South West Paediatric Major Trauma Network
Severe Head Injury in Children:
Guideline for Initial Management and Transfer

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Approved by: South West Paediatric Major Trauma Network

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RECOGNITION:
Any child < 16y with evidence or suspicion of significant head trauma
And decreased level of consciousness and/or abnormal neurological signs

A
Maintain airway with C-spine control (Manual In-Line Stabilisation)
(Jaw thrust, Guedel if required)
Absolute indications for intubation:
• GCS ≤ 8
• Abnormal response to painful stimulus
• Signs of raised intracranial pressure (ICP)
• Unprotected airway due to trauma in conjunction with decreased
level of consciousness
• Rapidly deteriorating consciousness
• Uncontrollable seizure

B
High flow oxygen 15L/min via face mask
Ventilated: Use lowest PIP possible, lowest PEEP > 4cm H2O, and
lowest FiO₂ to achieve: Sats >95%, ETCO₂ 4.0 - 4.5 kPa

C
Treat hypotension and hypovolaemia:
• At least two IV/IO access sites; consider arterial line
• Ensure Tranexamic Acid (15mg/kg) bolus + infusion over 8 hours
• Consider blood loss due to trauma in sites other than head
• Consider possibility of spinal shock
• Treat with 10ml/kg 0.9% saline / plasmalyte or packed red cells
• 2/3 maintenance fluids of 0.9% saline / plasmalyte / Hartmann's

D
Assess & document (prior to RSI):
Focal neurology, including Pupil size & reactivity; GCS
Posturing or seizure

E
Maintain normothermia (36-37°C)
Check glucose (aim ≥ 3mmol/l); <3 mmol/l give 2ml/kg 10% glucose

OBJECTIVES:
• Early diagnosis: CT head & neck ASAP (within 60 mins of arrival as per TU standard)
• Minimise Secondary Brain Injury
• Time Critical Transfer: Aim to arrive at PMTC within 4 hours of presentation

COMMUNICATION
On recognition contact:
Paediatric Trauma Team Leader (Consultant ED PMTC)
Call: 0300 0300 789, choose Option 2
PTTL can conference:
• On-call neurosurgical registrar/consultant
• WATCH Transport Team (if cardiovascular instability &/or NAHI)
Ensure that images transferred urgently to PMTC at
Bristol Royal Hospital for Children (UH Bristol)
IN EXTREMIS, at Derriford Hospital, Plymouth, in discus-
sion with PMTC, consider local surgical intervention

Rapid sequence induction
Use local RSI checklist
Suggested Induction: Ketamine 1-2 mg/kg +/- Fentanyl 1-3 micrograms/kg
Muscle relaxant: Rocuronium 1-2 mg/kg
Maintenance: Morphine, midazolam and rocuronium
infusions (may consider Propofol infusion)
Monitor for and treat hypotension promptly (see C)

MANAGE ICP
• Analgesia and sedation (as above)
• Muscle relaxants (as above)
• Ventilate to End-Tidal CO2 of 4.0 - 4.5 kPa (see B)
• Head midline (protect C-spine but no collar)
• Head up to 30 degrees
• Critical ICP: ↓HR, ↑TBP, dilated pupil
Bolus Hypertonic saline 3ml/kg of 5% or 5ml/kg of 2.7%
Subsequent doses 1-3ml/kg
Monitor; aim not to exceed [Na⁺] > 150mmol/l

TRANSFER
Senior clinician and assistant (nurse/ODP/paramedic)
appropriately trained to safely transfer children
Use transfer checklist / trolley / bags
Call early for transport either by road or air
(BRI helipad open 9am - 7pm)
Contact PTTL (0300 0300 789) when 15 minutes away

Blood investigations:
FBC, Coagulation, U&E, Blood glucose, ABG
Cross match on arrival at PMTC (2 separate samples)