

Trauma Emergencies Overview (Children)

Significant blood losses are seen in long bone fractures with even greater losses (double the volume) seen when the fracture is open, when compared to a corresponding closed fracture: for example, in a closed femoral fracture 20% of the circulating blood volume may bleed into the surrounding tissues compared to losses of 40% from an open femoral shaft fracture.

Management

Splintage, traction and full immobilisation can reduce blood loss and pain.

Where possible, vascular access can be gained en-route to hospital, reducing the time spent on scene. Use the widest possible cannula for the veins available.

In paediatric trauma **5 ml/kg fluid boluses** are used and repeated as needed to improve clinical signs (e.g. RR, HR, capillary refill, conscious level) **towards normal**. Seek advice to exceed maximum dose in trauma.

NB Hypotensive resuscitation practices (as used in adult trauma) should not be used in children.

(Due to their physiological reserves, children maintain their systolic blood pressures in the face of major blood loss, with hypotension only occurring at a very late stage. Significant cardiovascular compromise and even cardiac arrest may occur if volume resuscitation were to be delayed until a child had reached such an advanced state of hypovolaemia).

Following IV fluid resuscitation, in paediatric major trauma with catastrophic haemorrhage, a bolus of tranexamic acid should be given, if available ([refer to tranexamic acid guideline](#)).

9. Disability – Assessment

Record the initial level of consciousness using the AVPU Scale (below):

- A** Alert
- V** Responds to voice
- P** Responds to painful stimulus
- U** Unresponsive

as well as:

- The time of the AVPU assessment.
- Pupil size, shape, symmetry and response to light.
- Whether the child was moving some or all limbs. If there is no movement, then ask the child to 'wiggle' their fingers and toes, paying particular note to movements peripheral to any injury site.
- Any abnormalities of posture.

If the child is not **alert** they should be considered time critical. A formal GCS (see Appendix) en-route may be valuable to the receiving hospital but should only be recorded if it can be accurately done and does not delay transfer.

9.1 Stepwise disability management

Confusion or agitation in an injured child may result directly from a significant head injury, but equally may be secondary to hypoxia from an impaired airway or compromised breathing or else hypoperfusion due to blood loss and shock.

The management of any child with impaired consciousness is based on ensuring an adequate airway, oxygenation, ventilation and circulation.

Always measure the blood glucose level in any child with altered consciousness. If hypoglycaemia is detected **refer to the glycaemic emergencies in children guideline for treatment**.

10. Exposure

Children will lose heat rapidly when exposed for examination and immobilised during trauma care. Do protect the child from a cold environment during your assessment.

Expose children 'piecemeal' if possible, replacing a piece of clothing before removing the next as stripping a child may cause insecurity or embarrassment as well as exposing them to cold.

If the child is **TIME CRITICAL** they must be packaged appropriately (with full spinal immobilisation – or improvisation as tolerated – and pelvic splint if pelvic injury suspected) and transported rapidly to hospital.

An **alert/information call should be given for all TIME CRITICAL children** en-route.

If there is no apparent problem with the primary survey, a secondary survey may be commenced en-route. This should not delay the transfer to definitive care.

10.1 Secondary survey

This is a systematic and careful review of each part of the injured child looking for non-critical and/or occult injuries. It is rarely possible to complete this before hospital in a seriously injured child.

Any deterioration in the child's condition mandates an immediate return to the primary survey and the problem sought and treated.

Dress and immobilise any injuries found as required. Perform a simple **MSC** check of **ALL** 4 limbs (see below):

M	MOTOR	Test for movement
S	SENSATION	Apply light touch to evaluate sensation
C	CIRCULATION	Assess pulse and skin temperature

11. Analgesia in Trauma

As would happen for an adult, a child's pain must be addressed once their life-threatening problems have been attended to ([refer to pain management in children guideline](#)).

Note: Paediatric drug doses are expressed as mg/kg ([refer to specific drug protocols/Page-for-Age](#) for dosages and information). Drug doses **MUST** be checked prior to **ANY** drug administration, no matter how confident the practitioner may be.