

STUDY GUIDE FOR ACLS

ADVANCED CARDIOVASCULAR LIFE SUPPORT



WHAT IS ACLS?

ACLS builds on high-quality BLS to manage adult cardiac arrest, arrhythmias, stroke, and acute coronary syndromes.

ADULT BLS ESSENTIALS

Assessment Steps

- Unresponsive with absent/abnormal breathing: check pulse and breathing together for no more than 10 seconds.
- If HR stays below 60/min with poor perfusion despite effective oxygenation and ventilation, start CPR.

High-quality Compressions

- At least 2 inches with a rate between 100–120/min
- Allow for full recoil
- PETCO₂ (intubated) < 10 mmHg, indicates poor compressions
- Interruptions in compressions should be < 10 seconds
- Switch compressors every 2 min.
- Pre-charging the defibrillator 15 seconds before the rhythm check can improve CCV

Breaths during CPR

- No advanced airway: 30:2
- Give each breath over about 1 second, only enough for visible chest rise.
- Advanced airway: continuous compressions plus 1 breath every 6 seconds.

Rescue Breathing with a Pulse

- Absent or inadequate breathing: Give 1 breath every 6 secs.
- **Respiratory arrest without a pulse:** You must immediately begin full CPR starting with chest compressions using the 30:2 ratio (30 compressions followed by 2 breaths)

ADULT CORONARY SYNDROMES AND ACUTE STROKE

Suspected ACS/STEMI

- Assess ABCs; attach monitor/defibrillator; obtain IV access. Give oxygen only for hypoxemia or respiratory distress per protocol.
- Obtain and interpret a 12-lead ECG within 10 minutes; check troponin without delaying reperfusion decisions.
- Give chewable aspirin 162–325 mg promptly unless allergic, actively bleeding, or otherwise contraindicated.
- Activate the STEMI system early. System targets: first-medical-contact-to-device within 90 minutes at a PCI-capable center or 120 minutes when transfer is required.

Stroke

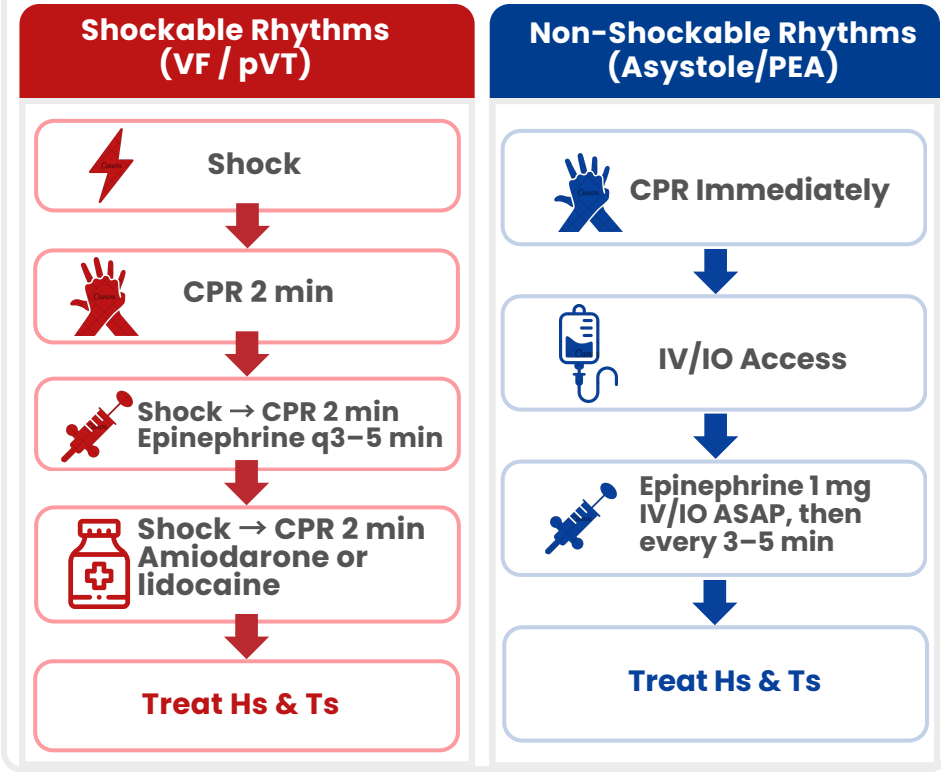
- Use FAST/Cincinnati or an approved stroke scale; activate EMS/stroke pathway immediately and provide prearrival notification.
- Document last known well, perform focused neurologic assessment, and check glucose without delaying transport or imaging.
- Obtain urgent noncontrast brain imaging; a quality target is CT initiation within 20 minutes of hospital arrival.
- Use imaging, time last known well, and specialist assessment to determine IV thrombolysis and thrombectomy eligibility; follow the stroke team/local protocol.

