

ACLS Study Guide 2025

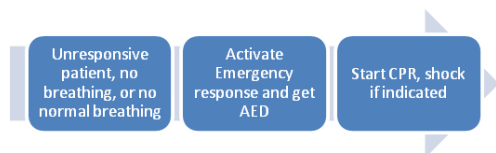
The ACLS Provider Exam has 50 multiple-choice questions. Passing score is 84%. A Student may miss 8 questions. Remediation is allowed. All AHA exams are “open resource” so a student may use books and/or handouts for the exam.

Mandatory Precourse Self-Assessment Score at least 70% to pass. Bring proof of completion to class.

<https://elearning.heart.org/course/1637> for Traditional ACLS Course Click on link.

<https://elearning.heart.org/course/1551> for ACLS Preferred Provider Course. Click on link.

BLS Overview – CAB Compressions, Airway, Breaths



- Push hard and fast 100 to 120/min for 2 minutes
- If person unresponsive, check breathing and pulse
- Pulse check no more than 10 seconds
- Begin chest compression – pt history of opiate addition found unresponsive not breathing and no pulse
- Agonal gasps, no pulse or unsure – begin CPR starting with chest compressions
- Charge defibrillator 15 seconds before rhythm check

Elements of High-Quality CPR

COMPRESSIONS

- Compressions started within 10 seconds
- Rate at least 100 to 120 per minute
- Compression depth at least 2 inches, not more than 2.4 inches or 6cm
- Switch compressors every 2 minutes or 5 cycles
- In addition to defibrillation, chest compressions should be performed immediately
- Interruptions in compression, maximum interval 10 seconds
- PETCO₂ reading of at least 10
- Chest Compression Fraction (CCF) above 80%

RECOIL Allow complete chest recoil after compression to allow maximum blood return to the heart

VENTILATION

- Effective breaths to make the chest rise
- 1 breath every 6 seconds (10/min)
- 30 compressions to 2 ventilations
- Avoid excessive ventilation
- Effect of excessive ventilation - decrease cardiac output

AED

- Immediately after defibrillation, resume CPR starting with chest compressions
- Use AED/defibrillator as soon as possible
- Can compress while defibrillator is charging
- Defibrillation – noticed the patient has a jewelry piercing at the navel. Continue by charging the defibrillator and delivering the shock as usual

Stroke

- 8 D's – **D**etection, **D**ispatch, **D**elivery, **D**oor, **D**ata **D**ecision, **D**rug/**D**evice, **D**isposition
- Perform validated stroke screen, severity tool
 - Facial Droop, Arm Drift, Abnormal Speech
- Noncontrast CT scan. Not more than 20 min after arrival bypass ED, go straight to imaging

- Give thrombolytic therapy and consider endovascular therapy
- Provide prehospital notification to expedite pt care

Acute Coronary Syndromes (ACS), STEMI

- STEMI door-to-balloon within 90 minutes or less of initial contact
- Door to needle fibrinolysis 30 minutes or less.
- Give fibrinolytics as soon as possible, consider endovascular therapy
- Coronary reperfusion – capable medical center
- 12-lead ECG important assessment step for pt with chest pain
- Aspirin is 162 to 325 mg to chewed, NTG, Morphine
- Right ventricular MI – caution with Nitroglycerin
- Chest discomfort post stent then ventricular fibrillation – probable cause? Acute coronary syndrome

Cardiac Rhythm Strips to Interpret

- Ventricular Tachycardia (VT)
 - Stable, Unstable, Monomorphic VT
- Supraventricular Tachycardia (SVT), unstable
- Heart Blocks
 - Second-degree atrioventricular Type I
 - Second-degree atrioventricular Type II
 - Third-degree atrioventricular
- Ventricular Fibrillation (VF)
- Pulseless Electrical Activity (PEA)

Bradycardia-Heart rate below 50

Need to assess stable versus unstable

If stable . . .

- Monitor, observe, and obtain expert consultation

If unstable . . .

