

# NCLEX® Essentials MED SURG

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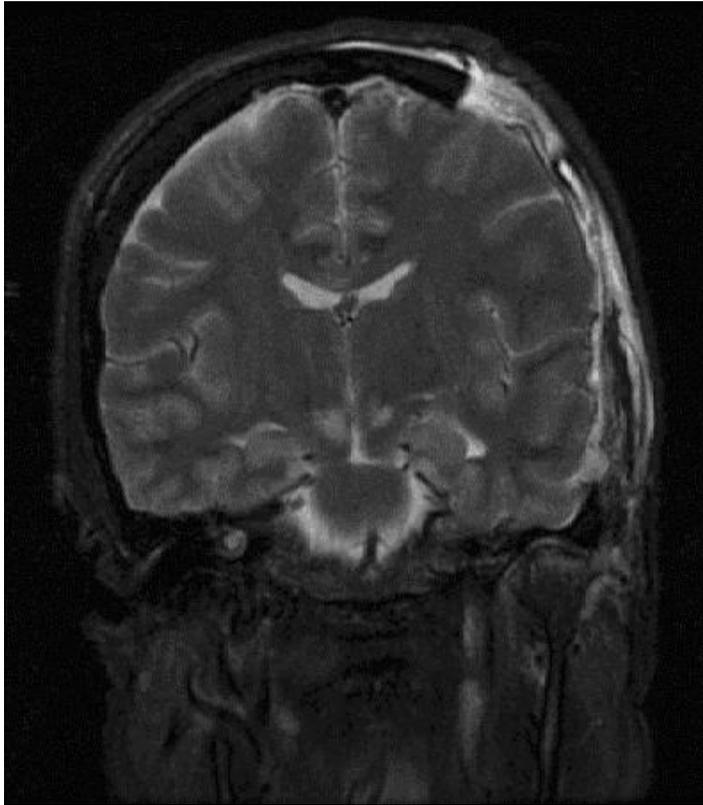
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## Neurological Disorders

### Increased Intracranial Pressure (ICP)



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*Increasing ICP can lead to brain herniation*

1. Overview
  - a. Normal ICP: 5-15mmHg
  - b. ICP can elevate due to trauma, hemorrhage, tumor, hydrocephalus, inflammation
  - c. The cranial vault is rigid, increased ICP can limit cerebral perfusion, impeded CSF absorption and lead to herniation of brain tissue causing death
2. NCLEX® Points
  - a. Assessment
    - i. Levels of Consciousness

Conscious	Normal	Assessment of LOC involves checking orientation: people who are able promptly and spontaneously to state their name, location, and the date or time are said to be oriented to self, place, and time, or "oriented X3". A normal sleep stage from which a person is easily awakened is also considered a normal level of consciousness. "Clouding of consciousness" is a term for a mild alteration of consciousness with alterations in attention and wakefulness.
Confused	Disoriented; impaired thinking and responses	People who do not respond quickly with information about their name, location, and the time are considered "obtuse" or "confused". A confused person may be bewildered, disoriented, and have difficulty following instructions. The person may have slow thinking and possible memory time loss. This could be caused by sleep deprivation, malnutrition, allergies, environmental pollution, drugs (prescription and nonprescription), and infection.
Delirious	Disoriented; restlessness, hallucinations, sometimes delusions	Some scales have "delirious" below this level, in which a person may be restless or agitated and exhibit a marked deficit in attention.
Somnolent	Sleepy	A <i>somnolent</i> person shows excessive drowsiness and responds to stimuli only with incoherent mumbles or disorganized movements.
Obtunded	Decreased alertness; slowed psychomotor responses	In <i>obtundation</i> , a person has a decreased interest in their surroundings, slowed responses, and sleepiness.
Stuporous	Sleep-like state (not unconscious); little/no spontaneous activity	People with an even lower level of consciousness, stupor, only respond by grimacing or drawing away from painful stimuli.
Comatose	Cannot be aroused; no response to stimuli	Cannot be aroused; no response to stimuli

- ii. headache
- iii. Cushing's Triad
  1. abnormal respirations
  2. widening pulse pressure
  3. reflex bradycardia
- iv. elevated temp
- v. pupillary changes