PHARMACOLOGY IN ACLS

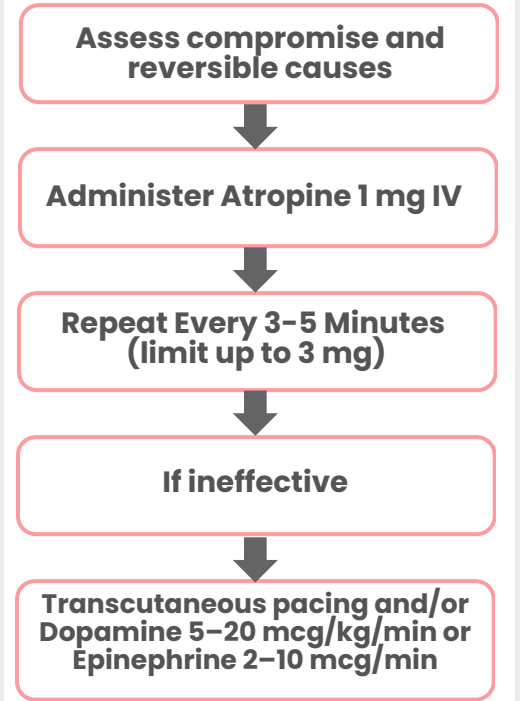
DRUG	USE	DOSE (ADULT)
Epinephrine	Cardiac Arrest All Rhythms	1 mg IV/IO every 3-5 min
Amiodarone	VF/pulseless VT	300 mg IV/IO bolus may repeat 150 mg
Atropine	Symptomatic Bradycardia	1 mg IV every 3-5 min, max dose 3 mg
Adenosine	SVT (Supraventricular Tachycardia)	6 mg rapid IV push then 12 mg IV push after 1-2 min if needed
Magnesium Sulfate	Torsades de Pointes and Hypomagnesemia	1-2 g IV diluted in 10 mL D5W over 5-20 min
Dopamine	Bradycardia/ Hypotension when atropine is ineffective	0.05-1mcg/kg/ min IV infusion
Norepinephrine	Severe Hypotension & Shock	0.1-0.5 mcg/kg/min IV infusion
Aspirin	ACS (Acute Coronary Syndrome)	81-325 mg orally, chew if possible
Nitroglycerin	ACS/Chest Pain	0.4 mg SL every 5 min (max 3)

ACLS ALGORITHMS

CARDIAC ARREST



BRADYCARDIA (with pulse)



TACHYCARDIA (WITH PULSE)

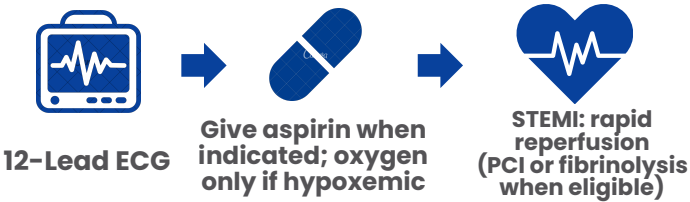
STABLE

- Assess stability and QRS width.
- Regular narrow QRS: vagal maneuvers → adenosine 6 mg rapid IV push, then 12 mg if needed.
- Stable regular monomorphic wide QRS: consider adenosine; antiarrhythmic infusion and expert consultation.
- Treat underlying causes.

UNSTABLE

- Administer synchronized cardioversion immediately.

ACS ALGORITHM



STROKE ALGORITHM



ECG RHYTHM RECOGNITION

KEY ECG COMPONENTS

P Wave	Atrial depolarization.
QRS Complex	Ventricular depolarization.
T Wave	Ventricular repolarization.
PR Interval	Time from atrial to ventricular activation
Wide QRS	≥ 0.12 seconds
Narrow QRS	< 0.12 seconds
Regularity	Regular or irregular rhythm aids in diagnosis.