- Atropine 1 mg IV. Can repeat Q 3 to 5 minutes to 3 mg maximum dose of 3.0 mg (including heart blocks)
- If Atropine is ineffective
 - Dopamine infusion (5-20 mcg/kg/min)
 - Epinephrine infusion (2-10 mcg/min)
 - Transcutaneous pacing

Tachycardia with a Pulse

- If unstable (wide or narrow tachycardia) – go straight to synchronized cardioversion
- If stable narrow complex tachycardia
 - Obtain 12-lead ECG
 - Vagal maneuvers
 - Adenosine 12 mg second dose; first was 6mg

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Pulseless Rhythms - Cardiac Arrest CPR

- Included in Primary Survey
- Shock as soon as defibrillator is available
- Continue compressions while defibrillator charging
- No oxygen blowing over chest during defibrillation
- Hands free pads allow for more rapid defibrillation

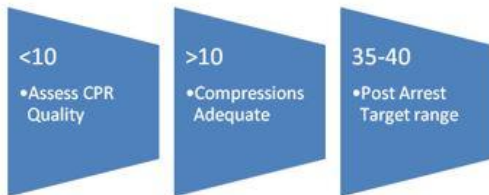
Shockable Rhythms – VF, VTach

- Push hard and fast 100 to 120/min for 2 minutes
- Oxygen, monitor, IV, fluids, glucose check
- Agonal gasps are a likely indicator of cardiac arrest in an unresponsive patient
- Defibrillation – Pt apneic, pulseless but rhythm same
- Epinephrine 1 mg IV push every 3 to 5 minutes
- Amiodarone 300 mg IV push first dose, Second dose 150 mg
OR
- Lidocaine 1-1.5 mg /kg IVP first dose, then 0.5-0.75 mg/kg

Non-Shockable Rhythms – Asystole, PEA

- Push hard and fast 100 to 120/min for 2 minutes
- Give epinephrine 1 mg IV
- **Synchronized Cardioversion, Consider Sedation**
- Unstable VT, unstable SVT
 - Patient has a pulse; Heart rate typically 150 or above; Use synch setting on defibrillator

Waveform Capnography in ACLS (PETCO₂)



- Continuous waveform capnography allows for accurate monitoring quality of CPR especially if intubated to monitor PETCO₂
- Continuous waveform capnography – Most reliable method to confirm and monitor ETT placement – Continuous waveform capnography
- Capnography shows a persistent waveform and a PETCO₂ of 8 mm Hg – significance chest compressions may not be effective
- CPR Coach notes PETCO₂ persists at 8 mm Hg and directs Rescuer 2 to compress deeper

Treat Reversible Causes (H's and T's)

Hypovolemia	Tension pneumothorax
Hypoxia	Tamponade, cardiac
Hydrogen ion (acidosis)	Toxins – poisons, drugs
Hypo/hyperkalemia	Thrombosis – pulmonary
Hypothermia	Thrombosis – coronary

Return of Spontaneous Circulation (ROSC)

Post Cardiac Arrest Care

- Treat hypotension minimum mean arterial pressure (MAP) 65 mm Hg
- 12-lead ECG, airway, capnography
- SpO₂ 90-98%, 10 breaths per minute
- Targeted Temperature Management (TTM)

- Hypothermia if pt DOES NOT follow verbal commands initiate temperature control
- Duration to hold temperature control – at least 36 hours
- Temperature control after cardiac arrest – 32° to 37.5° C

Cardiac Arrest in Pregnancy

- CPR, defibrillation, drugs – as with cardiac arrest
- Most experienced person for intubation
- Place IV above diaphragm
- If receiving IV magnesium, stop and give calcium chloride or calcium gluconate
- BLS Guidelines – Uterus above umbilicus lateral uterine displacement, manually moving the uterus to the patient's left side to relieve pressure on vessels
- Obstetric interventions – detach fetal monitor; Prepare for perimortem Cesarean if no ROSC in minutes

Opioid Poisoning

- Decreased respirations and pinpoint pupils
- Decreased breathing, consider Naloxone
- Begin chest compression – pt history of opiate addition found unresponsive not breathing and no pulse

Points to Ponder

- Medical emergency team/rapid response team can improve outcome by identifying and treating early clinical deterioration
- OPA – Oropharyngeal airway measure from corner of mouth to angle of the mandible
- Do not suction for more than 10 seconds
- Pulse oximeter reading 84%, apply oxygen
- CPR Coach – primary focus is to ensure high-quality CPR
- Chain of Survival – 6 links is Recovery Recognition and Emergency Activation, High-Quality CPR, Defibrillation, Advanced Resuscitation, Post-Cardiac Arrest Care, Recovery and Survivorship



