



# Tension Pneumothorax Decompression with the Air Release System (ARS) or Intravenous (IV) Cannula

## 1. Purpose

This CWI provides guidance on the performance of tension pneumothorax decompression using the ARS needle. Where required, the same technique can be applied using an appropriately sized IV cannula.

SCOPE OF PRACTICE				
MICA <input checked="" type="checkbox"/>	ALS <input checked="" type="checkbox"/>	BLS <input type="checkbox"/>	CERT/ACO <input type="checkbox"/>	Patient Transport <input type="checkbox"/>

### Indications

- Suspected tension pneumothorax including in Traumatic Cardiac Arrest.

### Contraindications

- The Air Release System (ARS) may not be appropriate for paediatric/small patients (use 14G or 16G decompression needle depending on patient's size).

### Clinical Precautions

- Tension pneumothorax decompression is a low volume/high risk skill performed in high pressure circumstances and requires regular practice to maintain familiarity with locating the appropriate physical landmarks and familiarity with the equipment.
- If both sides of the chest are being decompressed, the patient's right side should be decompressed first to minimise the risk of the needle puncturing the heart.
- Once inserted, if air escapes, or air and blood bubbles through the cannula, or no air/blood detected, leave in situ. If copious blood flows out, remove the cannula and cover the insertion site with an occlusive dressing.
- There is a risk of body fluid being expelled under pressure when the procedure is initially done, or if CPR is subsequently performed.
- This procedure is monitored through the Limited Occurrence Screening process.

### Equipment Required

- Chlorhexidine / alcohol swab
- ARS needle (or appropriately sized cannula)
- Sharps container
- Sterile gauze
- Adhesive tape








## Health, Safety and Welfare

- Apply standard precautions.
- Modify as informed by the dynamic risk assessment.
- It is recommended that paramedics wear gloves, safety glasses and a P2 mask at a minimum.



## 2. Instructions

KEY POINTS	EXPLANATORY NOTE	Y/N
<p><b>Prepare equipment</b></p> <ol style="list-style-type: none"> <li>1. Remove lid from Air Release System protective canister.</li> </ol>	 <p>Remove lid from canister</p>	
<p><b>Prepare site</b></p> <ol style="list-style-type: none"> <li>2. Locate insertion site – 2nd intercostal space, mid clavicular line on the affected side. Consider marking the site for easy reference.</li> <li>3. Thoroughly clean the insertion site with a chlorhexidine swab. Clinical urgency may dictate how long this can be performed for, ideally it will be for 10 seconds using a side-to-side or up and down motion with light friction, repeated with a second swab and then allow antiseptic to completely dry prior to inserting the needle. Do not re-palpate the site once cleaned.</li> <li>4. Ensure easy access to sharps container.</li> </ol>	 <p>Clean site with swab</p>	
<p><b>Insertion of ARS/cannula</b></p> <ol style="list-style-type: none"> <li>5. Remove device from canister.</li> <li>6. Insert needle at 90 degree angle to chest wall in lower part of 2nd intercostal space (just above the rib below) angling towards the body of the vertebrae, holding cannula hub for support until a 'give' is felt.</li> <li>7. Progress needle into chest. Stop if a rush of air is heard (indicating decompression), otherwise advance to the hilt.</li> <li>8. Withdraw needle from cannula and discard.</li> <li>9. Leave cannula in place to decompress pneumothorax.</li> </ol>	 <p>Insert needle into chest wall</p>	
<p><b>Post decompression</b></p> <ol style="list-style-type: none"> <li>10. Fold a piece of sterile gauze over the back of cannula and secure it with adhesive tape around the hub.</li> <li>11. The ARS can be replaced by a pneumocath kit when appropriate. It should be left in place and open until this can be achieved or until arrival at hospital, with the patient monitored for possible recurrence of the tension pneumothorax.</li> </ol> <p><b>Note:</b> Where an IV cannula is used, hold cannula in place using clear occlusive dressing attached to chest and either side of cannula.</p>	 <p>Place gauze over back of cannula</p>	

	 <p>This will allow air to escape, but help prevent blood/body fluid being sprayed from the cannula if CPR is performed.</p>	
<p><b>Problem solving</b></p> <p>12. If the decompression has proved positive but air flow or physiological parameters decline suggesting the patient is re-tensioning:</p> <ul style="list-style-type: none"> <li>• Flush the cannula with 5 - 10 mL of saline</li> <li>• If that is ineffective then perform a second decompression in close proximity to the original cannula on the lateral side</li> </ul> <p>13. Reassess for a positive response.</p>		

### 3. Assessment

Candidate's name and date	Comments

Instructor's name	Satisfactory	
	<input type="checkbox"/> Yes	<input type="checkbox"/> No

<b>Document name</b>	<b>TENSION PNEUMOTHORAX DECOMPRESSION WITH THE AIR RELEASE SYSTEM (ARS) OR INTRAVENOUS (IV) CANNULA CLINICAL WORK INSTRUCTION</b>		
<b>Applies to</b>	<input checked="" type="checkbox"/> MICA <input type="checkbox"/> BLS	<input checked="" type="checkbox"/> ALS <input type="checkbox"/> CERT/ACO	<input type="checkbox"/> Patient Transport
<b>Document no.</b>	CWI/OPS/169	<b>Stored:</b>	CM: CWI/OPS/169
<b>Version:</b>	4.0	<b>Review:</b>	<input type="checkbox"/> Annual <input checked="" type="checkbox"/> 3-Yearly
<b>Division</b>	Medical Directorate		
<b>Responsible Executive</b>	Medical Director		
<b>Responsible Manager</b>	Manager, Clinical Practice Guidelines — 9840 3980		
<b>Review date</b>	By <b>28 August 2022</b> , or as required for accuracy.		
<b>Relevant National Safety and Quality Health Service Standards</b>	<b>To be completed by the National Standards Accreditation Lead:</b> <input type="checkbox"/> 1. Clinical governance <input checked="" type="checkbox"/> 2. Partnering with consumers <input checked="" type="checkbox"/> 3. Healthcare-associated infection <input type="checkbox"/> 4. Medication safety <input type="checkbox"/> 5. Comprehensive care <input type="checkbox"/> 6. Communicating for safety <input type="checkbox"/> 7. Blood management <input checked="" type="checkbox"/> 8. Recognising and responding to acute deterioration <input type="checkbox"/> NSQHS standards are NOT applicable		
<b>Material related documents</b>	The following documents are material to this clinical work instruction: <ul style="list-style-type: none"> <li>CWI/OPS/073 – Tension Pneumothorax Decompression with Arrow Pneumocath</li> </ul>		

## Version control and change history

Version	Date approved	Date superseded	Amendment
1.0	25 July 2016	19 May 2017	Unconfirmed
2.0	19 May 2017	4 September 2017	<ul style="list-style-type: none"> <li>Reformatting to new document style</li> <li>Addition of gauze to the back of the cannula during post decompression</li> <li>Addition of assessment section</li> </ul>
3.0	4 September 2017	28 August 2019	<ul style="list-style-type: none"> <li>Addition of use of a 14G or 16G cannula where required by patient size</li> </ul>
4.0	28 August 2019	Current	<ul style="list-style-type: none"> <li>Application of revised CWI template</li> </ul>

