

Document Conception			
Document type	Clinical Guidance		
Document name	STPN Paediatric Chest Drain initial management Clinical guidance		
Document Audience	All clinical teams involved in the initial management of chest drains in paediatric patients, following emergency insertion away from specialist centres across the STPN.		
Summary	This guideline provides structured guidance on the initial management of chest drains away from specialist centres following insertion. It is applicable to all staff involved as outlined above. It applies to STPN acute sites who routinely do not insert or manage paediatric chest drains and should be used alongside specialist advice.		
Reason for development	To address the challenges raised with the network in the insertion and initial management of chest drains away from specialist centres in emergency situations, which, although a rare occurrence, carry risks. It supports centres to stock the correct equipment, identify training needs and supports clinicians who do not regularly manage chest drains to do so safely. This guidance should be used alongside specialist advice.		
Document Benefits			
Key Improvements / Benefits	<ul style="list-style-type: none"> <li>• Standardised approach to chest drain management</li> <li>• Clear safety focus</li> <li>• Support clinicians in non-specialist settings who do not regularly insert or manage paediatric chest drains</li> <li>• Support centres to stock appropriate equipment and identify any training needs</li> </ul>		
Project Evaluation			
Evaluation	The impact of this guidance will be monitored across the STPN through feedback on its use in forums and direct feedback from participating Trusts or any incidents raised.		
Implementation / Recommendations: Next Steps			
For the Guidance to be effective across the network, it must be widely circulated so that all clinical staff who may be required to provide initial management of a paediatric chest drain are aware of the guidance and for teams to take through their governance process.			
Step 1	The guidance is to be shared with critical care leads within each of the STPN trusts		
Step 2	Each Trust should align local guidelines and policies with the principles set in this document.		
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Next review date	February 2028		

Revision History				
Version	Date	Author / Updated by	Summary of Changes	Approved By
1.0	09/02/2026	N/A	Identified as not uploaded to website. Document reviewed and advised to amend date & release.	PCC Clinical leads Network Manager



Clinical guideline:

# Paediatric Chest Drain Initial Management

## References

1. The Royal Children's Hospital Melbourne (2022). *Clinical Guidelines (Nursing) : Chest Drain Management*. [online] RCH. Available at: [https://www.rch.org.au/rchcpg/hospital\\_clinical\\_guideline\\_index/Chest\\_Drain\\_Management/](https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/Chest_Drain_Management/).
2. [www.clinicalguidelines.scot.nhs.uk](http://www.clinicalguidelines.scot.nhs.uk). (n.d.). *NHSGGC - Seldinger chest drain insertion and management*. [online] Available at: <https://www.clinicalguidelines.scot.nhs.uk/nhsggc-guidelines/nhsggc-guidelines/neonatology/seldinger-chest-drain-insertion-and-management/>.
3. Anderson, D., Chen, S.A., Godoy, L.A., Brown, L.M. and Cooke, D.T. (2022). Comprehensive Review of Chest Tube Management: A Review. *JAMA surgery*, [online] 157(3), pp.269–274. doi:<https://doi.org/10.1001/jamasurg.2021.7050>.
4. Online Appendix 10: Suction and digital chest drain devices. (n.d.). [online] British Thoracic Society. Available at: [www.brit-thoracic.org.uk](http://www.brit-thoracic.org.uk) [Accessed 20 Jul. 2024].

