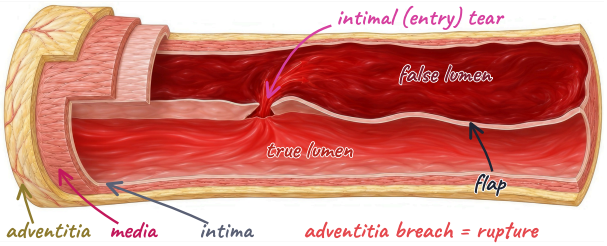
ER BASICS · ONE-PAGER

Aortic Dissection and Hypertensive Emergency

Stanford types, heart rate and BP targets, BP goals by condition and IV antihypertensives

6 sources + more detail
erbasics.com/sheets/aortic-htn.html
checked Nov 2026

ANATOMY How the wall splits



1 Aortic dissection

	STANFORD A	STANFORD B
Involves	Ascending aorta	Descending only
Treatment	Emergency surgery	Medical; TEVAR if complicated
Complicated	Tamponade, AR, rupture	Malperfusion, rupture, refractory pain or BP

- Clues: sudden tearing or ripping chest pain to the back, arm BP difference over 20 mm Hg, pulse deficit, new aortic regurgitation murmur, stroke signs, wide mediastinum
- Targets (2022 ACC/AHA): SBP 120 mm Hg or less and heart rate 60–80; many exam items say under 60
- Beta-blocker FIRST (esmolol or labetalol), then a vasodilator (nicardipine, clevidipine or nitroprusside) if BP stays high
- Opioids for pain; CT angiography (TEE if unstable)

SAFETY A vasodilator before the beta-blocker causes reflex tachycardia and raises aortic wall stress. No anticoagulants or thrombolytics: dissection can mimic an inferior STEMI.

EXAM TIP Hypotension in type A: think tamponade, rupture or acute aortic regurgitation — surgical emergency.

2 Hypertensive emergency

Severe BP (often over 180/120) WITH new organ damage: encephalopathy, stroke or ICH, ACS, pulmonary edema, dissection, eclampsia, AKI. Without organ damage it is an urgency: oral drugs, no rapid lowering.

CONDITION	GOAL
Most emergencies	Lower no more than 25% in the first hour, to 160/100–110 over 2–6 h, then normal over 24–48 h
Aortic dissection	SBP 120 or less within the first hour, sooner if tolerated
Severe preeclampsia, eclampsia, pheochromocytoma	SBP under 140 in the first hour
Ischemic stroke, lytic candidate	Under 185/110 before and under 180/105 for 24 h after
Ischemic stroke, no lytic	Treat only over 220/120; lower about 15% in 24 h
Intracerebral hemorrhage	SBP about 140; avoid dropping under 130

SAFETY Dropping BP too fast causes stroke, MI and kidney injury where autoregulation has reset.

3 IV antihypertensives

DRUG	TYPICAL START	WATCH FOR
Nicardipine	5 mg/h, up 2.5 every 5–15 min (max 15)	Reflex tachycardia, phlebitis
Clevidipine	1–2 mg/h, double every 90 s (max 32)	Lipid emulsion: egg and soy allergy
Labetalol	20 mg IV, then 20–80 mg every 10 min or an infusion	Bradycardia, bronchospasm, heart failure
Esmolol	500 mcg/kg load, then 50–300 mcg/kg/min	Bradycardia, hypotension
Nitroprusside	0.3–10 mcg/kg/min	Cyanide and thiocyanate toxicity, raised ICP
Nitroglycerin	5–200 mcg/min	Best for ACS and pulmonary edema; headache
Hydralazine	10–20 mg IV	Unpredictable drop; used in pregnancy

Typical adult values for exam study. Follow your institution's protocols.

EXAM TIP Cocaine or pheochromocytoma: avoid an unopposed beta-blocker; use benzodiazepines (cocaine) and phentolamine or nicardipine.

MORE Recognition: ADD-RS, D-dimer and imaging

Pain is abrupt and worst at onset, more often called sharp or stabbing than tearing (2022 ACC/AHA). In IRAD's first 464 patients only 31.6% had an aortic regurgitation murmur, 15.1% a pulse deficit and 12.4% a normal chest x-ray (Hagan 2000). Measure BP in both arms and both legs: a difference over 20 mm Hg suggests a compromised branch.

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