

**Make early contact with PIPER for advice from the Paediatric Major Trauma Service & to initiate retrieval.**

- Delayed management of the obstructed airway and inadequate fluid resuscitation are two of the most preventable causes of death in paediatric patients.
- The family of an injured child requires appropriate support and explanation.

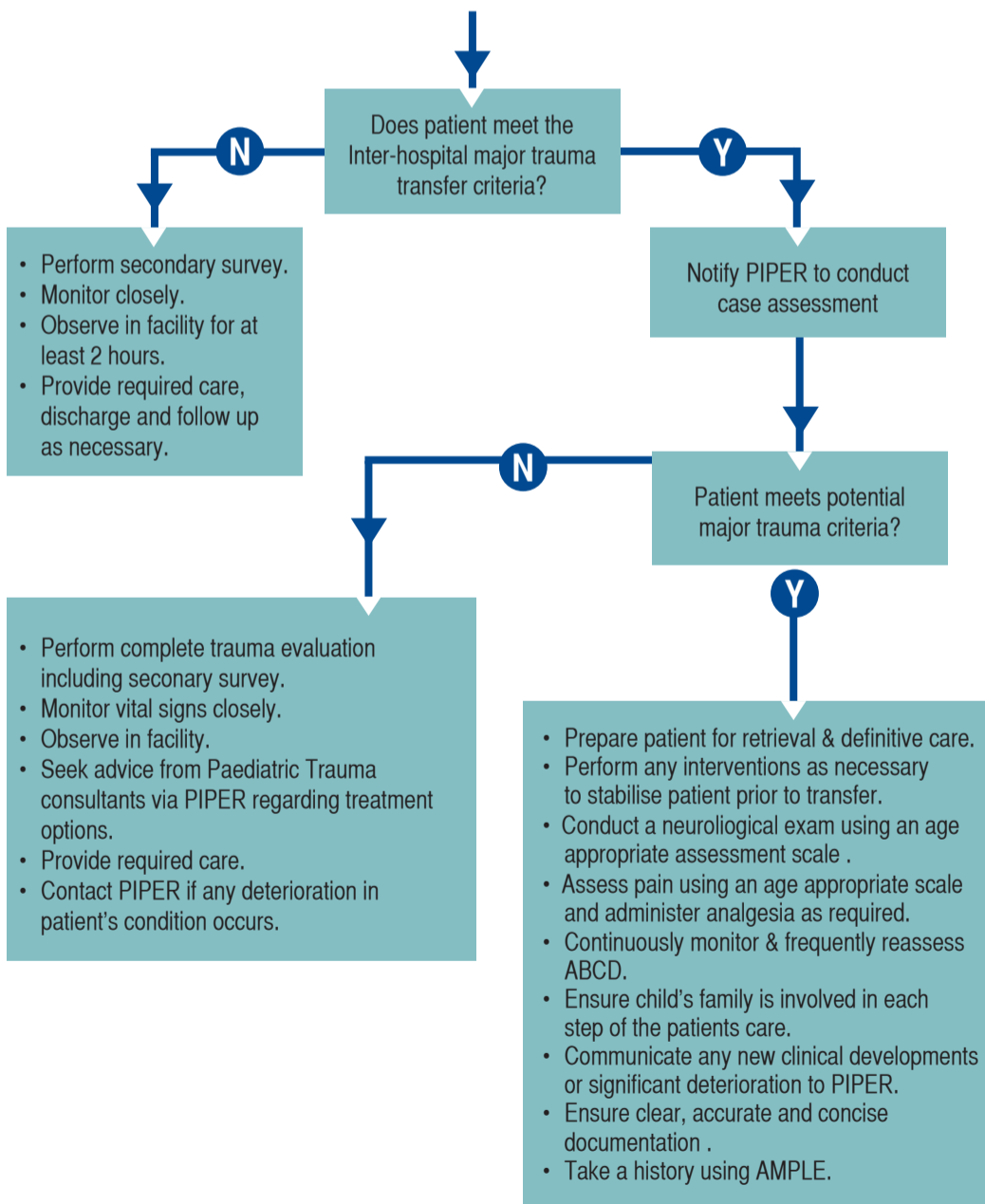
## Early Activation

- Gather vital information
- Designate roles
- Ensure safety using PPE
- Set up to receive patient
- Activate Trauma Team
- Call for help early
- Perform calculations based on estimated weight or Broselow tape guide
- Predetermine age / weight specific interventions

