

Chapter 82

Approach to Tracheostomy Care in the ICU



82.1 Introduction

Tracheostomy care is critical in managing patients with prolonged respiratory needs or airway compromise. Proper management ensures patient safety, prevents complications such as infection, tube obstruction, or dislodgment, and supports recovery, including potential decannulation. A multidisciplinary team approach enhances the quality of care, reduces complications, and improves patient satisfaction by ensuring comprehensive management of all aspects of tracheostomy care [1] [Ref: Algorithm 82.1].

82.2 Multidisciplinary Tracheostomy Care Team

Effective tracheostomy management involves a multidisciplinary team comprising:

- Physicians: Oversee medical management and coordinate care.
- Nurses: Provide daily care, monitor for complications, and educate patients.
- Respiratory Therapists: Manage ventilator settings, humidification, and secretion clearance.
- Speech and Language Therapists: Assist with communication and swallowing rehabilitation.
- Physiotherapists: Promote mobilization and respiratory exercises.

This team collaborates to address the complex needs of tracheostomized patients, facilitating comprehensive care planning, early detection of issues, and tailored interventions to enhance patient outcomes.

82.3 Routine Assessment

Objective: Ensure the tracheostomy tube functions properly and the patient's respiratory status is stable.

Actions:

- Inspect the Tube Position and Patency:
- Confirm the tube is secured and unobstructed.
- Check for proper alignment to prevent airway obstruction or accidental decannulation.
- Evaluate the Stoma:
- Assess for signs of infection, granulation tissue, or skin breakdown.
- Redness, swelling, or purulent discharge requires immediate attention.
- Confirm Cuff Pressure (if applicable):
- Cuff Management:
- Monitor cuff pressure every 8 h or as per protocol.
- Maintain pressure between 20 and 30 cm H₂O to prevent aspiration and minimize tracheal mucosal damage.
- Risks:
- Overinflation can cause tracheal ischemia and necrosis.
- Underinflation increases the risk of aspiration.
- Implement strategies for cuff deflation during weaning to assess readiness for decannulation.
- Assess Respiratory Status:
- Monitor oxygen saturation, respiratory rate, and work of breathing.
- Detect early signs of respiratory distress or inadequate ventilation.
- Check for Overall Stability:
- Address systemic issues like sepsis or hemodynamic instability that may impact tracheostomy care [2].

82.4 Tube Selection

Selecting the appropriate tracheostomy tube is vital and should be based on the patient's anatomy and clinical needs:

- **Standard Tubes:** Suitable for general use.
- **Adjustable-Length Tubes:** For patients with unusual neck anatomy or tracheal depth.
- **Fenestrated Tubes:** Facilitate speech by allowing air to pass through the vocal cords.
- **Subglottic Suction Tubes:** Allow continuous or intermittent suctioning above the cuff, reducing the risk of ventilator-associated pneumonia.

Proper tube selection enhances patient comfort, facilitates communication, and reduces complications.

82.5 Humidification and Secretion Management

Rationale: Adequate humidification ensures airway secretions remain thin and manageable. Dry air can lead to thick mucus, increasing the risk of obstruction.

Actions:

- **Verify Humidification Systems:**
- Ensure devices like heated humidifiers or heat and moisture exchangers (HMEs) are functioning properly.
- Crucial for patients on ventilators or oxygen support.
- **Assess Secretions:**
- Monitor volume and consistency.
- Thick or excessive secretions may indicate dehydration, infection, or inadequate humidification.
- **Evidence-Based Practices:**
- Utilize subglottic suction tubes when appropriate.
- Implement protocols for secretion management, including chest physiotherapy and nebulization.

82.6 Patient Communication and Rehabilitation

Facilitating communication and addressing psychosocial aspects are essential components of tracheostomy care:

- **Speaking Valves:**
- Use one-way speaking valves (e.g., Passy-Muir valve) to enable phonation.
- Assess the patient's ability to tolerate the valve, ensuring airway patency and adequate ventilation.
- **Role of Speech and Language Therapists:**
- Provide interventions to optimize vocalization and swallowing.
- Address issues related to dysphagia and risk of aspiration.
- **Psychosocial Support:**
- Recognize the emotional impact of tracheostomy on patients.
- Offer counseling and support to address anxiety, depression, or body image concerns [3].

82.7 Emergency Preparedness

Being prepared for emergencies is critical in tracheostomy care:

- **Guidelines for Emergency Management:**
- Develop and follow standardized protocols.

