

ACLS Review



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Third Edition

Clinical Editor
Kate Stout

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Easy!**[®]



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Clinical Editor

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Third Edition

Dedication

To all the health care workers who provide care in critical situations, you are truly appreciated.

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Foreword

Emergency situations can cause anxiety in even the most experienced health care workers. It can be overwhelming to think that someone's life is in your hands. The American Heart Association (AHA) has provided evidence-based interventions for many critical situations to optimally improve patient outcomes. *ACLS Review Made Incredibly Easy*, third edition, provides information that follows AHA guidelines to assist with preparing for Advanced Cardiac Life Support (ACLS) certification. This book provides current treatment algorithms as well as information regarding oxygen delivery, critical medications, and how to care for patients in other life-threatening situations, such as anaphylaxis and submersion. Don't stress too much while preparing for your certification—you will get through it with diligent studying and guidance from ACLS instructors, who truly want you to succeed. Once certified, your knowledge in a critical situation may be the difference between life and death for the person you are caring for.

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Chapter 1

ACLS essentials

Just the facts



In this chapter, you'll learn:

- ◆ core concepts of advanced cardiac life support (ACLS)
- ◆ basic components of the ACLS course
- ◆ study strategies to help you prepare for the ACLS examination.

What is ACLS?

Advanced cardiac life support (ACLS) is a systematic approach to advanced resuscitation efforts. ACLS training gives rescuers a coordinated way to approach critically ill patients, regardless of response team size. (See *ACLS core concepts*, page 2.)

Health care workers seeking ACLS training include physicians, registered nurses (RNs), emergency medical services (EMS) personnel, and dental and surgical care professionals.

ACLS training

The foundation of ACLS is high-quality basic life support (BLS) measures. A current BLS card is required of ACLS certification participants.

ACLS certification is obtained after an individual successfully completes a certification course, which may be a live class or an online course. ACLS education involves information on ACLS concepts, algorithms, and medications, followed by hands-on practice and testing using simulated ACLS situations. Certification cards are issued only to active health care providers who demonstrate the appropriate skills and knowledge of ACLS.

Keep in mind that the certification card, which verifies that you've successfully completed the ACLS course, isn't a license to perform techniques discussed or reviewed in the course (such as endotracheal intubation or I.V. catheter insertion). Instead, each person's scope of practice and state license determine the specific

Don't sweat
ACLS training!
Six to eight hours
of coursework
will prepare you
for the written
and practical
examination.



ACLS core concepts

Here are the core concepts and skills you'll need for advanced cardiac life support (ACLS) certification.

General skills

For cardiopulmonary resuscitation (CPR):

- identification of need for CPR
- demonstration of CPR

For devices and procedures, you need to know:

- indications
- precautions
- proper use.

Airway management

You need to know ventilation techniques, such as how to use a bag-valve mask device, how to perform and assist with endotracheal intubation, and use of supraglottic devices.

Early management

You need to know how to manage the first 30 minutes of emergencies that result from such causes as:

- acute coronary syndrome
- cardiac arrest associated with trauma
- cardiac arrest involving a pregnant patient
- cardiac tamponade
- drowning and near-drowning
- electrocution and lightning strike

- hypothermia
- pneumothorax
- possible drug overdose
- stroke
- thrombosis.

Electrical therapy

You need to know how to safely use electrical devices, such as an automated external defibrillator, conventional defibrillator, and pacemakers.

Emergency conditions

You need to know cardiac rhythms that may require ACLS treatment, such as bradycardia, asystole, pulseless electrical activity, tachycardias, ventricular tachycardia, and ventricular fibrillation.

I.V. and invasive techniques

You need to be familiar with I.V. and invasive therapeutic techniques, such as peripheral and central I.V. line insertion and intraosseous cannulation.

Pharmacology

You need to know the action, indication, dosages, and precautions for the major drugs used during ACLS, such as epinephrine, atropine, adenosine, amiodarone, and dopamine.

individual's ability to perform these techniques. ACLS renewal is required every 2 years.

