



Clinical Practice Procedures: Respiratory/ Emergency chest decompression – Pneumodart®

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Date	July, 2022
Purpose	To ensure a consistent procedural approach to Emergency chest decompression – Pneumodart®.
Scope	Applies to Queensland Ambulance Service (QAS) clinical staff.
Health care setting	Pre-hospital assessment and treatment.
Population	Applies to all ages unless stated otherwise.
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Author	Clinical Quality & Patient Safety Unit, QAS
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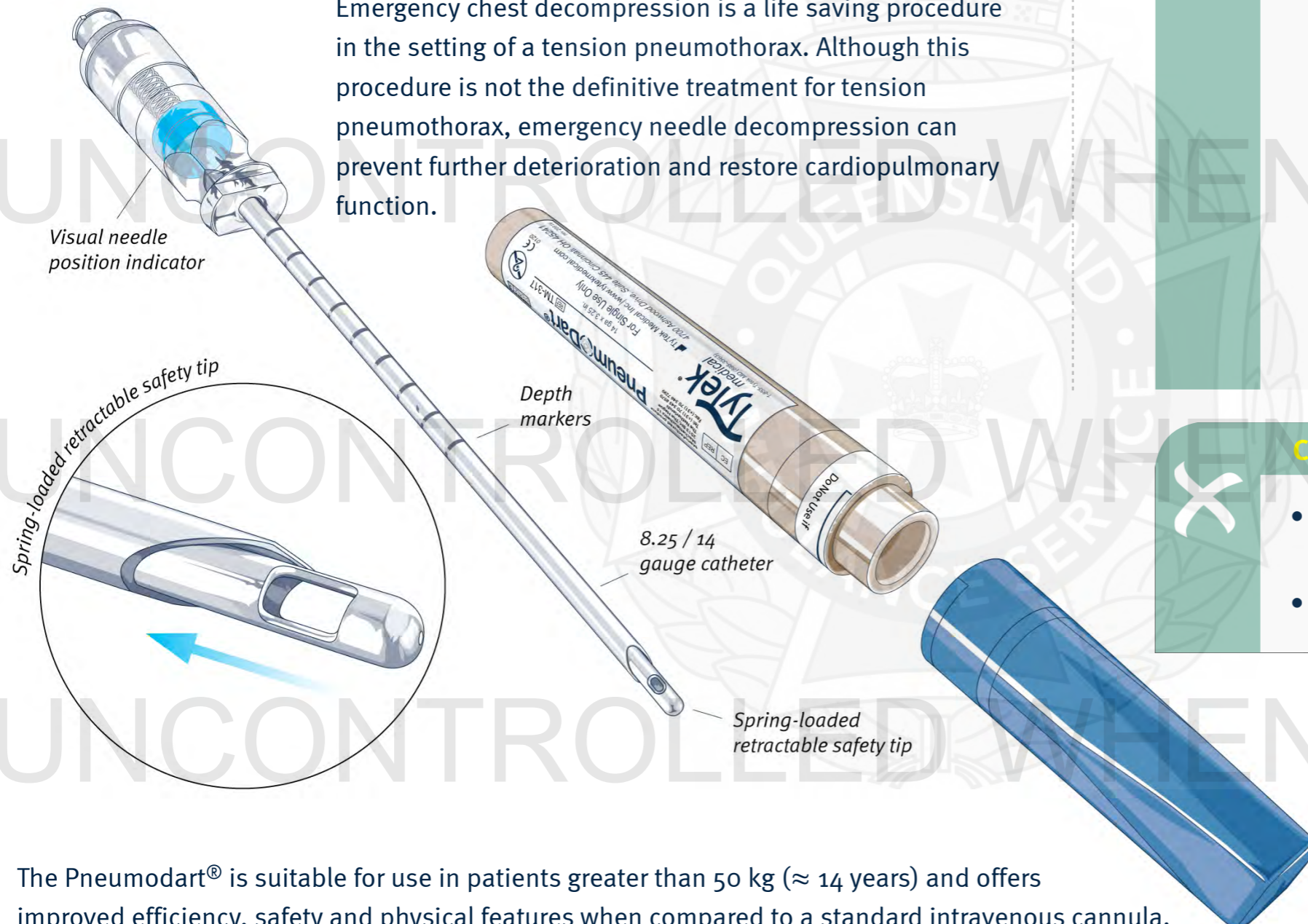
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Tension pneumothorax is a life-threatening condition that develops when air becomes trapped in the pleural cavity under pressure. The progressive build-up of pressure in the pleural space can collapse the lung, displace the mediastinum, and obstruct 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 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
- Patients less than 50 kg (\approx 14 years)

