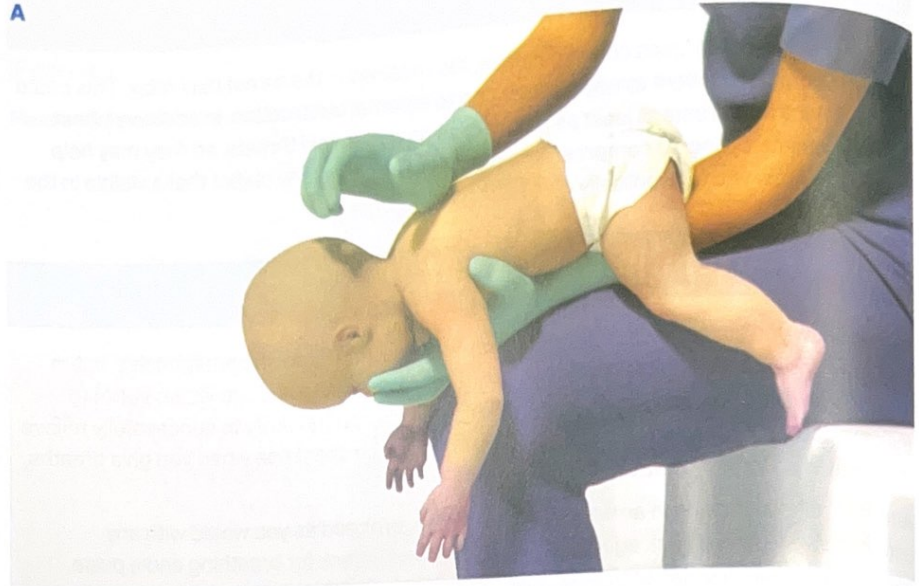
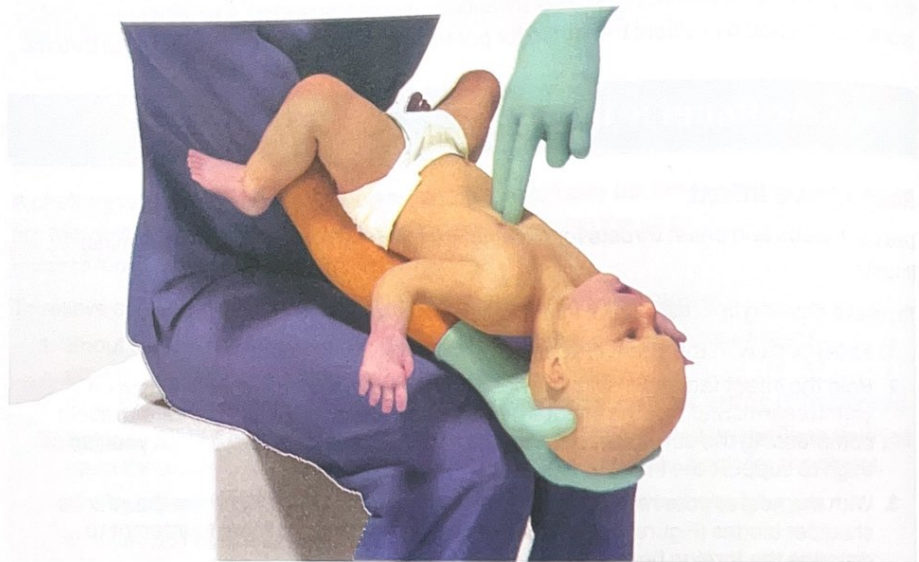


Figure 43. Relief of choking in an infant. **A,** Back slaps. **B,** Chest thrusts.

A



B



Unresponsive Infant

If the infant victim becomes unresponsive, stop giving back slaps and start CPR, starting with chest compressions.

To relieve choking in an unresponsive infant, follow these steps:

1. Shout for help. If someone responds, send that person to activate the emergency response system. Place the infant on a firm, flat surface.
2. Begin CPR (starting with compressions) with 1 extra step: Each time you open the airway, look for the object in the back of the throat. If you see an object and can easily remove it, remove it. Note that you do not check for a pulse before beginning CPR.
3. After about 2 minutes of CPR, activate the emergency response system (if no one has done so).



**Critical Concepts:
No Blind Finger Sweeps**

Do not perform a blind finger sweep because it may push the foreign body back into the airway, causing further obstruction or injury.

Review Questions

1. Which is an example of a mild foreign-body airway obstruction?
 - a. Cyanosis (blue lips or skin)
 - b. High-pitched noise while inhaling
 - c. Inability to speak or cry
 - d. Wheezing between coughs
 2. Which victim of a severe airway obstruction should receive abdominal thrusts?
 - a. An average-size 27-year-old man
 - b. A woman who is obviously pregnant
 - c. An obese 50-year-old man
 - d. An average-size 9-month-old infant
 3. You are performing abdominal thrusts on a 9-year-old child when she suddenly becomes unresponsive. After you shout for nearby help, what is the most appropriate action to take next?
 - a. Begin high-quality CPR, starting with chest compressions.
 - b. Check for a pulse.
 - c. Continue performing abdominal thrusts.
 - d. Provide 5 back slaps followed by 5 chest thrusts.
- See Answers to Review Questions in the Appendix.

Appendix

Step 1: Verify Scene Safety

Make sure that the scene is safe for you and the victim.

Step 2: Check for Responsiveness and Get Help

1. Tap the victim's shoulder and shout, "Are you OK?"
2. If the victim is not responsive, activate the emergency response system by calling 911 or the local emergency number.

Step 3: Assess for Breathing and a Pulse

Next, assess the victim for normal breathing and a pulse. Do not spend more than 10 seconds.

Step 4 and 5: Determine Next Actions

- If the victim is breathing normally and a pulse is felt, you should transport the victim to a hospital.
- If the victim is not breathing normally but a pulse is felt, you should provide rescue breathing.
- If the victim is not breathing and a pulse is not felt, you should provide CPR.

Step 6: Start High-Quality CPR

Start with 30 chest compressions. Then provide 2 rescue breaths. Repeat this cycle.

Step 7: Use the AED or BLS Responder's Manual

Follow the AED or BLS Responder's Manual instructions.

Step 8: If the AED Shows a Shockable Rhythm, Deliver a Shock

Stand clear of the victim and the AED. Press the shock button.

Adult 1-Rescuer BLS Sequence

This is your step-by-step guide to providing high-quality CPR when you encounter an unresponsive adult and you are the only rescuer. The numbered steps correspond to the numbered steps on the Adult BLS Algorithm for Healthcare Providers (Figure 4 in Part 3).

