EL DORADO COUNTY EMS AGENCY
FIELD PROCEDURES

Effective: July 1, 2016
Reviewed: July 2024
Revised: July 2024
Scope: ALS – Adult and Pediatric

(on file)

EMS Agency Medical Director

NEEDLE CHEST DECOMPRESSION

INDICATION:

To relieve the intra-thoracic pressure caused by suspected Tension Pneumothorax under the following circumstances:

- Traumatic Arrest
  OR
- Traumatic Hypoxia & Hypotension (Pulse Oximetry and/or SBP≤90)

  OR

- Decreased lung sounds, unilateral or bilateral, **AND** 1 or more of the following signs of tension pneumothorax:

  - Tachycardia
  - Increasing dyspnea
  - Unequal expansion of the chest wall
  - Subcutaneous emphysema
  - Jugular venous distension
  - Tracheal shift away from affected side (a late sign)
  - If there is a concern that decompensation is from tension pneumothorax and hypotension is not present, contact base.

PRECAUTION:
Provider must be confident of the diagnosis before attempting this procedure. Introducing a needle into the chest will almost certainly cause a simple pneumothorax.

COMPLICATIONS:
- Creation of a pneumothorax if not already present
- Laceration of the lung,
- Laceration of the liver or spleen (lateral sites)
- Infection from non-aseptic technique
- Laceration of intercostal vessels and nerves, which run **under** each rib
- Subcutaneous emphysema

PROCEDURE:

1. Administer high-flow oxygen. Assist ventilations if needed.
2. Locate either:
   a. The 4th intercostal space (Lateral to nipple) in the anterior axillary line on the affected side. *Pull the tissue up and away towards the chest and count the ribs*.
   b. The 2nd intercostal space in the mid-clavicular line on the affected side.
   c. *Neither site is universally preferred.*

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3. Prepare the area with a chlorhexidine swab/prep.
4. Select an over the needle catheter, attached to a syringe for control and confirmation.
    a. 10 gauge 3.25" (Adult)
    b. 14 gauge 2"–2.5" (Peds)
5. Direct the needle over the rib of the chosen intercostal space on the affected side (the lateral fifth rib or anterior third rib) until there is a lack of resistance or a pop is heard or felt as the needle enters pleural space.
6. Listen for air escaping.
7. Aspirate air with the syringe to confirm placement
5. Remove the needle. Insert the catheter through the parietal pleura until air escapes. Air should exit under pressure.
6. Reassess level of consciousness, respiratory effort, chest/lung sounds, JVD, tracheal shift, skin signs, blood pressure, pulses, and NCD site frequently.
7. Secure the catheter in place to prevent dislodging.
8. Continue to monitor – if a second attempt is made, utilize the second location on the same side.