To reduce the risk of cross infection
2	Hyper-oxygenate or ask patient to take five deep breaths	To prevent hypoxia
3	Position patient with neck slightly extended	To provide patient comfort and ease procedure
4	Remove oxygen, remove inner cannula and insert clean spare inner cannula, replace oxygen	To maintain the airway, prevent early build-up of secretions in outer tube and to maintain oxygenation
5	Observe the inside of the removed cannula for excessive crusting	Crusting should not occur if the tube is kept clean with the provision of adequate humidification and suction. More frequent checks will depend on viscosity and volume of secretions
6	Clean the inner cannula and flush with sterile saline or water prior to reinsertion (may require the use of a cleaning brush or pipe cleaners to remove any dried or tenacious secretions) Agitate inner cannula to remove all visible secretions prior to re-inserting in airway If using a spare inner cannula store in a clean, dry identified container	Ensure end of pipe cleaner is folded over to prevent any exposed metal scratching or damaging the inner tube
7	Document procedure and findings on Tracheostomy Management and Observation chart	To facilitate communication and evaluation

7. CHECKING CUFF PRESSURE

Practice Limitations:
Registered Nurses who are deemed competent by a designated assessor
Enrolled Nurses who have achieved 'Extended Practice Skill' in Tracheostomy checking Cuff Pressure and been deemed competent by a designated assessor.

7.1 Education Note

Tracheostomy tubes may be cuffed or un-cuffed. The cuff seals the space around the tracheostomy tube and prevents aspiration of oral or gastric secretions. A cuff pressure

maintained at 25-30 cm H2O prevents tracheal wall necrosis. A leaking cuff may indicate that the cuff is over inflated and/or the tube is dislodged.

7.2 Policy Alert:

- Where a cuffed tracheostomy tube is in situ the cuff pressure must be checked at least once a shift using a manometer and maintained at 25-30cm H20
- Cuff deflation is not recommended (unless part of the formal weaning process) as it increases the risk of aspiration
- If cuff pressure cannot be maintained e.g. spontaneously reducing or a leak is suspected (indicated by audible gurgling) escalate to senior medical/nursing staff for assistance. The patient with a leaking cuff is at increased risk of aspiration and the tracheostomy tube may need to be changed.

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for Cuff pressure:

Cuff Pressure Recommendations (ACI)	Grade of Recommendation
When using a cuffed tracheostomy tube, the intra-cuff pressure should be high enough to achieve a closed respiratory system and be between 25 – 30cm H_2O to: • Maintain a closed respiratory system to facilitate mechanical ventilation; and • Prevent tracheal mucosal necrosis and minimise micro-aspiration.	Evidence - C Recommendation C
Intra-cuff pressure should be measured directly using a cuff manometer, optimised and documented: • At least once every eight hours and when clinically indicated • Immediately post intubation • Immediately on receiving patient from another clinical area • After significant patient movement • Where there are any concerns about air leak from the respiratory system such as when the patient vocalizes or a ventilator alarms.	Evidence - B Recommendation B
Where there is a persistent cuff leak, the nurse must notify the TRT or ENT team to review.	Consensus
Preferably patients should have their own cuff manometer. However, where a cuff manometer is used among multiple patients, it MUST be cleaned between patients using the usual disinfection practices and according to manufacturer's instructions.	Consensus
Infectious patients MUST have their own cuff manometer.	Consensus

Cuff Pressure Recommendations (ACI)	Grade of Recommendation
Cuff deflation is to be managed by experienced clinicians and may include members of the ENT team or TRT (e.g. speech pathologist, specialist nurses, physiotherapists or medical professional).	Consensus
Where patients are transported by air, tracheostomy cuffs will require specific care to prevent over-distension and high intra-cuff pressures.	Consensus

	Procedure: Checking Cuff Pressure	Key Points
1	Inform the patient of procedure	
2	Securely connect pressure gauge to pilot balloon of the manometer	If not secure - pressure will be inaccurate
3	Determine if pressure is above or below the optimum range	Optimum is any level in the green range of the manometer
4	Above range - press the release button on the side of the pressure gauge until it returns to green	An over-inflated cuff may cause tracheal necrosis, fistulas, dilation or stenosis. 25-30cm H_2O is the acceptable pressure range
5	Below range - inflate balloon one depression at a time until the needle enters the optimal range 25-30cm H2O	Deflated or partially inflated cuff increases risk of aspiration and may compromise respiratory status
6	Disconnect the gauge when in the optimal range. If cuff will not inflate or continues to lose pressure inform ENT/ICU Registrar, CNC Respiratory/ENT or CNC Surgery	The one way valve will ensure that air will remain in cuff
7	If the cuff pressure is reading lower than the acceptable range, inflate the cuff and reassess within the hour to detect/confirm a cuff leak	

8. SUCTIONING A TRACHEOSTOMY TUBE

Practice Limitations:
Registered Nurses who are deemed competent by a designated assessor
Enrolled Nurses who have achieved 'Extended Practice Skill' in Tracheostomy Suctioning and been deemed competent by a designated assessor.

Indications:	Persistent coughing	Respiratory distress	Audible gurgling or visible secretions
	Decreasing oxygen saturation	Increased peak inspiratory pressures for mechanically ventilated patients	Increased or decreased respiratory rate
Contraindications:	Platelets < 20	Acute pulmonary oedema	Acute respiratory haemorrhage
Potential Complications:	Tracheal trauma	Suctioning induced hypoxemia	Hypertension
	Cardiac arrhythmias	Raised intracranial pressure	Infection
	Laryngospasm	Haemorrhage	

8.1 Policy Alert:

- Suction frequency should be based on patient assessment and clinical indicators such as work of breathing, oxygen saturations and chest auscultation. Patients should be regularly assessed for work of breathing, oxygen saturations and chest auscultation
- Light suction to the end of the tracheostomy tube is preferable if the patient is awake and has an effective cough
- Deep suction (catheter fully advanced to the carina and then withdrawn 1cm before applying suction), must be used with caution as it may cause trauma to the trachea and increase intracranial pressure
- Suction should only be applied during catheter withdrawal and should be applied continuously as opposed to intermittently
- Suctioning should take no longer than 10 seconds. Longer periods of suction are associated with increased risk of hypoxemia and trauma
- Gloves should be used when using a closed suction system
- Suction using an open system must use aseptic non-touch technique.