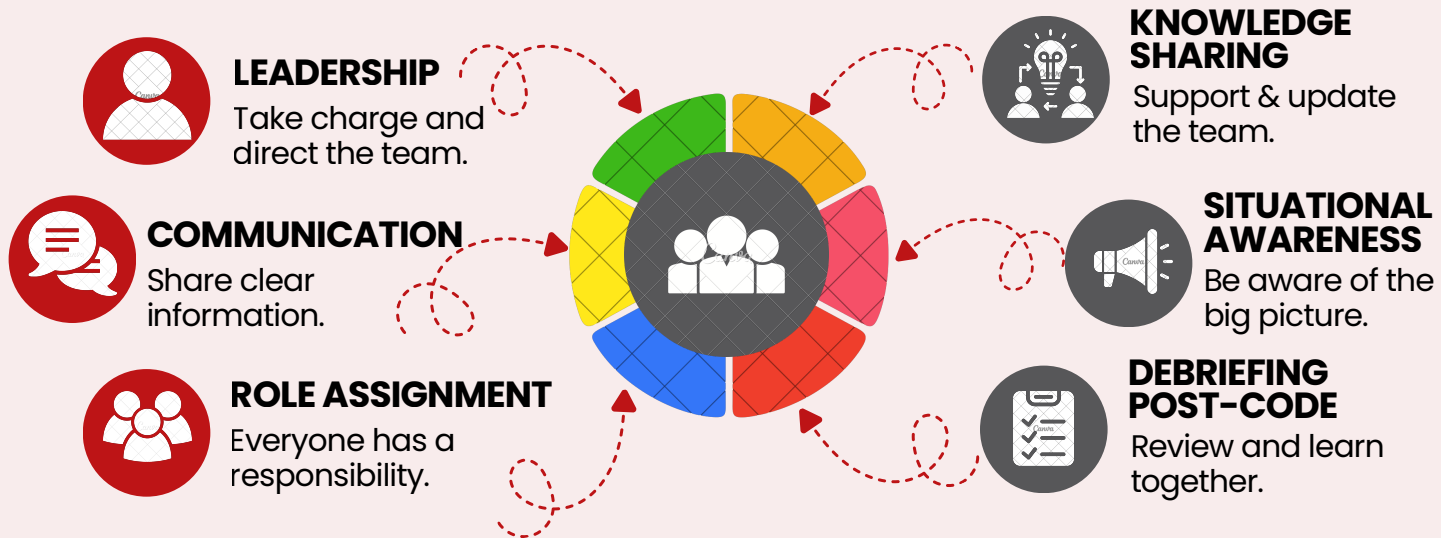
HEART BLOCK LEVELS

1	First-Degree AV Block	PR interval > 0.20 sec; all impulses conducted.
2	Second-Degree AV Block	Some atrial impulses fail to reach ventricles.
2.1	Mobitz Type I (Wenckebach)	PR interval progressively lengthens, then a QRS is dropped.
2.2	Mobitz Type II	Dropped QRS without PR prolongation; may progress to complete block.
3	Third-Degree AV Block (Complete Heart Block)	No P–QRS relationship; atria and ventricles beat independently.

HEART RHYTHM

Normal Sinus Rhythm	Rate: 60–100 bpm	
Bradycardia	Rate: < 60 bpm	
Tachycardia	Rate: > 100 bpm	
Atrial Fibrillation (AF)	No distinct P waves, irregularly irregular ventricular response	
Ventricular Fibrillation (VF)	Chaotic electrical activity, no effective contraction	
Asystole	No electrical activity visible, flatline.	

TEAM DYNAMICS



CASE SCENARIOS

VF CARDIAC ARREST



- Patient collapses, pulseless, VF on monitor—what is the immediate action?

- ✓ Shock Immediately
- ✓ CPR for 2 min
- ✓ Shock → CPR + epinephrine q3–5 min
- ✓ Shock → CPR + amiodarone or lidocaine
- ✓ Treat Hs & Ts

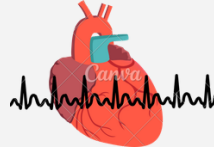
SYMPTOMATIC BRADYCARDIA



- Slow heart rate causing symptoms—what is the first-line treatment?

- ✓ Assess symptoms
- ✓ Atropine 1 mg IV
- ✓ Pacing and/or dopamine or epinephrine if ineffective

TACHYCARDIA WITH PULSE



- Rapid heart rate with symptoms—what medical interventions are needed?

- ✓ Stable vs Unstable
- ✓ Vagal maneuvers
- ✓ Adenosine if regular
- ✓ Synchronized cardioversion if unstable

STROKE RESPONSE



- How can early recognition and treatment improve outcomes?

- ✓ FAST assessment
- ✓ Imaging (CT)
- ✓ IV thrombolysis if eligible
- ✓ Evaluate for thrombectomy

SPECIAL CONSIDERATIONS

- ✓ Identify & treat reversible causes (Hs & Ts)
- ✓ Post-ROSC care & monitoring
- ✓ Temperature control after ROSC
- ✓ SpO₂ 90–98% after reliable reading
- ✓ Special populations (Pregnancy, Elderly)
- ✓ Medication safety & dosing
- ✓ Closed-loop communication

ASSESSMENT GUIDE

- ✓ Master the 2025 Core Algorithms First
- ✓ Prioritize Rhythm Recognition
- ✓ Memorize Key Drug Actions and Timing
- ✓ Practice ACLS Scenarios Regularly
- ✓ Focus on Decision Points, Not Details
- ✓ Use Flowcharts for Revision
- ✓ Simulate Exam Timing
- ✓ Revise in Short, Repeated Sessions

ACLS EXAM QUICK FACTS



BLS PROFICIENCY IS ESSENTIAL



COMPLETION MEET ALL COURSE REQUIREMENTS



CERTIFICATION VALID — 2 YEARS



COURSE DURATION 8.25–16.5 HOURS*



REMEMBER: Knowledge + Skills + Calm = Save Lives



DISCLAIMER: Educational study aid only. It does not replace an official ACLS course, current algorithms, local protocols, or clinical judgment.

