

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# Coma

# Coma

**Coma is a state of loss of consciousness from which the patient can't be aroused by any stimulation whatever vigorous and painful.**

## **Component of consciousness**

- Arousal
- Awareness

# Coma

## Arousal

is dependent on the upper brainstem and diencephalon. The Ascending Reticular Activating System (ARAS) ascends from the midpons extending rostrally through the midline and intralaminar nuclei of the thalamus to the cerebral cortex.

# Coma

## Awareness

Awareness of the outside world requires the parietal cortex for sensory processing and interpretation, after initial reception in the primary sensory areas.

# Coma

## Causes of coma:

### A. Cranial

- ✓ Trauma
- ✓ CVS
- ✓ Tumors
- ✓ Abscess
- ✓ CNS infections

# Coma

## B. Extracranial

- ✓ **Metabolic** (liver, renal, DM, electrolyte disturbances).
- ✓ **Endocrinal.**
- ✓ **Toxins** (CO, CO<sub>2</sub>, heavy metals, alcohol).
- ✓ **Heat stroke.**
- ✓ **Drugs** (sedatives, anaesthetics, anticonvulsants and antidepressants)

# Diagnostic approach to Coma

## History

## General examination

- ✓ Vital signs
- ✓ Chest and abdomen
- ✓ Cardiac



# Diagnostic approach to Coma

## Neurological examination

- ✓ **GCS**
- ✓ **Ocular examination** (Doll's head, pupils, corneal reflex).
- ✓ **Motor system** (paralysis, involuntary movements as seizures)

# Glasgow Coma Scale

## Eye Response

- 4 = eyes open spontaneously
- 3 = eye opening to verbal command
- 2 = eye opening to pain
- 1 = no eye opening

## Motor Response

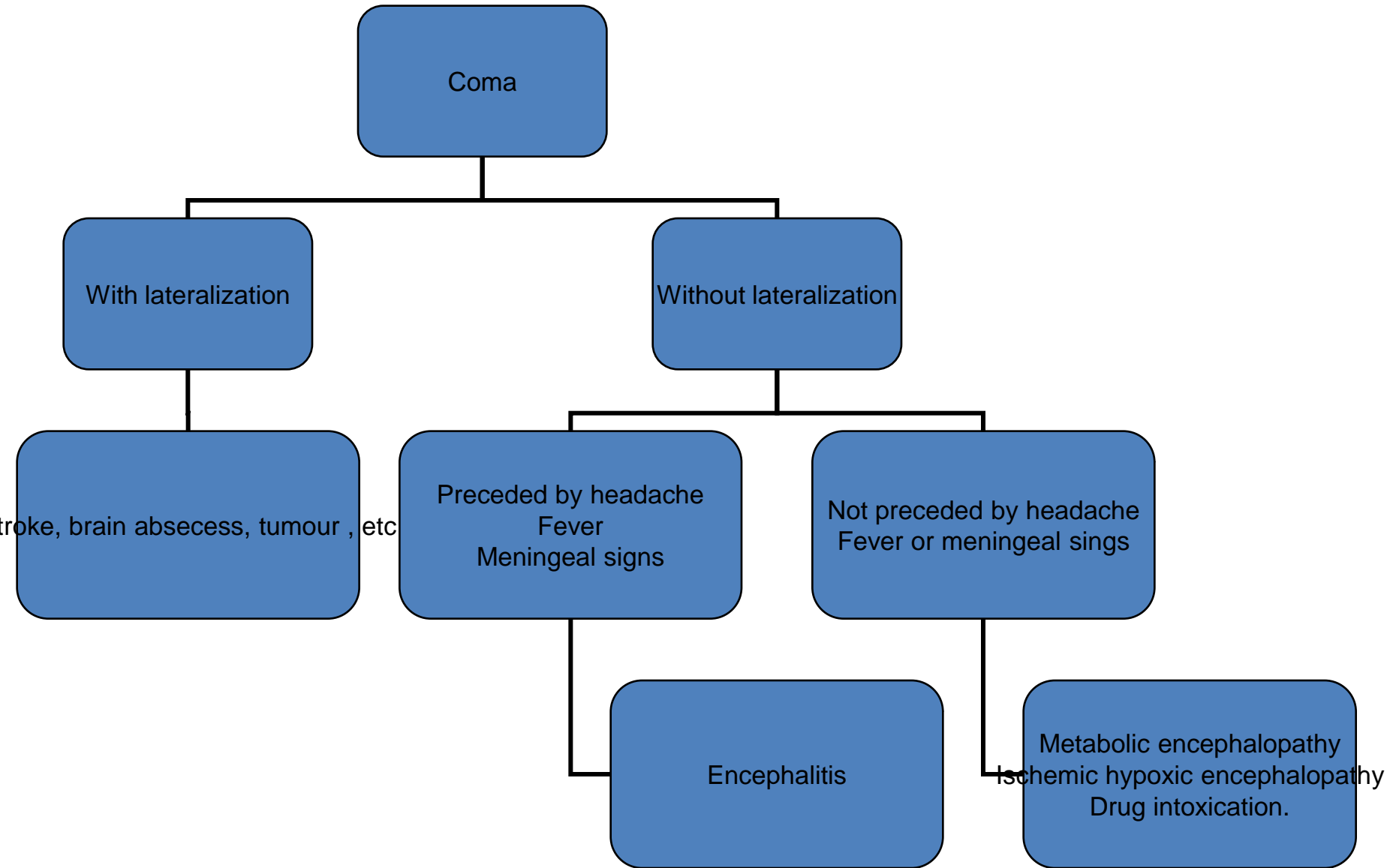
- 6 = obeys commands
- 5 = localizing pain
- 4 = withdrawal from pain
- 3 = flexion response to pain
- 2 = extension response to pain
- 1 = no motor response

