Management of patient with Neurologic Dysfunction

Altered level of consciousness

Learning objectives:

- Define level of consciousness alteration
- Differentiate between level of consciousness alterations
- Identify the pathophysiology of altered level of consciousness
- Identify the clinical manifestation and complication of patient with altered level of consciousness
- Describe the multiple needs of the patient with altered level of consciousness
- Use the nursing process as a framework for care of the patient with altered level of consciousness

Definition

- altered level of consciousness is defined as a condition of being less responsive to and aware of environmental stimuli.
- LOC is gauged on a continuum with a normal state of alertness and full cognition (consciousness) on one end and coma on the other end.

Altered level of consciousness terminology

- **Alert or conscious**: attends to the environment, responds appropriately to commands and questions with minimal stimulation
- **Confused**: disoriented to surroundings, may have impaired judgment, may need cues to respond to commands
- **Lethargic**: drowsy, needs gentle verbal or touch stimulation to initiate response

Continue

- **Obtunded**: responds slowly to external stimulation, needs repeated stimulation to maintain attention and response to the environment
- **Stuporous**: responds only minimally with vigorous stimulation, may only moan as a verbal response
- **Comatose:** no observable response to any external stimuli

Causes of altered level of consciousness:

1. Structural

- Trauma: concussion, contusion, traumatic intracerebral haemorrhage, cerebral edema, subdural and epidural hematoma
- Vascular disease; infarction, intracerebral haemorrhage, subarachnoid haemorrhage
- Infection: meningitis, encephalitis, brain abscess
- Neoplasms: primary brain tumor, metastatic tumors

Continue

2. **Metabolic**

- Systemic metabolic derangement: hypoglycaemia, diabetic ketoacidosis, hyperglycaemic nonketotic hyperosmolar state, uraemia, hepatic encephalopathy, hyponatremia, myxedema
- Hypoxic encephalopathies: sever congestive heart failure, chronic obstructive pulmonary disease, sever anaemia, prolonged hypertension
- Toxicity: heavy metals, carbon monoxide, drug(opiates, barbiturates and alcohol)
- Extremes of body temperature: heat stroke, hypothermia
- Seizures

Pathophysiology

- Altered level of consciousness is a symptom of a multiple pathophysiologic causes such as:
- Neurologic: head injury, stroke
- Toxicologic: drug overdose, alcohol intoxication
- Metabolic: hepatic failure, renal failure, diabetic ketoacidosis
- The underlying causes of neurologic dysfunction are disruption in the cells of the nervous system, neurotransmitters, or brain anatomy

Continue

1. Cellular brain edema or disrupting chemical transmission at receptor site, result in faulty impulse transmission and impeding communication within the brain or from the brain to other body parts
2. Brain trauma, brain edema, tumor pressure, increase or decrease blood or cerebrospinal fluid result in disruption in anatomic structure of the brain and faulty impulse transmission and impeding communication within the brain or from the brain to other body part

Clinical manifestations

- As the patient's state of alertness and consciousness decreases, there will be changes in the pupillary response, eye opening response, verbal response, and motor response.
- Initial changes may be reflected by subtle behavioral changes such as restlessness or increased anxiety,with time,there will be decrease wakefulness, decrease attention to environment, confusion, disorientation, agitation, poor memory, decrease ability to carry out activities of daily living, decrease mobility, incontinence, hallucination, and delusions

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- The pupils, normally round and quickly reactive to light, become sluggish (response is slower); as the patient becomes comatose, the pupils become fixed (no response to light).
- The patient in a coma does not open the eyes, respond verbally, or move the extremities.

Assessment and Diagnostic Findings

- Neurological examination, which includes an evaluation of mental status, cranial nerve function, cerebellar function (balance and coordination), reflexes, and motor and sensory function.
- Glasgow Coma Scale is used: eye opening, verbal response, and motor response

  The Glasgow Coma Scale is a tool for assessing a patient's response to stimuli. Scores range from 3 (deep coma) to 15 (normal).

Glasgow Coma Scale

Eye opening response	Spontaneous	4
	To voice	3
	To pain	2
	None	1
Best verbal response	Oriented	5
	Confused	4
	Inappropriate words	3
	Incomprehensible sounds	2
	None	1
Best motor response	Obeys command	6
	Localizes pain	5
	Withdraws	4
	Flexion	3
	Extension	2
	None	1
Total		3 to 15

Procedures used to identify the cause of unconsciousness include

- Scanning
- Computed tomography
- Magnetic resonance imaging
- Positron emission tomography
- Eelectroencephalography

Laboratory tests include

- Blood glucose
- Electrolytes
- Serum ammonia
- Blood urea nitrogen
- Calcium level
- Partial thromboplastin and prothrombin time

Complications

Potential complications for the patient with altered LOC include:

1. Respiratory failure
2. Pneumonia
3. Pressure ulcers
4. Aspiration.

Medical management

- **Obtain and maintain a patent airway.**
- **Intubation, or a tracheostomy may be performed.**
- **Mechanical ventilator is used to maintain adequate oxygenation.**
- **The circulatory status (blood pressure, heart rate) is monitored to ensure adequate perfusion to the body and brain.**

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- **An intravenous catheter is inserted to provide access for fluids**
- **intravenous medications.**
- **Nutritional support, using either a feeding tube or a gastrostomy tube**
- **Determine and treat the underlying causes of altered LOC.**
- **Pharmacological management of complications and strategies to prevent complications.**

NURSING PROCESS

THE PATIENT WITH AN ALTERED LEVEL OF CONSCIOUSNESS

Assessment

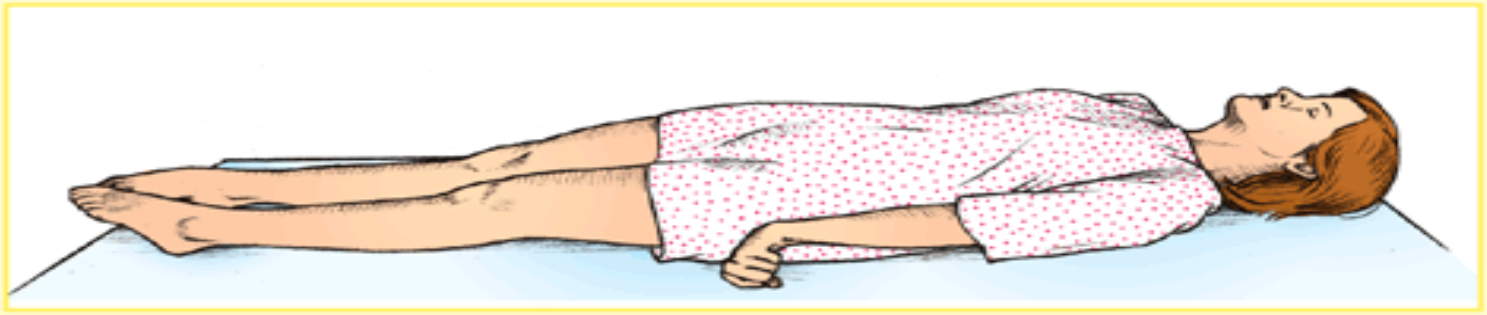
- Level of responsiveness or consciousness
- Verbal response.
- Patient's orientation to time, person, and place, the patient is asked to identify the day, date, or season of the year and to identify where he or she is or to identify the clinicians, family members, or visitors present.
- Assess alertness by the patient's ability to open the eyes spontaneously or to a stimulus.
- Periorbital edema or trauma, which may prevent the patient from opening the eyes.

Continue

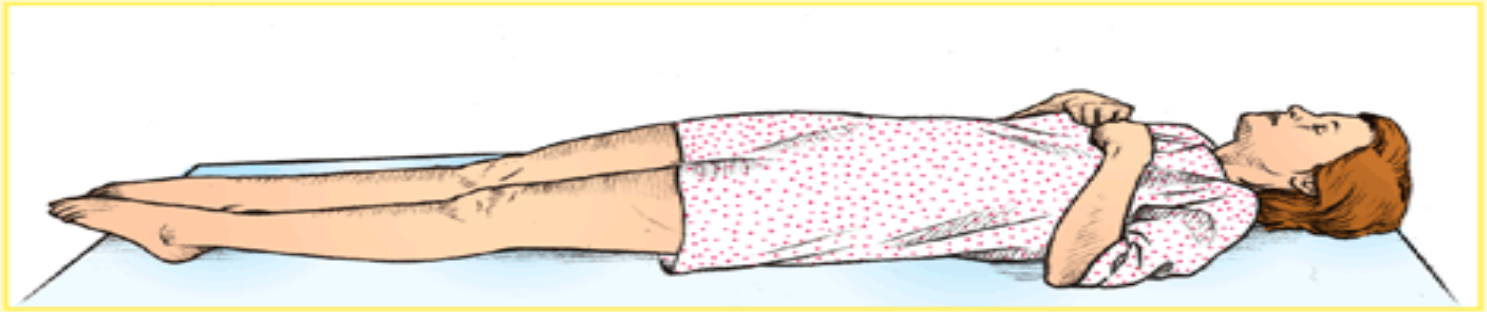
- Motor response includes spontaneous, purposeful movement, movement only in response to noxious stimuli, or abnormal posturing (decorticate or decerebrate).
- Respiratory status and pattern of respiration.
- Eye signs, and reflexes.
- Corneal reflex.
- Facial symmetry.
- Swallowing reflex.
- Deep tendon reflex.