The first rescuer who arrives at the side of a potential cardiac arrest victim should quickly perform Steps 1 and 2 and then begin high-quality CPR.

Step 1: Verify Scene Safety

Make sure that the scene is safe for you and the victim.

Step 2: Check for Responsiveness and Get Help

1. Tap the victim's shoulders and shout, "Are you OK?"
2. If the victim is not responsive, activate the emergency response system via mobile device. Get the AED or send someone to do so.

Step 3: Assess for Breathing and a Pulse

Next, assess the victim for normal breathing and a pulse (Figure 5) to determine next actions.

To minimize delay in starting CPR, you should assess breathing and pulse at the same time. This should take no more than 10 seconds.

For detailed instructions on checking for breathing and a pulse in an adult, see Part 3.

Steps 3a and 3b: Determine Next Actions

Determine next actions based on whether breathing is normal and if a pulse is felt.

- If the victim is breathing normally and a pulse is felt, monitor the victim until emergency responders arrive.
- If the victim is not breathing normally but a pulse is felt:
 - Provide rescue breathing at a rate of 1 breath every 6 seconds, or 10 breaths per minute (see Rescue Breathing in Part 8).
 - Check for a pulse about every 2 minutes. Perform high-quality CPR if you do not feel a pulse.
 - If you suspect opioid use, give naloxone if available and follow your local protocols (see Part 9 for more information).
- If the victim is not breathing normally or is only gasping and has no pulse, begin high-quality CPR (Step 4).

Step 4: Start High-Quality CPR

Start cycles of CPR with 30 chest compressions followed by 2 breaths (see Critical Concepts: High-Quality CPR in Part 1 and Perform High-Quality Chest Compressions in Part 3). Remove bulky clothing from the victim's chest so that you can locate appropriate hand placement for compressions. Removing the clothing will also aid in more rapid AED pad placement when the AED arrives.

Steps 5 and 6: Use the AED as Soon as It Is Available

Follow the AED directions to check the rhythm (see Part 4).

Step 7: If the AED Detects a Shockable Rhythm, Give a Shock

Give 1 shock. Resume CPR immediately until prompted by the AED to allow a rhythm check, about every 2 minutes. Continue CPR and using the AED until advanced life support providers take over or the victim begins to breathe, move, or otherwise react.

Step 8: If the AED Detects a Nonshockable Rhythm, Resume High-Quality CPR

Resume high-quality CPR until prompted by the AED to allow a rhythm check, about every 2 minutes. Continue CPR and using the AED until advanced life support providers take over or the victim begins to breathe, move, or otherwise react.

Adult 2-Rescuer BLS Sequence

This is your step-by-step guide to providing high-quality CPR to an unresponsive adult when you are part of a multirescuer (2 or more) team. The numbered steps correspond to the numbered steps on the Adult BLS Algorithm for Healthcare Providers (Figure 4 in Part 3). Follow the steps of the algorithm for the single rescuer; incorporation of additional rescuers is included here.

The first rescuer who arrives at the side of a potential cardiac arrest victim should quickly perform Steps 1 and 2 and then begin high-quality CPR. As more rescuers arrive, assign tasks (see Team Roles and Duties for 2 or More Rescuers in Part 3). When more rescuers are available for a resuscitation attempt, they can perform more tasks at the same time.

Step 1: Verify Scene Safety

Make sure the scene is safe for you and the victim.

Step 2: Check for Responsiveness and Get Help

1. Tap the victim's shoulders and shout, "Are you OK?"

2. If the victim is not responsive:

- a. The first rescuer assesses the victim and, if no mobile phone is available, sends the second rescuer to activate the emergency response system and retrieve the AED.

Step 3: Assess for Breathing and a Pulse

Next, assess the victim for normal breathing and a pulse (Figure 5) to determine next actions.

To minimize delay in starting CPR, you should assess breathing and pulse at the same time. This should take no more than 10 seconds.

For details, see Assess for Breathing and a Pulse in Part 3.

Steps 3a and 3b: Determine Next Actions

Determine next actions based on whether breathing is normal and if a pulse is felt:

- If the victim is breathing normally and a pulse is felt, monitor the victim.
- If the victim is not breathing normally but a pulse is felt:
 - Provide rescue breathing at a rate of 1 breath every 6 seconds, or 10 breaths per minute (see Rescue Breathing in Part 8).
 - Check for a pulse about every 2 minutes. Perform high-quality CPR if you do not feel a pulse.
 - If you suspect opioid use, give naloxone if available and follow your local protocols (see Part 9 for more information).
- If the victim is not breathing normally or is only gasping and has no pulse, begin high-quality CPR (Step 4).

Step 4: Begin High-Quality CPR, Starting With Chest Compressions

If the victim is not breathing normally or is only gasping and has no pulse, immediately do the following:

1. One rescuer begins high-quality CPR, starting with chest compressions. Remove bulky clothing from the victim's chest so that you can locate appropriate hand placement for compressions. Removing the clothing will also aid in more rapid AED pad placement when the AED arrives.
2. Once the second rescuer returns and assists in providing 2-rescuer CPR, switch compressors frequently (about every 2 minutes or 5 cycles, typically when the AED is analyzing the rhythm). This helps ensure that compressor fatigue does not reduce CPR quality (see Critical Concepts: High-Performance Teams in Part 3).

Steps 5 and 6: Use the AED as Soon as It Is Available

Follow the AED directions to check the rhythm (see Part 4).

Step 7: If the AED Detects a Shockable Rhythm, Give a Shock

Give 1 shock. Resume CPR immediately until prompted by the AED to allow a rhythm check, about every 2 minutes. Continue CPR and using the AED until more advanced life support providers take over or the victim begins to breathe, move, or otherwise react.