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for suctioning a tracheostomy tube:

Recommendations	Grade of Recommendation
Due to the potential for adverse effects and significant patient discomfort, suctioning a tracheostomy tube should be performed on the basis of clinical need and not be carried out on a routine basis.	Evidence - B Recommendation B

Recommendations	Grade of Recommendation
For ventilated patients, assessment of the patient to identify the need to suction a tracheostomy tube should be continuous with chest auscultation performed every two hours or more frequently as indicated by clinical signs (see Table 8 - Suctioning a Tracheostomy Tube).	Consensus
For non-ventilated patients, assessment of the patient to identify the need to suction should be based on observation and clinical assessment.	Consensus
The size of the suction catheter should occlude no more than 50% of the internal diameter of the artificial airway to avoid greater negative pressure in the airway.	Evidence - C Recommendation C
Closed suction catheter systems should be used as the system of choice for patients with high FiO_2 or PEEP or at risk of lung de-recruitment	Evidence - B Recommendation C
During a suction procedure, the patient must be assessed for clinical stability and tolerance.	Consensus
The effectiveness of the suction procedure should be evaluated using clinical indicators.	Consensus
Suction pressure should be set at 100-150mmHg for adults.	Evidence - C Recommendation C
To prevent the occurrence of adverse events, bolus instillation of normal saline **should not be** used routinely during suctioning.	Evidence - B Recommendation B
Where a fenestrated tracheostomy tube is in situ, a non-fenestrated inner cannula must be inserted prior to suction.	Consensus
The upper airway should be suctioned periodically to remove oral secretions and to minimise stasis of pooled secretions about the tracheostomy cuff with subsequent potential for aspiration to lower airways.	Evidence - C Recommendation C

8.2 Equipment required for suctioning

- High pressure wall suction
- Oxygen as required
- Clean examination gloves and disposable apron/gown
- Eye/Facial protection/shield
- Water to wash through tubing after suctioning
- Yankuer sucker
- Suction catheter of appropriate size not exceeding 50% of the internal diameter of the tracheostomy tube.

Tracheostomy Tube Size	Suction Catheter Size (fg)
Mini- tracheostomy	8-10
Shiley 6	10 or 12

Tracheostomy Tube Size	Suction Catheter Size (fg)
Shiley 8 Shiley 10	12 14
Portex 7 Portex 8 Portex 9	10 12 10 or 12

	Procedure: Suction Technique	Key Points
1	Assess patient clinically to determine necessity for suction	(see Indications above)
2	Perform hand hygiene Wear eye protection and apron/gown throughout the procedure	To reduce the risk of cross infection
3	Time suctioning to occur before patient has eaten/drunk	Decrease the risk of aspiration
4	Explain procedure to the patient	To obtain consent, cooperation and confidence
5	Provide reassurance to the patient	Suctioning can produce increased levels of anxiety due to alternation of inspiration during procedure
6	Position patient in semi-fowler's if clinically appropriate	Facilitate clearance
7	Hyper-oxygenate the patient for one minute before suctioning Or ask the patient to take five deep breaths **NB:** COPD patients should be assessed for the need to hyper-oxygenate as they may only require a 20% increase of current oxygen concentration	To maintain arterial oxygenation and reduce risk of hypoxia and arrhythmias. Patients with COPD have an altered CO2 response mechanism and should not routinely be given 100% O2
8	Insert a non-fenestrated inner cannula if the patient has a fenestrated tracheostomy tube	This prevents the suction catheter from damaging the mucosa by passing through the fenestrations
9	Select appropriate sized catheter. Do not use a catheter more than half of the internal diameter of the tracheostomy tube.	If sputum is tenacious it is recommended to increase the size of the suction catheter to no more than ½ the internal diameter of the tracheostomy tube.
10	Turn on the suction at the source and attach a sterile catheter. Check there is a good seal.	Ensure equipment is working correctly.
11	Put a clean disposable glove onto the dominant hand. At this point avoid touching anything other than the suction catheter.	This reduces the risk of cross infection and ensures the technique is as clean as possible

	Procedure: Suction Technique	Key Points
12	Introduce the catheter with the suction port uncovered. Suction pressure should be set at 100-150mmHg. **Light Suction:** Insert catheter to just past the inner most tip of the tracheostomy tube (15cm), encourage patient to cough and apply suction. **Deep Suction:** Insert catheter until resistance is felt (at the carina) or until the patient coughs. Remove 1cm and apply suction. The catheter tip should go no further than the patient's carina where the cough reflex is stimulated This is approximately at 0.5-1.0 cm beyond the tip of the tracheostomy tube.	The catheter is inserted with the suction off to reduce the risk of trauma. Damage and infection of the respiratory mucosa can occur if the practitioner is not gentle. Light suction is preferable if the patient is awake with an effective cough and assessment is done to ensure all sputum and secretions have been removed. Higher negative pressure can cause mucosal trauma, hypoxemia and atelectasis. **Deep suction must be used with caution as it may cause tracheal trauma and increase intracranial pressure**
13	Gently withdraw catheter without rotating the catheter and with continuous suction until completely removed from the tracheostomy tube. The entire process should not exceed 10 seconds.	Continuous suctioning is the most effective technique of removing secretions. Withdrawal of the catheter **without rotation** reduces the risk of trauma. Prolonged suction will result in hypoxia.
14	The same suction catheter may be used up to three times in the one suction episode prior to disregarding of catheter (providing it is not blocked with secretions or become unsterile)	
15	Immediately reapply the patient's oxygen or ask the patient to take five deep breaths Ask the patient to huff in order to assess whether further suctioning is required	To reduce the risk of further hypoxia and restore their arterial PaO2 immediately. When the patient huffs listen for harsh or gurgled breath sounds which indicates need for further suctioning.
16	Repeat the process until the patient is breathing comfortably and the secretions have been successfully removed	To reduce the risk of infection and trauma and to ensure that secretions are removed and the

	Procedure: Suction Technique	Key Points
	NB: maximum of three passes unless emergency i.e. tube blocking. If repeating allow patient at least five breaths between catheter passes. Dispose of catheter by wrapping catheter around hand and turning glove inside out over dirty catheter. Clear suction tubing with tap or bottled water. Perform hand hygiene.	patients breathing becomes more comfortable i.e. maximise removal with minimal attempts. Cleaning the tubing to minimise risk of infection and prevent the circuit from blocking.
17	Reattach heat moisture exchanger. Return oxygen flow to pre oxygenated level.	If the patient is comfortable and there are no signs of respiratory distress, return oxygen to flow level prior to procedure to prevent oxygen toxicity.
18	Record secretion volume, consistency and colour on tracheostomy chart. If secretions are thick and tenacious increase humidification and consider more frequent use of nebulised saline.	

9. ORAL HYGIENE

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for oral hygiene during a tracheostomy:

Oral Hygiene Recommendations (ACI)	Grade of Recommendation
A comprehensive oral hygiene program will: • Reduce the incidence of nosocomial pneumonia (GRADE: B) • Improve oral health • Improve patient comfort and appetite.	Pneumonia – Grade B Consensus
A comprehensive oral hygiene program includes: • Daily assessment of the oral cavity using an oral assessment tool to evaluate oral health and plan appropriate oral care • Cleaning and moistening of all structures within the oral cavity • Evaluation of the patient's ability to complete their own oral care • Escalation of care for patients with poor oral health including dentistry assessment if required.	Consensus

Oral Hygiene Recommendations (ACI)	Grade of Recommendation
The oral cavity should be cleaned at least twice daily to reduce colonisation with nosocomial organisms; and promote oral health and immunity. This cleaning should include: • Checking the cuff pressure (if applicable) ensuring the pressure is 25-30cmH_2O to prevent micro aspiration • Brushing of the teeth, gums, tongue and hard palate with a soft-toothbrush to remove and prevent plaque development (GRADE: B). Toothpaste is not necessary, however, if one is to be used a small amount of low-foaming or anti-bacterial toothpaste is appropriate. Excess use of toothpaste will dry the mouth • Rinsing or irrigation with small amount of clean water to remove toothpaste and debris (GRADE: Consensus).	Consensus
To maintain a moist oral cavity the mouth should be rinsed or moistened at regular intervals. Clean or sterile water can be applied using swabs or a dental syringe. However, for patients with poor oral health, regular sodium bicarbonate or chlorhexidine based mouth rinse may be necessary. Excess fluid should be aspirated using a sucker.	Consensus

10. SECURING A TRACHEOSTOMY – TAPE CHANGE AND DRESSING

Practice Limitations:
Registered Nurses who are deemed competent by a designated assessor
Enrolled Nurses who have achieved 'Extended Practice Skill' in Tracheostomy Tape Change and Dressing and been deemed competent by a designated assessor.

