

ACLS

Advanced Cardiovascular Life Support

Quick-Reference Charts & Drug-Dosage Card · Based on 2025 AHA Guidelines

NEW 2025 EDITION

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ACLS CARDIAC ARREST ALGORITHM — Adult**SHOCKABLE: VF / Pulseless VT**

1. Confirm cardiac arrest. Start high-quality CPR immediately.
Rate 100–120/min · Depth ≥2 in, ≤2.4 in · Full recoil · Minimize interruptions
2. Charge defibrillator while CPR continues. Prefer biphasic device.
3. Deliver 1 shock → resume CPR immediately (2 min). No pulse check right after shock.
4. Rhythm check every 2 min — still shockable? → shock again → CPR (2 min).
5. **Epinephrine 1 mg IV/IO** every 3–5 min. IV preferred over IO.
6. After 3rd shock → antiarrhythmic (acceptable alternatives):
 - **Amiodarone** 300 mg IV/IO push (2nd dose: 150 mg)
 - **OR Lidocaine** 1–1.5 mg/kg IV/IO (then 0.5–0.75 mg/kg, max 3 mg/kg)
7. Continue CPR — treat reversible causes (H's & T's).
8. ROSC achieved → Post-Cardiac Arrest Care.

Note 2025: Dual-sequence & vector-change defibrillation NOT recommended for routine use.

NON-SHOCKABLE: PEA / Asystole

1. Confirm cardiac arrest. Start high-quality CPR immediately.
2. **Epinephrine 1 mg IV/IO ASAP** — repeat every 3–5 min.
Give as early as possible. IV preferred over IO.
3. Consider advanced airway (ETT or supraglottic device).
4. Waveform capnography when airway placed. **ETCO₂ most valuable non-invasive ROSC indicator.**
5. Continue CPR (2 min cycles) — check rhythm every 2 min.
6. Treat reversible causes (H's & T's).
7. If rhythm converts to shockable → go to VF/pVT branch.
8. ROSC achieved → Post-Cardiac Arrest Care.

For ASYSTOLE: Verify in 2 leads. Confirm lead connections. **Do NOT defibrillate asystole.**

Note 2025: Routine Ca, NaHCO₃, Mg NOT recommended unless specific indication (hyperkalemia, toxin, etc.).

Reversible Causes — The H's and T's

H's	T's
Hypovolemia	Tension Pneumothorax
Hypoxia	Tamponade (cardiac)
Hydrogen ion (acidosis)	Toxins / Drug Overdose
Hypo/Hyperkalemia	Thrombosis (pulmonary — PE)
Hypothermia	Thrombosis (coronary — MI)

ACLS BRADYCARDIA ALGORITHM — Adult (HR <60 bpm with symptoms) ★ 2025 UPDATE

#	STEP	ACTION / DECISION
1	Assess & Monitor	Maintain patent airway. Assist breathing if needed. O ₂ if SpO ₂ <94%. IV access. 12-lead ECG. Identify and treat reversible causes.
2	Symptomatic?	Signs of poor perfusion: hypotension, acutely altered mental status, signs of shock, ischemic chest discomfort, acute heart failure.
3	No symptoms	Observe and monitor.
4	Symptoms present	ATROPINE 1 mg IV — repeat every 3–5 min. MAX DOSE: 3 mg. ★ 2025: First dose increased from 0.5 mg → 1 mg IV.
5	Atropine ineffective?	TRANSCUTANEOUS PACING: Consider; begin immediately for high-degree AV block. DOPAMINE: 5–20 mcg/kg/min IV infusion. EPINEPHRINE: 2–10 mcg/min IV infusion.
6	Persistent?	Consider transvenous pacing. Expert consultation.

ACLS TACHYCARDIA ALGORITHM — Adult (HR >150 bpm with symptoms)

#	STEP	ACTION / DECISION
1	Assess & Monitor	Maintain patent airway. O ₂ if SpO ₂ <94%. IV access. 12-lead ECG. Identify reversible causes.
2	Unstable?	Persistent tachyarrhythmia with hypotension, AMS, signs of shock, chest pain, acute HF → IMMEDIATE SYNCHRONIZED CARDIOVERSION.
3	Cardioversion	Narrow regular: 50–100 J. Narrow irregular (A-fib): 120–200 J biphasic. Wide regular: 100 J. Wide irregular (VF): DEFIBRILLATION (unsynchronized).
4	Stable patient	Determine QRS width: Narrow (<0.12 sec) vs Wide (≥0.12 sec).
5	Narrow QRS (SVT)	Vagal maneuvers first. Then ADENOSINE 6 mg rapid IV push + 20 mL NS flush; if no conversion, 12 mg; may repeat 12 mg once. If SVT persists: beta-blocker or calcium channel blocker IV.
6	Wide QRS (regular)	If monomorphic VT: Consider AMIODARONE 150 mg IV over 10 min. Adenosine for regular wide-complex of uncertain type. Prepare for cardioversion.
7	Wide QRS (irregular)	If pre-excited A-fib: Avoid AV nodal agents. Consult expert. If torsades de pointes: Magnesium sulfate 1–2 g IV over 15 min.

