



VASOPRESSORS

CLASS: Adrenergic Agonists / Sympathomimetics

SYSTEM: Cardiovascular · Critical Care

NCLEX-RN High-Yield · 2026 Test Plan · NGN / NCJMM Aligned

1 DRUG OVERVIEW

- **Why we give them:** Raise BP & maintain tissue perfusion when fluids fail
- **Goal:** MAP $\geq$ 65 mmHg to perfuse brain, heart, kidneys
- **Key indications:**
 - Septic shock (1st line: norepinephrine)
 - Cardiogenic shock
 - Neurogenic / spinal shock
 - Anaphylactic shock (epinephrine)
 - Cardiac arrest / code blue (epinephrine)
 - Severe hypotension refractory to fluids
- **Setting:** ICU, ED, OR — ALWAYS with continuous monitoring

2 MECHANISM OF ACTION

- **Alpha-1 receptors:** vasoconstriction $\rightarrow$ $\uparrow$ SVR $\rightarrow$ $\uparrow$ BP
- **Beta-1 receptors:** $\uparrow$ HR + $\uparrow$ contractility $\rightarrow$ $\uparrow$ CO
- **Beta-2 receptors:** bronchodilation (epi)

Receptor stim $\rightarrow$ vasoconstriction + $\uparrow$ CO $\rightarrow$ $\uparrow$ MAP $\rightarrow$ $\uparrow$ tissue perfusion

RECEPTOR CHEAT CODE

- **Alpha = Arteries** (squeeze vessels)
- **Beta-1 = 1 heart** (faster, stronger)
- **Beta-2 = 2 lungs** (open airways)

3 THERAPEUTIC EFFECTS (IT'S WORKING!)

- **MAP ≥ 65 mmHg** sustained
- **Urine output ≥ 0.5 mL/kg/hr** (kidneys perfusing)
- **Lactate trending DOWN** (aerobic metabolism restored)
- **Mental status improving** (alert, oriented)
- **Warm, pink extremities** with cap refill < 3 sec
- **HR normalizing** (tachycardia resolving)
- **SpO₂ improving**, ABGs correcting

4 SIDE EFFECTS & ADVERSE REACTIONS

COMMON

- Tachycardia, palpitations, anxiety, tremor
- Headache, nausea, vomiting
- Hyperglycemia (especially epinephrine)
- Pallor, cold extremities, piloerection

SERIOUS / LIFE-THREATENING

- **Extravasation** → **tissue necrosis** (limb/digit loss)
- **Dysrhythmias** — V-tach, V-fib, SVT
- **Myocardial ischemia / MI** ($\uparrow$ O₂ demand)
- **Stroke** from severe HTN
- **Reflex bradycardia** (phenylephrine — pure alpha)
- **Rebound hypotension** if stopped abruptly
- **Pulmonary edema**
- **Gut & renal ischemia** from over-vasoconstriction

5 PRIORITY NURSING CONSIDERATIONS

ASSESS / MONITOR

- **Continuous BP** (arterial line preferred)
- **Continuous ECG** for dysrhythmias
- **IV site q1h** — check for blanching, coolness, swelling
- **MAP, HR, SpO₂, UO, LOC, cap refill**
- **Lactate, ABGs** q2–6h

HOLD / NOTIFY PROVIDER IF...

- MAP exceeds target (risk of stroke/MI)
- New arrhythmia, chest pain
- Signs of extravasation
- Uncorrected hypovolemia (give fluids FIRST)

CONTRAINDICATIONS / CAUTIONS

- Hypovolemia not yet corrected
- Pheochromocytoma
- Uncontrolled tachyarrhythmias
- Mesenteric / peripheral vascular thrombosis

KEY DRUG INTERACTIONS

- **MAOIs, TCAs** → hypertensive crisis
- **Beta-blockers** → blunt response
- **Digoxin** → ↑ dysrhythmia risk
- **General anesthetics** → arrhythmias

6 LABS & DIAGNOSTICS

- **Lactate:** > 2 mmol/L = poor perfusion; trend DOWN = good
- **ABGs:** watch for metabolic acidosis resolving
- **BUN / Creatinine:** rising = renal hypoperfusion
- **Troponin:** elevated = cardiac ischemia
- **Glucose:** hyperglycemia w/ epi & dopamine
- **K⁺, Mg²⁺:** correct — low levels ↑ arrhythmia risk
- **CBC:** H&H, WBC trends
- **ScvO₂:** ≥ 70% = adequate O₂ delivery

7 ADMINISTRATION & SAFETY 🚨

- **HIGH-ALERT medication** — independent double-check
- **Central line preferred** (PICC, CVC, IJ)
- Peripheral line = *emergency / short-term only*
- **Continuous IV infusion via pump** — never gravity
- **Titrate to MAP ≥ 65** per provider orders
- **NEVER bolus** (except epi in cardiac arrest: 1 mg IV push q3–5 min)
- **NEVER stop abruptly** → taper to prevent rebound hypotension
- Use **dedicated IV line** (no Y-site meds)
- Protect from light (norepi, epi oxidize)

🚨 EXTRAVASATION PROTOCOL

- **STOP** the infusion immediately
- **DO NOT remove** the IV catheter
- Aspirate residual drug through catheter
- Give **PHENTOLAMINE** (antidote) SQ around site
- Elevate limb, apply warm compress (NOT cold)
- Notify provider, document

8 PATIENT & FAMILY EDUCATION

- Drug is given in **ICU** to support blood pressure
- Report **pain, burning, numbness** at IV site *immediately*
- Expect frequent BP & blood draws
- Restraints / arterial lines explained for safety
- Family: understand weaning may take time
- Post-ICU: report chest pain, SOB, cold extremities to team