10.1 Policy Alert:

- Securing and positioning of the tracheostomy tube must prevent dislodgement and maintain alignment, particularly during patient repositioning and suctioning
- Educate the patient to not manipulate the tape and/or tracheostomy tube to reduce the risk of tracheostomy dislodgment or misalignment
- Cloth tape is the preferred method to secure tubes (rather than Velcro) for the newly formed (<72 hours) tracheostomy
- Any patient at risk of upper airway obstruction, caused by accidental decannulation, must have the tracheostomy tube secured with cloth tape (not Velcro) and tied securely
- Following neck surgery, pressure on any part of the neck must be avoided. In these cases, the tracheostomy tube should be sutured to the skin
- Cloth tape should be changed daily or whenever soiled/moist and always fastened using a double knot
- Tension of tapes should be tested by putting small finger between the tape and the patient's neck (with the patient's neck in a neutral position)
- Tracheostomy tube must not move more than 1cm in any direction from the midline
- If the tube is an adjustable flanged tube:

  - Flange position marked and document it in the notes each time the tube is accessed
- Two people are required when changing tapes - one to hold the tube, the other to perform the procedure. One should be a registered nurse
- **Dressing Frequency**: First 24 hours post insertion - Avoid changing the tracheostomy dressing (to reduce the risk of bleeding)
  - Next 24-48 hours - every shift or PRN
  - Post 48 hours – Dressing may not be required. Stoma site needs to be cleaned every eight hours or more frequently if evidence of discharge or secretions
- Cotton balls or material that has not been pre-cut by manufacturers must **NEVER** be used to clean around the stoma due to the potential for inhalation of loose fibres.

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for positioning and maintaining the tube for a tracheostomy:

Tube Position Maintenance Recommendations (ACI)	Grade of Recommendation
To minimise damage to the tracheal wall by the distal end of the tracheostomy tube, the tube has to be maintained in a central position, avoiding angling and contact between tracheal mucosa and tube. Traction as well as unnecessary movement of the tube should be avoided.	Consensus
Two clinicians must always be present to change the method of securing the tracheostomy tube. One clinician changes the tapes while the other holds the tracheostomy in position.	Consensus
Of the two clinicians changing the tracheostomy tube securement, at least one clinician must be experienced in tracheostomy care.	Consensus
Due to the risks of TT dislodgment, the tracheostomy tube tapes MUST not be changed for 24hrs after insertion or as specified by the team.	Consensus
The method of stabilisation should be consistent within units to promote staff proficiency in safe and effective tracheostomy care.	Consensus
The most appropriate method of stabilisation should be used based on the: • Patients diagnosis • Patient's level of consciousness, orientation, understanding, memory and cooperation • Age of tracheostomy stoma or maturity of percutaneous tracheal tract • Skin condition • Level of difficulty in achieving an airway if the tracheostomy tube was to become dislodged.	Consensus

Tube Position Maintenance Recommendations (ACI)	Grade of Recommendation
Careful consideration should be given to the method chosen for securing the tracheostomy tube. A combination of techniques may be required by some patients • Sutures may be appropriate where there is ✓ Oedema formation secondary to interruption of venous and lymph drainage ✓ Increased intra-cranial hypertension as venous flow from the head may be impaired by ties around the patient's neck ✓ Complete loss of the airway if the tracheostomy was to be displaced ✓ Patients who have undergone micro vascular reconstruction (flap) to the head/neck area • Cotton tapes secured with a double knot are appropriate for newly formed tracheostomy stomas (< one week old) as these are less likely to become loose • Manufactured tapes using Velcro should only be used for TT > 7 days old and patients unlikely to self-extubate • Shoulder epaulettes (created using elastoplasts and white tape) may be of use where there are concerns regarding the skin or blood flow of the neck.	Consensus
Tracheostomy tapes should be changed at least once daily (except within the first 24hrs) and under the following circumstances: • Soiled or wet • Excess movement (> 1cm in any direction) of the tracheostomy tube • Restriction of blood flow • Where tapes are too tight (unable to insert one digit between tapes and skin).	Consensus
Where sutures are used, these should be reviewed daily. Sutures used to close surgical incisions should be removed by Day 7-10.	Consensus
Assessment of the neck should be completed and documented at least daily with abnormalities reported to the treating team. Assessment includes: • Visual inspection of all skin • Evaluation of tracheostomy stoma healing.	Consensus
Where closed suction devices are being used, the suction tubing should be removed (non-ventilated patients only) or supported so that there is no lateral drag on the tracheostomy tube.	Consensus

Tube Position Maintenance Recommendations (ACI)	Grade of Recommendation
If the patient is on a ventilator, the tubing should be supported by a ventilator arm that maintains the tracheostomy tube in a central position with no lateral drag.	Consensus
Where an adjustable flange tracheostomy tube is used, the position of the flange relative to the tube must be • Marked permanently • Inspected at least each shift and • Documented to identify tube migration.	Consensus
Prevention of dislodgement or displacement when the patient is moved including: • Position changes in a bed, theatre table or chair • From bed to chair and the reverse • Standing from a chair • Walking.	
Under the circumstances listed above, an experienced clinician must complete a risk assessment and decide if a designated tube holder is required. However, a designated clinician must hold the TT when: • When the patient is on mechanical ventilation • Newly inserted TT (< 7days) • Where reinsertion of the tube OR oral intubation is difficult if the tube were to become dislodged.	Consensus

10.2 Equipment

- Normal saline Sachet (sodium bicarbonate if skin is ulcerated, red or swollen)
- Dressing Pack
- Gauze squares
- Clean gloves
- Face shield, mask and eye protection
- Plastic apron
- Cloth tape (13mm wide, 2 x 1 metre lengths)
- Tracheostomy dressing (Lyofoam or gauze keyhole)
- Split gauze dressing (required for initial 48 hours or until no ooze from stoma).