Step 8: If the AED Detects a Nonshockable Rhythm, Resume High-Quality CPR

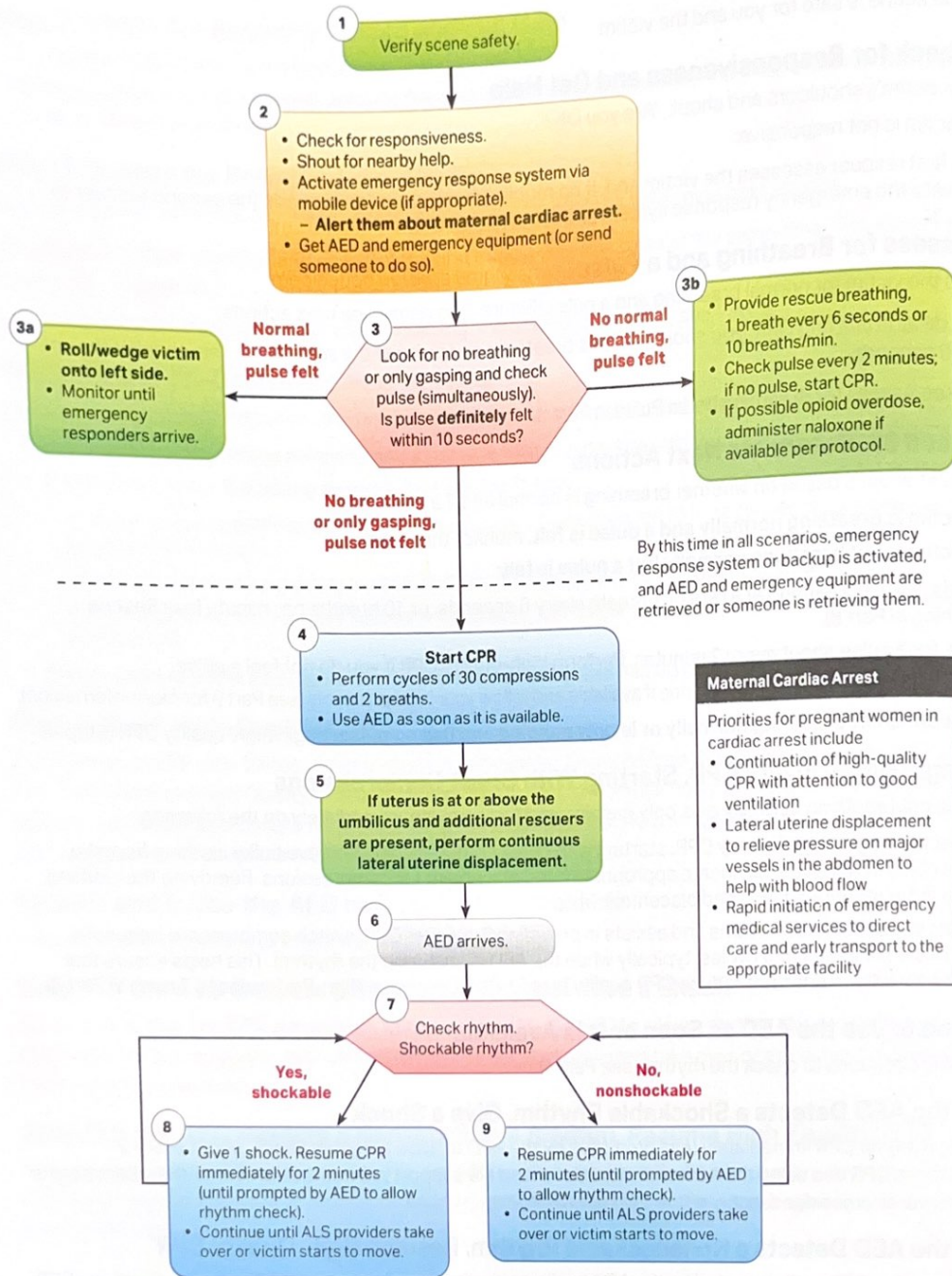
Resume high-quality CPR until prompted by the AED to allow a rhythm check, about every 2 minutes. Continue CPR and using the AED until more advanced life support providers take over or the victim begins to breathe, move, or otherwise react.

Cardiac Arrest in Pregnancy: Out-of-Hospital BLS Considerations

This is your step-by-step guide to providing care for a pregnant victim in cardiac arrest. The steps correspond to the Adult BLS Algorithm for Healthcare Providers with specific pregnancy steps included. Goals of BLS with a pregnant victim include continuation of high-quality CPR with attention to good ventilation, continuous LUD, and rapid initiation of emergency services to determine proper transportation location and advanced care (Figure 44).

It is crucial to provide high-quality CPR for a pregnant woman just as you would for any victim of cardiac arrest. Without CPR, the lives of both the mother and the baby are at risk.

Figure 44. Adult BLS in Pregnancy Algorithm for Healthcare Providers.



Rescuers who arrive at the side of a pregnant woman in cardiac arrest should follow these sequential steps on the algorithm:

Step 1: Verify Scene Safety

Make sure that the scene is safe for you and the victim.

Step 2: Check for Responsiveness and Get Help

1. Tap the victim's shoulders and shout, "Are you OK?"
2. If the victim is not responsive, activate the emergency response system via mobile device. Get the AED or send someone to do so.
3. Notify EMS of maternal arrest.

Step 3: Assess for Breathing and a Pulse

Next, assess the victim for normal breathing and a pulse (Figure 5) to determine next actions.

To minimize delay in starting CPR, you should assess breathing and pulse at the same time. This should take no more than 10 seconds.

For detailed instructions on checking for breathing and a pulse in an adult, see Part 3.

Steps 3a and 3b: Determine Next Actions

Determine next actions based on whether breathing is normal and if a pulse is felt.

- **If the victim is breathing normally and a pulse is felt**, monitor the victim until emergency responders arrive.
 - Roll or wedge the victim so that she is lying on her left side.
- **If the victim is not breathing normally but a pulse is felt:**
 - Provide rescue breathing at a rate of 1 breath every 6 seconds, or 10 breaths per minute (see Rescue Breathing in Part 8).
 - Check for a pulse about every 2 minutes. Perform high-quality CPR if you do not feel a pulse.
 - If you suspect opioid use, give naloxone if available and follow your local protocols (see Part 9 for more information).
- **If the victim is not breathing normally or is only gasping and has no pulse**, begin high-quality CPR (Step 4).

Step 4: Start High-Quality CPR

Start cycles of CPR with 30 chest compressions followed by 2 breaths (see Critical Concepts: High-Quality CPR in Part 1 and Perform High-Quality Chest Compressions in Part 3). Remove bulky clothing from the victim's chest so that you can locate appropriate hand placement for compressions. Removing the clothing will also aid in more rapid AED pad placement when the AED arrives. Use an AED as soon as it is available.

Step 5: LUD

If the uterus is at or above the umbilicus and additional rescuers are present, perform continuous LUD to relieve pressure on major vessels in the abdomen to help with blood flow (Figure 9).

- You should also provide LUD during rescue breathing if additional help is available.

Steps 6 and 7: Use the AED as Soon as It Is Available

Follow the AED directions to check the rhythm (see Part 4).

Step 8: If the AED Detects a Shockable Rhythm, Give a Shock

Give 1 shock. Resume CPR immediately until prompted by the AED to allow a rhythm check, about every 2 minutes. Continue CPR and using the AED until more advanced life support providers take over or the victim begins to breathe, move, or otherwise react.

