DIANE'S NGN NCLEX 2026 VISUAL STUDY LIBRARY

NEUROLOGICAL / PEDIATRIC SURGICAL

Ventriculoperitoneal *(VP) Shunt* Nursing Care

A surgically implanted CSF diversion device used to manage hydrocephalus. NCLEX-critical priorities: detect increased ICP, prevent infection, position correctly post-op, and educate families on lifelong shunt monitoring.

SYSTEM: NEURO • NGN 2026 TEST PLAN • CLINICAL JUDGMENT: ICP RECOGNITION • HIGH-YIELD PEDS + ADULT

📚 **Content Sourcing Note:** This topic was not present in Diane's uploaded reference notes. Content compiled from standard NGN NCLEX 2026 references: Saunders Comprehensive Review (Silvestri), ATI Review Module — Maternal Newborn & Pediatrics, Lippincott Manual of Nursing Practice, Hockenberry & Wong's *Nursing Care of Infants and Children*, and Hinkle & Cheever *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*.

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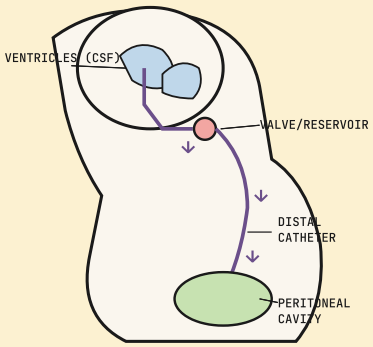
DEFINITION & OVERVIEW

What Is a VP Shunt?

- A **surgically implanted catheter system** that drains excess cerebrospinal fluid (CSF) from the brain's lateral ventricles into the peritoneal cavity, where it is absorbed.
- Used to treat **hydrocephalus** — a build-up of CSF causing increased intracranial pressure (ICP).
- Most common in **infants and young children**, but also used in adults with normal-pressure hydrocephalus, brain tumors, or post-hemorrhagic hydrocephalus.
- **Three components:** proximal catheter (in ventricle) → one-way pressure valve (often with a palpable reservoir behind the ear) → distal catheter (tunneled subcutaneously into peritoneum).



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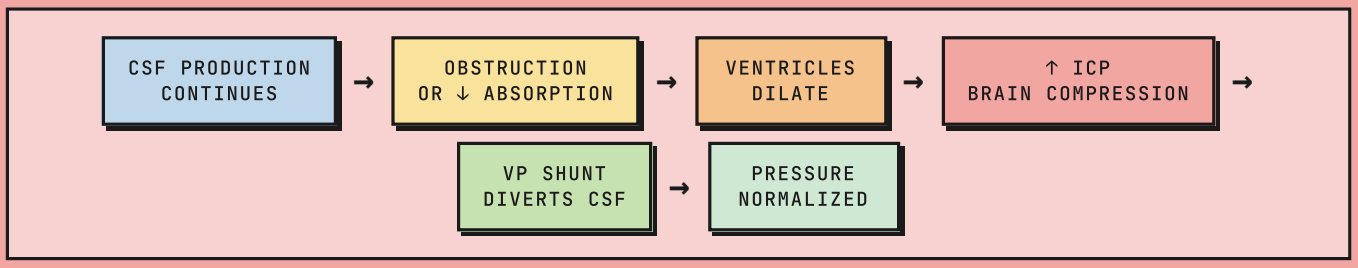
PATHOPHYSIOLOGY — SIMPLIFIED

Why CSF Diversion Matters

CSF is produced by the choroid plexus at ~500 mL/day. Normally it circulates through the ventricles, around the spinal cord, and is reabsorbed by arachnoid villi. When flow is blocked (obstructive) or reabsorption fails (communicating), CSF accumulates → pressure rises → brain tissue is compressed.



Obstructive (Non-Communicating)

CSF flow is physically blocked between ventricles (e.g., aqueductal stenosis, tumor, Chiari II in spina bifida). CSF cannot reach reabsorption sites.

Communicating

CSF flows freely but is not reabsorbed by arachnoid villi (e.g., after meningitis or intraventricular hemorrhage). Total CSF volume rises.