Team Dynamics

TEAM DYNAMICS: 1.) Clear Roles and Responsibilities 2.) Knowing your Limitations 3.) Constructive Intervention

- Closed-loop communication is when you instruct a team member to give 1 mg of atropine IV, and they respond saying, "I'll administer 1 mg of atropine IV push"
- When a team member realizes a task is beyond their scope of practice, they should ask for a new task or role
- A pt is being resuscitated in a noisy environment. Team member thinks the Team Leader gave an order for 500 mg of amiodarone IV. The best response from the team member is to repeat the order, "I have an order to give 500 mg of amiodarone IV. Is this correct?"
- When a team member realizes a task is beyond their scope of practice, they should ask for a new task or role

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Tachycardia Rhythms with a Pulse

Stable = good BP and Alert X4 / Unstable = low BP and poor mental activity (Follow Tachycardia Algorithm)

Sinus tachycardia



Narrow-complex tachycardia



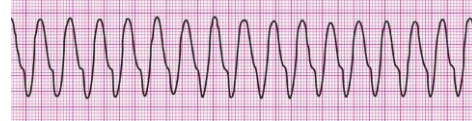
Atrial flutter



Atrial fibrillation



Monomorphic ventricular tachycardia with a pulse



Polymorphic ventricular tachycardia



Bradycardia Rhythms with a Pulse

Non-symptomatic = good BP & good mentation / Symptomatic = low BP and poor mental activity (Follow Bradycardia Algorithm)

Sinus bradycardia



First-degree Heart Block



Second-degree atrioventricular block, type I



Second-degree atrioventricular block, type II



Third-degree atrioventricular block



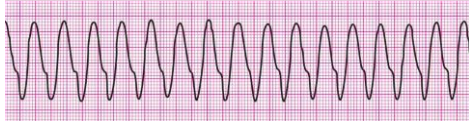
Third-degree atrioventricular block



Pulseless Rhythms (Cardiac Arrest)

1st Start CPR | 2nd Shock pVT/VF Immediately | 3rd Establish IV Access & give Epi | 4th Treat Reversible Causes (H/T)

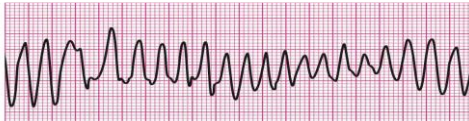
Pulseless monomorphic ventricular tachycardia



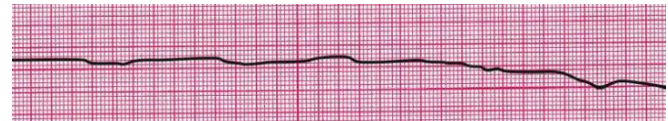
Pulseless polymorphic ventricular tachycardia



