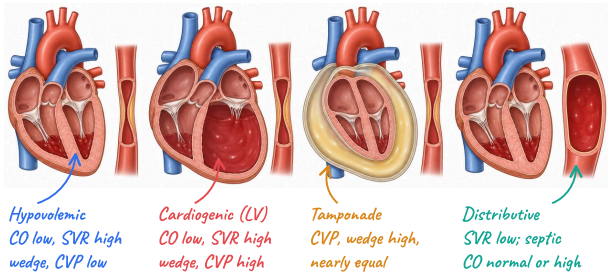
ER BASICS · ONE-PAGER

Shock Types at a Glance

Hemodynamic patterns, exam findings and first treatments for each shock type

21 sources + more detail
erbasics.com/sheets/shock-types.html
checked Oct 2026

COMPARE Low-flow vs low-resistance

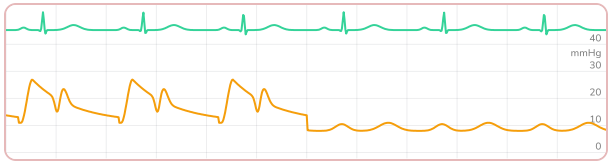


1 Hemodynamic patterns

Shock: cells get or use too little oxygen; hypotension is not required. Hypovolemic, cardiogenic and obstructive shock are low-flow; distributive is low-resistance. Lactate >2 mmol/L marks hypoperfusion in any type; trend it to judge response.

Untreated patterns; mixed shock is common. Late or under-resuscitated sepsis can turn cold, with low CO and SvO2.

TYPE	CO / SVR	WEDGE / CVP	SVO2
Hypovolemic	CO low, SVR high	Both low	Low
Cardiogenic (LV)	CO low, SVR high	Both high	Low
Obstructive: PE	CO low, SVR high	CVP high, wedge low or normal	Low
Obstructive: tamponade	CO low, SVR high	Both high, nearly equal	Low
Septic	CO normal or high, SVR low	Low or normal	Normal or high
Anaphylactic or neurogenic	CO low or normal, SVR low	Low	Normal or low



PA tracing that becomes a normal wedge (PAOP, 8–12 mm Hg) as the balloon inflates. Wedge is high in cardiogenic shock, low with volume loss or vasodilation.

2 Findings and first treatments

TYPE	EXAM FINDINGS	FIRST TREATMENTS
Hypovolemic	Cool, pale, clammy; flat neck veins; narrow pulse pressure	Stop the loss; 1:1:1 blood products for bleeding; crystalloid otherwise
Cardiogenic	Cool, mottled; crackles, JVD; low urine output	Reperfuse an MI; norepinephrine; add an inotrope; MCS if failing
Obstructive	JVD plus muffled heart tones, absent breath sounds or sudden hypoxemia	Relieve it: chest decompression, pericardiocentesis, reperfusion for massive PE
Septic	Warm, flushed early; fever; cold late	Antibiotics within 1 h; ≥30 mL/kg balanced crystalloid in 3 h; norepinephrine
Anaphylactic	Hives, angioedema, wheeze or stridor	IM epinephrine first; IV fluids; epinephrine infusion if refractory
Neurogenic	Warm, dry skin; slow heart rate; cord injury T6 or above	Fluids, then norepinephrine; atropine for symptomatic bradycardia

Septic shock (Sepsis-3): vasopressors needed for MAP ≥65 mm Hg and lactate >2 mmol/L despite adequate fluids. SSC 2026 MAP goal: 65 (60–65 at age 65 or older).

⚠ **SAFETY** Typical adult doses for exam study; follow your institution's protocols. Anaphylaxis: epinephrine 0.01 mg/kg IM (1 mg/mL), mid-outer thigh; adults usually 0.3–0.5 mg (max 0.5 mg); repeat every 5–15 min if needed. Antihistamines and steroids never replace it.

⚠ **SAFETY** Fluids worsen LV cardiogenic shock with a high wedge and crackles. RV infarct is preload-dependent: cautious fluids, no nitrates or diuretics. Bleeding: limit crystalloid; accept SBP 80–90 until controlled, except with brain injury. Neurogenic: phenylephrine can worsen bradycardia.

