



Clinical Practice Procedures: Respiratory/Emergency chest decompression – cannula

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Date	February, 2021
Purpose	To ensure a consistent procedural approach for emergency chest decompression – cannula.
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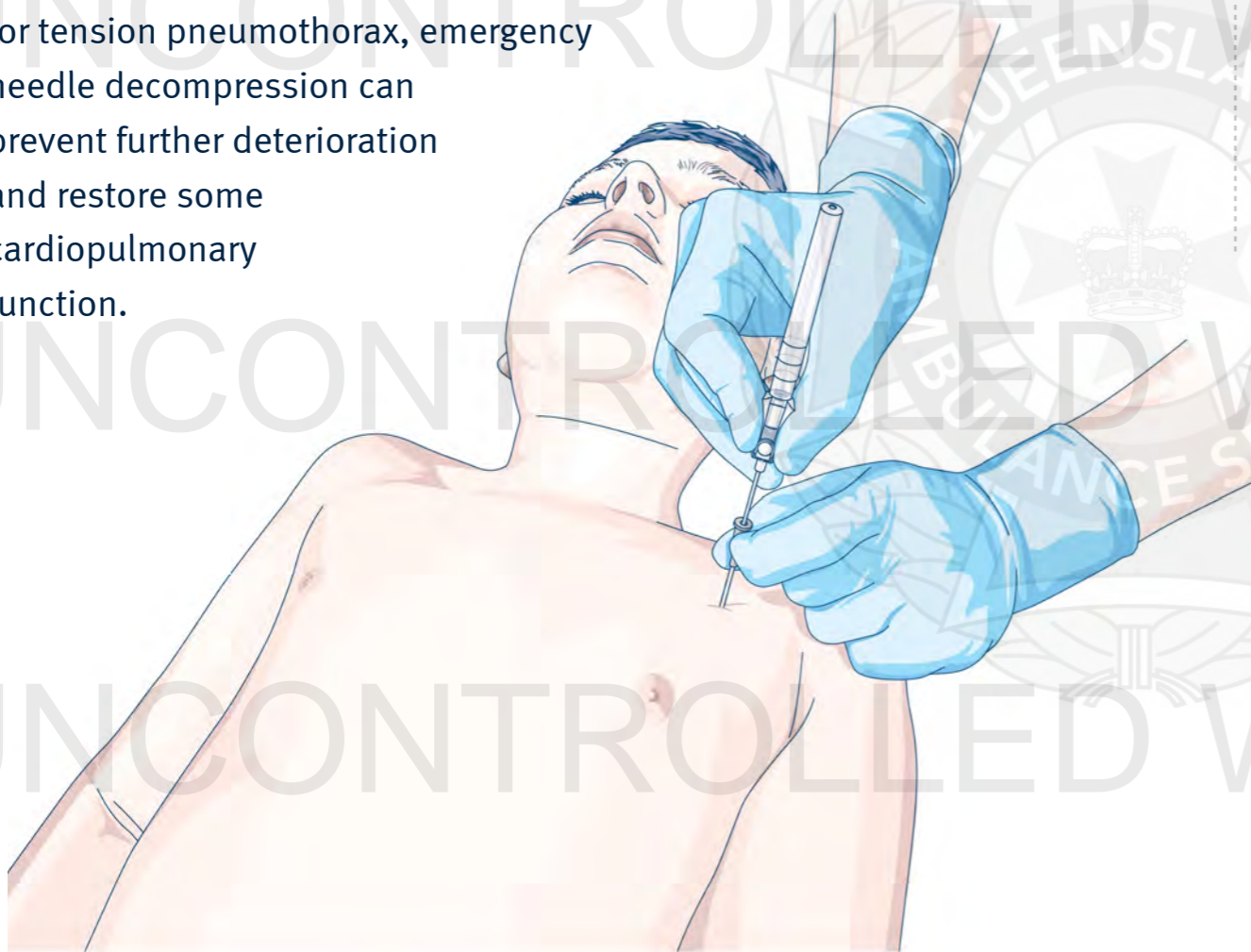
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Emergency chest decompression – cannula

February, 2021

Tension pneumothorax is a life threatening condition that develops when air becomes trapped in the pleural cavity under pressure. The progressive build-up of pressure in the pleural space can collapse the lung, displace the mediastinum, and obstruct venous return to the heart. This leads to compromised cardiopulmonary function and may result in cardiac arrest.^[1]

Emergency chest decompression is a life saving procedure in the setting of a tension pneumothorax. Although this procedure is not the definitive treatment for tension pneumothorax, emergency needle decompression can prevent further deterioration and restore some cardiopulmonary function.