The Pneumodart® is suitable for use in patients greater than 50 kg (\approx 14 years) and offers improved efficiency, safety and physical features when compared to a standard intravenous cannula.

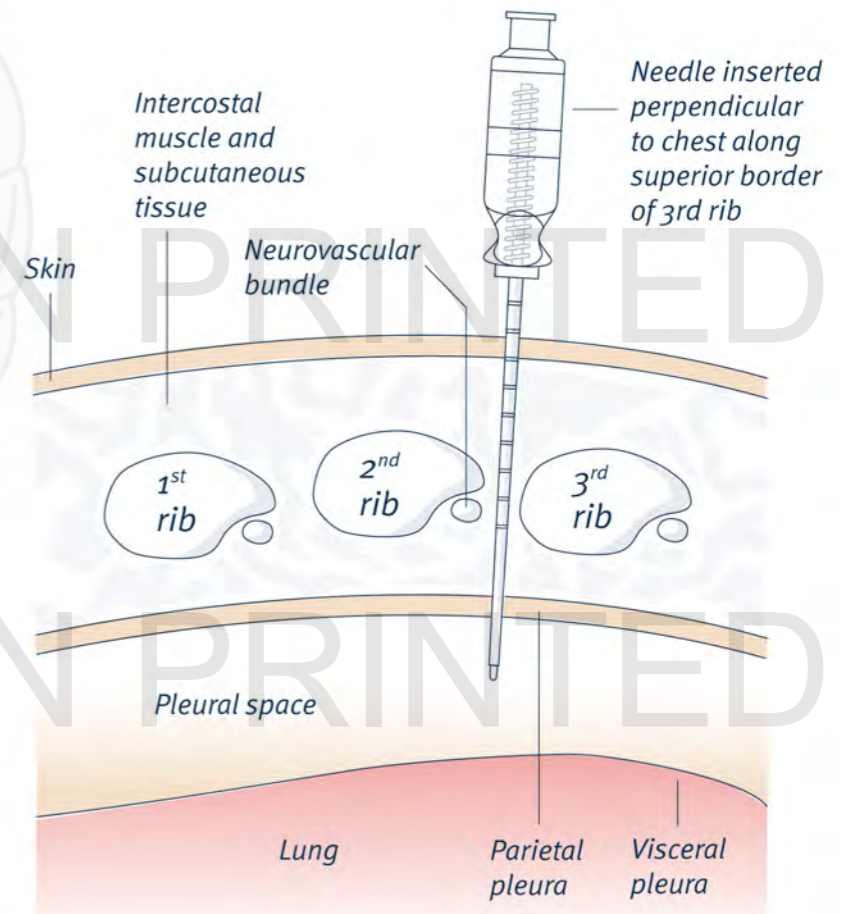
