

# GCC- Surgical Cricothyrotomy Evaluation Sheet

Name \_\_\_\_\_

Activity	Points	Points
Ask Student for <b>Indications</b> for a surgical cricothyrotomy	3	
Ask Student for <b>Contraindications</b> for a surgical cricothyrotomy	2	
Ask Student to indicate <b>5 predictors</b> difficult surgical cricothyrotomy <i>S</i> urgery or other airway obstruction <i>H</i> ematoma (includes infection/abscess) <i>O</i> besity <i>R</i> adiation distortion (and other deformity) <i>T</i> umor	5	
<b>Select</b> and prepares equipment Chlorhexidine ( or Anti septic swabs) #10 blade 6.0mm endotracheal tube /Bougie (or equivalent device) 10ml syringe BVM attached to high flow oxygen Wave from capnography	6	
<b>Position</b> the patient supine and extend the neck to improve anatomic view	1*	
<b>Prep/ cleanse</b> the neck with Chlorhexidine	1*	
Using your non dominate hand, <b>stabilize</b> the larynx and locate the following landmarks: thyroid cartilage (Adam’s apple) and cricoid cartilage. The cricothyroid membrane lies between these cartilages.	1*	
<b>Make</b> an approximately <b>3 cm vertical incision</b> 0.5 cm deep through the skin and fascia, over the cricothyroid membrane	1*	
<b>Make</b> approximately a <b>1.5 cm horizontal incision</b> through the cricothyroid membrane	1*	
With your finger or other suitable object (blunt end of scalpel) <b>bluntly dilate the opening</b> through the cricothyroid membrane. Consider use of a tool (cric hook, curved hemostat) to maintain this opening with gentle controlled pressure.	1*	
<b>Insert</b> the bougie curved- tip first through the incision and angled towards the patient’s feet	1*	
<b>Advance</b> the bougie into the trachea feeling for “clicks” of tracheal rings and until “hang-up” when it cannot advance any further. This confirms tracheal position.	1*	
<b>Advance</b> a 6.0 mm endotracheal tube over the bougie and into the trachea.	1*	
<b>Remove</b> the bougie while stabilizing the ETT ensuring it does not become dislodged	1*	
<b>Inflate</b> the cuff with 5- 10 ml of air	1*	
<b>Confirm</b> appropriate proper placement by primary methods including symmetrical chest wall rise, auscultation of equal breath sounds and lack of epigastric sounds with ventilations using a BVM	2*	
<b>Apply</b> and monitor <b>waveform capnography</b>	1*	
<b>Secure</b> the ETT	1*	
<b>Reassess</b> patient frequently, especially after patient movement	1*	
Points possible	X / 32	

### Passing criteria:

- Earn > 24/32 points **without** missing any steps with an asterisks

(Check sheet adapted from Connecticut EMS Protocols v2019.5 –5.11, Massachusetts EMS Protocols 2019.2)

## GCC Surgical Cricothyrotomy Lab

**Purpose:** The purpose of this lab session is to teach and reinforce the principles of surgical cricothyrotomy.

**Rationale:** Excellent BLS and ALS airway skills are required of all paramedics. Unfortunately, there is a low frequency high risk situation where paramedics might find themselves in a situation of “can’t ventilate, can’t intubate”. In this situation the only option may be performing a surgical cricothyrotomy. This life saving and rare skill needs to be thoroughly understood and learned before the situation arises.

