

**MEHLVILLE FIRE PROTECTION DISTRICT  
EMERGENCY MEDICAL SERVICES  
GUIDELINES FOR PREHOSPITAL EMERGENCY CARE**

**SUBJECT: 1000.17 ORIGINAL ISSUE 01/15**  
**PEDIATRICS:**  
**PEDIATRIC RESPIRATORY**  
**DISTRESS IN PATIENTS WITH PAGE 1 OF 5**  
**A TRACHEOSTOMY**

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Fire District personnel may encounter pediatric patients who have been sent home from the hospital with a tracheostomy tube in place. These patients may or may not be on ventilatory support. If these patients are found to be in respiratory distress, the following protocol should be followed.

- Determine when the last time the tracheostomy tube was cleaned and if there have been any prior problems with the tracheostomy tube.
- Assess the tracheostomy tube to make sure that:
  - ⇒ It is in place
  - ⇒ The obturator has been removed
  - ⇒ If it is a double lumen, that the inner cannula is in place
  - ⇒ If a fenestrated tracheostomy tube, that the decannulation plug or talk valve has been removed.
- If signs of respiratory arrest or respiratory failure with inadequate breathing are present, assist ventilation using a bag-valve mask device with high-flow, 100% concentration oxygen via the tracheostomy. If unsuccessful, reposition airway and attempt bag-valve mask assisted ventilation again. If tracheostomy tube is a double lumen tube, the inner cannula must be in place to attach bag-valve mask device.
- If unable to ventilate via the tracheostomy or respiratory distress persists with poor or noisy (gurgling, rhonchi) breath sounds, attempt to suction through the tracheostomy using the following procedure:
  - ⇒ Ask family and caregivers for child's suctioning supplies and for assistance as they are more familiar with suctioning of patient. If child's supplies are not available use a suction catheter of the same size as normally used for the child. If knowledge of size of catheter is not available, the size can be estimated by doubling the inner diameter of the tracheostomy tube and rounding down to an available size catheter.
  - ⇒ For double lumen tracheostomy tubes, the inner lumen may be removed, suctioned directly and then re-inserted.
  - ⇒ Determine suction depth by comparing suction catheter to either obturator or patient's spare tracheostomy tube. If these are not available then maximum suction depth for catheter should be 3-6 cm.
  - ⇒ Ensure that suction device is set to 100 mm Hg for tracheostomy suctioning.
  - ⇒ Pre-oxygenate the child via either non- rebreather mask over face (partial tracheostomy) or tracheostomy tube or via assisted ventilations with bag-valve mask if patient has ineffective ventilations. If unable to ventilate, proceed immediately to the next step.

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- ⇒ Flush 2 to 3 mL of sterile normal saline into the tracheostomy tube.
- ⇒ Insert suction catheter into tracheostomy to pre-determined depth with suction off. Never force catheter while inserting. Apply suction while withdrawing catheter. Limit suctioning to no more than 3 seconds.
- ⇒ Suctioning following steps d-g may be repeated up to two times, if significant secretions are removed and patient tolerates procedure.
- ⇒ If unable to pass the suction catheter and patient remains in distress despite assisted ventilations, continue with protocol to change tracheostomy tube.
- After suctioning, if the child remains in distress with poor air movement, again attempt assisted ventilation using a bag-valve mask device with high-flow, 100% concentration oxygen via the tracheostomy. If unable to ventilate via the tracheostomy and the child remains in distress, change the tracheostomy tube by either the following facilitated or direct technique.
- If the child remains in distress with inadequate breathing and you are unable to replace the tracheostomy tube with a new tracheostomy tube or an endotracheal tube, attempt to perform orotracheal intubation using standard technique. This should only be attempted for a child with an intact airway proximal to the tracheostomy site (partial tracheostomy).
- If the child remains in distress with inadequate breathing and you are unable to replace tracheostomy tube and unable to perform orotracheal intubation, assist ventilations with a bag-valve mask over the mouth and nose while occluding the stoma (this should only be performed on a patient with an intact airway proximal to the tracheostomy site) or over the stoma while occluding the mouth and nose. Assess for adequate ventilation by clinical assessment including bilateral chest expansion with good breath sounds, improvement in vital signs, and pulse oximetry.
- Continue with assisted ventilations for child with continued respiratory distress and inadequate breathing. If abdominal distention arises, have suction ready in the event the child vomits. If breathing is adequate and the child exhibits continued signs of respiratory distress, administer high-flow, 100% concentration oxygen as necessary. Use a non-rebreather mask or blow-by as tolerated. In the child with respiratory distress and absent breath sounds consider obstruction of the tracheostomy tube. If bronchospasm is present, refer to the appropriate protocol for treatment options.

