ACLS Respiratory Arrest Case: Out-of-Hospital Scenario

You are a paramedic and respond to the scene of a possible cardiac arrest. A young man lies motionless on the pavement. He is having a few agonal gasps but otherwise appears lifeless. Bystanders report that he "just collapsed."

Case Development

Initial Information
The scene is safe. No one has started CPR. The man otherwise appears healthy and is in casual, clean attire. There are no indications of trauma. He has stopped breathing as you approach and he is cyanotic. What are your actions?

Additional Information
You perform an initial assessment and determine that a pulse is present. After interventions and with bag-mask ventilation, vital signs are BP 100/60 mm Hg, heart rate (HR) 110/min, and respiratory rate (RR) 0/min (spontaneous). Cyanosis improves with ventilation. He remains unresponsive. You transport with appropriate ventilations and monitoring.

ACLS Respiratory Arrest Case: Out-of-Hospital Scenario

You are a paramedic and respond to the scene of a possible cardiac arrest. An elderly woman lies motionless on her sofa. She is having a few agonal gasps but otherwise appears lifeless and is cyanotic. Her family reports that she complained of a headache and then gradually lost consciousness. Respirations became slow.

Case Development

Initial Information
The scene is safe. No one has started CPR. The woman otherwise appears healthy and is in bedclothes. There are no indications of trauma. She gasps and stops breathing as you approach. She is deeply cyanotic. What are your actions?

Additional Information
The student performs initial assessment and determines that a pulse is present. After interventions and ventilation with a bag-mask, vital signs are BP 100/60 mm Hg, HR 110/min, and RR 0/min (spontaneous). Cyanosis improves with ventilation. She remains unresponsive. You transport with appropriate ventilations and monitoring.

Management of Respiratory Arrest Bag-Mask Ventilation Testing Checklist

Student Name: ____________________________  Test Date: ____________________________

Performance Guidelines and Critical Actions

✓ if done correctly

BLS Survey and Interventions
- Checks for responsiveness
- Taps and shouts, "Are you all right?"
- Scans chest for movement (5-10 seconds)

Activates the emergency response system
- Activates the emergency response system and gets the AED
- Directs second rescuer to activate the emergency response system and get the AED

Checks carotid pulse (5-10 seconds). Notes that pulse is present

Does not initiate chest compressions or attach AED

Performs ventilations at the correct rate of 1 breath every 5-6 seconds (10-12 breaths per minute)

ACLS Survey Case Skills
- Inserts oropharyngeal or nasopharyngeal airway
- Administers oxygen
- Performs correct bag-mask ventilation for 1 minute

Critical Actions
- Effectively ventilates with a bag-mask device for 1 minute
- Gives proper ventilation—rate and volume

STOP TEST

Test Results

Circle P or NR to Indicate Pass or Needs Remediation:

P     NR

Instructor signature affirms that skills tests were done according to AHA Guidelines. Save this sheet with course record.

Instructor Signature: ____________________________
Print Instructor Name: ____________________________
Date: ____________________________
ACLS Respiratory Arrest Case: Out-of-Hospital Scenario

You arrive at a backyard swimming pool to find bystanders performing CPR on a cyanotic male, age 30 years, whom they pulled from the pool about 15 minutes ago. The bystanders report that the patient did not dive into the pool and that they thought he was playing a joke.

Case Development

<table>
<thead>
<tr>
<th>Initial Information</th>
<th>The scene is safe. There is no evidence of trauma. The patient is making no respiratory effort. What are your actions?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Information</td>
<td>After quickly performing the BLS Survey, the team leader discovers that the patient is not breathing but does have a strong radial pulse. After ventilation with a bag-mask, oropharyngeal airway, and 100% oxygen, the patient's BP is 118/86 mm Hg, the pulse is 114/min, and the assisted-ventilation RR is 10-12 breaths per minute. The patient's wife is present and reports no significant medical history, drug use, or allergies. Bystanders report that the patient had been drinking throughout the afternoon.</td>
</tr>
</tbody>
</table>

ACLS Respiratory Arrest Case: In-Hospital Scenario

You are a nurse and respond to a call for help in your patient's room. In the room, the patient's daughter says her mother stopped talking and breathing. She has been well for several days after knee replacement.

Case Development

<table>
<thead>
<tr>
<th>Initial Information</th>
<th>She lies on her side motionless, and she is not breathing. She has not been on a cardiac monitor. What are your actions?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Information</td>
<td>The student performs an initial assessment and determines that a pulse is present. After interventions and ventilation with a bag-mask, vital signs are BP 100/80 mm Hg, HR 110/min, and RR 0/min (spontaneous). Cyanosis improves with ventilation. She remains unresponsive. The code team and attending physician arrive.</td>
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</tbody>
</table>

Management of Respiratory Arrest Bag-Mask Ventilation Testing Checklist

Student Name: ___________________________ Test Date: _______________________

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<tr>
<th>Performance Guidelines and Critical Actions</th>
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**BLS Survey and Interventions**

- Checks for responsiveness
  - Taps and shouts, "Are you all right?"
  - Scans chest for movement (5-10 seconds)
- Activates the emergency response system
- Activates the emergency response system and gets the AED or
- Directs second rescuer to activate the emergency response system and get the AED
- Checks carotid pulse (5-10 seconds). Notes that pulse is present
- Does not initiate chest compressions or attach AED
- Performs ventilations at the correct rate of 1 breath every 5-6 seconds (10-12 breaths per minute)