Comparing Decerebrate and Decorticate Postures

Decerebrate posture results from damage to the upper brain stem. In this posture, the arms are adducted and extended, with the wrists pronated and the fingers flexed. The legs are stiffly extended, with plantar flexion of the feet.



Decorticate posture results from damage to one or both corticospinal tracts. In this posture, the arms are adducted and flexed, with the wrists and fingers flexed on the chest. The legs are stiffly extended and internally rotated, with plantar flexion of the feet.



Nursing Diagnosis

- Ineffective airway clearance related to altered level of consciousness.
- Risk of injury related to decreased level of consciousness.
- Deficient fluid volume related to inability to take in fluids.
- Impaired oral mucous membranes related to mouth breathing, absence of pharyngeal reflex, and altered fluid intake.
- Risk for impaired skin integrity related to immobility.

Continue

- Impaired tissue integrity of cornea related to diminished or absent of corneal reflex.
- Ineffective thermoregulation related to damage to hypothalamic center
- Impaired urinary elimination (incontinence or retention) related to impairment in neurologic sensing and control.
- Bowel incontinence related to impairment in neurologic sensing and control.
- Disturbed sensory perception related to neurologic impairment.
- Interrupted family processes related to health crisis.

Nursing Interventions

Maintaining the airway

- Remove accumulated secretion to eliminate the danger of aspiration.
- Elevating the head of the bed to 30 degrees helps prevent aspiration.
- Positioning the patient in a lateral or semiprone position to promote drainage of secretions.
- Suctioning and oral hygiene to remove secretions from the posterior pharynx and upper trachea.
- Hyperoxygenated and hyperventilated the patient before and after suctioning to prevent hypoxia

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- Chest physiotherapy and postural drainage to promote pulmonary hygiene.
- Auscultate the chest at least every 8 hours to detect adventitious breath sounds or absence of breath sounds.
- Maintaining the patency of the endotracheal tube or tracheostomy for intubated patient.
- Providing frequent oral care.
- Monitoring arterial blood gas measurements.

Protecting the patient

- Padded side rails and raised at all times.
- prevent injury from invasive lines and equipment (eg, restraints, tight dressings, environmental irritants, damp bedding or dressings, tubes and drains).
- protecting the patient's dignity during altered LOC as providing privacy and speaking to the patient during nursing care activities to preserve the patient's humanity.
- No negative speaking about the patient's condition or prognosis in the patient's presence.

MAINTAINING FLUID BALANCE AND MANAGING NUTRITIONAL NEEDS

- Hydration status is assessed by examining tissue turgor and mucous membranes.
- Assessing intake and output, and analyzing laboratory data.
- Fluid needs are met initially by giving the required fluids intravenously.
- intravenous solutions for patients with intracranial conditions must be administered slowly.
- Restrict fluid administration to minimize the possibility of producing cerebral edema.
- Enteral feeding to the patient with inadequate fluid and calories intake by mouth.

Providing mouth care

- The mouth is inspected for dryness, inflammation, and crusting.
- Oral care because there is a risk of parotitis. The mouth is cleansed and rinsed carefully to remove secretions and crusts and to keep the mucous membranes moist.
- A thin coating of petrolatum on the lips to prevent drying, cracking, and encrustations.
- If the patient has an endotracheal tube, the tube should be moved to the opposite side of the mouth daily to prevent ulceration of the mouth and lips.

MAINTAINING SKIN AND JOINT INTEGRITY

- Continuing nursing assessment and intervention.
- Special attention is given to unconscious patients because they cannot respond to external stimuli.
- Regular schedule of turning to avoid pressure, which can cause breakdown and necrosis of the skin.
- Turning also provides kinesthetic (sensation of movement), proprioceptive (awareness of position), and vestibular (equilibrium) stimulation.

Continue

- After turning, the patient is carefully repositioned to prevent ischemic necrosis over pressure areas.
- Dragging the patient up in bed must be avoided, because this creates a shearing force and friction on the skin surface.
- Maintaining correct body position, passive exercise of the extremities to prevent contractures.
- Use of splints or foam boots aid in the prevention of footdrop and eliminate the pressure of bedding on the toes.

Continue

- Trochanter rolls supporting the hip joints keep the legs in proper alignment.
- The arms should be in abduction, the fingers lightly flexed, and the hands in slight supination.
- The heels of the feet should be assessed for pressure areas.
- Specialty beds, such as fluidized or low-air-loss beds, may be used to decrease pressure on bony prominences.

PRESERVING CORNEAL INTEGRITY

- The eyes may be cleansed with cotton balls moistened with sterile normal saline to remove debris and discharge.
- If artificial tears are prescribed, they may be instilled every 2 hours.
- Periocular edema (swelling around the eyes) often occurs after cranial surgery.
- Cold compresses may be prescribed, and care must be exerted to avoid contact with the cornea.
- Eye patches should be used cautiously because of the potential for corneal abrasion from the cornea coming in contact with the patch.

