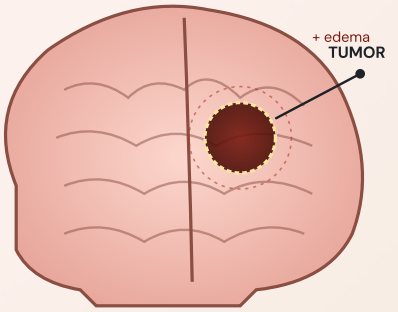
NGN NCLEX 2026 · NEUROLOGICAL SYSTEM

Brain *Tumors*

A high-yield clinical judgment review covering pathophysiology, ICP red flags, priority nursing interventions, pharmacology, and the NCJMM framework for the Next-Generation NCLEX.

ONCOLOGY · NEURO / CNS · ICP PRIORITY · SURGERY / RADIATION / CHEMO



Fixed skull · Rising ICP

1 Definition & Overview

WHAT IT IS

An **abnormal growth of cells** within the brain tissue or surrounding structures. Tumors may be **primary** (arising in the CNS) or **metastatic** (spread from lung, breast, melanoma, colon, kidney).

WHY IT MATTERS

The skull is a **closed, fixed cavity**. Both benign and malignant tumors are dangerous because any growth raises **intracranial pressure (ICP)** and compresses brain tissue.

NCLEX FOCUS

Expect questions on **early vs late ICP signs**, **Cushing's triad**, positioning, activities to avoid, and post-craniotomy care.

2 Pathophysiology — The ICP Cascade

Tumor Grows → **↑ ICP** (No room to expand → pressure rises) → **Cerebral Edema** (Swelling worsens compression) → **↓ Perfusion** (Blood + CSF flow obstructed) → **Herniation**

Abnormal cells multiply within fixed skull

Brain shifts → Cushing's triad → death

Symptoms by Location

Signs depend on **where** the tumor sits. Location dictates the deficit — a classic NCLEX discriminator.

FRONTAL	Personality change, expressive aphasia (Broca's), judgment loss
TEMPORAL	Receptive aphasia (Wernicke's), memory deficits, seizures
PARIETAL	Sensory deficits, spatial disorientation
OCCIPITAL	Visual field loss, visual hallucinations
CEREBELLAR	Ataxia, loss of coordination, nystagmus
BRAINSTEM	Vital sign changes, cranial nerve deficits (HIGHEST risk)

3 Signs & Symptoms

EARLY SIGNS

- **Headache** — worse in morning, with coughing or straining
- **Nausea & vomiting** — often *projectile* and without nausea
- **Vision changes** — blurred vision, diplopia, papilledema
- **New-onset seizures** in an adult
- **Personality or behavior changes**
- **Subtle cognitive decline** — memory, concentration

LATE SIGNS / RED FLAGS

- **Decreased LOC** — confusion → stupor → coma
- **Pupil changes** — dilated, sluggish, unilaterally fixed
- **Posturing** — decorticate (flexed) → decerebrate (extended)
- **Projectile vomiting**
- **Cushing's Triad** — a preterminal emergency (see below)
- **Respiratory changes** — Cheyne-Stokes, apnea

CUSHING'S TRIAD — LATE-STAGE EMERGENCY

The Classic Preterminal ICP Sign

A late, ominous reflex when ICP dangerously compresses the brainstem. Recognize it instantly — herniation and death follow without rapid intervention.

HIGH BP | LOW HR | IRREGULAR RR

Widening pulse pressure (systolic rises, diastolic falls)	Bradycardia — paradoxical slowing	Cheyne-Stokes / slow & irregular breathing

4 Priority Nursing Interventions

✅ DO

- **Airway & Neuro first** — ABCs; GCS, pupils, motor q1–2h
- **HOB at 30°** — promotes venous drainage, lowers ICP
- **Neck in neutral / midline alignment**
- **Quiet, dim environment** — minimize stimulation
- **Seizure precautions** — padded rails, suction at bedside
- **Strict I&O** — prevent fluid overload
- **Stool softeners** — prevent Valsalva with straining
- **Monitor for Cushing's triad** — report immediately

🚫 AVOID (RAISES ICP)

- **Neck flexion or hip flexion** — obstructs venous return
- **Valsalva maneuver** — coughing, straining, bearing down
- **Prone or flat positioning**
- **Clustered nursing care** — space out activities
- **Hypotonic IV fluids** (D5W) — worsen cerebral edema
- **Suctioning >10 seconds** — spikes ICP
- **Rectal temperatures / enemas** — stimulate Valsalva
- **Opioids that mask neuro changes**

5 Pharmacology

Dexamethasone (Decadron)

CORTICOSTEROID

Action: Reduces cerebral edema around tumor

Side effects: Hyperglycemia, immunosuppression, GI ulcers, mood change

Nursing: Monitor glucose; give with food + PPI; never stop abruptly (taper)

Mannitol (Osmitrol)

OSMOTIC DIURETIC

Action: Pulls fluid out of brain → rapidly lowers ICP

Side effects: Dehydration, electrolyte imbalance, pulmonary edema

Nursing: Use filter tubing (crystallizes); monitor I&O, Na^+, osmolality

Phenytoin (Dilantin) / Levetiracetam (Keppra)

