





		Needle Cricothyrotomy (for patients 1 – 8 years of age)	6091H(b)
		Effective 7/1/2025	Expires 6/30/2028
Low Frequency Needle Cricothyrotomy	Approval: Medical Director John Beuerle, MD	Signed 	
Applies To: Paramedics	Approval: EMS Director Teresa Rios	Signed 	

Performance Objective

To establish a patent airway when all other methods of airway management have failed.

Needle cricothyrotomy is a rarely utilized but potentially life-saving intervention that can be performed to establish a patent airway for adult and pediatric patients with a complete airway obstruction that cannot be resolved using less-invasive techniques. Needle cricothyrotomy is contraindicated if the patient can either breathe spontaneously or can be adequately ventilated.

Before performing needle cricothyrotomy, paramedics must:

1. Attempt all other methods of airway management appropriate for the patient, such as patient positioning, performing a jaw thrust or head tilt / chin lift, suctioning the airway, performing back blows, abdominal thrusts, chest compressions, and/or removal of foreign bodies using Magill forceps, ventilating the patient using a bag-valve-mask, placement of an oropharyngeal and/or nasopharyngeal airway, placement of a supraglottic airway device, and/or intubating the patient with an endotracheal tube. Not all of these methods may be appropriate for the patient's condition. (Use of Magill forceps, for example, is only indicated for removal of a visualized foreign body.) The paramedic is therefore not required to attempt *all* of the above interventions prior to performing a needle cricothyrotomy, but they should attempt any reasonable airway management intervention prior to performing a needle cricothyrotomy. Move through the less-invasive interventions quickly in an attempt to establish an airway and ventilate the patient. If these methods fail and the patient cannot be adequately ventilated, perform a needle cricothyrotomy as follows:
2. Identify indications for performing a needle cricothyrotomy:
 - A. Inability to establish and maintain the airway using less-invasive techniques
 - 1) Unable to ventilate using a bag-valve-mask
 - 2) Unable to perform endotracheal intubation
 - 3) Unable to place a supraglottic airway and effectively ventilate through the supraglottic airway
 - 4) Complete obstruction of the upper airway that cannot be removed by suctioning, abdominal thrusts, Magill forceps, etc.
3. Identify contraindications for needle cricothyrotomy:
 - A. Child less than 1 year of age
 - B. Injury to larynx with known damage to cricoid cartilage
 - C. Laryngeal fracture
 - D. Tracheal rupture
 - E. Anterior neck masses or swelling that obscure anatomical landmarks
4. Understand potential complications of needle cricothyrotomy:

- A. Hypoxic brain injury or death due to incorrect placement or inadequate ventilation
 - B. Aspiration of blood or emesis
 - C. Posterior tracheal wall perforation
 - D. Thyroid injury
 - E. Esophageal laceration or perforation
 - F. Subcutaneous emphysema
 - G. Hypercarbia or pneumothorax due to over-ventilation and/or inadequate expiratory time
 - H. Vocal cord injury
 - I. Tracheal stenosis
 - J. Hemorrhage
 - K. Infection
5. Gather all necessary supplies and equipment.
- A. The Quicktrach I Child (2 mm internal diameter) shall be used for patients 1 – 8 years of age.
 - B. The Quicktrach II (4 mm internal diameter) shall be used for patients 9 years or older.

While performing a needle cricothyrotomy on a patient 1 – 8 years of age using the Quicktrach I, paramedics must:

1. Don personal protective equipment (PPE).
2. Place the patient in a supine position with head and neck extended. Place sheets or blankets beneath the shoulder blades to help maintain this position.
3. Open the Quicktrach I equipment package. Have equipment and supplies readily available.
4. Clean the skin of the anterior neck with iodine, chlorhexidine, or alcohol swabs.
5. If possible, left-handed providers should position themselves to the right of the patient, while right-handed providers should position themselves to the left of the patient. If the patient is already loaded in the ambulance, there may not be room for the provider to position themselves to the right of the patient, and the procedure will therefore be performed with the provider positioned to the left of the patient and using their right hand to insert the catheter.
6. Grasp and stabilize the trachea between the thumb and middle finger of your non-dominant hand. Locate the cricothyroid membrane with the index finger of your non-dominant hand by palpating the depression between the inferior aspect of the thyroid cartilage and the superior aspect of the cricoid cartilage. This is the location of the cricothyroid membrane.
7. Holding the Quicktrach I catheter in your dominant hand (or in your right hand if you are positioned to the left of the patient), puncture the cricothyroid membrane with the needle tip and catheter while positioning the needle and catheter at a 90-degree angle to the plane of the skin.
8. Once the needle tip has punctured the cricothyroid membrane, change the angle of insertion of the needle and catheter to a 45-degree angle and advance the catheter caudally (toward the patient's feet) until the red stopper is against the patient's skin.
9. Aspirate air with the attached syringe to confirm that the needle tip and catheter are within the trachea. If you cannot aspirate air through the attached syringe, re-position the catheter and try again. If you still cannot aspirate air, remove the device completely and repeat steps 6 through 9. If you cannot aspirate air following two additional attempts, remove the device, continue attempted ventilation with a BVM, and transport.
10. Once air can be aspirated with the attached syringe, remove the red stopper and advance the plastic cannula over the needle until the plastic flange is flush with the skin. (Caution: The metal needle serves as a guide and must not be inserted further.)
11. Stabilize the plastic flange with your non-dominant hand, remove the metal needle from the cannula, and dispose of the needle in the sharps container.
12. Continue to stabilize the plastic flange with the fingers of one hand to ensure that it does not become dislodged.
13. Attach a BVM to the device either directly or via the included connecting tube.
14. Ventilate the patient at 6-10 breaths/minute, allowing adequate time for exhalation.
15. Secure the plastic cannula with the foam neck tape.
16. Auscultate lung sounds while ventilating the patient.

