



## ***Inter-Professional Policy and Procedure***

**Policy: I- CP- RT- Post Tracheostomy Management**

**Policy Number: I—CP-RT**

**Applicable to the following locations/departments:**

**Flagler Hospital**

**Responsible Department:**

**Cardiopulmonary Services**

**Coordinating Departments:**

**Respiratory Therapy  
Nursing Services  
Intensivists  
Rehabilitation Services- Speech Therapy**

**Original Issue Date:**

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**Medical Director/Staff Approval:**  
(if applicable)

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**Legal and Regulatory References:**

**n/a**

**Other References/Corresponding Policies:**

**Replaces Trach Tube Weaning Policy**

Hernández Martínez G, Rodríguez M-L, Vaquero M-C, et al. High-flow oxygen with capping or suctioning for tracheostomy decannulation. *N Engl J Med* 2020;383:1009-17. DOI: 10.1056/NEJMoa2010834

*Standards for the care of adult patients with a temporary Tracheostomy; STANDARDS AND GUIDELINES. TRACHEOSTOMY CARE - INTENSIVE CARE SOCIETY STANDARDS © 2014*

## **I. Objective**

This protocol will guide care from initial tracheostomy tube placement through decannulation by outlining expected interventions that are based on objective criteria. A tracheostomy may only be a short term requirement for the patient, therefore, should be removed as soon it is no longer needed to improve patient outcomes and reduce length of stay. This protocol serves to provide the multidisciplinary team with an evidenced-based framework to facilitate an efficient and best practice approach to weaning the tracheostomy patient.

This protocol does not replace practitioner's judgement; it is intended to provide guidance to the physician for the group of patients described in the protocol. The expectation is that expert practitioners will modify and customize the protocol as necessary to meet the individual patient needs.

## **II. Scope**

Flagler Hospital- The protocol will be driven by the Respiratory Therapists in collaboration with Intensivists and midlevel providers, Nurses, Speech therapists, the surgeon who performed the tracheostomy, and ENT when applicable.

## **III. Definitions**

- a. Mechanical Ventilation (MV): Positive pressure ventilation via tracheostomy tube
- b. High-Flow Oxygen Therapy: Heated high-flow nasal cannula with tracheostomy tube adapter
- c. Passy Muir™ Valve (PMV): one-way valve applied to the tracheostomy hub that restores a closed respiratory system and facilitates restoration of upper airway functions including, cough, sensation, phonation, secretion management, and swallowing

## **IV. Policy**

- a. All critically ill patients who have had tracheostomies performed during their ICU stay and have been weaned from mechanical ventilation (defined as freedom from mechanical ventilation for 24 consecutive hours) will be eligible for decannulation once they meet criteria.
- b. Upon receiving an order from the physician, the RT will be responsible for tracheal tube exchanges and decannulation when clinically indicated. Two level 2 RT's will be present during tracheal tube exchanges.
- c. PMV will not be used on patients with a cuffed tracheostomy tube (even with cuff deflated) unless under direct supervision of the Speech Therapist during treatment.

## V. Procedure

### a. Initial Tracheostomy Tube Placement

#### i. Monitoring & Interventions

1. Tracheostomy care is performed and documented once per shift and PRN by both nursing and RT until decannulation or patient discharge.
2. Skin care consult should be requested and placed if any skin breakdown is noted involving the tracheostomy site.
3. Physician orders for *tracheostomy suture removal by RT* should be placed on day 7 post initial tube placement. The Physician can order suture removal as early as 4 days post initial tube placement at their discretion.

#### ii. Weaning from Mechanical Ventilatory Support

1. Patients will be weaned from MV following our standard practice
2. When the patient can sustain spontaneous breathing on pressure support mode (PSV) for more than 12 consecutive hours over 2 consecutive days or per intensivists/midlevel's discretion:
  - a) RT will switch the patient to either High flow oxygen therapy device using a tracheostomy adapter or to a tracheostomy collar per intensivist/midlevel's choice.
  - b) The cuff will be deflated, and any secretions will be suctioned. The cuff must remain deflated while on HFO2 or trach collar.
  - c) Intensivists/Midlevel practioners to place order for "Consult-Speech Therapy Evaluation + Treatment" to assess swallowing, risk of aspiration, and to initiate interventions for restoration of upper airway functions.
    - 1) At their discretion, Speech Therapist will perform diagnostic imaging utilizing Flexible Endoscopic Evaluation of Swallowing (FEES) or Modified Barium Swallow Study (MBS) to assess aspiration risk and guide further interventions.