## Primary Survey

| AIRWAY / C-SPINE   | BREATHING  | CIRCULATION  | DISABILITY  | EXPOSURE / ENVIRONMENT  | ADJUNCTS   |
|--|--|--|---|---|--|
| <ul style="list-style-type: none"> <li>• Protect Airway</li> <li>• Adjuncts as necessary</li> <li>• Maintain full spinal precautions with neutral alignment</li> </ul> | <ul style="list-style-type: none"> <li>• Identify &amp; treat any life threats</li> <li>• Measure RR &amp; work of breathing</li> <li>• Oxygen therapy to maintain SpO<sub>2</sub> 94 - 98%</li> <li>• Listen for expiratory "grunting"</li> </ul> | <ul style="list-style-type: none"> <li>• Insert peripheral IV cannula x 2</li> <li>• If difficult, insert Intraosseous</li> <li>• Take blood</li> <li>• Assess HR / BP / skin perfusion</li> <li>• Assess central capillary refill time</li> </ul> | <ul style="list-style-type: none"> <li>• Assess level of consciousness using AVPU</li> <li>• Check pupils</li> <li>• Check BSL</li> </ul> | <ul style="list-style-type: none"> <li>• Fully expose patient</li> <li>• Prevent heat loss</li> <li>• Log roll</li> </ul> | <ul style="list-style-type: none"> <li>• X rays: Chest, Pelvis</li> <li>• Analgesia</li> <li>• Consider eFAST scan in adolescents &gt; 50kg</li> </ul> |

Only an experienced clinician should attempt intubation in a young child. Prior to attempting intubation, always have a plan for managing a difficult airway or failed intubation.



## Paediatric Vital Signs Major Trauma Criteria

| Age              | Term - 3 mths | 4-11 mths    | 1-4 yrs     | 5-11 yrs    | 12-15 yrs   |
|------------------|---------------|--------------|-------------|-------------|-------------|
| HR               | <100 or >180  | <100 or >180 | <90 or >160 | <80 or >140 | <60 or >130 |
| RR               | >60           | >50          | >40         | >30         | >30         |
| BP sys           | <50           | <60          | <70         | <80         | <90         |
| SpO <sub>2</sub> | <90%          |              |             |             |             |
| GCS              | <15           |              |             |             |             |

## Calculations

### Weight

- Age 0-1: weight = (age / 2) + 4
- Age 1-5: weight = (age x 2) + 8
- Age 6-12: weight = (age x 3) + 7

### Endotracheal tube

- The endotracheal tube size (age / 4) + 4 (use 1/2 size down if using microcuff ETT where available).
- The depth of endotracheal tube insertion:
  - neonates: 10cm.
  - infants <1yr: 11cm.
  - children over 1yr: length (cm) = (age/2) + 12.
- Intubation must be verified with ETCO<sub>2</sub>

### Fluid resuscitation

- 20 ml / kg of 0.9% NaCl

### Burn Resuscitation fluid: 0.9% NaCl / Hartmanns.

- For burns with >10% TBSA
  - Modified Parklands formula of 3ml x TBSA% x kg= \_ml/24 hrs.
  - 50% is given in the first 8/24 post injury, and 50% given in the following 16/24.

### Maintenance fluid

- Normal daily fluid requirements in children up to 30kgs:
  - Up to 10kgs: 100ml/kg/day.
  - 10-20kgs: 1000mls plus 50ml/kg/day for each kg over 10kgs.
  - 20-30kgs: 1500mls plus 20ml/kg/day for each kg over 20kgs.
  - Potassium chloride supplements may be required.

## Paediatric Sub-guidelines

### Traumatic Brain Injury

- Use the modified GCS to assess neurological state in children.
- Seizures are common in children after head injury: maintain inline c-spine immobilisation and nurse in reverse Trendelenburg position.

### Spinal Trauma

- Significant spinal injury may occur without fracture.

### Burns

- Use the Lund & Browder method for assessing Total Body Surface Area (TBSA) in children accurately.