3 SCAI SHOCK stages (cardiogenic)

STAGE	MEANING	TYPICAL FINDINGS
A: At risk	AMI or heart failure, perfusing well	Warm, normal lactate, SBP ≥100 (or baseline)
B: Beginning	Unstable, still perfusing	SBP <90, MAP <60 or >30 drop from baseline; HR ≥100; normal lactate
C: Classic	Hypoperfused; needs a drug or device	Lactate ≥2, cold, urine <30 mL/h; CI <2.2, PCWP >15
D: Deteriorating	Failing initial support	Rising lactate; more pressors or MCS added
E: Extremis	Circulatory collapse	CPR or near pulseless; lactate ≥8, pH <7.2

Cardiac arrest modifier: add only if comatose (GCS <9) after the arrest. Current US guidance: norepinephrine first; no routine IABP in MI-related shock.

💡 **EXAM TIP** Exams test B versus C. Hypotension or tachycardia alone is stage B; any hypoperfusion (lactate ≥2, cold skin, low urine output) makes it C.

4 Neurogenic vs spinal shock

FEATURE	NEUROGENIC SHOCK	SPINAL SHOCK
What is lost	Sympathetic tone	Reflexes and function below the injury
Findings	Low BP, low HR, warm skin	Flaccid paralysis, areflexia, no sensation
Shock?	Yes, distributive	No, not circulatory
Duration	Often 48–72 h, can last weeks	About 4–6 weeks; ends when the bulbocavernosus reflex returns



Sinus bradycardia plus hypotension after a high cord injury suggests neurogenic shock; other types are usually tachycardic.

Cord injury MAP: a 2024 guideline suggests at least 75–80, not above 90–95, for 3–7 days. Many exam items still use 85–90 for 7 days.

5 Reading the numbers on exams

1. Low SVR: distributive. Slow HR suggests neurogenic; hives or wheeze, anaphylaxis; infection, sepsis.
2. High SVR, low CO: low-flow; check the filling pressures.
3. CVP and wedge low: hypovolemic. Wedge above about 15–18: cardiogenic.
4. High CVP with a low or normal wedge: PE or RV infarct.
5. CVP, PA diastolic and wedge high and nearly equal: tamponade, with Beck triad and pulsus paradoxus (inspiratory SBP fall >10 mm Hg).

💡 **EXAM TIP** Normals: CI 2.5–4.0 L/min/m², SVR 800–1,200 dynes·s/cm⁵, wedge 8–12 mm Hg, CVP 2–8 mm Hg, SvO2 60–80%.

MORE Oxygen delivery, consumption and lactate

Every shock type ends in the same place: oxygen delivery (DO_2) falls below what the tissues consume (VO_2), or the cells cannot use what arrives. $CaO_2 = (1.34 \times Hb \times SaO_2) + (0.003 \times PaO_2)$, about 20 mL/dL. $DO_2 = CO \times CaO_2 \times 10$, about 1,000 mL/min ($DO_2$I 500–600 mL/min/m²). Resting VO_2 is about 250 mL/min, so the oxygen extraction ratio ($O_2ER = VO_2 \div DO_2$) is about 25% and SvO_2 sits near 70–75%.

Worked example: Hb 15, SaO_2 98% and CO 5 L/min give DO_2 1,000 mL/min. After hemorrhage to Hb 7 with SaO_2 90% and CO 3, CaO_2 is 8.6 mL/dL and DO_2 about 260 mL/min, a 74% fall. Raising PaO_2 from 100 to 300 adds only 0.6 mL/dL; hemoglobin, saturation and flow are the levers.

As DO_2 falls, extraction rises and VO_2 holds steady while SvO_2 drops. Extraction tops out near 60–70%; below that point, the critical DO_2, VO_2 becomes supply-dependent and lactate rises. Critical DO_2 was about 330 mL/min/m² in anesthetized adults (Shibutani 1983) and about 4 mL/kg/min in dying ICU patients (Ronco 1993); it varies and cannot be measured at the bedside, so lactate and SvO_2 trends stand in for it.

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