#### iii. Tracheostomy Tube Occlusion Test (By ST and RT)

1. Pass: If the patient is able to tolerate gloved finger occlusion of the tracheostomy hub for 5 consecutive minutes with phonation and without stridor, labored breathing or any level of respiratory distress, consider initiation of the decannulation process. (See Page 7)
2. Fail: If the patient is unable to tolerate 5 consecutive minutes of trach hub occlusion marked by inability to phonate, stridor, labored breathing, and/or any level of respiratory distress, consider tracheostomy tube downsizing (Procedure step b.), further speech and swallow therapy with or without use of PMV (Procedure step c.), ENT consult, and/or bronchoscopy.

### b. Tracheostomy Tube Downsizing and Exchanging

#### i. Indications

1. Inability to achieve airflow around the outer diameter of the trach tube for phonation and subglottic air pressure generation
2. Inability to pass the 5 minute finger occlusion test related to size of tracheostomy tube

3. Inability to utilize PMV until tube is changed to cuffless per FH policy (section IV. C.)
  4. Special Consideration: Consider exchanging fenestrated tracheostomy tubes to non-fenestrated prior to discharge.
- ii. Qualifications
1. Sutures are removed
  2. Tracheostomy site is clean and dry
  3. 72 hours off PPV if changing to a cuffless tube.
  4. Two Level 2 Respiratory Therapists are present for tube exchange
  5. At least 7 days post initial tube placement
- Note: At the discretion of the Physician and if performed by the Physician, the initial tracheostomy tube change can occur as early as 4 days post placement.
- iii. Procedure
1. Obtain and/or verify physician's order "Tracheostomy tube exchange". The physician's order should include the size of the tracheostomy tube to be placed as well as cuffed or cuffless.
  2. Verify with nursing that the patient is stable for the procedure
  3. Identify the patient using 2 identifiers and explain the procedure
  4. Gather equipment:
    - a) New tracheostomy tube kit
    - b) Cuffed Shiley of same size for emergency
    - c) Trach ties
    - d) Suction catheters
    - e) Wall suction canister with connecting tubing
    - f) Ambu-bag with mask
    - g) Towel
    - h) Water soluble lubricant
    - i) Saline
    - j) Scissors
    - k) Tracheal tube exchange kit
    - l) 10cc syringe
  5. Verify that the patient is on telemetry
  6. Pre-oxygenate patient, if necessary
  7. Perform hand hygiene and don appropriate PPE for procedure
  8. Set up suction (14 French flexible catheter and yankauer) and verify that the suction is set to continuous <150mmHg
  9. Ensure Ambu-bag is hooked up to 15 lpm oxygen flow meter and mask is available for emergency use
  10. Open a new tracheostomy tube kit and examine for any defects. If placing a cuffed trach, make sure there is no air leak.
  11. Ensure patient is monitored with pulse oximetry and pre-oxygenate the patient with 100% FiO<sub>2</sub>.
  12. Place head of bed flat or to the 30-degree angle position, and remove the pillows behind the patient head to extend the neck.
  13. Place a rolled towel under the neck of the patient to extend their neck, and allow for optimal positioning.
  14. Suction the patient to clear any secretions from the airway

15. Deflate the pilot balloon and ensure all air is evacuated
16. Remove the inner cannula
17. Loosen tracheostomy tube ties and introduce the tracheal tube exchanger as if you were suctioning the patient
18. Hold the tracheal tube exchanger in place while the second RT removes the patient's tracheostomy tube in a curving downward motion. Do not pull the tracheostomy tube straight out
19. Once the tracheostomy tube has been removed, feed the new tracheostomy tube down over the tracheostomy tube exchanger and into the patient's stoma
20. Remove the tracheal tube exchanger and suction the patient to verify proper placement
21. Clean around patient's stoma and place new drain sponges
22. Secure tracheal tube with trach ties
23. Place patient back on their previous FiO<sub>2</sub>
24. Document trach tube change including tracheostomy tube size and date/time of change:
  - a) Add "Airway Management" parameter under the "Respiratory Interventions" header in the A&I flowsheet.

c. Passy Muir™ Valve (PMV)

