



Needle Decompression

General

Tension Pneumothorax is a life-threatening condition. Decompressing the chest is considered potentially lifesaving and may be performed on any patient found in cardiac arrest or multi-system trauma **WITH** signs of hemodynamic instability (Hypotension and/or falling systolic blood pressure, narrowing pulse pressure), **AND one or more** of the following indications.

Indications

Patients presenting with

- Increased respiratory difficulty/increased difficulty in bagging
- Sudden decrease in level of consciousness
- Loss of peripheral pulses
- Pale and/or cyanotic with diaphoretic skin
- Diminished or Absent unilateral breath sounds
- Distended neck veins
- Tracheal deviation (often a late sign)
- Pulseless electrical activity
- Subcutaneous Emphysema

Precautions

- Crepitus and/or subcutaneous air may be present with a tension pneumothorax
- Always insert needle over (cephalic) rib to avoid neurovascular bundle

Complications

- Creation of a simple pneumothorax if not already present
- Laceration of blood vessels and/or nerves
- Laceration of lung
- Infection due to poor aseptic technique

Procedure

1. Use designated decompression needle or attach appropriate size needle to 10 mL syringe
 - In adults, use a 10 ga needle or largest available of appropriate length (3 ¼ inches inches)
 - In children < 12 years, use a 14 ga needle/catheter
5. Identify intercostal space at mid-clavicular line, between the 2nd and 3rd ribs (Alternatively, the fifth intercostal space at anterior-axillary line may be used).
6. Swab site with cleaning solution.
7. Position the tip of the needle just over the top of the 3rd rib at the mid-clavicular line, Insert needle into the chest at 90° angle to the chest wall. At the pleural cavity a slight “give” is felt. Advance further into chest until bevel of the needle clears the pleura.
8. Advance the catheter over the needle and then remove needle.
9. If decompression occurs a rush of air may be heard.



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10. Connect Heimlich valve tubing (if available), making sure to pay attention to proper flow directions of the valve.
11. Secure catheter to chest
12. Catheter may be connected to **LOW** suction intermittently to assist evacuation of pneumothorax.
13. If suction is not available or contraindicated, positive pressure BVM will help to inflate the lung and push out compressing air in the pleural space. This will take multiple breaths to accomplish.

Special Notes

- Individuals who have chronic COPD may have a spontaneous pneumothorax that progress to a tension pneumothorax.
- A tension pneumothorax may be precipitated by the occlusion of an open chest wound dressing.
- Rush of air and/or patient improvement indicates correct placement,
- If the patient has sustained multi-system trauma, bilateral decompression may be required.
- **Once the needle is placed, Prehospital personnel should not remove it.** If the needle has been improperly placed, tape the needle to the patient's chest and repeat the procedure.