Care of Unconscious Patient and Mechanical Ventilation

- is the state of awareness of oneself and the surrounding environment and the ability to respond to external stimuli. Reduced alertness, diminished wakefulness, and a decreased awareness of oneself and the environment all characterize impaired consciousness. Although some patients may naturally regain full consciousness without medical intervention, others require intensive care and intricate diagnostic assessments.

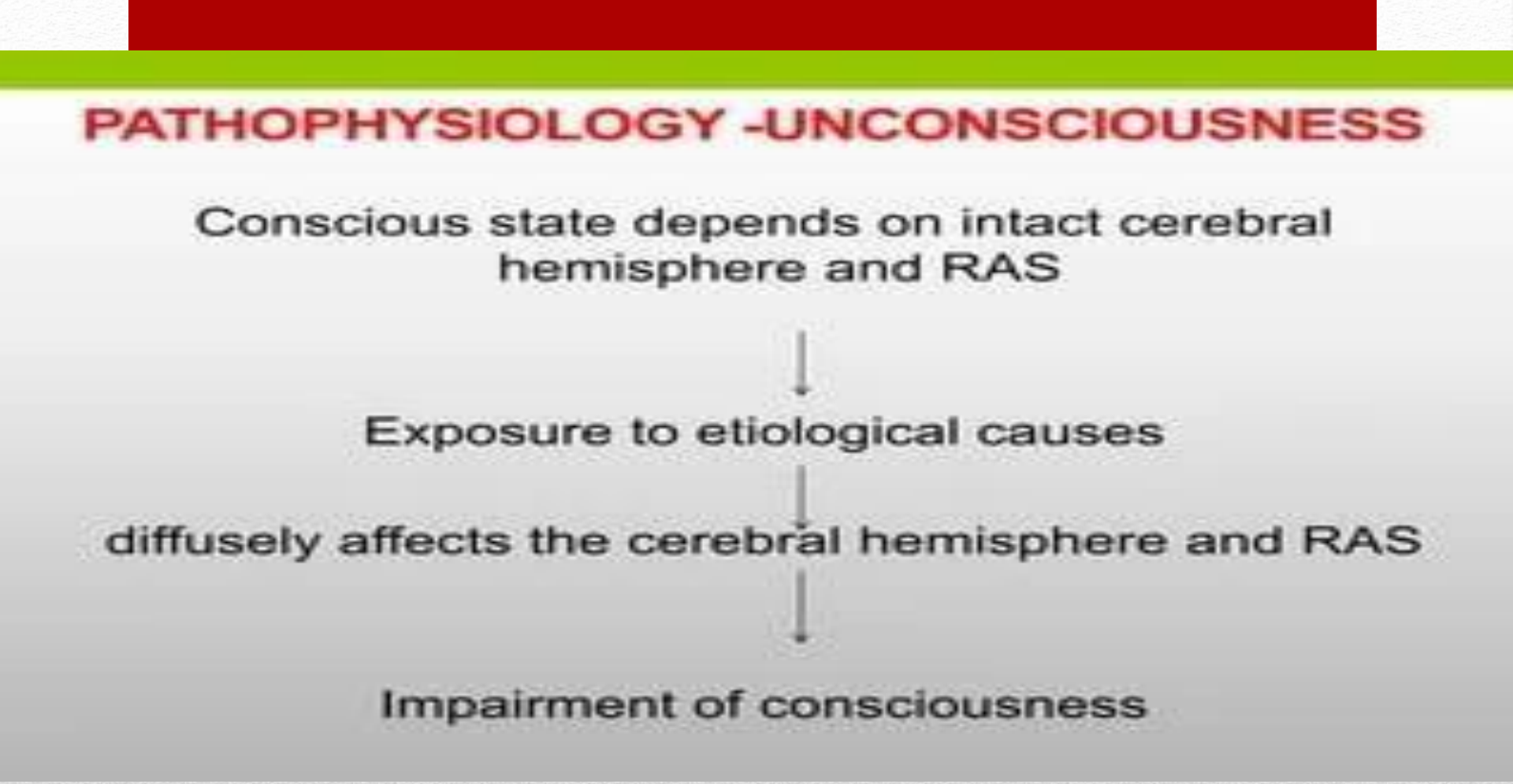
Consciousness

is a profound and occasionally extended state of unconsciousness. a coma is defined as a state of unresponsiveness in which the patient lies with their eyes closed and cannot be awakened to respond appropriately to stimuli, even with vigorous stimulation. The Glasgow Coma Scale (GCS) is a medical tool that objectively measures a coma's severity. GCS scores are valuable in predicting the prognosis for patients with traumatic brain injuries (TBIs), subarachnoid hemorrhages, and bacterial meningitis.

