Irish Paediatric Acute Transport Service

Guideline for Patients with Severe Traumatic Brain Injury

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Related Documents:	PICU Traumatic Brain Injury Guideline (Q-Pulse CUH intranet)

The Irish Paediatric Acute Transport Service (IPATS) in conjunction has produced this clinical guideline with the Paediatric Intensive Care Unit and Neurosurgical Department, in Children's University Hospital, Temple Street. It has been designed for nurses, doctors and ambulance staff to refer to in the emergency care of critically ill children.

This guideline represents the views of IPATS 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.

Guideline for Patients with Severe Traumatic Brain Injury (GCS ≤8)

All patients should be discussed with PICU & Neurosurgical Consultant

Call PICU Bridge Phone: 1800 222378

Priority One
Airway & Breathing

Airway

- Assess patient ability to maintain patent airway – clear and/or secure as per ATLS
- If Intubation needed: **Oro**-tracheal rapid sequence induction is ideal. ETT tapes **not** circumferential
- Cuffed ETT preferred due to risk of aspiration/nosocomial infection
- Lower doses of induction agent recommended – avoid hypotension

Breathing

- Keep oxygen saturations > 98%
- Use ABG to maintain PaO_2 10-14kPa & $PaCO_2$ 4.5 – 5.0kPa
- Ventilate with initial PEEP 5cmH_20. **CXR to confirm ETT position**.
- Continuous ETC02 mandatory to monitor airway patency and keep pCO_2 in target range
- Insert OGT to free drainage to empty and decompress stomach

Priority Two
Maintain Haemodynamic stability

- Out-rule ongoing haemorrhage as per ATLS
- Maintain **minimum** systolic BP ≥ [70mmHg + (age in years x2)] if 0-10yr & ≥90mmHg if >10yr old
- If Hypotensive/hypovolaemic – 10-20ml/kg 0.9% NaCl as IV push – reassess post bolus. Repeat x3
- If fluid resistant – consider inotropes – see full guideline. Dopamine first line if central access not available
- IVF @ 100% maintenance for age– NaCl 0.9%. Add dextrose 5% if <1yr AND hypoglycaemic. Keep bld glucose >4mmol/L
- Maintain Hb >100g/L. FFP, platelets and tranexamic acid can be considered if blood loss significant or ongoing
- Catheterise to monitor U/O and avoid bladder distension.

Priority Three
Neuroprotection

- Adequate sedation – 1st line – morphine load 100mcg/kg then infusion @ dose 20mcg/kg/hr (range 20-60mcg/kg/hr) AND midazolam load 50mcg/kg then infusion @ 2mcg/kg/min (range 1-5mcg/kg/min)
- Treat seizures - as per APLS – lorazepam 0.1mg/kg x2 then phenytoin load 20mg/kg IV over 20minutes (max 1gram)
- Maintain normothermia (36 – 36.5°C). Monitor **core** temp (rectal/oesophageal). Cool aggressively if hyperthermic >37°C
- If shivering occurs – consider neuromuscular blockade (NMB).
- NMB will mask seizures but may be necessary to facilitate safe transfer. Ensure adequate sedation before paralysing
- Nurse with head in midline and head at 30° elevation if no C-spine precautions in place
- Perform non contrast CT brain and C spine when safe. Do **not** delay transfer for scan if head injury is obvious and timely CT unavailable – discuss with neurosurgical team/PICU team if unsure

Priority Four
Treatment of suspected raised ICP

- Suspect raised ICP if: Lateralising signs, pupillary dilatation, falling GCS, acute HR/BP changes, abnormal CT
- If clinical concern – reassess priorities 1-3. Assess need to suction – sedate for same. Use NBM if coughing
- Osmotic therapy – mannitol 0.5gm/kg IV **OR** 3% NaCl 5ml/kg over 20minutes – can be repeated
- If ongoing concern: Third line therapies → 3-5min targeted fall in paC02 of 1-2kpa – **prolonged use is harmful**