- i. Indications
  1. To restore and rehabilitate upper airway functions including phonation, cough, olfaction, and swallowing.
  2. To facilitate weaning from the tracheostomy tube
  3. To promote infection control
  4. To improve the patient's quality of life and engagement
- ii. Contraindications
  1. Cuffed tracheostomy tube (see Policy IV. C)
  2. Foam-cuffed tracheostomy tube
  3. Severe upper airway obstruction
  4. Unable to tolerate cuff deflation
  5. Unconscious, sleeping, or not fully alert
  6. Unmanageable and excessive secretions
  7. Positive Pressure Ventilation (PPV) dependence
  8. Inflated tracheostomy tube cuff
- iii. Procedure
  1. ST will obtain Physician order for "Passy Muir Valve Order Set"
  2. ST will contact RT to schedule a joint session for initial PMV placement
  3. RT and ST bedside assessment of patient should include: pre/ post heart rate, respiratory rate, and SpO<sub>2</sub>
  4. ST will explain procedure to patient, family and staff present in room
  5. ST and RT will position patient in upright, comfortable position.
  6. (RT will deflate tracheostomy tube cuff if present)
  7. RT will perform tracheal and oral suctioning as needed before PMV placement
  8. ST will perform gloved finger occlusion on exhalation trial and confirm adequate air flow through the mouth and nose

9. ST will stabilize the tracheostomy tube with one hand while attaching the PMV to the hub of the tracheostomy tube with the other hand using an approximate 1/4 twist in a clockwise direction.
10. Oxygen may be administered via a tracheostomy collar and adjusted as needed by RT.
11. ST and RT will directly observe the patient for symptoms of respiratory distress, shortness of breath, and cyanosis and monitor vital signs to ensure adequate air flow around the tracheostomy tube. If the patient experiences any difficulty following application of the device, REMOVE THE VALVE IMMEDIATELY.
12. ST and RT will document use and tolerance of the PMV in the patient's medical record and/or respiratory flow sheets
13. If RT and ST agree and document that the patient can tolerate the use of PMV unsupervised, the PMV will be secured to the patient's trach collar and nursing will be educated on placement, removal and use of the valve.
  - a) Unsupervised PMV Tolerance Criteria= PMV in place >15 mins while talking, performing basic repositioning tasks, and executing upper airway functions (prompted by ST) without signs of respiratory distress, discomfort, fatigue, or other signs of intolerance as defined by supervising ST and/or RT. Cuffless tracheostomy tube.
14. If RT or ST assess that the patient is not appropriate for unsupervised use of the valve, the **PMV will be labeled and stored in the ST office until criteria for unsupervised use is met.**

iv. Special Considerations

1. Do not administer nebulized drugs when the PMV is in situ as it precipitates on the valve and can cause it to become sticky and therefore reduce its effectiveness
2. Clean PMV with warm water and soap
3. **For cuffed tracheostomy tubes, the PMV may only be used under direct supervision of ST** even if tolerated well. The valve will be labeled and stored in ST office when not in use. This is a patient safety measure at this facility.
4. Once the patient is cleared to use PMV unsupervised, ST, RT and nursing will continue to monitor the patient's tolerance.

#### d. Decannulation

##### i. Decannulation Criteria:

1. Tolerating High-Flow oxygen therapy or tracheostomy collar for 24 hours
2. Condition that necessitated the tracheostomy tube has resolved
3. Does not have airway patency problem marked by passing the Tracheostomy Tube Occlusion Test
4. Consistently alert and responsive
5. Effective cough marked by consistent ability to cough out of tube or mouth
6. Hemodynamically stable
7. No respiratory distress present (unlabored breathing with no use of accessory muscles and RR <30) with acceptable oxygenation defined as O<sub>2</sub>Sat >92% with FiO<sub>2</sub> ≤50% unless otherwise indicated by physician
8. No severe swallowing dysfunction as confirmed by objective measure performed by ST

##### ii. Decannulation Methods:

###### 1. High-Flow Oxygen Therapy option

- a) High-flow oxygen therapy will be applied continuously through tracheal cannula. Flow will initially be set at 20L/min and titrated upward in 5L/min increments as needed to a maximum of 60L/min or until patient experiences discomfort. Fio<sub>2</sub> to be adjusted targeting Sat 90-96%
- b) Patient will be considered for decannulation when they need ≤2 tracheal suction every 8 hours during a 24-hour period as monitored and documented by RT.
- c) If the patient meets the criteria detailed above in section b, proceed to section V. d. v. decannulation procedure. There will be no need for capping trial.

###### 2. Capping Trial option

- a) Patients will be considered appropriate for capping trial when they need ≤1 tracheal suction every 4 hours in 12 consecutive hours and meet decannulation criteria listed above.
- b) Procedure for Capping Trach: (RT role)
  - 1) RT will confirm that a communication order for decannulation has been placed by intensivist or midlevel prior to moving forward with procedure.
  - 2) Gather supplies
  - 3) Verify that the patient has a cuffless trach in place
  - 4) Remove the inner cannula
  - 5) Attach the trach tube cap or button
  - 6) Administer conventional O<sub>2</sub> therapy via facemask or nasal prongs as needed to achieve target O<sub>2</sub> saturation
  - 7) Document procedural note under airway management parameter
- c) Once tracheostomy is capped, decannulation will be based on tolerance to a 24-hour capping trial.

