

Essential Medical Training, LLC

Providing Quality, Professional Training™



HeartSaver CPR and AED

Course Study Guide and Agenda

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Course Outline and General Information

Today's course is provided by:

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Course:

HeartSaver CPR and AED Training

Topics Include:

- Recognizing someone who needs CPR
- How to perform high quality CPR for adult, child, & infant
- Proper and safe use of an AED (automated external defibrillator)
- Giving effective breaths using mouth to mouth or mouth to mask
- Choking emergencies for adult, child, & infant

Course time: Approximately 2.0 hours

Curriculum: American Heart Association (2016 Edition)

Required Course book: Heartsaver CPR AED Student Manual (ISBN: 978-1-61669-421-0)

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 \$10 and subject to change without notice.

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

ENJOY YOUR CLASS!

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Sudden Cardiac Arrest versus Heart Attack

Sudden Cardiac Arrest- 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 in 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

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 the chest to come back up to its normal position after each compression
- Minimize interruptions in chest compressions
- Give effective breaths that make the chest rise
- Avoid excessive ventilations

Adult Chain of Survival



Figure 1: AHA Adult Chain of Survival

This course will teach you the first three links of the chain. The fourth and fifth links are provided by advanced first responders.

Adult Chain of Survival

First Link	Quickly recognize an emergency and call 9-1-1
Second Link	Perform early CPR with emphasis on chest compressions
Third Link	Use AED as soon as it becomes available

Pediatric Chain of Survival



Figure 2: AHA Pediatric Chain of Survival

This course will teach you the first three links of the chain. The fourth and fifth links are provided by advanced first responders.

Pediatric Chain of Survival

First Link	Quickly recognize an emergency and call 9-1-1
Second Link	Perform early CPR with emphasis on chest compressions
Third Link	Use AED as soon as it becomes available

Respiratory problems are usually the cause of cardiac arrest in children. Children usually have healthy hearts. Respiratory problems can be a result of drowning, choking, or other breathing problems.

CPR for Adults

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

- Chest compressions
- Airway
- Breathing

CPR sequence for an adult

1. Make sure the scene is safe
2. Check responsiveness. Tap and shout “Are you ok?”
3. If the victim is not responsive. Shout for help, call 9-1-1, and get an AED
 - Follow the instructions of the dispatcher. Do not hang up until instructed
 - Use the AED as soon as it is available
4. Return to the victim and look for normal breathing

Assess 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 not breathing normally “gasping for air” begin CPR!

Unresponsive + Not breathing or not breathing normally???

Being high quality CPR!

Chest Compressions

- Place victim on a firm, flat surface
- Position yourself at the side of the victim
- Move clothes out of the way
- 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 per minute
- Perform a ratio of 30:2 (30 chest compressions followed by 2 rescue breaths)
- Allow the chest to come back up to its normal position after each compression
- Minimize interruptions in chest compressions

Performing chest compressions is hard work. If additional rescuers are available, take turns performing chest compressions. Switch every 2 minutes or after 5 cycles of compressions.

Giving Breaths

After giving 30 chest compressions, you will need to give 2 breaths. First you will need to open the airway using the Head-tilt-chin-lift method

1. Place one hand on the forehead and two fingers of your other hand on the bony part of the chin
2. Tilt the head back and lift the chin

Giving breaths without a barrier device

1. Open the airway using the head-tilt-chin-lift method
2. Take a normal breath and cover the victim's mouth with your mouth
3. Give 1 breath over 1 second, watching for chest rise
4. Take your mouth off so they can exhale and you can take another breath. Repeat the process for a total of 2 breaths. Then return to chest compressions

Barrier Devices- Pocket Mask

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.

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

CPR for Infants and Children

Ages:

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

CPR sequence for 1 Rescuer – Child and Infant

1. Make sure the scene is safe
2. Check responsiveness. Tap and shout "Are you ok?"
3. If the victim is not responsive. Shout for help, call 9-1-1, and get an AED
 - Follow the instructions of the dispatcher. Do not hang up until instructed

- Use the AED as soon as it is available
4. Return to the victim and look for normal breathing

Assess breathing and pulse

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 not breathing normally “gasping for air” begin CPR!

Unresponsive + Not breathing or not breathing normally???

Being high quality CPR!