Ventricular fibrillation



Asystole



Pulseless Electrical Activity--PEA



PEA is any organized rhythm without a pulse that is not VF or pVT

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1. Adenosine 12 mg second dose; first was 6mg
2. Agonal gasps are a likely indicator of cardiac arrest in unstable monomorphic tachycardia
3. Agonal gasps, no pulse or unsure – Begin CPR starting with chest compressions
4. Aspirin to chew – 162 to 325 mg
5. Atropine 1 mg IV. Can repeat Q 3 to 5 minutes to 3 mg, maximum dose of 3.0 mg (including heart blocks)
6. Cardiac arrest with ROSC – Likely cause of cardiac arrest tension pneumothorax
7. Chest compression – Immediately after defibrillation, resume CPR starting with chest compressions
8. Chest compression – In addition to defibrillation, chest compressions should be performed immediately
9. Chest compression – pt history of opiate addition found unresponsive not breathing and no pulse; Begin chest compression
10. Chest compression – Interruptions in compression, maximum interval 10 seconds
11. CPR Coach – primary focus is to ensure high-quality CPR
12. Capnography shows a persistent waveform and a PETCO₂ of 8 mm Hg – significance chest compressions may not be effective
13. Continuous waveform capnography – Most reliable method to confirm and monitor ETT placement
14. Continuous waveform capnography allows for accurate monitoring quality of CPR especially if intubated to monitor PETCO₂
15. CPR Coach notes PETCO₂ persists at 8 mm Hg and directs Rescuer 2 to compress deeper
16. Defibrillator – Charge 15 seconds before conducting a rhythm check
17. Perform defibrillation – Pt apneic, pulseless but rhythm same
18. Defibrillation – A patient in the emergency department becomes unresponsive and lead II on the ECG reveals ventricular fibrillation. The appropriate treatment is immediate defibrillation
19. Defibrillation – noticed the patient has a jewelry piercing at the navel. Continue by charging the defibrillator and delivering the shock as usual
20. Pulseless rhythms – Epinephrine 1 mg IV push every 3 to 5 minutes
21. Hypothermia if pt DOES NOT follow verbal commands initiate temperature control
22. Hypovolemia suspected reversible cause – During a resuscitation attempt on a patient, the team leader learns, the patient had had poor oral intake, vomiting, and diarrhea, resulting in severe dehydration.
23. Lidocaine 1 to 1.5 mg/kg first dose then 0.5 to 0.75 mg/kg
24. Mean arterial pressure (MAP) one should attempt to achieve with fluid administration or vasoactive agents in a hypotensive patient with post-cardiac arrest who achieves return of spontaneous circulation is 65 mm Hg
25. Medical emergency team/rapid response team can improve outcome by identifying and treating early clinical deterioration
26. OPA – Oropharyngeal airway measure from corner of mouth to angle of the mandible
27. PEA – Give epinephrine 1 mg IV
28. Pulse oximeter reading 84%, apply oxygen
29. Rhythm – The successive prolongation of the PR interval until an atrial impulse is not conducted to the ventricles best describes a Second-degree atrioventricular block type I. These waveforms are described as the P-R interval getting progressively longer
30. Rhythm – Third-degree atrioventricular block is most clinically significant because it is most likely to cause cardiovascular collapse and require immediate pacing
31. Rhythm – Second-degree atrioventricular block type II has intermittent nonconduction of P waves or atrial impulses with a constant PR interval on conducted beats with an occasional dropped QRS complex
32. Rhythm – A patient reports having light-headedness, nausea, and chest discomfort. The patient is awake and responsive but appears ill, pale, and grossly diaphoretic. Their radial pulse is weak, thready, and fast. Monomorphic ventricular tachycardia is seen on the monitor. The ACLS algorithm to be followed is Adult Tachyarrhythmia with a Pulse
33. Rhythm – A patient with a history of heart failure is experiencing shortness of breath, hypotension, and a heart rate over 180 / minute in supraventricular tachycardia, otherwise known as an unstable narrow-complex tachycardia
34. STEMI, ACS – Obtaining a 12-lead ECG important assessment step for pt with chest pain
35. STEMI, ACS – Chest discomfort post stent then ventricular fibrillation – probable cause? Acute coronary syndrome (ACS)
36. STEMI, ACS – door-to-balloon within 90 minutes or less of initial contact
37. Stroke – Noncontrast CT scan. Not more than 20 min after arrival bypass ED, go straight to imaging
38. Stroke – give or consider thrombolytic therapy and consider endovascular therapy
39. Stroke – Prehospital notification to expedite pt care
40. Synchronized cardioversion – pt with a pulse and tachycardia
41. Synchronized cardioversion – During an event of unstable regular monomorphic ventricular tachycardia, performing synchronized cardioversion would be done first
42. Synchronized cardioversion – For patients with a pulse and tachycardias, such as unstable narrow-complex tachycardia, unstable atrial fibrillation, unstable atrial flutter, and unstable regular monomorphic tachycardia, perform synchronized cardioversion
43. Targeted temperature management – Duration to hold temperature control is at least 36 hours
44. Targeted temperature management – Temperature control after cardiac arrest is 32° C to 37.5° C
45. Team dynamics – When a team member realizes a task is beyond their scope of practice, they should ask for a new task or role
46. Team dynamics – If a team member is about to make a mistake during resuscitation attempt, Team Leader should address the team member immediately
47. Team dynamics – A pt is being resuscitated in a noisy environment. Team member thinks the Team Leader gave an order for 500 mg of amiodarone IV. The best response from the team member is to repeat the order, “I have an order to give 500 mg of amiodarone IV. Is this correct?”
48. Team dynamics – Closed-loop communication is when you instruct a team member to give 1 mg of atropine IV, and they respond saying, “I’ll administer 1 mg of atropine IV push”
49. Ventilation – Effect of excessive ventilation is decrease in cardiac output
50. Ventilation – 1 breath every 6 seconds (10/min)