Providence Health Care	Department: **Respiratory Services**	Date Originated: August 2010 Date Reviewed/Revised: Dec 2012
CLINICAL PRACTICE GUIDELINE	Topic: Critical Care – Tracheostomy Weaning Protocol (Respiratory Therapy) Number: B-00-13-12016	Related Links: Tracheostomy Weaning Protocol - algorithm

APPLICABLE SITES:

St. Paul's Hospital
Mount Saint Joseph Hospital

GENERAL INFORMATION and POLICY STATEMENT:

For patients with trach tubes in situ that are being transferred from critical care or PACU to the general ward see also Tracheostomy Transfer Guidelines.

Trials of Unsupported Ventilation:

Trials of unsupported ventilation are generally well tolerated by patients who meet the criteria for weaning from mechanical ventilation (refer to Weaning Protocol for ICU/CCU).

Oxygen therapy during trial of unsupported ventilation can be provided by Optiflow high flow heated humidity system (OPTIFLOW Heated Humidity High Flow Oxygen Therapy).

Some patients do not tolerate trials off the ventilator because of loss of PEEP and subsequent lung derecruitment. In these cases, consider use of the Passy-Muir valve (refer to Passy-Muir Valve) because they help to restore positive pressure to the upper airway and may prevent lung volume loss, among the other benefits seen with the use of this device. Note: a physician's order required for the use of a PMV.

Cuff Deflations:

Unless otherwise ordered by the physician, all patients with tracheostomy tubes in situ will be automatically assessed for cuff deflation trials on a daily basis when off the ventilator.

Deflating the cuff of a tracheostomy tube during a trial of unsupported ventilation has the potential to:

- Decrease diaphragmatic effort
- Decrease oxygen consumption of the diaphragm
- Increase respiratory muscle efficiency

Corking Trials:

Unless otherwise ordered by the physician, once a patient has tolerated cuff deflation for 24 hours they will be automatically assessed for corking trials. Whenever possible plugging/corking trials will be initiated while the patient is still in a critical care unit, and prior to transfer to the general ward.

Corking the tracheostomy tube as an interim step to decannulation is common practice, although there is no evidence to support that it is mandatory. However, it does allow time to monitor the patient in terms of:

- Cough effectiveness
- Ability to swallow
- Voice quality
- Ability to breathe through the upper airway

Patients who tolerate initial corking trials should be considered for a cuffless tracheostomy tube (physician's order required).

For Patients Outside Critical Care Areas:

- If a patient has been plugged/corked **less than 24 hours continuous** prior to transfer from critical care area to the ward, they will be unplugged for the night. This is to ensure that trials will occur during the day when there is sufficient RT and RN staff.

- The patient must be stable on the receiving unit for a period of 24 hours prior to initiating or resuming any plugging/corking trials. The greatest risk to a post-critical care patient is during the first 24-hour period after transfer to the ward.

First Trach Tube Change:

The first tracheostomy tube change should not be attempted for 7 days following the initial tracheotomy procedure. This recommendation is based on the generally accepted theory that it takes this long for a stable endotracheal-cutaneous tract to form, although there is no hard data to confirm this. A physician's order is required to change the tracheostomy tube.

Procedure: Refer to Tracheostomy Tube Management – Changing Trach Tube.

Downsizing Trach Tubes:

Although downsizing to a smaller size tube may be necessary to facilitate corking trials,

smaller trach tubes not only have a smaller outer & inner diameter, but they are also shorter in length. As such, very small trach tubes (i.e. size #4 Shiley) may not sit properly within a given patient's trachea.

As a general recommendation, if a patient is able to tolerate plugging/corking of the trach tube, regardless of its size, then further downsizing is not necessary.

Elective Decannulation:

Although there are no specific guidelines regarding when to consider decannulation, in general once a patient who is otherwise stable and has tolerated corking for 24h, they can be considered for decannulation. A physician's order is required for elective decannulation.

Procedure: Refer to Decannulation/Elective Removal of a Tracheostomy Tube.