Indications

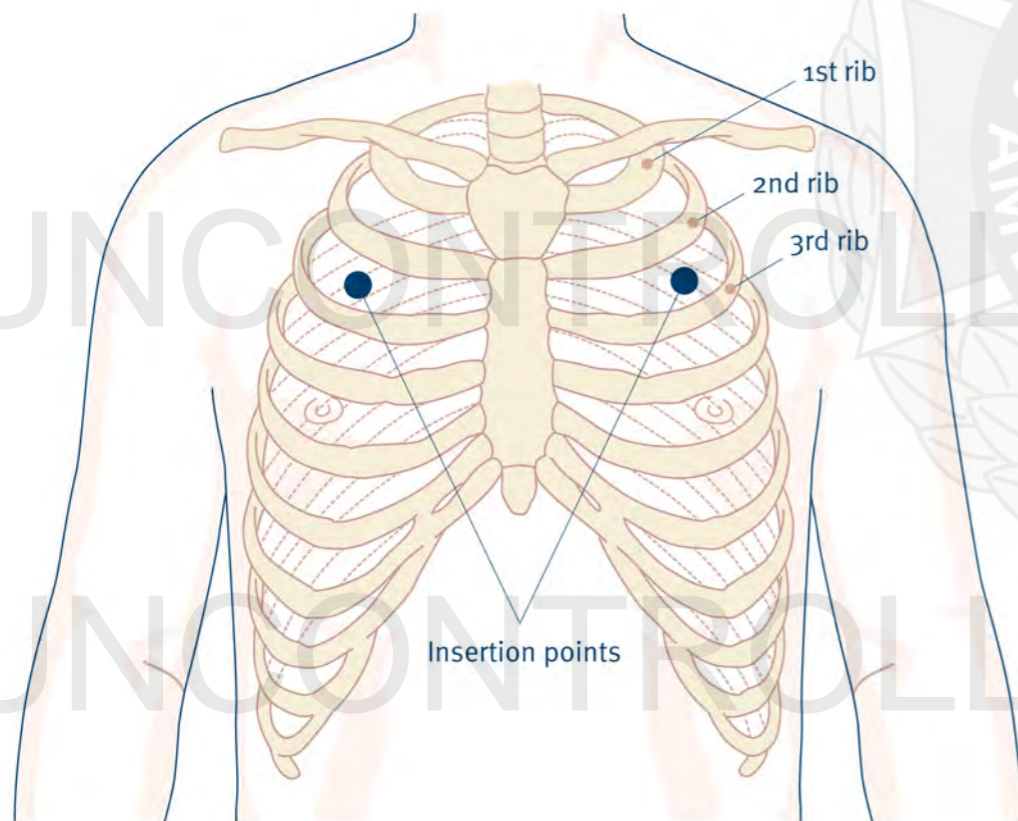
- Traumatic cardiac arrest (with torso involvement)
- Suspected tension pneumothorax with respiratory and/or haemodynamic compromise
 - **Respiratory:** Chest pain, dyspnoea, tachypnoea, surgical emphysema, diminished breath sounds on affected side, tracheal deviation, cyanosis
 - **Cardiovascular:** Tachycardia, ALOC, hypotension, JVD (may not be present with hypotension)