ANTICONVULSANT

Action: Prevents tumor-related seizures

Side effects: Gingival hyperplasia (Dilantin), ataxia, drowsiness

Temozolomide (Temodar)

ALKYLATING CHEMOTHERAPY

Action: First-line chemo for glioblastoma; crosses BBB

Side effects: Bone marrow suppression, N/V, fatigue

Nursing: Therapeutic Dilantin level 10–20 mcg/mL; never stop abruptly

Nursing: Monitor CBC; infection precautions; antiemetic before dose

Ondansetron (Zofran)

ANTIEMETIC (5-HT3 ANTAGONIST)

Action: Controls ICP-related & chemo-induced nausea/vomiting

Side effects: Headache, constipation, QT prolongation

Nursing: Give ATC; avoid Valsalva-triggering emesis

Acetaminophen (Tylenol)

NON-OPIOID ANALGESIC

Action: First choice for headache — doesn't mask LOC

Side effects: Hepatotoxicity at high doses

Nursing: Avoid opioids early — they obscure neuro checks & depress respirations

6 NCLEX Test Traps ⚠

TRAP #1 — POSITIONING

HOB is **30°**, *not* flat and *not* high Fowler's. Flexion of the neck or hips obstructs venous drainage and spikes ICP.

TRAP #2 — CUSHING'S TRIAD

It is a **LATE** sign, not an early one. HIGH BP + LOW HR + IRREGULAR RR = impending herniation. Hypertension here is *not* treated with antihypertensives.

TRAP #3 — "MIGRAINE" VS TUMOR HEADACHE

A headache that is **worst in the morning** and worsens with coughing, straining, or lying down points to ICP — not a migraine.

TRAP #4 — PROJECTILE VOMITING

Sudden projectile vomiting WITHOUT nausea is classic for ↑ ICP. Don't assume GI cause.

TRAP #5 — DECORTICATE VS DECEREBRATE

deCORticate = arms flexed to the *CORE* (bad). **deCErebrate** = arms *Extended* (worse — brainstem). A shift from decorticate → decerebrate is deterioration.

TRAP #6 — FLUID CHOICE

Avoid **hypotonic fluids (D5W)** — they worsen cerebral edema. Use isotonic (0.9% NS) instead.

TRAP #7 — POST-CRANIOTOMY POSITIONING

Supratentorial (above tentorium) → HOB elevated 30°. **Infratentorial** (below tentorium, near brainstem) → HOB flat, position on unaffected side, log roll.

★ NCJMM Clinical Judgment Framework

The Next-Generation NCLEX measures clinical judgment in four steps. Apply them to every brain tumor scenario:

01
RECOGNIZE CUES
Morning HA, projectile vomiting, new seizures, pupil change, widening pulse pressure

02
ANALYZE CUES
Cluster findings → ↑ ICP. Distinguish early (HA, N/V) from late (Cushing's, posturing)

03
PRIORITIZE / ACT
ABCs → HOB 30° → neutral alignment → notify HCP → prep for mannitol/dexamethasone

04
EVALUATE OUTCOMES
Improved LOC, stable VS, equal pupils, resolving headache, no seizure activity

7 Patient & Family Education

1. **Recognize warning signs:** worsening headache, new weakness, vision changes, confusion, or seizure — report immediately.
2. **Avoid Valsalva maneuvers:** use stool softeners, avoid heavy lifting, bending at the waist, or straining.
3. **Seizure safety:** no driving until cleared by HCP; shower instead of bathe; never swim alone; take anticonvulsants on schedule.
4. **Medication adherence:** never abruptly stop steroids or anticonvulsants — both require tapering.
5. **Post-craniotomy care:** keep incision clean and dry; avoid shampooing until cleared; report drainage, fever, or increasing pain.
6. **Radiation therapy skin care:** plain water only, pat dry, no soaps or metallic ointments, protect from sun.
7. **Home safety:** remove throw rugs, install grab bars, use night lights — cognitive and visual deficits raise fall risk.
8. **Support resources:** connect with brain tumor support groups; involve family in care planning and rehabilitation.

8 Memory Boosters & Mnemonics

Signs of ↑ ICP

H · E · A · D

- **H** — **Headache** (worse in morning)
- **E** — **Emesis** (projectile, no nausea)
- **A** — **Altered LOC** (confusion → coma)
- **D** — **Dilated pupils** (sluggish, unequal)

Cushing's Triad

HIGH · LOW · IRREGULAR

- ↑ **HIGH BP** with widening pulse pressure
- ↓ **LOW HR** (bradycardia)
- 〰 **IRREGULAR RR** (Cheyne-Stokes)

Decorticate vs Decerebrate

CORE vs EXTEND

- **C** — de**COR**ticate: arms flexed to *CORE* (bad)
- **E** — de**CE**rebrate: arms *Extended* (worse — brainstem)

Progression core → extend = deterioration 🚨

Things that ↑ ICP — AVOID

C · O · U · G · H

- **C** — **Coughing** / sneezing
- **O** — **Overstraining** (bowel, lifting)
- **U** — **Up-flexing** neck or hips
- **G** — **Going** with Valsalva (bathroom)
- **H** — **Heavy** activity / suctioning > 10 sec