Essential Medical Training, LLC

Providing Quality, Professional Training"

Basic Life Support (BLS) for the Healthcare Provider

Course Study Guide and Agenda

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Course Outline and General Information

Today's course is provided by:

Essential Medical Training, LLC

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Course:

Basic Life Support (BLS) for Healthcare Providers

Topics Include:

- 1 & 2 Rescuer CPR for adult, child, & infant
- Proper and safe use of an AED (automated external defibrillator)
- Ventilation techniques and using a bag valve mask (BVM)
- Opioid-associated life threatening emergencies
- Choking emergencies for adult, child, & infant

Course time: Approximately 3.0 hours

Curriculum: American Heart Association (2020 Edition)

Course book: Basic Life Support (BLS) Provider Manual (ISBN: 978-1-61669-768-6)

The following information is a guide and basic course outline. The information within this packet is limited and maybe incomplete. Students should refer to their course books and American Heart Association's Emergency Cardiovascular Care handbook for complete and accurate information.

Upon completion of the course you will receive a course completion card. You will receive your card within 30 days after the class. Recommended renewal is every two years.

Lost Cards: If you lose your card you can obtain a duplicate by contacting us. The cost for a duplicate card is currently $12 and subject to change without notice.

Thank you for choosing Essential Medical Training, LLC for your training needs.

ENJOY YOUR CLASS!

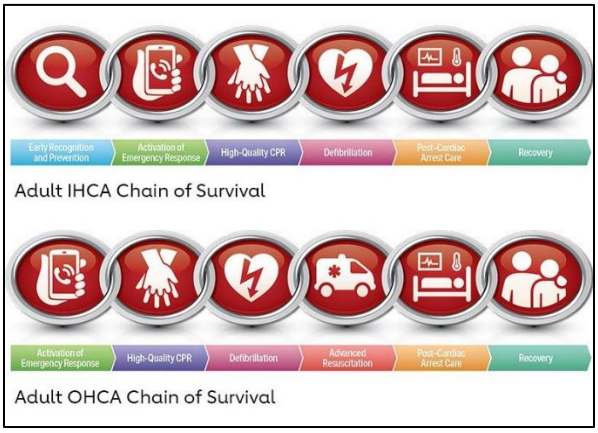
High Quality CPR

- Start compressions within 10 seconds of recognition of cardiac arrest
- Push Hard, Push Fast: compress at rate of 100 to 120 per minute and a depth of
    - At least 2 inches (5cm) for adults
    - At least 1/3 the depth of the chest, about 2 inches (5 cm) for children
    - At least 1/3 the depth of the chest, about 1 ½ inches (4 cm) for infants
- Allow complete chest recoil
- Minimize interruptions in chest compressions
- Give effective breaths that make the chest rise
- Avoid excessive ventilations

Adult Chain of Survival

OHCA

Out-of-hospital cardiac arrest



IHCA

In-hospital cardiac arrest

IHCA: In-hospital cardiac arrest

- Recognize and prevent prearrest conditions
- Immediate recognition of cardiac arrest and activation of emergency response system
- Early CPR with emphasis on chest compressions
- Rapid defibrillation
- Post-cardiac arrest care
- Recovery

OHCA: Out-of-hospital cardiac arrest

- Immediate recognition of cardiac arrest and activation of the emergency response system
- Early CPR with emphasis on chest compressions
- Rapid defibrillation with an AED
- Effective advanced life support
- Post-cardiac arrest care
- Recovery

Pediatric Chain of Survival

OHCA
Out-of-hospital cardiac arrest

IHCA
In-hospital cardiac arrest

Links in the chain of survival

- Prevention of arrest
- Early high-quality bystander CPR
- Rapid activation of the emergency response system
- Effective advanced life support
- Post-cardiac arrest care
- Recovery

Cardiac Arrest or Heart Attack?

Most people use the terms cardiac arrest and heart attacks interchangeably, but they are not the same:

- **Sudden Cardiac Arrest** (SCA)- is caused from an abnormal heart rhythm that causes the heart to quiver and it can no longer pump blood to the rest of the body. This will cause the person to become unresponsive and stop breathing. High quality CPR is needed within minutes or the victim will die.
- **Heart Attack-** is when the flow of blood to the heart is blocked due to a clot in one of the arteries going to the heart. The heart continues to pump but blood is not making it to all parts of the heart. This causes discomfort or pain in the chest which may be felt in one or both arms, the neck, jaw, or back between the shoulder blades.

