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# Clinical Guidance

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## Paediatric Critical Care: Pre Transport Stabilisation

### Summary

This guideline is for staff to use as a prompt when preparing a child for safe retrieval.

Document Detail	
Document type	Clinical Guideline
Document name	Paediatric Critical Care: Pre Transport Stabilisation
Document location	Evelina London website & GSTT guideline database
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Owner	PICU Head of Service
Author(s)	Jon Lillie, PICU Consultant
Approved by, date	Evelina London Clinical Guideline Committee, 09/06/2021
Superseded documents	Paediatric Critical Care: Pre Transport Stabilisation v2
Related documents	<a href="#">Intubation</a> , <a href="#">ETT securing guideline</a>
Keywords	Evelina, child, Paediatric, intensive care, STRS, Retrieval, Paediatric critical care, Pre transport stabilisation, PICU
Relevant external law, regulation, standards	<a href="#">UK Resus council guidance 2021</a>
<p>This clinical guideline has been produced by the South Thames Retrieval Service (STRS) at Evelina London for nurses, doctors and ambulance staff to refer to in the emergency care of critically ill children.</p> <p>This guideline represents the views of STRS and was produced after careful consideration of available evidence in conjunction with clinical expertise and experience. The guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient.</p>	

Change History		
Date	Change details, since approval	Approved by
May 2021	Reflect <a href="#">Resus council guidance</a> : Balanced fluids for resus fluid rather than 0.9% sodium chloride, adrenaline rather than dopamine New links and STRS app referenced more clearly	ELCGC June 2021

**Key information for referral call**

- Patient demographics, current location of patient (please update if moved)
- Paediatric consultant preference for destination PICU
- Relevant clinical history and thorough examination
- Management to date and response to treatment
- Current physiological parameters (bring PEWS chart to phone) & results