A coma

An abnormal state of lack of response to sensory stimuli, resulting from injury, illness, shock, or some other bodily disorder

Definition of unconsciousness



Pathophysiology of an unconscious patient

thalamus plays a crucial role in maintaining arousal. The thalamus and ascending reticular activating system can be damaged either by direct insult or by problems.

Causes of decreased Conscious Level	
Brain (structure)	- Brain injury (traumatic edema, hemorrhage, coma, including late hematomas) · Stroke (CMP ischemic or hemorrhagic, air embolism, thrombosis) · CNS infection (meningitis, encephalitis, brain abscess) . - CNS tumor (and other space-occupying lesions not elsewhere classified)
Brain function	· Epilepsy · Psychogenic disturbance of consciousness (neuroses, psychoses,hysteria, narcolepsy, ...) include significant stressful stimuli (urinary retention, pain, immobilization), especially in older people.
Blood	- Blood gases (hypoxia, hypercapnia, watch out for tissue hypoxia in the presence of carbonylhemoglobin and methemoglobin) - Glycaemia (the vast majority of disorders relate to a reduced level, hyperglycemia causes rather qualitative disorders and dehydration) · Temperature (subcooling and overheating) - Blood pressure (hypotension of a thousand causes, but also hypertensive encephalopathy)
Poisons	- Internal intoxication Sepsis, hyponatremia, hepatic coma, uremia, eclampsia, thyrotoxic crisis, hypothyroid coma, pituitary coma, adrenal insufficiency coma (Addison), hypocalcemic coma (tetany), hypercalcemic coma. - External intoxication: · Carbon monoxide · drugs with a sedative component in chronic medication

Levels of Consciousness	
Clouding of consciousness	- is a very mild form of altered mental status in which the patient has inattention and reduced wakefulness.
Confussional state	- is a more profound deficit that includes disorientation, bewilderment, and difficulty following commands.
Lethargy	- consists of severe drowsiness in which the patient can be aroused by moderate stimuli and then drift back to sleep.
Obtundation	- is a state similar to lethargy in which the patient has a lessened interest in the environment, slowed responses to stimulation, and tends to sleep more than normal with drowsiness in between sleep states.
Stupor	- means that only vigorous and repeated stimuli will arouse the individual, and when left undisturbed, the patient will immediately lapse back to the unresponsive state.
Coma	is a state of unarousable unresponsiveness.

The Glasgow Coma Scale (GCS) is used to objectively describe the extent of impaired consciousness in all types of acute medical and trauma patients.

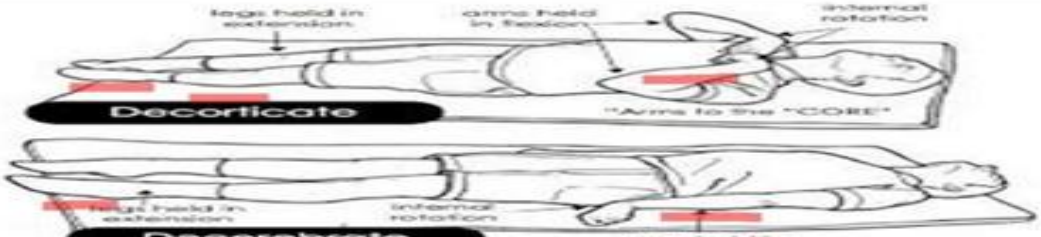
The assessment tools of conscious level

TABLE 38-2

Glasgow Coma Scale

BEHAVIOR	RESPONSE	SCORE
Eye opening response	Spontaneously	4
	To speech	3
	To pain	2
	No response	1
Best verbal response	Oriented to time, place, and person	5
	Confused	4
	Inappropriate words	3
	Incomprehensible sounds	2
	No response	1
Best motor response	Obeys commands	6
	Moves to localized pain	5
	Flexion withdrawal from pain	4
	Abnormal flexion (decorticate)	3
	Abnormal extension (decerebrate)	2
	No response	1
Total score:	*Best response*	15
	Comatose client	8 or less
	Totally unresponsive	3