	Procedure: Tracheostomy Tape Change and Dressing	Key Points
1	Remove soiled dressing and tapes It is essential that two people are present when tapes are changed to avoid dislodgment of tube	Wet tapes predispose to growth of bacteria such as pseudomonas
2	Inspect stoma site for signs of infection, swelling, bleeding, maceration or excoriation. If any of these signs are present or if the patient is at increased	

	Procedure: Tracheostomy Tape Change and Dressing	Key Points
	risk of infection sterile dressing technique must be used.	
3	Initial 24-48 hours: • Clean with normal saline if skin is ulcerated, red or swollen • Apply a single split dressing under the flange After 48 hours: • Clean site eight hourly or PRN with warm tap water and a clean soft cloth	Dressing only required for the initial 48 hours or until no ooze. Review skin integrity around stoma.
4	Assistant holds tracheostomy flange during procedure.	
5	Fasten tapes to each flange leaving one end longer on each side.	
6	Take long end of tape on one side of neck to short end of tape on other side. Fasten using a double knot. Repeat. Test tension of tapes by putting two fingers between the tape and the patient's neck (with the patient's neck in a neutral position). Do not tie over the carotid artery.	Unequal traction will cause pressure on one side and may cause tissue damage Pressure over the carotid artery may compromise cerebral perfusion.

11. COMMUNICATION

The presence of a tracheostomy may limit verbal communication. If verbal communication is not possible, patients should have speech pathologist review. A variety of verbal and non-verbal systems are available. Success of the communication system is dependent on the patients' clinical condition (e.g. respiratory function, level of alertness, cognitive status), ENT anatomy, physical dexterity, co-morbidities and environmental factors (e.g. staffing limitations and skills) and patient preferences, language and cultural background.

Education Note
Verbal communication is mechanically impossible for patients with an inflated tracheostomy cuff unless a specialised tracheostomy tube is used. An inflated cuff blocks air from the lungs, passing the vocal cords and producing voice.

11.1 Non-verbal Communication can be enhanced by the following aids:

- Pen and paper or whiteboard and marker
- Generic communication board

- Strategies to maximise communication e.g. Encourage the patient to exaggerate lip movement and use short complete sentences to facilitate lip reading

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for improving communication with patients during a tracheostomy:

Recommendations	Grade of Recommendation
Pre-operative communication assessment is recommended for all patients when speech is likely to be temporarily lost/impaired to improve psychological and communication success post-surgery. Assessment should include the choice of appropriate augmentative communication system(s).	Consensus
All conscious patients without speech should have access to alternative communication systems (e.g. pen/paper, whiteboard, communication board) at all times to supplement mouthing and gesture.	Consensus
Where simple alternative communication methods are not effective, the patient is experiencing significant distress with their communication or no speech is expected for an extended period, patients should be referred for a communication assessment by a Speech Pathologist or similar person with skills in AAC devices.	Consensus
Where an effective communication system has been established, consistent use should be encouraged.	Consensus
A variety of communication methods should be available during communication assessment to ensure individual patient needs are met including voice output devices, picture boards, and electrolarynges.	Consensus
Consultation by specialised communication services should be considered when an effective communication system has not been able to be established, for patients, and in particular, for long-term patients without speech.	Consensus
The effectiveness of communication methods needs to be evaluated on an ongoing basis, in accordance with patient's preferences and clinical status.	Consensus
Communication assessment should be considered by all members of multidisciplinary team with engagement of the patient and caregivers.	Consensus
Communication assessment should occur as soon as clinically indicated.	Consensus
Speech should be used where possible. However, when it is not possible, alternative communication strategies should be trialled.	Consensus

11.2 Voice production may be achieved by the following:

- **Cuff Deflation** – Deflation of the cuff facilitates voice, by allowing air to pass into the upper airway on expiration. Phonation may be achieved as air is directed up into the larynx. The strength of the voice is usually weak as some air passes out of the open tracheostomy and by the resistance created by the tracheostomy tube and the deflated cuff.
- **Fenestrated Tracheostomy Tube** – A fenestrated tracheostomy tube may allow additional air to pass into the upper airway on expiration and improve voice production. It is recommended that a fenestrated inner cannula is used with a fenestrated outer cannula.
- **Intermittent Finger Occlusion** – Intermittent occlusion of the tracheostomy tube with a gloved finger.
- **Downsizing of Tracheostomy Tube** – Use of a smaller tracheostomy tube, which increases passage of air between the tube and the tracheal walls on exhalation, may facilitate improved voice production. Decisions regarding tube downsizing should be a multidisciplinary decision.
- **Specialised Tracheostomy Tube/Use of subglottic suction aid** - In patients who are unable to tolerate cuff deflation there are a variety of specialised tracheostomy tubes available to achieve speech. Speaking tracheostomy tubes work by directing the flow of air, above the level of the tracheostomy cuff, to allow phonation without cuff deflation. These include use of 'talking tracheostomy tubes' (e.g. Portex Blue Line Trach-talk™), use of a subglottic suction tube aid to facilitate speech, or the use of specialised 'speaking inner cannulae' tubes). These tracheostomies should be used for short periods initially and the tolerance and comfort of each patient monitored closely.

11.3 Policy Alert

The Speech Pathologist, in consultation with the Multidisciplinary team, will provide information and advice regarding the most appropriate communication system for the patient

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for managing cuff deflation:

Recommendations	Grade of Recommendation
Cuff deflation in a non-ventilated patient should be assessed/conducted with an understanding of the potential risks of aspiration. Further management and planning for cuff deflation for speech should be managed within a team approach considering appropriate parameters/contingency plans that allow for changes to the patient's clinical condition.	Consensus

Recommendations	Grade of Recommendation
If intermittent finger occlusion is recommended, education on the importance on hand hygiene is needed to patient, carer or staff. An HME speaking valve may be considered as a way to reduce infection risk.	Consensus
Using a fenestrated tracheostomy (or inner-cannula), downsizing a tracheostomy tube, or inserting a cuffless tracheostomy tube may be considered as methods to facilitate/improve speech with less respiratory effort.	Consensus

Recommendations	Grade of Recommendation
Specialised tracheostomy tubes with speaking inner cannula, may be considered in patients who are ventilator dependent and unable to tolerate cuff deflation to achieve speech with agreement of patient's primary clinical team.	Recommendation D
Subglottic suction aid tracheostomy with air redirection may be considered in patients who are ventilator dependent and unable to tolerate cuff deflation to achieve verbal speech.	Recommendation D

11.4 One Way Speaking Valve

Education Note
One Way Speaking Valve: this device contains a diaphragm which remains during the inhalation phase and closes on forced exhalation (e.g. 'neck breathing' on inhalation and upper airway when exhaling, coughing and speaking.

11.4.1 Contraindications include:

- Inability to tolerate cuff deflation
- Severe tracheal/laryngeal stenosis
- Airway obstruction
- End stage pulmonary disease
- Unstable pulmonary status
- Anarthria
- Laryngectomy
- Cognitive dysfunction.

11.4.2 Policy Alert

- Patients requiring a speaking valve should be referred to Speech Pathology
- Speech Pathology will liaise with the medical/nursing team and ENT
- Speaking valves should be used with a fenestrated outer and inner cannula
- Baseline respiratory rate and oxygen saturation must be monitored and documented prior to the procedure
- The speaking valve must be removed at night or when the patient is asleep

- A trial period using the one way speaking valve must be conducted.

