University Hospitals of Derby and Burton NHS Foundation Trust

Head Injury in Children- Summary Paediatric Guideline – Joint Derby & Burton

Approach to Child with Severe Head Injury
Is there an indication for activation of the major trauma team? (see Major trauma Guideline)
Assessment and management of <C> ABC
(Major external hemorrhage, c-spine, airway, breathing and circulation)
Assessment of GCS (IF < 15 SEEK SENIOR HELP)
GCS < 8 (V/U on AVPU)
Activate Paediatric Major Trauma Team (Derby) (2222)
Activate Paediatric 'Crash' team (Burton) (2222)
Follow principles of management of TBI (below)
GCS 9-14
Assess and manage A-E problems
Consider TXA
Consider immediate neuroimaging
GCS 15
Manage Pain
Full history (including mechanism, examination findings and GCS at scene)
Secondary Survey for Further Injuries
Consider Further investigation, closure of wounds or discharge as appropriate

Principles of traumatic brain injury management are to reduce the risk and effect of secondary brain injury. Continue to assess in A-E manner	
C-Spine	Consider whether immobilization of c-spine is warranted (see c-spine guideline)
Airway	Consider whether intubation/ventilation is required
Breathing	Maintain normal oxygen and CO2 levels guided by blood gas and sats targeting
Circulation	Maintain adequate blood pressure ***
Disability	Control pain – consider intranasal fentanyl (if no concerns of Basal skull fracture or IV Morphine/Ketamine Control seizures (as per APLS algorithm) Use Hypertonic Saline ** to maintain serum sodium between 140-150 Nurse in the head up position (30°) with head in midline Check blood glucose and manage hypogylcaemia
Exposure	Examine for other life threatening injuries with consideration of mechanism of injury Give TXA (see TXA Guideline)

*Normal oxygen defined as PaO2 > 13kPA, sats 94-98%, Normal CO2 4-4.5kPa ** Hypertonic saline 2.7% Sodium Chloride 3-5ml/kg
*** Adequate MBP <1 year 50mmHg, 1-5 years 60mmHg, 5-14 years 70mmHg, >14 years 80mmHg

CT Imaging for Head Injury Guidelines (under 16)

Are any 1 of the following risk factors present?

- Clinical suspicion of non-accidental injury
- Post-traumatic seizure but no history of epilepsy
- Age > 1 year: GCS < 14 on assessment in ED
- Age < 1 year: GCS (paediatric) < 15 on assessment in ED
- GCS < 15 at 2 hours post injury
- Suspicion of open or depressed skull injury or tense fontanelle
- Any sign of basal skull fracture (haemotympanum, 'panda' eyes, CSF leakage from ears or nose, Battle's sign)
- Focal neurological deficit
- Age < 1 year: presence of bruise, swelling or laceration > 5cm on the head

Seek senior advice: RDH: CED or ED Consultant or ED registrar (Bleep 2020)

QHB: ED consultant

Are More than 1 of the following risk factors present?

- Witnessed loss of consciousness lasting > 5 minutes
- Amnesia (antegrade or retrograde) lasting > 5 minutes
- Abnormal drowsiness
- 3 or more discrete episodes of vomiting
- Dangerous mechanism of injury (high speed road traffic accident either as a pedestrian, cyclist or vehicle occupant, fall from > 3m, high-speed injury from a projectile or an object)
- Any Current Bleeding or Clotting Disorder (see below*)

Seek senior advice:

RDH: CED or ED Consultant or ED registrar (Bleep 2020)

QHB: ED consult

Yes

Immediate CT Head

RDH:
- Consider involving Paediatric Anaesthetist early to provide advanced airway management and assist in resuscitation (see above contact details)
- Urgent ED/CED Middle Grade or Consultant review

QHB:
- Urgent ED Middle Grade or Consultant review

None

No imaging required now
Consider period of observation

1 risk factor

No imaging required now
Observe for min. 4 hours post injury

Consider CT head if within 4 hours of head injury:
1. GCS < 15
2. Further vomiting
3. A further episode of abnormal drowsiness

*For people who have sustained a head injury and have no other indications for a CT head scan, but are on anticoagulant treatment (including vitamin K antagonists, direct-acting oral anticoagulants (DOACs), heparin and low molecular weight heparins) or antiplatelet treatment (excluding aspirin monotherapy), consider doing a CT head scan:
-within 8 hours of the injury (for example, if it is difficult to do a risk assessment or if the person might not return to the emergency department if they have signs of deterioration) or
-within the hour if they present more than 8 hours after the injury.