

NGN NCLEX 2026 · CRITICAL CARE · CARDIOVASCULAR

Hypovolemic & Cardiogenic Shock

Two shocks, one cardinal truth: tissue perfusion is failing. The nurse's job is to recognize *which* pump is broken — the tank or the engine — and respond with the right fluid strategy before organs die.

🔴 Volume vs. Pump

📄 MAP < 65 mmHg

🕒 Golden Hour

🔴 NCJMM Integrated

🔴 Priority Recognition

SECTION 01

Definition & Overview

KNOW THE PUMP

TYPE I · VOLUME PROBLEM



Hypovolemic Shock

The **tank is empty**. Loss of **≥15–20%** of intravascular volume → not enough blood returning to the heart → ↓ cardiac output → inadequate tissue perfusion.

- ▶ Most common shock in trauma
- ▶ Causes: hemorrhage, severe burns, GI losses, DKA, third-spacing
- ▶ Fix the **volume** — give fluids/blood



Visual: The Empty Tank

Volume leaks out → vessels collapse → BP drops → organs starve. Think **drain**.

TYPE II · PUMP PROBLEM



Cardiogenic Shock

The **pump is broken**. The heart cannot eject enough blood (**cardiac index < 2.2**) despite adequate volume → backup into lungs + hypoperfusion downstream.

- ▶ #1 cause: Acute MI (large anterior wall)
- ▶ Also: HF, cardiomyopathy, dysrhythmias, tamponade
- ▶ Fix the **pump** — do NOT flood it



Visual: The Weak Pump

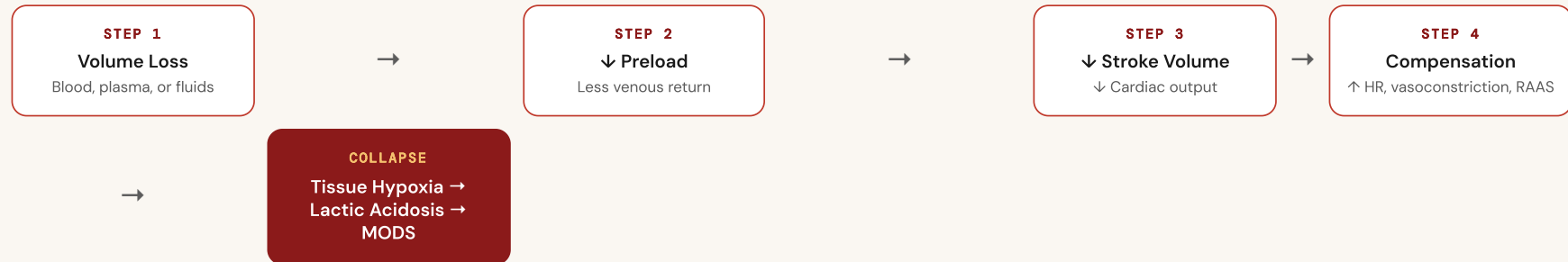
Heart fails to eject → blood backs up into lungs → crackles + pump-forward failure. Think **dam**.

SECTION 02

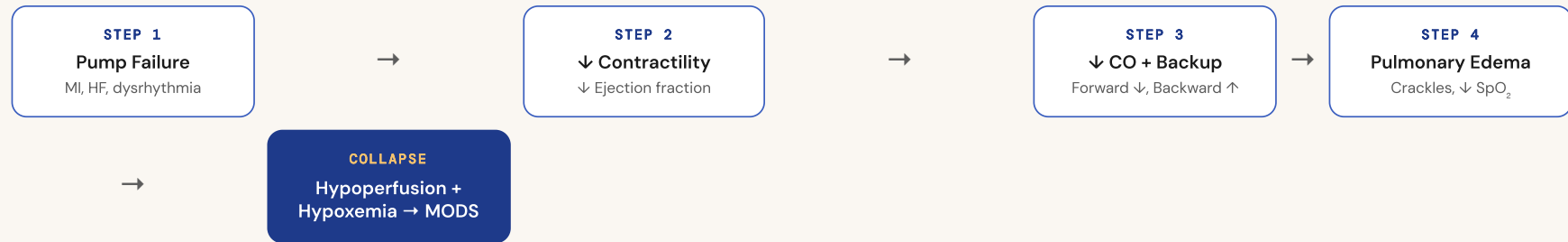
Pathophysiology — The Cascade

MECHANISM FLOW

● Hypovolemic Cascade



● Cardiogenic Cascade



SECTION 03

Signs & Symptoms — Early vs. Late

RED FLAGS HIGHLIGHTED

Hypovolemic Shock

TANK EMPTY

EARLY / COMPENSATED

- Tachycardia (earliest)
- Restlessness / anxiety
- Narrowing pulse pressure
- Cool, pale, clammy skin
- Thirst
- ↑ Respirations