11.4.3 Remove the speaking valve if any of the following occur:

- Respiratory difficulty (e.g. respiratory rate increase)
- Decrease in SpO2
- The patient becomes fatigued/wants to sleep
- Patient request
- Inadequate clearance of secretions
- Deterioration in chest/medical status.

Action	Key Points
Monitor SpO2 and respiratory rate prior and during trial.	To obtain the patient's baseline status.
Explain the procedure and gain consent. Check for patient comprehension.	To gain cooperation and reduce patient anxiety which can influence the success of the voice production.
Encourage patient to cough and clear secretions. Suction as required – both above and below cuff.	To reduce risk of aspiration of saliva and remove secretions.
Deflate tracheostomy tube cuff (See procedure on Weaning and Decannulation BEFORE deflating cuff).	To ensure the patient can breathe (i.e. exhale) when speaking valve placed.
Encourage the patient to cough. Suction only as required – below cuff as indicated.	To remove secretions and aspirated saliva.
Once suctioning is not indicated, remove non-fenestrated inner cannula and replace with fenestrated inner cannula.	Insert fenestrated inner cannula to promote improved air flow for voice.
Place speaking valve firmly on the hub at the end of the tracheostomy tube.	
Once the speaking valve is in situ, instruct the patient to breathe in (via the tracheostomy tube) and blow out through the mouth.	Reassure the patient that this may feel different, as they may not be used to breathing through their upper airway.
Begin trial attempts at phonation by asking the patient to count from one to five.	Automatic speech such as counting is often easier for the patient than spontaneous speech.
If the patient's voice sounds 'wet' or 'gurgly' ask them to cough and clear secretions.	This will be usually coughed out of the mouth when speaking valve on.
During the trial period Monitor and document vital signs. Observe for complications.	

Action	Key Points
Liaise with the other team members regarding the length of time the speaking valve remains in situ, and the tracheostomy decannulation weaning plan.	
Remove the speaking valve at the end of the trial period.	

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for one-way valves:

Recommendations	Grade of Recommendation
A one-way valve should be considered in an acute and chronic non-ventilated population to promote phonation. Manufacturers' guidelines need to be adhered to. There are risks of barotraumas, respiratory arrest and death if the valve is placed on an inflated cuff. Additional external humidification may be considered in patients with a one way speaking valve in situ.	Recommendation D

12. MANAGEMENT OF SWALLOWING AND ORAL INTAKE

Education Note:
The clinical condition of a patient with a tracheostomy or in some cases the tracheostomy tube itself can affect swallowing function and result in dysphagia.

- Dysphagia may be present post removal of the tracheostomy tube, as the patient's clinical condition or co-morbidities may also result in dysphagia.
- When the cough reflex is impaired or absent, aspiration of saliva, food, drink or gastric secretions can occur without overt signs of aspiration. The risk of aspiration is increased by prolonged tracheal intubation which can desensitise the airway.
- Clinical consequences of aspiration include transient hypoxemia, chemical pneumonitis, pulmonary infection or obstruction.

12.1 Policy Alert

- All patients who are at risk of dysphagia or aspiration, (e.g. Stroke, Head and Neck cancer Trauma or COPD), must be referred to Speech Pathology prior to commencing oral intake or cuff deflation.
- For all other patients with a tracheostomy, a referral to Speech Pathology is highly recommended prior to commencing oral intake or cuff deflation. Speech Pathology will document drinking and feeding instructions in the progress notes, compliance

with instructions is mandatory (i.e. use of one way speaking valve or capping of tracheostomy during feeding or drinking).

12.2 Risk Factors for Dysphagia and Aspiration include:

- Decreased level of consciousness
- Neurological impairment, including cognitive impairment
- Dependence for feeding
- Dependence for oral hygiene
- Poor oral hygiene
- Prior history of aspiration pneumonia
- History of Head and Neck Cancer
- Respiratory compromise.

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for managing swallowing and oral intake:

Recommendations	Grade of Recommendation
Consideration should be given to the patient's underlying clinical status as this will be a major factor that will impact on swallowing function.	Consensus
The presence of a tracheostomy tube should therefore not preclude an assessment of swallowing.	Evidence - C Recommendation B
Patients should undergo a swallowing assessment by a speech pathologist if any swallowing dysfunction is observed or if requested by the treating team.	Consensus

12.3 Swallowing Assessment

Where dysphagia is suspected or identified a speech pathologist should assess the patient's swallowing function. Swallowing assessments may use a combination of clinical and instrumental assessment techniques. Generally, it is recommended that the patient undergo a swallowing assessment with the cuff deflated however, there are situations where it may be recommended that the patient undergo a swallowing assessment with the cuff inflated.

Blue food dye assessments, for example the Modified Evan's Blue Dye Test (MEBDT), are no longer recommended as they have been shown to be an unreliable assessment.

In the first instance a bedside (clinical) assessment will be undertaken and if deemed necessary an instrumental assessment of swallowing using videofluoroscopy termed a Modified Barium Swallow (MBS) or Videofluoroscopic Swallow Study (VFSS) may be recommended. A fibre optic endoscopic evaluation of swallow (FEES) is an alternative objective assessment that may be recommended particularly following ENT surgery, in the ICU setting or where a VFSS is unable to be performed. A FEES appears to be a

far more sensitive assessment than a clinical examination alone and provides an objective opportunity to observe how well the patient is able to tolerate saliva.

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for assessing swallowing:

Recommendations	Grade of Recommendation
Swallowing assessment by a speech pathologist is required in adult patients to determine whether changes to tracheostomy tubes (cuff up/down, tube occlusion, use of speaking valve) change patient's swallowing status. Cuff deflation should be assessed/conducted with an understanding of the potential risks of aspiration. Further management and planning for cuff deflation should be managed within a team approach considering appropriate parameters/contingency plans that allow for changes to the patient's clinical condition.	Consensus
An objective assessment using VFSS or FEES may be required if a clinical assessment is not sufficient to determine whether cuff up/down, tube occlusion, use of speaking valve, can improve swallow function in adult patients.	Recommendation C

13. CHANGING A TRACHEOSTOMY TUBE (Routine)

Practice Limitations:
Registered Nurses, Medical Staff and Allied Health Staff who are deemed competent by a designated assessor.

Education Note:
Factors which may complicate tube change include: immature tracheostomy tract (7-10 days), obesity, a short neck, anatomical abnormalities, granulation tissue, viscous secretions and peri-tracheal oedema.

13.1 Policy Alert:

A tracheostomy tube should **not** be changed within 72 hours of insertion. Please refer to NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline.

- Elective early tracheostomy tube changed (within 72 hours of the formation of the tracheal stoma) may be hazardous and should be avoided, particularly in patients with a history of difficult intubation.