Contraindications

- Obvious non-survivable injury in the traumatic cardiac arrest

Complications

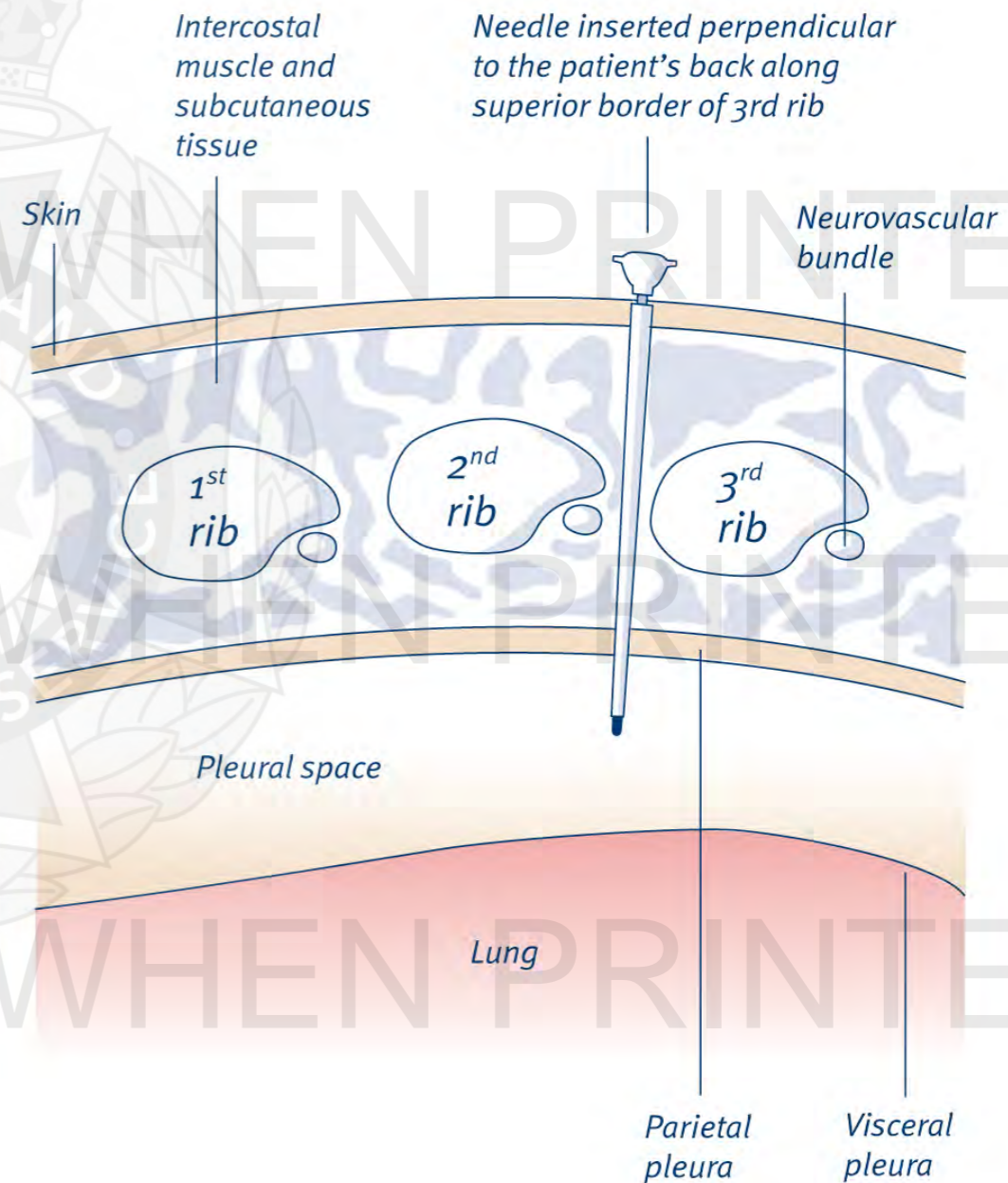
- Improper diagnosis and insertion of a pleural catheter may lead to the creation of a simple or tension pneumothorax.^[2]
- Incorrect placement may result in life-threatening injury to the heart, great vessels, or damage to the lung.^[3]
- Bilateral pleural decompression in the spontaneously breathing patient may result in significant respiratory compromise.



Procedure

1. Apply required infection control measures (refer to the *QAS Infection Control Framework*).
2. Identify appropriate insertion site: 2nd intercostal space, midclavicular line of the affected side. (refer to illustration bottom left and below)