- d) Intolerance to capping will be defined as removing the cap for any reason within the 24-hour capping trial as determined by the attending Physician/midlevel, nurse, RT, or ST based on any of the following criteria:
  - 1) Need to remove accumulated pulmonary secretions as evidenced by the presence of coarse crackles over the trachea
  - 2) Visible secretions in the airways around the tracheal cannula
  - 3) Patient displays inability to generate an effective spontaneous cough through the native airway despite repetitive attempts
  - 4) Suspected aspiration of gastric or upper-airway secretions
  - 5) Acute respiratory distress secondary to airway obstruction
  - 6) Deterioration of oxygen saturation ( $\text{SatO}_2 \leq 92\%$ )
  - 7) Need to increase  $\text{FiO}_2 \geq 40\%$  or an increase  $\geq 10\%$  over the baseline  $\text{FiO}_2$
- e) If patient does not pass 24-hour capping trial, the trial will not be repeated until  $\geq 12$  hours later in order to recheck criteria for eligibility.
- f) Patients with repetitive intolerance to capping trial, that Intensivist attributes to capping trial itself, can be considered for the High-flow Oxygen Therapy method. (section V. d. ii. 1)

iii. Suctioning

1. Indications for tracheal suctioning within this protocol:

- a) Need to remove accumulated pulmonary secretions as evidenced by the presence of coarse crackles over the trachea
- b) Visible secretions in the airways around the tracheal cannula
- c) Patient's inability to generate an effective spontaneous cough despite repetitive attempts
- d) Suspected aspiration of gastric or upper airway secretions
- e) Deterioration of oxygen saturation ( $\text{SatO}_2 \leq 92\%$ ) secondary to airway obstruction
- f) Tracheal suctioning performed only to obtain a sputum specimen for analysis are not considered in the decannulation protocol

2. Tracheal Suctioning Technique:

- a)  $\text{FiO}_2$  will be increased temporarily to 100% prior to suctioning.
- b) The inner sleeve will be removed and cleaned, and open suctioning will be performed through the tracheal cannula. If tracheal cannula is fenestrated, a nonfenestrated inner cannula will be placed for suctioning procedure.
- c) Prior to each suctioning event, the negative pressure will be checked by occluding the end of the suction tubing before attaching it to the suction catheter.
- d) Suction pressure will be set to  $< 150\text{mmHg}$ . Manual ventilations will be allowed.
- e) Initially shallow tracheal suctioning will be attempted, as in most cases respiratory secretions accumulate the cannula level and can be resolved by removing the inner sleeve.



- f) Deep tracheal suctioning will be attempted when the criteria for suctioning remains after shallow tracheal suctioning.
  - g) The duration of each suctioning event will be limited to 15 seconds.
- iv. Alternate interventions for persistent failure to meet criteria for decannulation
  - 1. Diagnostic bronchoscopy
  - 2. ENT consultation for endoscopic laryngeal examination to identify possible functional or anatomical abnormality
  - 3. Long-term tracheostomy tube with inner cannula
  - 4. Sleep apnea tube
  - 5. Surgical treatment for tracheal obstruction
  - 6. Vocal cord surgery
  - 7. Noninvasive ventilation with a capped tracheostomy tube
  - 8. Placement of an airway stent for tracheomalacia
- v. Decannulation Procedure:
  - 1. RT will consult with the intensivist or midlevel when the indications for decannulation are met and request orders for decannulation.
  - 2. RT will confirm that a communication order for decannulation has been placed by intensivist or midlevel prior to moving forward with procedure. Order: "Tracheostomy Removal"
  - 3. When order for decannulation is confirmed, the RT will proceed with decannulation in coordination with nursing.
  - 4. Once the tracheostomy tube has been removed, the stoma will be covered with semi-permeable dressing (i.e. gauze).
  - 5. After decannulation, the patient will be instructed to apply gentle pressure with their fingers over the site gauzed when coughing.
  - 6. RT and nursing will continue to perform and document trach care until the stoma site no longer requires bandaging marked by stoma closure.
  - 7. The tracheostomy stoma heals within 5-7 days in most patients with no need for sutures. However, tracheostomy-stoma-closure rates are variable, and closure may occur in a single day or may take weeks.