# Head Injury Pathway

## Clinical Assessment/ Management tool for Children

## Management - Combined Acute and Primary Care

Patient presents

### Suspected/ Observed Head Injury?

**History:**

- When? Mechanism of injury?
- Loss of consciousness ? Vomiting? Fitting? Persisting dizziness?
- Amnesia (anterograde /retrograde)?
- Worsening headache
- Clotting disorder

**Examination:**

- Assess conscious level - GCS (see table 2) or AVPU
- Confused or repetitive speech?
- Skull integrity (bruises; wounds; boggy swelling) + fontanelle assessment
- Signs of base of skull fracture
- Signs of focal neurology
- Cervical spine
- If under 3 years, undress and examine fully

Do the symptoms and/or signs suggest an immediately life threatening injury? (see Table 1)

**Yes**

Refer immediately to emergency care by **999**
**Alert emergency department**
**Stay with child whilst waiting and prepare documentation**

Are there **safeguarding concerns** (e.g. delay in presentation; injury not consistent with history or age/ developmental stage of child)?

**Concern**

Contact child protection / social services team

## Table 1

| | Green - low risk | Amber - intermediate risk | Red - high risk |
|---|---|---|---|
| **Nature of injury and conscious level** | • Low risk mechanism of injury<br>• No loss of consciousness<br>• Child cried immediately after injury<br>• Alert, interacting with parent, easily rousable<br>• Behaviour considered normal by parent | • Mechanism of injury: fall from a height > 1m or greater than child's own height<br>• Alert but irritable and/or altered behaviour | • Mechanism of injury: considered dangerous (high speed road traffic accident; >3m fall)<br>• GCS < 15 / altered level of consciousness<br>• Witnessed loss of consciousness lasting > 5mins<br>• Persisting abnormal drowsiness<br>• Post traumatic seizure |
| **Symptoms & Signs** | • No more than 2 episodes of vomiting (>10 minutes apart)<br>• Minor bruising or minor cuts to the head | • 3 or more episodes of vomiting (>10 minutes apart)<br>• Persistent or worsening headache<br>• Amnesia or repetitive speech<br>• A bruise, swelling or laceration of any size should be considered as dangerous | • Skull fracture – open, closed or depressed<br>• Tense fontanelle (infants)<br>• Signs of basal skull fracture (haemotypanum, 'panda' eyes, CSF leakage from ears/ nose; Battle's sign (mastoid ecchymosis)<br>• Focal neurological deficit |
| **Other** | | • Clotting disorder<br>• Additional parent/carer support required | |

### Green Action

- Provide safety netting advice
- If concussion, provide advice about graded return to normal activities [Fig 2] and signpost to Bumps Happen self-referral service
- Think "safeguarding" before sending home

If no deterioration

### Amber Action

- Send to ED for further assessment
- Consider safeguarding risk
- Provide analgesia
- Refer to NICE imaging algorithm [Fig 1]
- Discuss with ED or Paediatric senior if <1 year old

If deterioration (suggestive of raised ICP)

### Urgent Action

- Refer immediately to emergency care by 999 and alert ED team
- ED assess need for CT head within 30 mins [Fig 1]
- Treat and stabilise as per STRS guideline
- Review need for time critical neurosurgical transfer. Liaise with neurosurgical team
- Complete STPN STOPP tool

GMC Best Practice recommends: Record your findings (See "Good Medical Practice"

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**Figure 1 : Selection of children for CT head scan**

