Save-A-Life
First Aid & CPR

CPR and First Aid Introduction

This material will allow you to become well rounded in emergency medical intervention. You cannot pick and choose an emergency, by its definition the occurrence is unpredictable. Situation might require you to know CPR, and also First Aid. If the victim is in need of both, it will be hard to help if you have no knowledge of performing one or the other.

We strongly encourage you to read both topics so you are prepared to be in control of the situation until emergency responders arrive. This material has been developed with concentration on action. Knowing your plan of action will allow you to execute effectively, and ultimately help someone in need.

CPR Introduction - Adult/Child/Infant

There are 500,000 deaths in US related to new and recurring coronary (heart) attacks. That means that every day 1,400 people die from a heart attack. Out of these 500,000, 80% die outside the hospital setting and do not receive any medical treatment after suffering heart attack. If these patients received CPR, this would save 200,000 per year or 550 lives per day.

These numbers are staggering, and prove beyond any doubt that knowing CPR techniques in case of heart attack usually means a difference between life and death for the victim. If CPR is administered within first four minutes after the heart attack, the chances for brain damage are virtually nonexistent. If administered between 4 to 6 minutes, the brain damage is probable; 6 to 10 min brain damage is likely, and after 10 min. the chances of some type of brain damage are virtually certain. So, knowledge of CPR does not only saves lives, but also allows victim to recover without sustaining any permanent damage.

By the end of this section you should know how to administer CPR to the adult (age 9 yrs. or older), child (between 1 and 8 yrs. old), and infant (younger that 1 yr. old) and understand the key steps and reasons for performing CPR.

Guideline Changes

2015 guidelines (largely unchaged from 2010 guidelines) "strongly recommend" that untrained / lay responders perform "compression-only" CPR, sometimes known as CCR. However, medical professionals and trained lay people are still urged to give the victim two "rescue breaths" in between each series of 30 chest compressions. All the changes apply only to adult victims who collapse of cardiac arrest; artificial respiration is still recommended for children and for adults in a few cases, including near-drowning and drug overdose.

The science behind the changes is simple. In an adult who has been breathing normally, for several minutes even after cardiac arrest there is enough oxygen in the bloodstream to maintain the heart and brain, as long as compressions circulate that oxygen.

The new guidelines also call for faster and more forceful compressions than in the past. The new standard is to compress the chest at least two inches on each push, at a rate of 100 to 120 compressions per minute. The perfect pace is that of the Bee Gees "Staying Alive".

Key points, if performing Chest Compressions only:

1. Chest compressions should be performed at a rate of 100 to 120 per minute

2. Increase the depth of chest compressions to 2 inches (but not greater than 2.4 inches) for adults/children and 1.5 inches for infants

3. Continue with chest compressions for as long as possible or until help arrives

4. There has been a change in the recommended sequence for the lone rescuer to initiate chest compressions before giving rescue breaths (C-A-B rather than A-B-C).

When going through our course keep these points in mind and pay close attention to how properly administer chest compressions.

CPR Course - Adult/Child/Infant

Cardiopulmonary resuscitation, commonly called CPR, combines rescue breathing (one person breathing into another person) and chest compression in to one lifesaving procedure. It is performed when a person has stopped breathing or a person's heart has stopped beating. When performed quickly enough, CPR can save lives in such emergencies as loss of consciousness, heart attacks or heart "arrests," electric shock, drowning, excessive bleeding, drug overdose, and other conditions in which there is no breathing or no pulse.

The purpose of CPR is to bring oxygen to the victim's lungs and to keep blood circulating so oxygen gets to every part of the body. When a person is deprived of oxygen, permanent brain damage can begin in as little as four minutes and death can follow only minutes later. So the main objective is to intervene as soon as possible.

Table below represents the likelihood of brain damage or death and typical timing after the heart stopping.

0 to 4 minutes after exhibiting symptoms	Chances of Brain Damage Minimal
4 to 6 minutes after exhibiting symptoms	Chances of Brain Damage Possible
6 to 10 minutes after exhibiting symptoms	Chances of Brain Damage Likely
Greater than 10 minutes	Chances of Brain Death Likely

There are three general symptoms that warrant immediate administration of CPR:

- Victim is Unconscious
- Victim is not Breathing
- Victim has No Pulse

If one or more of those symptoms is present, perform CPR as soon as possible.

CPR Course

Before proceeding with CPR:

•Make sure you are not in any danger

•Make sure the victim is not in danger

•Avoid moving the victim unless there is in immediate danger or you are preparing for CPR

•Assess the surroundings for any people who can help

•Make sure you are aware of your location (for ex. floor in the building, etc.), to help emergency responders locate you

•Determine if the victim is conscious or unconscious by positioning yourself next to the victim, tapping him/her on the shoulder and shouting **"Are you OK? Are you OK"" several times**

•If no response, immediately ask someone to call ambulance and then have the person report back to you. If no one is available call ambulance yourself prior to beginning CPR

To perform CPR, remember the basic steps of CPR administration called CAB

C for compressions, A for airway, and B for breathing

C - COMPRESSIONS

External chest compressions provide artificial circulation.

When you apply rhythmic pressure on the lower half of the victim's breastbone, you force the heart to pump blood.

To do external chest compression properly, follow the steps below:

1. Kneel beside the victim's chest. With the middle and index fingers of your hand find the notch where the bottom rims of the two halves of the rib cages meet in the middle of the chest.

2. Put the heel of one hand on the sternum (breastbone) next to the fingers that found the notch. Put your other hand on top of the hand that's in position. Be sure to keep your fingers up off the chest wall. It may be easier to do this if you interlock your fingers.

3. Bring your shoulders directly over the victim's sternum and press down, keeping your arms straight. Depress the sternum at least 2 inches. Then completely relax the pressure on the sternum. Do not remove your hands from the victim's sternum, but do let the chest rise to its normal position between compressions.

4. Relaxation and compression should take equal amounts of time. If you must give both rescue breathing and external chest compressions, the proper rate is 30 chest compressions to 2 breaths. You must compress at a rate of 100 times per minute. Keep interruptions to less than 10 seconds. Continue administration until help arrives.

Important:

As of October of 2010, the guidelines for performing effective CPR have changed. If the person is not confident in his/her abilities of performing CPR, for adult, first, you should call ambulance if help is not available and perform external chest compressions without mouth-to-mouth breathing. Continue

performing compressions until emergency services arrive with Automated External Defibrillator (AED). Based on the recent studies, external compressions can be as effective as combinations of compressions and mouth-to-mouth. If you are trained and/or comfortable performing mouth-to-mouth breathing then administer after the first set of compressions.

To perform CPR, remember the basic steps of CPR administration called CAB

C for compressions, A for airway, and B for breathing

A - CLEAR AIRWAY

•Place the victim on his/her back on a firm surface.

•Kneel next to the victim's neck and shoulders.

•To open the airway, place your palm on the forehead to carefully tilt the head back and lift the chin forward with your other hand.

•Then you must check for signs of life for no longer than 10 second. Place your ear over the mouth of the victim, and while counting from 10 to 0 listen if the victim is breathing.

•There are no signs of life, proceed to B.

Important: Gasping for air is not considered normal breathing, so you should proceed with CPR immediately. If the victim is breathing, roll the person onto his or her side, and wait for emergency personnel to arrive.

To perform CPR, remember the basic steps of CPR administration called CAB

C for compressions, A for airway, and B for breathing

B - BREATHING

Breathing - refers to rescue breathing, where one person is breathing into other or also commonly referred to as mouth to mouth technique.

1. Using the thumb and forefinger of your hand that's on the victim's forehead, pinch the person's nose shut.

2. Keep the heel of your hand in place so the person's head remains tilted. Keep your other hand under the person's chin, lifting it up.

3. As you keep an airtight seal with your mouth, give first breath and watch the victim's chest rise. If rises, give second breath. If not, start from the beginning. Goal is for the victim to receive two full mouth to mouth breaths, 1 second each.

Important: Make sure to monitor that chest is actually moving, that means you are applying the technique correctly. Also, make sure not to press on the soft part of the neck or under the chin, as this could prevent proper air circulation.

Child CPR (1-8 years of age)

The steps for performing CPR for children are similar to adult; however, there are key differences which are essential to remember.

Difference 1: Assuming there is no one to help, in adult scenario it is better to call ambulance prior to initiating CPR, in case of a child initiate CPR prior to calling ambulance. Perform 5 reps of 30 compressions with two mouth to mouth breaths in between. Once done, then phone ambulance.

Difference 2: While checking for signs of life, listening to breathing, also place your index and adjacent finger on the victim's carotid artery to feel for pulse, and while counting from 10 to 0 besides listening for breathing, determine if the victim also has a pulse (watch the video on the next page for more detail).

Difference 3: When performing compressions, depending on the size/age of the child you may use one or two hands.

Difference 4: The depth of the compression should be 1/3 to 1/2 the depth of the chest.

Before proceeding with Child CPR:

•Make sure you are not in any danger

•Make sure the victim is not in danger

•Avoid moving the victim unless there is in immediate danger or you are preparing for CPR

•Assess the surroundings for any people who can help

•Make sure you are aware of your location (for ex. floor in the building, etc), to help emergency responders locate you

•Determine if the victim is conscious or unconscious by positioning yourself next to the victim, and shouting "Are you OK?, Are you OK?" while tapping the victim on the shoulder several times

•If unconscious, and help is available, have the person call ambulance and report back to you, if you are alone, (Difference 1) initiate CPR and perform 5 reps of 30 compressions with two rescue breaths in between, once done call ambulance.

To perform CPR, remember the basic steps of CPR administration called CAB

C for compressions, A for airway, and B for breathing

C - COMPRESSIONS

Circulation - you want to verify if the child has a pulse. This can be done by checking the child's carotid artery. To locate, use the hand holding up the chin and find a voice box (Adam's apple). Once found, slide your fingers to the side and find if there is a pulse. If none found, you must proceed to External Chest Compressions.

External chest compressions provide artificial circulation. When you apply rhythmic pressure on the lower half of the child's breastbone, you force the heart to pump blood.

To do external chest compression properly, follow the steps below:

1. Kneel beside the child's chest. With the middle and index fingers of your hand nearest the person's legs, find the notch where the bottom rims of the two halves of the rib cages meet in the middle of the chest.

2. Now put the heel of one hand on the sternum (breastbone) next to the fingers that found the notch.

3. Put your other hand on top of the hand that's in position. Be sure to keep your fingers up off the chest wall. It may be easier to do this if you interlock your fingers.

4. When the victim is a child, you may use one hand for compression, instead of two (Difference 3). The compressions must be 1/3 to 1/2 of the depth of the chest (Difference 4), instead of 1 1/2 to 2 inches in case of an adult. Bring your shoulders directly over the child's sternum and press down, keeping your arm(s) straight.

5. Then completely relax the pressure on the sternum. Don't remove your hands from the victim's sternum, but do let the chest rise to its normal position between compressions.

Relaxation and compression should take equal amounts of time. If you must give both rescue breathing and external chest compressions, the proper rate is 30 chest compressions to 2 breaths. You must compress at a rate of 100 times per minute. Keep interruptions to less than few seconds. Continue administration until help arrives.

Important: As of October of 2010, the guidelines for performing effective CPR have changed. If the person is not confident in his/her abilities of performing CPR, for child, first, perform 5 external chest compressions without mouth-to-mouth breathing and then you may call ambulance. Continue performing compressions until emergency services arrive with Automated External Defibrillator (AED). Based on the recent studies, external compressions can be as effective as combinations of compressions and mouth-to-mouth. If you are trained and/or comfortable performing mouth-to-mouth breathing then administer after the compressions.

To perform CPR, remember the basic steps of CPR administration called CAB

C for compressions, A for airway, and B for breathing

A - CLEAR AIRWAY

1. As with adult, place the child on his/her back on a firm surface.

2. Kneel next to the child's neck and shoulders. To open the airway, place your palm on the forehead to carefully tilt the head back and lift the chin forward with your other hand.

3. Then you must check for signs of life for no longer than 10 second. Place your ear over the mouth of the victim, and also place your two fingers (watch the video) on the carotid artery to feel the pulse. While counting from 10 to 0 listen if the victim is breathing and/or has a pulse (Difference 2).

4. If no signs of life observed, proceed to B.

Important: As with adult, gasping for air is not considered normal breathing, so you should proceed with CPR immediately. If child is breathing, roll him/her onto his or her side, and wait for emergency personnel to arrive.

To perform CPR, remember the basic steps of CPR administration called CAB

C for compressions, A for airway, and B for breathing

B - BREATHING

Breathing - as with adult, refers to rescue breathing, where one person is breathing into other or also commonly referred to as mouth to mouth technique.

1. Using the thumb and forefinger of your hand that's on the child's forehead, pinch the person's nose shut.

2. Keep the heel of your hand in place so the child's head remains tilted. Keep your other hand under the person's chin, lifting it up.

3. As you keep an airtight seal with your mouth, give first breath and watch the child's chest rise, if rises give second breath, if not start from the beginning. Goal is for the child to receive two full mouth to mouth breaths, 1 second each.

Important: Do not give large, forceful breaths, by adhering to 1 second limit per breath. Proper breathing administration is extremely important for children, make sure the breaths are sufficient to make the chest rise. Monitor the chest while administering mouth to mouth.

Infant CPR (younger than 1 year)

The steps for performing CPR for infant are slightly different to adult and child;

Difference 1: Administration of CPR prior calling ambulance.

Perform 5 reps of 30 compressions with two mouth to mouth breaths in between. Once done, then phone ambulance.

Difference 2: Breathing

When performing mouth to mouth on infant, make sure you cover the victim's nose as well as mouth.

Difference 3: Circulation Check

After completing first two rescue breath check if the infant has a pulse by placing your index and middle fingers on the inside of the arm, between the shoulder and elbow.

Infant CPR Difference 4: Chest Compressions

When performing compressions, place 2 fingers on the breastbone (see video for more detail) -- just below the nipples and make sure not to press at the very end of the breastbone. Keep your other hand on the infant's forehead, keeping the head tilted back.

Difference 5: Depth of Compressions

Press down on the infant's chest so that it compresses about 1/3 to 1/2 the depth of the chest.

Before proceeding with Infant CPR:

•Make sure you are not in any danger

•Make sure the victim is not in danger

•Avoid moving the victim unless there is in immediate danger or you are preparing for CPR

•Assess the surroundings for any people who can help

•Make sure you are aware of your location (for ex. floor in the building, etc), to help emergency responders locate you

•Position yourself next to the infant, and determine if the victim is responsive by tapping/flicking the victim on the foot several times

•If unresponsive, and help is available, have the person call ambulance and report back to you, if you are alone, (Difference 1) initiate CPR and perform 5 reps of 30 compressions with two rescue breaths in between, once done call ambulance.

To perform CPR, remember the basic steps of CPR administration called CAB

C for compressions, A for airway, and B for breathing

C - COMPRESSIONS

External chest compressions provide artificial circulation. When you apply rhythmic pressure on the lower half of the infant's breastbone, you force the heart to pump blood.

To do external chest compression properly, follow the steps below:

1. Place 2 fingers on the breastbone - just below the nipples (Difference 4).

2. Make sure not to press at the very end of the breastbone.

3. Keep your other hand on the infant's forehead, keeping the head tilted back.

4. Press down on the infant's chest so that it compresses about 1/3 to 1/2 the depth of the chest (Difference 5).

5. Give 30 chest compressions. Each time, let the chest rise completely, with two mouth to mouth breaths in between each rep 1 second per each breath.

Relaxation and compression should take equal amounts of time. If you must give both rescue breathing and external chest compressions, the proper rate is 30 chest compressions to 2 breaths. You must compress at a rate of 100 times per minute. Keep interruptions to less than few seconds. Continue administration until help arrives.

Important: As of October of 2010, the guidelines for performing effective CPR have changed. If the person is not confident in his/her abilities of performing CPR, for infant, first, perform 5 external chest compressions without mouth-to-mouth breathing and then you may carry the infant with you to the phone to call ambulance. Continue performing compressions until emergency services arrive with Automated External Defibrillator (AED). Based on the recent studies, external compressions can be as effective as combinations of compressions and mouth-to-mouth. If you are trained and/or comfortable performing mouth-to-mouth breathing then administer after the compressions.

To perform CPR, remember the basic steps of CPR administration called CAB

C for compressions, A for airway, and B for breathing

A - CLEAR AIRWAY

1. As with adult and child, place the infant on his/her back on a firm surface.

2. Kneel next to the infant's neck and shoulders. To open the airway, place your palm on the forehead to carefully tilt the head back and lift the chin forward with your other hand.

3. Then you must check for signs of life for no longer than 10 seconds. Place your ear over the mouth of the victim, and (Difference 2) also place your two fingers (watch the video) on the brachial artery to feel the pulse.

To locate brachial artery, place your index and middle fingers between the shoulder and elbow, right inside of the middle arm. While counting from 10 to 1 listen if the victim is breathing and/or has a pulse.

4. If no signs of life observed, proceed to B.

Important: As with adult and child, gasping for air is not considered normal breathing, so you should proceed with CPR immediately. If infant is breathing, roll him/her onto his or her side, and wait for emergency personnel to arrive.

To perform CPR, remember the basic steps of CPR administration called CAB

C for compressions, A for airway, and B for breathing

B - BREATHING

Breathing - as with adult, refers to rescue breathing, where one person is breathing into other or also commonly referred to as mouth to mouth technique.

1. Keep the heel of your hand in place so the infant's head remains tilted. Keep your other hand under the person's chin, lifting it up.

2. Take a normal breath, cover infant's mouth and nose with your mouth (Difference 2), and give 2 gentle breaths until the chest rises (blow for one second each). Observe baby's chest. Stop blowing when the chest rises, and wait for the chest to fall before beginning another breath. If chest is not rising, readjust the head-tilt/chin-lift position and try two more breaths. Goal is for the child to receive two full mouth to mouth breaths, 1 second each.

3. Once done with rescue breaths you must check the infant for pulse by placing your index and adjacent fingers on the victim's brachial artery. (Difference 3)

4. If no pulse, proceed to C.

Important: Do not give large, forceful breaths, adhere to 1 second limit per breath. Proper breathing administration is extremely important for infants, make sure the breaths are sufficient to make the chest rise. Monitor the chest while administering mouth to mouth.

CPR information - Adult/Child/Infant CPR Review

Let's summarize key concepts:

Timeline for brain death/permanent damage after the heart has stopped beating:

0 to 4 minutes after exhibiting symptoms	Chances of Brain Damage Minimal
4 to 6 minutes after exhibiting symptoms	Chances of Brain Damage Possible
6 to 10 minutes after exhibiting symptoms	Chances of Brain Damage Likely
Greater than 10 minutes after exhibiting symptoms	Chances of Brain Death Likely

The following condition warrants immediate CPR: 1) Victim is unconscious; 2) Victim is not breathing; 3) Victim has no pulse

Before CPR

Victims and you are safe, if adult call ambulance before CPR, if child/infant initiate CPR and perform 5 reps, 30 compressions each, with 2 rescue breaths or 2 minutes of CPR, then call ambulance, and also make certain you know where you are to help notify emergency services.

CPR

•C-Compressions, after checking for pulse via carotid artery or brachial artery for infant, perform 30 compressions, interrupted by two mouth to mouth breaths, one second each; repeat until emergency services arrive

•A-Airway, determine if the person is breathing and check for obstructions by opening airway;

•B-Breathing, perform two mouth to mouth breaths 1 second each;

•Recommended position for performing CPR is to have victim lying flat on his back

•Recommended rate for effective compressions for adult/child is 100 to 120 compressions per minute

•When performing compressions, make sure the chest returns to its original position

•When performing adult CPR the depth of the compressions should be at least 2 inches deep (but not greater than 2.4 inches)

•When performing child/infant CPR make sure your compressions are 1/3 to 1/2 the depth of the chest

•For child, depending on the size you can use one or two hands

•For infant, use two fingers

•If not comfortable performing mouth to mouth, call ambulance, but at least administer external chest compressions until help arrives -----Proceed to First Aid

Ref: https://ecprcertification.com