LATE / DECOMPENSATED

- Hypotension (SBP < 90)
- ↓ Urine output (< 30 mL/hr)

Cardiogenic Shock

PUMP FAILING

EARLY / COMPENSATED

- Tachycardia
- Chest pain (MI origin)
- Dyspnea, tachypnea
- Anxiety, restlessness
- Cool, pale, clammy skin
- S3 gallop

LATE / DECOMPENSATED

- Hypotension (SBP < 90)
- ↓ Urine output
- Mottled / cyanotic skin
- Altered LOC
- Weak peripheral pulses
- ↑ Troponin, ↑ BNP

Weak, thready pulse

Altered LOC

Cold, mottled skin

Metabolic acidosis

RED FLAGS

Flat neck veins (JVP ↓)

Lungs CLEAR

Lactate > 4 mmol/L

Unconsciousness / irreversible

RED FLAGS

DISTENDED neck veins (JVD)

Crackles / pulmonary edema

Pink frothy sputum

Cardiac index < 2.2 L/min/m²

SECTION 03B

Rapid Compare — Side by Side

THE NCLEX DISCRIMINATORS

Parameter	Hypovolemic 🔴	Cardiogenic 🔵
Root Problem	Loss of volume	Pump failure
Preload (CVP)	↓ Decreased	↑ Increased
Neck Veins	FLAT ○	DISTENDED (JVD) ●
Lung Sounds	CLEAR	CRACKLES (edema)
Cardiac Output	↓	↓↓
SVR (afterload)	↑ (compensatory)	↑ (compensatory)
Skin	Cool, pale, dry → clammy	Cool, clammy, often mottled
Priority Fluid Action	GIVE fluids aggressively	RESTRICT / cautious fluids
Positioning	Supine, legs elevated (modified)	HOB elevated / semi-Fowler's
Key Drug Class	Crystalloids → blood → vasopressors	Inotropes + vasodilators + diuretics

SECTION 04

Priority Nursing Interventions — ABCs First

SAFETY · PRIORITIZATION

A

AIRWAY

- Assess patency
- Prep intubation if ↓ LOC
- Suction PRN

B

BREATHING

- 100% O₂ via NRB mask
- Monitor SpO₂ ≥ 95%
- Check lung sounds
- ABG analysis

C

CIRCULATION

- Two large-bore IVs (≥18g)
- Continuous cardiac monitor
- BP q5–15 min / A-line
- Strict I&O; Foley

D

DISABILITY / DRUGS

- Q-hourly LOC checks
- Correct acidosis
- Administer shock-specific meds

• Hypovolemic — Priority Order

- 1 **STOP the bleeding** — direct pressure, surgical consult, tourniquet if trauma
- 2 **Two large-bore IVs** (16g–18g) — NOT central line first; peripheral access is faster for volume
- 3 **Isotonic fluid bolus** — 1–2 L NS or LR wide open; reassess q 15 min
- 4 **Blood products** if Hgb < 7 or ongoing hemorrhage (PRBCs, FFP, platelets)
- 5 Position: **supine with legs elevated** ~10–20° (modified Trendelenburg — full Trendelenburg NOT recommended)
- 6 Warm fluids to prevent hypothermia-coagulopathy-acidosis "lethal triad"
- 7 Vasopressors (norepinephrine) ONLY after fluid resuscitation is adequate
- 8 Monitor: urine output (goal ≥ 30 mL/hr), MAP ≥ 65, lactate trend

• Cardiogenic — Priority Order

- 1 **Treat the underlying cause** — if STEMI: PCI within 90 min (gold standard)
- 2 **O₂ + position HOB up** — semi/high Fowler's to ↓ preload & ease breathing
- 3 **Morphine IV** — ↓ anxiety, ↓ preload, ↓ myocardial O₂ demand
- 4 **Inotropes** — Dobutamine to ↑ contractility (watch BP)
- 5 **Vasopressors** — Norepinephrine or dopamine if SBP < 90
- 6 **Vasodilators** — Nitroglycerin to ↓ preload/afterload (hold if SBP < 90)
- 7 **Diuretics** — Furosemide IV for pulmonary edema
- 8 Mechanical support: **IABP** (intra-aortic balloon pump) or LVAD if refractory