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**Changing the Tracheostomy Tube**

**Facilitated Technique**

1. Ask the child's family or caregiver for a new tracheostomy tube and for assistance with changing the tracheostomy tube as they may have more experience than prehospital personnel.
2. For a double cannula tracheostomy tube, remove the inner cannula and follow this technique to insert the outer cannula. Once the outer cannula is in place, insert the inner cannula prior to confirming correct placement via assisted ventilation.
3. Insert a suction catheter through a new tracheostomy tube.
4. If the old tracheostomy tube has a cuff, deflate the cuff by connecting a syringe to the valve on the pilot balloon and withdrawing air until the pilot balloon collapses.
5. Cut the tracheostomy ties or remove the tracheostomy holder device.
6. Gently remove the old tracheostomy tube in the anatomical direction (outward and towards the child's feet).
7. Insert the suction catheter into the stoma. Aim the suction catheter towards the child's feet and only insert 3-6 cm into the airway.
8. Gently advance the new tracheostomy tube over the suction catheter while holding the catheter in place and using it as a guide.
9. Remove the suction catheter from the tracheostomy tube.
10. If unable to insert a new tracheostomy tube, try this same procedure with a smaller size tracheostomy tube.
11. If still unable to insert the tracheostomy tube, insert a similar internal diameter size endotracheal tube following same technique. The endotracheal tube should only be inserted to a depth equal to the length of the tracheostomy tube which would have been inserted.
12. Attach bag-valve mask device and provide assisted ventilations.
13. Confirm placement of the new tracheostomy tube using clinical assessment including bilateral
  1. chest expansion with good breath sounds, improvement in vital signs, and pulse oximetry. Secondary confirmation should be via end-tidal CO2 monitoring.

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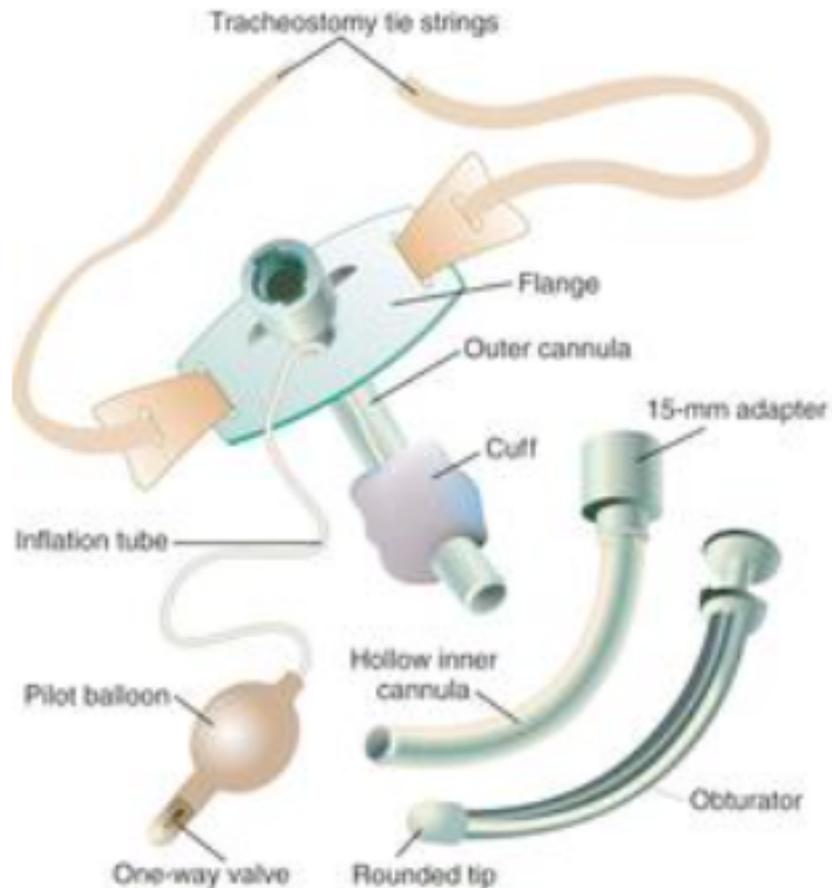
**Direct Technique**

1. Ask the child's family or caregiver for a new tracheostomy tube and for assistance with changing the tracheostomy tube as they may have more experience than prehospital personnel.
2. For a double cannula tracheostomy tube, remove the inner cannula and follow this technique to insert the outer cannula. Once the outer cannula is in place, insert the inner cannula prior to confirming correct placement via assisted ventilation.
3. If the tracheostomy tube has a cuff, deflate the cuff by connecting a syringe to the valve on the pilot balloon and withdrawing air until the pilot balloon collapses.
4. Cut the tracheostomy ties or remove the tracheostomy holder device.
5. Gently remove the old tracheostomy tube in the anatomical direction (outward and towards the child's feet).
6. Gently insert the new tracheostomy tube in the anatomical direction. This will be with the curve downward, the tube aimed towards the child's feet and in a curving motion. Make sure the obturator is in place for insertion and then remove after insertion.
7. If unable to insert a new tracheostomy tube, try this same procedure with a smaller size tracheostomy tube.
8. If still unable to insert the tracheostomy tube, insert a similar internal diameter size endotracheal tube following same technique. The endotracheal tube should only be inserted to a depth equal to the length of the tracheostomy tube which would have been inserted.
9. Attach bag-valve mask device and provide assisted ventilations.
10. Confirm placement of the new tracheostomy tube using clinical assessment including bilateral chest expansion with good breath sounds, improvement in vital signs, and pulse oximetry. Secondary confirmation should be via end-tidal CO<sub>2</sub> monitoring.

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Parts of a Tracheostomy Tube