

7F5 NEEDLE CRICOTHYROTOMY

PATIENT CARE GOALS

- Gain control of the airway¹ in patients for whom orotracheal intubation and/or supraglottic airway insertion has failed or is not indicated and ventilation by any other means is not possible.² Such conditions as total or partial airway obstruction and severe facial trauma are conditions in which this procedure may be indicated.

PARAMEDIC

1. Assemble the oxygen flow modulator set in the order³ shown to the right.
2. Connect 3 mL syringe to the needle/catheter.
3. Place the patient in a supine position. Hyperextend the neck to bring landmarks into view, unless cervical spine injury is suspected.
4. Secure the larynx laterally between the thumb and middle finger, pulling tension on the skin to make landmarks more visible.
5. Use the forefinger of the same hand to find the cricothyroid membrane (see Figure 1, below). The membrane is located in the midline between the thyroid cartilage and the cricoid cartilage. This is the puncture site.
6. Clean the site by vigorously scrubbing with alcohol or iodine preps.
7. Holding the device firmly, insert the needle at the inferior margin of the cricothyroid membrane. The needle should be inserted at a 45-degree angle, with the bevel of the needle pointing toward the patient's feet (see Figure, 2 below).



Figure 1



Figure 2

8. As the needle is being inserted, apply negative pressure to the syringe until the plunger moves freely, confirming entrance into the trachea (see Figure 3, below).
9. Hold the needle and syringe firmly and advance the catheter along the needle into the trachea.

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Carefully remove the needle and syringe (see Figure 4, below).



Figure 1



Figure 4

10. Reattach the syringe to the catheter and aspirate for air to confirm that the catheter is still in the trachea.
11. Have an assistant stabilize the catheter while proceeding to next steps.
12. Attach oxygen line to O₂ source. Attach oxygen flow modulator to the catheter.
13. Set O₂ flow rate as follows. Age 0-12: 1 LPM plus 1 LPM per year. Age >12 15 LPM
14. Deliver oxygen by occluding the holes on the modulator for 2 seconds and then uncovering them for 6 seconds. Repeat process of 2:6 second modulations while proceeding to following steps (see figures 5 and 6, below).



Figure 5



Figure 6

15. Assess lung sounds and oximetry frequently.⁴
16. Secure the catheter to the neck with gauze and tape.

DOCUMENTATION KEY POINTS

- Suspected cause of partial or complete airway obstruction.
- Complications⁵ encountered and response to procedure.
- Continuous monitoring of oximetry and physical signs of air movement in the lungs.

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NOTES

¹ It is important to remember that the needle cricothyrotomy and use of the ENK Needle Jet Modulator only provide oxygenation to the lungs and does not allow for full exhalation of carbon dioxide. For these reasons this procedure should be performed at the earliest determination that the ventilation is unable to be performed adequately.

² Needle cricothyrotomy is the preferred surgical airway for pediatric patients but may be used in the adult patient when the QuickTrach or other adult sized surgical airway is unsuccessful or not available.

³ If this equipment is not available the following alternative setup may be used:

1. ARS Chest Decompression Needle
2. 3 mL syringe (plunger removed after insertion of catheter)
3. BVM adapter from size 7.5 endotracheal tube
4. BVM

The catheter is inserted using the same method as above (steps 2-11).

Provide ventilations at the appropriate rate for the patient's age. Be aware that there might be considerable resistance while providing ventilations due to the small diameter of the catheter.

⁴ Capnography cannot be measured when providing ventilations via needle cricothyrotomy.

⁵ Complications include potential for pneumothorax as a result of high airway pressures, bleeding at the puncture site, perforation of the esophagus, subcutaneous or mediastinal emphysema.

If the patient does not have a complete upper airway obstruction it is necessary to pinch nose and cover mouth to prevent air exfiltration.