SECTION 05

Pharmacology — Shock Drug Deep Dive

HIGH-YIELD DRUG CARDS

Normal Saline / LR

CRYSTALLOID

USE	1st-line volume replacement for HYPOvolemic shock
MECH	Isotonic — expands intravascular volume
DOSE	1–2 L bolus wide open; reassess q 15 min
WATCH	Fluid overload, dilutional coagulopathy, hyperchloremic acidosis (NS in large vol)

Packed RBCs

BLOOD PRODUCT

USE	Hemorrhagic shock, Hgb < 7
MECH	Restores O ₂ -carrying capacity + volume
LINE	Only with NS; 18g IV; Y-tubing with filter
WATCH	Reaction in first 15 min: back pain, fever, chills → STOP, keep line open with NS

Norepinephrine (Levophed)

VASOPRESSOR

USE	Both shocks after fluids fail; 1st-line vasopressor
MECH	α_1 agonist → vasoconstriction → ↑ SVR, ↑ BP
LINE	CENTRAL LINE ONLY (extravasation = tissue necrosis)
WATCH	Titrate to MAP ≥ 65; monitor for bradycardia, ischemia to extremities

Dobutamine

INOTROPE (B₁)

USE	CARDIOGENIC shock — weak pump, adequate volume
MECH	β_1 agonist → ↑ contractility, ↑ CO (no major α effect)
LINE	Titrate drip; IV pump required
WATCH	Titrate by BP + urine output; may drop BP — have vasopressor ready

Dopamine

DOSE-DEPENDENT

USE	Treats HYPOtension; dose changes effect
MECH	Low = renal; Mid = β_1 (inotrope); High = α (vasopressor)
LINE	Central line preferred; titrated drip
WATCH	Harmful to kidneys at high doses — avoid in CKD; dysrhythmias

Nitroglycerin

VASODILATOR

USE	CARDIOGENIC (post-MI, CHF) to ↓ preload/afterload
MECH	Dilates veins (↓ preload) & arteries (↓ afterload)
LINE	Titrate drip — special non-PVC tubing
WATCH	HOLD if SBP < 90 ; headache, hypotension

Furosemide (Lasix)

LOOP DIURETIC

USE	CARDIOGENIC — pulmonary edema (NEVER in hypovolemic)
MECH	Inhibits Na/K/Cl in loop of Henle → ↓ volume
ROUTE	IV push slowly (≤ 20 mg/min to prevent ototoxicity)
WATCH	Hypokalemia, hypotension, ototoxicity

Morphine Sulfate

OPIOID

USE	CARDIOGENIC (MI) — ↓ anxiety, ↓ preload, ↓ O ₂ demand
MECH	Vasodilation + analgesia
DOSE	2–4 mg IV push slow
WATCH	Respiratory depression (hold if RR < 12); have Narcan ready

SECTION 06

NCLEX Test Traps & Confusion Points

⚠ DON'T GET FOOLED

Trap #1 — BP is NOT the earliest sign ⚠

Students pick hypotension as the first sign of shock. **WRONG.** The earliest sign is **tachycardia** (compensatory) and **narrowing pulse pressure**. BP often stays normal until late stages — by then, compensation has failed.

Trap #2 — Fluids for BOTH types? ⚠

Hypovolemic = **give fluids aggressively**. Cardiogenic = **fluids worsen pulmonary edema** (the pump is already overloaded). If the lungs are crackling, do NOT bolus.

Trap #3 — Flat vs. distended neck veins ⚠

This is the #1 discriminator on NCLEX. **FLAT JVP → Hypovolemic** (tank empty). **DISTENDED JVP (JVD) → Cardiogenic** (backup into right side).

Trap #4 — Position changes by type ⚠

Hypovolemic: **supine with legs up** (return volume to core). Cardiogenic: **HOB elevated / semi-Fowler's** (reduce preload + ease breathing). Full Trendelenburg is NO LONGER recommended for any shock.

Trap #5 — Vasopressor timing ⚠

Never start vasopressors for hypovolemic shock **before** fluid resuscitation — you'll just constrict empty vessels and worsen tissue ischemia. Fluids FIRST, pressors if still hypotensive after.

Trap #6 — Don't give Lasix in hypovolemic ⚠

If the volume is already low, diuresing them could be fatal. Lasix belongs in cardiogenic shock (too much fluid backed up in lungs) — NEVER in hypovolemic shock.

Trap #7 — Urine output is the truth-teller ⚠

If the question shows BP "stable" but urine is < 30 mL/hr, organs are **already** underperfused. Urine output < 30 mL/hr is a late compensated sign — act NOW.

