



Pediatric Needle Decompression

OBJECTIVE

- Demonstrate the proper procedure for needle decompression of a tension pneumothorax in a pediatric patient younger than 13 years who is not morbidly obese.

REFERENCE

- *Pediatric Education for Prehospital Professionals*, 4th Edition

EVALUATION

- The instructor will verify the accuracy of the student's ability to properly manage a simulated tension pneumothorax on a pediatric manikin's thoracic section and perform a needle decompression by means of observing the student's procedures and technique.

EQUIPMENT

- Needle decompression simulator
- Betadine/alcohol prep
- Needle/catheter 14- to 16-gauge and 1.5 inches (3.8 cm)
- Adhesive tape
- Personal protective equipment

INSTRUCTOR GUIDELINES

1. Ensure that each student has all required materials.
2. Read the objective and the evaluation statement to students.

PERFORMANCE STEPS

1. The student prepares the equipment.
2. The student verbalizes that body substance isolation (BSI) precautions were considered.
3. The student verbalizes that the progressive respiratory distress is associated with chest trauma.

4. The student identifies the fourth or fifth intercostal space along the anterior axillary line on the affected side (just over the fifth or sixth ribs).

INSTRUCTOR TIP: Typically, it is best to march over along the nipple line to identify the correct location.

5. Alternatively (per local protocols), the student identifies the midclavicular position (the 2nd intercostal space above the third rib at the midclavicular line).
6. The student verbalizes that the needle to be used for the procedure is a large-bore (14- to 16-gauge) IV needle that is at least 1.5 inches (3.8 cm) in length.
7. The student verbalizes the importance of ensuring that the needle-entry site is between the fourth and fifth ribs and not at risk for penetrating the spleen or liver.
8. The student cleans the site with an antimicrobial solution (alcohol or betadine).
9. The student inserts the needle into the chest over the top of the rib:
 - a) The student removes the plastic cap from the needle. The student also removes the cover to the needle's flash chamber.
 - b) For lateral decompression, the student inserts the needle in the fifth intercostal space along the anterior axillary line, over the top of the rib (or the midclavicular position if local protocols demand).
10. As the needle enters the pleural space, a "pop" is felt, followed by a possible hiss of air. Ensure that the needle is advanced all the way to the hub.

INSTRUCTOR NOTE: Some systems may also use the approach of placing a 60cc syringe on the needle hub to draw back, because some scenes can be too loud to appreciate the hiss. If air pulls back freely, then you have a pneumothorax. Alternatively, if blood returns, the patient has a hemothorax. It is possible to have a hemopneumothorax.

- 11.** The student removes the needle, leaving the catheter in place.
 - a)** If tension pneumothorax recurs (as noted by return of respiratory distress), the student repeats the needle decompression on the injured side.
- 12.** The student stabilizes the catheter hub to the chest wall with adhesive tape.
- 13.** The student listens for increased breath sounds or observes decreased respiratory distress.

CRITICAL CRITERIA

- The student did not recognize progressive respiratory distress as an indication for needle decompression.
- The student did not identify the correct needle size and length.
- The student did not perform the needle decompression at the proper landmarks.
- The student performed the procedure in a manner that was dangerous to the patient.