Insertion site



Procedure – Emergency chest decompression – cannula

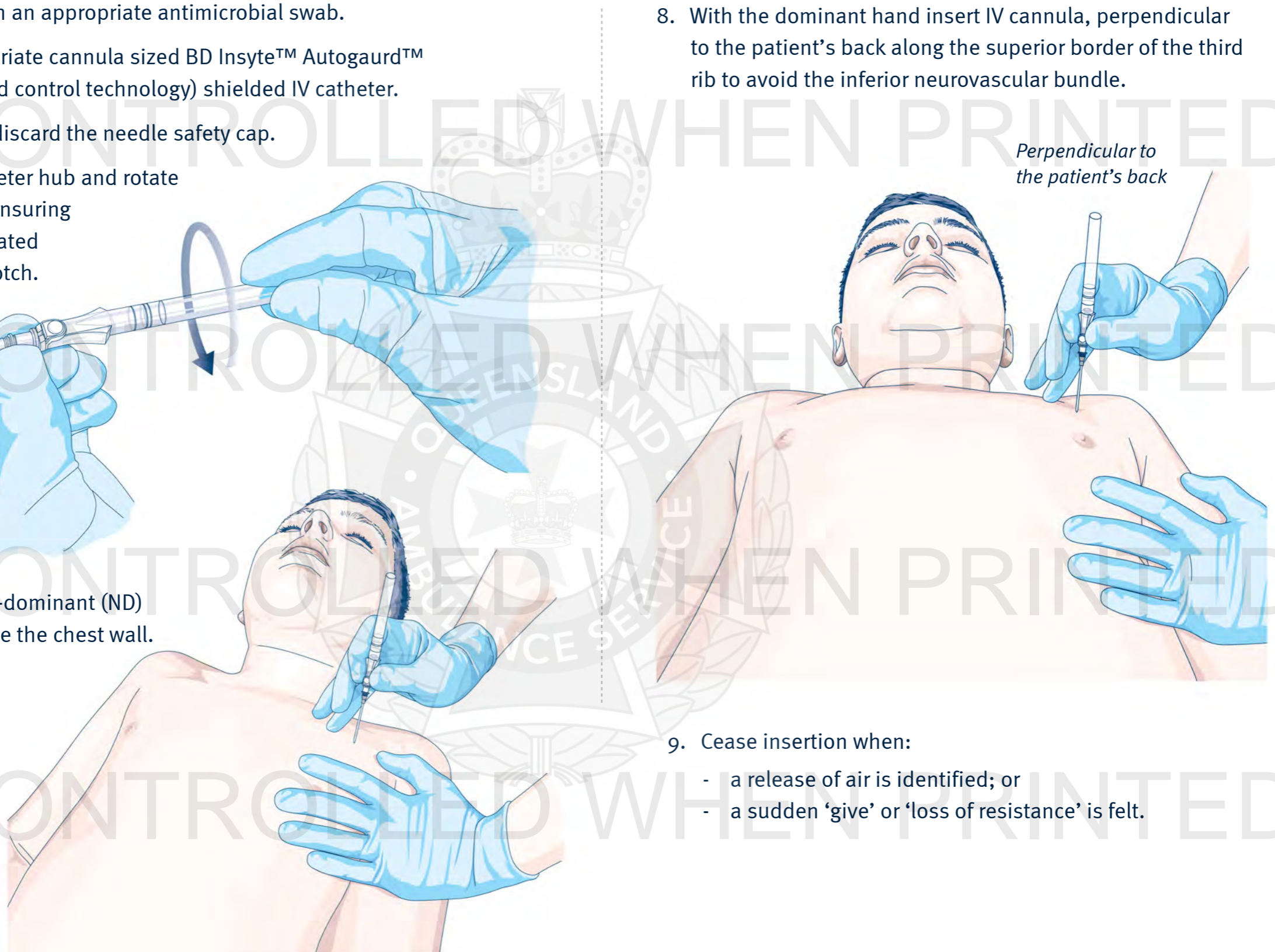
3. Swab site with an appropriate antimicrobial swab.
4. Select appropriate cannula sized BD Insyte™ Autogaurd™ (**without** blood control technology) shielded IV catheter.
5. Remove and discard the needle safety cap.
6. Hold the catheter hub and rotate barrel 360°, ensuring catheter is seated back in the notch.

8. With the dominant hand insert IV cannula, perpendicular to the patient's back along the superior border of the third rib to avoid the inferior neurovascular bundle.