- vi. posturing
- vii. seizures
- viii. positive Babinski reflex
- b. Therapeutic Management
  - i. monitor respiratory status
  - ii. monitor pupil changes
  - iii. avoid sedatives and CNS depressants
  - iv. Hypocapnia ( $\text{PaCO}_2$  30-35 mmHg) will lead to cerebral vasoconstriction leading to decreased ICP
  - v. monitor temperature
  - vi. prevent shivering
  - vii. decrease stimuli
  - viii. monitor electrolytes
  - ix. avoid Valsalva's maneuver
  - x. Ventricular drain and ICP monitoring
  - xi. Assess neuro status q 1-2 hours
  - xii. elevate HOB to at least 30 degrees
  - xiii. Osmotic diuretics and corticosteroids

## Stroke



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### *Right MCA Infarct*

#### 1. Overview

- a. Neurological deficit caused by decreased blood flow to a portion of the brain
- b. May be ischemic or hemorrhagic
- c. Lack of blood flow greater than 10 minutes can cause irreversible damage
- d. Risk factors:
  - i. HTN
  - ii. Diabetes
  - iii. atherosclerosis
  - iv. cardiac dysrhythmias
  - v. substance abuse
  - vi. obesity
  - vii. oral contraceptives
  - viii. anticoagulant therapy
- e. Diagnosed via: CT, MRI, cerebral arteriogram (hemorrhagic and late ischemic)

#### 2. NCLEX® Points

- a. Assessment

- i. contralateral manifestations (opposite side of stroke)
- ii. FAST
  1. facial droop
  2. arms - does one arm drift?
  3. speech problems
  4. time - call 9-1-1
- iii. dependent on location
  1. Aphasia - speech difficulty
    - a. Expressive - understands but unable to communicate verbally
    - b. Receptive - unable to comprehend spoke and written word
    - c. Global - language dysfunction
    - d. Interventions
      - i. provide adequate time for client to respond
      - ii. repeat names of individuals and objects frequently
      - iii. use a picture board
      - iv. provide only one instruction at a time
  2. Apraxia - inability to perform tasks
  3. Hemianopsia - blindness in half the vision field
    - a. instruct client to turn head to capture the entire vision field
    - b. approach client from unaffected side
    - c. provide food and objects to unaffected side
  4. Dysphagia - difficulty swallowing
- b. Therapeutic Management
  - i. involve speech therapy
  - ii. ischemic stroke
    1. permissive hypertension
    2. antithrombotic therapy
    3. carotid endarterectomy
    4. thrombectomy
    5. monitor neurological status
  - iii. hemorrhagic stroke
    1. coiling or clipping of aneurysm
    2. monitor neurological status
  - iv. seizure precautions
  - v. monitor level of consciousness
  - vi. monitor neurological status
  - vii. maintain quiet, calm environment
  - viii. assess need for assistive devices
  - ix. involve physical and occupational therapy

## Seizure Disorder

View the NRSNG.com video on Seizures here: <https://youtu.be/lr2G34fl4Fg>

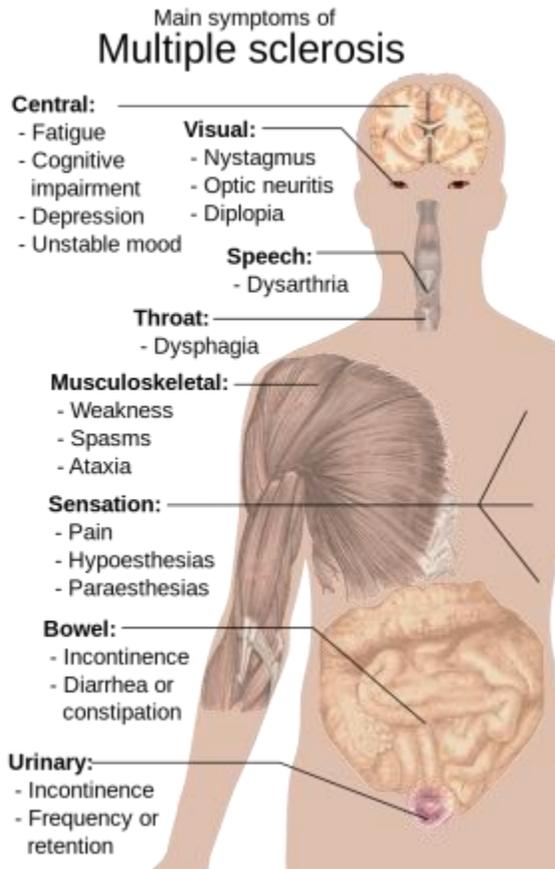
1. Overview
  - a. Abnormal excessive discharge of electrical activity in the brain
  - b. Types
    - i. Generalized - both hemispheres
      1. Tonic-clonic
      2. absence
      3. myoclonic
      4. atonic
    - ii. Partial - one hemisphere
      1. simple partial
      2. complex partial
  - c. Risk factors
    - i. genetics
    - ii. trauma
    - iii. tumors
    - iv. toxicity
    - v. infection
    - vi. cerebral bleeding or swelling
    - vii. acute febrile state
  - d. Status epilepticus - persistent seizure activity with little or no break
2. NCLEX® Points
  - a. Assessment
    - i. assess for Aura (sensation that warns of impending seizure)
    - ii. Postictal state (period after seizure): memory loss, sleepiness, impaired speech
    - iii. assess type, onset, duration
  - b. Therapeutic Management
    - i. Maintain patent airway
      1. turn client to side
      2. have O2 and suction equipment available after the seizure
      3. DO NOT force anything into the mouth during the seizure (including bite block)
    - ii. prevent injury
      1. bed to the lowest position
      2. padded side rails
      3. loosen restrictive clothing
      4. DO NOT try to restrain client
    - iii. Document onset, preceding events, duration, and postictal events
    - iv. Medications
      1. Antiepileptics

