VANDERBILT UNIVERSITY MEDICAL CENTER

MULTIDISCIPLINARY SURGICAL CRITICAL CARE
PERCUTANEOUS TRACHEOSTOMY MANAGEMENT GUIDELINE

I. PURPOSE:

- To standardize the steps and processes involved in the performance of bedside percutaneous tracheostomies in the SICU.
- This document should be used in conjunction with the SOP for Bedside Surgical Procedures and is meant to supplement the information contained within that document.

II. PERSONNEL:

- To ensure that maximal compliance with safety procedures within the SICU and to minimize the potential for communication errors, Bedside Percutaneous Tracheostomies are to be performed by appropriate personnel dedicated to the SICU.
- Appropriate members include
    - **1. Attending – Surgical Critical Care Faculty that routinely practice in the SICU**
        - During Anesthesia faculty SICU - contact Dr. May or his office to obtain coverage of the procedure.
    - **2.** Critical Care Fellow – employing a non-surgical critical care fellow is at the discretion of the Surgical Critical Care Attending
    - **3.** Residents – primarily residents from the SICU team, however, residents from the primary team may be involved at the discretion of the Primary and Surgical Critical Care attending

III. SELECTION OF TRACHEOSTOMY LENGTH:

- All patients with a BMI > 35 – should employ and XLT (usually an 8)
- All patients with severe head and neck edema, particularly with BMI > 30 should be considered for an XLT.

IV. EQUIPEMENT:

1. Trach Kit (located in service center)
    1) Ciaglia (Blue Rhino) percutaneous tracheostomy kit
        a. Scalpel
    2) Cut-Down Instrument Set
        a. Suture (2-0 silk)
        b. Pair - scissors
        c. Pair - curved hemostats
        d. Needle holder
        e. Army/Navy retractors
    3) Percutaneous Trach Pack
        a. Sterile Field
        b. OR Towels
        c. Fluffs
        d. Extra Tools
    4) Trach tubes: (1) #8 Shiley and assorted smaller sizes
    5) Gowns, gloves, masks, hats
    6) Chemical CO2 detector

7) Wall Suction canisters set-up with Yankauer.
8) A Betadine / Chlorhexidine prep
9) Omni Flex (flexible trach adapter)
10) 3-0 Vicril Suture (in the event of bleeding)

2. Intubation tray (on standby: do not open)
3. Medications
4. Bronchoscope (if elected for high risk cases)

V. Drugs used during Percutaneous Tracheostomy. These may vary depending on the fellow or attending performing the procedure.

Patients must be adequately sedated for procedure to ensure tolerance and comfort.

1. Analgesia (narcotic) with some combination of sedation (Benzodiazepine/ Propofol) and supplemental sedation for increased BP and heart rate.
    a. Fentanyl 500 mcg
    b. Versed 10 mg
    c. Diprivan 50 cc vial (esp. CHI pts.) – erase this part since we don't do CHI
2. Paralytic agent (Vecuronium or Cisatracurium if hepatic or renal insufficiency suspected)

VI. Pre-Procedure Evaluation

During performance of any percutaneous tracheostomy procedure, an evaluation should be preformed to minimize risk of complications. Relative contraindications include:

1. Inability to maintain oxygenation and ventilation during and after procedure
    a. Peep > 15
    b. Inability to tolerate decreased minute ventilation
    c. High FIO2 requirements prior to initiating procedure
    d. History of difficult intubation
2. Elevated ICP:
    a. Acute change in minute ventilation and airway pressures will acutely elevate ICP – delete this section because we don't do ICP's
2. Presence of coagulopathy
    a. INR >1.5
    b. Plt < 20,000

 Each of these suggests increased risk and should be discussed with attending.