**ACLS Survey Case Skills**

- Inserts oropharyngeal or nasopharyngeal airway
- Administers oxygen
- Performs correct bag-mask ventilation for 1 minute

**Critical Actions**

- Effectively ventilates with a bag-mask device for 1 minute
- Gives proper ventilation—rate and volume

STOP TEST

<table>
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<tr>
<th>Test Results</th>
<th>Circle P or NR to Indicate Pass or Needs Remediation:</th>
<th>P</th>
<th>NR</th>
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Instructor Signature: ___________________________
Print Instructor Name: ___________________________
Date: ___________________________
ACLS Respiratory Arrest Case: In-Hospital Scenario

You are a radiology technician and respond to a call for help from your coworker. She is preparing a patient for a contrast computed tomography scan of the chest for pulmonary embolism but has not injected contrast material. Her patient has suddenly stopped breathing.

Case Development

<table>
<thead>
<tr>
<th>Initial Information</th>
<th>The patient lies on her side motionless, and she is not breathing. The cardiac monitor/defibrillator shows an artifact. What are your actions?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Information</td>
<td>The student performs initial assessment and determines that a weak pulse is present. After interventions and ventilation with a bag-mask, vital signs are BP 90/60 mm Hg, HR 120/min, and RR 0/min (spontaneous). Cyanosis continues with oxygen. She remains unresponsive. The code team and attending physician arrive.</td>
</tr>
</tbody>
</table>

ACLS Respiratory Arrest Case: In-Hospital Scenario

While you are working in the emergency department (ED), a man walks through the door carrying a woman in his arms. He says that his wife had a bad toothache and he was driving her to the dentist's office when she suddenly lost consciousness.

Case Development

<table>
<thead>
<tr>
<th>Initial Information</th>
<th>After the man places the patient on a hospital stretcher, you discover that she is unconscious and is not making any respiratory effort. What are your actions?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Information</td>
<td>The team leader discovers that the patient is not breathing but does have a strong radial pulse. After ventilation with a bag-mask, oropharyngeal airway, and 100% oxygen, the patient's BP is 128/94 mm Hg, the pulse is 108/min, and the assisted-ventilation RR is 10-12 breaths per minute. The patient's husband reports no significant medical history or allergies. The patient had recently taken some pain medicine her friend had given her for the toothache.</td>
</tr>
</tbody>
</table>
ACLS VF/Pulseless VT Case: Out-of-Hospital Scenario

You are an airport paramedic and respond to an AED alarm on Concourse B. Bystanders report that a man collapsed while running for a flight with his luggage. An AED is attached, and CPR is in progress.

Case Development

**Initial Information**
The scene is safe. The man is cyanotic and unresponsive. The AED operator reports that the machine has shocked twice. What are your actions?

**Additional Information**
Your team takes over, and a cardiac monitor/defibrillator is placed. A rhythm check finds VF (show ECG strip). What are your actions?
### Debriefing Tool

#### ACLS Sample Scenario: VF/Pulseless VT

#### Learning Objectives
- Apply the elements of effective team dynamics
- Describe signs of the patient experiencing VF/pulseless VT
- Recognize VF and VT on the ECG
- Manage VF/pulseless VT according to the Cardiac Arrest Algorithm
- Recall indications for drugs recommended for refractory VF/pulseless VT
- Recall contraindications for drugs recommended for refractory VF/pulseless VT
- Recall doses for drugs recommended for refractory VF/pulseless VT

#### General Debriefing Principles
- Use the table on the right to guide your debriefing.
- Debriefings are 4-6 minutes long (unless more time is needed).
- Address all objectives.
- Summarize take-home messages at the end of the debriefing.
- **Encourage** students to self-reflect, and engage all participants.
- **Avoid** mini-lectures and prevent closed-ended questions from dominating the discussion.

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<tr>
<td>Assigns team roles and directs the team (effective team dynamics)</td>
</tr>
<tr>
<td>Directs the BLS and ACLS Surveys</td>
</tr>
<tr>
<td>Directs team to administer 100% oxygen</td>
</tr>
<tr>
<td>Directs team to apply monitor leads</td>
</tr>
<tr>
<td>Directs IV or IO access</td>
</tr>
<tr>
<td>Directs appropriate defibrillation and drug treatment</td>
</tr>
<tr>
<td>Directs reassessment of patient in response to treatments</td>
</tr>
<tr>
<td>Summarizes specific treatments</td>
</tr>
<tr>
<td>Verbalizes indications for advanced airway if needed</td>
</tr>
<tr>
<td>Considers reversible causes</td>
</tr>
<tr>
<td>Directs post-cardiac arrest care</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STUDENT OBSERVATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>What did you observe about the scenario?</td>
</tr>
<tr>
<td>What did you notice about the team's performance?</td>
</tr>
<tr>
<td>What could you have done differently?</td>
</tr>
<tr>
<td>What would you recommend for future scenarios?</td>
</tr>
</tbody>
</table>

| ANALYZE |
| Done Well |
| How were you able to [insert action here]? |
| Why do you think you were able to [insert action here]? |
| Tell me a little more about how you [insert action here]. |