- Include flowcharts for managing airway obstruction, accidental decannulation, bleeding, or infection.
- Tracheostomy Emergency Kit:
- Ensure a kit is available at the bedside at all times.
- Should include spare tracheostomy tubes (same size and one size smaller), obturator, suction catheters, syringes, and lubricants.
- Staff Training:
- Regularly train all caregivers on emergency procedures.
- Simulate scenarios to enhance readiness.

82.8 Airway Obstruction Management

Decision Point: Determine if the airway is compromised due to secretions, mucus plugs, or tube kinking.

If Yes:

- Perform Suctioning:
- Clear secretions to restore airway patency.
- Inspect the Tube:
- Check for kinks or external occlusions.
- Replace the tube if issues cannot be corrected.
- Emergency Protocols:
- If obstruction persists, escalate care immediately (may need bronchoscopy to assess the cause of obstruction).
- Follow emergency flowcharts and call for additional support.

If No:

- Proceed to Evaluate Tube Position and Potential Dislodgment.

82.9 Accidental Decannulation Management

Significance: Accidental decannulation is a medical emergency, especially in new or immature tracheostomies.

If Yes:

- Attempt Reinsertion:
- Reinsert the tracheostomy tube promptly.
- Use a smaller size tube if reinsertion is difficult.
- Utilize Stay Sutures:
- If available, use stay sutures to aid reinsertion.
- Emergency Airway Support:
- If reinsertion fails, initiate emergency airway management (may go for orotracheal intubation and place endotracheal tube beyond the tracheal stoma).

- Ensure oxygenation and call for anesthesiology or airway specialists.

If No:

- Continue Monitoring and Address Other Potential Issues.

82.10 Weaning and Decannulation

Assess Readiness for Decannulation.

Criteria:

- Stable Respiratory Function:
- Maintain adequate oxygenation and ventilation without ventilator support.
- Effective Secretion Clearance:
- Demonstrate the ability to manage secretions independently.
- Airway Protection:
- Intact cough and swallow reflexes to prevent aspiration.
- No Upper Airway Obstruction:
- Confirmed via endoscopic evaluation.

Actions:

- Implement Weaning Protocols:
- Use evidence-based practices such as gradual cuff deflation, downsizing tubes, and capping trials.
- Utilize T-pieces or high-flow oxygen systems as appropriate.
- Trial of Cuff Deflation:
- Gradually deflate the cuff to assess tolerance.
- Downsizing the Tracheostomy Tube:
- Replace with a smaller, uncuffed tube when feasible.
- Decannulation Readiness Testing:
- Perform capping trials (cap the tracheostomy tube and see if patient is able to breathe on his own by the side of the downsized tracheostomy tube and through nose and mouth without distress—normal breaths), monitoring closely for any signs of distress.

Benefits of Protocolized Care:

- Improved Outcomes:
- Standardized weaning protocols reduce decannulation time and complications.

82.11 Decannulation Protocol for Tracheostomy Care

82.11.1 Initial Assessment

- Confirm that the patient meets the following criteria:
- Stable respiratory function without ventilatory support.

- Ability to effectively clear secretions.
- No ongoing upper airway obstruction.
- Sufficient cognitive ability to protect the airway.
- Conduct an endoscopic/bronchoscopic evaluation of the airway to confirm patency and absence of granulation tissue.

82.11.2 Trial of Cuff Deflation

- Gradually deflate the cuff to assess airway patency and tolerance.
- Monitor for:
 - Respiratory distress (e.g., increased work of breathing, hypoxia).
 - Effective handling of secretions.
 - Adequate phonation and swallowing.
- If unsuccessful, reinflate the cuff and reassess the patient's readiness after further support or interventions.

82.11.3 Downsizing the Tracheostomy Tube

- Replace the current tracheostomy tube with a smaller, uncuffed tube to test the airway.
- Monitor for tolerance to the smaller tube:
 - Ensure no evidence of respiratory compromise.
 - Evaluate the ability to manage secretions without aspiration.

82.11.4 Decannulation Readiness Testing

- Perform a capping trial:
 - Place a decannulation cap over the tracheostomy tube to simulate normal breathing.
 - Monitor respiratory rate, oxygen saturation, and patient comfort during the trial.
 - Duration of capping may vary from a few hours to overnight, depending on patient tolerance.

82.11.5 Decannulation

- If the capping trial is successful, proceed to remove the tracheostomy tube.
- Cover the stoma with an occlusive dressing.

- Advise the patient to apply gentle pressure over the stoma during coughing or speaking.