TRACHEOSTOMY WEANING PROTOCOL

PROCEDURE:

1. If a patient with a trach tube in situ meets the criteria for weaning from a ventilator, unassisted breathing trials should be initiated unless otherwise ordered by a physician. The initial attempt should be initiated with the cuff inflated to assess patient tolerance to the trial.

2. Document patient tolerance to unassisted breathing trial, including vital signs, work of breathing, chest auscultation, and effectiveness of cough.

   If the patient does not tolerate unassisted breathing trial, return patient to ventilator, document rationale, and discuss weaning plan with patient care team.

3. If the patient tolerates a 1hour trial with cuff inflated, assess the patient for cuff deflation:

   - Effective cough
   - Minimal secretions (requires suctioning less than 4-5 times per shift)
   - Alert and cooperative
   - Minimal aspiration risk (patient is vomiting or has increased gastric residuals)

4. If the patient is a candidate for cuff deflation, deflate the cuff and continue with unassisted breathing trial.

   NOTE: If the patient is not a candidate for cuff deflation, document rationale and continue with unassisted breathing trial with cuff inflated. Reassess for cuff deflation in 24 hours.

5. Document patient tolerance to cuff deflation, including vital signs, work of breathing, chest auscultation, effectiveness of cough, ability to phonate. If tolerated, continue cuff deflation during trials. Signs that the patient may not be tolerating cuff deflation include:
   - Increased work of breathing
   - Decreased oxygen saturation

- Difficulty clearing secretions, increased frequency of suctioning

NOTE: If cuff deflation trial is not tolerated, re-inflate cuff and continue with unassisted breathing trial. Document rationale and discuss weaning plan with patient care team.

6. Once patient has tolerated cuff deflation for 24 hours, assess the patient for corking trials:

   - Patent upper airway
   - Significant leak around the trach tube
   - Able to cough and clear secretions
   - Able to swallow

7. If the patient is not a candidate for corking trials because there is no leak around the trach tube, consider downsizing to a smaller size tube (a physician's order is required).

8. For patients who are candidates for a corking trial:

   - Suction the patient via the tracheostomy tube and oropharynx.
   - Remove the tracheostomy specific oxygen delivery device, and replace with the desired therapy for the plugging/corking trial.
   - For **CUFFED** tracheostomy tubes, *the cuff must be fully deflated prior to initiating plugging/corking trials.*
   - Firmly place the 15 mm Shiley cap over the end of the tracheostomy tube.

   NOTE: The inner cannula must remain in the tracheostomy tube when the cap is used.

9. Assess the patient to ensure adequate airflow around the tracheostomy tube and through the upper airway. The patient should be able to vocalize and produce an effective cough effort both spontaneously and on command.

10. If initial corking is tolerated, continue with trial. Document patient tolerance to corking, including vital signs, work of breathing, chest auscultation, effectiveness of cough, ability to phonate.

11. *Consider changing to a cuffless trach tube once patient tolerates 1 hour or more of corking* (physician's order required).

12. Once patient remains corked for 8-10 hours continuously, corking may continue overnight; otherwise, uncork trach tube at night and resume trial next morning.

13. Consider decannulation when corking has been tolerated for approximately 24 hours and patient is otherwise stable (physician's order required).

REFERENCES:

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2. Clifford C, Spencer A. *An evalution of the impact of a tracheostomy weaning protocol on*

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3. Dhand R, Johnson JC. *Care of the chronic tracheostomy.* Respiratory Care 2006; 51(9): 984-1001.

4. Lewarski JS. *Long-term care of the patient with a tracheostomy.* Respiratory Care 2005; 50(4): 534-538.

5. Martinez GH, Fernandez R, Casado M. *Tracheostomy tube in place at intensive care unit discharge is associated with increased ward mortality.* Resp Care 2009; 54(12): 1644-1652.

6. Pierson, DJ. *Tracheostomy and weaning.* Resp Care 2005; 50(4): 526-533.