<table>
<thead>
<tr>
<th>INSTRUCTOR OBSERVATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I noticed that [insert action here]</td>
</tr>
<tr>
<td>I observed that [insert action here]</td>
</tr>
<tr>
<td>I saw that [insert action here]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NEEDS IMPROVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why do you think [insert action here] occurred?</td>
</tr>
<tr>
<td>How do you think [insert action here] could have been improved?</td>
</tr>
<tr>
<td>What was your thinking while [insert action here]?</td>
</tr>
<tr>
<td>What prevented you from [insert action here]?</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>STUDENT-LED SUMMARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the main things you learned?</td>
</tr>
<tr>
<td>Can someone summarize the key points made?</td>
</tr>
<tr>
<td>What are the main take-home messages?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INSTRUCTOR-LED SUMMARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Let's summarize what we learned...</td>
</tr>
<tr>
<td>Here is what I think we learned...</td>
</tr>
<tr>
<td>The main take-home messages are...</td>
</tr>
</tbody>
</table>
ACLS VF/Pulseless VT Case: Out-of-Hospital Scenario

You are a paramedic. You arrive on the scene, and bystanders are performing CPR on a woman. They report that she suddenly collapsed while she was standing in line to pay for merchandise.

Case Development

**Initial Information**
The scene is safe. She is cyanotic and unresponsive. What are your actions?

**Additional Information**
Your team takes over, and a cardiac monitor/defibrillator is placed. A rhythm check finds VF (show ECG strip). What are your actions?
## Debriefing Tool

### ACLS Sample Scenario: VF/Pulseless VT

#### Learning Objectives
- Apply the elements of effective team dynamics
- Describe signs of the patient experiencing VF/pulseless VT
- Recognize VF and VT on the ECG
- Manage VF/pulseless VT according to the Cardiac Arrest Algorithm
- Recall indications for drugs recommended for refractory VF/pulseless VT
- Recall contraindications for drugs recommended for refractory VF/pulseless VT
- Recall doses for drugs recommended for refractory VF/pulseless VT

#### General Debriefing Principles
- Use the table on the right to guide your debriefing.
- Debriefings are 4-6 minutes long (unless more time is needed).
- Address all objectives.
- Summarize take-home messages at the end of the debriefing.
- **Encourage** students to self-reflect, and engage all participants.
- **Avoid** mini-lectures and prevent closed-ended questions from dominating the discussion.

### Table of Debriefing

<table>
<thead>
<tr>
<th>ACTION</th>
<th>GATHER</th>
<th>ANALYZE</th>
<th>SUMMARIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Assigns team roles and directs the team (effective team dynamics)</td>
<td><strong>Student Observations</strong> (primary is team leader and code recorder)</td>
<td><strong>Done Well</strong></td>
<td><strong>Student-Led Summary</strong></td>
</tr>
<tr>
<td>- Directs the BLS and ACLS Surveys</td>
<td>- Can you describe the events from your perspective?</td>
<td>- How were you able to [insert action here]?</td>
<td>- What are the main things you learned?</td>
</tr>
<tr>
<td>- Directs team to administer 100% oxygen</td>
<td>- How did you think your treatments went?</td>
<td>- Why do you think you were able to [insert action here]?</td>
<td>- Can someone summarize the key points made?</td>
</tr>
<tr>
<td>- Directs team to apply monitor leads</td>
<td>- Can you review the events of the scenario? (directed to the recorder)</td>
<td>- Tell me a little more about how you [insert action here].</td>
<td>- What are the main take-home messages?</td>
</tr>
<tr>
<td>- Directs appropriate defibrillation and drug treatment</td>
<td>- What could you have improved?</td>
<td><strong>Instructor Observations</strong></td>
<td></td>
</tr>
<tr>
<td>- Directs reassessment of patient in response to treatments</td>
<td>- What did the team do well?</td>
<td>- I noticed that [insert action here]</td>
<td><strong>Instructor-Led Summary</strong></td>
</tr>
<tr>
<td>- Summarizes specific treatments</td>
<td><strong>Needs Improvement</strong></td>
<td>- I observed that [insert action here]</td>
<td>- Let's summarize what we learned...</td>
</tr>
<tr>
<td>- Verbalizes indications for advanced airway if needed</td>
<td>- I saw that [insert action here]</td>
<td>- Why do you think [insert action here] occurred?</td>
<td>- Here is what I think we learned...</td>
</tr>
<tr>
<td>- Considers reversible causes</td>
<td>- What was your thinking while [insert action here]?</td>
<td>- How do you think [insert action here] could have been improved?</td>
<td>- The main take-home messages are...</td>
</tr>
<tr>
<td>- Directs post-cardiac arrest care</td>
<td><strong>Instructor-Led Summary</strong></td>
<td>- What prevented you from [insert action here]?</td>
<td></td>
</tr>
</tbody>
</table>

---

This table provides a structured approach to debriefing, facilitating discussion and learning from the simulation experience.
ACLS VF/Pulseless VT Case: Out-of-Hospital Scenario

Your ambulance responds to a jogging track across the street from the station. Bystanders on the scene report that a man collapsed while jogging. Before collapsing, the patient walked off the track and appeared to be trying to sit down before he fell to the ground. One bystander is performing chest compressions but is not providing ventilation.

Case Development

Initial Information
The scene is safe. There is no evidence of trauma. You see a cyanotic male, approximate age 50 years, lying supine with a bystander performing chest compressions. What are your actions?