Born to teach

After successfully completing an ACLS course, participants who display exemplary understanding of the core concepts and are interested in teaching ACLS can obtain additional education to become an ACLS instructor.



Key points

Taking the examination

- The examination consists of written and practical sections.
- The passing grade is 84%.
- Participation in established case scenarios is required.
- A team approach is used for the Megacode.

ACLS testing

The ACLS examination is required in both live and online courses. The test, issued by the AHA, contains 30 to 50 multiple-choice questions and generally takes about 1 hour.

To pass the test, you must answer 84% of the questions correctly.

“Mega” practice

The skills section must be completed with an authorized instructor at a training center and consists of performing adult CPR accurately and completing a Megacode scenario successfully. A Megacode is a simulation of an emergency situation in which a team approach is used to provide appropriate treatment. Each team member will have the opportunity to provide the correct actions associated with a described scenario and assigned role, following the appropriate algorithm.

Study strategies

Preparation is needed to pass ACLS testing successfully. Testing assesses both knowledge of ACLS concepts and the ability to apply those concepts during emergency situations. As a trained health care professional, you should view the ACLS certification as another step in your professional development. Preparing effectively creates confidence about being tested.

Several strategies may be utilized to study. Not all strategies are appropriate for every student. A combination of strategies may help you learn ACLS concepts and be enthusiastic about the material.

Determining your strengths and weaknesses

ACLS training focuses on a broad range of skills, from airway management to pharmacology to leadership during emergency situations. Chances are, some areas are more familiar than others.

Make a list and check it twice

One good way to begin your studying is to look at the list of ACLS core concepts provided in this chapter. On a sheet of paper, create two columns. Title one column “know well.” Title the other “need review.” Now go through the list of ACLS core concepts and place each one in either the “know well” or “need review” column. Don’t worry if one column is longer than the other. This will provide an initial guide to how much time may be needed for each topic.

Remember, although time will be spent studying the topics listed in the “know well” column, more will be needed for the topics in the “need review” column.

Putting ACLS concepts into “know well” and “need review” columns may help you map out how much time you need to spend studying each topic.



Setting your schedule

Most people can identify a period in the day when they feel most alert. Topics that need more review should be studied at the “high-energy” time of day. Topics that need less review can be studied at the “low-energy” time of day, if needed. Plan your schedule accordingly.

Eight days a week

Set up a basic study schedule. Using a calendar or organizer, determine how many days there are before ACLS testing. Fill in those dates with specific times and topics to study.

Keep in mind that studying all day or for extended periods of time may not be helpful. Set aside time for regular activities. Personal study capabilities should be considered to set realistic goals. (See *Creating an effective study space*.)

Get creative

Even the most determined student needs an occasional change of pace to stay motivated. Consider studying with a group or using audiovisual or other devices to make study time more effective.

Study buddies

Studying with a partner or group can be an excellent way to increase energy and motivation. Working with a partner provides the opportunity to test one another and encourage and motivate each other. When choosing a partner, select someone with similar goals, motivation, and knowledge; otherwise, valuable time may be wasted chatting or needlessly reviewing basic material.

Creating an effective study space

When preparing for the advanced cardiac life support examination, it's important to use your time and space effectively. Time is wasted when studying in places where it's hard to concentrate. Look for a study space that:

- is quiet, convenient, and away from traffic
- has soft lighting to prevent eye strain
- has a temperature between 65°F and 70°F (18.3°C and 21.1°C)
- contains a solid chair that aids good posture
- contains flowers, green plants, or familiar photos, paintings, or other elements that provide a sense of comfort.



Key points

Study tips

- Use a combination of study strategies to help learn effectively.
- Create a guide of “know well” and “needs review.”
- Devise a study schedule.
- Use additional materials to maintain motivation.

Virtual studying

Many Internet sites offer study materials to help with preparing for the advanced cardiac life support (ACLS) examination. For example, several sites offer ACLS simulators that provide practice of ACLS skills on virtual patients and offer immediate feedback as well as a fun approach to studying. Remember, ACLS information and recommendations may change, so check to see when a site was last updated before relying on it too heavily.