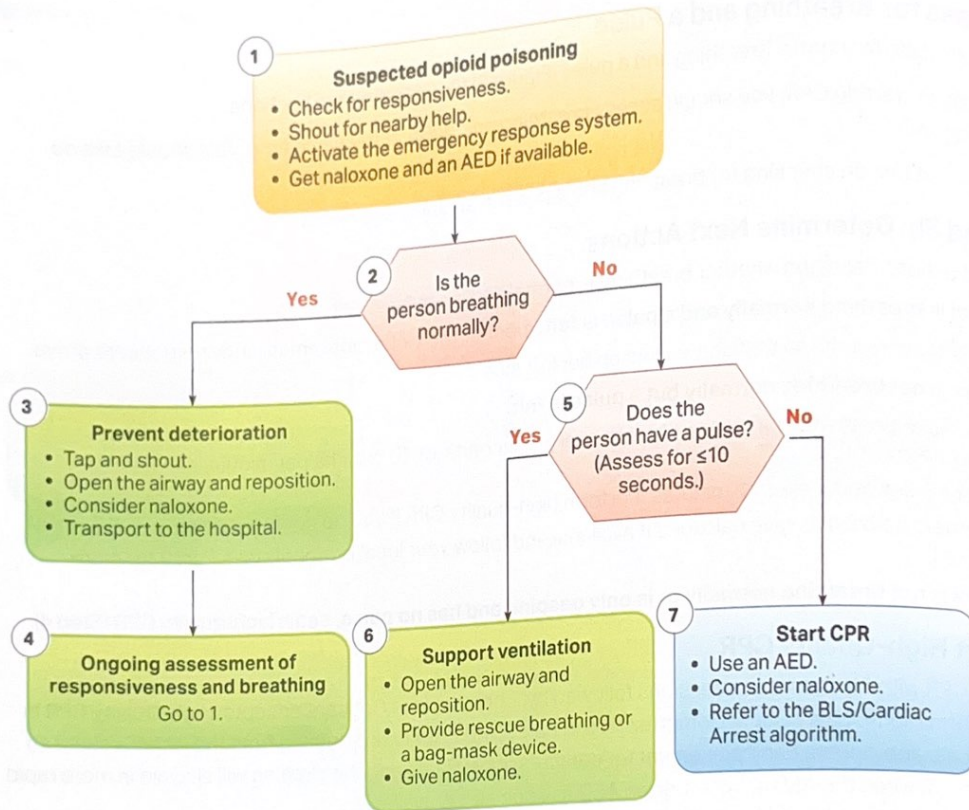
Step 9: If the AED Detects a Nonshockable Rhythm, Resume High-Quality CPR

Resume high-quality CPR until prompted by the AED to allow a rhythm check, about every 2 minutes. Continue CPR and using the AED until more advanced life support providers take over or the victim begins to breathe, move, or otherwise react.

Opioid-Associated Emergency for Healthcare Providers Algorithm and Sequence

This is your step-by-step guide to providing care for a victim with a suspected opioid-associated emergency. The numbered steps correspond to the numbered boxes on the Opioid-Associated Emergency for Healthcare Providers Algorithm (Figure 45). As with all emergency situations begin by assessing the scene for your safety and the safety of the victim.

Figure 45. Opioid-Associated Emergency for Healthcare Providers Algorithm.



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The first rescuer who arrives at the side of someone who has a suspected opioid-associated emergency should follow these sequential steps on the algorithm:

Step 1: Suspect Opioid Poisoning

- Check to see if the person responds.
- Shout for nearby help.
- Activate the emergency response system.
- If you are alone, get naloxone and an AED if available. If someone else is present, send that person to get them.

Step 2: Is the Person Breathing Normally?

- If the person is breathing normally, proceed with Steps 3 and 4.
- If the person is not breathing normally, go to Step 5.

Step 3: Prevent Deterioration

- Tap and shout. Check for responsiveness by tapping the victim's shoulders. Shout, "Are you OK?"
- Open and reposition the airway if needed to maintain normal breathing. This may be necessary if the victim is unresponsive or is responsive but unable to maintain an open airway due to a depressed level of consciousness.
- Consider administering naloxone, if available. If you suspect an opioid overdose, it is reasonable to give naloxone according to package directions and per local protocol. Monitor for response.
- Transport to the hospital. If the victim is not already in a healthcare setting, they should be transported by EMS to a hospital.

Step 4: Assess for Responsiveness and Breathing

Continue to assess responsiveness and breathing until the victim is transferred to advanced care. Victims with opioid-associated emergencies may not be able to maintain an open airway or breathe normally. Even those who receive naloxone may develop respiratory problems that can lead to cardiac arrest.

Step 5: Does the Person Have a Pulse?

Assess for a pulse for no more than 10 seconds.

- If yes (a pulse is felt), go to Step 6.
- If no (a pulse is not felt), go to Step 7.

Step 6: Support Ventilation

- Open and reposition the airway before giving rescue breaths.
- Provide rescue breathing or bag-mask ventilation. This can help prevent cardiac arrest. Continue until spontaneous, normal breathing occurs. Reassess the victim's breathing and pulse every 2 minutes. If there is no pulse, provide CPR (see Step 7).
- Give naloxone according to package directions and per local protocol.

Step 7: Start CPR

- If the victim is not breathing normally and no pulse is felt, provide high-quality CPR, including ventilation. Use the AED as soon as it is available.
- Consider naloxone. If naloxone is available and you suspect an opioid overdose, it is reasonable to give it according to package directions and per local protocol. High-quality CPR should take priority over giving naloxone.
- Refer to the BLS protocol (see Figure 4).

Infant and Child 1-Rescuer BLS Sequence

This is your step-by-step guide to providing CPR to an unresponsive infant or child when you are the only rescuer. The numbered steps correspond to the numbered steps on the Pediatric BLS Algorithm for Healthcare Providers—Single Rescuer (Figure 27 in Part 6).

The first rescuer who arrives at the side of an unresponsive infant or child should quickly perform Steps 1 and 2 and then begin high-quality CPR.

Step 1: Verify Scene Safety

Make sure the scene is safe for you and the victim.

Step 2: Check for Responsiveness and Get Help

1. Tap the child's shoulders. Shout, "Are you OK?"
2. If the victim is not responsive, shout for help and activate the emergency response system via mobile device if appropriate.