9 NCLEX TEST TRAPS ⚠️

- **TRAP:** Giving vasopressors before fluids. → **FLUIDS FIRST** (30 mL/kg isotonic crystalloid) in septic shock unless actively coding.
- **TRAP:** Running norepi through a peripheral IV long-term. → Central line is **gold standard**; peripheral only until CVC placed.
- **TRAP:** Assuming phenylephrine causes tachycardia. → It causes **REFLEX BRADYCARDIA** (pure alpha-1, no beta-1).
- **TRAP:** Pulling the IV out when infiltration occurs. → **LEAVE the catheter** — it's the route for phentolamine.
- **TRAP:** Stopping the drip when BP normalizes. → **WEAN slowly** to prevent rebound hypotension.
- **TRAP:** Confusing dopamine doses. → **Low = renal, Med = cardiac, High = vasoconstriction.**
- **TRAP:** Using cold compress for extravasation. → **WARM** compress promotes vasodilation & drug dispersal.
- **TRAP:** Dobutamine ≠ vasopressor. → It's a **positive inotrope** (beta-1); may actually *lower* BP via beta-2.
- **TRAP:** Vasopressin first line for septic shock. → **Norepinephrine is 1st line**; vasopressin is adjunct.
- **PRIORITY:** Extravasation > tachycardia > headache (ABC + tissue loss wins).

10 MEMORY BOOSTERS & MNEMONICS

"NEAT MAP" — THE VASOPRESSOR SQUAD

- Norepinephrine · Epinephrine · vAsopressin · Dopamine · phenylephrine → all Titrate to **MAP**

DOPAMINE DOSES — "RENAL, RUN, WRENCH"

- **Low (1–3 mcg/kg/min)** = **Renal** (dopaminergic) — ↑ renal perfusion
- **Medium (3–10)** = **Run** the heart (beta-1) — ↑ HR & contractility
- **High (> 10)** = **Wrench** the vessels (alpha) — vasoconstriction

RECEPTOR CHEAT CODE

- **Alpha** = **A**rteries (vasoconstrict)
- **Beta-1** = 1 heart (↑HR, ↑contractility)
- **Beta-2** = 2 lungs (bronchodilate)

"LEAVE 'EM DEAD" — NOREPINEPHRINE WARNING

- **Levophed** extravasation can cause limb loss → phentolamine antidote + central line preferred

SHOCK PRESSOR PAIRING

- **Septic** → Norepi (+ vasopressin if refractory)
- **Anaphylaxis** → Epinephrine IM
- **Cardiac arrest** → Epinephrine IV push
- **Cardiogenic** → Norepi ± dobutamine
- **Neurogenic** → Norepi or phenylephrine

★ MOST TESTED VASOPRESSORS — SIDE-BY-SIDE

DRUG	RECEPTORS	PRIMARY USE	KEY POINT / NCLEX PEARL
Norepinephrine (Levophed)	α -1 (strong), β -1	Septic shock — 1st line	"Leave 'em dead" if extravasates. Central line preferred. Target MAP $\geq$ 65.
Epinephrine (Adrenalin)	α -1, β -1, β -2	Anaphylaxis (IM), cardiac arrest (IV), severe asthma	Anaphylaxis = thigh IM 0.3–0.5 mg . Code = 1 mg IV q3–5 min. Causes hyperglycemia.
Dopamine (Intropin)	Dose-dependent: DA $\rightarrow$ β -1 $\rightarrow$ α -1	Shock (declining use), symptomatic bradycardia	Dose matters! Low=renal, Mid=cardiac, High=vasoconstriction. Causes tachydysrhythmias.
Phenylephrine (Neo-Synephrine)	Pure α -1	Neurogenic shock, anesthesia hypotension, SVT	Causes REFLEX BRADYCARDIA . No beta effects — safe in tachyarrhythmias.
Vasopressin (Pitressin, ADH)	V1 (vessels), V2 (kidneys)	Septic shock adjunct, refractory hypotension, DI	Non-adrenergic. Added to norepi in refractory septic shock. Watch for hyponatremia & gut ischemia.
Dobutamine* (*inotrope, not pressor)	β -1 (strong), β -2	Cardiogenic shock, acute HF	$\uparrow$ contractility & CO. May LOWER BP via β -2. Often paired with norepi.



CLINICAL JUDGMENT SNAPSHOT (NCJMM)

#1 PRIORITY RISK

EXTRAVASATION → **tissue necrosis, limb loss, gangrene.** Potent vasoconstrictors destroy peripheral tissue on contact. This is the deadliest bedside risk — even before arrhythmias.

WHAT HARMS THE PATIENT FIRST?

IV site infiltration causing local ischemia within minutes. Secondary harms: dysrhythmias, myocardial ischemia ($\uparrow$ O_2 demand), end-organ hypoperfusion from over-vasoconstriction (gut, kidneys, fingers/toes).

FIRST NURSING ACTION IF EXTRAVASATION IS SUSPECTED

STOP the infusion immediately → **LEAVE** the IV catheter in place → **aspirate residual drug** → **notify provider** → **administer PHENTOLAMINE** (antidote) subcutaneously around the site → **apply WARM compress, elevate limb** → **document.**

FIRST ACTION IF BP TOO HIGH ON PRESSOR

Titrate DOWN slowly per protocol — never stop abruptly. Reassess MAP, HR, rhythm. Notify provider if uncontrolled.

FIRST STEP BEFORE STARTING A VASOPRESSOR IN SHOCK

Ensure adequate fluid resuscitation (30 mL/kg isotonic crystalloid in sepsis) — unless patient is in cardiac arrest or anaphylaxis requiring immediate epi. Pressors into an empty tank = harm.