



American  
Heart  
Association.



# BLS

BASIC LIFE  
SUPPORT

PROVIDER MANUAL

# Contents

<b>Part 1</b>	
<b>General Course Concepts</b>	<b>1</b>
<hr/>	
BLS Course Objectives	1
Course Description	2
Completion Requirements	2
Skills Tests	2
Exam	2
Your Approach to a Resuscitation Attempt	3
Personal Protective Equipment	3
The <i>BLS Provider Manual</i>	3
Age Definitions	3
Callout Boxes	3
Review Questions	3
<b>Part 2</b>	
<b>The Chain of Survival</b>	<b>5</b>
<hr/>	
Learning Objectives	5
Overview	5
Chain of Survival Elements	7
Prevention and Preparedness	7
Activating the Emergency Response System	7
High-Quality CPR, Including Early Defibrillation	8
Advanced Resuscitation Interventions	9
Post-Cardiac Arrest Care	9
Recovery	9
Comparison of the In-Hospital and Out-of-Hospital Chains of Survival	9
Key Differences in Adult and Pediatric Chains of Survival	10
Review Questions	11

**Part 3**  
**BLS for Adults**

**13**

<b>Learning Objectives</b>	<b>13</b>
<b>Basic Framework for CPR</b>	<b>13</b>
<b>High-Performance Rescue Teams</b>	<b>14</b>
<b>Main Components of CPR</b>	<b>14</b>
<b>Adult BLS Algorithm for Healthcare Providers</b>	<b>14</b>
<b>High-Quality CPR Skills: Adults</b>	<b>16</b>
Assess for Breathing and a Pulse	16
<b>Perform High-Quality Chest Compressions</b>	<b>18</b>
Position Victim	19
Compression-to-Ventilation Ratio	19
Compression Rate	19
Compression Depth	19
Chest Recoil	19
Interruptions in Chest Compressions	19
<b>Chest Compression Technique</b>	<b>19</b>
Alternate Technique for Chest Compressions	21
Compressions for a Pregnant Woman	21
<b>Give Breaths</b>	<b>22</b>
Opening the Airway	22
Head Tilt–Chin Lift	22
Jaw Thrust	22
<b>Barrier Devices for Giving Breaths</b>	<b>22</b>
<b>Pocket Masks</b>	<b>24</b>
<b>Bag-Mask Devices</b>	<b>25</b>
Bag-Mask Ventilation Technique (1 Rescuer)	25
Bag-Mask Ventilation Technique (2 or More Rescuers)	27
Ventilation for a Victim With a Stoma or Tracheostomy Tube	28
<b>Adult 2-Rescuer BLS</b>	<b>28</b>
Team Roles and Duties for 2 or More Rescuers	28
Effective Team Performance to Minimize Interruptions in Compressions	31
<b>What Is a CPR Coach?</b>	<b>31</b>
<b>Review Questions</b>	<b>31</b>

## **Part 4**

### **Automated External Defibrillator for Adults and Children 8 Years of Age and Older**

---

**33**

<b>Learning Objectives</b>	<b>33</b>
<b>Defibrillation</b>	<b>33</b>
Early Defibrillation	33
Public Access Defibrillation Programs	34
AED Arrival	34
<b>Using the AED</b>	<b>34</b>
Know Your AED	34
<b>Operating an AED: Universal Steps</b>	<b>35</b>
<b>Minimize Time Between Last Compression and Shock Delivery</b>	<b>37</b>
<b>Do Not Delay High-Quality CPR After AED Use</b>	<b>37</b>
<b>Child AED Pads</b>	<b>39</b>
<b>Special Circumstances</b>	<b>40</b>
Hairy Chest	40
Presence of Water or Other Liquids	40
Implanted Defibrillators and Pacemakers	40
Transdermal Medication Patches	40
Pregnant Woman	41
Clothing and Jewelry	41
<b>Review Questions</b>	<b>41</b>