Step 3: Assess for Breathing and a Pulse

Next, assess the infant or child for normal breathing and a pulse. This will help you determine the next appropriate actions. *To minimize delay in starting CPR, you should assess breathing and pulse at the same time. This should take no more than 10 seconds.*

For detailed instructions on checking for breathing and a pulse in an infant and in a child, see High-Quality CPR Skills: Infants and Children in Part 6.

Steps 3a and 3b: Determine Next Actions

Determine next actions based on the presence or absence of normal breathing and a pulse:

- **If the victim is breathing normally and a pulse is felt:**
 - Activate the emergency response system (if not already done).
 - Monitor the victim until emergency responders arrive.
- **If the victim is not breathing normally but a pulse is felt:**
 - Provide rescue breathing, with 1 breath every 2 to 3 seconds, or 20 to 30 breaths per minute.
 - Assess the pulse rate for 10 seconds.

Steps 4, 4a, and 4b: Is the Heart Rate Less Than 60/Min (Fewer Than 6 Beats in 10 Seconds) With Signs of Poor Perfusion?

- If yes, start CPR.
- If no, continue rescue breathing. Check for a pulse about every 2 minutes. If no pulse, start CPR.

Steps 5 and 5a: Was the Sudden Collapse Witnessed?

If yes, activate the emergency response system (if not already done), and get the AED.

Step 6: If the Collapse Was Not Witnessed:

Start CPR with cycles of 30 compressions and 2 breaths. Remove bulky clothing from the victim's chest so that you can locate appropriate hand or finger placement for compression. Removing the clothing will also aid in more rapid AED pad placement when the AED arrives. Use the AED as soon as it is available.

Single rescuers should use the following compression techniques (see Perform High-Quality Chest Compressions in Part 6 for complete details):

- For an infant, use either the 2-finger or 2 thumb-encircling hands technique
- For a child, use 1 or 2 hands (whatever is needed to provide compressions of adequate depth)

Step 7: Activate the Emergency Response System and Get an AED

After about 2 minutes, if you are still alone, activate the emergency response system and get an AED if not already done.

Step 8: Use the AED as Soon as It Is Available

Follow the AED directions to check the rhythm.

Step 9: If the AED Detects a Shockable Rhythm, Give 1 Shock

Give a shock. Resume CPR immediately until prompted by the AED to allow a rhythm check, about every 2 minutes. Continue CPR and using the AED until advanced life support providers take over or the victim begins to breathe, move, or otherwise react.

Step 10: If the AED Detects a Nonshockable Rhythm, Resume High-Quality CPR

Resume high-quality CPR until prompted by the AED to allow a rhythm check, about every 2 minutes. Continue CPR and using the AED until advanced life support providers take over or the victim begins to breathe, move, or otherwise react.

Infant and Child 2-Rescuer BLS Sequence

This is your step-by-step guide to providing CPR to an unresponsive infant or child when you are part of a multi-rescuer (2 or more) team. The numbered steps correspond to the numbered steps on the Pediatric BLS Algorithm for Healthcare Providers—2 or More Rescuers (Figure 31 in Part 6).

The first rescuer who arrives at the side of an unresponsive infant or child should quickly perform Steps 1 and 2. As more rescuers arrive, assign roles and responsibilities. When more rescuers are available for a resuscitation attempt, they can perform more tasks at the same time.

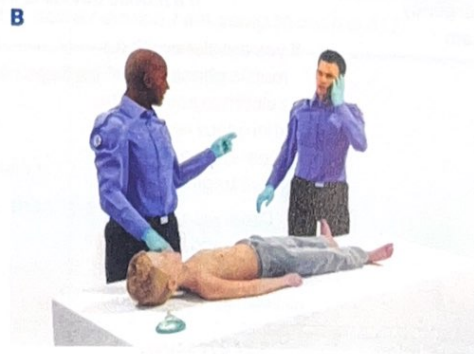
Step 1: Verify Scene Safety

Make sure that the scene is safe for you and the victim.

Step 2: Check for Responsiveness and Get Help

1. Tap the child's shoulders. Shout, "Are you OK?"
2. If the victim is not responsive, shout for help and activate the emergency response via mobile device if appropriate.
3. The first rescuer remains with the victim while the second rescuer activates the emergency response system and retrieves the AED and emergency equipment (Figure 46).

Figure 46. If the arrest of an infant or child was sudden and witnessed, activate the emergency response system in your setting. **A,** In-facility setting. **B,** Prehospital setting.



Step 3: Assess for Breathing and a Pulse

Next, assess the infant or child for normal breathing and a pulse. This will help you determine the next appropriate actions.

To minimize delay in starting CPR, you should assess breathing and pulse at the same time. This should take no more than 10 seconds. For detailed instructions on checking for breathing and a pulse in an infant and in a child, see High-Quality CPR Skills: Infants and Children in Part 6.

Steps 3a and 3b: Determine Next Actions

Determine next action based on whether breathing is normal and if a pulse is felt:

- If the victim is breathing normally and a pulse is felt, activate the emergency response system. Monitor the victim until emergency responders arrive.
- If the victim is not breathing normally but a pulse is felt:
 - Provide rescue breathing, with 1 breath every 2 to 3 seconds, or 20 to 30 breaths per minute.
 - Assess the pulse rate for 10 seconds.

Steps 4, 4a, and 4b: Is the Heart Rate Less Than 60/Min (Fewer Than 6 Beats in 10 Seconds) With Signs of Poor Perfusion?

- If yes, start CPR.
- If no, continue rescue breathing. Check for a pulse about every 2 minutes. If no pulse, start CPR.

Step 5: Begin High-Quality CPR, Starting With Chest Compressions

- The first rescuer starts cycles of CPR with 30 compressions and 2 breaths. When the second rescuer returns, continue cycles of CPR with 15 compressions and 2 breaths. Remove bulky clothing from the victim's chest so that you can locate appropriate hand or finger placement for compression. Removing the clothing will also aid in more rapid AED pad placement when the AED arrives. Use the AED as soon as it is available.
 - For an infant, use either the 2-finger or 2 thumb-encircling hands technique until the second rescuer returns to provide 2-rescuer CPR. During 2-rescuer CPR, the 2 thumb-encircling hands technique is preferred. (See Perform High-Quality Chest Compressions in Part 6 for instructions on both techniques.)
 - For a child, use 1 or 2 hands (1 hand for a very small child).
- When the second rescuer returns, that rescuer gives breaths.
- Rescuers should switch compressors about every 5 cycles or 2 minutes (or earlier if needed) so that compressor fatigue does not reduce CPR quality (see Critical Concepts: High-Performance Teams in Part 3).

