

Document Conception			
Document type	Clinical Guidance		
Document name	STPN Paediatric Emergency Chest Drain Insertion (away from specialist centres) Clinical Guidance		
Document Audience	All clinical teams involved in emergency chest drain insertion in paediatric patients away from specialist centres across the STPN.		
Summary	This guideline provides structured guidance on chest drain insertion away from specialist centres in emergency situations. It is applicable to all staff involved as outlined above. It applies to STPN acute sites who routinely do not insert paediatric chest drains and should be used alongside specialist advice. It does not replace but should support local training and competence.		
Reason for development	To address the challenges raised with the network in insertion of chest drains away from specialist centres in an emergency situation, which, although a rare occurrence, carry risks. It supports centres to stock the correct equipment and supports clinicians who do not regularly insert chest drains in paediatric patients to do so safely.		
Document Benefits			
Key Improvements / Benefits	<ul style="list-style-type: none"> Standardised approach to chest drain insertion for non – specialist centres Clear safety focus Support clinicians in non-specialist settings who do not regularly insert paediatric chest drains Support centres to stock appropriate equipment 		
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 insert 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.		
Document Contributors			
Written and reviewed by	Dr Nadir Chowdry, Paediatric Trainee Dr Nicholas Prince, STPN PICU Clinical Lead, Paediatric Critical Care ODN Dr Jatinder Singh Jheeta, STPN PICU Clinical Lead, Paediatric Critical Care ODN Sarah Levitt, STPN Lead Nurse, Paediatric Critical Care ODN		
Consultation and review by	STPN General Surgery Working Group Paediatricians and Nurse Members STPN Critical Care DGH Forum Dr Samantha Black, STPN Clinical Lead, Anaesthetics, Medway NHS Foundation Trust		
Signed off by	Dr Jatinder Singh Jheeta, STPN Clinical Lead, Critical Care ODN, Dartford and Gravesham NHS Trust Dr Nicholas Prince, STPN Clinical Lead, Critical Care ODN, St George's University Hospitals NHS Foundation Trust		
Document prepared by	Dr Nadir Chowdry, Paediatric Trainee Sarah Levitt STPN Lead Nurse Paediatric Critical Care ODN		
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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 Emergency Chest Drain Insertion (away from specialist centres)

References

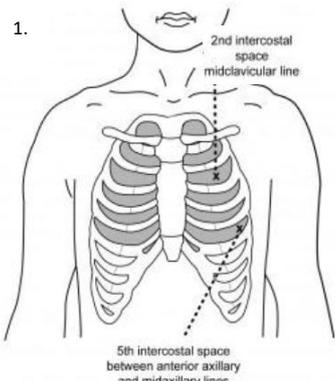
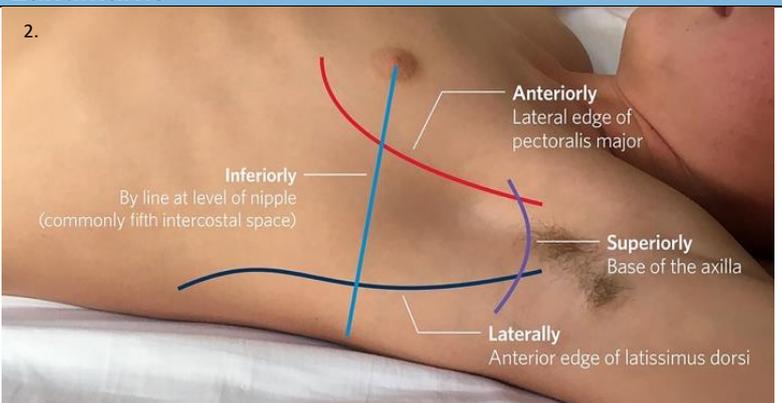
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Paediatric Chest Drain Insertion (away from specialist centres)

Indications	Cautions	Considerations
<ul style="list-style-type: none"> • Pneumothorax • Tension pneumothorax • Pleural effusion • Haemothorax 	<ul style="list-style-type: none"> • Avoid NIV prior to insertion of chest drain • Consider US chest in pleural effusion to exclude tumour 	<ul style="list-style-type: none"> • Most appropriate operator (1 person) • Anaesthesia and sedation (1 person) • Haemodynamic instability and monitoring (1 person)

Equipment list
<ul style="list-style-type: none"> • Chlorhexidine 2% (Chlorhexidine 1%/NaCl if preterm) • Surgical gown and sterile gloves • Surgical drapes • Scalpel • Large clamps • Suture • Local anaesthetic e.g. lidocaine • Scissors • Three-way tap • 10ml syringe • Chest drain – surgical/pigtail • Chest drain attachments/underwater seal • Safety Checklist (Pg. 4)

