



Section 14: Appendix 2: Medical Procedures

SECTION 14: NEEDLE CHEST DECOMPRESSION

A	AEMT	A
P	PARAMEDIC	P

INDICATIONS	SIGNS AND SYMPTOMS	PRECAUTIONS
<ul style="list-style-type: none"> Tension pneumothorax with significant dyspnea 	<ul style="list-style-type: none"> Tachypnea / tachycardia Hyper-resonance Absent breath sounds on the affected side Possibly diminished breath sounds on the unaffected side. Hypotension Distended neck veins Chest pain Extreme anxiety Altered LOC/coma 	<ul style="list-style-type: none"> Insufficient training

PROCEDURE

- Confirm presence of a tension pneumothorax or identify strong clinical evidence in a rapid deteriorating patient in the setting of major trauma. Consider in the setting of refractory PEA / traumatic arrest.
- Locate the insertion site at the second intercostal space at the midclavicular line on the affected side of the chest.
- Prep the insertion site. Use sterile gloves and utilize aseptic procedure to the fullest extent possible under the circumstances.
- Remove rear cap of IV catheter.
- Insert the 2 – 3.25 inch, 12 - 14 gauge IV catheter (1 inch, 18 gauge IV catheter in patients less than 8 years) by directing the needle just over the top of the third rib (2nd intercostal space) to avoid intercostal nerves and vessels which are located on the inferior rib borders.
- Advance the catheter 1 - 2 inches (3/4 - 1 inch in patients less than 8 years) through the chest wall. Tension should be felt until the needle enters the pleural space. A pop or give may also be felt. Do not advance the needle any further.

In a tension pneumothorax, air under pressure should be released when the needle enters the pleural cavity. This will be heard as a rush of air through an open catheter-over-the-needle. If you are using a syringe attached to the catheter-over-the-needle you should be able to withdraw air by pulling out on the barrel of the syringe.

- Withdraw the needle and advance the catheter until flush with the skin. Listen for a gush or hiss of air which confirms placement and diagnosis. This is frequently missed due to ambient noise.
- Dispose of the needle properly and **never reinsert into the catheter.**
- Once the presence of a tension pneumothorax has been confirmed:
 - Remove the needle, leaving the catheter in place.
 - Tape the catheter in place.
- Secure the catheter and rapidly transport the patient providing appropriate airway assistance.
- Be prepared to re-needle the chest next to original site if catheter kinks or becomes occluded.



Section 14: Appendix 2: Medical Procedures

SECTION 14: NEEDLE CHEST DECOMPRESSION-Cont.

A	AEMT	A
P	PARAMEDIC	P

KEY POINTS

- A tension pneumothorax can occur in any situation in which a simple pneumothorax occurs.
- Some patients who are at risk of developing a tension pneumothorax; include those receiving positive pressure ventilation, or any patient with blunt or penetrating trauma, and those with pre-existing lung diseases such as COPD.
- Cover all penetrating chest trauma with an occlusive dressing taped on three sides.
- In some cases of penetrating chest trauma, placing an occlusive dressing on the wound will convert an open pneumothorax to a closed tension pneumothorax. In these cases, treatment consists of removing the dressing and converting the wound back to an open pneumothorax. This may be the only treatment needed.
- DO NOT perform a chest decompression, if the patient is not in significant respiratory distress and is otherwise stable.
- **Major trauma victims should have catheter-over-the-needles placed on both sides of the chest, if all of the following are present:**
 1. **Obvious chest trauma**
 2. **Difficulty bagging, and absent breath sounds on one / both sides**
 3. **Hypotensive or pulseless**
- Needle decompression is a temporary life saving procedure only. Patient's requirement decompression will require chest tube placement for long term maintenance.
- Catheters may kink or become occluded, always be prepared to re-needle the chest next to the original site. **BE ALERT FOR SIGNS OF CONTINUING OR RECURRING TENSION PNEUMOTHORAX.**