Step 6: Prepare for Defibrillation With the AED

Follow the AED directions to check the rhythm.

Step 7: If the AED Detects a Shockable Rhythm, Give 1 Shock.

Give a shock. Resume CPR immediately until prompted by the AED to allow a rhythm check, about every 2 minutes. Continue CPR and using the AED until advanced life support providers take over or the victim begins to breathe, move, or otherwise react.

Step 8: If the AED Detects a Shockable Rhythm, Resume High-Quality CPR

Resume high-quality CPR until prompted by the AED to allow a rhythm check, about every 2 minutes. Continue CPR and using the AED until advanced providers take over or the victim begins to breathe, move, or otherwise react.

Summary of High-Quality CPR Components for BLS Providers



American Heart Association

Component	Adults and adolescents	Children (age 1 year to puberty)	Infants (age less than 1 year, excluding newborns)
Verifying scene safety	Make sure the environment is safe for rescuers and victim		
Recognizing cardiac arrest	Check for responsiveness No breathing or only gasping (ie, no normal breathing) No definite pulse felt within 10 seconds (Breathing and pulse check can be performed simultaneously in less than 10 seconds)		
Activating emergency response system	If a mobile device is available, phone emergency services (9-1-1)		
	If you are alone with no mobile phone, leave the victim to activate the emergency response system and get the AED before beginning CPR Otherwise, send someone and begin CPR immediately; use the AED as soon as it is available	Witnessed collapse Follow steps for adults and adolescents on the left	Unwitnessed collapse Give 2 minutes of CPR Leave the victim to activate the emergency response system and get the AED Return to the child or infant and resume CPR; use the AED as soon as it is available
Compression-ventilation ratio without advanced airway	1 or 2 rescuers 30:2	1 rescuer 30:2 2 or more rescuers 15:2	
Compression-ventilation ratio with advanced airway	Continuous compressions at a rate of 100-120/min Give 1 breath every 6 seconds (10 breaths/min)	Continuous compressions at a rate of 100-120/min Give 1 breath every 2-3 seconds (20-30 breaths/min)	
Compression rate	100-120/min		
Compression depth	At least 2 inches (5 cm)*	At least one third AP diameter of chest Approximately 2 inches (5 cm)	At least one third AP diameter of chest Approximately 1½ inches (4 cm)
Hand placement	2 hands on the lower half of the breastbone (sternum)	2 hands or 1 hand (optional for very small child) on the lower half of the breastbone (sternum)	1 rescuer 2 fingers or 2 thumbs in the center of the chest, just below the nipple line 2 or more rescuers 2 thumb-encircling hands in the center of the chest, just below the nipple line If the rescuer is unable to achieve the recommended depth, it may be reasonable to use the heel of one hand
Chest recoil	Allow complete recoil of chest after each compression; do not lean on the chest after each compression		
Minimizing interruptions	Limit interruptions in chest compressions to less than 10 seconds with a CCF goal of 80%		

*Compression depth should be no more than 2.4 inches (6 cm).

Abbreviations: AED, automated external defibrillator; AP, anteroposterior; CCF, chest compression fraction; CPR, cardiopulmonary resuscitation.

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Basic Life Support Adult CPR and AED Skills Testing Checklist



Student Name _____ Date of Test _____

Hospital Scenario: "You are working in a hospital or clinic, and you see a person who has suddenly collapsed in the hallway. You check that the scene is safe and then approach the patient. Demonstrate what you would do next."
 Prehospital Scenario: "You arrive on the scene for a suspected cardiac arrest. No bystander CPR has been provided. You approach the scene and ensure that it is safe. Demonstrate what you would do next."

Assessment and Activation

Checks responsiveness Shouts for help/Activates emergency response system/Sends for AED
 Checks breathing Checks pulse

Once student shouts for help, instructor says, "Here's the barrier device. I am going to get the AED."

Cycle 1 of CPR (30:2) *CPR feedback devices are required for accuracy

Adult Compressions

Performs high-quality compressions*:

- Hand placement on lower half of sternum
- 30 compressions in no less than 15 and no more than 18 seconds
- Compresses at least 2 inches (5 cm)
- Complete recoil after each compression

Adult Breaths

Gives 2 breaths with a barrier device:

- Each breath given over 1 second
- Visible chest rise with each breath
- Resumes compressions in less than 10 seconds

Cycle 2 of CPR (repeats steps in Cycle 1) Only check box if step is successfully performed

Compressions Breaths Resumes compressions in less than 10 seconds

Rescuer 2 says, "Here is the AED. I'll take over compressions, and you use the AED."

AED (follows prompts of AED)

Powers on AED Correctly attaches pads Clears for analysis
 Clears to safely deliver a shock Safely delivers a shock

Resumes Compressions

Ensures compressions are resumed immediately after shock delivery

- Student directs instructor to resume compressions or
- Second student resumes compressions

STOP TEST

Instructor Notes

- Place a check in the box next to each step the student completes successfully.
- If the student does not complete all steps successfully (as indicated by at least 1 blank check box), the student must receive remediation. Make a note here of which skills require remediation (refer to instructor manual for information about remediation).

Test Results Circle **PASS** or **NR** to indicate pass or needs remediation: **PASS** **NR**

Instructor Initials _____ Instructor Number _____ Date _____

Basic Life Support

Adult CPR and AED

Skills Testing Critical Skills Descriptors

- 1. Assesses victim and activates emergency response system (this must precede starting compressions) within 30 seconds. After determining that the scene is safe:**
 - Checks for responsiveness by tapping and shouting
 - Shouts for help/directs someone to call for help and get AED/defibrillator
 - Checks for no breathing or no normal breathing (only gasping)
 - Scans from the head to the chest for a minimum of 5 seconds and no more than 10 seconds
 - Checks carotid pulse
 - Can be done simultaneously with check for breathing
 - Checks for a minimum of 5 seconds and no more than 10 seconds
- 2. Performs high-quality chest compressions (initiates compressions immediately after recognition of cardiac arrest)**
 - Correct hand placement
 - Lower half of sternum
 - 2-handed (second hand on top of the first or grasping the wrist of the first hand)
 - Compression rate of 100 to 120/min
 - Delivers 30 compressions in 15 to 18 seconds
 - Compression depth and recoil—at least 2 inches (5 cm) and avoid compressing more than 2.4 inches (6 cm)
 - Use of a commercial feedback device or high-fidelity manikin is required
 - Complete chest recoil after each compression
 - Minimizes interruptions in compressions
 - Delivers 2 breaths so less than 10 seconds elapses between last compression of one cycle and first compression of next cycle
 - Compressions resumed immediately after shock/no shock indicated
- 3. Provides 2 breaths by using a barrier device**
 - Opens airway adequately
 - Uses a head tilt–chin lift maneuver or jaw thrust
 - Delivers each breath over 1 second
 - Delivers breaths that produce visible chest rise
 - Avoids excessive ventilation
 - Resumes chest compressions in less than 10 seconds
- 4. Performs same steps for compressions and breaths for Cycle 2**
- 5. AED use**
 - Powers on AED
 - Turns AED on by pushing button or lifting lid as soon as it arrives
 - Correctly attaches pads
 - Places proper-sized (adult) pads for victim's age in correct location
 - Clears for analysis
 - Clears rescuers from victim for AED to analyze rhythm (pushes analyze button if required by device)
 - Communicates clearly to all other rescuers to stop touching victim
 - Clears to safely deliver shock
 - Communicates clearly to all other rescuers to stop touching victim
 - Safely delivers a shock
 - Resumes chest compressions immediately after shock delivery
 - Does not turn off AED during CPR
- 6. Resumes compressions**
 - Ensures that high-quality chest compressions are resumed immediately after shock delivery
 - Performs same steps for compressions

