

DIANE'S NGN NCLEX 2026 VISUAL STUDY LIBRARY

The *Cerebrum* Nursing Assessment

NEUROLOGICAL SYSTEM

 This topic is not covered in your uploaded reference notes. Content drawn from standard NGN NCLEX 2026 references: Saunders Comprehensive Review, ATI RN Nursing Care of Children & Adults, Lippincott's NCLEX-RN Review, and current AANN (American Association of Neuroscience Nurses) clinical practice guidelines.

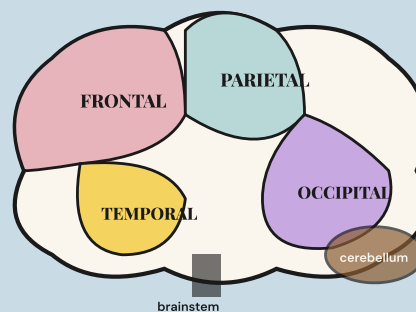
1

Definition & Overview

- The **cerebrum** is the largest part of the brain — responsible for **higher-order function**: thought, memory, language, voluntary movement, sensation, personality.
- Divided into **two hemispheres** (left & right) connected by the **corpus callosum**; each hemisphere has **4 lobes**.
- Why it matters for NCLEX**: Most stroke, TBI, tumor, and ICP questions ask you to localize the deficit to a lobe — and to recognize the **earliest sign of neuro deterioration: a change in LOC**.



Cerebrum Anatomy



Four lobes, two hemispheres, one brilliant control center.

2

Pathophysiology & Lobe Localization

Each lobe controls specific functions. **Damage = predictable deficit**. Localizing the deficit tells you where the lesion is.



FRONTAL LOBE

- Personality, judgment, impulse control**
- Voluntary motor (primary motor cortex)
- Broca's area** — expressive speech
- Damage**: disinhibition, poor judgment, contralateral weakness, expressive aphasia ("can't get the words out")



PARIETAL LOBE

- Sensation** (touch, pain, temp, proprioception)
- Spatial awareness, body in space
- Damage**: sensory loss, agnosia (can't recognize objects), **unilateral neglect** (right parietal stroke → ignores left side)



TEMPORAL LOBE



OCCIPITAL LOBE

- **Hearing & memory**
- **Wernicke's area** — receptive language
- **Damage:** receptive aphasia (speaks fluent gibberish, can't comprehend), memory loss, auditory hallucinations

- **Vision** (primary visual cortex)
- Visual interpretation
- **Damage:** visual field deficits (homonymous hemianopsia), cortical blindness, visual hallucinations

↻ Contralateral Control — Cross Wired

Left hemisphere stroke



Right-side weakness + language deficits (dominant side in 95%)

Right hemisphere stroke



Left-side weakness + neglect, spatial deficits, impulsivity

3

Signs & Symptoms

● EARLY (Subtle but Critical)

- **Change in LOC** — #1 earliest indicator of neuro deterioration
- Restlessness, irritability, confusion
- Subtle pupil changes (sluggish response)
- Mild headache, nausea
- Subtle motor weakness or pronator drift

● LATE (Brain in Trouble)

- **Cushing's Triad** 🚨 (late sign of ↑ ICP)
 - Widening pulse pressure ↑SBP, ↓DBP
 - Bradycardia
 - Irregular respirations (Cheyne-Stokes)
- Fixed & dilated pupils (blown pupil = herniation)
- Decorticate or decerebrate posturing
- Projectile vomiting (no nausea warning)
- Seizures, coma, GCS ≤ 8

⚠️ A change in LOC precedes vital sign changes by HOURS. Don't wait for Cushing's triad.

4

Priority Nursing Interventions

ABC framework + neuro priorities:

1. **Assess LOC first** — use AVPU (Alert, Verbal, Pain, Unresponsive) and Glasgow Coma Scale
2. **Maintain airway** — GCS ≤ 8, intubate
3. **Elevate HOB 30°**, head midline (promotes venous drainage, ↓ICP)
4. **Monitor pupils q1h** — PERRLA, size, reactivity, symmetry
5. **Vital signs q1h** — watch for Cushing's triad
6. **Prevent ↑ICP triggers:** avoid coughing, straining, suctioning >10 sec, hip flexion, Valsalva
7. **Seizure precautions** — padded rails, suction at bedside, O₂ ready
8. **Neuro checks q1-2h** — pupils, GCS, motor strength, speech
9. **Maintain normothermia** — fever ↑cerebral metabolism & ↑ICP
10. **Strict I&O** — monitor for DI or SIADH

