

TRACHEOSTOMY REVIEW AND MANAGEMENT SERVICE

CLINICAL PROCEDURE

TRACHEOSTOMY CUFF MANAGEMENT

Staff this document applies to:

- Nurses, Speech Pathologists, Physiotherapists and Medical staff on all campuses including ICU (Intensive Care Unit)

Related Austin Health policies, procedures, or guidelines:

- [Suctioning via the Tracheostomy](#)
- [Use of the Suctionaid Tracheostomy Tube](#)
- [Mandatory Equipment & Emergency Tracheostomy Management Poster](#)
- [Passy Muir \(PMV\) Use in Spontaneously Breathing Patients](#)
- [Scheduled Use of the Passy Muir Valve \(PMV\) in Line with the Ventilator](#)
- [Scheduled Use Of Speech Methods In Invasively Ventilated Tracheostomised Patients](#)
- [Emergency Response To Accidental Decannulation](#)

Key Points:

- [The minimal occlusive volume method](#)
- [Using the Tracoe ® Smart Cuff Manager](#)
- [Tracoe ® Smart Cuff Manager Clinical Instruction Sheet](#)

Definition:

- An inflated tracheostomy cuff separates the upper airway from the lower airway and lungs. This provides a degree of airway protection against the aspiration of oral secretions and prevents air leaks in the invasively ventilated patient.
- Cuff deflation is performed for a variety of reasons including:
 - To remove secretions from above the cuff
 - To ascertain if the upper airway is patent.
 - To enable assessment of voice in spontaneously breathing or ventilated patients.
 - To assist in the assessment of swallowing
- Initial cuff deflation trials are performed by Speech Pathologists with a Physiotherapist or bedside nurse who are competent in tracheostomy suctioning
- Routine cuff deflation can be performed by Nurses, Physiotherapists, Speech Pathologist (with the assistance of bedside nurse or physiotherapist) and medical staff trained in this procedure.
- Cuff deflation is the withdrawal of air from the pilot line attached to the tracheostomy tube cuff (for air-filled cuffs), or water in the case of a Bivona Tight-To-Shaft (TTS) tracheostomy tube cuff.

- Deflating the cuff restores airflow through the upper airway and provides the opportunity to assess the patient's voice, cough, and swallow.
- Cuff over-inflation can damage tracheal mucosa and a malpositioned tracheostomy tube.
- Cuff under-inflation can lead to aspiration of oral secretions, respiratory distress, aspiration pneumonia and suboptimal ventilation in invasively ventilated patients.
- Invasively ventilated patients who have their cuffs deflated for the purpose of Ventilator Adjusted Leak Speech, must have their ventilation parameters changed by staff trained in this practice. See related guideline [Scheduled Use Of Speech Methods In Invasively Ventilated Tracheostomised Patients](#).
- For air filled tracheostomy cuffs, inflation pressure should be measured between 20-30cmH₂O (15-22mmHg) using a manometer.
- For water filled Bivona TTS tracheostomy tube, use the [minimal occlusive volume \(MOV\) technique](#).

Equipment:

- Routine tracheostomy personal protective equipment (PPE)
 - o Clean gloves
 - o Safety shield, goggles, or glasses
 - o Surgical mask
 - o Disposable apron (optional)
- 10mL syringe, preferably a slip syringe (rather than luer lock syringe)
- Suction catheters, standard size 12FG
- Functioning suction unit
- Clean disposable gloves
- Cuff manometer if an air-filled cuff is present
- Stethoscope

Procedure:

Tracheostomy cuff deflation:

- This is a two-person procedure.
- Ensure the patient is comfortable and observations are stable.
- Explain the procedure to the patient and note that it may cause them to cough.
- Suction the patient via the tracheostomy tube.
- If the patient has a Portex Suctionaid tracheostomy tube, aspirate above cuff secretions from the Suctionaid line using a 10ml syringe. See [Use of the Suctionaid Tracheostomy Tube](#). Discard this syringe.
- Attach a new 10ml syringe to the valve of the pilot line and slowly withdraw the plunger to deflate the cuff, whilst a second staff member simultaneously suctions via the tracheostomy tube.
- The Speech Pathologist will determine the regimen for cuff deflation and will document this in the progress notes

Tracheostomy cuff inflation:

For air-filled cuffs:

- Reinflate the cuff by firmly attaching a 10ml syringe to the pilot line and introduce air slowly, so as not to cause discomfort. Firmly disconnect syringe.
- Firmly attach a manometer to the pilot line and ensure that cuff pressure is between 20-30cmH₂O

For water-filled Bivona TTS cuffs:

- For a water filled Bivona TTS cuff use the **MOV** technique (see text box below) to establish the amount of water required to achieve a cuff seal. Do not attach a manometer, as the water will damage it.