Calling for help

- If someone comes to help and has a cell phone. Ask them to call 9-1-1

If you are alone and have a cell phone

- Call 9-1-1 and put it on speaker phone
- Begin CPR starting with chest compressions. 30 compressions and 2 breaths
- Go get an AED
- Return to the child and use the AED

If you are alone and DO NOT have a cell phone

- Give 5 cycles of CPR (30 chest compressions + 2 breaths = 1 cycle) or 2 minutes
- Leave the child to call 9-1-1
- Return to the child and continue CPR

Chest Compressions: Children and Infants

- Infant: 2-finger chest compressions
- 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
- Perform high-quality CPR
- Allow the chest to return to its normal position after each chest compression

Giving Breaths: Children and Infants

After giving 30 chest compressions, you will need to give 2 breaths. First you will need to open the airway using the Head-tilt-chin-lift method

1. Place one hand on the forehead and two fingers of your other hand on the bony part of the chin

2. Tilt the head back and lift the chin

Giving breaths without a barrier device

1. Open the airway using the head-tilt-chin-lift method
2. Take a normal breath and cover the victim's mouth with your mouth
3. Give 1 breath over 1 second, watching for chest rise
4. Take your mouth off so they can exhale and you can take another breath. Repeat the process for a total of 2 breaths. Then return to chest compressions
5. Remember to modify the volume of air based on the child's size. Once you see the chest being to rise, that is the amount of air to give

Barrier Devices- Pocket Mask

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3. Give 2 breaths (1 at a time over 1 second each) while looking for the chest to rise

Automated External Defibrillator (AED)

Each year sudden cardiac arrest (SCA) strikes nearly 300,000 people in the United States. The time between collapse and a shock is an important factor in survival from sudden cardiac arrest. An AED can detect an abnormal heart rhythm that requires a shock. An AED can deliver a shock needed to return the heart to a normal 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 on the pads
 - Place pads on bare skin
 - Implanted pacemakers or defibrillators, move the pads down approximately 1-2 inches so they do not interfere with each other

3. Clear the victim and 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

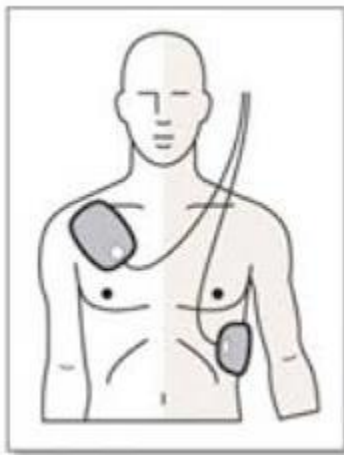
Options for Pad Placement

Option 1: Chest- Adults

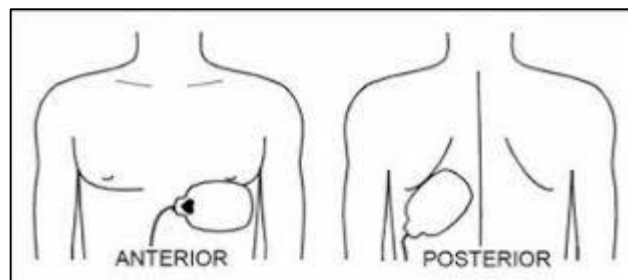
- Place one pad on the right upper bare chest just below the collarbone
- Place the other pad on the left side of the bare chest just left of the nipple, on the side of the chest

Option 2: Front and back: **Typically for children and infants less than age of 8**

- 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: Front of chest- Adults



Option 2: Front and back- Children and infants

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.
- **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 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.

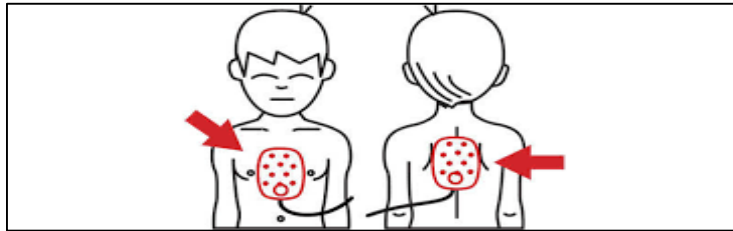


Figure 3: Front and Back AED pad placement for child and infant

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 choking 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 your thumb in towards the victim, place it just above the belly button.
4. Place your other hand on top of the first and give quick upward thrust into 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 on infants because 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, begin CPR.

Summary of High Quality CPR

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- "Tap and Shout"! If unresponsive, begin CPR and call for help		
Check for Breathing	If NOT breathing or not breathing normally- Call 9-1-1 and begin CPR		
Call 911	If alone, leave victim to call for help or use mobile phone	If alone and have mobile phone Call 9-1-1 and use speaker phone- Begin CPR If alone with NO mobile phone Give 2 minutes of CPR Leave victim to call 911 and get an AED	
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
Minimize Interruptions	Limit interruptions to less than 10 seconds		

Reference:

American Heart Association. (2016). Heartsaver CPRAED. In *Heartsaver CPR AED*. Dallas, TX: First American Heart Association Printing.