Head Injury +/- Cervical Spine Injury – Guideline for Investigations and Monitoring

Reference No: CG-T/2013/112

Aim

To aid the management of head injury patients, in terms of accurate timely recordings of neurological observations and to ensure prompt interventions and actions occur where necessary.

Scope

All staff involved in the care of adult patients with head injuries and the recording of neurological observations.

References

NICE Clinical Guideline No. 232 May 2023 - https://www.nice.org.uk/guidance/ng232. Head Injury. Assessment and early management

NICE Guideline No. 41 February 2016 June 2014 (updated May 2021) - https://www.nice.org.uk/guidance/ng41. Spinal Injury: Assessment and Initial Management.

Nursing Guidance – Observations and escalation of care

Patient has sustained head injury in the clinical area
Refer for Medical / NNP / ACP review and include in SBAR – Time of injury, Mechanism, LOC? GCS, Anticoagulated? / Bleeding disorder? / Seizure?

Patient admitted with history of a head injury

Record baseline observations including BM, neurological observations, and NEWS
Observe for other injuries
Continue to record NEWS

Continue neurological observations ½ hourly for 2 hours for all patients then 1 hourly for 4 hours then 2 hourly for 4 hours. If GCS consistent at this time and remains 15, neuro obs can be discontinued unless other instructions

Give simple analgesia as prescribed

If the patient's condition deteriorates ie drop of GCS at any stage report to Medical staff / NNP / ACP to obtain urgent review and restart ½ hourly observations.

Changes requiring immediate review by medical staff

- **Agitation, increased confusion, or abnormal behaviour**
- **Severe or increasing headache or persistent vomiting**
- **New or evolving neurological symptoms or signs, such as pupil inequality or asymmetry of limb or facial movement**
- **Changes in other vital signs recordings**

Complete DATIX entry at the earliest opportunity by the person who witnessed the fall or was involved in the immediate post fall period in the case of an unwitnessed fall; and record the time and details in the patient's healthcare record. All falls with Head injury to be reported as Moderate Harm.

1. Guideline for the Investigation of Adult Patients with a Head Injury at UHDB[1]

All Adults at UHDB who have sustained a head injury either as presenting complaint or during inpatient stay (e.g. as result of a fall) should be assessed by a clinician. If a patient is an inpatient this should be on the ward. For injuries in non-admitted patients, where there is concern or a clinician is not available to review the patient, these patients should be transferred and assessed in the Emergency Department.
For patients who do not wish to be assessed in the ED, the UHDB Head Injury Information Leaflet should be offered. This is available on the intranet. This guidance should be used alongside current NICE guidelines.

Where assessment is performed - Are any of the following risk factors present?

- GCS< 13 on initial assessment or drop of GCS from baseline
- GCS < 15 at 2 hours after injury
- Suspected open or depressed skull fracture
- Any sign of basal skull fracture
- Post-traumatic seizure
- Focal neurological deficit
- More than one episode of vomiting

Please ensure CT scans required within **1** hour are **PHONED** through to the Radiology dept as well as electronic urgent request

Yes

No

If Community Site

Arrange for Urgent 999 transfer to Acute Site and give SBAR handover to ED staff

If Acute Site

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 taking place

Current anticoagulant treatment, antiplatelet or coagulopathy?
(i.e. any current PROPHYLACTIC or THERAPEUTIC anticoagulant use e.g., DOAC, warfarin, heparin, LMWH or bleeding disorder, Antiplatelets or Platelets <50)

Yes – Consider CT as below

Perform CT head scan within 8 hours of the head injury. If on community site arrange transfer to ED

No

Is there loss of consciousness or amnesia since the head injury?

Yes

No

No imaging required

Are any of the following risk factors present?

- Age ≥ 65 years
- A history of bleeding or clotting disorder
- Dangerous mechanism of injury (a pedestrian or cyclist stuck by a motor vehicle, an occupant ejected from a motor vehicle or a fall from height of > than 1 metre or 5 stairs)
- More than 30 minutes' retrograde amnesia of events immediately before the head injury

Yes

No

2. Consideration for C-Spine imaging in patients with Head Injury

For adults who have sustained a head injury and have any of the following risk factors, perform a CT cervical spine scan within 1 hour of the risk factor being identified:

- GCS less than 13 on initial assessment
- The patient has been intubated
- A definitive diagnosis of cervical spine injury is needed urgently (for example, before surgery)
- The patient is having other body areas scanned for head injury or multi-region trauma
- The patient is alert and stable, there is clinical suspicion of cervical spine injury and any of the following apply:
    - age 65 years or older
    - dangerous mechanism of injury (fall from a height of greater than 1 metre or 5 stairs; axial load to the head, for example, diving; high-speed motor vehicle collision; rollover motor accident; ejection from a motor vehicle; accident involving motorised recreational vehicles; bicycle collision)
    - focal peripheral neurological deficit
    - paraesthesia in the upper or lower limbs

For adults who have sustained a head injury, and have neck pain or tenderness but no high-risk indications for a CT cervical spine scan do a CT cervical spine scan within 1 hour for any of these risk factors:

- It is not thought to be safe to assess the range of movement in the neck
- safe assessment of range of neck movement shows that the person cannot actively rotate their neck 45 degrees to the left and right
- the person has a condition predisposing them to a higher risk of injury to the cervical spine (for example, axial spondylarthritis).

Management of C-spine injuries where there is significant concern should involve using head blocks and tape only. Spinal precautions should be maintained. When requesting imaging, clinicians should always include a contact number (mobile / bleep) to facilitate reporting from radiology in a timely manner.

3. Imaging reports

Provisional radiology reports for urgent CT Head and CT C-spine should be available within one hour. Please remember it is the responsibility of the requesting clinician to view and act upon the scan reports.

Normal scans

In the presence of a normal CT Head with a verified scan report, neurological observations can be stopped and a return to normal ward level observations and frequency can occur. Until a report is issued, neuro obs should continue as documented above.

In the presence of a normal CT C-spine with a verified scan report, head blocks can be removed and patients should be assessed for any evidence of cord injury without radiological

abnormality. Should this be suspected spinal precautions should be reinitiated, and the Orthopaedic / Spinal team should be consulted.

Abnormal scans

In the presence of an abnormal CT Head, referral to the Neurosurgical Team may be appropriate. This should be discussed with the senior clinician (Consultant / Registrar) responsible for that patient. Neurosurgical referrals are completed through the https://www.referapatient.org/ website.

For patients who have CT scans showing intracranial bleeds that are anti-coagulated or have platelets <50 or have any coagulopathy, please refer to the anticoagulation guidelines on the intranet.

All patients that have abnormal scans should have neuro obs every 30 mins until a patient specific clinical decision is made.

Patients that have an abnormal CT C-spine should remain in spinal precautions and be discussed with the UHDB Spinal Team with local admission.

Caution

Agitation – Caution should be exhibited in patients that are agitated with suspected head and/or C-spine injuries. Early involvement of senior clinicians is essential. Collars and blocks can exacerbate agitation, and a risk vs. benefit approach should be considered in these patients. Forced immobilisation in patients that are agitated can place patients at increased risk of secondary injury and patients will often place themselves in a ‘protective’ position when left alone.

Patients that are agitated may need sedation to facilitate imaging. This should be discussed with senior clinicians at the earliest opportunity.

4. Guidance regarding cessation of observation, delayed deterioration risk and re-imaging

There is a reasonable balance needing to be struck between the serious recognised risks of sleep deprivation (delirium, *increased* falls risk etc) from persistent close observation and the risks of deterioration from delayed or progressing intracranial bleeding. There is little firm guidance or evidence available.

To give some context, from the literature:

In the patients scanned within 1 hour of injury with confirmed intra-cranial bleeding (ICH), progression of bleeding is thought to occur in:

- Less than 4% pts >24hrs post injury
- Less than 1% pts >48hrs post injury

Delayed acute subdural haemorrhage (DASH) presenting clinically >24hrs, after *normal initial CT*, estimated <0.5% of all mild head injuries where lowest GCS >12. Failure to achieve pre-trauma GCS by 24hours should trigger re-discussion of imaging.

The only consistently identified risk factor for delayed presentation or bleed is demonstrable coagulopathy (INR>2.4), although other forms of coagulopathy should raise index of suspicion.

Delayed presentation, whilst rare, is often clinically insidious and a low threshold to discuss imaging should be maintained in the high-risk groups.

Documentation Controls

Development of Guideline:	Head Injury Working Group
Consultation with:	Chair of Trauma group, Chair of Trust Falls group
Approved By:	Falls Group - Integrated Care Division - Surgical Division - Medical Division -
Review Date:	
Key Contact:	Dr G Robinson (MD Quality and Safety)

References

1. https://www.nice.org.uk/guidance/ng232
2. https://www.nice.org.uk/guidance/ng41