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SIGNS & SYMPTOMS — THREE PATTERNS

Recognize Shunt Trouble Early

🍼 INFANT — Shunt Malfunction (↑ICP)

- **Bulging, tense anterior fontanelle**
- **↑ head circumference** (measure daily — >1 cm/wk is abnormal)
- "Sunset eyes" (sclera visible above iris)
- High-pitched, shrill cry
- Poor feeding, vomiting (often projectile)
- Irritability or lethargy
- Separation of cranial sutures
- Distended scalp veins

👦 CHILD/ADULT — Shunt Malfunction (↑ICP)

- **Headache** (often worse in morning)
- **Vomiting** (with or without nausea)
- **↓ LOC**, drowsiness, confusion
- Irritability, personality change
- Papilledema, blurred or double vision
- Seizures
- Ataxia, decreased school performance

🦠 Shunt INFECTION

- **Fever** (most common in first 1–2 months post-op)
- Redness, swelling, or tenderness along the shunt tract
- Drainage from incision sites
- Poor feeding, irritability (infant)
- Meningeal signs: nuchal rigidity, photophobia, Kernig/Brudzinski
- Abdominal pain or peritonitis signs (distal end)

💧 OVER-Drainage

- Headache *worse when upright*, better when supine
- Nausea, lethargy
- **Sunken** anterior fontanelle (infant)
- Slit-like ventricles on imaging
- Risk of subdural hematoma from brain shifting away from skull

🚨 **RED FLAG — Cushing's Triad (LATE ↑ICP):** ↑ Systolic BP with widening pulse pressure + Bradycardia + Irregular respirations (Cheyne-Stokes). Indicates impending brainstem herniation — **medical emergency, notify neurosurgery STAT.**

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PRIORITY NURSING INTERVENTIONS — ABC FRAMEWORK

Post-Op & Ongoing Care

A — Airway / Neuro Priority

- **Assess** LOC, pupils (PERRLA), motor strength, and vital signs **q1h × first 24 h**, then q2–4 h.
- **Measure** head circumference daily in infants (same nurse, same tape, occipitofrontal).
- **Monitor** for Cushing's triad — late ↑ICP sign.

B — Breathing & Position

- **Position FLAT or low-Fowler's** initially (per surgeon/agency policy) to prevent rapid CSF drainage; HOB is elevated *gradually*.
- **Lie on the UNOPERATED side** — prevents pressure on the shunt valve.
- Reposition q2h; protect the scalp incision and avoid pressure on the valve site behind the ear.

C — Circulation, Comfort & Infection Control

- **Strict I&O;** daily weights; assess for abdominal distention (distal tubing).
- **Assess all 3 incision sites** — scalp, neck/clavicle, abdomen — for redness, drainage, swelling.
- **Administer** prophylactic antibiotics; **monitor** temperature q4h.
- Manage pain (acetaminophen, opioids per order). **Avoid ASA/NSAIDs** early post-op (bleeding risk).
- **Do NOT pump or manipulate the shunt reservoir** unless specifically ordered by the neurosurgeon.
- Maintain seizure precautions; pad side rails, suction at bedside.

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PHARMACOLOGY

Key Meds

DRUG / CLASS	WHY
Cefazolin / Vancomycin *Antibiotic prophylaxis*	Prevent shunt infection (#1 complication)
Levetiracetam / Phenytoin *Anticonvulsant*	Seizure prophylaxis post-op
Acetaminophen *Non-opioid analgesic*	Post-op pain (preferred — no bleeding risk)
Opioids (low-dose)	Pain control; **monitor LOC** closely — can mask neuro deterioration
Mannitol / 3% NaCl *Osmotic / hypertonic*	Emergency ↑ICP if shunt fails — pulls fluid out of brain
Stool softeners (docusate)	Prevent straining → ↑ICP

⚠ **AVOID:** Aspirin, NSAIDs (bleeding), and over-sedation that obscures neuro assessment.

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NCLEX TEST TRAPS ⚠

Wrong vs. Right — Don't Get Tricked

✗ WRONG	✓ RIGHT
Elevating HOB to high-Fowler's immediately post-op to "reduce ICP."	Position FLAT or low-Fowler's initially. HOB is elevated GRADUALLY per surgeon's order to prevent rapid CSF drainage and subdural hematoma.
Positioning the infant on the operative side to "protect the incision."	Position on the UNOPERATED side — pressure on the valve can cause malfunction and skin breakdown.
Assuming an infant's growing head circumference is normal growth.	Any rapid increase (>1 cm/week) in head circumference signals shunt malfunction or ↑ICP — notify the provider.
Waiting for Cushing's triad before acting.	Cushing's triad is a LATE sign. Act on EARLY cues: irritability, poor feeding, vomiting, headache, decreased LOC.
"Pumping" the shunt reservoir to check function on routine assessment.	Do NOT pump the shunt unless specifically ordered. Routine pumping can cause obstruction or over-drainage.
Treating a sunken fontanelle as "just dehydration" in a shunted infant.	A sunken fontanelle in a child with a VP shunt suggests OVER-drainage — notify the neurosurgeon.

