



Queensland  
Trauma Education



**CHEST TRAUMA**

# Intercostal catheter insertion

## Procedural skill

Participant resource kit

**CSDS**



Clinical Skills Development Service



## Queensland Trauma Education

The resources developed for Queensland Trauma Education are designed for use in any Queensland Health facility that cares for patients who have been injured as a result of trauma. Each resource can be modified by the facilitator and scaled to the learners needs as well as the environment in which the education is being delivered, from tertiary to rural and remote facilities.

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## Queensland Trauma Education

### Chest Trauma – Intercostal catheter insertion: Procedural skill – Participant resource kit Version 1.0

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## About this training resource kit

This resource kit provides healthcare workers with knowledge of the technical skills required for the insertion of an intercostal catheter (ICC) for the management of haemothorax or pneumothorax following trauma.

### National Safety and Quality Health Service (NSQHS) Standards



### Learning objectives

By the end of this session the participant will be able to:

- Demonstrate knowledge of the indications and contraindications for ICC insertion.
- Identify the anatomical landmarks for safe insertion.
- Identify the essential equipment required for set up.
- Perform the insertion of an ICC utilising the correct procedure.
- Demonstrate knowledge of post-procedure cares.

## Overview ICC insertion

An intercostal catheter is a tube used to drain air, blood or other fluid by insertion into the pleural space. In trauma this is commonly used to manage either pneumothorax or haemothorax or a combination of both.

Contraindications in the acute trauma patient are relatively limited, due to the emergent requirement to improve either haemodynamics and/or oxygenation/ventilation in the setting of tension or significant haemo/pneumothorax. However, a known history of previous pleurodesis and local infection may result in the clinician using alternate insertion techniques or location.

An intercostal catheter should be placed in the triangle of safety to avoid the neurovascular bundle, reduce risk of injury to the mammary artery or breast tissue and avoid inadvertent intraperitoneal insertion.

The size of pneumothorax that requires treatment may vary depending on both clinical situation and patient factors. A patient with signs of tension clinically (tachycardia, hypotension and hypoxia) should be managed with surgical thoracostomy followed by the insertion of an intercostal catheter connected to a chest drainage system.. In the stable patient, who does not require positive pressure ventilation or transfer in a non-pressurised aircraft, a conservative approach may be taken.

The supine CXR can be challenging to accurately measure the size of the pneumothorax, with CT measurement of <35mm measured between the parietal and visceral pleura/mediastinum shown to be safe for an observational approach.<sup>1</sup>

Longer term complications of intercostal catheter insertion include empyema, pain, bleeding and damage to underlying structures.

### Further reading

Online course: Intercostal Catheter Insertion ICC	
Organisation	Clinical Skills Development Service
Link	<a href="https://central.csds.qld.edu.au/central/courses/326">https://central.csds.qld.edu.au/central/courses/326</a>

ICC insertion consent form	
Organisation	Queensland Health
Link	<a href="https://www.health.qld.gov.au/_data/assets/pdf_file/0025/154915/medical_imaging_105.pdf">https://www.health.qld.gov.au/_data/assets/pdf_file/0025/154915/medical_imaging_105.pdf</a>

Princess Alexandra Hospital ED ICC procedure	
Organisation	Metro South Hospital and Health Service
Link	<a href="http://paweb.sth.health.qld.gov.au/medicine/emergency/documents/PAHED007.pdf">http://paweb.sth.health.qld.gov.au/medicine/emergency/documents/PAHED007.pdf</a>

ICC procedure documentation	
Organisation	Queensland Health
Link	<a href="https://qheps.health.qld.gov.au/_data/assets/pdf_file/0027/2153565/2218.pdf">https://qheps.health.qld.gov.au/_data/assets/pdf_file/0027/2153565/2218.pdf</a>

  

ICC procedural video	
Organisation	Queensland Trauma Education
Link	<i>Coming soon</i>

  

UWSD video demonstration	
Organisation	Queensland Trauma Education
Link	<i>Coming soon</i>

  

NSW Health ICC guideline	
Organisation	NSW Health
Link	<a href="https://www.aci.health.nsw.gov.au/_data/assets/pdf_file/0018/201906/PleuralDrains_Guideline-021116.pdf">https://www.aci.health.nsw.gov.au/_data/assets/pdf_file/0018/201906/PleuralDrains_Guideline-021116.pdf</a>

## Acronyms and abbreviations

Term	Definition
ICC	intercostal catheter insertion
UWSD	under water seal drain

## References

1. Eddine, S., Boyle, K., Dodgion, C., et al. Observing pneumothoraces: The 35-milimeter rule is safe for both blunt and penetrating chest trauma. *Journal of Trauma and Acute Care Surgery* 2019; 86(4), 557-564. <https://doi.org/10.1097/ta.00000000000002192>
2. NSW Health ICC guideline [https://www.aci.health.nsw.gov.au/\\_data/assets/pdf\\_file/0018/201906/PleuralDrains\\_Guideline-021116.pdf](https://www.aci.health.nsw.gov.au/_data/assets/pdf_file/0018/201906/PleuralDrains_Guideline-021116.pdf)



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