Head Injury in Children – guidelines for performing CT

The following algorithm originates from NICE Clinical Guideline 176 and applies to any child <16yrs attending with a head injury.

- **FURTHER GUIDANCE.** Please use these requesting guidelines alongside Paediatric head injury and Paediatric c-spine guidelines found in the ED guidelines.

- **WHO TO IMAGE.** See algorithm overleaf.

- **OUT OF HOURS.** For CT’s between 21:00-8:00 weekdays and 17:30-8:30 weekends
  1. Discuss with ED senior in GRH
  2. Clinical protocols for CT requests via radiographers can be found [here](#) (if this is fulfilled then there is no need to discuss with OOH radiology service – simply speak to the radiographers)
  3. If not fulfilled contact the OOH Radiology provider via switch.

- **OBSERVATION PERIOD.** Some patients may be suitable for a paediatric observation period. Please discuss admitted patients with the ED Senior before referral to the paediatric team.

Patients who return to an emergency department within 48 hours of transfer to the community with any persistent complaint relating to the initial head injury should be seen by or discussed with a senior clinician experienced in head injuries, and considered for a CT scan.
Algorithm 2: Selection of children for CT head scan

Children presenting to the emergency department who have sustained a head injury.

Are any of the following risk factors present?

- Susicion of non-accidental injury
- Post-traumatic seizure, but no history of epilepsy
- On initial assessment GCS <14, or for children under 1 year GCS (paediatric) < 15
- At 2 hours after the injury GCS < 15
- Suspected open or depressed skull injury or tense fontanelle.
- Any sign of basal skull fracture (haemotympanum 'panda' eyes, cerebrospinal fluid leakage from the ear or nose, Battle's sign).
- Focal neurological deficit.
- For children under 1 year, presence of bruise, swelling or laceration of more than 5 cm on the head

Yes

Perform CT head scan within 1 hour of risk factor being identified. A provisional written radiology report should be made available within 1 hour of the CT head scan taking place.

No

Are any of the following risk factors present?

- Witnessed loss of consciousness > 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 height of > 3 metres, high speed injury from an object
- Amnesia (antegrade or retrograde) lasting >5 minutes (assessment not possible in pre-verbal children and unlikely in any child < 5 years).

Yes, >1 factor

Observe for a minimum of 4 hours post head injury.

Are any of the following risk factors present during observation?

- GCS < 15,
- further vomiting
- further episodes of abnormal drowsiness

Yes

No

Yes

Current anticoagulation treatment?

Yes

No

No imaging required. Use clinical judgement to determine when further observation is required.

Yes

Perform CT head scan within 6 hours of the injury. A provisional written radiologist's report should be made available within 1 hour of the CT head scan taking place.