CPR and AED Use
Based on 2010 AHA Guidelines

Globally, cardiovascular disease (CVD) is the leading cause of adult death – far exceeding cancer, respiratory disease, and infectious diseases such as HIV/AIDS, tuberculosis and malaria – even in developing countries. The risk factors for cardiovascular disease are many and include:

- Men > 40 years
- Women > 50 years
- Obesity
- Sedentary life style
- Diabetes
- High blood pressure
- High cholesterol
- Menopause
- Tobacco smoking

Cardiovascular disease has been identified as a major contributing factor to many cases of **cardiac arrest**, heart attack and stroke.

**Sudden Cardiac Arrest** - *Each year, in the United States alone, sudden cardiac arrest accounts for more than 350,000 deaths – almost 1000 deaths per day!*

Sudden Cardiac Arrest occurs when a patient’s heart suddenly stops beating normally. This causes blood and oxygen to stop flowing to the brain. If the brain is deprived of oxygen for 4 – 6 minutes, it will begin to die. Once brain death occurs, the patient can no longer be saved.

However, if bystanders recognize cardiac arrest and begin CPR immediately, their chest compressions can reestablish blood flow to the brain, preventing brain death and buying the patient valuable time.

**Immediate initiation of CPR and use of an AED within 3 – 5 minutes may increase the victim’s survival rate to over 80%!!**

In an effort to decrease deaths due to cardiac arrest, The American Heart Association and its partner organizations stress education in the following:

1) Early Recognition of a Problem
2) Early Access to 911
3) Early CPR
4) Early Defibrillation
5) Early Advanced Care
Recognizing Signs and Symptoms of:

HEART ATTACK (blockage in a blood vessel in the heart)

- Chest pain – dull, crushing, burning
- Back pain – upper or lower
- Pain in either arm
- Pain that radiates from one area to another – ie. back or chest to neck and/or jaw
- Nausea
- Vomiting
- Shortness of breath or trouble breathing
- Cold, clammy sweat
- Feeling of fullness or indigestion
- Mental distraction or “disconnect”
- Increased foot or hand pain (diabetics)
- Denial

1. **Always call 911** for any suspected heart attack – **time is critical**!
2. Have the patient **sit** comfortably or **lie down** and rest.
3. Ask the patient to **cough** forcefully at regular intervals.
4. If the patient is conscious, can swallow and is **not allergic to aspirin**, have him/her **chew and swallow** one 325 mg **aspirin** tablet (or four 81 mg “baby aspirin”).
5. Be prepared to start the steps of CPR and use an AED.

STROKE (blockage in a blood vessel or bleeding into the brain)

- Loss of balance
- Paralysis or loss of muscle control on one side of the body
- Facial droop
- Slurred, unintelligible or inappropriate speech
- Altered mental status
- Sudden severe headache with no known cause
- Blurred vision
- Eye pain

1. **Always call 911** for a suspected stroke! Treatments must begin within 3 hours of the first onset of symptoms.
2. **Never administer aspirin** if a stroke is suspected.
3. Be prepared to start the steps of CPR and use an AED.
CPR and AED Use for Adults

- **Check the scene for Safety.** Look all around to make sure there is nothing which might injure you or your patient.

- **Check the person for Responsiveness.** Tap the top of the person’s shoulder with emphasis and shout loudly, “Are you OK? Can you hear me?”

- If the person does not respond, **Call 911 and Get an AED!** If bystanders can assist, designate someone to “Call 911” and someone else to “Get an AED”.

- Observe the patient for no more than 10 seconds. **If there is no sign of breathing, or no normal breathing** (only gasping, wheezing or snoring) then:

  - **Do 30 Chest Compressions.**
    - Push **hard** – compress the patient’s chest at least 2”.
    - Push **fast** – do at least 100 compressions per minute.
    - Kneel at the side of the patient. Place the heel of one hand on the center of the patient’s chest. Place the heel of your second hand on top of the first. Lock your elbows. Get your shoulders up over your hands. Press straight down through the heels of your hands. After each push, release pressure to let the chest come back to its normal position.

  - If there is still no sign of normal breathing and you choose to give breaths to the patient, **Open the Patient’s Airway** by tilting his forehead back and lifting his chin.

  - **Give 2 Breaths** that make the chest rise.
    - Pinch the patient’s nostrils closed, make a tight seal over the patient’s mouth with your mouth and breathe into the patient. (Or use a barrier device to deliver breaths.) Allow the patient to exhale between breaths.

  - **Keep repeating cycles of 30 compressions and 2 breaths** until help arrives or you can use the AED.

  - If you choose not to give breaths, do **“Hands Only” CPR**, performing continuous chest compressions until help arrives or you can use the AED.

  - **Defibrillate**, using the AED.
    - Turn the AED on.
    - Apply the proper electrode pads to the patient’s dry, bare chest. (Connect electrodes if prompted.)
    - Clear the patient, no one touching him/her, so the AED can analyze.
    - Clear the patient, no one touching him/her, so the AED can shock.
    - Push the Shock button, if advised.
CPR and AED Use for Children (Age 1 – Puberty)

If you are ALONE with the child and did NOT witness him collapse:

- **Check the scene for Safety.** Look all around to make sure there is nothing which might injure you or the child.

- **Check the child for Responsiveness.** Tap the top of the child’s shoulder with emphasis and shout loudly, “Are you OK? Can you hear me?”