- The decision to change a tracheostomy tube must be made by the multidisciplinary tracheostomy team (MDT) in conjunction with the primary care team (or critical care team in sites without an MDT).
- For **first** tracheostomy tube change, a medical officer with advance airway skills must be present for the procedure.
- Tracheostomy tube changes are only to be performed by a medical officer with advance airway skills (i.e. an Anaesthetist or ICU Registrar); a Clinical Nurse Consultant, Clinical nurse specialist 2(i.e. ENT, Respiratory, Neurosciences or ICU Liaison Nurse); a senior Physiotherapist or Nurse with advanced accreditation in this skill.
- The patient should be nil by mouth for at least four to six hours prior to a planned tube change.
- Notify primary care team prior to commencing tube change. **The Intensive care Services [ICS] and/or ENT team** should be made aware that a tracheostomy tube change is being performed.
- This procedure requires a minimum of two skilled practitioners.
- Document the procedure in the progress notes and on the Tracheostomy Management and Observation Chart including tube size, type of tracheostomy and next tracheostomy change due. Also document and notify medical officer of any problems during the change (i.e. bleeding, trauma or difficult insertion).
- Many manufacturers recommend that a tube with an inner cannula should not remain insitu for more than 30 days. The frequency of a tracheostomy tube change should take into consideration the manufactures recommendation and be guided by the medical team or TRT responsible for the change of the tracheostomy tube.
- A tracheostomy tube **should not** be changed within 72 hours of insertion. Please refer to NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline.

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for changing a tracheostomy tube:

Recommendations	Grade of Recommendation
Ideally the TT should not be changed for the first week.	Consensus
Elective early tracheostomy tube changed within 72 hours of the formation of the tracheal stoma may be hazardous and should be avoided, particularly in patients with a history of difficult intubations.	Consensus
The decision to change a tracheostomy must be made by the multidisciplinary team experienced in tracheostomy care in conjunction with the primary care team.	Consensus
Where the TT change is required within the first seven days, or when there is a risk of difficult re-cannulation, a senior medical officer with advanced airway skills MUST be present.	Consensus

Recommendations	Grade of Recommendation
Tracheostomy tube changes are only to be performed by or under the direct supervision of a medical officer, clinical nurse consultant, physiotherapist or nurse with advanced accreditation in this skill.	Consensus
A TT change should be at least a two person procedure, one of whom has proven experience in tracheostomy tube changes.	Consensus
Where the TT change is a planned procedure, the patient should be assessed to identify the risk of aspiration of gastric contents. This may require fasting for four to six hours prior to change of TT, or aspiration of the NG tube.	Consensus
The procedure is undertaken in a safe environment with: • Two clinicians present; with at least one of these being assessed as competent at the procedure • Monitoring of the patient including pulse, respiratory rate and work of breathing, continuous SpO_2 monitoring • Emergency equipment available at the bedside.	Consensus
The procedure must be documented in the patient notes, tracheostomy management and observation chart and should include: • Size and type of tracheostomy tube • Any complications/problems arising during procedure (abnormal bleeding, trauma or difficult insertion) • The condition of the tracheostomy stoma and the surrounding skin (i.e. over-granulation, wound breakdown) • When the next tube change is required.	Consensus
Any complications must be reported to the medical officer and clearly documented in the patient notes.	Consensus
Patients should be monitored post tube change as clinically indicated	Consensus

13.2 Equipment Required

- Dressing pack
- Suction catheter (with Y connection removed)
- Correct size tracheostomy tube and one size smaller,
- Tracheostomy tube holder/tracheostomy tape
- Manometer if tube is cuffed
- Sterile water-soluble lubricant
- Sterile normal saline
- Pre-cut slim line key hole dressing (i.e. drain sponge)
- Sterile or clean gloves, apron and protective eye wear/face visor
- Tracheal dilators and suction
- Functioning suction unit and appropriate sized suction catheters

- Stethoscope
- Resuscitation equipment.

	Procedure: Changing a Tracheostomy Tube	Key Points
1	Aspirate naso-gastric tube if present Nil by mouth for **four to six hours prior** to tube change.	To reduce the risk of aspiration while airway is unprotected.
2	Two skilled clinicians should perform the procedure. Both must wear eye protection, gloves and apron/gown.	To ensure a swift and safe procedure.
3	Explain the procedure and rationale to the patient **The ICS and/or ENT team** should be made aware that a tracheostomy tube change is being performed.	The patient should give their verbal consent to the procedure, unless unable or an emergency procedure. Ensuring the availability of a medical officer with advanced airway skills is safe practice should problems arise.
4	Perform the 5 moments of hand hygiene and prepare dressing trolley.	To reduce the risk of cross infection.
5	Position patient in semi-recumbent position, extending the neck, remove any obstructive clothing.	Extending the neck will make the removal and insertion of the tube easier. To ensure adequate view of patient's neck.
6	If the patient is dependent on oxygen, hyper-oxygenate the patient with 100% oxygen and monitor oxygen saturations. Assess COPD patients for need to hyper-oxygenation as they may only require a 20% increase of their oxygen concentration.	During tube change the patient will be at risk of hypoxia. Patients with COPD have an altered CO2 response mechanism and should not routinely be given 100% O2.
7	If the new tracheostomy tube is cuffed, check the cuff by inflating it with air, and observe cuff for leakage. Deflate cuff fully. Ensure a smaller tracheostomy tube is available.	To check for air leaks and spontaneous deflation. In case the same size tube cannot be inserted easily.
8	Check obturator can be removed.	To become familiar with removing obturator prior to insertion.
9	Lubricate the tube sparingly with a water soluble lubricant. Place on sterile surface.	To facilitate insertion, and maintain sterility.

	Procedure: Changing a Tracheostomy Tube	Key Points
10	Remove old dressing and tapes, observe site and clean around stoma site.	To clean skin of debris and potential skin contaminants. To enable removal of the tracheotomy tube.
11	Suction patient if required. Suction Oro-pharyngeal secretions. Using the synchronized cuff deflation and suction technique deflate the cuff with a10ml syringe.	Pooled secretions above the cuff may enter the lungs when the cuff is deflated. A fully deflated cuff reduces the risk of trauma on removal of the old tube.
12	Remove old tube in a firm upwards and downwards motion on expiration. Observe the stoma site.	To cause minimal trauma and reduce the risk of coughing. To identify signs of stoma infection and granulation tissue.
13	With clean gloves insert the new tracheostomy tube with the obturator in place as the patient exhales.	The obturator guides the tracheostomy tube along the contour of the trachea. Relaxation of the neck muscles makes insertion easier.
14	Remove the obturator immediately.	The patient will be unable to breathe with the obturator blocking the lumen.
15	Inflate the cuff using the minimal occlusion technique and check with a cuff pressure gauge.	An inflated cuff reduces the risk of aspiration. Correct inflation reduces the risk of tracheal wall damage.
16	Insert inner cannula if using a two piece system.	To prevent secretions collecting on the inside of the outer cannula.
17	Observe the patient for respiratory distress. Feel for respiration via the tube, where able, ask the patient to breathe deeply and observe for chest movement.	There should be airflow via the Tracheostomy tube if the tube is correctly positioned in the airway. **NB: If tube insertion fails or patient becomes compromised and cyanosed initiate, Tracheostomy Emergency Procedures**
18	Listen for equal air entry.	To ensure bilateral inflation of the lungs.