The instructor will

1. Set up the lab equipment.
2. Review anatomy of the airway including the following:
  - A. Thyroid cartilage, cricoid cartilage, and the cricothyroid membrane.
  - B. **Have each student locate these landmarks on each other**
3. Review the indications for performing a surgical cricothyrotomy
  - Inability to adequately oxygenate or ventilate a patient
  - No other airway device or maneuvers have been successful
  - The patient is in immediate danger of death
4. Review the contraindications for surgical cricothyrotomy
  - Age is less than 12 years old (8 years old according to Massachusetts protocol 6.8)
5. Review indicators for predicting difficulty in performing surgical cricothyrotomy (SHORT)
  - *Surgery or other airway obstruction*
  - *Hematoma (includes infection/abscess)*
  - *O besity*
  - *R adiation distortion (and other deformity)*
  - *T umor*
6. Demonstrate the skill from beginning to end
  - Pay particular attention to the order on the incisions

Notes:

This skill station will ideally work with 2 adjuncts

1. The first adjunct oversee the student performing the skill
2. The second adjunct will prepare the equipment and pork for the next student

**Equipment:**

- |                       |                          |                     |                         |
|-----------------------|--------------------------|---------------------|-------------------------|
| 1. lid from box       | 2. absorbent underpads   | 3. duct tape        | 4. rubber band          |
| 5. synthetic blood    | 6. Fluid bag with tubing | 7. 2- 10ml syringe  | 8. 21g needle           |
| 9. 3D printed larynx  | 10. Salt pork packages   | 11. Cellophane wrap | 12. 6.0 and 8.5 ETTs    |
| 13. Scalpel/#10 blade | 14. Antiseptic swabs     | 15. BVM             | 16. Capnography         |
| 17. Sharps container  | 18. Disposable gloves    | 19. Eye protection  | 20. Zip ties (Optional) |

**Set up:**

1. Lay out absorbent underpads to keep site clean and place the lid of back to catch fluids
2. Fill synthetic blood into bag with drain tubing closed off (You may modify an IV bag with drip set)
3. Prep the salt pork to cut the meat to the desired thickness you wish to make.
4. Apply cellophane to tracheal end of 3D printed larynx and secure with rubber band
5. Insert an 8.5 ETT that has been cut proximal to the cuff to the top of the larynx and attach BVM
6. Use a strip duct tape to create the cricothyroid membrane and secure the larynx to the lid
7. Using a strip of tape secure the tubing from the blood bag to the larynx located superior to the opening of the cricothyroid membrane
8. Lay the prepared salt pork on top of the larynx
- 8- Optional: Secure salt pork to larynx using sip ties. When using a larger piece of pork this is not necessary. If using a smaller portion it is safer to stabilize the meat to the larynx
9. Prior to student performing the skill, Inject some synthetic blood into subcutaneous layer. Ideally this should be applied to the area where the student is expected to perform the incision.
10. Lay put equipment that the student in expected to use to perform skill.

**During the Skill station:**

1. As student performs the incision open blood from bag to simulate bleeding.  
You control how much is released.
2. At same time gently squeeze BVM to simulate the rush of air when the student

## Sources:

A. Higgs, B.A. McGrath, C. Goddard, J. Rangasami, G. Suntharalingam, R.Gale, T.M. Cook, and on the behalf of Difficult Airway Society, Intensive Care Society, Faculty of Intensive Care Medicine, Royal College of Anaesthists, (2018). Guidelines for the management of tracheal intubation in critically ill adults. *British Journal of Anaesthesia* 120 (2) 323- 352

Department of Public Health Connecticut Office of Emergency Medical Services. (2019,October) *Connecticut Statewide Emergency Medical Services Protocols v 2019.5*. Retrieved October 7, 2019, from [https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/ems/pdf/local\\_EMS\\_planning/v20195ProtocolsFINAL.pdf?la=en](https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/ems/pdf/local_EMS_planning/v20195ProtocolsFINAL.pdf?la=en)

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The REAL CRIC Trainer. (2018 February 11). Kei, Jonathan. Retrieved December 11, 2018, from <https://www.youtube.com/watch?v=B2QdD4k4rLI>

### **The 3D printed larynx may be obtained by the sources following:**

The Airway App - 3D Cric Trainer STL file is available at <http://www.airwaycollaboration.org/3d-cric-trainer-1>

3dsmith.ca currently make the 3D printed larynx for apx \$30.00 CAD [https://formlabs.com/materials/standard/?utm\\_content=main-nav](https://formlabs.com/materials/standard/?utm_content=main-nav)