## **Part 5**

### **Team Dynamics**

---

**43**

<b>Learning Objectives</b>	<b>43</b>
<b>Elements of Effective Team Dynamics</b>	<b>43</b>
<b>Roles and Responsibilities</b>	<b>43</b>
Assign Roles and Responsibilities	43
Know Your Limitations	44
Offer Constructive Intervention	44
<b>Communication</b>	<b>44</b>
Share Knowledge	44
Summarize and Reevaluate	45
Use Closed-Loop Communication	45
Give Clear Messages	45
Show Mutual Respect	45

Coaching and Debriefing	45
Review Questions	46

**Part 6**  
**BLS for Infants and Children** **47**

---

Learning Objectives	47
Pediatric BLS Algorithm for Healthcare Providers—Single Rescuer	47
High-Quality CPR Skills: Infants and Children	50
Assess for Breathing and a Pulse	50
Breathing	50
Pulse	50
Signs of Poor Perfusion	50
Perform High-Quality Chest Compressions	51
Compression-to-Ventilation Ratio	51
Compression Rate	51
Compression Depth	51
Chest Recoil	51
Interruptions in Chest Compressions	51
Chest Compression Techniques	51
Give Breaths	51
Breaths Are Important for Infants and Children in Cardiac Arrest	51
Opening the Airway	51
Ventilation With a Barrier Device	51
Pediatric BLS Algorithm for Healthcare Providers— 2 or More Rescuers	51
Infant and Child 2-Rescuer BLS	51
Review Questions	51

**Part 7**  
**Automated External Defibrillator for Infants and  
 Children Younger Than 8 Years of Age** **51**

---

Learning Objectives	51
Know Your AED	51
Pediatric-Capable AEDs for Reduced Shock Doses	51
Choosing and Placing the AED Pads	61
AED Use for Victims 8 Years of Age and Older	61

AED Use for Victims Younger Than 8 Years of Age	61
AED Use for Infants	62
Review Questions	62

## **Part 8**

### **Alternate Ventilation Techniques** **63**

---

Learning Objectives	63
CPR and Breaths With an Advanced Airway	63
Rescue Breathing	64
How to Provide Rescue Breathing for Adults, Infants, and Children	64
When to Switch From Only Rescue Breathing to CPR in an Infant or a Child	64
Techniques for Giving Breaths Without a Barrier Device	65
Mouth-to-Mouth Breathing for Adults and Children	65
Breathing Techniques for Infants	66
Mouth-to-Mouth-and-Nose Technique	66
Mouth-to-Mouth Technique	66
Caution: Risk of Gastric Inflation	67
Review Questions	67

## **Part 9**

### **Opioid-Associated Life-Threatening Emergencies** **69**

---

Learning Objectives	69
What Are Opioids?	69
Problematic Opioid Use	69
Identifying an Opioid Emergency	70
Scene Assessment	70
Signs of an Opioid Overdose	70
Antidote to Opioid Overdose: Naloxone	70
Naloxone Autoinjector	70
Intranasal Naloxone	70
Opioid-Associated Life-Threatening Emergency Response Sequence	71
Review Questions	72

**Part 10**  
**Other Life-Threatening Emergencies**

73

**Learning Objectives**

73

**Heart Attack**

73

- Signs of Heart Attack
- Heart Attack and Sudden Cardiac Arrest
- Obstacles to Lifesaving Treatment
- Actions to Help a Heart Attack Victim
- System of Care

73

73

73

73

73

73

73

**Stroke**

- Warning Signs of Stroke
- Other Signs of Stroke
- Actions to Help a Stroke Victim
- System of Care

73

73

73

73

73

73

73

**Drowning**

- Rescue Actions Based on Cause of Cardiac Arrest
- Actions to Help a Victim of Cardiac Arrest Due to Drowning
- Vomiting During Resuscitation
- Transport