Some of the signs of a heart attack are:

- Chest discomfort sometimes described as a heaviness or pressure to the chest. This discomfort can radiate to the jaw, arms, back, or neck.
- Shortness of breath
- Cold sweats
- Nausea/vomiting

Woman can present differently than men. Some women have experienced “indigestion” type symptoms associated with light-headedness.

Ages Definitions

Adult	Adolescent and older
Child	1 year to puberty. (approximately 1-8 years of age)
Infant	1 month to 1 year of age

BLS for Adults

There are three main components to CPR {C ~ A ~ B}

- Chest compressions
- Airway
- Breathing

Steps for BLS sequence for single rescuer adult

1. Scene safety
2. Check responsiveness. Tap and shout "Are you ok?"
3. If the victim is unresponsive- call for help
4. Activate the emergency response system
    a. Hospital- Call a code or call the rapid response team
    b. Prehospital- Activate EMS, paramedics, or advanced life support
    c. Workplace- Call 9-1-1
5. Get an AED/defibrillator.

Assess breathing and pulse

The more experienced provider may be able to perform these at the same time.

Breathing

Look at the chest for rise and fall but not for longer than 10 seconds.

- If they are breathing, monitor them until help arrives
- If they are not breathing or only gasping (agonal respirations) not normal breathing

Check Pulse

- Palpate the carotid pulse for no longer than 10 seconds

No breathing or no normal breathing and no pulse? **Being high-quality CPR!**

Use the AED as soon as it becomes available

Opening the Airway

1. Head-tilt chin lift
2. Jaw thrust

Barrier Devices

Although risk of infection is low from giving mouth to mouth, barrier devices do provide a standard of protection when providing rescue breaths. Most barrier devices do include a 1-way valve which prevent exhaled air and bodily fluids from making contact with the rescuer. Pocket mask are available in different sizes for adult, child, and infant.

BVM (Bag Valve Mask)

- Provides positive-pressure ventilations
- Self-inflating bag
- Can be used with or without an oxygen source
- Some bags have a 1-way valve
- Provides 21% oxygen without supplemental oxygen
- Recommended for 2 Rescuers
- Use E-C technique
- Rescuers can observe for adequate chest rise to ensure breaths are effective

Giving breaths with a pocket mask

1. Put the mask over the person's mouth and nose
    - The mask has a pointed end which is placed on the bridge of the nose. The wide end overs the mouth
2. Tilt the head back and lift the chin while pressing the mask against the face.
3. Give 2 breaths (1 at a time over 1 second each) while looking for the chest to rise

Chest Compressions

- Place victim on a firm, flat surface
- Position yourself at the side of the victim
- Place the heel of one hand in the center of the chest, on the lower half of the breastbone
- Place the other hand on top with your arms straight
- Push straight down at least 2 inches at a rate of 100 to 120 / minute
- Perform a ratio of 30:2 (30 chest compressions followed by 2 rescue breaths)
- Allow full chest recoil after each chest compression. This allows the heart refill between compressions.
- Minimize interruptions in chest compressions

2 Rescuer CPR

- Switch compressors every 2 minutes or 5 cycles of CPR to prevent fatigue
- Ratio remains 30:2

BLS for Infants and Children

Ages:

- Children are 1 year to puberty
- Infants are birth to 1 year of age

Steps for BLS sequence for 1 Rescuer – Child and Infant

1. Make sure the scene is safe
2. Check for responsiveness. Tap heel of infant's foot or child's shoulder and shout "Are you ok?"
3. If victim is unresponsive activate the emergency response system via mobile device

Assess breathing and pulse

The more experienced provider may be able to perform these at the same time.

Breathing

Look at the chest for rise and fall but not for longer than 10 seconds.

- If they are breathing, monitor them until help arrives
- If they are not breathing or only gasping (agonal respirations) not normal breathing

Check Pulse

- Child: palpate carotid or femoral pulse
- Infant: palpate the brachial pulse
- Pulses can be difficult to feel in a child or infant. If you don't definitely feel a pulse within 10 seconds or less, begin CPR!