2. Diazepam, Lorazepam, phenobarbital are often given during seizure activity
  - v. Educate client and family on importance of medication compliance
  - vi. Educate family on care during seizure

## Parkinson's Disease

1. Overview
  - a. Degenerative neurological disorder caused by atrophy of substantia nigra leading to depletion of dopamine. This leads to termination of acetylcholine inhibition which causes symptoms.
  - b. Dopamine plays a role in the inhibition of excitatory impulses. When this neurotransmitter is depleted acetylcholine is no longer inhibited.
  - c. Slow, progressive disease.
  - d. client becomes progressively debilitated and self-care dependent
2. NCLEX® Points
  - a. Assessment
    - i. bradykinesia: slow movements due to muscle rigidity
    - ii. resting tremor
    - iii. Pill rolling - tremors in hands and fingers
    - iv. Akinesia
    - v. blank facial expression
    - vi. shuffling steps, stooped stance, drooling
    - vii. dysphagia
  - b. Therapeutic Management
    - i. Assistive devices
    - ii. involvement of speech, physical, and occupational therapy
    - iii. monitor diet to insure proper caloric intake
      1. increase fluid intake
      2. high protein
      3. high fiber
    - iv. Assess ability to swallow prior to anything by mouth
    - v. Use rocking movement to initiate movement
    - vi. encourage client to ambulate multiple times a day
    - vii. participate in active and passive range of motion activities
    - viii. avoid foods high in Vitamin B6 (blocks effects of antiparkinsonian drugs)
    - ix. small, frequent, nutrient dense foods
    - x. Medication therapy
      1. dopaminergics, dopamine agonists, anticholinergics
      2. goal is to increase the level of dopamine in the CNS
      3. eventually drugs become ineffective

## Multiple Sclerosis



### 1. Overview

- a. Chronic, progressive demyelination of the neurons in the CNS
- b. Remission and exacerbation
- c. Primarily ages 20-40 years old

### 2. NCLEX® Points

- a. Assessment
  - i. fatigue
  - ii. tremors
  - iii. spasticity of muscles
  - iv. bladder dysfunction
  - v. decrease peripheral sensation (pain, temperature, touch)
  - vi. visual disturbances
  - vii. emotional instability
- b. Therapeutic Management
  - i. No cure - supportive therapy
  - ii. energy conservation
  - iii. maintain adequate fluid intake 2000 mL/day
  - iv. provide bowel and bladder training

- v. encourage activity independence
- vi. regulate temperatures on water heaters, baths, and heating pads
- vii. insure in home safety (rugs, cords, etc)

## Myasthenia Gravis

### 1. Overview

- a. Chronic progressive disorder of the PNS which affects transmission of nerve impulses
- b. Onset often caused by precipitating factors (stress, hormone disturbance, infection, trauma, temperature)
- c. Insufficient secretion of acetylcholine with excessive secretion of cholinesterase

### 2. NCLEX® Points

#### a. Assessment

- i. weakness/fatigue
- ii. diplopia (double vision) and ptosis (drooping eyelid)