DECEREBRATE RIGIDITY	DECORTICATE RIGIDITY
Upper and lower limb extended	Upper limb flexed and lower limb extended
Lesion below midbrain	Lesion above midbrain
Temperature regulation absent	Temperature regulation present
Not better outcome	Better outcome



The Richmond Agitation-Sedation Scale:

(RASS) is an instrument in which the presence and extent of agitation, ranging from combative to calm, as well as the level of consciousness, ranging from alert to comatose, can be evaluated quickly and reliably in 3 easy steps. Occurring first is a baseline observation, a response to verbal stimulation, and then a response to physical stimulation.

+4	Combative; overtly violent; immediate danger to staff
+3	Very agitated; pulls or removes tubes/catheters; aggressive
+2	Agitated; frequent non-purposeful movements; fights ventilator
+1	Restless; anxious but not aggressive/vigorous
0	Alert and calm
-1	Drowsy; not fully alert but sustained awakening; eye contact to voice >10 secs
-2	Light sedation; briefly awakens to voice with eye contact <10 secs
-3	Moderate sedation; movement or eye opening to voice but no eye contact
-4	Deep sedation; no response to voice; movement or eye opening to physical stimulation
-5	Unrousable; no response to voice or physical stimulation

A = the resident is fully awake

V = the resident responds to verbal stimulation only

P = the resident responds to painful stimulation only

U = the resident is completely unresponsive

Prognosis of the unconscious patient

The outcome and prognosis of the unconscious patient is determined by the underlying cause. Patients not responding to initial treatment, and who remain unconscious, are likely to require critical care admission unless withdrawal of treatment and palliation of symptoms is appropriate, for example a patient with a catastrophic brain injury.

- **Oxygenation:** Generally, unconscious patients with an oxygen saturation level below 90%, a GCS score lower than 8, or a weakened cough or gag reflex necessitate intubation.
- **Circulation:** A mean arterial blood pressure below 70 mm Hg should be treated with fluids or vasopressors. Mean arterial pressures exceeding 130 mm Hg may require administering intravenous (IV) labetalol at a dose of 5 to 20 mg or as necessary.
- **Vital Signs:** The vital signs of an unconscious patient should be obtained if this task has not yet been completed.

Glucose Administration: If the cause of the coma is unknown, 25 g of dextrose should be administered while awaiting the results of laboratory tests

Treatment / Management

- **Thiamine Administration:** In cases of malnourishment, a 100 mg dose of thiamine should be administered alongside or before administering glucose to the patient.
- **Specific Antidotes:** In patients strongly suspected of experiencing a specific drug overdose, it is advisable to consider naloxone and flumazenil. In addition, gastric lavage and activated charcoal are alternative options that can be considered.

Intracranial Pressure: If a patient exhibits a clinically evident herniation syndrome or if one is imminent based on CT findings, mannitol should be administered via IV route at a dosage of 1 g/kg, along with hyperventilation

- **Infection Treatment:** In cases where bacterial meningitis or viral encephalitis is suspected, it is recommended to administer empiric antibiotics or antivirals.
- **Acid-Base and Electrolyte Balances:** Restoring acid-base and electrolyte balances in unconscious patients should be a priority.

- **Body Temperature:** Maintaining a body temperature above 38.5 °C in
- patients with ischemia can exacerbate brain damage. Therefore, it is essential to use cooling blankets and antipyretics. In cases of cardiac arrest, inducing hypothermia is considered neuroprotective. Rewarming is generally unnecessary unless the patient's temperature falls below 33 °C.
- **Agitation Control:** Once diagnostic testing results are obtained, management strategies can be customized accordingly to achieve optimal outcomes. Patients who are in a persistently comatose state despite initial interventions often necessitate a higher level of care, such as placement in an intensive care unit.