No breathing or no normal breathing and no pulse? **Being high-quality CPR!**

Chest Compressions

- Infant: 2-finger chest compressions or 2 Thumb-Encircling Technique (2 rescuer)
- Child: 1 or 2 hands in the center of the chest
- 1/3 the depth of the chest – approximately 2 inches for child and 1 ½ inches for infant
- Compress at a rate of 100-120 per minute
- Ratio: single rescuer 30:2 and 2-Rescuer 15:2
- Perform high-quality CPR
- Allow full chest recoil

2 Thumb-Encircling Technique
This technique is preferred for 2 Rescuer CPR because it improves blood flow.

2-Rescuer CPR

- Chest compressions using the 2 thumb-encircling technique
- Ratio switches to a 15:2 (15 chest compressions and 2 rescue breaths)

Opening the Airway

- Rescuers should take caution when performing the head-tilt chin-lift in infants. Extending the head too far back can cause the airway to be blocked. The head should be tilted back slightly to the neutral position or the sniffing position.

Ventilation Techniques

- Rescuers should synchronize their chest compression and ventilations until and advanced airway is in place (endotracheal tube, LMA, King Airway etc.)
- Once an advanced airway is in place, chest compressions should continue at a rate of 100-120 per minute and 1 breath given every 6 seconds (10 breaths / min) for adult and 1-breath every 2-3 seconds for children and infants. There are no pauses in chest compressions to give a breath when an advanced airway is in place.
- Rescue Breathing- when a victim is NOT breathing but does have a pulse.
    - **Adults**- 1 breath every 6 seconds (10 breaths/min)
    - **Children/infants**- 1 breath every 2-3 seconds (20-30 breaths/min)

Infants with signs of poor perfusion and a heart rate < 60 per minute- Begin CPR

Automated External Defibrillator (AED)

Each year sudden cardiac arrest (SCA) strikes nearly 300,000 people in the U.S. The time between collapse and defibrillation is an important factor in survival from sudden cardiac arrest cause by ventricular fibrillation and pulseless ventricular tachycardia. Ventricular fibrillation (also known as V-fib) and pulseless ventricular tachycardia (also known as V-tach) are the two shockable rhythms that an AED would recognize and deliver a shock. Defibrillation can restore a regular cardiac rhythm.

An AED should be used as soon as it arrives at the victim's side.

Four Universal steps to using an AED

1. **Turn on the AED**
    - You want the AED to begin guiding you through the steps
2. **Attached the AED pads**

- Place pads on the chest where the picture shows
- Place pads on the bare skin
- Implanted pacemakers or defibrillators, move the pads down approximately 1-2 inches

3. **Clear the victim and allow the AED to analyze**
    - Some AED's will have you push a button to analyze and others may do it automatically once the pads are in place. Follow the prompts of the AED.
4. **Deliver Shock**
    - If the AED recommends a shock, make sure no one is touching the victims and push the flashing orange button
    - Immediately begin CPR starting with chest compressions
    - If **NO SHOCK** is advised, begin CPR starting with chest compressions and complete another 5 cycles or 2 minutes of CPR, then re-analyze

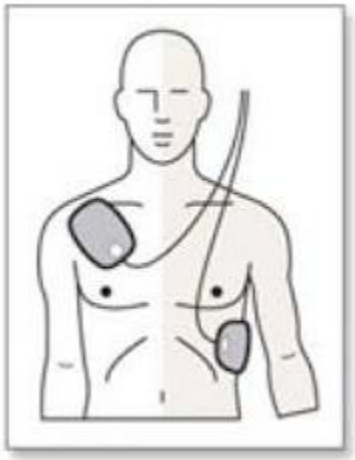
Options for Pad Placement

Option 1: Anterolateral

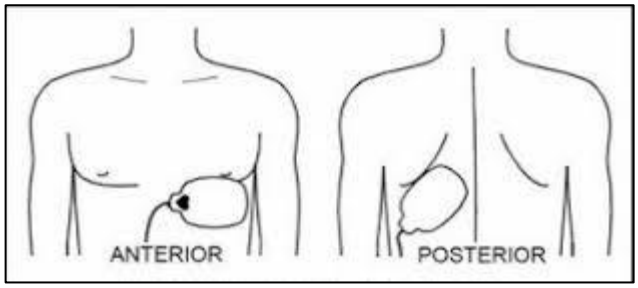
- Place one pad on the right upper bare chest just below the collarbone
- Place the other pad on the left side of the bare chest just left of the nipple, mid-axillary

Option 2: Anteroposterior

- Place one AED pad on the left side of the chest, between the victims left side of the breastbone and the nipple
- Place the other pad on the left side of the victim's back, next to the spine



Option 1: Anterolateral Placement 1



Option 2: Anteroposterior Placement 1

Special Circumstances

- **Hairy chest**- razor the area so that the AED pads will stick to the skin. Pads that do not stick to the skin may fail to deliver shock.
- **Water**- water is a good conductor of electricity. Do not use near water. If the skin is wet, dry before placing pads on the chest
- **Implanted pacemaker or defibrillator**- avoid placing the AED pads directly over the devices.
- **Transdermal medication patches**- do not place AED pads directly over the medication patches. If necessary, remove patches with gloved hand and wipe off area.