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- iii. monitor respiratory status
  - 1. swallowing, respirations, tachypnea, abnormal ABG, breath sounds, difficulty breathing
- iv. Cholinergic crisis: severe muscle weakness due to overmedication; cramps, diarrhea, bradycardia, bronchial spasm
  - 1. Assessment
    - a. N/V, diarrhea
    - b. hypotension
    - c. blurred vision
  - 2. Intervention
    - a. withhold medication
    - b. administer antidote
- v. Myasthenic crisis: acute exacerbation of disease, sudden severe motor weakness, risk of respiratory failure, caused by insufficient medication dosage
  - 1. Assessment
    - a. increase pulse, respirations, bp

- b. anoxia and cyanosis
    - c. bowel and bladder dysfunction
  - 2. Intervention
    - a. increase medication
- vi. Tensilon test
  - 1. used to confirm diagnosis
    - a. client at risk of vfib and cardiac arrest have atropine available
- b. Therapeutic Management
  - i. monitor respiratory status
  - ii. maintain suction and emergency equipment
  - iii. insure proper medication
  - iv. monitor feeding and insure proper nutrition
    - 1. schedule medication 30-40 minutes prior to meals
  - v. provide adequate eye care
  - vi. instruct client to avoid temperature extremes, emotional stress, drugs, alcohol, and exposure to infection
  - vii. educate on signs of cholinergic and myasthenic crisis

## NCLEX® Cram - Neurological Disorders

### 1. Glasgow Coma Scale

Score	1	2	3	4	5	6
<b>Eyes</b>	Does not open	Opens to painful stimuli	Opens to voice	Opens spontaneously	N/A	N/A
<b>Verbal</b>	Makes no sound	Incomprehensible sounds	Utters inappropriate words	Confused, disoriented	Oriented, converses normally	N/A
<b>Motor</b>	Makes no movements	Extension to painful stimuli	Flexion to painful stimuli	Withdraws to painful stimuli	Localizes to pain	Obeys commands

- 2. Hypothalamus
  - a. regulates body temperature
  - b. regulates response to sympathetic and parasympathetic nervous system
  - c. produces hormones secreted by pituitary gland and hypothalamus
- 3. Pons
  - a. regulates breathing
- 4. CT Scan



- a. assess for allergy to contrast, shellfish, iodine if dye is used
  - b. provide adequate fluids to flush dye if used
5. MRI
- a. remove all metal objects from patients
  - b. determine if client has a pacemaker - cannot complete MRI with pacemaker
6. Cerebral Angiography
- a. assess for allergies to dye
  - b. maintain flat bed rest or at the position the physician orders
  - c. assess insertion site for swelling, hematoma, and bleeding
7. Level of consciousness is the most essential indicator of neurological status
8. Pupil Assessment
- a. Pupils equal and react to light ● ●
  - b. Pupil reacts slowly to light ● ●
  - c. Dilated pupil (compressed cranial nerve III) ● ●
  - d. Bilateral pupillary dilation, fixed (ominous) ● ●
  - e. Bilateral pinpoint (pons damage) ● ●

## 9. Client position

- a. Decorticate
  - i. flexes both arms on chest (toward CORd)
  - ii. cortex damage



- b. Decerebrate
  - i. extends arms and/or legs
  - ii. brainstem lesion
- c. Flaccid
  - i. no motor response to stimuli

## 10. Babinski test

- a. dorsiflexion of the big toe indicating neurologic damage

11. Hyperthermia can increase cerebral O<sub>2</sub> demands and lead to hypoxia

- a. initiate seizure precautions

## 12. Halo Sign

- a. CSF will separate from blood when placed on a white sterile background

## 13. Do not suction or blow nose with traumatic head injury or pituitary surgery

## 14. Diabetes insipidus results from inadequate secretion of ADH and can be manifested as copious amounts of urine output. This reflects damage to the pituitary gland.