73

73

73

73

73

73

73

**Anaphylaxis**

- Mild Allergic Reaction
- Severe Allergic Reaction

73

73

73

73

73

**Review Questions**

73

**Part 11**  
**Choking Relief for Adults, Children, and Infants**

83

**Learning Objectives**

83

**Signs of Choking**

83

**Choking Relief in a Responsive Adult or Child**

83

- Abdominal Thrusts
- Abdominal Thrusts With the Victim Standing or Sitting

83

83

83

**Choking Relief in Pregnant and Obese Victims**

83

**Choking Relief in an Unresponsive Adult or Child**

83

**Giving Effective Breaths When There Is an Airway Obstruction**

83

83

**Actions After Choking Relief**

83

<b>Choking Relief in Infants</b>	<b>89</b>
Responsive Infant	89
Unresponsive Infant	90
<b>Review Questions</b>	<b>91</b>

## **Appendix** **93**

---

<b>Adult 1-Rescuer BLS Sequence</b>	<b>94</b>
<b>Adult 2-Rescuer BLS Sequence</b>	<b>95</b>
<b>Cardiac Arrest in Pregnancy: Out-of-Hospital BLS Considerations</b>	<b>96</b>
<b>Opioid-Associated Emergency for Healthcare Providers     Algorithm and Sequence</b>	<b>98</b>
<b>Infant and Child 1-Rescuer BLS Sequence</b>	<b>100</b>
<b>Infant and Child 2-Rescuer BLS Sequence</b>	<b>101</b>
<b>Summary of High-Quality CPR Components for BLS Providers</b>	<b>102</b>
<b>Adult CPR and AED Skills Testing Checklist</b>	<b>103</b>
<b>Adult CPR and AED Skills Testing Critical Skills Descriptors</b>	<b>104</b>
<b>Infant CPR Skills Testing Checklist</b>	<b>105</b>
<b>Infant CPR Skills Testing Critical Skills Descriptors</b>	<b>107</b>
<b>Glossary</b>	<b>108</b>
<b>Answers to Review Questions</b>	<b>110</b>
<b>Recommended Reading</b>	<b>110</b>

## **Abbreviations**

<b>Abbreviation</b>	<b>Definition</b>
AED	automated external defibrillator
AP	anteroposterior
BLS	Basic Life Support
CCF	chest compression fraction
CPR	cardiopulmonary resuscitation
ECG	electrocardiogram
ED	emergency department
EMS	emergency medical services
LUD	lateral uterine displacement
PAD	public access defibrillation
PPE	personal protective equipment
pVT	pulseless ventricular tachycardia
ROSC	return of spontaneous circulation
T-CPR	telecommunicator-assisted CPR



## General Course Concepts

Welcome to the American Heart Association Basic Life Support (BLS) Provider Course. BLS is the foundation for saving lives after cardiac arrest. In this course, you will learn the skills of high-quality cardiopulmonary resuscitation (CPR) for victims of all ages. You will practice delivering these skills both as a single rescuer and as a member of a multirescuer team. The skills you learn in this course will enable you to

- Recognize cardiac arrest
- Activate the emergency response system early
- Respond quickly and confidently

Despite important advances in prevention, sudden cardiac arrest remains a leading cause of death in many countries. About half of cardiac arrests are unwitnessed. Outcome from out-of-hospital cardiac arrest remains poor. Only about 10% of adult patients with nontraumatic cardiac arrest who are treated by emergency medical services (EMS) survive to hospital discharge.

This course will help you give victims the best chance of survival.

### BLS Course Objectives

The BLS Course focuses on what you need to know to perform high-quality CPR in a wide variety of settings. You will also learn how to respond to choking and other types of life-threatening emergencies.

