Early management of children with a head injury

**Quick Reference Guide**

May 2009

Copies of all SIGN Guidelines are available online at www.sign.ac.uk

---

**Indications for Admission to a Hospital Ward**

- Children who have sustained a head injury should be admitted to hospital if any of the following risk factors apply:
  - any indication for a CT scan
  - suspicion of non-accidental injury
  - significant medical comorbidity
  - difficulty making a full assessment
  - child not accompanied by a responsible adult
  - social circumstances considered unsuitable.

- In injured children, especially the very young, the possibility of non-accidental injury must be considered:
  - when findings are not consistent with the explanation given
  - if the history changes, or
  - if the child is known to be on the Child Protection Register.

- In such cases a specialist paediatrician with responsibility for child protection should be involved. Child protection procedures should be followed.

- Primary and secondary care information systems should identify children on the Child Protection Register and frequent attenders.

- Children can be discharged from the ED if no additional risk factors apply.

**Indications for Discharge**

- Features suggesting that specialist neuroscience assessment, monitoring, or management are appropriate include:
  - persisting coma (GCS score 8/15 or less) after initial resuscitation
  - confusion which persists for more than four hours
  - deterioration in level of consciousness after admission (a sustained drop of one point on the motor or verbal subscales, or two points on the eye opening subscale of the GCS)
  - focal neurological signs
  - a seizure without full recovery
  - compound depressed skull fracture
  - definite or suspected penetrating injury
  - a CSF leak or other sign of a basal fracture.

- Before discharge from the ward a patient with a head injury must be assessed by an experienced doctor, who must establish that all the following criteria have been met:
  - consciousness has recovered fully and is sustained at the pre-injury state
  - the patient is eating and drinking normally and not vomiting
  - neurological symptoms/signs have either resolved, or are minor and resolving or are amenable to simple advice/treatment, (eg headache relieved by simple analgesia, or momentary positional vertigo due to vestibular disturbance)
  - the patient is either mobile and self caring or returning to a safe environment with suitable social support
  - the results of imaging and other investigations have been reviewed and no further investigation is required
  - extracranial injury has been excluded or treated.

- Clear written instruction should be given to and discussed with parents or carers before a child is discharged.

**Transfer to a Neurosurgical Unit**

- Transfer of a child to a specialist neurosurgical unit should be undertaken by staff experienced in the transfer of ill children, such as the Scottish Paediatric Retrieval Service.

- Consultation on the best method of transfer of an individual patient should be with referring healthcare professionals, transfer clinicians and receiving neurosurgeon. It should take into account the clinical circumstances, skill of available staff, imaging, mode of transfer and timing issues.

- Before discharge from the ward a patient with a head injury must be assessed by an experienced doctor, who must establish that all the following criteria have been met:
  - consciousness has recovered fully and is sustained at the pre-injury state
  - the patient is eating and drinking normally and not vomiting
  - neurological symptoms/signs have either resolved, or are minor and resolving or are amenable to simple advice/treatment, (eg headache relieved by simple analgesia, or momentary positional vertigo due to vestibular disturbance)
  - the patient is either mobile and self caring or returning to a safe environment with suitable social support
  - the results of imaging and other investigations have been reviewed and no further investigation is required
  - extracranial injury has been excluded or treated.

- Clear written instruction should be given to and discussed with parents or carers before a child is discharged.

**Referral to Neurosurgical Unit**

- Children suffering from moderate/severe head injury should be followed up by a specialist multidisciplinary team to assess rehabilitation needs.

- Parents should be given information and advice about the possible short/longer term difficulties that their child may have.

- The primary healthcare team, school health team and teachers should be notified of all children with head injury regardless of severity.

**Follow Up**

This Quick Reference Guide provides a summary of the main recommendations relating to children in SIGN guideline 110: Early management of patients with a head injury.

Recommendations are graded to indicate the strength of the supporting evidence. Good practice points are provided where the guideline development group wishes to highlight specific aspects of accepted clinical practice.

Details of the evidence supporting these recommendations can be found in the full guideline, available on the SIGN website: www.sign.ac.uk
The management of patients with a head injury should be guided by clinical assessments and protocols based on the Glasgow Coma Scale and Score.

**Indications for Head CT**

- GCS ≤ 13
- GCS 14/15 - 15/15
- Involved in a high speed road traffic accident.
- Witnessed loss of consciousness > 5 minutes
- Suspicion of open or depressed skull injury or tense fontanelle
- Focal neurological deficit
- Any sign of basal skull fracture.

**Indications for Referral to The ED**

- Consider CT scanning within eight hours.
- In any child where abuse is suspected a head CT scan should be performed as ‘soon as the patient is stable’ (within 24 hours of admission) for children:
  - who present with evidence of encephalopathic features or focal neurological signs or haemorrhagic retinopathy, or
  - under the age of one.

**Imaging the Cervical Spine**

- In children under 10 years initial assessment of the cervical spine is by anteroposterior and lateral plain radiography.
- Cervical spine CT scanning should be directed at patients with a severe head injury, or where there are signs or symptoms of cord injury, or where plain radiography is abnormal or inadequate.
- Criteria for imaging the cervical spine in children over 10 years of age should reflect those for adults (base of skull to T4 images).