Glasgow Coma Scale (max 15)

Component	Max	Best Response
Eye Opening	4	Spontaneous
Verbal	5	Oriented
Motor	6	Obeys commands

15 = normal · 9–12 = moderate · ≤ 8 = severe (intubate)

5

Pharmacology — Cerebrum/ICP

Drug / Class	Mechanism	Key Side Effects	Nursing Considerations
Mannitol (osmotic diuretic)	Pulls fluid from brain → ↓ICP	Dehydration, electrolyte imbalance, rebound ICP	Use filter needle (crystallizes); monitor osmolality, I&O, renal function
Hypertonic saline 3%	↑Serum osmolality, pulls fluid from brain tissue	Hypernatremia, fluid overload	Central line preferred; monitor Na ⁺ q4–6h; max Na ⁺ ~160
Levetiracetam (Keppra) / Phenytoin (Dilantin)	Anticonvulsant — prevents/treats seizures	Phenytoin: gingival hyperplasia, ataxia, rash (SJS); Keppra: mood changes	Therapeutic phenytoin level: 10–20 mcg/mL ; never IV push fast (cardiac dysrhythmia)
Dexamethasone (corticosteroid)	↓Cerebral edema (especially tumor-related)	Hyperglycemia, GI bleed, infection risk	Check glucose; taper — never stop abruptly; give with food
Acetaminophen	Antipyretic — prevents fever-induced ICP rise	Hepatotoxicity > 4 g/day	First-line for fever in neuro patients (avoid aspirin/NSAIDs — bleeding risk in TBI/stroke)
tPA (alteplase)	Thrombolytic — dissolves clot in ischemic stroke	Hemorrhage	Window: ≤ 4.5 hours from symptom onset; rule out hemorrhagic stroke FIRST with CT
Nimodipine (CCB)	Prevents cerebral vasospasm post subarachnoid hemorrhage	Hypotension	PO/NG only — never IV (death risk); hold for SBP < 90

6

NCLEX Test Traps ⚠️

Decorticate vs Decerebrate

Wrong: "They're both bad, doesn't matter which."

Right: **Decorticate** = arms to **core** (flexion) → cortex damage. **Decerebrate** = Extension → brainstem → **WORSE**. Progression from decorticate → decerebrate = deterioration.

Expressive vs Receptive Aphasia

Wrong: "Just give them a writing board for both."

Right: **Broca's (frontal)** = **expressive** — they understand but can't speak → use yes/no questions, picture boards. **Wernicke's (temporal)** = **receptive** — they

7

Patient & Family Education

Acute Phase

- Explain why HOB is elevated & head must stay midline
- Teach family **not to** overstimulate (dim lights, quiet voice, cluster care)
- Warn against pillow under head if cervical spine not cleared

Safety After Discharge

- **Fall prevention** — clear walkways, grab bars, no throw rugs

Speak fluent nonsense and don't understand → use gestures, demonstrations.

Earliest Sign of ↑ICP

Wrong: Picking Cushing's triad as "early."

Right: **Change in LOC is the earliest.**

Cushing's triad is a **LATE** sign — brain is already herniating.

Stroke Side & Symptoms

Wrong: Right-side weakness = right-side stroke.

Right: Brain is **contralateral**. Right-side weakness = **LEFT** hemisphere stroke (and likely aphasia, since language is left-dominant).

Pupil Assessment

Wrong: "Both pupils dilated = drug overdose."

Right: **Fixed & dilated pupil** (especially unilateral "blown pupil") = **brainstem**

herniation 🚑 — call provider STAT.

Positioning After Stroke

Wrong: "Lay flat to perfuse the brain."

Right: **HOB 30°, head midline** — promotes venous drainage and ↓ICP. Flat position ↑ICP.