## Verbal Response

- 5 = oriented
- 4 = confused
- 3 = inappropriate words
- 2 = incomprehensible sounds
- 1 = no verbal response

A GCS score of 13 or higher indicates mild brain injury, 9 to 12 moderate brain injury, and 8 or less severe brain injury.

# Algorithm of coma diagnosis



AIRWAY: intubate if GCS  $\leq 8$  and  
pCO<sub>2</sub> > 45 torr  
BREATHING: maintain SaO<sub>2</sub> > 90% pCO<sub>2</sub> < 40 torr  
CIRCULATION: maintain MAP > 70 mmHg

Check fingerstick glucose and administer glucose if < 45 mg/dl; draw blood sample for electrolytes, arterial blood gas, liver and thyroid function tests, complete blood count, toxicology screen (blood & urine), ECG

### NEUROLOGICAL ASSESSMENT

Hyperventilation, mannitol 0.5–1.0 g/kg if clinical evidence of increased ICP/herniation  
(some prefer 30ml 23.4% NaCl)

**Thiamine** (100 mg IV) followed by glucose (if < 40 mg/dL, 10 ml aliquots of a 50% solution  
until blood glucose > 60 mg/dL)

**Naloxone** if opioid overdose is suspected (0.4-2.0 mg IV q 3 min or continuous IV infusion 0.8 mg/kg/hr)

**Flumazenil** if benzodiazepine overdose suspected (0.2 mg/min, maximum dose 1 mg IV)

After intubation, gastric lavage with **activated charcoal** if drug intoxication is suspected

HEAD CT, CERVICAL SPINE, IF STRUCTURAL CAUSE

DETAILED HISTORY AND SYSTEMIC EXAMINATION

CONSIDER EEG, LUMBAR PUNCTURE, MRI

# **Nursing care for comatosed patient**

- **Turn the patient regularly on bed every 2 hs.**
- **Frequent massage and washing the body with alcohol and talc powder.**
- **Catheterization if retention or incontinence.**
- **Nasogastric tube for feeding.**
- **DVT prevention**

تمت بحمد الله

Thank you