	Procedure: Changing a Tracheostomy Tube	Key Points
19	Clean stoma site if required, renew dressing and secure tracheostomy tube with cotton tapes.	To reduce the risk of dislodgement, maintain patient comfort and reduce the risk of infection.
20	If the patient is comfortable and there are no signs of respiratory distress, return oxygen to levels prior to procedure and observe respiratory rate and oxygen saturation.	
21	Record tube change on Tracheostomy Care Chart and progress notes, document time, date, size, type of tube and any complications.	To ensure effective communication.
22	There may be a small amount of bleeding post tube change. If there is excessive bleeding, ensure cuff is inflated and **call for immediate medical assistance.[Code blue]**	Trauma can occur to stoma site during a tube change. An inflated cuff will protect the patient's airway whilst controlling the bleeding.

13.3 Weaning/Decannulation Process

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for undertaking the weaning/decannulation process:

Recommendations	Grade of Recommendation
The decision to commence weaning and proceed to decannulation is a collaborative decision involving the treating medical team and TRT. This must be documented in patient notes prior to beginning the weaning process.	Consensus
The weaning/decannulation plan should be documented. Following this, it should be reviewed at least daily and updated as required.	Consensus
In the presence of a cuffed TT, a successful cuff deflation is a minimal requirement for decannulation.	Consensus
An absent swallow in isolation is not a contraindication for an initial cuff deflation trial. Where there is no swallow present, it is recommended that a Speech Pathologist is consulted.	Consensus
Where airway patency is insufficient a medical/ENT assessment of the upper airway is recommended.	Consensus
Before placing a cap or speaking valve, the cuff needs to be completely deflated and airway patency established.	Consensus
Emergency equipment must be available and checked prior to changes in TT management related to weaning/decannulation.	Consensus

Recommendations	Grade of Recommendation
A medical officer with advanced airway management skills MUST be present when the TT is changed for the first time or is removed.	Consensus
In head and neck patients, the decision to decannulate is made by, or in consultation with, the ENT team.	Consensus
In general, the decision to decannulate is based on clinical criteria indicating the patient's readiness including: • Clinically stable • Resolution of need for TT • Able to manage own oral secretions or a secretion management plan (e.g. alternate suction route, pharmacological agents, positional management) • No signs of deteriorating lung function • Strong effective cough • Minimal oxygen requirements • Airway patency.	Evidence – C Recommendation C
The patient should be NBM for a minimum of four hours prior to TT removal OR if a nasogastric tube is present, this should be aspirated to empty the stomach.	Consensus
An airtight dressing must be applied to the stoma after the tracheostomy tube is removed. This dressing should be changed • At least DAILY • If odorous or contaminated by secretions • If no longer airtight.	Consensus

13.4 Observations: Pre, During and Post Decannulation

These parameters are MINIMUM requirements and each patient MUST be individually assessed.	
Constant presence of clinician	For 30 minutes after any changes including: • Capping or insertion of speaking valve • Cuff deflation • **Removal of TT.**
Assessment	The nurse responsible for the care of the patient must visually assess that the patient is tolerating the change at least hourly.
Vital signs	Pulse oximetry: • Continuous for 24 hours • Review at 24 hours BTF observations [Respiratory rate Pulse, BP, temperature] • All observations should be recorded hourly for the first 4/24 and then 4/24 for 24 hours

14. CUFF DEFLATION, OCCLUSION AND TUBE REMOVAL

Practice Limitations:

- Registered Nurses, Speech Pathologists and Physiotherapists who are deemed competent by a designated assessor.
- Enrolled Nurses who have achieved 'Extended Practice Skill' in Tracheostomy Decannulation and been deemed competent by a designated assessor.

The patient must meet the following clinical criteria prior to the weaning process:

- Clinical indications for tracheostomy are resolved, nil deterioration within last 24hrs
- Stable chest status – nil deterioration within last 24hrs per physio and medical team
- Absence of respiratory/chest infection
- Oxygen requirement – self ventilating with or without oxygen (as per medical order)
- Minimal suctioning requirements
- Adequate airway protective mechanisms – i.e. ability to cough and clear airway secretions via tracheostomy or by mouth
- No granulation tissue, oedema around tracheostomy site
- Patent upper airway e.g. absence of oedema, no obstructions
- Agreement by all members of the MDT.

14.1 Stage 1: Cuff Deflation

14.1.1 Policy Alert:

- Cuff deflation is only recommended as part of the weaning process or in an emergency due to occlusion, as it may increase the risk of aspiration and hypoxia
- If cuff deflation is unsuccessful the cuff must be reinflated using the cuff manometer
- This is a two person procedure
- Weaning is a progressive, three stage process. The patient must successfully achieve cuff deflation and tube occlusion (for at least 24-48 hour period), before the tracheostomy tube can be removed

  OR
- An alternative to assess suitability for decannulation, when not appropriate or safe to occlude the tracheostomy, is for the patient to tolerate continuous cuff deflation for a 24-48 hour period without need for tracheal suctioning.

	Procedure: Cuff Deflation	Rationale
1	Encourage the patient to cough and clear secretions.	To reduce the amount of secretions in the airway.
2	*Person 1* If the patient has a Suction-aid tracheostomy tube with an 'above cuff suction port', suction above the cuff before deflating the cuff.	To reduce the amount of oro-pharyngeal saliva that may be aspirated when the cuff is deflated.
3	*Person 1* If the patient requires a tracheal suction prior to cuff deflation, pass a sterile catheter into the tracheostomy tube, approximately	To minimise the risk of cross infection and trauma.

	Procedure: Cuff Deflation	Rationale
	0.5 cm longer than the tracheostomy tube tip. This should not be conducted unless indicated.	
4	*Person 2* Advise the patient that they may cough after cuff deflation and this is normal. Deflate the cuff steadily, removing all air from the balloon. *Person 1* may need to suction post cuff deflation if indicated.	To prepare the patient for what to expect. Suction post deflation may be indicated to assist the patient if they have had saliva previously pooling above the tracheostomy cuff.

Indicators of Successful Cuff Deflation
• SpO_2 maintained at or above 90% or within 5% of baseline • Respiratory rate within breaths/minute above the pre-procedure baseline • Blood pressure (BP) and heart rate within 10% of patient's baseline • No increase in shortness of breath • No uncontrollable coughing post deflation (after the first five minutes) • No increase in suctioning requirements or secretions.

14.2 Stage 2: Tube Occlusion

14.2.1 Policy Alert:

- Successful cuff deflation must be achieved prior to tracheostomy tube occlusion
- Tube occlusion is based on individual patient assessment and is an MDT decision
- Ensure cuff is completely deflated before the tube is occluded
- When occluding the tube for the first time, stay and observe the patient for a minimum of 15 minutes post occlusion
- Continuously monitor patient's oxygen saturation
- If occluding tracheostomy as a method to assess suitability for decannulation, occlusion must be tolerated for a minimum of 24-48 hours without the need to remove the tracheostomy cap for suctioning or respiratory purposes, before tracheostomy tube removal is considered
  OR
- An alternative method to assess suitability for decannulation **(when not appropriate or safe to occlude the tracheostomy)** is for the patient to tolerate continuous cuff deflation for 24-48 hours without need for tracheal suctioning.