Basic Life Support
Infant CPR
Skills Testing Checklist (2 of 2)



Date of Test _____

Student Name _____

(continued)

Cycle 4 of CPR

Rescuer 2: Infant Compressions

This rescuer is not evaluated.

Rescuer 1: Infant Breaths

- Gives 2 breaths with a bag-mask device:
 - Each breath given over 1 second
 - Visible chest rise with each breath
 - Resumes compressions in less than 10 seconds

STOP TEST

Instructor Notes

- Place a check in the box next to each step the student completes successfully.
- If the student does not complete all steps successfully (as indicated by at least 1 blank check box), the student must receive remediation. Make a note here of which skills require remediation (refer to instructor manual for information about remediation).

Test Results Circle PASS or NR to indicate pass or needs remediation:	PASS	NR
Instructor Initials _____ Instructor Number _____	Date _____	

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Infant CPR

Skills Testing Critical Skills Descriptors

- 1. Assesses victim and activates emergency response system (this must precede starting compressions) within 30 seconds. After determining that the scene is safe:**
 - Checks for responsiveness by tapping and shouting
 - Shouts for help/directs someone to call for help *and* get emergency equipment
 - Checks for no breathing or no normal breathing (only gasping)
 - Scans from the head to the chest for a minimum of 5 seconds and no more than 10 seconds
 - Checks brachial pulse
 - Can be done simultaneously with check for breathing
 - Checks for a minimum of 5 seconds and no more than 10 seconds
- 2. Performs high-quality chest compressions during 1-rescuer CPR (initiates compressions within 10 seconds after identifying cardiac arrest)**
 - Correct placement of hands/fingers in center of chest
 - 1 rescuer: 2 fingers or 2 thumbs just below the nipple line
 - *If the rescuer is unable to achieve the recommended depth, it may be reasonable to use the heel of one hand*
 - Compression rate of 100 to 120/min
 - Delivers 30 compressions in 15 to 18 seconds
 - Adequate depth for age
 - Infant: at least one third the depth of the chest (approximately 1½ inches [4 cm])
 - Use of a commercial feedback device or high-fidelity manikin is required
 - Complete chest recoil after each compression
 - Appropriate ratio for age and number of rescuers
 - 1 rescuer: 30 compressions to 2 breaths
 - Minimizes interruptions in compressions
 - Delivers 2 breaths so less than 10 seconds elapses between last compression of one cycle and first compression of next cycle
- 3. Provides effective breaths with bag-mask device during 2-rescuer CPR**
 - Opens airway adequately
 - Delivers each breath over 1 second
 - Delivers breaths that produce visible chest rise
 - Avoids excessive ventilation
 - Resumes chest compressions in less than 10 seconds
- 4. Switches compression technique at appropriate interval as prompted by the instructor (for purposes of this evaluation). Switch should take no more than 5 seconds.**
- 5. Performs high-quality chest compressions during 2-rescuer CPR**
 - Correct placement of hands/fingers in center of chest
 - 2 rescuers: 2 thumb-encircling hands just below the nipple line
 - Compression rate of 100 to 120/min
 - Delivers 15 compressions in 7 to 9 seconds
 - Adequate depth for age
 - Infant: at least one third the depth of the chest (approximately 1½ inches [4 cm])
 - Complete chest recoil after each compression
 - Appropriate ratio for age and number of rescuers
 - 2 rescuers: 15 compressions to 2 breaths
 - Minimizes interruptions in compressions
 - Delivers 2 breaths so less than 10 seconds elapses between last compression of one cycle and first compression of next cycle

Glossary

- 30:2 CPR:** CPR that is provided in a ratio of 30 chest compressions to 2 breaths.
- Abdominal thrusts:** A procedure used to force a foreign object from a choking victim's airway; sometimes called the *Heimlich maneuver*.
- Adult and adolescent:** Anyone with visible signs of puberty (chest or underarm hair in males; any breast development in females) and older.
- Agonal gasps:** An abnormal, reflexive breathing pattern that may be present in the first minutes after sudden cardiac arrest. The victim with agonal gasps appears to be drawing in air very quickly. Gasps happen at a slow rate. They may sound like a snort, snore, or groan. Agonal gasps are not normal breathing and do not provide adequate oxygenation and ventilation.
- Arrhythmia:** An irregular rhythm or abnormal heartbeat; occurs when the electrical impulses that cause the heart to beat happen too quickly, too slowly, or erratically.
- Automated external defibrillator (AED):** A lightweight, portable, computerized device that can identify an abnormal heart rhythm that may need a shock. If the AED identifies a shockable rhythm, it then can deliver an electrical shock through pads placed on the cardiac arrest victim's chest. The shock can reset an abnormal heart rhythm.
- AEDs are simple to operate. Laypeople and healthcare providers can provide defibrillation safely by following the AED's visual or audible prompts.
- Bag-mask device:** A hand-held device consisting of an inflatable bag attached to a face mask; used to provide effective ventilation to a victim with ineffective or absent breathing. A bag-mask device may be used with or without supplemental oxygen.
- Cardiac arrest:** The abrupt loss of heart function in a person who may or may not have been diagnosed with heart disease. It can come on suddenly or in the wake of other symptoms. Cardiac arrest is often fatal if appropriate steps aren't taken immediately.
- Cardiac catheterization procedure:** A procedure that uses diagnostic imaging equipment to evaluate blood flow in and through the heart. During the procedure, a catheter is inserted in an artery (most frequently the groin or wrist) and threaded through the blood vessels to the patient's heart so that providers can visualize the arteries and chambers of the heart. Some cardiac problems, such as a blocked artery or other abnormalities, can be treated during the procedure. The procedure is performed in a cardiac catheterization suite, also called a *cath lab*.
- Cardiopulmonary resuscitation (CPR):** A lifesaving emergency procedure for a victim who has signs of cardiac arrest (ie, unresponsive, no normal breathing, and no pulse). The 2 key components of CPR are chest compressions and breaths.
- Chest compression fraction (CCF):** The proportion of time that rescuers perform chest compressions during CPR. A CCF of at least 60% increases the likelihood of return of spontaneous circulation and survival to hospital discharge. With good teamwork, rescuers often can achieve 80% or greater.
- Chest recoil:** When the chest reexpands and comes back up to its normal position after a chest compression.
- Child:** 1 year of age to puberty (signs of puberty are chest or underarm hair in males; any breast development in females).
- Defibrillation:** Interrupting or stopping an abnormal heart rhythm by using controlled electrical shocks.
- Gastric inflation (gastric distention):** When the stomach fills with air during CPR; it is more likely to occur when the victim's airway isn't positioned properly, and air from ventilation goes into the stomach instead of the lungs. Another cause is when rescuers give breaths too quickly or too forcefully. Gastric inflation often interferes with properly ventilating the lungs. It also can cause vomiting.
- Hands-Only CPR:** Providing chest compressions without rescue breathing during CPR.
- Head tilt–chin lift:** A maneuver used to open a victim's airway before providing rescue breaths during CPR.