AED use in Children less than 8 years of age and infants

Some AED's are designed for both adults and pediatric use. Some AED's are equipped with a dose attenuator device which reduces the energy level to a dose recommended for pediatrics. Some AED's will also have smaller pads designed for use in infants and children less than 8 years of age or less than 55 pounds.

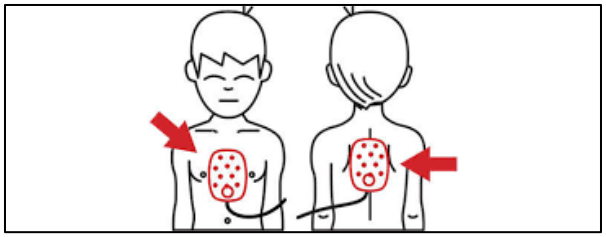


Figure 1: Anteroposterior AED pad placement for child

Choking Relief for Adults, Children, and Infants

There are two basic types of airway obstructions

1. **Partial or mild**- victim is able to breath, coughing, and able to speak
2. **Severe or complete**- victim is unable to speak or cry, using universal sign, unable to breath or cough

You must take immediate action for any victim who is not able to breath by performing abdominal thrust in adults and children 1-8 years of age or backslaps for infants

Anytime any victim becomes unresponsive, Begin CPR. With unresponsive victims, look inside the mouth for obstructing objects each time you open the airway to ventilate.

Adults

1. Determine if partial or complete airway obstruction.
2. If complete or severe, stand behind the victim and wrap your arms around their waist.

3. Make a fist with either hand and with you thumb in towards the victim, place it just above the belly button.
4. Place your other hand on top of the first and forcefully press in and up on the abdomen.
5. Repeat this process until the object comes out or the victim becomes unresponsive.
6. If the victim becomes unresponsive, gently lay the person on the ground and begin CPR.

Children *(1-8 years of age)*
The steps are the same except you may have to kneel down and modify your abdominal thrust to the child's size.

Infants *(Less than 1 year of age)*
DO NOT perform abdominal thrust as you could cause damage.

1. Determine if partial or complete airway obstruction.
2. If complete or severe, hold the infant facedown with their body resting on your forearm.
3. Deliver 5 back slaps between the shoulder blades.
4. Then turn the infant over to where the infant is resting on the other forearm.
5. Perform 5 chest thrust on the sternum between the nipples.
6. Repeat this process until the object comes out or victim becomes unresponsive.
7. If the victim becomes unresponsive, being CPR.

Summary of High Quality CPR for BLS Providers

Component	Adult/Adolescent	Children 1-8 years	Infants < 1 year
Scene Safety	Make sure scene is safe for rescuer and victim		
Recognize Cardiac Arrest	Check for responsiveness Check breathing (No breathing or not normal) Check pulse (no longer than 10 seconds)		
Call 911	If alone, leave or use mobile device to activate the emergency response system	**Witnessed Collapse** Follow adult steps on left **Unwitnessed Collapse** Give 2 minutes of CPR Leave victim to call 911 and get an AED	
CPR without advanced airway	1 or 2 Rescuer 30:2	1 Rescuer 30:2 2 or more Rescuers 15:2	
CPR with advanced airway	Continue Chest Compressions at a rate of 100-120/min Adult: Give 1 breath every 6 seconds (10 breaths/min) Child/Infant: Give 1 breathe every 2-3 seconds (20-30 breaths/min)		
Compression Rate	100-120 per minute		
Compression Depth	At least 2 inches	At least 1/3 the depth of chest (about 2 inches)	At least 1/3 depth of chest (about 1 ½ inches)
Hand Placement	2 hands lower half of breastbone	2 hands or 1 hand	1 Rescuer- 2 fingers 2 Rescuer- 2 Thumb-Encircling Technique
Minimize Interruptions	Limit interruptions to less than 10 seconds		

CPR is as easy as