VII. PREPARATION FOR THE PROCEDURE

1. Ensure that the components of the SICU bedside surgery procedures standard operating procedures document are followed
2. Ensure that appropriate consent for procedure is completed
3. Availability of appropriate medications as outlined in section V.
4. Ensure that intubation tray is present
5. Ensure that ventilator settings are adjusted appropriately
    a. Ensure a fixed minute ventilation that approximates the patient's pre-procedure minute ventilation

b. Set a volume control setting to ensure fixed volumes during the procedure
c. Set FIO2 to 100%

6. Personnel to be present for procedure:
   a. Nurse procedure support personnel – maintains airway and ensures that all appropriate SOPs are followed
   b. Primary nurse – responsible for delivery of all medication, monitors patient level of consciousness and sedation, monitors and records vitals
   c. Surgical proceduralists – fellow, residents, and surgical faculty that are on the SICU service
      i. If anesthesia attending on-service, a covering surgical attending from the MDSCC should be arranged through Dr. May's office
      ii. If primary surgical attending is the covering faculty, SICU attending/fellow must be present to ensure that all safety practices are followed and to monitor the patient during the procedure. The SICU surgical team should assist the faculty.
7. Ensure hypopharyngeal suctioning has been performed prior to induction of general anesthesia.

VIII. OUTLINE OF PROCEDURE PERFORMANCE:

1. Pre-procedure consent, sedation as required
2. Surgical Set up
   a. A sterile perimeter is designated around the patient's bed, and the surgical instruments are setup by the proceduralist
   b. Sterile prep and draping
   c. All materials listed above checked and placed in appropriate position
3. Adjust ventilator settings as above
4. Induction of general anesthesia (attending presence required)
   a. Sedated with *Versed* and / or *Diprivan*,
   b. Anesthesia *Fentanyl* bolus (150 – 250 mcg IV)
   c. Surgical paralysis *vecuronium* (*cisatracurium* for patients in renal or hepatic failure)
5. **PROCEDURAL TIME OUT:**
   a. Utilize tracheostomy specific time out sheet (shown below)

IX. THE SURGICAL PROCEDURE:

a. The area is infiltrated with 1% Lidocaine with Epinephrine and a vertical incision is made. Dissection is carried down to the level of the trachea.
b. The tapes holding the endotracheal tube are cut and the procedurealist at the head of the bed manipulates the ET tube while the surgeon palpates for its presence within the trachea. Tidal volumes should be closely monitored during this time. The tube is slowly withdrawn until the balloon can be palpated, and then withdrawn further until its tip is palpated at the level of the second tracheal ring.
c. The percutaneous tracheostomy is completed in the standard fashion.
d. Confirmation of Position
e. CO2 monitor is connected to the tracheostomy tube and color change is confirmed,

expiratory tidal volumes are confirmed
f. At this point the ET tube may be fully withdrawn.
g. The tracheostomy tube to be sutured to the neck and secured with tracheostomy ties.
- Do not replace with the soft Velcro ties. The trach ties should remain in place for at least 3 -5 days in order to form a tract.

h. Post Procedure Chest x-ray is always obtained.
i. Ventilator settings are returned to prior levels after sedation and paralytics have worn off.
j. Make sure obturator is placed in a plastic bag and kept at the bedside if needed for emergent tracheostomy tube reinsertion if the patient is accidentally decannulated. Additionally, laminated tracheostomy ID card should be filled out by the bedside nurse and placed at the head of the bed.
k. Discard used supplies, and wash hands.

S.I.C.U. Check off sheet for Perc Trach

Patient Name_____ Date: _____
Pts BMI_____

Consent signed _____

Attending present _____

Medications in Room _____

- Fentanyl 600 mcg
- Vecuronium 20 mg
- Versed 8 mg
- Propofol 400 mg: two (2) 20 ml vials
- Lidocaine 1% with epinephrine

Ventilator on Volume Control mode, rate to maintain consistent minute volume and FiO2 at 100% _____

Ambu bag and mask in room, connected to O2, and O2 turned on _____

Intubation tray in room or just outside door _____

Also in room: _____

- CO2 detector
- scissors
- 10cc syringe
- trach extender
- 2 suction set-ups at head of bed
- airway nurse