Heart attack: When a blockage or spasm occurs in a blood vessel and severely restricts or cuts off the flow of blood and oxygen to the heart muscle. During a heart attack, the heart typically continues to pump blood. But the longer the person with a heart attack goes without treatment to restore blood flow, the greater the possible damage to the heart muscle.

In-hospital cardiac arrest: A cardiac arrest that occurs inside a hospital.

Infant: A child younger than 1 year of age (excluding newly born infants in the delivery room).

Jaw thrust: A maneuver used to open a victim's airway before providing rescue breaths during CPR; used when the victim may have a spinal injury or when a head tilt–chin lift doesn't work.

Lateral uterine displacement: The process of using 1 or 2 hands to manually move the visibly pregnant abdomen of a woman to the left side by either pushing or pulling. This action will move the baby off of the large blood vessels that run from the lower body to the heart and help to improve blood flow provided by CPR.

Naloxone: An antidote that partially or completely reverses the effects of an opioid overdose, including respiratory depression. This medication may be given via several routes. The most common routes for emergency use in patients with known or suspected opioid overdose are intramuscularly by autoinjector or intranasally via nasal atomizer device.

Out-of-hospital cardiac arrest: A cardiac arrest that occurs outside of a hospital.

Opioids: A class of drugs that produces narcotic effects of pain relief; includes prescription drugs (hydrocodone, fentanyl, morphine) and illegal drugs (heroin). Misuse or overuse can cause respiratory depression and lead to cardiac arrest.

Personal protective equipment (PPE): Equipment such as protective clothing, helmets, and goggles designed to protect the wearer's body from injury or infection. Some hazards addressed by PPE are airborne particulate matter, physical hazards, chemicals, and biohazards. Common PPE for healthcare providers includes gloves, eye covering, masks, and gowns.

Pocket mask: A handheld device consisting of a face mask with a 1-way valve; the rescuer places it over a victim's nose and mouth as a barrier device when giving rescue breaths during CPR.

Public access defibrillation (PAD): Having AEDs available in public places where large numbers of people gather, such as airports, office buildings, and schools, or where there are people at high risk for heart attacks. Programs may also include CPR and AED training for potential rescuers and coordination with local EMS.

Pulseless ventricular tachycardia (pVT): A life-threatening shockable cardiac rhythm that results in ineffective ventricular contractions. The rapid quivering of the ventricular walls prevents them from pumping so that pulses are not detectable (ie, the "pulseless" in pVT). Body tissues and organs, especially the heart and brain, no longer receive oxygen.

Respiratory arrest: A life-threatening emergency that occurs when normal breathing stops or when breathing is not effective. If untreated, it will lead to cardiac arrest, or it can occur at the same time as cardiac arrest.

Return of spontaneous circulation (ROSC): When a victim of cardiac arrest resumes a sustained heartbeat that produces palpable pulses. Signs of ROSC include breathing, coughing, or movement and a palpable pulse or measurable blood pressure.

Shock: A life-threatening condition that occurs when the circulatory system can't maintain adequate blood flow; the delivery of oxygen and nutrients to vital tissues and organs is sharply reduced.

Telecommunicator CPR (T-CPR): Live, instant instructions provided over the phone by a telecommunicator (eg, dispatcher or emergency call taker) to a 9-1-1 caller. The telecommunicator helps the rescuer recognize a cardiac arrest and coaches them in how to provide effective CPR. For example, T-CPR assists the untrained rescuer in performing high-quality compression-only CPR. T-CPR coaches the trained rescuer in performing high-quality 30:2 CPR.

Ventricular fibrillation: A life-threatening shockable cardiac rhythm that results when the heart's electrical activity becomes chaotic. The heart muscles quiver in a fast, unsynchronized way so that the heart does not pump blood.

Answers to Review Questions

Part 1: [No review questions]

Part 2: 1.b, 2.c, 3.d

Part 3: 1.d, 2.d, 3.a, 4.c, 5.d, 6.a, 7.b, 8.c

Part 4: 1.c, 2.b, 3.a, 4.d

Part 5: 1.c, 2.c, 3.a

Part 6: 1.d, 2.b, 3.d, 4.c, 5.b

Part 7: 1.c, 2.b, 3.c

Part 8: 1.c, 2.a, 3.a, 4.b

Part 9: 1.d, 2.c, 3.b

Part 10: 1.b, 2.a, 3.d, 4.b, 5.c, 6.d, 7.b, 8.a

Part 11: 1.d, 2.a, 3.a

Recommended Reading

2020 Handbook of Emergency Cardiovascular Care for Healthcare Providers. Dallas, TX: American Heart Association; 2020.

American Heart Association. American Heart Association Guidelines for CPR and ECC. Web-based integrated guidelines site. ECCguidelines.heart.org. Originally published October 2020.

Highlights of the 2020 American Heart Association Guidelines for CPR and ECC. Dallas, TX: American Heart Association; 2020. ECCguidelines.heart.org.