In addition, many professional sites (such as the American Medical Association, the American Heart Association [AHA], and various other nursing and medical sites) offer materials that provide specific concepts and up-to-date information on the changing field of health care.

Always beware of online ACLS courses that may not be approved by the AHA. Your health care facility may not find them to be acceptable courses, and you may just waste time and money.

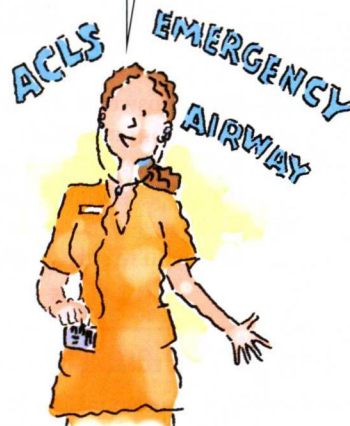
Using a recording device is a portable and effective way to enhance your memorization of core concepts.

Visualize success

Audiovisual tools can also enhance a study routine. Flash cards, flowcharts, drawings, and diagrams all provide images that may improve retention of studied material. Even the process of creating these materials may help learning. (See *Virtual studying*.)

Do you hear what I hear?

If understanding and retaining information occurs more effectively by listening rather than seeing, consider using a handheld recording device (such as a tape recorder or even an electronic organizer or cell phone) to record key ideas. Like flash cards, a recording is portable and perfect for short study periods during the day.



Quick quiz

1. What's the meaning of "advanced cardiac life support"?
 - A. Systematic approach to life support
 - B. Life support with use of a ventilator
 - C. A 2-day course with 6 to 8 hours of lecture
 - D. A written and practical examination

Answer: A. ACLS is a systematic approach to resuscitation that provides rescuers with memory aids for the treatment of critically ill patients.

2. To prepare for the ACLS testing, you should:
- A. study all day, the day prior to the examination.
 - B. determine a study strategy that works for you.
 - C. not study at all.
 - D. study for several weeks prior to the examination.

Answer: B. Not all study strategies are appropriate for every student. Determine a study strategy, or combination of strategies, that works for you to adequately prepare for ACLS testing.

3. ACLS certification is a professional advancement for which groups of health care professionals?
- A. RNs, physicians, and advanced EMS personnel
 - B. Physicians, licensed practical nurses (LPNs), and nursing students
 - C. Certified nursing assistant, nursing students, and RNs
 - D. LPNs, physician's assistants, and surgical care professionals

Answer: A. Health care professionals seeking ACLS training may include physicians, RNs, EMS personnel, and dental and surgical care professionals.

Scoring



If you answered all three questions correctly, way to go! You really know your essentials.



If you answered two questions correctly, keep up the good work! You're "essentially" on the right track.



If you answered fewer than two questions correctly, nice try! Next time, you're sure to get an "A" on ACLS.

Suggested References

American Heart Association. (2010). *2010 handbook of emergency cardiovascular care for healthcare providers*. Dallas, TX: Author.

American Heart Association. (2015). *Highlights of the 2015 American Heart Association guidelines update for CPR and ECC*. Dallas, TX: American Heart Association.

ACLS in practice

Just the facts

In this chapter, you'll learn:

- ◆ American Heart Association's "chains of survival"
- ◆ BLS and ACLS surveys that form the basis of advanced cardiac life support actions
- ◆ phased-response approach to emergency response team management
- ◆ purpose of treatment algorithms.

The chain of survival

The chain of survival describes a chain of events—each interdependent—that plays a crucial role in helping a patient survive cardiac arrest. Just like a real "chain," each link must be strong for the process to work. If one link is weak or missing, poor survival rates will result even if the rest of the emergency cardiac care system is excellent. In 2015, the AHA instituted two separate chains of survival to reflect the two separate processes for in-hospital and out-of-hospital cardiac arrest.