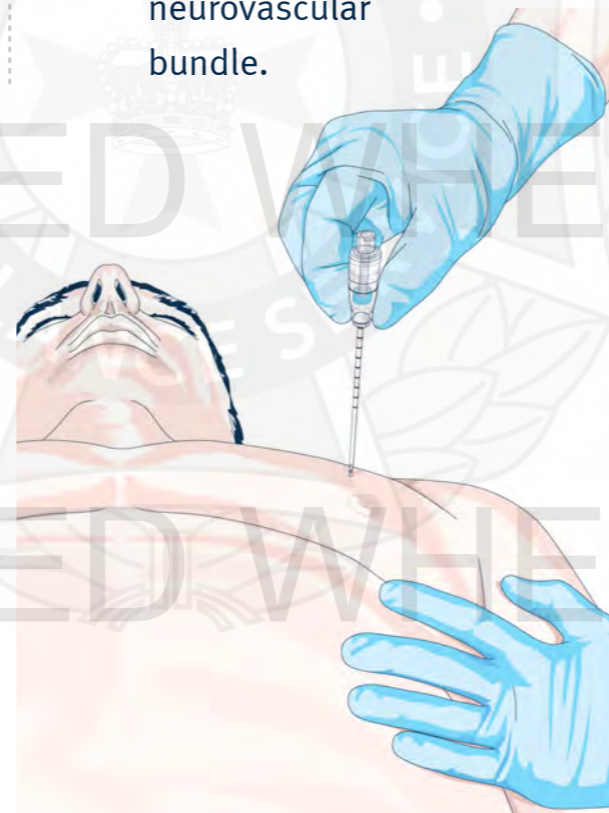
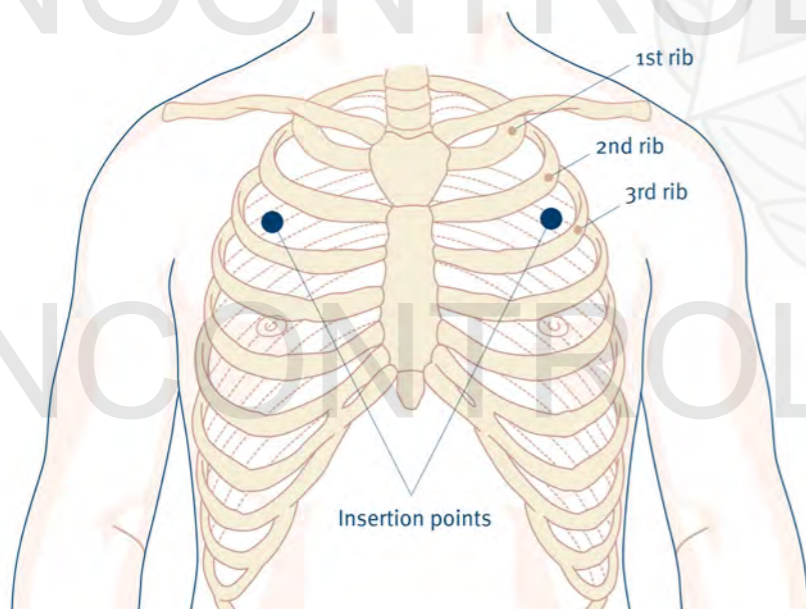
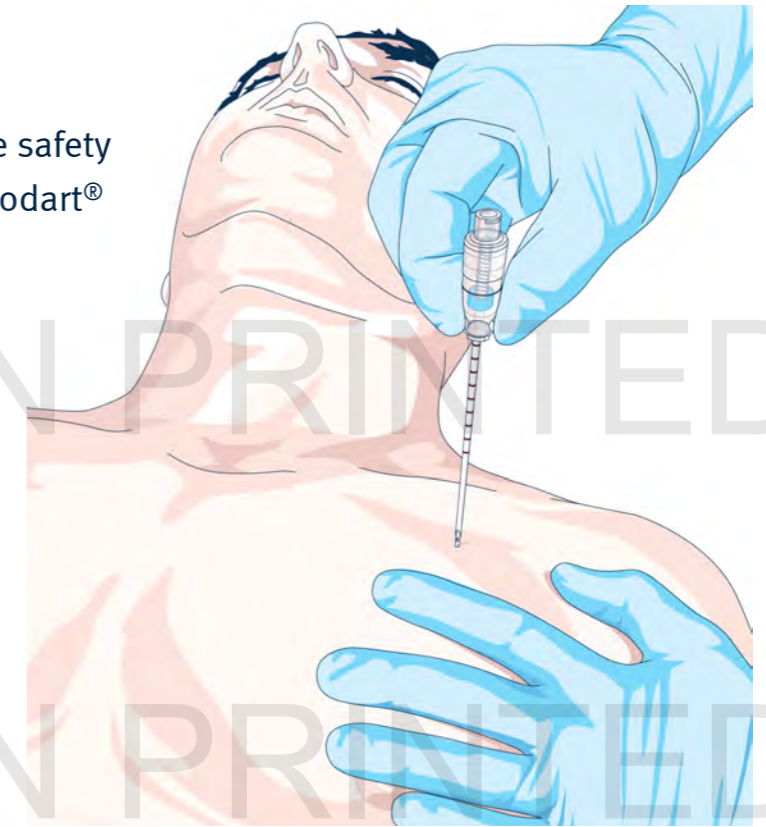
Complications

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

PROCEDURE^[2]

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.