The minimal occlusive volume (MOV) technique:

- **Invasively ventilated patient:** Place a stethoscope on the side of the patient's neck above the tracheostomy tube and listen for air leak or breath sounds. Inflate the cuff slowly (using water or air depending on the tracheostomy tube specifications), until there is no audible air leak heard in the upper airway.
- **Non-ventilated patient:** Place a stethoscope on the side of the patient's neck above the tracheostomy tube and listen for breath sounds. Inflate the cuff slowly until there is no audible breath or voice sounds.

Management of suspected cuff leak or faulty cuff:

- A cuff leak may present as audible upper airway sounds or air leaking through the nose/mouth (for example, in the invasively ventilated patient). It may also appear as the pilot balloon not maintaining inflation.
- Defects or faults in tracheostomy cuffs are rare. Cuff leaks are frequently due to a malpositioned tracheostomy tube or variations in practice when connecting devices to the pilot line, resulting in inadvertent leak of air from the pilot line valve (e.g. syringes, manometers, Tracoe Smart Cuff Manager®).
- It is important to differentiate between:
- *Cuff leak* – air escaping from the cuff, pilot balloon, or valve due to a structural defect in the tracheostomy tube.
- *Persistent loss of cuff seal* – inability to maintain an effective airway seal despite appropriate inflation, often indicating a malpositioned tube.
- Both scenarios must be promptly escalated to the proceduralist responsible for insertion.
- In ICU: escalate to the ICU consultant and, where relevant, the surgical team responsible for insertion (e.g. thoracic surgery).
- On the ward: escalate to TRAMS and the procedural team responsible for insertion.
- Until proven otherwise, assume the tracheostomy is malpositioned if a seal cannot be maintained despite an inflated cuff.
- If a tracheostomy cuff is confirmed to be defective or faulty, the tracheostomy should be changed. Before performing a change, consider the following troubleshooting steps:

For patients with invasive positive pressure ventilation:

- A new cuff air leak may indicate partial tracheostomy dislodgement (Ananthan et al, 2022).
- Caution should be used when inflating the cuff further as this may result in further displacement of the tracheostomy and potential accidental removal of the tracheostomy tube.
- Assess cuff pressure with a manometer (for air-filled cuffs).
- If in ICU, increase FiO₂ to 100% to achieve adequate SpO₂. If on the ward, assess if supplemental oxygen is required to achieve target SpO₂.
- Contact senior medical staff or activate a MET call if indicated.

- Assess tracheostomy tube position. Ensure tube is midline, tapes are secure, and ventilator circuit is not pulling on the tube.
- Seek senior airway specialist or TRAMS input regarding Tracoe Smart Cuff Manager® use (only for air-filled cuffs) or further troubleshooting (including tracheostomy change).
- Visualise tube position with bronchoscopy or tracheoscopy by a senior clinician where possible.

For spontaneously breathing patients:

- If the tracheostomy tube has an air-filled cuff, assess cuff pressure with a manometer.
- Assess tracheostomy tube position. Ensure tube is midline, tapes are secure, and attachments (e.g. humidifier tubing) are not pulling on the tube.
- Consider use of a Tracoe Smart Cuff Manager® (only suitable for air-filled cuffs).

The Tracoe ® Smart Cuff Manager:

- The TRACOE ® Smart Cuff Manager is a tracheostomy cuff management device that can be used for patients who may have suspected cuff leak (only suitable for air-filled cuffs).
- This device allows for air flow between the tracheostomy cuff and the balloon chamber which continually maintains the correct internal cuff pressure.
- There is **no need to use a manometer** to check cuff pressure when this device is in place.

Using the Tracoe ® Tracheostomy Smart Cuff Manager:

- Attach the device to the tracheostomy pilot line. Using a syringe, inflate the balloon in the chamber with air until it is 2/3 to 3/4 full (figure 1).
- If the device is detached, the chamber balloon will deflate. The tracheostomy cuff will remain inflated.
- To deflate the cuff, you must still use a 10ml syringe to deflate the cuff. This is especially important prior to placing a Passy Muir Valve.
- Figure 2 and Figure 3 demonstrate examples of an under-inflated and an over-inflated chamber balloon.



Figure 1: Balloon chamber inflated 2/3 to 3/4 full



Figure 2: Under-inflated



Figure 3: Over-inflated

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Legislation/References/Supporting Documents:

- Tracoe ® Smart Cuff Manager

Product information:

https://assets.website-files.com/5e43a61af75ce2f5073778f6/5ef5efa969a197cde89bb3af_REF_730-5_EN.pdf

Instructions for Use:

<https://www.atosmedical.co.uk/download/wp-content/uploads/sites/2/2023/06/801521-tracoe-smart-cuff-manager-ifu-v3-2022.pdf>

(Accessed 25/3/24)

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Endorsed by:

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