## 15. Immobilize clients when spinal injury is suspected

## 16. Clean pin sites on halo traction devices daily

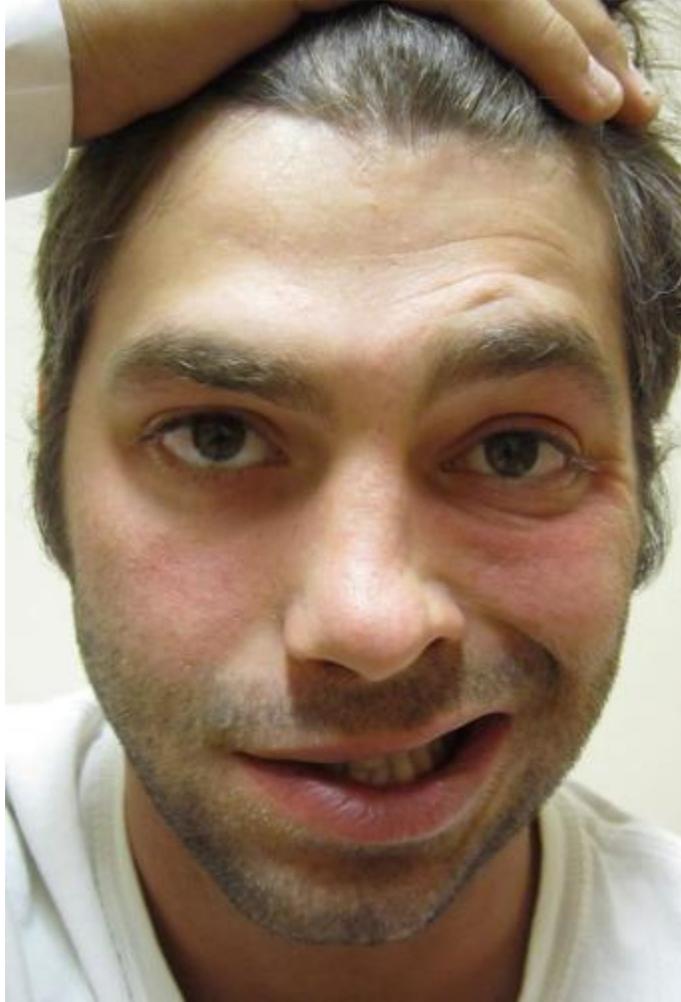
- a. Do not shower
- b. keep pin sites clean, assess skin, report any redness or swelling

## 17. Turn spinal patients using the log rolling technique

## 18. Trigeminal Neuralgia

- a. damage to fifth cranial nerve

- b. severe pain to cheeks, lips, gums
  - c. extreme temperatures may exacerbate symptoms
  - d. client should avoid hot or cold foods and fluids
19. Bell's Palsy
- a. sudden weakness in the muscles on one half of face
  - b. usually resolves within 6 months without treatment
  - c. steroids and antivirals may be provided
  - d. protect eyes from dryness
  - e. chew food on unaffected side



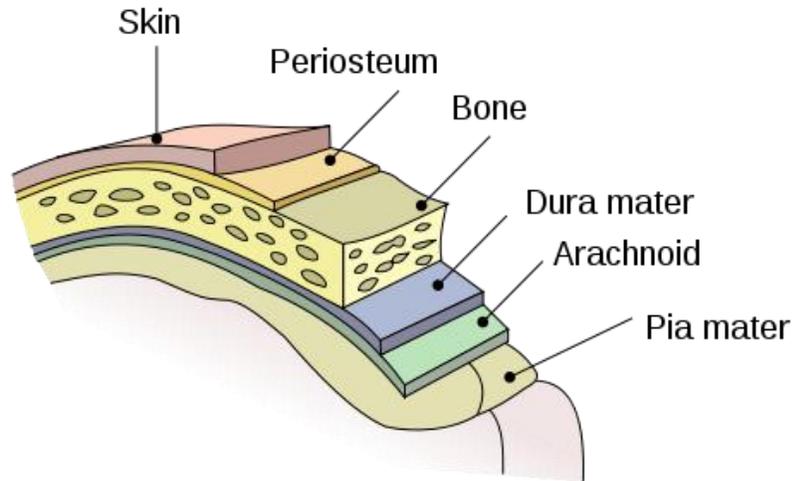
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20. Guillain-Barre Syndrome

- a. monitor respiratory status closely
21. West Nile Virus
- a. symptoms develop 3-14 days after being bitten by infected mosquito
  - b. fever, headache, tremors, seizures, coma, vision loss
  - c. DEET bug spray should be worn

## 22. Meningitis

- a. inflammation of the brain and spinal cord membranes due to infection by virus, bacteria, or fungus, protozoa



- b. CSF is analyzed to determine diagnosis
  - i. cloudy,  $\uparrow$ WBC,  $\downarrow$ Glucose
- c. Nuchal rigidity
- d. photophobia
- e. lethargy
- f. altered level of consciousness
- g. positive Kernig and Burdzinski's sign
- h. client should be placed in isolation
- i. administer analgesics and antibiotics
- j. initiate seizure precautions
- k. Assess for  $\uparrow$ ICP
- l. Transmission usually occurs in areas of population density and crowded living spaces

