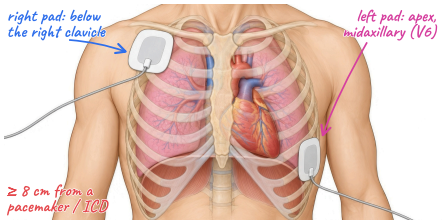
ER BASICS · ONE-PAGER

ACLS Algorithms in Brief

2025 AHA adult arrest, bradycardia, tachycardia and post-ROSC steps on one page

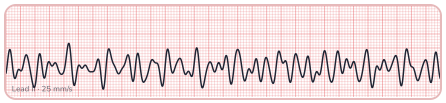
35 sources + more detail
erbasics.com/sheets/acls-algorithms.html
checked Nov 2026

PADS Placement and a safe shock



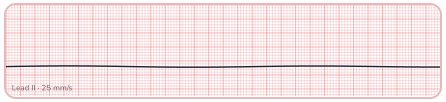
1 Cardiac arrest: two tracks

Start CPR, oxygen and the monitor; ask: shockable? Recheck the rhythm every 2 min; pulse checks take 10 s at most.



VF: chaotic, no organized QRS. VF and pulseless VT get shocks.

STEP	VF / PULSELESS VT	PEA / ASYSTOLE
First move	Shock, resume CPR at once	CPR and epinephrine ASAP
Epinephrine	After initial shocks fail	As soon as feasible
Antiarrhythmic	After the 3rd shock	Not used



Asystole is never shocked; shock only if a check finds VF or VT.

EXAM TIP Exam order: shock, CPR, shock, epinephrine, shock, amiodarone or lidocaine. Epinephrine every 3–5 min is about every other 2-minute cycle.

2 CPR quality, shocks and drugs

- Rate 100–120/min; depth 2–2.4 in (5–6 cm)
- Full recoil; short pauses; compression fraction at least 60%; swap compressors every 2 min
- 30:2 without an advanced airway; with one, 1 breath every 6 s and nonstop compressions
- $ETCO_2$ under 10 mm Hg: improve CPR (aim for 20 or more). A sudden rise of more than 10 mm Hg may signal ROSC

Typical adult doses for exam study; follow your institution's protocols.

THERAPY	TYPICAL ADULT DOSE
Biphasic shock	Device dose (often 120–200 J) or maximum; then same or higher
Monophasic shock	360 J
Epinephrine	1 mg IV/IO every 3–5 min
Amiodarone	300 mg, then 150 mg
Lidocaine	1–1.5 mg/kg, then 0.5–0.75 mg/kg
Access	IV first; IO if IV fails (ET route dropped)

SAFETY Not routine in arrest: calcium, bicarbonate, magnesium, vasopressin, high-dose epinephrine, pacing. Hyperkalemic arrest: calcium and bicarbonate may be considered (2025: benefit unproven).

3 Bradycardia with a pulse

Usually under 50/min. Treat if it causes hypotension, acute confusion, shock, ischemic chest pain or acute heart failure; look for ischemia, drugs, hypoxia, hyperkalemia.

1. Airway, oxygen if needed, monitor, IV, 12-lead ECG
2. Atropine 1 mg IV, repeated every 3–5 min to a 3 mg total
3. If atropine fails: transcutaneous pacing and/or dopamine 5–20 mcg/kg/min or epinephrine 2–10 mcg/min
4. Expert consult and transvenous pacing



Third-degree block: P waves and QRS complexes march independently. Atropine rarely helps block below the AV node; have pacing ready.

SAFETY Shock and no IV or IO yet: pace while getting access. Heart transplant: no atropine (denervated heart; paradoxical block reported); go to pacing or an infusion.

4 Tachycardia with a pulse

Usually 150/min or more. Unstable because of the rhythm (not, say, sepsis)? Synchronized cardioversion, sedated when feasible; if regular and narrow, adenosine may be tried while preparing.

2025 biphasic starting energies; increase if a shock fails; re-sync each time.

UNSTABLE RHYTHM	STARTING ENERGY
Atrial fibrillation	200 J or more
Atrial flutter	200 J
Other narrow-complex	100 J
Monomorphic VT	100 J
Polymorphic VT	Defibrillate (always unstable)



Regular narrow-complex tachycardia (SVT).

- Stable, narrow, regular: vagal maneuvers, adenosine 6 mg rapid IV push with a flush, then 12 mg
- Then a beta-blocker or calcium channel blocker (not diltiazem or verapamil in suspected systolic heart failure)
- Stable, wide (QRS 0.12 s or more): adenosine only if regular and monomorphic
- Amiodarone 150 mg over 10 min, then 1 mg/min for 6 h
- Or procainamide 20–50 mg/min; stop at 17 mg/kg, hypotension or QRS widening over 50%; avoid in long QT or heart failure

SAFETY Can't synchronize a crashing patient? Shock unsynchronized. Torsades: IV magnesium, correct potassium. Adenosine: avoid in asthma. Through a central line or after heart transplant, reduce the first dose: 1 mg may be enough per AHA 2025; older references and many protocols use 3 mg. Follow your protocol.

5 After ROSC

- FiO_2 100% until SpO_2 is reliable, then 90–98% (PaO_2 60–105 mm Hg)
- $PaCO_2$ 35–45 mm Hg ($ETCO_2$ may read falsely low)
- MAP 65 mm Hg or more
- Early 12-lead; emergent cath for STEMI, cardiogenic shock, recurrent VT/VF or severe ischemia
- Not following commands: hold 32–37.5 °C for at least 36 h; rewarm no faster than 0.5 °C/h
- Glucose 70–180 mg/dL; EEG for seizures
- Prognosis: multimodal, at least 72 h after ROSC or normothermia

6 Hs and Ts

HS	TS
Hypovolemia	Tension pneumothorax
Hypoxia	Tamponade, cardiac
Hydrogen ion (acidosis)	Toxins
Hypo- or hyperkalemia	Thrombosis, pulmonary
Hypothermia	Thrombosis, coronary

EXAM TIP PEA items pair a history with one clue (dialysis and peaked T waves; chest trauma and absent breath sounds). Treat that cause during CPR.

7 Older answers vs 2025

Older question banks may still key the middle column.

TOPIC	OLDER SOURCES	2025
AF shock	120–200 J	200 J or more
Flutter shock	50–100 J	200 J
Bradycardia	Under 60/min	Under 50/min
Atropine	0.5 mg (2010)	1 mg
ROSC on $ETCO_2$	Jump to 40 or more	Rise by more than 10
Post-ROSC	SpO_2 92–98%, SBP over 90	SpO_2 90–98%, MAP 65
Temperature	32–36 °C, 24 h	32–37.5 °C, 36 h

MORE Post-arrest care: targets, temperature and prognosis

Post-cardiac arrest syndrome combines brain injury, myocardial dysfunction, a sepsis-like ischemia-reperfusion response and the cause of the arrest. Stunning usually improves within about 24 hours (Laurent 2002); brain injury causes most deaths after OHCA admission.

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