The links in each adult chain of survival are similar. The in-hospital chain includes a link regarding surveillance and prevention of cardiac arrest (such as utilizing a rapid response system). The out-of-hospital chain includes a link regarding utilizing basic and advanced emergency medical services. (*See IHCA and OHCA chains of survival*).

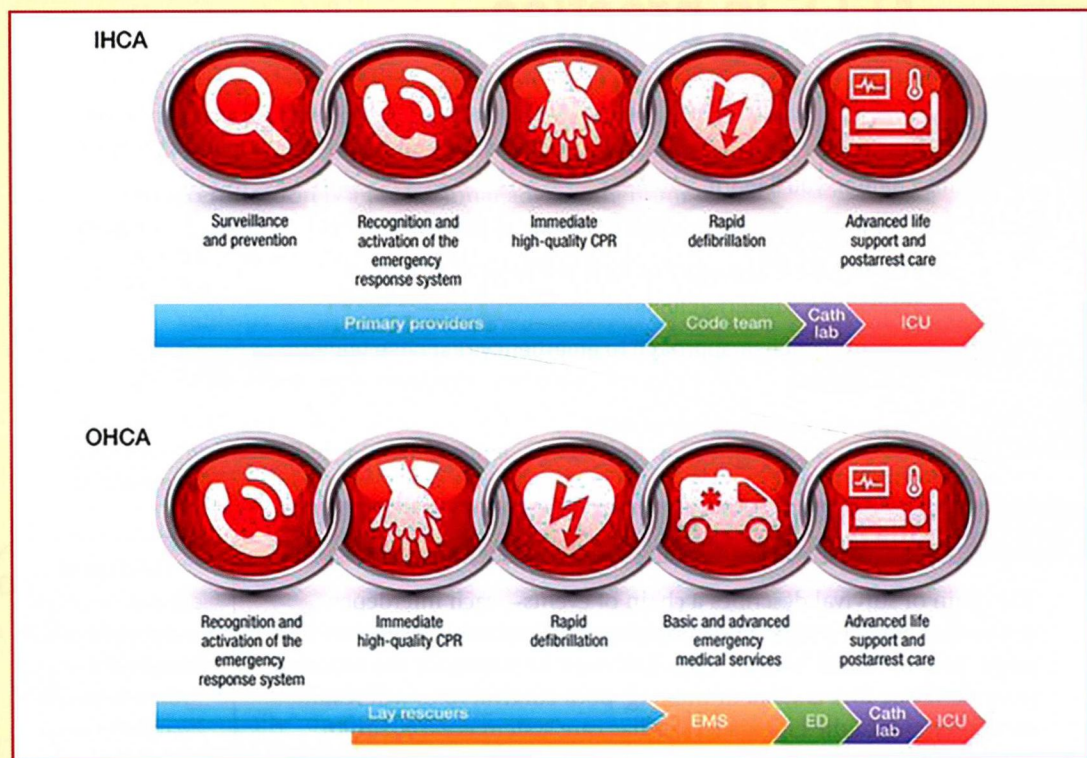
Both chains include the following:

- recognition of cardiac arrest and activation of an emergency response system
- immediate cardiopulmonary resuscitation (CPR) with high-quality chest compressions
- rapid defibrillation
- effective advanced cardiac life support (ACLS) interventions
- integrated post-cardiac arrest care.

The chain of survival describes a chain of events that plays a crucial role in helping a patient survive cardiac arrest.



IHCA and OHCA Chains of Survival



Recognition and activation

Recognition of cardiac arrest begins with identifying the patient's collapse, establishing unresponsiveness, absence of effective breathing, and pulselessness. Activation of the emergency response system, whether in hospital or out of hospital, and the arrival of ACLS trained response personnel improve the patient's chance for survival.

Immediate CPR

Immediate, high-quality CPR bridges the gap between the patient's collapse and the arrival of ACLS trained personnel with emergency equipment. Even with an effective emergency response system, a delay between the out-of-hospital patient's collapse and the arrival of EMS personnel may be unavoidable.