Additional Information
After quickly performing the BLS Survey, the team leader discovers that the patient is pulseless and aspnic. The team leader should verify that the resuscitation team is providing high-quality CPR, including ventilations with a bag-mask device. The team leader should instruct one of the team members to attach the ECG monitor/defibrillator. A rhythm check reveals VF. What are your actions?
# Debriefing Tool

**ACLS Sample Scenario: VF/Pulseless VT**

## Learning Objectives
- Apply the elements of effective team dynamics
- Describe signs of the patient experiencing VF/pulseless VT
- Recognize VF and VT on the ECG
- Manage VF/pulseless VT according to the Cardiac Arrest Algorithm
- Recall indications for drugs recommended for refractory VF/pulseless VT
- Recall contraindications for drugs recommended for refractory VF/pulseless VT
- Recall doses for drugs recommended for refractory VF/pulseless VT

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- Address all objectives.
- Summarize take-home messages at the end of the debriefing.
- Encourage students to self-reflect, and engage all participants.
- Avoid mini-lectures and prevent closed-ended questions from dominating the discussion.

## Action
- Assigns team roles and directs the team (effective team dynamics)
- Directs the BLS and ACLS Surveys
- Directs team to administer 100% oxygen
- Directs team to apply monitor leads
- Directs IV or IO access
- Directs appropriate defibrillation and drug treatment
- Directs reassessment of patient in response to treatments
- Summarizes specific treatments
- Verbalizes indications for advanced airway if needed
- Considers reversible causes
- Directs post-cardiac arrest care

## Gather
- **Student Observations**
  - primary is team leader and code recorder
  - Can you describe the events from your perspective?
  - How did you think your treatments went?
  - Can you review the events of the scenario? (directed to the recorder)
  - What could you have improved?
  - What did the team do well?

## Analyze
- **Done Well**
  - How were you able to [insert action here]?
  - Why do you think you were able to [insert action here]?
  - Tell me a little more about how you [insert action here].

- **Needs Improvement**
  - Why do you think [insert action here] occurred?
  - How do you think [insert action here] could have been improved?
  - What was your thinking while [insert action here]?
  - What prevented you from [insert action here]?

## Summarize
- **Student-Led Summary**
  - What are the main things you learned?
  - Can someone summarize the key points made?
  - What are the main take-home messages?

- **Instructor-Led Summary**
  - Let's summarize what we learned...
  - Here is what I think we learned...
  - The main take-home messages are...
ACLS VF/Pulseless VT Case: In-Hospital Scenario

You respond to a cardiac arrest in the ED registration area. A patient, brought in by car, collapsed while complaining of chest pain. The triage personnel have initiated CPR.

Case Development

Initial Information

The patient is cyanotic and unresponsive. A cardiac monitor/defibrillator is attached and displays VF (show ECG strip). What are your actions?

Additional Information

You have given a shock and resumed CPR. What are your next actions? After a rhythm check, VF persists. What do you do?

Immediate Post–Cardiac Arrest Care Learning Station Checklist

Adult Cardiac Arrest

- Shout for Help/Activate Emergency Response
  - Start CPR
    - Give bag-mask
    -Attach monitor/defibrillator
  - Rhythm shockable?
  - CPR 2 min
    - IV/IO access
    - AED/defibrillator
  - Rhythm shockable?
    - CPR 2 min
      - Epinephrine every 3-5 min
      - Consider advanced cardiac life support
  - CPR 2 min
    - IV/IO access
    - Consider advanced cardiac life support
  - CPR 2 min
    - No
  - Rhythm shockable?
    - CPR 2 min
      - IV/IO access
      - Consider advanced cardiac life support

- Optimize ventilation and oxygenation

- Treat hypotension (SBP <90 mm Hg)

- Consider induced hypothermia

- Fosphenytoin

- Intravenous

- Consider advanced cardiac life support

- High blood pressure, may use 4°C bath

- Epinephrine IV infusion

- 1.0-1.5 mcg/kg per minute (0.01-0.02 mcg/kg per minute) adult: 0.06 mcg/kg per minute

- Propofol IV infusion

- 6-10 mcg/kg per minute

- Advanced venous access

- Intravenous

- Consider induced hypothermia

- Patient with cardiac arrest

- CPR

- Intravenous

- Adult: 0.06 mcg/kg per minute

- Advanced venous access

- Intravenous

- Consider induced hypothermia

- Advanced venous access

- Intravenous
# Debriefing Tool

**ACLS Sample Scenario: VF/Pulseless VT**

## Learning Objectives
- Apply the elements of effective team dynamics
- Describe signs of the patient experiencing VF/pulseless VT
- Recognize VF and VT on the ECG
- Manage VF/pulseless VT according to the Cardiac Arrest Algorithm
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| Directs the BLS and ACLS Surveys | - How were you able to [insert action here]? | - Why do you think you were able to [insert action here]?
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| Directs team to apply monitor leads | - How did you think your treatments went? |
| Directs IV or IO access | - Can you review the events of the scenario? (directed to the recorder) |
| Directs appropriate defibrillation and drug treatment | - What could you have improved? |
| Directs reassessment of patient in response to treatments | - What did the team do well? |
| Summarizes specific treatments | **Instructor Observations** | **Needs Improvement** | **Instructor-Led Summary** |
| Verbalizes indications for advanced airway if needed | - I noticed that [insert action here] |
| Considers reversible causes | - I observed that [insert action here] |
| Directs post-cardiac arrest care | - I saw that [insert action here] |

- What are the main things you learned?
- Can someone summarize the key points made?
- What are the main take-home messages?
ACLS VF/Pulseless VT Case: In-Hospital Scenario

You respond to a cardiac arrest in the hospital admission area. A patient collapsed while giving registration information. She had been referred for elective cardiac catheterization. Hospital admissions personnel initiated CPR and called a code.

