

Vasopressors & Inotropes

Vasopressors and inotropes — dose, mechanism, and hemodynamic + neuro effects. Verify doses against your institutional protocol before use.

Medication	Dose	MOA	BP	HR	ICP	Cerebral vessels	SVR	Use	Adverse
Norepinephrine (Levophed)	0.01–3 mcg/kg/min	$\alpha + \beta 1$ agonist ($\alpha > \beta$)	↑↑	↔/↓	↔	Minimal direct (BBB) — maintains CBF via ↑CPP	↑↑	1st-line septic & most shock; CPP augmentation	Reflex bradycardia, peripheral/digital ischemia
Phenylephrine (Neosynephrine)	0.5–6 mcg/kg/min	Pure α agonist	↑	↓	↔	Minimal direct — safe for CPP support	↑↑	Neurogenic shock, tachyarrhythmia, maintain CPP	Reflex bradycardia, ↓cardiac output
Vasopressin	0.01–0.07 U/min (usual 0.03; fixed adjunct)	V1 (vascular), V2 (renal)	↑	↔	↔	Cerebral vasoconstriction	↑↑	Catecholamine-sparing adjunct in septic shock	Peripheral/splanchnic/coronary ischemia, hyponatremia
Dopamine	2–20 mcg/kg/min	Dose-dependent: DA → $\beta 1$ → α	↑	↑	↑	Vasodilation → ↑cerebral blood volume	↑	Shock, symptomatic/resistant bradycardia	Tachyarrhythmia, tissue ischemia/gangrene (high dose)
Dobutamine	2–20 mcg/kg/min	$\beta 1 > \beta 2$ agonist	↔/↓	↑	↔	Minimal	↓	Cardiogenic shock, low cardiac output (inotrope)	Hypotension, tachyarrhythmia, myocardial ischemia
Epinephrine	0.05–2 mcg/kg/min (shock)	$\alpha + \beta$ (β low dose, α high)	↑↑	↑↑	↑	↑CBF / cerebral metabolism	↑	Anaphylaxis, cardiac arrest, refractory shock	Tachyarrhythmia, hyperglycemia, lactic acidosis
Angiotensin II (Giapreza)	Start 20 ng/kg/min (max 80 ×3 h, then 40)	AT1 receptor agonist	↑	↔	↔	Vasoconstriction	↑↑	Distributive/vasodilatory shock refractory to catecholamines + vasopressin	Thromboembolism / VTE (give prophylaxis)
Inodilator — LOWERS blood pressure (not a pressor)									
Milrinone (Primacor)	50 mcg/kg load, then 0.375–0.75 mcg/kg/min	PDE-3 inhibitor (inodilator)	↓	↔/↑	↔	Vasodilator — used for cerebral vasospasm (IV or intra-arterial)	↓	Low-output heart failure; cerebral vasospasm (SAH)	Hypotension (caution) , arrhythmia; renal-adjust

Light-blue rows = preferred pressors in neuro patients (minimal direct cerebral effect, maintain CPP). ↑ increase · ↓ decrease · ↔ little/no effect.

Drug of choice — General ICU

Condition	Agent
Septic shock	Norepinephrine → add Vasopressin → add Epinephrine
Cardiogenic shock	Norepinephrine + Dobutamine
Heart failure (low output)	Dobutamine or Milrinone
Anaphylactic shock	Epinephrine → 2nd line Vasopressin
Undifferentiated hypotension	Phenylephrine or Norepinephrine

Drug of choice — Neuro ICU

Condition	Agent
Hemorrhagic stroke (ICH / SAH)	Norepinephrine (maintain CPP; avoid over-shoot)
Ischemic stroke (induced HTN / augmentation)	Phenylephrine or Norepinephrine
Cerebral vasospasm (SAH)	Norepinephrine / Phenylephrine (induced HTN) + Milrinone (IV / intra-arterial)
Neurogenic shock (spinal cord injury)	Norepinephrine or Phenylephrine (+ atropine/dopamine if bradycardic)