Observe for:	If present:

• Increase in heart rate • Decrease in oxygen saturation • Signs of respiratory distress • Irritation, confusion or agitation • Cyanosis	Remove cap and activate appropriate management including escalating for assistance if necessary.

14.3 Stage 3: Removal of Tracheostomy Tube

Practice Limitations:
Registered Nurses, Physiotherapists who are deemed competent by a designated assessor.

14.3.1 Policy Alert

- This is a two person procedure. At least one person must be a clinician who has reached competency in the procedure.
- Weaning is a progressive, ongoing process. The patient must successfully achieve cuff deflation and tube occlusion, before the tracheostomy tube can be removed.
- Tracheostomy MDT consultation should inform the decision to remove a tracheostomy tube. Medical orders needs to be documented in patient medical record prior to tube removal.
- In a ward area tracheostomy tube removal should only be attempted before 12midday Monday to Thursday.
- Stay with the patient for a minimum of 15 mins post tube removal or until the patient is stable, whichever is the longer.

14.3.2 Equipment

Emergency airway resuscitation equipment immediately available:

- Clean gloves
- Disposable apron
- Protective eyewear
- Disposable drawsheet
- Yankauer sucker
- 10ml syringe if cuffed tube
- Large steristrip
- Sleek tape
- O2 if required via face mask or nasal prongs.

Note: Prior to tube removal the patient must have an effective cough, patent airway and gag reflex.

Procedure: Removal of a Tracheostomy Tube	
1	Sit patient up at 60 degree angle and pre oxygenate

2	Don PPE and perform 5 moments of hand hygiene
3	Thoroughly suction oropharynx with Yankauer sucker
4	Suction Tracheostomy tube
5	The role of the assistant is to undo the ties deflate cuff with syringe and support the tube
6	Remove tube, with consistent firm but gentle digital pressure
7	If required, give O_2 via facial mask
8	Observe for signs of respiratory distress and airway obstruction
9	Clean stoma with normal saline
10	Apply **airtight** dressing to the stoma (as per MDT preference)
11	Check tube for blood or damaged cuff.

14.3.3 Management Post Tube Removal

- Encourage patient to breathe via mouth and nose
- Explain to patient that they can now talk
- Remind patient to manually press over dressing to adequately occlude stoma when speaking or coughing
- Request patient to try to vocalise and try a strong cough
- Daily dressing for three to five days until wound discharge decreased, and then PRN until complete wound closure
- The stoma may be left exposed when clean and dry and there is no evidence of air leak.

15 DISCHARGE OF A PATIENT WITH A TRACHEOSTOMY

In line with NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy - Clinical Practice Guideline, the following are evidence-based recommendations for discharging a patient with a tracheostomy:

Recommendation	Grade of Recommendation
A caregiver for the patient with a tracheostomy is identified early in the patient's hospital admission and their education program should commence as soon as possible to facilitate discharge. Adult patients will be responsible for their own care; however, an individual's dexterity and cognitive abilities need to be taken into consideration.	Consensus

15.1 Patient and Carer Required Competency and Skills

The following competencies and skills are required from the patient and carer for a successful patient discharge:

The caregiver and/or patient if capable:

- Explain reasons for and purposes of the tracheostomy
- Describe the type and size of the current tracheostomy tube
- Describe and demonstrate TT stabilisation
- Demonstrate safe and effective suctioning of the tracheostomy tube including:
  - Size of suction catheter/apparatus
  - Insertion depth of catheter
  - Length of suction procedure
  - Use of suction equipment
  - Assessment of outcomes of procedure
  - Normal and abnormal sputum, especially tenacity and infection.
- Demonstrate safe and effective care of the tracheostomy stoma and the skin of the neck including:
  - Cleaning of stoma
  - Application of dressing products, if applicable
  - Listing signs of infection and poor skin integrity.
- Provide effective humidification of inspired gases including:
  - Explanation of the purposes of humidification
  - Demonstration of attachment of humidification devices including passive humidification attachment
  - When, why and how to use nebulised saline
- Identifies and justifies essential equipment to be with person at all times.
- Demonstrates safe and effective care of all equipment including:
  - Correct use, cleaning and maintenance
  - Identification of contact person for malfunctioning equipment.
- Demonstrates safe and effective care where home ventilation will be used, including:
  - Correctly assembling ventilator equipment and circuit components
  - Correctly switching ventilator on and off
  - Correctly attaching/removing ventilator to/from tracheostomy
  - Demonstrate competence with inflating/deflating cuff and changing inner cannula (e.g. Between fenestrated and non-fenestrated) as needed to correctly attach/remove ventilator, as prescribed by home ventilation specialist
  - Demonstrate awareness of ventilator alarms and how to respond to them
  - Demonstrate awareness of possible problems requiring immediate intervention that may arise during ventilation via tracheostomy, and appropriate knowledge of how to respond to these problems
  - Knowledge of how and when to clean equipment, change disposable items and perform basic machine maintenance such as changing filters.
    Note: This competency only applies to patients on home ventilation.
- Identifies, articulates and demonstrates the appropriate action (on an airway mannequin) for emergencies including:

  - Dislodged tube
  - Blocked airway
  - Acute respiratory distress.
- Demonstrates the following clinical skills on airway mannequin and patient:
  - Changing of tracheostomy tube
  - Suctioning
  - Changing of tapes
  - Application of oxygen.
- Describes and demonstrates effective infection prevention principles including:
  - Hand hygiene
  - Cleaning and storage of reusable equipment
- Where to get further equipment consumables.

16. DOCUMENTATION

Document Tracheostomy management and observation on the SESLHD Tracheostomy Management & Observation Chart (SEI110.055)

17. AUDIT

Auditing undertaken at a site level.

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19. REVISION AND APPROVAL HISTORY

Date	Revision No.	Author and Approval
February 2014	2	Converted to Procedure by Perioperative, Surgery and Anaesthetics Clinical Stream Nurse Manager
March 2014	2	Reviewed and aligned with 'NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy' by Mary Dunford, Respiratory CNC, Paula Gunner CNC Neck & Surgery and District Policy Officer
November 2014	2	Endorsed by SESLHD Clinical and Quality Council
November 2016	3	Review undertaken – minor changes. Approved for Draft for Comment.
August 2017	3	Processed by Executive Services for publishing following a minor review.
March 2018	4	Reviewed and aligned with 'NSW Agency for Clinical Innovation (ACI): Care of Adult Patients in Acute Care Facilities with a Tracheostomy' by Mary Dunford, Respiratory CNC, Paula Sankey CNC Neck & Surgery and District Policy Officer
April 2020	5	Minor review to update the procedure with BTF terminology (PACE Tier 2 Call replaced by Code Blue call). Cuff pressure amended to 25-30 cm.
October 2020	5	Approved by Executive Sponsor. Published by Executive Services.