Case Development

<table>
<thead>
<tr>
<th>Initial Information</th>
<th>She is cyanotic and unresponsive. A cardiac monitor/defibrillator is attached and displays VF (shock ECG strip). Your cardiac arrest team has arrived on location. What are your actions?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Information</td>
<td>You have given a shock and resumed CPR. What are your next actions? After a rhythm check, VF persists. What do you do?</td>
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# Debriefing Tool
## ACLS Sample Scenario: VF/Pulseless VT

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<td>Can you describe the events from your perspective?</td>
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<td></td>
</tr>
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<td>Directs team to administer 100% oxygen</td>
<td>How did you think your treatments went?</td>
<td>- Why do you think you were able to [insert action here]?</td>
<td></td>
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<tr>
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<td>Can you review the events of the scenario? (directed to the recorder)</td>
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<td>Instructor-Led Summary</td>
</tr>
<tr>
<td>Considers reversible causes</td>
<td>I observed that [insert action here]</td>
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<tr>
<td>Directs post-cardiac arrest care</td>
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<td>- How do you think [insert action here] occurred?</td>
<td></td>
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<td>- What prevented you from [insert action here]?</td>
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ACLS VF/Pulseless VT Case: In-Hospital Scenario

You respond to the hospital floor after a call for assistance. The patient was on telemetry because she was noted to have ectopy during her hip surgery today.

Case Development

Initial Information

You arrive with a crash cart and find 2 staff members performing chest compressions and ventilation with a bag-mask device on a cyanotic female, approximate age 65 years. What are your actions?

Additional Information

After quickly performing the BLS Survey, the team leader discovers that the patient is pulseless and apneic. The team leader should verify that the resuscitation team is providing high-quality CPR, including ventilations with a bag-mask device. A rhythm check reveals VF. The team leader should instruct one of the team members to attach defibrillator pads. What are your actions?

Cardiac Arrest VF/Pulseless VT Learning Station Checklist

Adult Cardiac Arrest

- Start CPR
  - CPR-access
  - AED or manual defibrillator

CPR 2 min

- Rhythms checkable?
  - Rhythms checkable?

CPR 2 min

- Ephedrine every 3.5 min
  - Consider advanced airway management

CPR 2 min

- Rhythms checkable?

CPR 2 min

- IV access
  - Ephedrine every 3.5 min
  - Consider advanced airway management

CPR 2 min

- Anaphylaxis
  - Reversible causes

CPR 2 min

- IV access
  - Consider advanced airway management

CPR 2 min

- Return of Spontaneous Circulation (ROSC)

Go to 5 or 7

Immediate Post-Cardiac Arrest Care Learning Station Checklist

Adult Immediate Post-Cardiac Arrest Care

1. Return of Spontaneous Circulation (ROSC)

- Optimize ventilation and oxygenation
  - Maintain oxygen saturation >88%
  - Consider advanced airway and invasive hemodynamic monitoring
  - Do not hyperventilate

2. Test hypotension (SBP <60 mm Hg)

- MI/O insufficiency
- Vasopressor infusion
- Consider head/foot sections
- 12-Lead ECG

3. Consider induced hypothermia

4. Follow commands?

5. Consider reperfusion

- Endovascular therapy
- High quality of AMI

6. Consider advanced care

- Neuroprotection
- IV infusion
  - 1-2 mg/kg per minute (in 70 kg adult: 7.7 kg/m² per minute)
- Therapeutic hypothermia
- Thrombolysis
- Thrombectomy

- Advanced care
  - Therapy adapted according to shock/ventilation response
  - Therapeutic hypothermia to core >32°C (MM 17-24°C)
  - IV lidocaine per minute with continuous ECG monitoring
- Neuroprotective drugs
  - Thrombolysis
  - Thrombectomy
  - Transport to tertiary hospitals
- Early invasive procedures
  - Thrombolysis
  - Thrombectomy
- Early invasive procedures
  - Thrombolysis
  - Thrombectomy
  - Transport to tertiary hospitals

- Invasive monitoring
  - ECG
  - Central venous pressure
  - Invasive hemodynamic monitoring

- Reversible Causes
  - Hypovolemia
  - MI/O insufficiency
  - Hypoperfusion
  - Hypothermia
  - Renal failure
  - Respiratory failure
  - Septic shock
  - Tachycardia
**Debriefing Tool**

**ACLS Sample Scenario: VF/Pulseless VT**

### Learning Objectives

- Apply the elements of effective team dynamics
- Describe signs of the patient experiencing VF/pulseless VT
- Recognize VF and VT on the ECG
- Manage VF/pulseless VT according to the Cardiac Arrest Algorithm
- Recall contraindications for drugs recommended for refractory VF/pulseless VT
- Recall doses for drugs recommended for refractory VF/pulseless VT

### General Debriefing Principles

- Use the table on the right to guide your debriefing.
- Debriefings are 4-6 minutes long (unless more time is needed).
- Address all objectives.
- Summarize take-home messages at the end of the debriefing.
- **Encourage** students to self-reflect, and engage all participants.
- **Avoid** mini-lectures and prevent closed-ended questions from dominating the discussion.

