**Tracheostomy Suctioning**

**Purpose:** Tracheostomy suctioning, or “deep suctioning”, is done to improve ventilation by removal of airway secretions using a sterile catheter. The catheter must remain sterile when inserted into a tracheostomy either by the use of sterile gloves and sterile technique or a by using a catheter-in-sleeve to prevent bacterial contamination and reduce the risk for nosocomial infections.

A closed catheter system is preferred when suctioning ventilator-dependent patients to allow vent pressure to be maintained during suctioning. Ventilated patients will not be discussed here.

**Nursing Considerations**

**Assessment:**

Review medical history and indication for tracheostomy. Many patients have long-standing tracheostomies and consider suctioning routine, while post op patients may require additional measures to address fears and concerns for pain.

Assess for airway patency, effective vs. ineffective airway clearance (ability to cough), and for presence of abnormal breath sounds. Also assess heart rate, oxygen saturation, and respiratory rate.

If applicable, clean the inner cannula (see: Cleansing Inner Cannula and Ostomy procedure). Many times secretions collect along the cannula and may cause occlusion. Suctioning may be avoided by cleaning the inner cannula and by encouraging the patient to cough.

Review whether patient is on droplet precautions or is at risk for infectious disease related to droplet or airborne transmission (influenza, MRSA). The CDC advises caution while performing aerosol-generating procedures (AGP).. Procedures that induce coughing with tracheal intubation have been associated with transmission of smaller droplet particles and may require use of N-95 mask according to the World Health Organization.

Calculate catheter size: The diameter should be less than or up to half the internal diameter of the trach tube. If it is too large it will occlude the airway or cause injury. Estimated size: Adults: 12-18 Fr, Children: 14 Fr, Infant: 6-10 Fr.

Sizing formula: INNER trach diameter divided by 2, then multiplied by 3 = French size.

**Contraindications**

Scheduled suctioning is inappropriate. Frequency of suctioning should be guided by clinical indications based on patient’s respiratory status, consistency of secretions, and ability to mobilize secretions independently with coughing.

Routine instillation of saline prior to suctioning in order to loosen secretions has not been shown to be effective and is no longer recommended. The best approach to manage secretions and enhance pulmonary function is by adequate hydration and humidification of oxygen when ordered.

Suctioning should not be performed if resistance is met when attempting to pass the tube into the tracheostomy or if the tube is dislodged. This may cause injury.

**Risks:**

Suctioning temporarily depletes oxygen, and can lead to hypoxia and atelectasis. A vagal response including arrhythmias can also occur; however, proper technique and catheter size can mitigate these problems. Note: Suctioning causes coughing and tachycardia. This is an expected response.
Suctioning can cause damage to the mucosal lining. Appropriate suction pressure and technique can reduce this risk. Measures must be taken in case of inadvertent dislodging of the trach tube during any care for a patient with tracheostomy. An obturator should be present at the bedside as well as a self-inflating resuscitator bag (AMBU) for emergency use.

Patient Teaching:

Patients should be instructed to breath normally. Inform him or her that the procedure will likely induce coughing. Suctioning should not be painful. Patients should be given a hand signal to use if they experience discomfort or wish to pause the procedure, since they cannot speak during suctioning.

Procedure

**Supplies:**

- suction tubing
- trach suctioning kit or individually wrapped sterile gloves and suction catheter
- bottle sterile water or normal saline (250mL)
- sterile container to hold water
- clean gloves
- PPE including gown and mask with face shield (CDC recommends N-95 mask for suspected pathogen)
- suction machine (portable or wall connection with Y connector)
- oxygen source with tubing
- obturator (kept at bedside for emergencies)
- self-inflating resuscitator bag (AMBU) with trach tube adapter (for emergencies)

**Steps:**

Confirm the patient’s ID using two identifiers and explain the procedure to the patient.

Prepare equipment: Wall suction should have tubing connected and be set between -80 mmHg and -120 mmHg. Higher pressures increase the risk of trauma to the mucosa. Depending on method of delivery, the oxygen source should be set to maximum (10-12 LPM) with the tubing connected. An AMBU bag should have a trach tube adapter connected and should be checked for function - this can be done by squeezing the bag. It should re-inflate spontaneously.

Perform hand hygiene; don clean gloves and PPE.

Position client for comfort. Semi-fowlers or upright is optimal for pulmonary hygiene, but not required.

Hyperoxygenate: Instruct patient to take a few deep breaths while oxygen is at maximum, then disconnect oxygen source from the trach tube.

Remove and the clean inner cannula if the patient has one. While suctioning, this can be placed on the sterile field or in sterile water. (see: Tracheostomy Care: Removing and Cleaning Inner Cannula)

Open new suction catheter package, and ready sterile container for water.

Remove cap from sterile water, and pour into open sterile container.

Don sterile gloves. Keeping dominant hand sterile and the other hand clean, grasp suction tubing with clean hand and sterile catheter with sterile hand. Estimate the depth catheter will be advanced: 0.5 to 1 cm past the end of trach tube - and grasp the catheter at that point.

Move your clean hand near the chimney valve at base of catheter (this end will not touch the tracheostomy). The chimney valve initiates suction when it is occluded with your thumb.
Insert the catheter: Without applying suction, move your sterile hand toward the end/tip of catheter and guide the catheter into trach tube just until resistance is felt. If patient begins coughing, withdraw catheter slightly. (Suction during insertion may cause discomfort and injury.)

Suction: Using your clean thumb, occlude the chimney valve to produce intermittent suction as catheter is rotated gently while withdrawing from the trach. Suction for no more than 10 seconds.

Rinse the catheter with sterile water from the tray until the lumen is clear by using intermittent suction. Do this between each pass with the suction.

Repeat the suction steps, inserting without suction and removing with intermittent suction for no more than 10 seconds.

Turn off suction and replace oxygen to patient as ordered.

Discard catheter into appropriate receptacle after disconnecting from suction tubing.

Empty suction bowl with sterile water and discard.

Auscultate lungs and assess heart rate and breathing effort.

Remove (doff) all PPE before exiting room and place in appropriate receptacle.