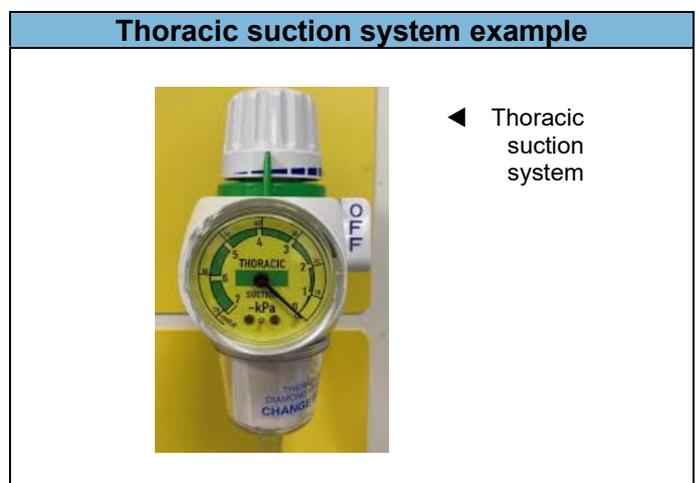
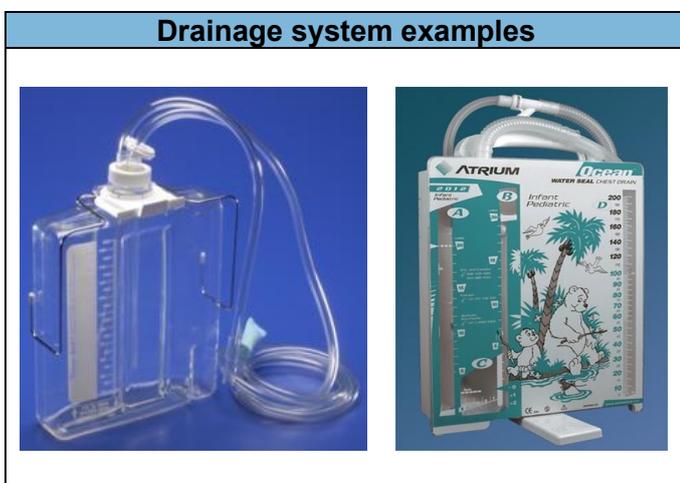
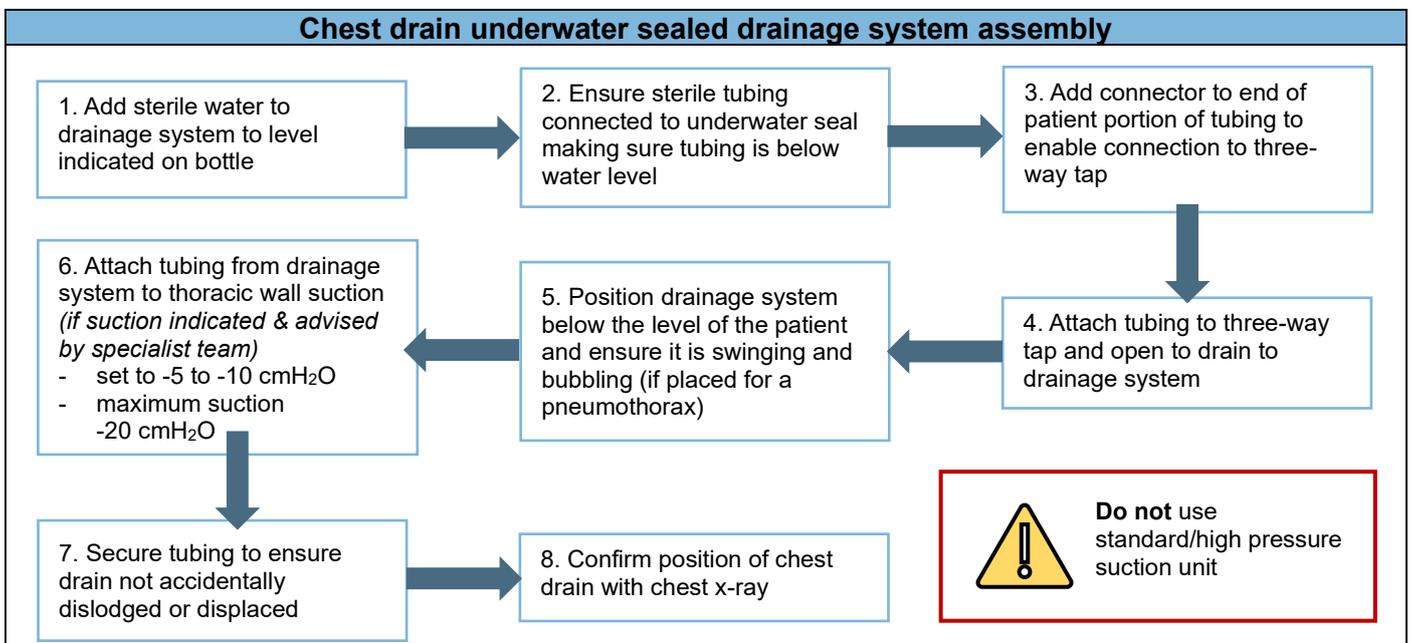
## Paediatric Chest Drain Initial Management

Indications	Cautions	Considerations
<ul style="list-style-type: none"> <li>Pneumothorax</li> <li>Tension pneumothorax</li> <li>Pleural effusion</li> <li>Haemothorax</li> </ul>	<ul style="list-style-type: none"> <li>High output drains</li> <li>Haemodynamic instability</li> </ul>	<ul style="list-style-type: none"> <li>Analgesia and sedation</li> <li>Haemodynamic instability</li> <li>Most appropriate location for careful monitoring of drain</li> </ul>

Equipment list
<ul style="list-style-type: none"> <li>Underwater seal</li> <li>Suction system <b>(if indicated – discuss with specialist team)</b></li> <li>Appropriate tubing</li> <li>Sterile water</li> <li>Non-toothed clamps</li> </ul> <p><b>Monitoring:</b></p> <ul style="list-style-type: none"> <li>Fluid balance chart</li> <li>Pulse oximeter</li> <li>Cardiac monitor</li> </ul>

Check the guidance on water level vs. suction pressure on the drainage system before attaching to the patient

