

PR21: Needle Chest Decompression

BD AngioCath

Non-releasing
plug-style cap

12GA 3.00 IN
catheter **without**
fenestrations

Turkel Thoracentesis Device

Audible air
release
valve

Visual contact
needle indicator
(red to green)

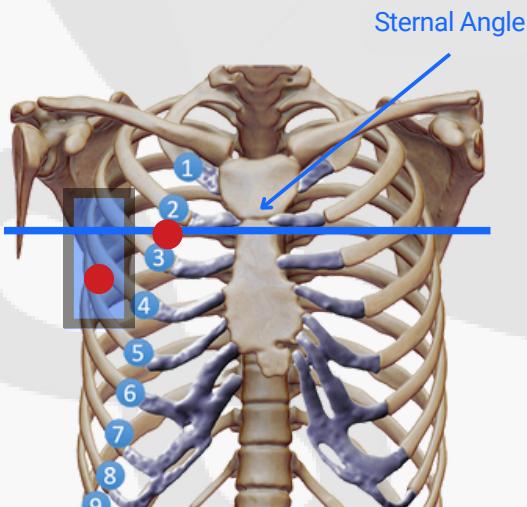
3-way stopcock
(default **closed**
position)

8Fr (12G) 3.5 IN
catheter **with**
fenestrations

Step-By-Step Procedure

1. Don PPE and prepare equipment.
2. Identify the insertion site.
 - Palpate sternal angle to identify 2nd rib.
 - Midclavicular site is the **2nd intercostal space** (superior to the 3rd rib).
 - Midaxillary site is at the **4th or 5th intercostal space** (superior to the 5th or 6th rib)

The **space between the axillary and nipple line above the 6th rib** is considered a '**safe space**' for needle chest decompression.



3. Clean site with aseptic techniques.

4. Grasp needle hub at the intended space on the device, and use the other hand to steady the chest tissue.

5. Advance through the skin, subcutaneous tissue, muscle, and parietal pleura.

- Stop advancing after feeling the "pop" through the parietal pleura. Air release may be heard.
- A pre-attached saline syringe is not necessary, but can be optionally used with negative pressure on the plunger to identify air space.
- The contact indicator will turn from **red** to **green** when in the pleural space.



6. Stabilize catheter assembly with one hand, and simultaneously remove the needle while advancing the flexible catheter completely to the hub.

7. Safely dispose of the needle.

8. Open the 3-way stopcock to relieve pressure
BD AngioCath: A 3-way stopcock does not need to be added.

Closed
stopcock

Opened
stopcock



9. The catheter may be left open to atmospheric pressure.

10. Reassess the patient's chest rise, breath sounds, and hemodynamic status.

11. Securing generally not required.

12. Additional catheters may be placed as required.

✓ Indications

- **Tension pneumothorax** (as evidenced by abnormal chest rise, diminished unilateral breath sounds, and hemodynamic compromise).
- Bilateral decompression in traumatic **cardiac arrest with thoracic trauma**.

✗ Contraindications

- No absolute contraindications

✗ Complications

- Incorrect diagnosis and insertion of catheter may lead to the creation of pneumothorax.
- Improper landmarking may cause injury to underlying structures.
- Catheter may become blocked, kinked, or dislodged with patient movement.
- Bleeding or infection.

! Precautions

- Tension pneumothorax is more common under positive pressure ventilation.
- Site **must** be at the superior border of the rib to avoid vessels and nerves.
- Term pregnancy patients may require 1-2 spaces higher for insertion site.
- Obese patients may need midclavicular site due to chest wall thickness.
- Mainstem bronchus intubation may mimic unilateral chest rise and breath sounds.

Pediatric Needle Sizing

Age 0 to 4: 22G (25mm)

Age 5 to 17: 18G (48mm)

Age 18+: 12G (76mm)

Consider using alternative needle size if decompression is not achieved but tension pneumothorax is highly suspected.