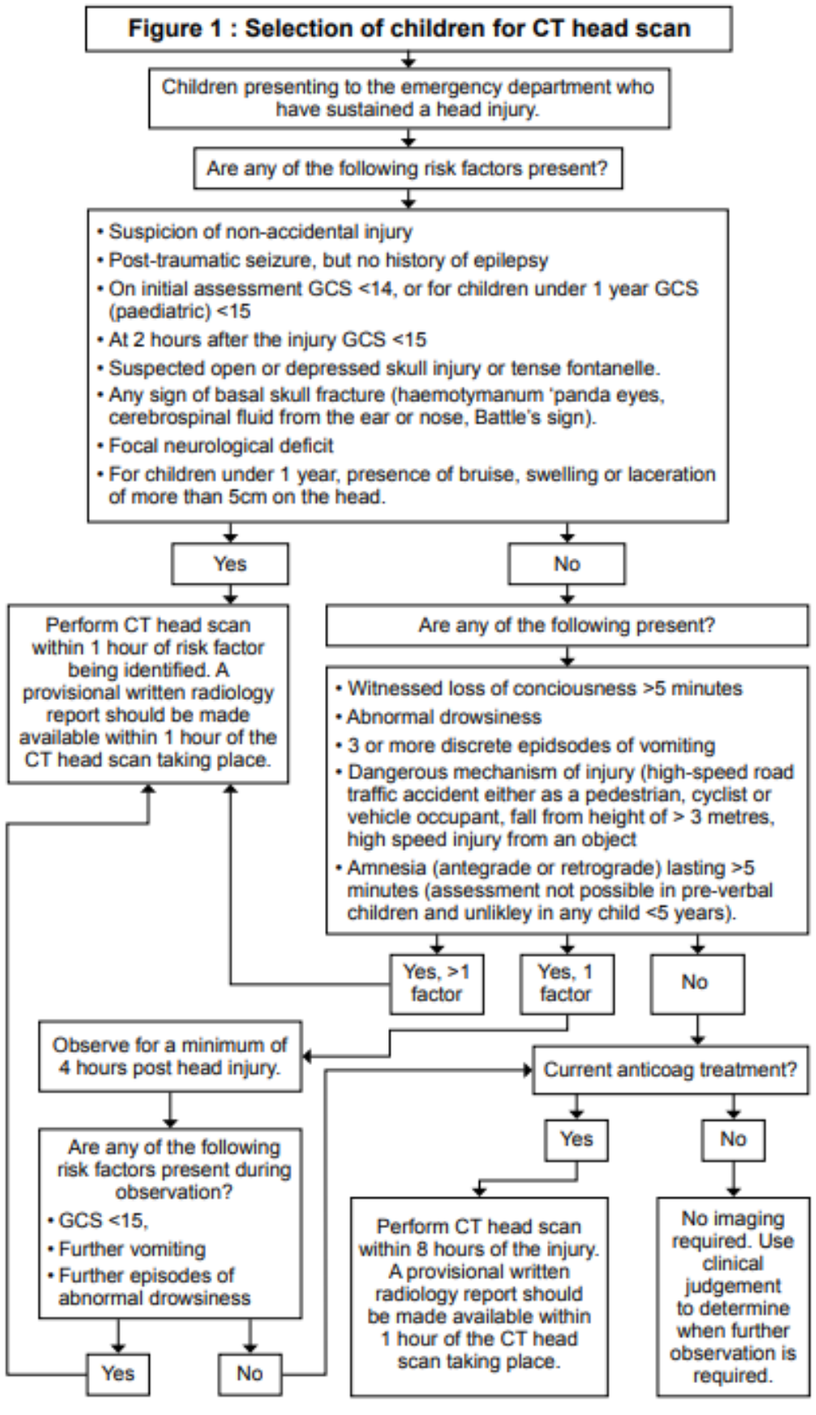


**Table 2: Modified Glasgow Coma Scale for Infants and Children**

| | Child | Infant | Score |
|---|---|---|---|
| Eye opening | Spontaneous | Spontaneous | 4 |
| | To speech | To speech | 3 |
| | To pain only | To pain only | 2 |
| | No response | No response | 1 |
| Best verbal response | Oriented, appropriate | Coos and babbles | 5 |
| | Confused | irritable cries | 4 |
| | Inappropriate words | Cries to pain | 3 |
| | Incomprehensible sounds | Moans to pain | 2 |
| | No response | No response | 1 |
| Best motor response* | Obey commands | Moves spontaneously and purposefully | 6 |
| | Localises painful stimulus | Withdraws to touch | 5 |
| | Withdraws in response to pain | Withdraws to response in pain | 4 |
| | Flexion in response to pain | Abnormal flexion posture to pain | 3 |
| | Extension in response to pain | Abnormal extension posture to pain | 2 |
| | No response | No response | 1 |

* If patient is intubated, unconcious, or preverbal, the most important part of this scale is motor response. Motor response should be carefully evaluated.

**Figure 2: suggested graded recovery regime following concussion (taken from BMJ 2016; 355 doi: https://doi.org/10.1136/bmj.i5629 (Published 16 November 2016)**