82.11.6 Post-Decannulation Monitoring

- Observe the patient for:
- Respiratory distress or stridor.
- Signs of upper airway obstruction.
- Provide humidified oxygen if required.
- Encourage mobilization and airway clearance exercises.

82.11.7 Stoma Care

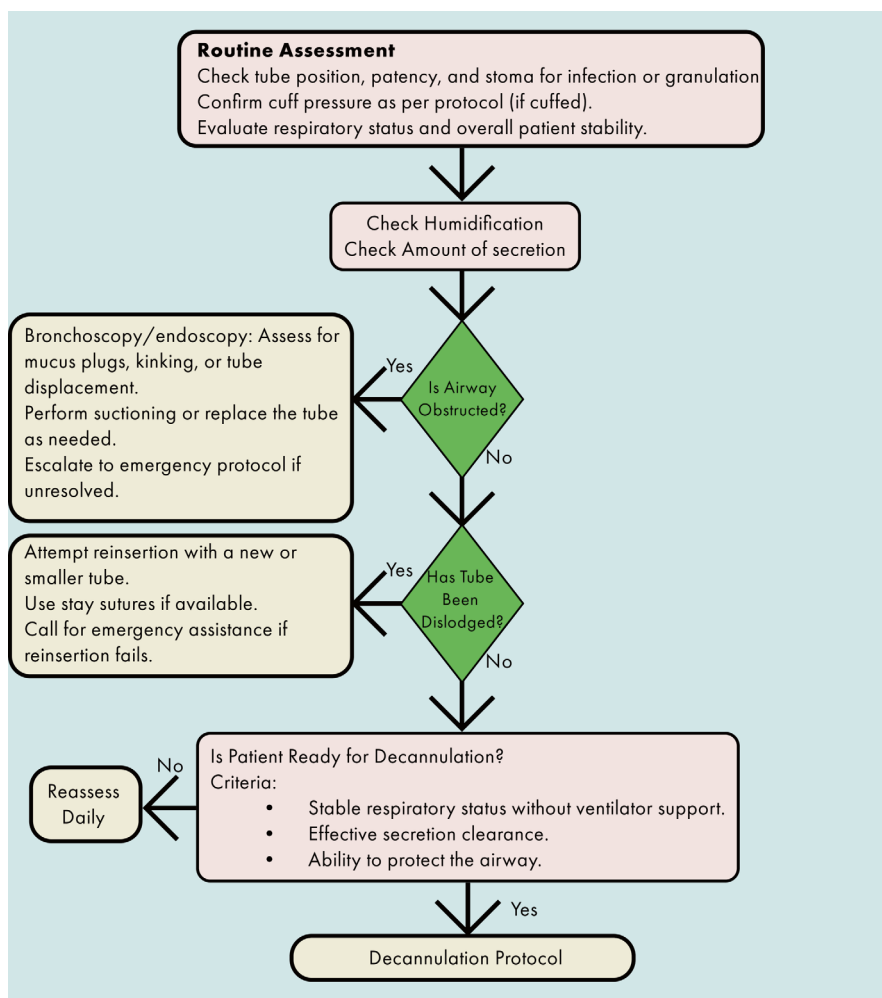
- Keep the stoma site clean and dry.
- Allow the stoma to close naturally or refer for surgical closure if necessary.

82.11.8 Documentation and Education

- Record the decannulation process, including the patient's tolerance and any complications.
- Educate the patient and caregivers on:
- Recognizing signs of respiratory distress.
- Proper wound care for the healing stoma.

82.12 Conclusion

This systematic approach to tracheostomy care emphasizes regular assessment, early identification, and resolution of complications, and a structured pathway to decannulation. Key practices include maintaining humidification, monitoring airway patency, and adhering to decannulation criteria. Timely interventions and careful monitoring can prevent adverse outcomes and promote safe patient recovery.

Algorithm 82.1: Approach to tracheostomy care in the ICU**Bibliography**

1. El-Anwar MW, Nofal AA, Shawadfy MA, Maaty A, Khazbak AO. Tracheostomy in the intensive care unit: a university hospital in a developing country study. *Int Arch Otorhinolaryngol.* 2017;21(1):33–7.
2. Lewith H, Athanassoglou V. Update on management of tracheostomy. *BJA Educ.* 2019;19(11):370–6.
3. Whitmore KA, Townsend SC, Laupland KB. Management of tracheostomies in the intensive care unit: a scoping review. *BMJ Open Respir Res.* 2020;7(1):e000651.