Neuro.Wiki

IV Agents for Hypertension & Tachycardia

IV agents for hypertension and tachycardia in the neuro-ICU. Verify every dose against your institutional protocol before use.

Hypertension — IV agents

Drug	Dose	MOA	Onset	Duration	Metabolism	Notes & clinical pearls
✓ Preferred / safe in neuro patients — minimal effect on ICP						
Clevidipine	1–2 mg/hr, double q90 s; usual ≤16 mg/hr	Dihydropyridine CCB (arterial)	2–4 min	5–15 min	Blood/tissue esterases	**Preferred neuro agent** — fast on/off, safe in hepatic/renal failure. Lipid emulsion: **avoid egg/soy allergy, severe aortic stenosis**; monitor triglycerides.
Nicardipine	5 mg/hr, ↑ 2.5 q5–15 min; max 15 mg/hr	Dihydropyridine CCB (arterial)	5–10 min	~30 min offset	Hepatic	**Preferred neuro agent** — smooth control in stroke & hypertensive encephalopathy. Reflex tachycardia, flushing; phlebitis (rotate site / central).
Labetalol	20 mg IV bolus, then 40–80 mg q10 min or 0.5–2 mg/min; max 300 mg/episode	α1 + nonselective β	2–5 min	2–6 h	Hepatic	Aortic dissection, sympathetic surge; ok in pregnancy. **Avoid: bradycardia, block, decompensated HF, asthma, cocaine.**
Phentolamine	5 mg IV bolus, repeat q10 min PRN	α1/α2 blocker	1–2 min	15–30 min	Hepatic	**Catecholamine crisis** (cocaine, pheo, MAOI, clonidine withdrawal) — treats HTN + tachycardia. Also reverses pressor extravasation.
Enalaprilat	1.25 mg IV q6 h; max 5 mg q6 h	ACE inhibitor	15–30 min	~6 h	Renal	No ICP effect but **slow, poorly titratable — not first-line.** Hyperkalemia, angioedema; avoid bilateral RAS / pregnancy.
✗ Not preferred in neuro patients — raise ICP						
Hydralazine	10–20 mg IV bolus q4–6 h	Direct arteriolar	10–30 min	2–4 h (variable)	Hepatic	**↑ICP, ↓CPP, unpredictable — avoid in ICH/TBI/edema.** Reflex tachycardia; lupus (chronic); ok in eclampsia.
Sodium nitroprusside	0.3–0.5 mcg/kg/min; max 10	NO donor (art. + venous)	<1 min	1–2 min	Hb → cyanide → thiocyanate (renal)	**↑ICP, coronary steal, cyanide/thiocyanate & methemoglobinemia** (worse in organ failure). Light-protect.
Nitroglycerin	5 → 200 mcg/min	NO donor (venous > art.)	2–5 min	3–10 min	RBC / vascular	**↑ICP.** Tolerance, headache; **contraindicated with PDE5 inhibitors.** For cardiac ischemia / pulmonary edema.
Fenoldopam	0.01–0.3 mcg/kg/min	D1 agonist	5–15 min	~30 min	Conjugation (renal)	**↑IOP (glaucoma), possible ↑ICP.** Improves renal perfusion; hypokalemia; sulfite; limited US supply.

Tachycardia / rate control — IV agents

Drug	Dose	MOA	Onset	Duration	Notes
Esmolol	500 mcg/kg load over 1 min, then 25–50 → 200 mcg/kg/min	β1 blocker	~5 min	10–20 min	Ultra-short — ideal titratable. **Avoid: bradycardia, block, decompensated HF, asthma/COPD.**
Metoprolol	5 mg IV q5 min ×3 (max 15 mg)	β1 blocker	~5 min	3–4 h	AFib/flutter, ACS. **Avoid: decompensated HF, bradycardia, block, bronchospasm.**
Diltiazem	0.25 mg/kg IV load (0.35 if needed), then 10 mg/hr (5–15)	Non-DHP CCB	2–7 min	1–3 h (bolus)	AFib/flutter RVR, SVT. **Avoid: decompensated HF, pre-excited AF / accessory pathway, wide-complex VT.**
Amiodarone	150 mg IV over 10 min, then 1 mg/min ×6 h, then 0.5 mg/min	Class I–IV	Variable	Very long	AFib, VT/VF. **Hypotension, phlebitis (give central), QT;** long-term thyroid / lung / liver toxicity.

Neuro BP targets: Acute ischemic stroke — if thrombolysis, keep <185/110 before and <180/105 for 24 h; if no reperfusion, permit up to ~220/120. Spontaneous ICH — SBP ~130–140 (avoid <130). **Nicardipine** or **clevidipine** preferred; nitroprusside/nitroglycerin/hydralazine can raise ICP.