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PATIENT & FAMILY EDUCATION

Teaching the Family

- **Recognize malfunction:** headache, vomiting, irritability, lethargy, vision changes, seizure, change in personality — **call provider immediately**.
- **Recognize infection:** fever, redness or swelling along shunt tract, neck stiffness, abdominal pain.
- **Measure infant's head** at home weekly; record and bring to appointments.
- **Lifelong follow-up** with neurosurgery — shunts often need revision as the child grows or if it malfunctions.
- **Activity:** avoid contact sports (football, hockey, wrestling). Helmet required for biking, skating, skiing.
- **Medical alert bracelet / ID card** at all times — note shunt type, valve, surgeon.
- **Air travel and altitude:** generally safe; programmable valves may need post-MRI reprogramming.
- **MRI warning:** some programmable valves require reprogramming after MRI — always notify radiology.
- Encourage normal development; the child can attend school, learn, and play.

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MEMORY MNEMONICS

Lock It In

🧠 "VP SHUNT" — What to Monitor

V	Vomiting (esp. projectile)
P	Pupil changes / Papilledema
S	Seizures
H	Headache / High-pitched cry
U	Unresponsiveness / ↓ LOC
N	Neuro decline (irritability, lethargy)
T	Temperature ↑ = infection

🧠 Cushing's Triad — "Brain Says Bye-Bye"

- **↑ BP** with widening pulse pressure
- **↓ HR** (bradycardia)
- **Irregular respirations** (Cheyne-Stokes)

🧠 Position: "Flat & Off the Valve"

FLAT initially + UNOPERATED side = protects valve, prevents over-drainage.

🧠 Infant Signs — "BIG HEAD, BAD CRY"

Bulging fontanelle, Increased head circumference, Growing veins on scalp, High-pitched cry, sEpAration of sutures, Anorexia (poor feeding), Down-cast "sunset" eyes.

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NCJMM — 6-STEP CLINICAL JUDGMENT SCENARIO

Putting It All Together

Scenario: *A 6-month-old infant with a VP shunt placed 3 months ago is brought to the ED by the mother. Mother reports the infant has been "fussy for 2 days, won't eat, and threw up three times today." Vitals: T 101.4°F (38.6°C), HR 102, RR 28, BP 90/52. Anterior fontanelle is bulging and tense. Head circumference is 1.8 cm larger than 1 week ago. There is mild redness along the scalp incision behind the right ear. Infant is lethargic, with a high-pitched cry on stimulation.*

Step 1

Recognize Cues

- Vomiting × 3, poor feeding × 2 days
- Bulging, tense anterior fontanelle
- ↑ Head circumference (1.8 cm/wk)
- High-pitched cry, lethargy
- Fever 101.4°F
- Redness along shunt tract

Step 2

Analyze Cues

- Vomiting + bulging fontanelle + ↑head circumference + lethargy + high-pitched cry = classic **↑ICP / shunt malfunction**
- Fever + tract redness = **shunt infection**
- Both processes likely co-existing (infection can cause obstruction)

Step 3

Prioritize Hypotheses

- **#1: Shunt malfunction with ↑ICP** — life-threatening, can progress to herniation
- #2: Shunt infection — urgent, may require shunt removal
- Address ↑ICP FIRST (airway/brain) — infection second

Step 4

Generate Solutions

- Position HOB gradually elevated 15–30° per surgeon order
- Minimize stimulation, cluster care
- Establish IV access; obtain CBC, blood cultures, electrolytes, CRP
- NPO; prepare for STAT CT/MRI & possible shunt revision
- Notify neurosurgery; alert OR
- Administer antipyretic (acetaminophen) + IV antibiotics per order

Step 5

Take Action

- Establish IV, draw labs/cultures
- Continuous neuro & cardiorespiratory monitoring (q15 min)
- Notify neurosurgeon immediately
- Obtain imaging (CT/shunt series)
- Administer ordered antibiotics, antipyretic, fluids
- Keep family informed; provide emotional support
- Prepare infant & family for OR (shunt revision/externalization)

Step 6

Evaluate Outcomes

- Improved LOC; consolable, age-appropriate cry
- Fontanelle soft & flat; HC stable
- VS within range; afebrile
- No vomiting; tolerating feeds
- Infection markers (WBC, CRP) trending down; cultures negative
- Family verbalizes signs of shunt malfunction & follow-up plan