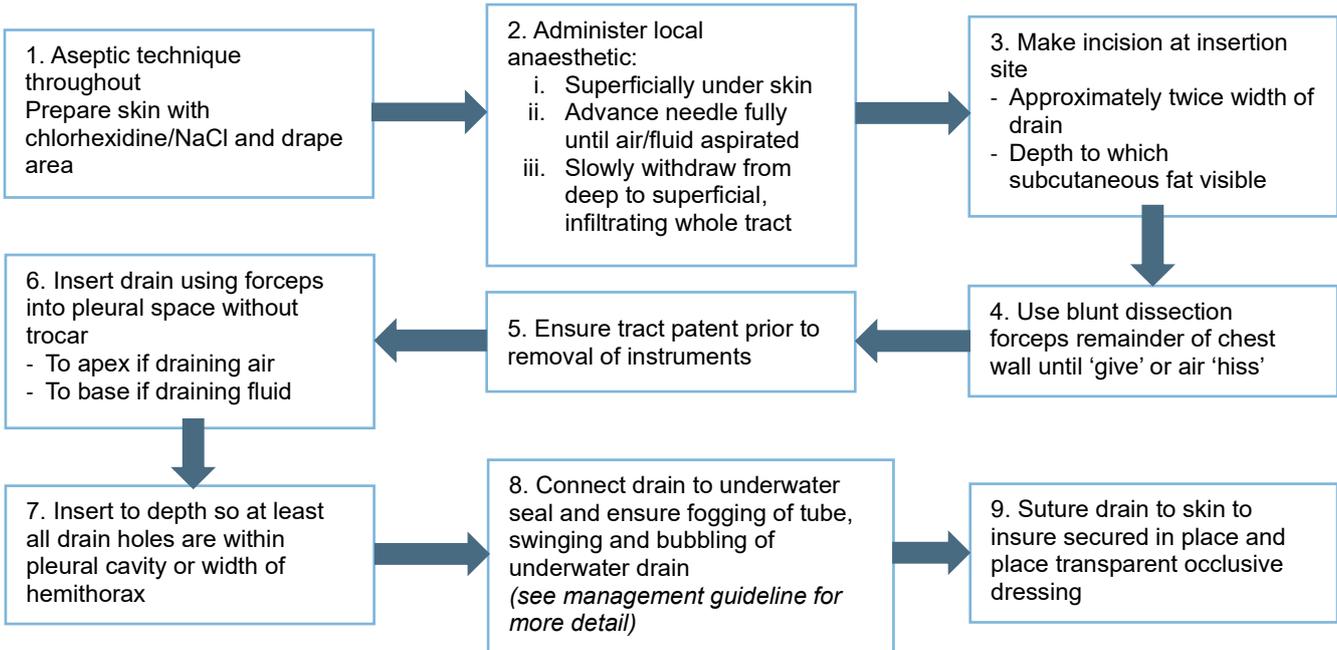
Cannula size for needle decompression				
<ul style="list-style-type: none"> • 0-5 years: 22G (Blue) • 5-10 years: 20G (Pink) • 10-15 years: 18G (Green) • 15+ years: 16G (Grey) 				
Chest drain selection				
<table border="1"> <tr> <th>Pigtail drain</th> <th>Chest tube drain</th> </tr> <tr> <td>- Non-viscid and non-coagulable collections</td> <td>- Thick viscid and coagulable collections</td> </tr> </table>	Pigtail drain	Chest tube drain	- Non-viscid and non-coagulable collections	- Thick viscid and coagulable collections
Pigtail drain	Chest tube drain			
- Non-viscid and non-coagulable collections	- Thick viscid and coagulable collections			
<ul style="list-style-type: none"> • Newborns: 8-12Fr • Infants: 14-20Fr • Children: 20-28Fr • Adolescents: 28-36Fr 				

Landmarks		
<p>1.</p> 	<p>1. Needle decompression (tension pneumothorax): Second intercostal space, mid-clavicular line</p> <p>2. Chest drain insertion: Fifth intercostal space, between anterior axillary and mid-axillary lines</p>	<p>2.</p> 

Analgesia/sedation and local anaesthetic
<p>Analgesia/sedation Consider in presence of anaesthetic team/appropriately trained staff and full monitoring:</p> <ul style="list-style-type: none"> • Ketamine IV <ul style="list-style-type: none"> - Initial dose 0.5-1mg/kg (over 60 seconds) - Supplemental doses 0.5 mg/kg (slow administration; after 5-10 minutes of initial dose) • Oral sucrose/dextrose in babies <p>Local anaesthetic Toxicity occurs with high blood levels – accidental IV administration or excess absorption from infiltration site Risk of arrhythmia and cardiac arrest in high doses</p> <ul style="list-style-type: none"> • Patient should be cardiac monitored during procedure <p><i>Maximum doses of local anaesthetic – lignocaine</i></p> <ul style="list-style-type: none"> • Lignocaine 1% 3 mg/kg = 0.30 ml/kg • Lignocaine 2% 3 mg/kg = 0.15 ml/kg <p><i>NB. A combination of analgesia/sedation with local anaesthetic is recommended</i></p>

Insertion techniques
<p>Surgical blunt dissection method – preferred in trauma</p> <p>Seldinger method – first-line for pneumothorax and free-flowing effusions; consider performing US-guided if operator competent</p>