- Helmet for any future activity if TBI; **no contact sports x6 mo** minimum
- Avoid Valsalva-triggering activities (heavy lifting, straining at stool — use stool softeners)
- No alcohol — lowers seizure threshold & masks neuro changes



Cognitive & Communication

- For aphasia: **speak slowly, one idea at a time**, face the client, use gestures
- Don't shout — they're not deaf
- Allow time to respond — do not finish sentences for them
- Encourage speech, OT, PT — neuroplasticity is real, recovery continues for months



When to Call 911

- **BE FAST:** Balance loss, Eyes blurry, Face droop, Arm weakness, Speech slurred, Time to call
- New or worsening headache "worst of my life"
- Seizure, sudden confusion, sudden vision loss

8

Memory Mnemonics & Pattern Recognition



LOBE FUNCTIONS — "F-P-T-O"

F Frontal = Focus, planning, personality, motor (front of brain = front of behavior)

P Parietal = Perception (sensation, spatial)

T Temporal = Talking (Wernicke's), hearing, memory ("Temporal = Tune in")

O Occipital = Observing (vision — back of head)



STROKE — "BE FAST"

B Balance — sudden loss

E Eyes — vision change

F Face — drooping

A Arms — weakness/drift

S Speech — slurred

T Time — call 911 NOW

👐 POSTURING — Hands Don't Lie

Decorticate = arms flexed to **core** 👐 → *cortical* damage

Decerebrate = arms **Extended** 📏 → *brainstem* damage (worse)

Going from decorticate → decerebrate = patient is **DECLINING**.

📊 GCS — "Eyes, Voice, Move" (4-5-6)

Eyes open = **4** max

Verbal = **5** max

Motor = **6** max

Total: **15**. ≤ 8 = intubate ("If GCS less than 8, intubate.")

👂 CUSHING'S TRIAD — "HBI"

H High systolic / widened pulse pressure

B Bradycardia

I Irregular respirations (Cheyne-Stokes)

Late sign — brain is herniating.

🗣️ APHASIA — "B before W"

Broca's = **B**roken speech (frontal, expressive — can't get words out)

Wernicke's = **W**ord salad (temporal, receptive — speaks fluent gibberish, doesn't understand)

🎯 NCJMM Clinical Judgment Scenario

Next Generation Clinical Judgment Measurement Model — All 6 Cognitive Steps

CASE: A 68-year-old male is admitted to the ED after his wife found him in the kitchen unable to speak and with right-sided weakness. Symptoms began approximately 90 minutes ago. **VS:** BP 178/94, HR 88, RR 18, SpO₂ 96% RA, Temp 98.6°F. Patient opens eyes to voice, attempts to speak but produces only garbled sounds, follows simple commands with the left side. Right arm and leg flaccid. Right facial droop. PERRLA. PMH: HTN, atrial fibrillation, type 2 DM. Home meds include warfarin (last INR 2.4 yesterday).

1

Recognize Cues

- Sudden onset focal deficit — right hemiparesis
- Expressive aphasia (garbled speech, follows commands → comprehension intact)
- Right facial droop
- BP elevated (178/94)
- Time of onset ~90 min ago
- On warfarin, INR 2.4 (therapeutic)
- Risk factors: HTN, A-fib, DM

2

Analyze Cues

- Right-sided deficit + aphasia = **LEFT hemisphere stroke**
- Frontal lobe (motor + Broca's) involvement
- A-fib → likely **embolic ischemic stroke**
- Warfarin + therapeutic INR = ↑ hemorrhagic risk; CT must rule out bleed before tPA
- Within tPA window (<4.5 hr) IF ischemic AND INR < 1.7

3

Prioritize Hypotheses

- **#1 Acute ischemic stroke** (likely embolic from A-fib)
- **#2 Rule out hemorrhagic stroke** (warfarin user)
- **#3 Risk for aspiration** (dysphagia screening needed)
- **#4 Risk for further deterioration** / ↑ICP

4

Generate Solutions

- STAT non-contrast CT head to differentiate ischemic vs hemorrhagic
- Labs: CBC, PT/INR, PTT, glucose, BMP, type & screen
- NIH Stroke Scale documentation
- NPO until swallow screen passed
- HOB 30°, head midline
- If ischemic + INR < 1.7: consider tPA; if INR > 1.7 → not a candidate, consider mechanical thrombectomy
- BP management: only treat if > 185/110 before tPA (permissive HTN preserves penumbra)

5

Take Action

- Activate stroke alert / code stroke
- 2 large-bore IVs, draw labs & send STAT
- Transport to CT immediately
- Continuous cardiac monitoring
- Neuro checks q15 min
- Notify neurology & pharmacy
- Communicate with family about onset time & medication history

6

Evaluate Outcomes

-  Improved NIHSS score post-intervention
-  Return of right-sided motor function
-  Improvement in speech production
-  BP within target range
-  No signs of intracranial bleeding (LOC stable, pupils equal, no Cushing's triad)
-  If declining LOC, new pupil change, or seizure → reassess; consider hemorrhagic conversion