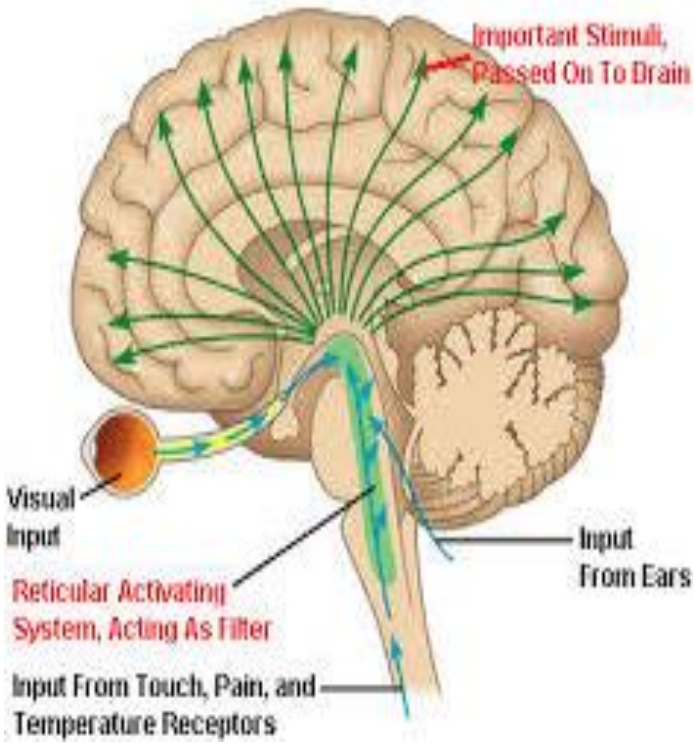
NEUROLOGY

UNCONSCIOUS PATIENT

Unconsciousness is a state of inability to react to the environment.

A patient's degree of unconsciousness will vary depending on how much of their brain is functioning and the intensity of the stimulus.

To be pathologically unconscious a person **must have impairment of ascending reticular system of the brainstem, and/or <u>both</u> cerebral hemispheres**



Causes of bilateral cerebral hemisphere failure include:

- Inadequate blood supply
- Lack of substrate
  e.g. hypoxia or hypoglycaemia
- Trauma
- Toxic insult e.g.
  - Infection
  - Toxic metabolites
  - Exogenous poisons

CVA of one cerebral hemisphere doesn't cause coma but brainstem haemorrhage or infarction, or globalised swelling causing brainstem herniation can.

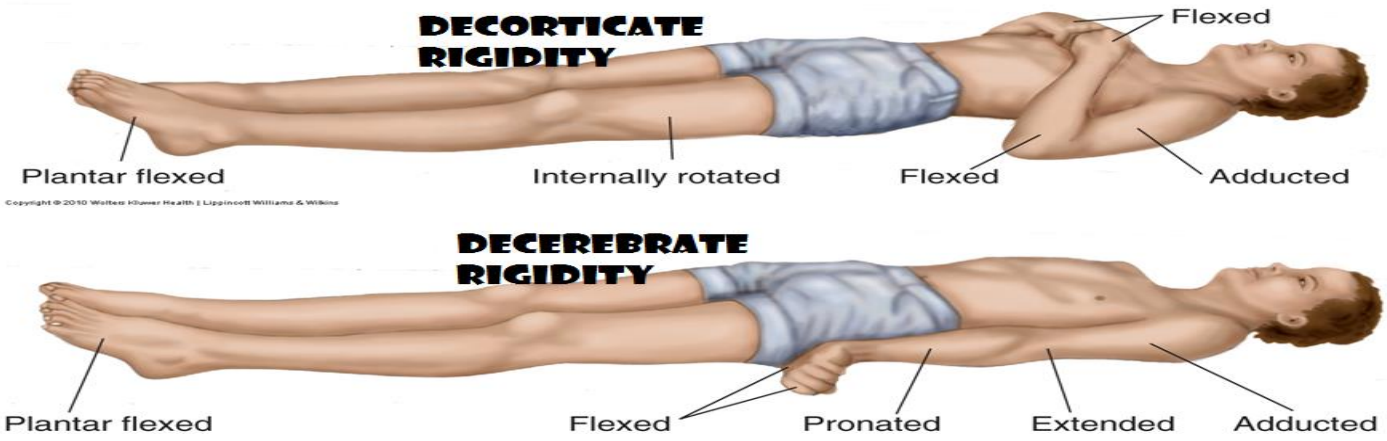
<u>Assessment:</u>

- When assessing the unconscious patient **follow the usual ABCDE approach**

- **Airway compromise, hypoxia, hypotension and hypoglycaemia** are easily diagnosed and immediately actionable causes

- **Assess Glasgow Coma Scale score:**

	Eye opening	**Verbal**	**Motor**
6			Obeys commands
5		Converses normally	Localises to pain
4	Spontaneous	Confused/ disorientated	Withdraws from pain
3	To voice	Incoherent words	**Abnormal flexion to pain** (Decorticate posturing)
2	To pain	Incomprehensible sounds	**Extension to pain** (Decerebrate posturing)
1	None	None	None



- Perform a neurological exam assessing for lateralising signs
    - Pupillary size and response
    - Doll's eye reflexes
    - Meningism
    - Motor response- tone, reflexes

- Look for signs suggestive of cause
    - Head trauma
    - Breath odour e.g. fetor hepaticus, ketosis, toxins (see toxicology examination)
    - Fever= cerebral infection/ sepsis/ pontine or hypothalamic insult
    - Organomegaly
    - Drug ingestion e.g. oral residue, tract marks

- **Always, always check a blood glucose**

<u>Differential diagnosis</u>

Signs of head injury
If evidence of head injury presume this is the cause and arrange CT Brain, but continue to investigate other causes e.g. bloods for metabolic or infective, urine toxin screen

No apparent head injury but lateralising neurology and/or meningism:
- Cerebrovascular event e.g. brainstem infarct/ haemorrhage, large subarachnoid haemorrhage
- Trauma
- Space occupying lesion
- Intracerebral infection

No apparent head injury and no lateralising neurology or meningism:
- Toxins/ drugs
- Organ failure e.g. uraemia, hepatic encephalopathy
- Metabolic e.g. hypoxia/ hypercapnia, hyponatraemia, hyper/ hypoglycaemia, hyperosmolality, hyper/ hypothermia,
- Endocrine e.g. Addisonian crisis, Hypothyroidism, Hypopituitarism
- Seizure i.e. non-convulsive status, eclampsia or post- ictal
- Pseudo coma

See also *RCEM learning* on coma and *Life in the Fast Lane*