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<td>- Done Well</td>
<td>- Student-Led Summary</td>
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<tr>
<td>- Directs the BLS and ACLS Surveys</td>
<td>- Can you describe the events from your perspective?</td>
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<td>- Directs team to administer 100% oxygen</td>
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**Instructor Observations**

- I noticed that [insert action here]
- I observed that [insert action here]
- I saw that [insert action here]

**Needs Improvement**

- Why do you think [insert action here] occurred?
- How do you think [insert action here] could have been improved?
- What was your thinking while [insert action here]?
- What prevented you from [insert action here]?

**Instructor-Led Summary**

- Let's summarize what we learned...
- Here is what I think we learned...
- The main take-home messages are...
ACLS PEA Case: Out-of-Hospital Scenario

You are a paramedic and respond to a cardiac arrest call. On your arrival, the daughter of an elderly man reports that he has been having abdominal pain and has just returned from the doctor's office. He collapsed and became unresponsive.

Case Development

<table>
<thead>
<tr>
<th>Initial Information</th>
<th>The scene is safe. The man is unresponsive. Emergency medical technicians (EMTs) have performed the BLS Survey, and CPR is in progress. What are your actions?</th>
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<tr>
<td>Additional Information</td>
<td>You attach a cardiac monitor/defibrillator. A rhythm check finds a narrow-complex rapid tachycardia (show ECG strip). What are your actions?</td>
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<td>Additional Information</td>
<td>A repeat rhythm check is unchanged, and no pulse is present. The daughter shows you an office discharge paper with the diagnosis of anemia and peptic ulcer disease. There is also a prescription for ulcer medication. What are your next actions?</td>
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ACLS PEA Case: Out-of-Hospital Scenario

You are a paramedic and respond to a cardiac arrest call. On your arrival, you find that a young woman has collapsed, and CPR is in progress.

Case Development

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<tr>
<th>Initial Information</th>
<th>The scene is safe. She is unresponsive. EMTs have performed the BLS Survey, and CPR is in progress. What are your actions?</th>
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<tr>
<td>Additional Information</td>
<td>You attach a cardiac monitor/defibrillator. A rhythm check finds a narrow-complex rapid tachycardia (show ECG strip). There is still no pulse or spontaneous respirations. What are your actions?</td>
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<tr>
<td>Additional Information</td>
<td>A repeat rhythm check is unchanged, and no pulse is present. The patient's husband says she had recently complained of abdominal pain and had fevers. What are your next actions?</td>
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### Debriefing Tool
ACLS Sample Scenario: PEA

#### Learning Objectives
- Apply the elements of effective team dynamics
- Describe signs and symptoms of PEA
- Demonstrate treatment priorities of individuals experiencing PEA as specified by the Cardiac Arrest Algorithm
- State the correct dosage of the vasopressor epinephrine in PEA
- Recall the correct method of administering epinephrine in PEA
- State the correct dosage of the vasopressor in PEA
- Describe the target of PEA (treatment of the cause, not the rhythm)
- Describe the most likely causes of PEA
- Assign team functions
  - Monitor CPR
  - Monitor treatments
  - Monitor drug administration

#### General Debriefing Principles
- Use the table on the right to guide your debriefing.
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ACLS PEA Case: In-Hospital Scenario

You are a nurse and respond to a call for help from a radiology technician. She was preparing a patient for a contrast computed tomography scan of the chest for pulmonary embolism. Her patient suddenly stopped breathing.

Case Development

<table>
<thead>
<tr>
<th>Initial Information</th>
<th>The patient lies on her side motionless and is not breathing. The cardiac monitor shows an artifact. What are your actions?</th>
</tr>
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<tr>
<td>Additional Information</td>
<td>You perform an initial assessment and determine that no pulse is present. After initiation of CPR, including bag-mask ventilation, the cardiac monitor shows a narrow-complex tachycardia at 120/min. What are your initial actions?</td>
</tr>
<tr>
<td>Additional Information</td>
<td>After administration of epinephrine, there is no change in rhythm. What do you consider now? (H's and T's if not already addressed; patient should receive an advanced airway, rate slows, then agonal—then consider code termination versus consultation for advanced therapies such as extracorporeal membrane oxygenation, thrombectomy, or thrombolysis.)</td>
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ACLS PEA Case: In-Hospital Scenario

You are a physician and respond to an in-hospital cardiac arrest. You find CPR in progress by the nursing staff. They report that a patient was admitted for observation after a motor vehicle collision and surgery for treatment of an open leg fracture. The patient was the unbelted driver of a car.

Case Development

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<tr>
<th>Initial Information</th>
<th>Members of the code team have arrived, and CPR is in progress. The BLS Survey steps are reported as completed. What are your actions?</th>
</tr>
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<tr>
<td>Additional Information</td>
<td>You have confirmed high-quality CPR and have assigned team member functions. After administration of epinephrine, there is no change in rhythm. What do you consider now? (H's and T's if not already addressed; patient should receive an advanced airway; rate slows, then agonal—then consider code termination versus consultation for advanced therapies such as extracorporeal membrane oxygenation, thrombectomy, or thrombolysis.)</td>
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### Debriefing Tool

**ACLS Sample Scenario: PEA**

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- Apply the elements of effective team dynamics
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- State the correct dosage of the vasopressor epinephrine in PEA
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- Assign team functions
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<td>- Directs the BLS and ACLS Surveys</td>
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ACLS PEA Case: Out-of-Hospital Scenario

You arrive at a home in a residential neighborhood to find a woman lying on her living room floor. The patient has a history of hypertension and a previous heart attack about 10 years ago. She is a dialysis patient who missed her treatment yesterday because she did not have transportation. The patient's husband is administering chest compressions with the instructions provided by the 911 operator.

