

QUICK REFERENCE FOR HEALTHCARE PROVIDERS

# EARLY MANAGEMENT OF HEAD INJURY IN ADULTS



Ministry of Health  
Malaysia



Neurosurgical  
Association of Malaysia



Academy of  
Medicine Malaysia

Clinical Practice Guidelines

## KEY MESSAGES

1. Majority of patients with major trauma have injury to the head & neck. Many lives can be saved with good pre-hospital care & quick transportation to the hospital.
2. Glasgow Coma Scale (GCS) & Glasgow Coma Scale Score (GCS score) should be used in the assessment of all patients with head injury by trained healthcare providers.
3. Hypotension, hypoxia, hypocarbia & hypercarbia should be avoided in patients with head injury to prevent secondary brain injury.
4. Cervical collar should be applied in head injury patients with suspected cervical injury.
5. Isotonic crystalloid is the preferred choice of intravenous fluid resuscitation in head injury.
6. Patients with head injury should be monitored using head chart & any deterioration should prompt immediate re-evaluation by the attending doctor.
7. Canadian Computed Tomography Head Rule (CCTHR) may be used to decide on the need of Computed Tomography (CT) of the head in mild head injury (MHI).
8. Patients with MHI with no indication for CT scan can be safely observed in emergency department (ED) for a minimum of 6 hours.
9. Teleconsultation should be used in the management of head injury if available.
10. Verbal & written discharge advice should be comprehensible & include instructions to recognise alarming features & phone contact number of local healthcare facilities.

This Quick Reference provides key messages & a summary of the main recommendations in the Clinical Practice Guidelines (CPG) Early Management of Head Injury in Adults.

Details of the evidence supporting these recommendations can be found in the above CPG, available on the following websites:

Ministry of Health Malaysia: [www.moh.gov.my](http://www.moh.gov.my)

Academy of Medicine Malaysia: [www.acadmed.org.my](http://www.acadmed.org.my)

Malaysian Neurosurgical Association of Malaysia: <http://www.nam.org.my>

### CLINICAL PRACTICE GUIDELINES SECRETARIAT

Health Technology Assessment Section  
Medical Development Division, Ministry of Health Malaysia  
4th Floor, Block E1, Parcel E, 62590 Putrajaya  
Tel: 603-8883 1229 E-mail: [htamalaysia@moh.gov.my](mailto:htamalaysia@moh.gov.my)

## DEFINITION

Head injury is defined as blunt and/or penetrating injury to the head (above the neck) and/or brain due to external force with temporary or permanent impairment in brain function which may or may not result in underlying structural changes in the brain.

- To define head injury, criteria i & ii must be present with/without criteria iii:
    - i. mechanism - presence of external force
    - ii. physiological - alteration in physiology of the brain
    - iii. anatomical - scalp and/or face and/or skull and/or brain injury (internal & external)\*
- \*The anatomical or mechanical changes in the brain such as axonal injury which may not be visualised in the CT scan does not rule out such injury.

## CLASSIFICATION OF SEVERITY

The severity of head injury can be classified according to the presenting GCS:

- MHI: GCS 13 - 15
- moderate head injury: GCS 9 - 12
- severe head injury: GCS 3 - 8

## REFERRAL CRITERIA

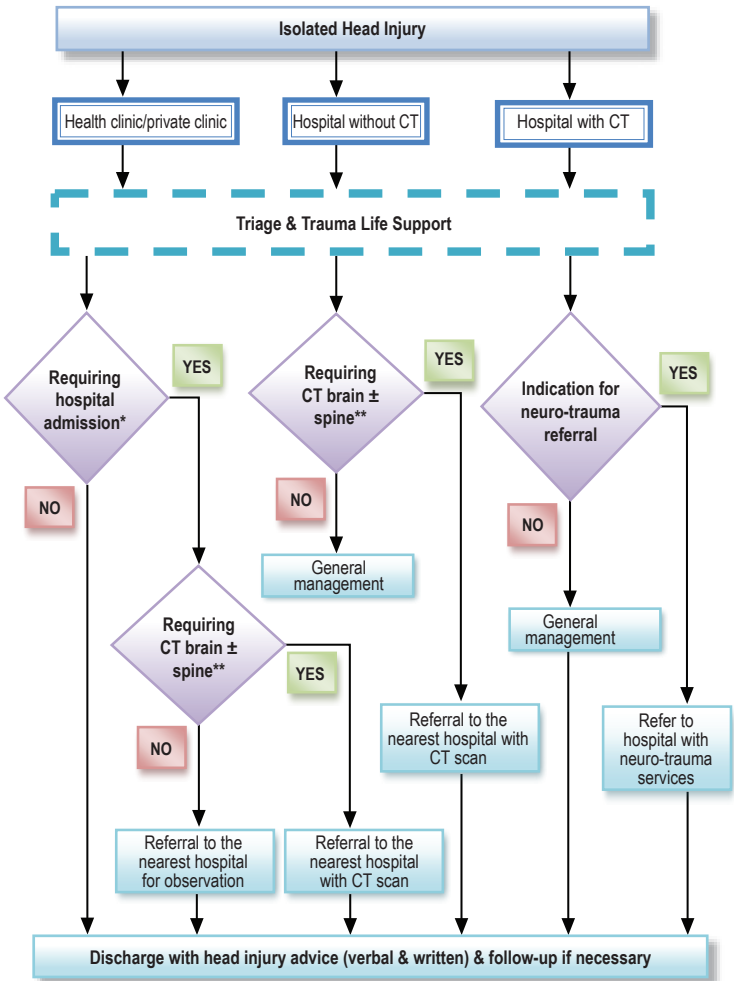
Referral of patients with MHI to the nearest hospital should be considered especially if they have any of the following factors:

- GCS of 15 but symptomatic such as amnesia, headache, vomiting or restlessness
- age  $\geq 65$  years old
- treated with antiplatelets or anticoagulants
- GCS  $< 15$  and/or declining GCS score
- alcohol intoxication & substance misuse
- focal temporal blow
- social issues such as transport, communication problem or no supervision by a responsible adult
- indicated for head CT (refer to **Algorithm 3 on Selection of Adults with Head Injury for Head CT**)

## ASSESSMENT

- Initial assessment & management of patients with head injury includes:
  - airway patency & cervical spine protection
  - breathing (to detect any intrathoracic injury)
  - circulation & haemorrhage control
  - disability including GCS, pupil size & reaction to light
  - exposure including log roll
- Secondary survey (head to toe examinations) should be done in patients with head injury which includes signs of base of skull fracture.
- Head chart which includes serial GCS, blood pressure, pulse rate & pupil size should be done at least hourly.
  - Monitor for signs of intracranial hypertension such as decreased pupillary response to light, hypertension with bradycardia, posturing or respiratory abnormalities.

## ALGORITHM 1. GENERAL MANAGEMENT OF ADULTS WITH ISOLATED HEAD INJURY

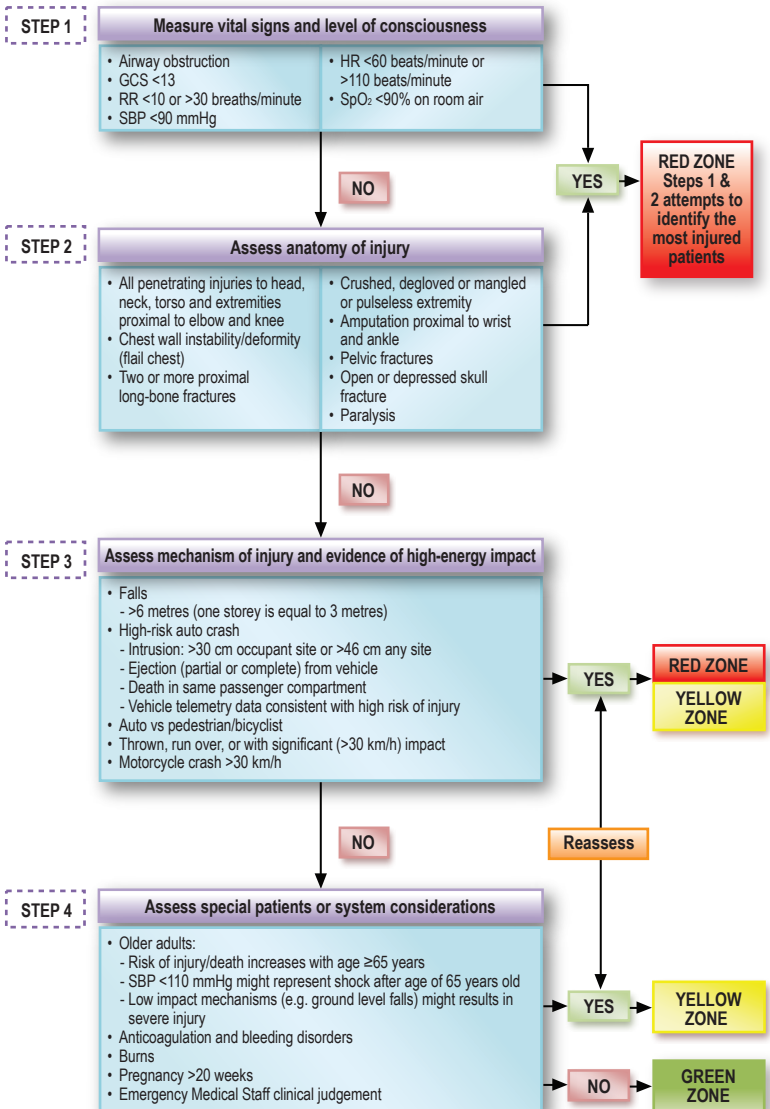


If a healthcare provider is unsure which hospital to refer to, the patient should then be referred to the nearest hospital.

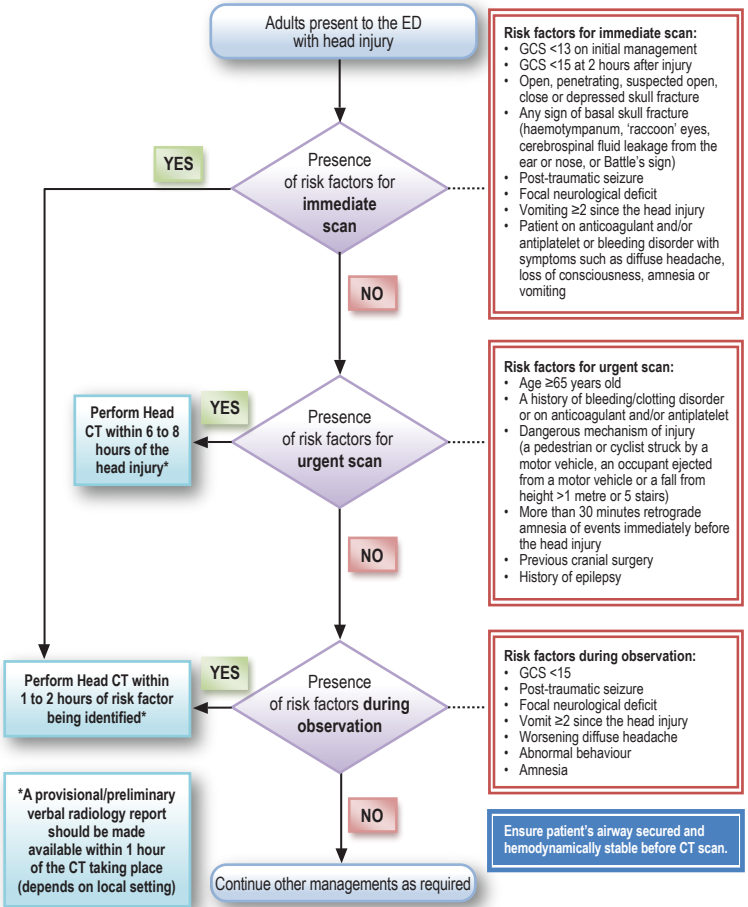
\* Refer to Referral Criteria in the preceding page.

\*\*Refer to Algorithm 3 on Selection of Adults with Head Injury for Head CT.

## ALGORITHM 2. TRIAGING OF ADULTS WITH SUSPECTED HEAD INJURY IN PRE-HOSPITAL CARE OR EMERGENCY DEPARTMENT



### ALGORITHM 3. SELECTION OF ADULTS WITH HEAD INJURY FOR HEAD CT



## OBSERVATION IN ED

Patients with MHI in whom CT scan is not indicated & with all the following criteria can be safely observed in emergency department\* for a minimum of 6 hours:

- GCS score 15 on arrival or 2 hours later
- no neurological abnormality
- age <65 years old
- not on any anticoagulant or antiplatelet therapy
- no history of coagulopathy
- no multiple injuries
- not intoxicated & not under influence of psychotropic drugs

\*For hospital without observation ward, these patients may be admitted.

## CRITERIA FOR ADMISSION AFTER OBSERVATION

Patients with MHI who have been observed for 6 hours in ED should be admitted to ward if they have:

- clinically significant abnormalities on head CT imaging
- GCS Score <15\*
- worrying signs (e.g. vomit  $\geq 2$  times, seizure, diffuse headache, amnesia, abnormal behaviour or neurological deficit)\*
- other body system injuries requiring admission
- social problem\*\* including no supervision by a responsible adult

\*Patients should have a head CT before admission.

\*\*Transport issue, no communication, stay in remote area, suspected abuse case or other factors affecting the monitoring & safety of the patients

## CRITERIA FOR SAFE DISCHARGE

Criteria to be met by patients of head injury prior to discharge:










- Presence of a willing responsible adult for at least 24-hour observation
- Verbal & written discharge advice given to responsible care givers & discussed prior to discharge
- Easy access to an emergency response system e.g. 999
- Living within reasonable access to medical care
- Availability of home transport

## DISCHARGE ADVICE FOR HEAD INJURY

Patient's name:	Contact no.:
Care giver's name:	Date:
IC/RN:	

If any of the following alarming symptoms are present, you or your care giver should immediately contact the hospital for advice.

If within the next 24 hours you experience/as observed by care giver:

- Fainting or sleepiness 
- Increasing confusion, inability to recognise time, place or people 
- Change in behaviour 
- Constant headache which is worsening 
- Vomiting 
- Inability to remember new events 
- Jerking or seizures, abnormal speech 
- Blood or fluid coming out of the ear 
- Inability to move any part of your body 

### What you should and should not do

DO	DON'T (until advised by your doctor)
✓ Take paracetamol for headache	× Take sleeping pills & anticoagulants/antiplatelets
✓ Take your usual medications	× Take alcohol
✓ Mild exercise when you feel better	× Play contact sport
✓ Take rest or a few days off from work	× Drive

Name of Doctor:

Emergency Contact:

Witness: