

Percutaneous Tracheostomy Guideline

Scope: All bedside percutaneously placed tracheostomies in the SICU.

Population: All ICU personnel.

Outcomes:

- To delineate the responsibilities of the personnel performing percutaneous tracheostomies at the bedside in adult ICU patients.
- To provide evidence-based methods for identification and management of early complications of percutaneous tracheostomies (PT).

Recommendations:

Surgeon or designee will:

1. Assess the patient for appropriateness for the procedure:

Indications: Intubated ICU patients requiring prolonged mechanical ventilation, airway protection and to facilitate ventilator weaning.

Contraindications: Neurological Instability (Elevated ICPs), Halo, Mandibular wiring or naso-tracheal tube with mandibular fracture.

Consider detailed evaluation for appropriateness of PT for the following:

- Emergency airway access.
 - Prior difficult Direct Laryngoscopy (DL) with difficult airway or upper airway obstruction.
 - Anatomical abnormalities such as enlarged thyroid or vascular anomalies.
 - Anterior neck trauma, anterior neck infections or recent anterior cervical surgery.
 - Inability to palpate tracheal landmarks.
 - Cervical spine precautions.
 - Morbid obesity.
 - Hemodynamic instability.
 - PEEP > 12cm H2O, FiO2>0.6 in isolation or PEEP>10 with FiO2>0.5 simultaneously.
2. Obtain consent for procedure and scan into EPIC.
 3. Coordinate with SICU team time of procedure.
 4. Appropriate surgical equipment at bedside to be obtained by surgical and SICU teams:

Equipment Required (To be obtained by surgical team and SICU team):

PPE: Sterile gowns, gloves, hat, mask, eyewear – for all.	Fiber optic Bronchoscopy Cart or Single use bronchoscope with video screen.
Cook percutaneous Tracheostomy Kit x 2 size 6 and a size 8	Ambu bag with PEEP valve connected with O2 flowing.
Red Airway Box (LMA, oral airways and 6.0 ETT)	Yankauer with wall suction
CMAC	Soft tracheostomy tube ties
Procedure Cart	

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Equipment Readily Available:

Crash cart in pod immediately available and can remained locked (Open Tracheostomy tray in bottom drawer, 6 cuffed Shiley DCT)	Yellow difficult airway box (Contains Bougie and Cook airway exchange catheter).
Pre-mixed vasopressors	Sedative/ Analgesic agents/ Paralytic (optional)
IV fluids	Hemostatic agent (Surgicel)

5. Arrange for video bronchoscope and cart to be available for procedure by contacting PCT.
6. Arrange for Bronch/Airway Provider to be available for the procedure (fellow or attending, but cannot be procedure performing attending surgeon).
7. Arrange for sedation provider to be available for the procedure (optional).
8. Arrange for respiratory therapist to be available for the procedure.
9. NMB at the discretion of the surgeon, if used follow NMB Sedation guideline.
10. Notify patient's nurse and team of anticipate time of the procedure.
11. Open tracheostomy set present at bedside.

Additional Personnel Requirements and Responsibilities:

All Personnel:

- Review chart for previous ETT placements and determine difficulty of airway.
- Assure appropriate rescue airway devices are available and in working order and review difficult airway guideline for unexpected or accidental extubation.
- Check ETT position and ETT size.

Bronch/Airway Provider:

- Review previous intubation records, assure anticipated emergency airway equipment is easily available in room.
- Review Difficult Airway Algorithm.
- Supervise withdrawal of ETT to agree upon position and secure within the bronchoscope in the ETT.
- Maintain a patent airway during the procedure and SaO₂ ≥ 95%.
- Perform bronchoscopy during and after the procedure.
- Consider direct laryngoscopy (DL) prior to start of procedure.
- Consider placement of tube exchanger posteriorly with DL/CMAC or Fiber-optic Bronchoscopy while maintaining ETT in place.

Respiratory Therapist:

- Assure availability of appropriate airway devices.
- Have available preloaded saline flushes and suction.
- Place patient on 100% FiO₂ 15 minutes prior to procedure.
- Provide and monitor full ventilation support during the procedure (by ventilation or manually).
- Adjust alarms on vent.
- Place Bodai adapter once adequate anesthesia has been delivered.

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- Place bite block.
- Position endotracheal tube at direction of the Bronch/Airway Provider and maintain the endotracheal tube position during the procedure with cuff inflated.
- Assist Bronch/Airway provider during the procedure.

Surgeon performing procedure:

- Evaluate ventilator settings and confirm placement of patient on 100% FiO₂.
- Assure appropriate monitoring equipment is in working order.
- May act as sedation provider if designee present to perform procedure.
- May not act as Bronchoscopist/airway provider.
- Secure tracheostomy tube at completion of procedure.

Sedation Provider:

- Set non-invasive blood pressure cuff for every 3 minutes unless monitoring by arterial line.
- Ensure functional EtCO₂, 5-lead EKG, SpO₂ monitors.
- Review sedation plan with the bedside nurse and assess potential need for vasopressors or IV fluids for treatment of peri-operative hypotension.
- If using neuromuscular blockade follow NMB Sedation guideline.

ICU Nurse:

- Assist with "Time-Out" procedure.
- Review sedation plan with provider and have appropriate medications at the bedside.
- Determine treatment plan for peri-procedure hypotension with the Sedation Provider.
- Establish medication access away from sterile field.
- Administer medications as indicated by the Sedation Provider.
- Assist operator and bronch/airway provider when necessary.
- Monitor vital signs of the patient during the procedure and alert providers of any abnormalities.
- Review medication used with the Sedation Provider and confirm that the medication orders are accurate.

Post Procedure Recommendations:

- **Remove shoulder roll in present**
- **Confirm tracheostomy is secured with sutures/soft trach ties**
- **Check trach cuff pressure**
- **Order CXR**
- **Document procedure and medications delivered**
- **Clarify post-op orders**
- **Communicate results and orders with the ICU team**
- **Complete trach order set**