Chest drain insertion technique – surgical blunt dissection method

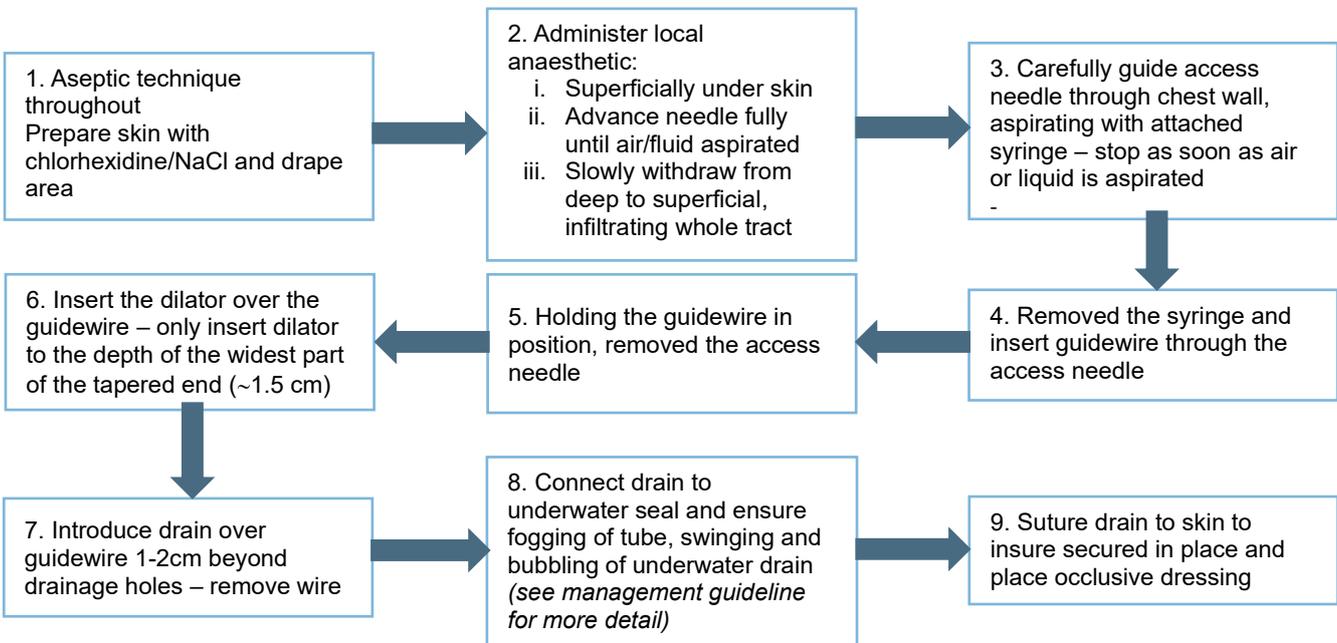


Post insertion checklist:

- Document drain size and procedure in patient notes
- Chest x-ray to confirm position(s)
- Where multiple drains inserted, label each catheter to drainage chamber
- Ensure patient monitored and nursed in at least a HDU setting/organise transfer to appropriate location

FOLD ALONG THIS LINE TO AVOID CONFUSION BETWEEN TECHNIQUES

Chest drain insertion technique – Seldinger method



Post insertion checklist:

- Document drain size and procedure in patient notes
- Chest x-ray to confirm position(s)
- Where multiple drains inserted, label each catheter to drainage chamber
- Ensure patient monitored and nursed in at least a HDU setting/organise transfer to appropriate location

Safety Checklist

Before the procedure		
Indication		
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 and equipment available? (Including guidance)	Yes	No
Confirm site of clinical abnormality	Yes	No
Correlates clinical signs with chest x-ray?	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 ₂ 100%?	Yes	No
Is the patient adequately sedated?	Yes	No
Is the position optimal?	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 gown and gloves	<input type="checkbox"/> Yes
Chlorhexidine 2% to skin? (Chlorhexidine 1% or NaCl in preterm neonates)	<input type="checkbox"/> Yes
Local anaesthetic administered?	<input type="checkbox"/> Yes
Large fenestrated drape used?	<input type="checkbox"/> Yes
STOP if unable to aspirate air/fluid while infiltrating local anaesthetic with needle	

Sign out		
Sutures, tubing and dressing secured?	Yes	No
All sharps and guidewire(s) removed and accounted for?	Yes	No
Patient/staff advised about care and not elevating drain above chest?	Yes	No
Analgesia/sedation prescribed?	Yes	No
Chest x-ray requested to confirm position?	Yes	No
Verbal handover to nurse responsible for patient?	Yes	No

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

Side:	Left	Right
Site:		
Appearance of fluid:		
Chest drain type:		
Size:	Fr	
Method of insertion:	Surgical	Seldinger
Samples sent:	<input type="checkbox"/> None <input type="checkbox"/> Mico <input type="checkbox"/> Biochemistry	