MWLC EMSS Skills Sheet

NEEDLE CRICOTHYROTOMY

Name:	1st attempt:		Meets Standard		Does not meet standard
Date:	2nd attempt:		Meets Standard		Does not meet standard

Instructions: The purpose of this skills sheet is to outline the requirements for needle cricothyrotomy. This skills sheet shall be utilized when evaluating needle cricothyrotomy performance and skills validation by both practicing MWLC EMSS personnel and students. **Required items to meet standards are indicated with an asterisk.**

Performance standard NP=Step not performed. 0=Does not meet standard. Unsuccessful; critical or excess prompting; improper technique. 1=Meets Standard. Successful; minimal to no prompting; proper technique.	**1st attempt**	**2nd attempt**
* BSI: Gloves, goggles, facemask		
Verbalize indications for the procedure: ☐ Cannot intubate ☐ Cannot insert a King or alternate airway ☐ Cannot ventilate w/ BVM or other means to maintain SpO2 > 90%		
* **List two disadvantages of the procedure – least effective lower airway** ☐ Does not allow for good elimination of CO2 ☐ It is invasive ☐ Requires constant monitoring ☐ Does not protect airway from aspiration ☐ Does not allow for elimination of CO2; so accumulates rapidly ☐ Ineffective tidal volume; especially if upper airways open at all ☐ Provides temporary relief (30-40 minutes) ☐ No suctioning of secretions		
Contraindications ☐ Inability to identify the anatomical landmarks necessary to perform the procedure. ☐ Controversy in very small children; false placement easy, excessive bleeding real risk		

* Demonstrate preparing patient

Prepare the patient Position supine w/ padding under shoulders to extend neck unless contraindicated		
Assess VS, ECG, SpO2 as soon as time & personnel permit		
*Attempt to **preoxygenate** for 3 min w/ 15 LO2/BVM at 10-12 BPM unless asthma/COPD (6-8 BPM); squeeze bag over 1 sec just to see chest rise (~400-600 mL) – avoid high pressure & gastric distention		
Attempt manual maneuvers for opening upper airway; direct visualization with laryngoscope; may or may not attempt advanced airways based on patient situation		

* Demonstrate preparing equipment

***Concurrently: Prepare equipment – Have everything ready before beginning procedure** ☐ 10 g needle ☐ 20 mL syringe ☐ Stethoscope ☐ BSI ☐ 3 mL syringe barrel + 7.0 -7.5 ETT adaptor ☐ Peds BVM; O2 source ☐ CHG/IPA skin prep ☐ Tape ☐ 4X4 ☐ Capnography; SpO2, ECG monitors ☐ Suction ☐ Sharps container		
☐ Prepare equipment by inserting ETT adapter into barrel of 3 mL syringe (remove plunger) ☐ Remove hub from needle; attach 20 mL syringe to needle (acts like an EDD)		

* Demonstrate insertion

Perform the procedure Palpate thyroid & cricoid cartilages; locate membrane; prep skin with CHG/IPA prep		
***Identify anatomical landmarks**: Palpate thyroid cartilage superiorly & cricoid cartilage inferiorly w/ thumb & middle finger. Locate cricothyroid membrane with index finger. If Rt handed, work from Rt side. If Lt handed, work from pt's left side.		
Prep skin with Chlorhexidine/IPA as per an IV or IO		
*Insert needle through the membrane at a 90° angle to the skin through the midline of the membrane using firm downward pressure until a "popping" sensation is felt		
* When resistance abruptly ceases, stop advancing needle; aspirate air into syringe like an EDD to confirm tracheal placement. Should aspirate easily without resistance.		
* Angle needle tip downward (towards chest) and posteriorly at a 20-45° angle		
☐ *Hold needle stationary, advance ONLY catheter over the needle to its hub (like starting an IV in the trachea; needle acts like a guidewire preventing catheter kinking) ☐ *When catheter fully advanced, withdraw needle and place into a sharps container		
☐ *Attach 3 mL syringe barrel (with ETT adaptor attached) to hub of catheter.		

* Demonstrate ventilation and assessment

Apply capnography sensor to ETT adapter. Ventilate slowly /peds BVM at 10/BPM. Allow 4 sec exhalation for each 1 sec inhalation. Confirm exhaled CO_2. ☐ If upper airways are open: **For each 1 second of inspiration allow 4 seconds for exhalation to prevent barotrauma.** ☐ If the upper airways are entirely obstructed: Allow 8 seconds of exhalation for each 1 second of inhalation. ☐ May need to compress chest to assist exhalation		
☐ *Auscultate epigastrium, both midaxillary lines & anterior chest X 2 ☐ *Assess quantitative waveform capnography to confirm exhaled CO_2. ☐ If incorrectly placed: assess to determine error and take corrective action ☐ *If correctly placed, control bleeding prn & secure catheter in place using tape		
* **Reassess**: Frequently monitor SpO_2, $EtCO_2$, VS, & lung sounds enroute to detect displacement, complications or condition change; monitor insertion site for complications. **CO_2 accumulation can be dangerous in head injured patient.** Patients can be adequately oxygenated for 30 to 40 minutes using this technique. Because of inadequate exhalation, CO_2 accumulates and limits the long-term use of this approach, especially in head-injured patients (ATLS). ☐ High flow O_2 (>15 L/min) may actually dislodge a foreign body in the airway, however, significant barotrauma may occur including pulmonary rupture with tension pneumothorax if exhalation is poor. Low flow rates (5 to 7 L/min) should be used when total glottic obstruction is present (ATLS).		

Troubleshooting and complications

Troubleshooting ☐ High pressures may result during ventilation and can cause bypass valve to activate. Ensure bypass valve override is in place to prevent bypass valve from activating. ☐ Ensure enough time for exhalation is provided to prevent ineffective ventilations.		
Complications ☐ High pressure during ventilation and air entrapment may produce pneumothorax. ☐ Hemorrhage at the insertion site. ☐ Thyroid gland & esophagus can be perforated if needle is inserted inappropriately and/or advanced too far. ☐ Subcutaneous emphysema.		

Evaluator printed name and signature: