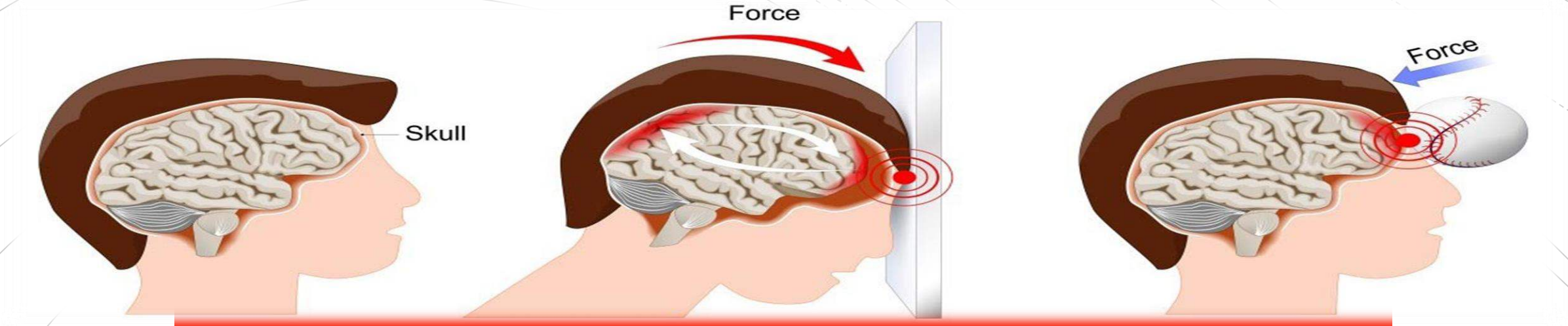

Head injury

By

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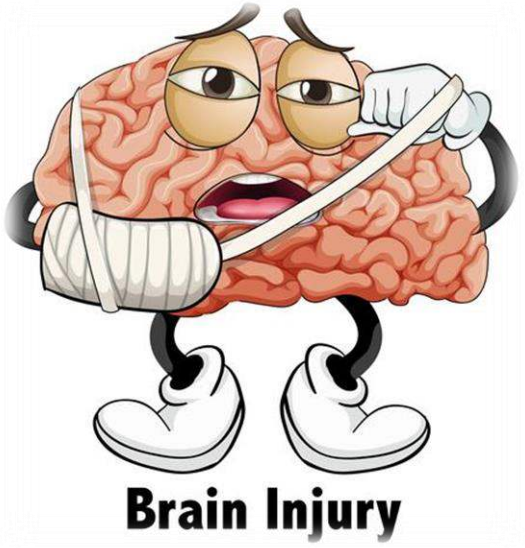
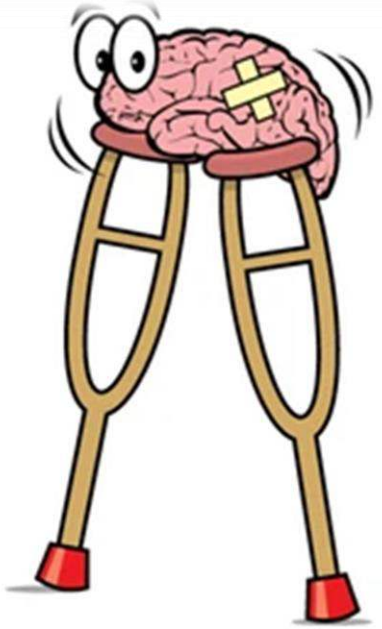
Traumatic Brain Injury

- insult to the brain from an external mechanical force, possibly leading to permanent or temporary impairments of cognitive, physical and psychosocial functions with an associated diminished or altered state of consciousness"
- Brain Injury is one of the leading cause of death , and disability worldwide







Head injury can be divided:

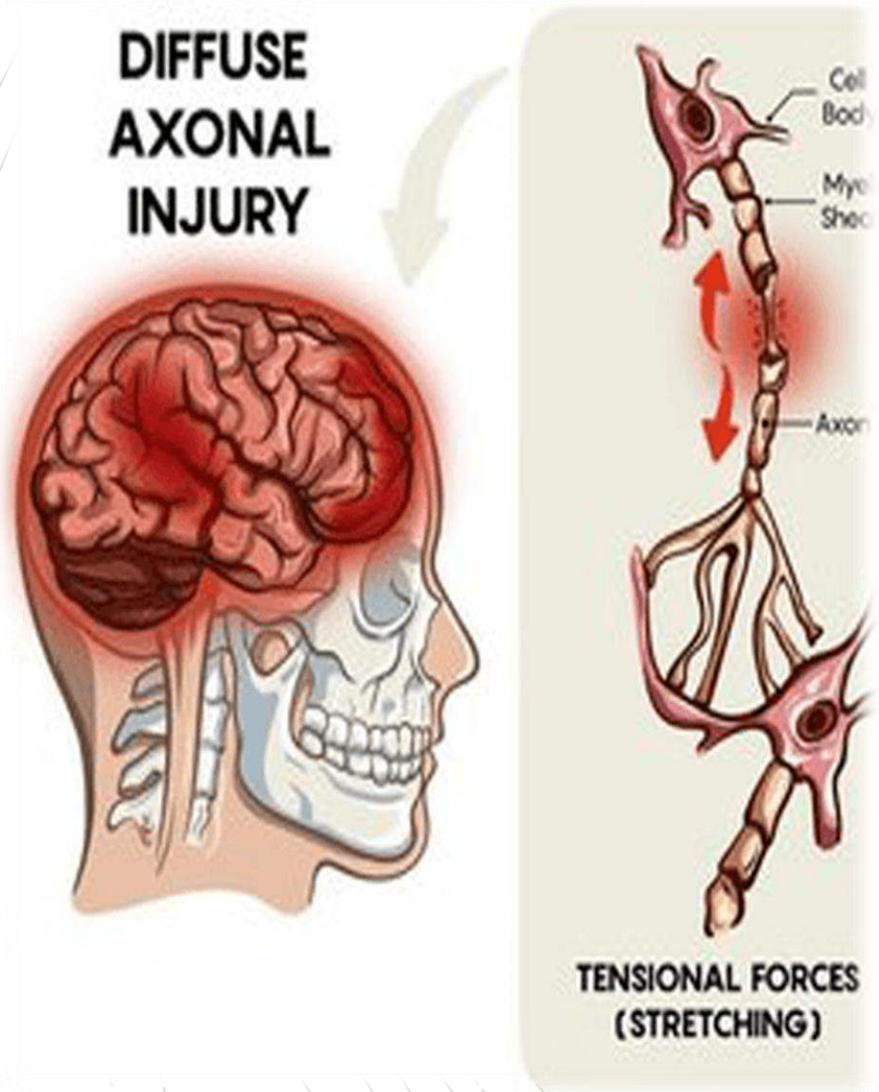
- mild (80 %)
- moderate (10 %)
- severe (10 %)



- *Common causes of head injury*

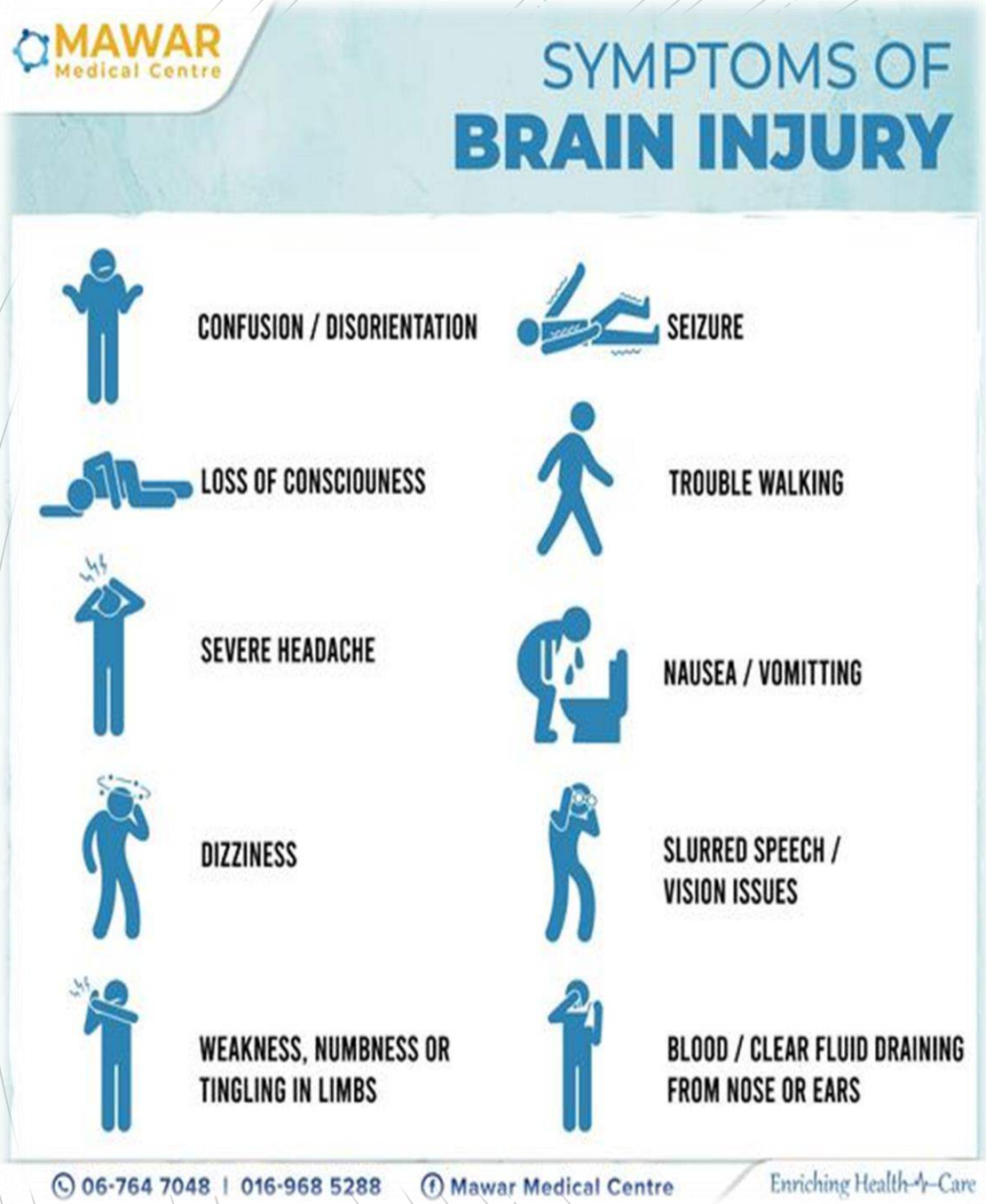
1. • Road traffic collisions of all types.
2. • Falls.
3. • Assaults.
4. • Sporting injuries.
5. • Workplace injuries.

Pathophysiology



- Brain injury may be primary or secondary.
- *Primary injury* occurs at the time of the head injury. This takes the form of axonal shearing and disruption, with associated areas of hemorrhage. This primary damage may be widespread ('diffuse axonal injury') or localized
- *Secondary injury* occurs later, due to various problems that commonly co-exist.

1. • Hypoxia.
2. • Hypovolemia and cerebral hypoperfusion.
3. • Intracranial hematoma with localized pressure effects and iincrease ICP.
4. • Epileptic fits.
5. • Infection.



symptoms

Enquire about the following symptoms:

1. • Headache.
2. • Nausea and vomiting.
3. • Limb weakness.
4. • Paranesthesia.
5. • Diplopia.
6. • Rhinorrhea.
7. • Otorrhea

Indications for referral to hospital



- Any one of the following criteria indicates the need for hospital assessment:

1. • Impaired conscious level at any time.
2. • Amnesia for the incident or subsequent events.
3. • Neurological symptoms (vomiting, severe and persistent headache, seizures).
4. • Clinical evidence of a skull fracture (cerebrospinal fluid leak, peri-orbital hematoma).
5. •possible penetrating injury
6. • Medical co-morbidity (anticoagulant use, alcohol abuse).

AVPU

Alert
Patient is fully awake and responsive.



Voice
Patient responds to your voice.



Pain
Patient responds when you cause them pain.



Unresponsive
Patient does not respond no matter what you do.



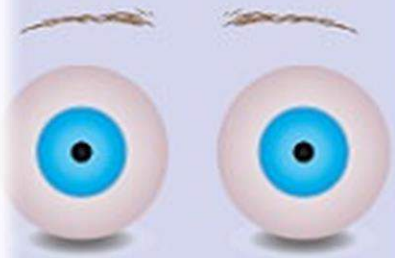
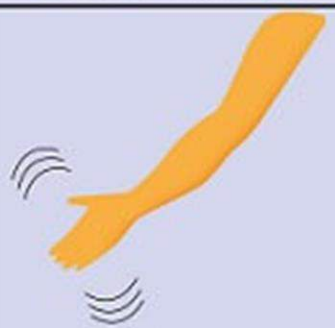
- During the first few seconds, it is useful to obtain an impression of the severity of the head injury.
- One simple method (AVPU) classifies patients according to their response to stimulation:
- • **A**lert.
- • Responsive to **V**oice.
- • Responsive only to **P**ain.
- • **U**nresponsive.



Head injury : examination

- Cervical spine injury : Consider this possibility in all cases
- Glasgow Coma Scale : The adult score ranges from a minimum of 3 to a maximum of 15
- Vital signs : Record pulse, BP, and respiratory rate.
- BMG : This is essential in all patients with altered conscious level.
- Alcohol : Record if the patient smells of alcoholic drinks
- Eye signs : Document pupil size (in mm) and reaction to light.

GCS

Behaviour	Response
 Eye Opening Response	4. Spontaneously 3. To speech 2. To pain 1. No response
 Verbal Response	5. Oriented to time, person and place 4. Confused 3. Inappropriate words 2. Incomprehensible sounds 1. No response
 Motor Response	6. Obeys command 5. Moves to localised pain 4. Flex to withdraw from pain 3. Abnormal flexion 2. Abnormal extension 1. No response

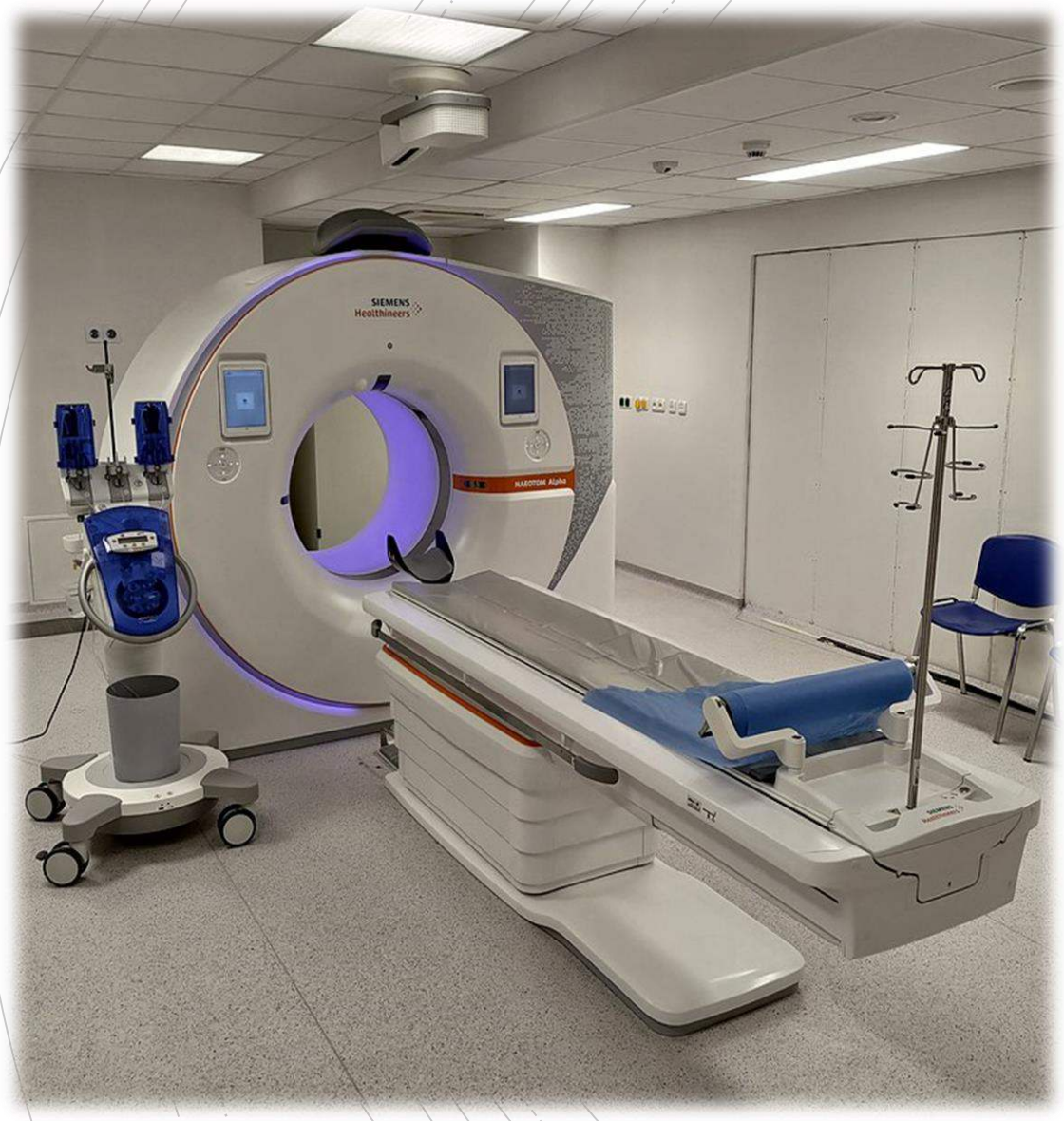


Classification of Head Injury

Severity

- Mild: GCS score 13 ~ 15
- Moderate: GCS score 10 ~12
- Severe: GCS score <9
- Coma: GCS sore =< 8

The role of CT scanning



- CT scanning is used to identify and define the brain injury
- **Indications for CT scan**
- Request CT scan for any of the following

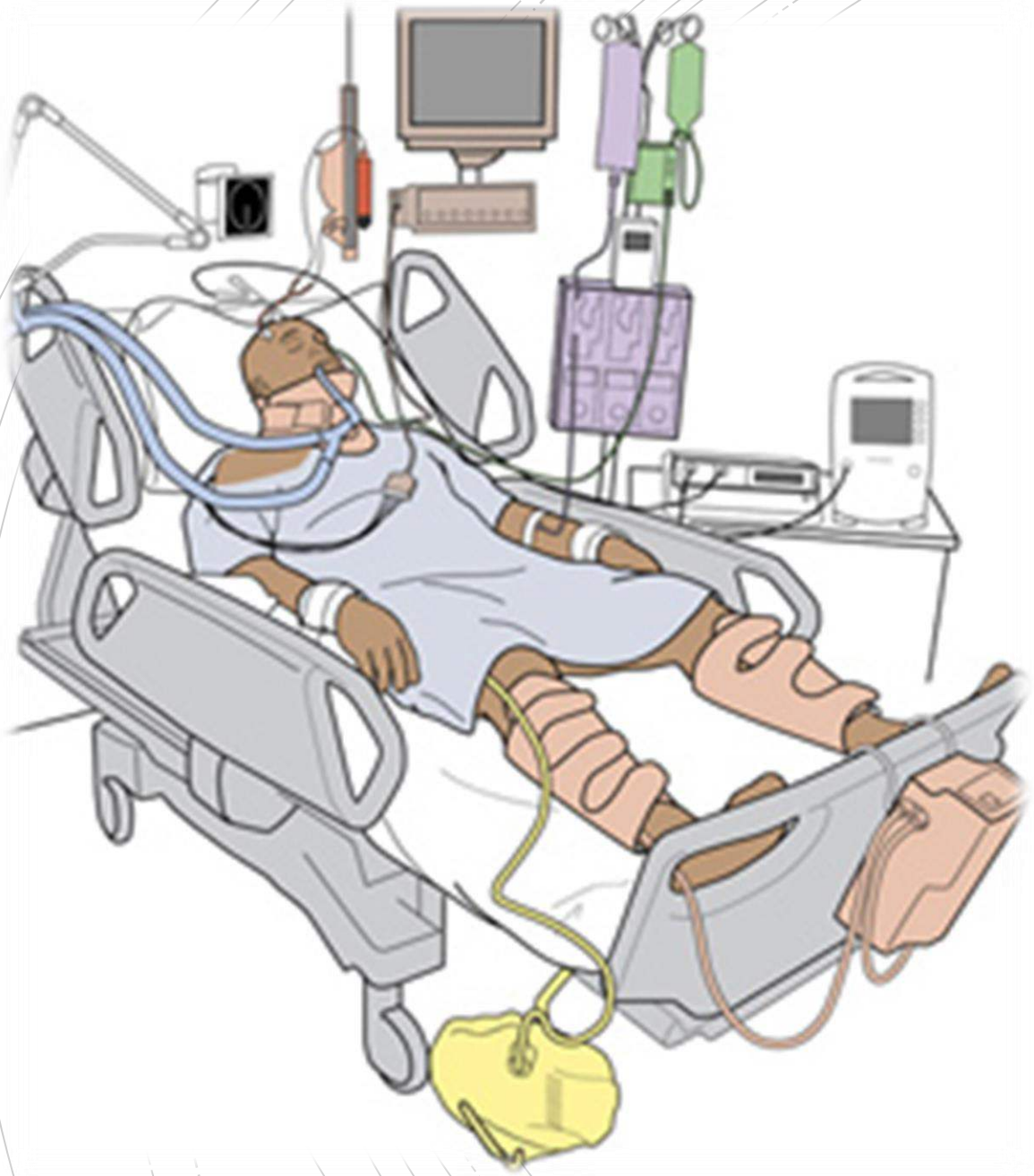
1. • GCS < 13 / 15 at any point since injury.
2. • GCS 13–14 / 15 at 2hr post-injury.
3. • Suspected open or depressed skull fracture.
4. • Any sign of basal skull fracture.
5. • Post-traumatic seizure.
6. • Focal neurological defi cit.
7. • > 1 episode of vomiting
8. • Amnesia for > 30min of events before impact * .
9. • Loss of consciousness and/or amnesia

Management of serious head injury



Initial management

1. • Clear, establish and maintain the airway, provide O 2 and protect the cervical spine
2. Head Position. Head of bed elevated to 30º
3. • Check breathing — provide support with bag mask device as necessary. Examine for and treat any serious chest injury.
4. • Check BMG and treat hypoglycemia if present .
5. • Insert two large IV cannula and send blood for X-matching, FBC, clotting screen, U&E, and glucose.
6. • Correct hypovolemia, resuscitate, and treat other injuries.



1. • If GCS < 8 / 15 , the patient will require urgent airway protection
2. Give IV antibiotics for patients with compound skull fractures
3. Clean and close scalp wounds to control scalp bleeding
4. Insert a urinary catheter.
5. • Consider the need for an orogastric tube. Avoid using NG tubes in facial injury or any possibility of base of skull fracture.
6. • Consider the need for tetanus immunization.


Thank you