INTRODUCTION TO CPR

AMERICAN HEART ASSOCIATION UPDATES:
October 18, 2010 If a bystander is not trained in CPR, the bystander should provide compression-only CPR (see below) for the adult victim who suddenly collapses, with an emphasis to "push hard and fast" on the center of the chest, or follow the directions of the EMS dispatcher. The rescuer should continue compression-only CPR until an AED is available or first responders can assist the victim. If the trained lay rescuer is able to perform rescue breaths, compressions and breaths should be provided in a ratio of 30 compressions to 2 breaths.

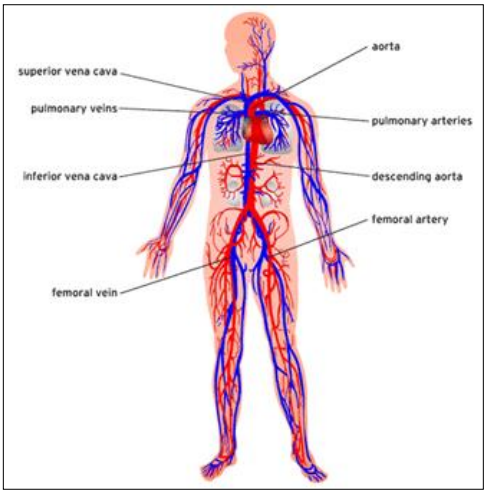
March 2008 The American Heart Association published an advisory statement outlining "hands-only" or "compression-only" CPR. This statement is a clarification addendum to the 2005 AHA Guidelines for CPR and ECC which dictates that lay persons who are unable or unwilling to provide rescue breaths may perform hands-only CPR. This updated recommendation does not apply to first responders and/or medical personnel with access to CPR barrier or a mechanical respirator; unwitnessed cardiac arrest, cardiac arrest in children and infants, or cardiac arrest presumed to be of non-cardiac origin (drowning, trauma, airway obstruction, acute respiratory diseases, drug overdose, etc). AHA study concedes that when performed correctly, conventional CPR continues to prove a more effective rescue method for victims of cardiac arrest and as such we will continue to educate our students in ventilation as well as compressions.

Statistics suggest that sudden cardiac arrest is rapidly becoming the leading cause of death in America. Once the heart ceases to function, a healthy human brain may survive without oxygen for up to 4 minutes without suffering any permanent damage. Unfortunately, a typical EMS response may take 6, 8 or even 10 minutes.

It is during those critical minutes that Cardio Pulmonary Resuscitation can provide oxygenated blood to the victim's brain and the heart, dramatically increasing his chance of survival. And if properly instructed, almost anyone can learn and perform CPR.

HOW CPR WORKS

The air we breathe in travels to our lungs where oxygen is picked up by our blood and then pumped by the heart to our tissue and organs. When a person experiences cardiac arrest - whether due to heart failure in adults and the elderly or an injury such as near drowning, electrocution or severe trauma in a child - the heart goes from a normal beat to an arrhythmic pattern called ventricular fibrillation, and eventually ceases to beat altogether. This prevents oxygen from circulating throughout the body, rapidly killing cells and tissue. In essence, Cardio (heart) Pulmonary (lung) Resuscitation (revive, revitalize) serves as an artificial heartbeat and an artificial respirator.



CPR may not save the victim even when performed properly, but if started within 4 minutes of cardiac arrest and defibrillation is provided within 10 minutes, a person has a 40% chance of survival.

Invented in 1960, CPR is a simple but effective procedure that allows almost anyone to sustain life in the first critical minutes of cardiac arrest. CPR provides oxygenated blood to the brain and the heart long enough to keep vital organs alive until emergency equipment arrives. The 2010 AHA Guidelines for CPR and ECC recommend a change in the BLS sequence of steps from A-B-C (Airway, Breathing, Chest compressions) to C-A-B (Chest compressions, Airway, Breathing) for adults, children, and infants (excluding the newly born).

WHEN TO DIAL 9-1-1

It is critical to remember that dialing 9-1-1 may be the most important step you can take to save a life. If someone besides you is present, they should dial 9-1-1 immediately. If you're alone with the victim, try to call for help prior to starting CPR on an adult and after a minute on a child. Before we learn what to do in an emergency, we must first emphasize what NOT to do:

- DO NOT leave the victim alone.
- DO NOT try to make the victim drink water.
- DO NOT throw water on the victim's face.
- DO NOT prompt the victim into a sitting position.
- DO NOT try to revive the victim by slapping his face.

Always remember to exercise solid common sense. When faced with an emergency situation we may act impulsively and place ourselves in harm's way. Although time should not be wasted, only approach the victim after determining that the scene is safe: always check for cars, fire, gas, downed electrical lines, and any other potential hazards before attempting to perform CPR.

ADULT CPR

Definition
Because there is no single anatomic or physiologic characteristic that distinguishes a "child" victim from an "adult" victim and no scientific evidence that identifies a precise age to initiate Adult rather than Child CPR techniques, the ECC scientists made a consensus decision for age delineation that is based largely on practical criteria and ease of teaching. However, American Heart Association's guidelines dictate that Adult CPR is performed on any person over the age of approximately 10 to 14 years (or post-adolescence, as defined by the presence of secondary sex characteristics).

Assessing the situation
If you suspect that the victim has sustained spinal or neck injury, do not move or shake him.

1 person CPR

- Verify that the victim is unresponsive by shaking the victim gently and shouting "Are you okay?"
- If there is no response, dial 9-1-1
- Retrieve an AED if one is available
- Begin CPR and use the AED as appropriate

2 person CPR

- Verify that the victim is unresponsive by shaking the victim gently and shouting "Are you okay?"
- A trained rescuer should remain with the victim to begin CPR
- Second rescuer telephones 9-1-1 and, if available, retrieves an AED
- Continue CPR and use the AED as appropriate

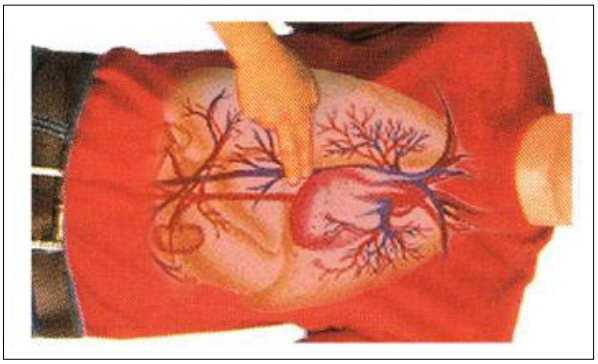
Change in CPR Sequence: C-A-B Rather Than A-B-C

Although no published evidence demonstrates that starting CPR with 30 compressions rather than 2 ventilations leads to improved outcome, chest compressions provide vital blood flow to the heart and brain, and studies of out-of-hospital adult cardiac arrest showed that survival was higher when bystanders made some attempt rather than no attempt to provide CPR.

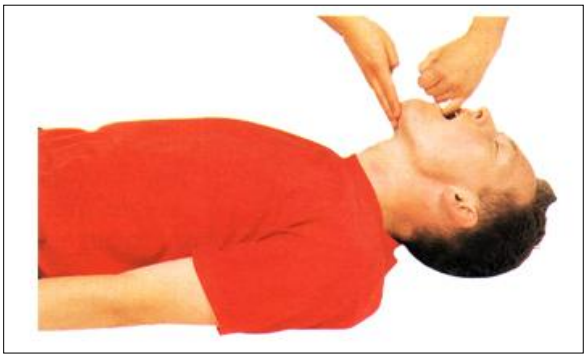
"C" is for CIRCULATION. In order to determine if the victim's heart is beating, place two fingertips on his carotid artery, located in the depression between the windpipe and the neck muscles, and apply slight pressure for several seconds. If there is no pulse then the victim's heart is not beating, and you will have to perform chest compressions.

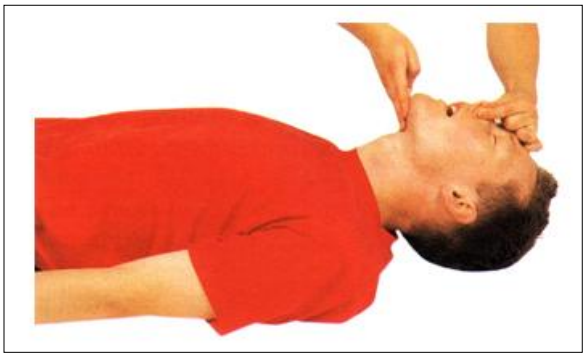
Chest compressions

When performing chest compressions, proper hand placement is very important. Place two fingers on the victim's sternum and then put the heel of your other hand next to your fingers. Now you need to place your hand on top of that hand and interlace the fingers. Lock your elbows and using your body's weight, compress the victim's chest. The depth of compressions should be **at least** 2 inches - remember: 2 hands, 2 inches at a rate of **100 compressions per minute**.

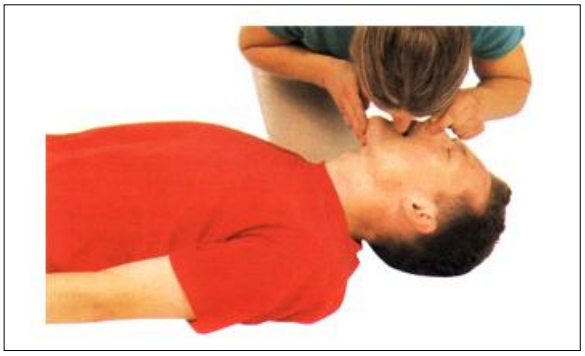


"A" is for AIRWAY. If the victim is unconscious and is unresponsive, you need to make sure that his airway is clear of any obstructions. If you determine that the victim is not breathing, then something may be blocking his air passage. The tongue is the most common airway obstruction in an unconscious person and it may be necessary to perform a finger sweep in order to move the tongue or any other foreign object away from the air passage. With the victim lying flat on his back, firmly hold his chin with one hand while using the finger of your other hand in a sweeping motion. Once the airway is unblocked, place your hand on victim's forehead and your other hand under the tip of the chin and gently tilt his head backward. In this position the weight of the tongue will force it to shift away from the back of the throat, opening the airway. If the person is still not breathing on his own after the airway has been cleared, you will have to assist him breathing.





"B" is for BREATHING (skip if performing compression-only CPR). With the victim's airway clear of any obstructions, gently support his chin so as to keep it lifted up and the head tilted back. Pinch his nose to prevent air from escaping once you begin to ventilate. Take a full breath, place your mouth tightly over the victim's (use a shield barrier if one is available) and blow until the victim's chest rises. Maintain a tight seal around his mouth and be careful not to over-inflate his lungs as this may force air into the stomach, causing him to vomit. If this happens, turn the victim's head to the side and sweep any obstructions out of the mouth before proceeding. Between each breath allow the victim's lungs to relax - place your ear near his mouth and listen for air to escape and watch the chest fall as he exhales. If the victim remains unresponsive (no breathing, coughing or moving), check his circulation.

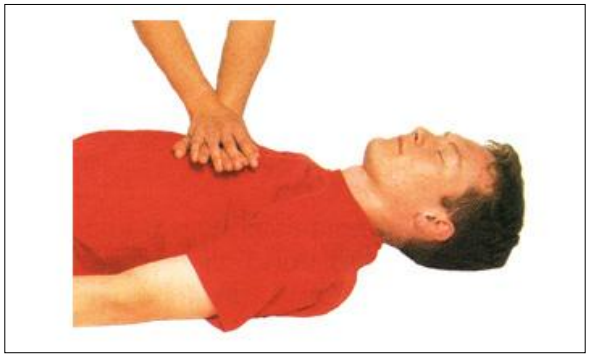


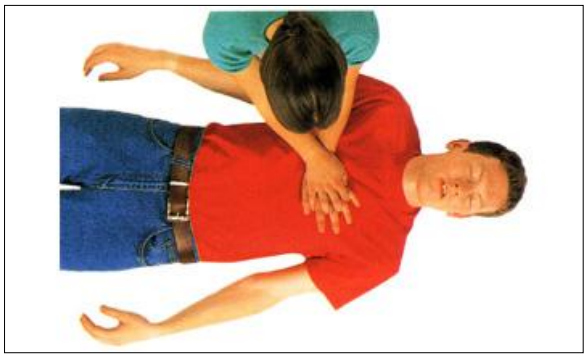
1 person CPR

Count aloud as you compress 30 times at the rate of at least 100/minute. Finish the cycle by giving the victim 2 breaths. This process should be performed 5 times - 30 compressions and 2 breaths - after which remember to check the victim's carotid artery for pulse (for no longer than 10 seconds) and other signs of consciousness. If you definitely not feel a pulse within 10 seconds, you should begin cycles of chest compressions and ventilations. Continue until an advanced airway is in place or victim regains consciousness.

2 person CPR

Count aloud as you compress 30 times at the rate of at least 100/minute. Finish the cycle by giving the victim 2 breaths. To prevent fatigue and deterioration in quality and rate of chest compressions the rescuers should change compressor and ventilator roles every 2 minutes - the switch should be accomplished as quickly as possible to minimize interruptions in compressions. Continue until an advanced airway is in place or victim regains consciousness.





CHILD CPR

Definition
In accordance with current American Heart Association's guidelines, healthcare providers should administer Child CPR to any victims ranging from about 1 to about 10 or 14 years of age, or the onset of adolescence as defined by the presence of secondary sex characteristics.

Assessing the situation
Because primary respiratory arrest in children is more commonly caused by an injury (i.e. poisoning, smoke inhalation, drowning, head trauma, etc.) rather than sudden cardiac arrest, statistics have shown that a child victim is more likely to respond to, and to benefit from, the immediate administration of CPR.

1 person CPR

- Verify that the victim is unresponsive by gently shaking the victim and, if age-appropriate, shouting "Are you okay?"
- Provide 5 cycles of CPR (30 compressions and 2 ventilations)
- Dial 9-1-1
- Retrieve an AED if one is available
- Continue CPR and use the AED as appropriate

2 person CPR

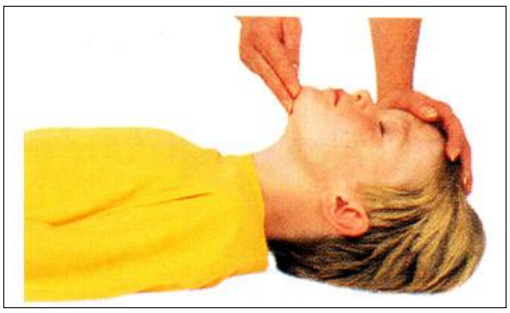
- Verify that the victim is unresponsive by gently shaking the victim and, if age-appropriate, shouting "Are you okay?"
- A trained rescuer should remain with the victim to begin CPR
- Second rescuer telephones 9-1-1 and, if available, retrieves an AED
- Continue CPR and use the AED as appropriate

Change in CPR Sequence: C-A-B Rather Than A-B-C

"C" is for CIRCULATION. Check the child's carotid artery for pulse by placing two fingertips and applying slight pressure on his carotid artery for approximately 5 to 10 seconds. If you don't feel a pulse then the victim's heart is not beating, and you will have to perform chest compressions.

Chest compressions
When performing chest compressions on a child proper hand placement is even more crucial than with adults. Place two fingers at the sternum and then put the heel of your other hand directly above your fingers. The depth of compressions should be **about** 2 inches.

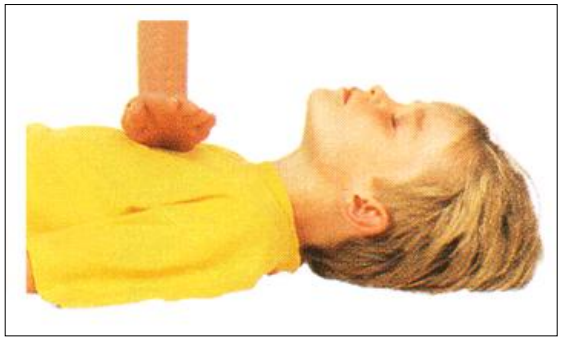
"A" is for AIRWAY. A child's breaths may be extremely faint and shallow - look, listen and feel for any signs of breathing. If there are none, the tongue may be obstructing the airway and preventing the child from breathing on his own. Exercise extra caution when you open the victim's air passage using the head tilt/chin lift technique. This will shift the tongue away from the airway. If the child is still not breathing after his airway has been cleared, you will have to assist him in breathing.



"B" is for BREATHING. If the child remains unresponsive and still not breathing on his own, pinch his nose with your fingertips or cover his mouth and nose with your mouth creating a tight seal, and give two breaths. Keep in mind that children's lungs have much smaller capacity than those of adults. When ventilating a child, be sure to use shallower breaths and keep an eye on the victim's chest to prevent stomach distention. If this happens and the child vomits, turn his head sideways and sweep all obstructions out of the mouth before proceeding.

1 person CPR

Count aloud as you compress 30 times at the rate of at least 100/minute. Finish the cycle by giving the victim 2 breaths. This process should be performed 5 times - 30 compressions and 2 breaths - after which remember to check the victim's carotid artery for pulse (for no longer than 10 seconds) and other signs of consciousness. If you definitely not feel a pulse within 10 seconds, you should begin cycles of chest compressions and ventilations. Continue until an advanced airway is in place or victim regains consciousness.



2 person CPR

Count aloud as you compress 15 times at the rate of at least 100/minute. Finish the cycle by giving the victim 2 breaths. To prevent fatigue and deterioration in quality and rate of chest compressions the rescuers should change compressor and ventilator roles every 2 minutes - the switch should be accomplished as quickly as possible to minimize interruptions in compressions. Continue until an advanced airway is in place or victim regains consciousness.

INFANT CPR

Definition
Infant CPR is administered to any victim under the age of 12 months (except for newborns in the first hours after birth). Infants, just as children, have a much better chance of survival if CPR is performed immediately.

Assessing the situation
Because primary respiratory arrest in infants is more commonly caused by an injury (i.e. poisoning, smoke inhalation, drowning, head trauma, etc.) rather than sudden cardiac arrest, statistics have shown that an infant victim is more likely to respond to, and to benefit from, the immediate administration of CPR. Currently there is no consensus on recommendation for or against the use of AEDs for infants.

1 person CPR
- Check the infant for responsiveness by patting his feet and gently tapping his chest or shoulders
- Provide 5 cycles of CPR (30 compressions and 2 ventilations)
- Dial 9-1-1
- Continue CPR

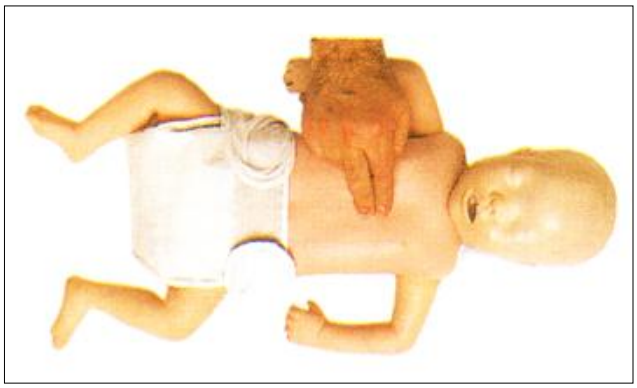
2 person CPR
- Check the infant for responsiveness by patting his feet and gently tapping his chest or shoulders
- A trained rescuer should remain with the victim to begin CPR
- Second rescuer telephones 9-1-1
- Continue CPR

Change in CPR Sequence: C-A-B Rather Than A-B-C

"C" is for CIRCULATION. An infant's pulse is checked at the brachial artery which is located inside of the upper arm, between the elbow and the shoulder. Locate the artery and place two fingers on it, applying slight pressure for 3 to 5 seconds. If you do not feel a pulse within that time, then the infant's heart is not beating, and you will need to perform chest compressions.

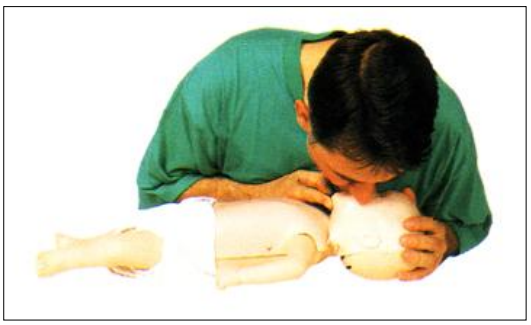
Chest compressions

With the infant flat on his back, place two fingers in the center of his chest just below the nipple line (on lower half of sternum). The compression should be approximately one third to one half the depth of the chest or 1½ inches.



"A" is for AIRWAY. It is normal for an infant to take shallow and rapid breaths, so carefully look, listen and feel for breathing. If you cannot detect any signs of breathing, the tongue may be obstructing the infant's airway. Although the head tilt/chin lift technique is similar to adults and children, when clearing an infant's airway it's important not to tilt the head too far back. An infant's airway is extremely narrow and overextending the neck may actually close off the air passage. Tilt the head back into what is sometimes known as the "sniffer's position" - far enough to make the infant look as if he is sniffing.

"B" is for BREATHING. To artificially respirate an infant, place your mouth over his mouth and nose and give a gentle puff from your cheeks. Let the victim exhale - watch his chest and listen and feel for breathing. If he does not breathe on his own, again place your mouth over his mouth and nose and give another small puff. If the infant remains unresponsive (no crying or moving), immediately check his circulation.



1 person CPR

Count aloud as you compress 30 times at the rate of at least 100/minute. Finish the cycle by giving the victim 2 breaths. This process should be performed 5 times - 30 compressions and 2 breaths - after which remember to check the victim's brachial artery for pulse (for no longer than 10 seconds) and other signs of consciousness. If you definitely not feel a pulse within 10 seconds, you should begin cycles of chest compressions and ventilations. Continue until an advanced airway is in place or victim regains consciousness.

2 person CPR

Count aloud as you compress 15 times at the rate of at least 100/minute. Finish the cycle by giving the victim 2 breaths. To prevent fatigue and deterioration in quality and rate of chest compressions the rescuers should change compressor and ventilator roles every 2 minutes - the switch should be accomplished as quickly as possible to minimize interruptions in compressions. Continue until an advanced airway is in place or victim regains consciousness.