ACLS POST-CARDIAC ARREST CARE — After ROSC ★ 2025 UPDATE

PRIORITY	TARGET / ACTION (2025)
Airway / Ventilation	Avoid hyperventilation. Start at 10 breaths/min. Target PaCO ₂ 35–45 mmHg. Waveform capnography — best non-invasive ROSC indicator.
Oxygenation	Titrate O ₂ to lowest FiO ₂ maintaining SpO ₂ 92–98%. Avoid hyperoxia AND hypoxia.
Hemodynamics	Target SBP ≥90 mmHg, MAP ≥65 mmHg. IV fluids, vasopressors as needed. Norepinephrine preferred post-ROSC.
12-Lead ECG	Obtain ASAP. STEMI or high AMI suspicion → emergent coronary angiography/PCI. ★ 2025: Routine coronary angiography NOT recommended for all OHCA without STEMI — use clinical judgment.
Temperature Management ★ 2025 UPDATED	Prevent fever (>37.5°C) with continuous temperature monitoring in all comatose survivors. Active normothermia preferred. If cooling used, maintain 32–36°C for ≥24 hrs. ★ 2025: Threshold changed to >37.5°C (was >37.7°C). Fever prevention is the priority over routine hypothermia induction.
Neurological Care	Multimodal neuroprognostication ≥72 hrs post-arrest AND post-rewarming. No single test should be used in isolation. Combine: clinical exam, EEG, SSEPs, biomarkers (NSE), neuroimaging. EEG monitoring for seizures. Treat post-arrest myoclonus if present.
Glucose Control	Target blood glucose 144–180 mg/dL. Avoid hypoglycemia.

ACLS DRUG-DOSAGE CARD — Adult ★ 2025 UPDATE

DRUG	INDICATION	DOSE / ROUTE	NOTES
Epinephrine	VF/pVT, PEA, Asystole Bradycardia (2nd line)	1 mg IV/IO q3–5 min 2–10 mcg/min infusion (brady)	Only vasopressor in 2025 arrest algorithm. Give ASAP for non-shockable. IV preferred over IO.
Amiodarone	VF/pVT (refractory) Stable VT	300 mg IV/IO push; 2nd: 150 mg 150 mg IV over 10 min (stable VT)	Acceptable alternative to lidocaine. Maintenance: 1 mg/min ×6 hr, then 0.5 mg/min ×18 hr.
Lidocaine	VF/pVT (alt. to amio) VT (stable)	1–1.5 mg/kg IV/IO push 0.5–0.75 mg/kg q5–10 min (max 3 mg/kg)	Acceptable alternative to amiodarone. Neither is clearly preferred in 2025. Maintenance: 1–4 mg/min infusion.
Adenosine	Stable SVT / narrow-complex tachycardia	6 mg rapid IV push (1st dose) 12 mg IV (2nd, 3rd doses)	Flush immediately with 20 mL NS. Shortest half-life: <10 sec. Use proximal large vein.
Atropine ★ 2025	Symptomatic bradycardia	1 mg IV q3–5 min MAX: 3 mg total	★ 2025: First dose increased to 1 mg (was 0.5 mg). Not effective for complete (3rd degree) AV block.
Dopamine	Bradycardia (2nd line) Hypotension	5–20 mcg/kg/min IV infusion	Titrate to effect. May cause tachycardia at high doses.
Norepinephrine	Post-ROSC hypotension	0.1–0.5 mcg/kg/min infusion Titrate to MAP ≥65 mmHg	Preferred vasopressor post-ROSC. Central line preferred.
Magnesium Sulfate	Torsades de Pointes Hypomagnesemia	1–2 g IV/IO over 5–20 min (TdP: 1–2 g IV over 15 min)	Flush with 10 mL D5W. Only use in cardiac arrest if TdP or hypomagnesemia confirmed.
Sodium Bicarbonate	Hyperkalemia Tricyclic OD, severe acidosis	1 mEq/kg IV/IO	Routine use in cardiac arrest NOT recommended. Use only for specific indications.
Calcium Chloride	Hyperkalemia, hypocalcemia Ca-channel blocker OD	500–1000 mg (5–10 mL of 10%) IV slow push	Routine use in arrest NOT recommended. Central line preferred. Monitor for bradycardia.

★ 2025 Drug Card Updates: Vasopressin removed (not in 2025 algorithm). Atropine first dose increased to 1 mg. Amiodarone and lidocaine are equally acceptable for refractory VF/pVT — neither is clearly preferred. Routine use of Ca, NaHCO₃, and Mg in undifferentiated cardiac arrest is not recommended.