Analgesia
<ul style="list-style-type: none"> <li>Regular analgesia e.g. paracetamol, ibuprofen</li> <li>Consider Morphine if significant pain</li> </ul>
Sedation
<p>Consider conscious sedation medications: (to be used with caution)</p> <ul style="list-style-type: none"> <li>Chloral hydrate <ul style="list-style-type: none"> <li>&lt;6kg = 10 mg/kg 6 hourly</li> <li>&gt;6kg = 30-50 mg/kg 6 hourly</li> </ul> </li> <li>Alimemazine <ul style="list-style-type: none"> <li>1-2 mg/kg 8 hourly</li> </ul> </li> </ul>



### Care of underwater sealed drain (UWSD)

- At least hourly documentation immediately following drain insertion
- Drainage checks every 15 minutes for 1 hour – if pleural losses >10mL/kg in first hour, urgent medical review required and consider fluid replacement
- Keep UWSD below the level of the patient at all times
- Keep drain upright
- Clamped drains should be unclamped as soon as safe to do so – failure may result in fluid/air accumulation
- Calculate 24-hour losses and document on fluid balance chart
- Note colour and consistency of drain losses
- Observe for surgical emphysema
- Monitor and document pain score
- Observe insertion site for signs of infection
- If sudden decline in drain output or swinging/bubbling stops, consider blockage, kinking of tubing or migration of drain
- *NB. If using thoracic suction, 1KPa = 10.2 cmH<sub>2</sub>O = 7.5 mmHg*

### Troubleshooting chest drain

#### *Pneumothorax*

- Repeat chest x-ray to confirm
- Prepare for repositioning or re-insertion of drain

#### *Bleeding at drain site*

- Apply pressure to drain site
- Place occlusive dressing over drain site
- Check drainage system to ensure no excessive blood loss

#### *Signs of infection*

- Swab wound site
- Consider blood cultures

#### *Accidental disconnection of drainage system*

- Clamp drain at patient end or close three-way tap to drainage system if attached
- Clean drainage tube and three-way tap hub and re-attach
- Consider chest x-ray if signs of deterioration

#### *Accidental drain removal*

- Apply pressure to drain site
- Apply occlusive dressing over site
- Alert Medical Staff
- Observe for Respiratory distress
- Apply steri-strips

#### *Migration of chest drain*

- Repeat chest x-ray to confirm position
- Prepare for repositioning or removal of drain if drainage holes outside of chest cavity
- If drain abutting mediastinum, withdraw drain by distance measured on chest x-ray and secure

### Removal of chest drain

#### *Indications for removal:*

- Lung re-expansion (CXR)
- Minimal drain output with no residual collection
- Drain stopped bubbling if inserted for pneumothorax

#### *Removal (two-person technique):*

- Safety Checklist (Pg. 3)
- Identify drain to be removed
- Turn off suction
- Remove drain dressing and loosen stay/securing suture
- Aim to remove chest drain at end of inspiration
- Apply gauze over site simultaneously whilst removing drain
- Apply steri-strips and dressing to wound
- Observe patient for signs of respiratory distress

## Safety Checklist

Before the procedure		
Indication for removal		
Patient identity checked and correct	Yes	No
Does the procedure need to be performed ASAP?	Yes	No
Appropriate consent completed? Comments:	Yes	No
Is suitable drain removal equipment available? (Including guidance)	Yes	No
Confirm site of drain to be removed	Yes	No
Medications and coagulation checked?	Yes	No
Any drug allergies known?	Yes	No
Safe site of drain insertion identified?	Yes	No
Are there any concerns about this procedure for the patient? Comments:	Yes	No

Time out		
Verbal communication between team members before start of procedure		
Is the patient on adequate ventilation settings and in FiO <sub>2</sub> 100%?	Yes	No
Is the patient adequately sedated?	Yes	No
Is the position optimal?	Yes	No
Suction turned off?	Yes	No
All team members identified, and roles assigned?	Yes	No
Any concerns about procedure?	Yes	No
If concerns, how were these addressed/mitigated?		

During procedure	
Sterile gloves	<input type="checkbox"/> Yes
Sutures removed	<input type="checkbox"/> Yes
Gauze applied immediately after drain removal	<input type="checkbox"/> Yes
Haemostatis achieved?	<input type="checkbox"/> Yes

Sign out		
Dressing secured	Yes	No
Drain removed in entirety?	Yes	No
Patient/staff advised about care post-drain removal?	Yes	No
Analgesia prescribed?	Yes	No
Verbal handover to nurse responsible for patient?	Yes	No

Drain removal date:		
Time:		
Operator:		
Observer:		
Assistant:		
Level of supervision:	SpR	Consultant
Signature of responsible clinician completing form:		

Side:	Left	Right
Site:		
Chest drain type:		
Size:	Fr	