3. Swab site with an appropriate antimicrobial swab.
4. Inspect the packing to ensure the safety seal is intact, remove the Pneumodart® from its protective case.
5. Stabilise the chest wall by applying gentle tension on the skin by spreading the thumb and index finger of the non-dominant (ND) hand
6. With the dominant hand, insert the Pnueomdart® perpendicular to the patient's back along the superior border of the third rib, to avoid the inferior neurovascular bundle.

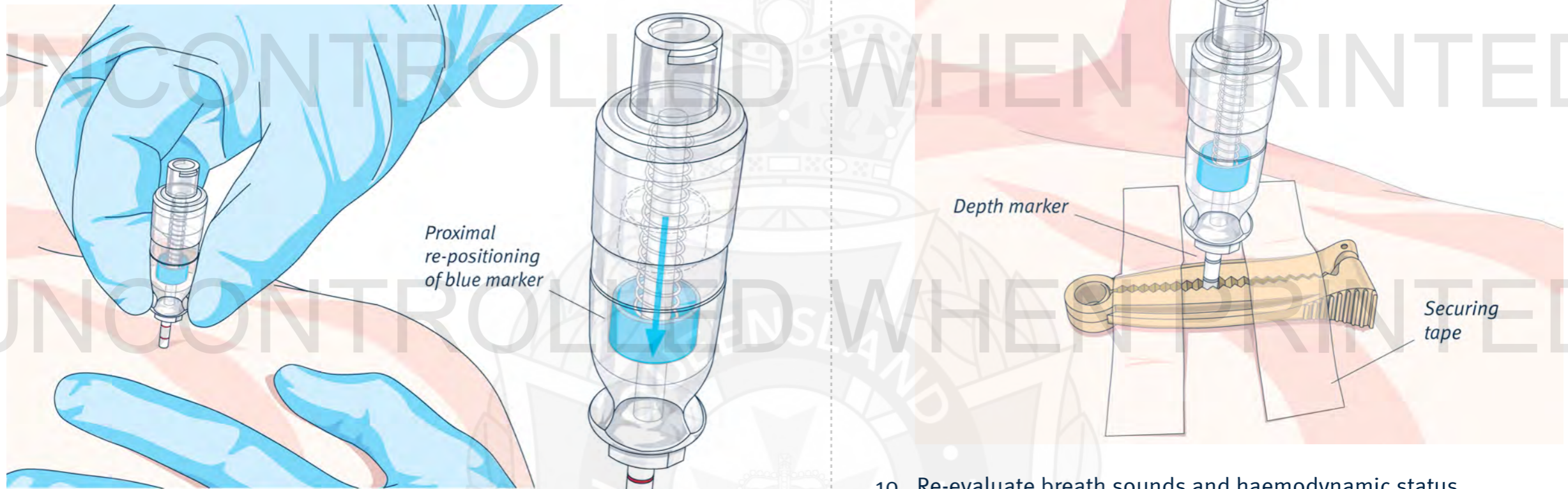


7. Cease insertion when:

- a release of air is identified; **and/or**
- a sudden 'give' or 'loss of resistance' is felt; **and/or**
- proximal re-positioning of the coloured needle position indicator

8. Once the catheter is inserted into the pleural space, count and record the depth markers on the Pneumodart®.

9. Consider stabilising the Pneumodart® with an umbilical cord clamp and tape.



10. 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.
- Extreme care must be taken when moving the patient to prevent accidental dislodgement or over insertion of the catheter.
- 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 50 kg or greater.
- Ambulance clinicians who fail to achieve successful chest decompression should contact the *QAS Clinical Consultation and Advice Line* to discuss patient management options.
- TyTek® Medical Incorporated are in the process of changing the Pneumodart®'s internal needle position indicator from blue to green. This change has no clinical significance and both coloured products are considered suitable for use if within the documented expiry date.