ACHIEVING THERMOREGULATION

- Unconscious patients often develop very high temperatures. Such temperature elevations must be controlled.
- Persistent hyperthermia with no identified clinical source of infection indicates brain stem damage and a poor prognosis.
- Adjustment of the environment depending on the patient's condition to promote a normal body temperature.

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- If body temperature is elevated, a minimum amount of bedding, a sheet or perhaps only a small drape is used.
- The room may be cooled to 18.3°C
- If the patient is elderly and does not have an elevated temperature, a warmer environment is needed because of damage to the heat-regulating center in the brain
- Frequent temperature monitoring is indicated to assess the response to the therapy and to prevent an excessive decrease in temperature and shivering.

Strategies for reducing fever include:

- Removing all bedding over the patient
- Administering repeated doses of acetaminophen as prescribed
- Giving a cool sponge bath and allowing an electric fan to blow over the patient to increase surface cooling
- Using a hypothermia blanket

PREVENTING URINARY RETENTION

- The bladder is palpated or scanned at intervals to determine whether urinary retention is present
- Indwelling urinary catheter attached to a closed drainage system is inserted.
- A catheter may be inserted during the acute phase of illness to monitor urinary output.
- Observe the patient for fever and cloudy urine.

Continue

- Inspect the area around the urethral orifice for drainage.
- Although many unconscious patients urinate spontaneously after catheter removal, the bladder should be palpated or scanned with a portable ultrasound device periodically for urinary retention.
- An intermittent catheterization program may be initiated to ensure complete emptying of the bladder at intervals.

Continue

- If indicated an external catheter (condom catheter) for the male patient and absorbent pads for the female patient can be used for the unconscious patient who can urinate spontaneously although involuntarily.
- As soon as consciousness is regained, a bladder-training program is initiated.
- Frequently skin monitoring for irritation and skin breakdown.
- Appropriate skin care is implemented to prevent complication.

PROMOTING BOWEL FUNCTION

- Assess the abdomen for distention by listening for bowel sounds and measuring the girth of the abdomen with a tape measure.
- Commercial fecal collection bags for patients with fecal incontinence.
- Monitors the number and consistency of bowel movements
- Performs a rectal examination for signs of fecal impaction.
- Stool softeners may be prescribed
- A glycerine suppository may be indicated to facilitate bowel emptying.
- The patient may require an enema every other day to empty the lower colon.

PROVIDING SENSORY STIMULATION

- keeping the usual day and night patterns for activity and sleep.
- Touches and talks to the patient and encourages family members and friends to do so.
- Communication is extremely important and includes touching the patient and spending enough time with him or her.
- Avoid making any negative comments about the patient’s status or prognosis in the patient’s presence.

Continue

- Minimize the stimulation to the patient by limiting background noises, having only one person speak to the patient at a time,
- Giving the patient a longer period of time to respond, and allowing for frequent rest or quiet times.
- When the patient has regained consciousness, videotaped family or social events may assist the patient in recognizing family and friends and allow him or her to experience missed events.

Continue

- Orients the patient to time and place at least once every 8 hours.
- Sounds from the patient's home and workplace may be introduced using a tape recorder.
- Family members can read to the patient from a favorite book and may suggest radio and television programs that the patient previously enjoyed as a means of enriching the environment and providing familiar input.

MEETING FAMILIES' NEEDS

- Reinforce and clarify information about the patient's condition.
- Permit the family to be involved in care.
- Listen to and encourage ventilation of feelings and concerns while supporting them in their decision-making process about post hospitalization management and placement.
- Families may benefit from participation in support groups offered through the hospital, rehabilitation facility, or community organizations.

Evaluation

EXPECTED PATIENT OUTCOMES

- Maintains clear airway and demonstrates appropriate breath sounds
- Experiences no injuries
- Attains/maintains adequate fluid status
- a. Has no clinical signs or symptoms of dehydration
- b. Demonstrates normal range of serum electrolytes
- c. Has no clinical signs or symptoms of over hydration
- Attains/maintains healthy oral mucous membranes
- Maintains normal skin integrity

Continue

- Has no corneal irritation
- Attains or maintains thermoregulation
- Has no urinary retention
- Has no diarrhea or fecal impaction
- Receives appropriate sensory stimulation
- Family members cope with crisis
- a. Verbalize fears and concerns
- b. Participate in patient's care and provide sensory stimulation by talking and touching

Continue

- Is free of complications
- a. Has arterial blood gas values within normal range
- b. Displays no signs or symptoms of pneumonia
- c. Exhibits intact skin over pressure areas
- d. Does not develop deep vein thrombosis

THANK YOU