17. Monitor for hyperinflation of the chest. If the chest becomes hyperinflated or if it becomes increasingly difficult to ventilate the patient, remove the BVM from the plastic flange to allow full exhalation for 10 seconds. Re-connect the BVM to the plastic flange and resume ventilating the patient at a slower rate.

Critical Success Targets for needle cricothyrotomy:

1. List indications and contraindications for performance of needle cricothyrotomy.
2. Needle inserted through the cricothyroid membrane and into the trachea.
3. Catheter advanced into the trachea and needle removed.
4. Ability to ventilate through the catheter.

System Benchmark

Successful placement of the catheter into the trachea through the cricothyroid membrane.

Core Competency Requirements to be covered during education / training on needle cricothyrotomy:

1. List indications for needle cricothyrotomy.
2. List contraindications for needle cricothyrotomy.
3. List less-invasive airway management techniques.
4. Identify appropriate catheter for age ranges.
5. List potential complications of needle cricothyrotomy.
6. Demonstrate step-by-step technique for needle/catheter insertion.
7. Ability to ventilate through the catheter using a BVM.
8. Appropriate ventilation rate.
9. Monitor patient for breath-stacking, pneumothorax, airway obstruction, and other complications.
10. Team leadership and patient / crew safety.
11. Documentation.

Equipment Requirements

1. Personal protective equipment
2. Quicktrach I needle cricothyrotomy kit
3. BVM with O2 tubing
4. Oxygen
5. Iodine, chlorhexidine, or alcohol swabs
6. Sharps container

Instructor Resource Materials

1. Monterey County EMS Policy #4502 Airway Management
2. Monterey County EMS Protocol R-1 Airway Management
3. Monterey County EMS Protocol RP-1 Airway Management-Pediatric
4. Manufacturer's Instructional Video for insertion of Quicktrach I (www.vbm-medical.de/en/products/airway-management/cricothyrotomy/quicktrach/)

Needle Cricothyrotomy Using the Quicktrach I

Successful (y/n)	Performance Steps	Additional Information
	Don or verbalize use of appropriate personal protective equipment.	Selection: gloves, mask, eye protection
	Determine that other measures to establish and maintain a patent airway are not adequate (airway positioning, suction, ET intubation, iGel, etc.).	
	Place patient in a supine position with head and neck extended.	Sheets or blankets may be placed beneath the shoulder blades to facilitate extension of the head and neck.
	Open Quicktrach I equipment package. Have equipment and supplies readily available.	Quicktrach I needle cricothyrotomy kit BVM with O2 tubing Oxygen Iodine, chlorhexidine, or alcohol swabs Sharps container
	Prepare the site.	Cleanse the site with chlorhexidine, iodine, or alcohol swabs
	Stabilize the trachea and locate the insertion site by palpating the appropriate anatomic landmarks.	Grasp and stabilize the trachea between the thumb and middle finger of one hand. Locate the cricothyroid membrane with the index finger of the same hand by palpating the depression between the inferior aspect of the thyroid cartilage and the superior aspect of the cricoid cartilage. This is the location of the cricothyroid membrane.
	Insert the needle tip of the Quicktrach I catheter through the cricothyroid membrane.	Puncture the cricothyroid membrane with the needle tip and catheter while positioning the needle and catheter at a 90-degree angle to the plane of the skin.
	Change the angle of insertion to 45 degrees and advance the needle and catheter until the red stopper is against the skin.	
	Aspirate air with the attached syringe to confirm that the needle tip and catheter are within the trachea.	Reposition the device if needed until air can be aspirated with the syringe.
	Remove the red stopper.	
	Advance the plastic cannula over the needle until the plastic flange is flush with the skin.	<u>Caution:</u> The metal needle serves as a guide and must not be inserted further.
	Stabilize the plastic flange with one hand and remove the metal needle from the cannula.	Once removed, verbalize that in an actual patient encounter the needle would be disposed in the sharps container.

	Continue to stabilize the plastic flange with one hand to ensure that it does not become dislodged.	
	Attach a BVM to the device either directly or via the included connecting tube.	
	Ventilate the patient at 6-10 breaths/minute, allowing adequate time for exhalation.	
	Secure the plastic cannula with the foam neck tape.	
	Auscultate lung sounds while ventilating the patient.	
	Monitor for hyperinflation of the chest.	If the chest becomes hyperinflated or if it becomes increasingly difficult to ventilate the patient, remove the BVM from the plastic flange to allow full exhalation for 10 seconds. Re-connect the BVM to the plastic flange and resume ventilating the patient at a slower rate.

Critical Failure Criteria

- Failure to don or verbalize use of appropriate PPE
- Failure to verbalize attempts at other methods of airway management
- Failure to correctly locate the insertion site
- Failure to insert the needle/catheter in the correct location
- Inability to ventilate through the catheter
- Hyperventilating the patient
- Any procedure that would have harmed the patient