After successfully completing the BLS Course, you should be able to

- Describe the importance of high-quality CPR and its impact on survival
- Describe all the steps in the Chains of Survival
- Apply the BLS concepts of the Chains of Survival
- Recognize the signs of someone needing CPR
- Perform high-quality CPR for an adult, a child, and an infant
- Describe the importance of early use of an automated external defibrillator (AED)
- Demonstrate the appropriate use of an AED
- Provide effective ventilation by using a barrier device
- Describe the importance of teams in multirescuer resuscitation
- Perform as an effective team member during multirescuer CPR
- Describe the technique for relief of foreign-body airway obstruction for an adult, a child, and an infant

## Course Description

This course prepares you to perform high-quality CPR skills. CPR is a lifesaving 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**.

High-quality CPR improves a victim's chances of survival. Study and practice the characteristics of high-quality CPR so that you can perform each skill effectively.



### Critical Concepts: High-Quality CPR

- *Start compressions within 10 seconds after recognizing cardiac arrest.*
- *Push hard, push fast: Compress at a rate of 100 to 120/min with a depth of*
  - *At least 2 inches (5 cm) for adults but no more than 2.4 inches (6 cm)*
  - *At least one third the depth of the chest, approximately 2 inches (5 cm), for children*
  - *At least one third the depth of the chest, approximately 1½ inches (4 cm), for infants*
- *Allow complete chest recoil after each compression. Avoid leaning on the chest between compressions.*
- *Minimize interruptions in compressions (try to limit interruptions to less than 10 seconds).*
- *Give effective breaths. Deliver each breath over 1 second, enough to make the victim's chest rise. Avoid excessive ventilation.*

## Completion Requirements

To successfully complete this course and receive your BLS course completion card, you must do the following:

- Participate in hands-on interactive demonstrations of high-quality CPR skills
- Pass the Adult CPR and AED Skills Test
- Pass the Infant CPR Skills Test
- Score at least 84% on the exam in the instructor-led course (or successfully complete the online portion of the HeartCode® BLS course)

### Skills Tests

You must pass 2 skills tests to receive your BLS course completion card. During the course, you will have an opportunity to learn and practice chest compressions, bag-mask ventilation, and using an AED. After practice, your instructor will test your skills by reading a brief scenario. You will be asked to respond as you would in a real-life situation. The instructor will not coach or help you during the skills tests.

### Exam

The exam is open resource. This means that you may refer to print or digital resources while you are taking the exam. You may not, however, discuss the exam questions with other students or your instructor. Examples of resources that you may use include notes you take in class, this Provider Manual, and the American Heart Association's *Handbook of Emergency Cardiovascular Care for Healthcare Providers*.

## Your Approach to a Resuscitation Attempt

The BLS techniques and sequences you will learn offer 1 approach to a resuscitation attempt. But every situation is unique. Your response will be determined by

- Available emergency equipment
- Availability of trained rescuers
- Level of training expertise
- Local protocols

## Personal Protective Equipment

Personal protective equipment (PPE) helps protect rescuers from health or safety risks. PPE will vary based on situations and protocols. It can include a combination of items, such as medical gloves, eye protection, gowns/full-body suits, high-visibility clothing, safety footwear, and safety helmets.

Ask your local health authority or regulatory body about the PPE protocols for your role.

## The BLS Provider Manual

Read your *BLS Provider Manual* carefully. Study the skills and lifesaving sequences. During the course, you'll apply this knowledge as a rescuer in simulated emergency scenarios. Your BLS Provider Manual can serve as a resource long after you complete your course.

### Age Definitions

In this course, age definitions are as follows:

- Infants: younger than 1 year of age (excluding newly born infants in the delivery room)
- Children: 1 year of age to puberty (signs of puberty are chest or underarm hair in males; any breast development in females)
- Adults: adolescents (ie, after the onset of puberty) and older

### Callout Boxes

This manual includes Critical Concepts boxes that call attention to specific content.



#### **Critical Concepts**

*These boxes contain important information you must know, including specific risks associated with certain interventions and additional background on key topics.*

### Review Questions

Answer the review questions provided at the end of each Part. You may use these to confirm your understanding of important BLS concepts.