7. With the non-dominant (ND) hand stabilise the chest wall.

9. Cease insertion when:

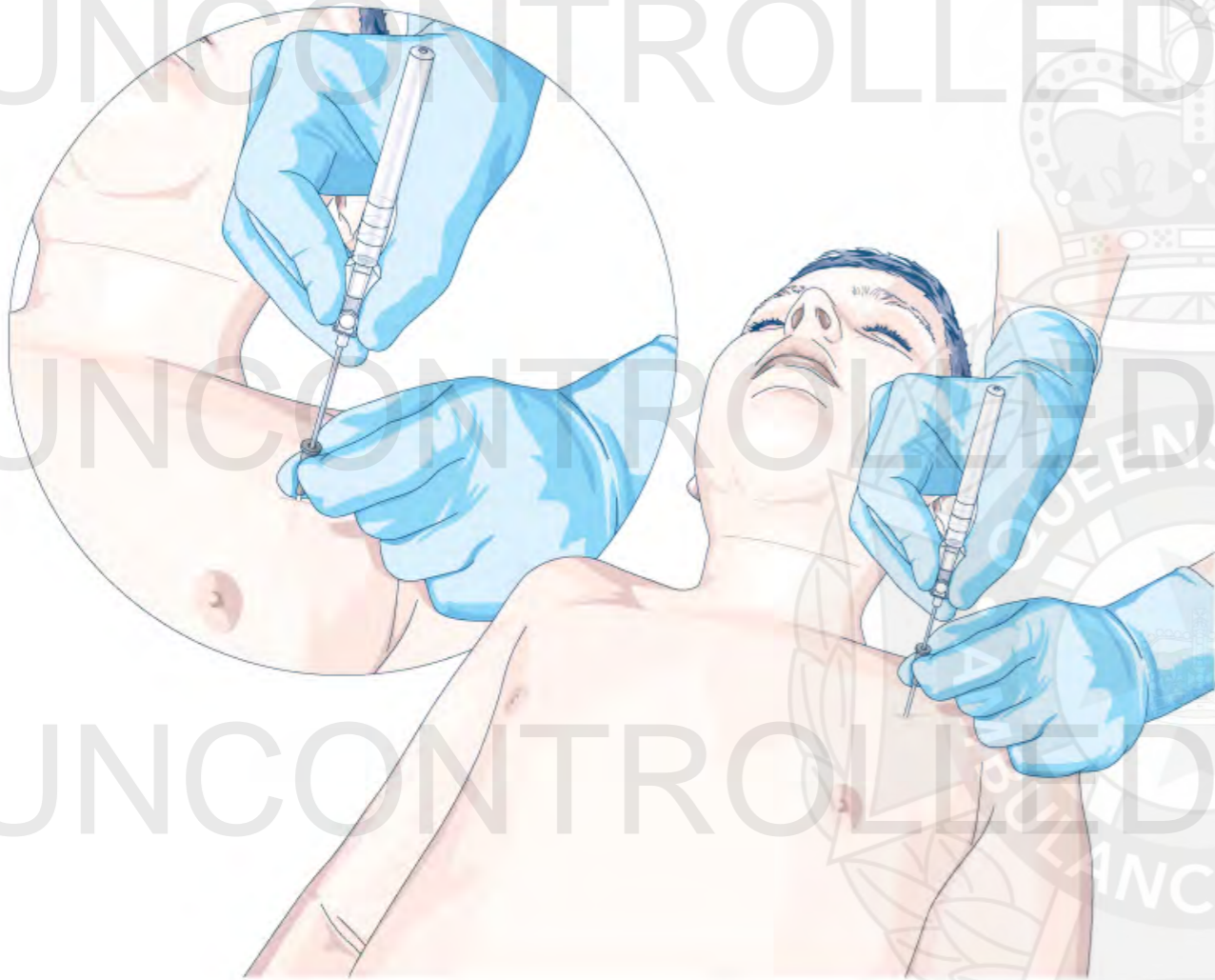
- a release of air is identified; or
- a sudden 'give' or 'loss of resistance' is felt.



Perpendicular to the patient's back

Procedure (cont.)

10. With the ND hand gently thread the catheter off the needle until the hub is flush with the skin.



11. Once the catheter is inserted into the pleural space, press the white button and dispose of the shielded needle immediately into a sharps container.
12. Re-evaluate breath sounds and haemodynamic status.

+ Additional information

- Eye protection must be worn by all clinicians. The potential of blood and body fluids exposure during the procedure is **HIGH**.
- If bilateral chest decompression is anticipated (e.g. traumatic cardiac arrest), then the side with the likely pathology should be completed first.
- Never remove a catheter once in place. Additional catheters may be required in extreme circumstances and should be placed laterally to the inserted catheter.
- Frequently check for redevelopment of a tension pneumothorax, especially if the patient is receiving positive pressure ventilation.
- The Pneumodart® is the preferred emergency chest decompression needle for use in patients greater than 50 kg (\approx 14 years).
- Shortened (30 mm) cannulae are considered appropriate to penetrate the chest wall in patients $<$ 15 kg.^[1]
- Ambulance clinicians who fail to achieve successful chest decompression should contact the *QAS Clinical Consultation and Advice Line* to discuss patient management options.
- The QAS supplies two sizes of BD Insyte™ Autoguard™ IV cannulae for emergency chest decompression. Cannula sizes are:

SPECIFICATIONS^[4]

Gauge	Length (mm)	Weight (kg)	Colour
14	45	15–50 (\approx 4–14 yrs)	Orange
16	30	$<$ 15 (\approx 3 yrs)	Grey