Paediatric consultant **must** be aware of all referrals

Double check advice, document clearly and inform entire team

Update STRS with significant changes

**Do not delay urgent interventions awaiting retrieval team arrival**

<b>A</b>	<p><b>AIRWAY</b></p> <ul style="list-style-type: none"> <li>• Secure oral or nasal ETT (appropriate size and position) – <a href="#">Intubation guidance</a>, <a href="#">ETT securing guideline</a></li> <li>• Avoid nasal if suspected basal skull fracture or coagulopathy</li> <li>• DO NOT pre-cut ETT as may result in later being too short</li> <li>• Cervical spine immobilisation for ANY ventilated trauma patient</li> <li>• Gastric tube on free drainage (all ventilated patients)</li> <li>• Obtain CXR post intubation to verify ETT position prior to transfer</li> </ul>																												
<b>B</b>	<p><b>BREATHING</b></p> <ul style="list-style-type: none"> <li>• Ensure adequate ventilation either by anaesthetic circuit or ventilator</li> <li>• Spontaneous ventilation via ETT will result in atelectasis: avoid</li> <li>• Monitor end tidal carbon dioxide (ETCO<sub>2</sub>) and saturations continuously</li> <li>• If ventilation difficulty-exclude ETT problems immediately (see right)</li> <li>• Suggested initial ventilator settings:</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>PIP</th> <th>PEEP</th> <th>Rate</th> <th>I Time</th> <th>ETCO<sub>2</sub></th> <th>Sats</th> </tr> </thead> <tbody> <tr> <td><b>Standard</b></td> <td>16-30*</td> <td>5</td> <td>15-20</td> <td>0.7-1sec</td> <td>4-7kPa</td> <td>&gt;95%</td> </tr> <tr> <td><b>Asthma</b></td> <td>To move chest</td> <td>5</td> <td>12-20</td> <td>1sec</td> <td>6-10kPa</td> <td>&gt;90%</td> </tr> <tr> <td><b>ARDS</b></td> <td>To move chest</td> <td>5-15</td> <td>15-25</td> <td>1sec</td> <td>6-10kPa</td> <td>&gt;85%</td> </tr> </tbody> </table> <p>* PIP initially to achieve chest rise, titrate to ETCO<sub>2</sub>/ PaCO<sub>2</sub>, limit to prevent barotrauma ** Severe hypoxia in ARDS employ recruitment manoeuvres- increase PEEP, suction</p>		PIP	PEEP	Rate	I Time	ETCO <sub>2</sub>	Sats	<b>Standard</b>	16-30*	5	15-20	0.7-1sec	4-7kPa	>95%	<b>Asthma</b>	To move chest	5	12-20	1sec	6-10kPa	>90%	<b>ARDS</b>	To move chest	5-15	15-25	1sec	6-10kPa	>85%
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<b>C</b>	<p><b>CIRCULATION: GOOD INTRAVENOUS ACCESS IS A PRIORITY</b></p> <ul style="list-style-type: none"> <li>• At least 2 well secured peripheral lines (external jugular vein useful)</li> <li>• Intraosseous needle if delay in obtaining IV access and shocked</li> <li>• If child shocked, ongoing resuscitation whilst awaiting STRS team</li> <li>• Fluid resuscitation: titrate to heart rate, blood pressure, CVP if available First line: 10ml/kg “balanced” crystalloid: hartmann’s or plasmalyte</li> <li>• Consider cardiogenic shock (gallop, hepatomegaly, cardiomegaly)</li> <li>• 1<sup>st</sup> line inotrope: adrenaline 0.05-0.5 micrograms/kg/minute-can start peripherally-monitor closely. Central/peripheral preparations may differ.</li> <li>• All inotropes can be commenced via IO, CVL, or external jugular line</li> <li>• Liaise with STRS regarding further escalation/ management</li> <li>• Central venous line (CVL) if inotropes or likely to need them</li> <li>• Arterial line if on inotropes (<b>not</b> initial priority, <b>avoid</b> brachial)</li> <li>• <b>Shocked neonate</b> - ?consider dinoprostone - <a href="#">see Neonatal collapse</a></li> </ul>																												
<b>D</b>	<p><b>DISABILITY</b></p> <ul style="list-style-type: none"> <li>• Ensure adequate sedation if intubated and ventilated – morphine 20-40 microgram/kg/h, consider midazolam infusion for &gt;5 yrs and if cardiovascularly stable</li> <li>• If neuroprotection required- see separate <a href="#">guideline</a></li> <li>• Trauma patients: ensure C-spine immobilization (current APLS guidance), complete secondary survey and imaging</li> </ul>																												
<b>E</b>	<p><b>EXPOSURE</b></p> <ul style="list-style-type: none"> <li>• Monitor temp, aim for normothermia (36-37°C) unless cooling indicated</li> <li>• Special attention to temperature control required in neonates/ infants</li> </ul>																												
<b>F</b>	<p><b>FLUIDS</b></p> <ul style="list-style-type: none"> <li>• Monitor blood glucose: neonates/ liver/ metabolic disease need glucose</li> <li>• Maintenance fluid not immediate priority (2mL/kg/h or max 40mL/h) - 0.9% sodium chloride &amp; 5% glucose</li> <li>• Use 0.9% sodium chloride &amp; 10% glucose if neonate or hypoglycaemic</li> <li>• Consider urinary catheter (monitoring/ possible retention)</li> </ul>																												

**Indications for Intubation**

- Airway protection/ patency
- Respiratory failure
- Cardiovascular support
- Neuroprotection
- Facilitate procedure/ analgesia

**Troubleshoot problems on ventilator: DOPES**

- **D**isplaced ETT - check ETCO<sub>2</sub> and exact length of tube
- **O**bstruction - suction ETT and check can pass to end of ETT
- **P**neumothorax - clinical examination- can be difficult to exclude if chest hyper-expanded due to air trapping
- **E**quipment - check ventilator settings including O<sub>2</sub>
- **S**tomach - Ensure decompressed: aspirate with nasogastric tube

**Ventilation for CVS support: DO NOT delay awaiting STRS arrival**

- Grunting - needs respiratory support
- Anticipate CVS instability on induction
- Commence dopamine and give volume
- Avoid propofol if CVS instability
- Oncology-related sepsis:
  - Early proactive fluid resuscitation
  - Consider line sepsis as source
  - If vasodilated consider noradrenaline

**Documentation**

- Referral letter, copy of notes, results and drug charts. Safeguarding documentation, x2 name bands
- PACS link X-rays/ CT to receiving hospital

**Parents**

- Keep as informed as possible
- Not to leave DGH before STRS arrival
- One parent & small bag can usually travel in ambulance

**Resources: [website](#) and STRS app Paediatric Emergency Tools**



- Guidance on age/ weight appropriate equipment
- Clinical guidelines
- Calculate infusions and drugs on [emergency drug calculator](#) then print