



**NEEDLE THORACOSTOMY (CHEST DECOMPRESSION)**

**PERFORMANCE OBJECTIVES**

The examinee will demonstrate proficiency in the ability to perform a needle thoracostomy with a catheter-over-needle and attach a flutter valve or Heimlich device.

**CONDITION**

The examinee will be requested to perform a needle thoracostomy on an anatomical model representing a spontaneously breathing patient who has signs and symptoms of a tension pneumothorax with a SBP <80mmhg. Necessary equipment will be adjacent to the anatomical model of the chest.

**EQUIPMENT**

Anatomical model of the chest, a 14 gauge catheter over a 3 inch needle, 2. 5ml or 10 ml syringes, flutter valve device, Heimlich device (optional), antiseptic wipes, gloves, goggles, 4x4 gauze pads, bulky roll dressing, tape, stethoscope

*For demonstration purposes an 18 or 20 gauge catheter-over-needle may be substituted to prolong the service life of the manikin.*

**PERFORMANCE CRITERIA**

100% accuracy required on all items for training program skills testing.

Aseptic technique must be maintained throughout the procedure

Must use appropriate body substance isolation precautions--personal protective equipment (PPE).

NAME \_\_\_\_\_ DATE \_\_\_\_/\_\_\_\_/\_\_\_\_

PASS

FAIL

1st      2nd      3rd (final)

EXAMINER(S) \_\_\_\_\_

SKILL	Yes/No	COMMENTS	SKILL	Yes/No	COMMENTS
<b>Preparation</b>					
1. Take body substance isolation precautions (PPE)			7. Advance needle and catheter to assure that the plastic catheter has punctured the parietal pleura		
2. Open catheter-over-needle device			8. Hold the needle and advance plastic catheter over the needle until the catheter hub rests against the skin		
3. Prepare flutter valve/Heimlich device			9. Withdraw the needle from catheter		
<b>Procedure</b>					
1. Locate the landmarks for placement of the needle on an anatomical or live model: <i>2<sup>nd</sup> intercostal space, mid-clavicular line of the affected side</i>			10. Dispose of the contaminated needle into a sharps container		
2. Cleanse site with an antiseptic solution			11. Attach a flutter valve or Heimlich device to the plastic catheter		
3. Insert needle perpendicular to chest wall at level of the superior border of the 3 <sup>rd</sup> rib. (Needle should meet resistance when 3 <sup>rd</sup> rib is reached)			12. Reassess the patient's: ◆ <i>Respiratory status</i> ◆ <i>Lung sounds</i> ◆ <i>LOC</i> ◆ <i>Vital signs</i> ◆ <i>Skin signs</i>		
4. Move needle up along the 3 <sup>rd</sup> rib until the needle tip is at the level of the 2 <sup>nd</sup> intercostal space			13. Secure the catheter with 4x4s or a bulky roll dressing		
5. Slowly advance the needle into the thoracic cavity until the tip of the needle enters the pleural space			14. Ensure that the flutter valve or Heimlich device remains unobstructed		
6. Verify entrance into the plural space by one or more of the following indicators: ◆ feel a "pop" or "giving way" sensation as the needle enters the pleural space. <i>OR</i> ◆ feel air escaping through the needle opening <i>OR</i> ◆ aspirate free air into a syringe			Revised 3/98, 03/06, 3/12		

# NEEDLE THORACOSTOMY (CHEST DECOMPRESSION)

## VERBAL TEST ITEMS (program option)

### Indications - S/S of a tension pneumothorax with a SBP <80mmHg

- Progressive dyspnea
- Decreased or absent unilateral breath sounds
- Decreased LOC
- Neck vein distention (if no hypovolemia)
- Difficulty ventilating patient through an ETT
- Tracheal deviation (late sign)

### Contraindications

- None if SBP <80 and S/S present for tension pneumothorax

### Complications

- Laceration of intercostal vessels and nerves
- Laceration of lung
- Infection
- Development of pneumothorax if not previously present

### Note

- A Heimlich device is a commercially prepared one way valve used to allow air to escape and prevents air entering the pleural space (acts as a flutter valve).
- A flutter valve can be created as follows:
  - ◆ *cut the center finger from a powder-free glove (or one rinsed with NS to remove powder)*
  - ◆ *stretch the cut end over the barrel of a 5-10 cc syringe with the plunger removed and secure the connection with tape*
  - ◆ *cut a small slit at the distal end of the glove to allow passage of air out of the pleural space, but not in*
- Only non-powdered gloves should be used to create a flutter valve. This prevents powder contamination in the pleural space which may result in chemical irritation.
- Bleeding should be controlled with direct pressure.
- Body substance isolation precautions - gloves & goggles

### Indications for removal in the field

- None  
*Once inserted the catheter is considered an "impaled object" and removal should only be done in the hospital.*