Case Development

Initial Information
The scene is safe. There is no evidence of trauma. You see an ashen-colored female, age 63 years, lying supine, with her husband performing chest compressions. What are your actions?

Additional Information
After quickly performing the BLS Survey, the team leader discovers that the patient is pulseless and apneic. The team leader should verify that the resuscitation team is providing high-quality CPR, including ventilations with a bag-mask device. The team leader should instruct one of the team members to attach the cardiac monitor/defibrillator. A rhythm check reveals a slow heart rate (about 30 wide QRS complexes per minute). There is still no palpable pulse or respiratory effort. What are your actions?

ACLS PEA Case: In-Hospital Scenario

You respond to a call for help from the hospital lobby. Hospital volunteers report that a car pulled up to the main entrance with an unconscious man in the front passenger's seat. The patient's wife said the patient was having trouble breathing and she did not know where to bring him.

Case Development

Initial Information
You arrive with a crash cart and 3 other members of the resuscitation team. Bystanders have pulled the cyanotic 76-year-old man out of the car, and he is lying motionless on the ground. What are your actions?

Additional Information
After quickly performing the BLS Survey, the team leader discovers that the patient is pulseless and apneic. The team leader should direct the resuscitation team to initiate high-quality CPR. The team leader should instruct one of the team members to attach the cardiac monitor/defibrillator. A rhythm check reveals a slow heart rate (about 30 wide QRS complexes per minute). There is still no palpable pulse or respiratory effort. What are your actions?
### Debriefing Tool
ACLX Sample Scenario: PEA

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- Directs the BLS and ACLS Surveys  
- Directs team to administer 100% oxygen  
- Directs team to apply monitor leads  
- Directs IV or IO access  
- Directs appropriate drug treatment  
- Directs reassessment of patient in response to treatments  
- Summarizes specific treatments  
- Verbalizes indicators for advanced airway if needed  
- Considers reversible causes | - Student Observations (primary is team leader and code recorder)  
- Can you describe the events from your perspective?  
- How did you think your treatments went?  
- Can you review the events of the scenario? (directed to the recorder)  
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  - What are the main things you learned?  
  - Can someone summarize the key points made?  
  - What are the main take-home messages? |
ACLS Asystole Case: Out-of-Hospital Scenario

You are a paramedic and arrive on the scene. Bystanders are standing around a man on the floor. They report that he suddenly collapsed. He was standing in line to pay for merchandise, and he appeared well.

Case Development

**Initial Information**
The scene is safe. He is cyanotic and unresponsive. What are your actions?

**Additional Information**
Your team takes over, and a cardiac monitor/defibrillator is placed. A rhythm check finds asystole (show ECG strip). What are your actions?

ACLS Asystole Case: Out-of-Hospital Scenario

You are an airport medic and respond to an AED alarm on Concourse B. Bystanders report that a woman collapsed while running for a flight with her luggage. An AED is attached and CPR is in progress but is clearly inadequate.

Case Development

**Initial Information**
The scene is safe. She is unresponsive. The AED operator reports that the machine has shocked 2 times. What are your actions?

**Additional Information**
Your team takes over, and a cardiac monitor/defibrillator is placed. A rhythm check finds asystole (show ECG strip). What are your actions?
### Debriefing Tool

**ACLS Sample Scenario: Asystole**

#### Learning Objectives

- Apply the elements of effective team dynamics
- Discuss when resuscitation should not be initiated, including DNAR orders
- Recall why survival from asystole is poor
- Differentiate asystole and PEA: causes; treatments; early, diligent search for correctable causes
- Recall reversible causes of asystole
- Outline treatments for causes of asystole
- Describe the Cardiac Arrest Algorithm for asystole
- Describe correct dosages and administration of the following during cardiac arrest: epinephrine and vasopressin

#### General Debriefing Principles

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<td>I saw that [insert action here]</td>
<td>- What was your thinking while [insert action here]?</td>
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<td>Direct post-cardiac arrest care</td>
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<td>- What prevented you from [insert action here]?</td>
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ACLS Asystole Case: Out-of-Hospital Scenario
You arrive at the patient's home just after midnight. The patient's wife said she awoke about 30 minutes ago when her husband got out of bed to go to the bathroom. She fell back asleep but awoke and noticed that he had not returned. She found him lying motionless on the bathroom floor and called 911 immediately. She was too distraught to perform CPR.

Case Development

<table>
<thead>
<tr>
<th>Initial Information</th>
<th>The scene is safe. There is no evidence of trauma. You see a male, age 70 years, lying on the bathroom floor. The patient's wife placed a pillow under his head and covered his body with a blanket. The patient is cyanotic and is motionless. What are your actions?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Information</td>
<td>After quickly performing the BLS Survey, the team leader discovers that the patient is pulseless and apneic. The team leader should verify that the resuscitation team is providing high-quality CPR, including ventilations with a bag-mask device. The team leader should instruct one of the team members to attach the cardiac monitor/defibrillator. A rhythm check reveals asystole. What are your actions?</td>
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ACLS Asystole Case: In-Hospital Scenario
You are a nursing supervisor and code team leader on the night shift. You respond to a code on the general medical floor. A patient was found unresponsive. Personnel initiated CPR and called a code.