Trap #8 — Morphine in trauma hypovolemia ⚠

Morphine is a vasodilator. In a hypovolemic trauma patient, giving morphine for pain before volume resuscitation can tank their BP. Resuscitate first, analgesia after.

SECTION 07

Patient & Family Education

POST-CRISIS TEACHING

Once stabilized, patients and families need to understand what happened, why, and how to prevent a repeat.

For the Hypovolemic Survivor

- ✓ Recognize early S/S: dizziness, rapid pulse, extreme thirst
- ✓ Report black/tarry stools or coffee-ground emesis immediately
- ✓ Hydration strategy for high-risk settings (heat, GI illness)

For the Cardiogenic Survivor

- ✓ Daily weights — report gain > 2 lb/day or 5 lb/week
- ✓ Low-sodium diet (< 2 g/day); fluid restriction as ordered

- ✓ Wound care if post-surgical; signs of reopening
- ✓ Follow-up Hgb/Hct; iron-rich foods if indicated
- ✓ Avoid NSAIDs / aspirin if GI bleed history

- ✓ Take medications as prescribed — NEVER stop beta-blockers or ACE inhibitors abruptly
- ✓ Recognize MI/HF warning signs: chest pain, dyspnea, orthopnea, edema
- ✓ Call 911 for chest pain unrelieved after 1 NTG (give 3 total, 5 min apart)
- ✓ Cardiac rehab referral; gradual activity progression
- ✓ Smoking cessation; alcohol moderation

SECTION 08

Memory Boosters & Mnemonics

PATTERN RECOGNITION

SHOCK S/S MNEMONIC

TIRED

- T** — Tachycardia (earliest)
- I** — Irritability / altered LOC
- R** — Restlessness (early $O_2 \downarrow$)
- E** — Extremities cool & clammy
- D** — Decreased urine output

HYPOVOLEMIC CAUSES

HIPP

- H** — Hemorrhage (#1 trauma cause)
- I** — Intake reduced (NPO, vomiting)
- P** — Plasma loss (burns, third-spacing)
- P** — Pee (osmotic diuresis — DKA)

CARDIOGENIC SIGNS

PUMP

- P** — Pulmonary edema (crackles)
- U** — Unstable BP (low)
- M** — Mottled, cool skin
- P** — Pounding heart → failing heart

FLUID STRATEGY

"TANK vs. DAM"

- ▶ Hypovolemic = empty *tank* → **FILL** it
- ▶ Cardiogenic = backed-up *dam* → **DRAIN** it (diurese)
- ▶ Never flood a dam — it'll burst the lungs

NECK VEIN CLUE

"FLAT vs. FULL"

- ▶ FLAT neck veins = volume is LOW = Hypovolemic
- ▶ FULL neck veins (JVD) = volume backed UP = Cardiogenic
- ▶ Eyes to the neck first — it's free data

DRUG PICKER

"D's for Different Shocks"

- ▶ **Dobut**amine — "D for the Dying pump" → cardiogenic
- ▶ **Dop**amine — "D for Drops (BP)" → hypotension rescue
- ▶ Remember: Dop harms kidneys, Dobut helps urine

NCJMM • CLINICAL JUDGMENT MEASUREMENT MODEL

Applying the 6 Cognitive Steps to Shock

Step 1

Recognize Cues

Tachycardia, narrowing pulse pressure, restlessness, cool clammy skin, urine < 30 mL/hr, lactate rising, SpO₂ dropping. Check neck veins & lungs for the discriminator.

Step 3

Prioritize Hypotheses

#1 Shock type identification → #2 Tissue perfusion failure → #3 Organ hypoxia → #4 Acid-base imbalance → #5 MODS risk. Wrong shock type = wrong intervention = worse outcome.

Step 5

Take Action

Administer O₂, start fluids or inotropes per protocol, insert Foley, draw labs (lactate, troponin, Hgb, ABG), notify HCP, prep for ICU/PCI. Reassess q 15 min.

Step 2

Analyze Cues

FLAT neck veins + clear lungs + ↓ Hgb → **Hypovolemic**. DISTENDED neck veins + crackles + chest pain → **Cardiogenic**. Cluster the data — don't treat one sign alone.

Step 4

Generate Solutions

Hypovolemic: 2 large-bore IVs → isotonic bolus → blood → pressors.
Cardiogenic: O₂ + HOB up → morphine → inotropes → diuretics → revascularize.

Step 6

Evaluate Outcomes

Targets: MAP ≥ 65, urine ≥ 30 mL/hr, lactate trending down, SpO₂ ≥ 95%, LOC improving, no new crackles. If no improvement → escalate; call RRT/MD.