Case Development

<table>
<thead>
<tr>
<th>Initial Information</th>
<th>You find a woman in cardiac arrest with CPR in progress. She is unresponsive. A cardiac monitor/defibrillator is attached and displays asystole (show ECG strip). Your code team has arrived on location. What do you do?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Information</td>
<td>You have performed the ACLS Survey and given initial drug therapy. The floor nursing staff informs you that the patient has cancer, and a family member on the phone informs them that the patient desires no life-prolonging measures. An admission DNAR order has not yet been signed by the attending physician. After a rhythm check, your team reports asystole. What are your next actions? (This should be modified on the basis of your hospital policies if necessary.)</td>
</tr>
</tbody>
</table>

Cardiac Arrest PEA/Asystole Learning Station Checklist

- **Start CPR**
  - Give oxygen
  - Attach monitor/defibrillator

- **Rhythm Check**
  - Is the rhythm shockable?

  - **Yes**
    - CPR 2 min
      - IV/IO access
      - Epinephrine every 3-5 min
      - Consider advanced airway, capnography
      - Rhythm checkable?

  - **No**

  - **Asystole/PEA**

- **CPR 2 min**
  - IV/IO access
  - Epinephrine every 3-5 min
  - Consider advanced airway, capnography

- **CPR 2 min**
  - Treat reversible causes

- **CPR 2 min**
  - Treat reversible causes

- **Go to 6 or 7**

**CPR Quality**
- Push hard (2 inches (5 cm) and fast)
- Minimum interruptions in compressions
- Avoid excessive ventilation
- Rotate compressor every 2 minutes
- If no advanced airway, 30:2 compressions/ventilation ratio
- Quantitative waveform capnography
  - If Pco2 < 40 mmHg, attempt to improve CPR quality
- Intra-arterial pressure
  - If pahas > 40 mmHg, attempt to improve CPR quality

**Return of Spontaneous Circulation (ROSC)**
- Pulse and blood pressure
- Abnormal sustained increase in PAMO2, typically >240 mmHg
- Spontaneous arterial pressure waves with interarterial monitoring

**Shock Energy**
- Biphasic: Manufacturer recommendation (e.g., initial dose of 120-200 J). If unavailable, use 150 J available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- Monophasic: 360 J

**Drug Therapy**
- Epinephrine IV/IO Dose: 1 mg every 3-5 minutes
- Vasopressin IV/IO Dose: 40 units can replace first or second dose of epinephrine

**Advanced Airway**
- Synchronized advanced airway or endotracheal intubation
- Waveform capnography to confirm and monitor ET tube placement
- 6-10 breaths per minute with continuous chest compressions

**Reversible Causes**
- Hypovolemia
- Hypoxia
- Hyperkalemia
- Hypotension
- Alkalosis
- Acidosis
- Hypothermia
- Tension pneumothorax
- Pericardial tamponade
- Myocardial ischemia
- Pulmonary
- Cardiac toxicity
- Peptic ulcer disease
- Renal failure
- Drugs
### Debriefing Tool

**ACLS Sample Scenario: Asystole**

#### Learning Objectives
- Apply the elements of effective team dynamics
- Discuss when resuscitation should not be initiated, including DNR orders
- Recall why survival from asystole is poor
- Differentiate asystole and PEA: causes; treatments; early, diligent search for correctable causes
- Recall reversible causes of asystole
- Outline treatments for causes of asystole
- Describe the Cardiac Arrest Algorithm for asystole
- Describe correct dosages and administration of the following during cardiac arrest: epinephrine and vasopressin

#### General Debriefing Principles
- Use the table on the right to guide your debriefing.
- Debriefings are 4-6 minutes long (unless more time is needed).
- Address all objectives.
- Summarize take-home messages at the end of the debriefing.
- **Encourage** students to self-reflect, and engage all participants.
- **Avoid** mini-lectures and prevent closed-ended questions from dominating the discussion.

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<td>- Directs the BLS and ACLS Surveys</td>
<td>- How were you able to [insert action here]?</td>
<td>- What are the main things you learned?</td>
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<td>- Directs team to administer 100% oxygen</td>
<td>- Why do you think you were able to [insert action here]?</td>
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<td>- Directs team to apply monitor leads</td>
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**Instructor-Led Summary**
- What prevented you from [insert action here]?
ACLS Asystole Case: In-Hospital Scenario

You are a hospital intensivist and respond to a cardiac arrest in the hospital admission area. A patient collapsed while giving registration information. He had been referred for elective cardiac catheterization. Hospital admissions personnel initiated CPR and called a code.

Case Development

**Initial Information**
- He is unresponsive. A cardiac monitor/defibrillator is attached and displays asystole (show ECG strip). Your cardiac arrest team has arrived on location. What are your actions?

**Additional Information**
- You have given a shock and resumed CPR. What are your next actions? After a rhythm check, you again find asystole. What do you do?

ACLS Asystole Case: In-Hospital Scenario

You respond to a late-night call for assistance on one of the medical/surgical floors. A nurse making rounds discovered that her patient was unresponsive.

Case Development

**Initial Information**
- You arrive with a crash cart and find 2 nurses performing CPR. The patient is a male, age 68 years. What are your actions?

**Additional Information**
- After quickly performing the BLS Survey, the team leader discovers the patient is pulseless and apneic. The team leader should verify that the resuscitation team is providing high-quality CPR, including ventilations with a bag-mask device. The team leader should instruct one of the team members to attach the cardiac monitor/defibrillator. A rhythm check reveals asystole. What are your actions?
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