- Observe the child for no more than 10 seconds. **If there is no sign of breathing, or no normal breathing** (only gasping, wheezing or snoring) then:

  - **Do 30 Chest Compressions.**
    - Push **hard** – compress the child’s chest at least 1/3 the depth of his chest.
    - Push **fast** – do at least 100 compressions per minute.
    - Kneel at the side of the child. Place the heel of one hand on the center of the child’s chest. If necessary, place the heel of your second hand on top of the first. Lock your elbow(s). Get your shoulders up over your hand(s). Press straight down through the heel of your hand(s). After each push, let the chest come back to its normal position.

  - If there is still no sign of normal breathing, **Open the Child’s Airway** by tilting his forehead back and lifting his chin.

- **Give 2 Breaths** that make the chest rise.
  - Pinch the child’s nostrils closed, make a tight seal over the child’s mouth with your mouth and breathe into the child. (Or use a barrier device to deliver breaths.) Allow the child to exhale between breaths.

- **Do five cycles, or 2 minutes, of 30 compressions and 2 breaths.**

- **Call 911 and Get an AED!**

- **Defibrillate**, using the AED OR continue cycles of 30 compressions and 2 breaths until help arrives or you can use the AED.

If bystanders are present to assist, or you DID witness the child collapse, follow the Adult sequence of events.
ADULT/CHILD CHOKING RELIEF

You might suspect an adult or child is choking if the person:

- Cannot speak
- Cannot cough loudly
- Makes the choking sign (holds his neck with one or both hands)
- Has bluish lips or skin

If you suspect the person is choking ask, “Are you choking”. If the person speaks, ask him to cough loudly. If the person nods, “Yes”, tell him you can help him; if he’s an adult, ask his permission to help. “I can help you, is it OK if I help?”

With the person’s permission:

- Kneel or stand braced behind the person.
- Wrap your arms around the person’s waist.
- Make a fist with one hand and place it, thumb-side down, slightly above the person’s belly button, but well below the breast bone.
- Grasp that fist with your other hand and give firm upward thrusts into his abdomen.
- Give thrusts until the object is forced out and he can breathe, cough, or talk, or until he stops responding.

If the person stops responding:

- Lower him gently to the floor and call for help.
- Have someone call 911 and get an AED.
- Begin the steps of CPR.
- Do 30 Chest Compressions.
- Open the airway – each time you open the airway to give breaths, open the mouth to look for the object. If you see the object and can safely remove it, do so. If you don’t see the object, or can’t safely reach it, continue with the steps of CPR.
- Give 2 Breaths (re-positioning the head after the first breath, if it does not go in.)
- Do 30 Chest Compressions.
- Repeat the sequence of 30 compressions and 2 breaths (checking the person’s mouth for the object before giving breaths) until help arrives or you can use the AED.

If you cannot get your arms around the person’s waist to do abdominal thrusts (the person is very large or in the late stages of pregnancy):

- Wrap your arms around the person’s chest and give chest thrusts – using the same fist technique, place your fist in the center of the chest (same positioning you use for chest compressions) and pull straight back.

Encourage anyone who has choked to consult a healthcare provider after the incident!!
CPR for Infants
(Ages 0 – 12 months)

*If you are ALONE with the infant and did NOT witness him collapse:*

- **Check** the scene for Safety. Look all around to make sure there is nothing which might injure you or the infant.

- **Check** the infant for Responsiveness. Tap the bottom of the infant’s foot, clap over his face and shout loudly, “Baby, baby, are you OK? Can you hear me?”

- Observe the infant for no more than 10 seconds. **If there is no sign of breathing, or no normal breathing** (only gasping, wheezing or snoring) then:

  - **Do 30 Chest Compressions.**

    Push *hard* – compress the breastbone at least 1/3 the depth of the infant’s chest.
    Push *fast* – do at least 100 compressions per minute.

    o Place the infant on a firm, flat, elevated surface. Move clothing from the infant’s chest, if possible. Place two fingers of one hand on the center of the breastbone, just below the nipple line – fingers should be above one-another, not next to each other. Press the infant’s breastbone straight down with your fingers, being careful not to press on the very bottom of the breastbone. After each push, release pressure to let the chest come back to its normal position.

- **If there is still no sign of normal breathing, Open the infant’s Airway** using the “head-tilt, chin-lift” method. (Place the infant’s head in a neutral position – do not hyper-extend his neck.)

- **Give 2 Breaths** that make the chest rise.

  o Place your mouth over the infant’s mouth and nose, making a tight seal, and breathe into the infant. (Or use a barrier device to deliver breaths.) Allow the infant to exhale between breaths. Each breath should be delivered over one second.

  o **Do 5 cycles or 2 minutes of CPR** (cycles of 30 compressions and 2 breaths) before calling 911.

- **Call 911**
- **Use an AED**

*If bystanders are present to assist, or you DID witness the infant collapse, follow the Adult sequence of events.*
INFANT CHOKING RELIEF

You might suspect an infant is choking if he:

- Cannot cry
- Cannot make sounds
- Makes only a high-pitched squeaky sound
- Has bluish lips or skin

To relieve the choking, do a series of 5 back slaps, followed by 5 chest thrusts:

- Hold the infant face down on your forearm.
- Support the infant’s head/jaw in your hand.
- Sit or kneel, supporting your forearm on your lap or thigh.
- Keep the infant’s head lower than his torso.
- Using the heel of your other hand, deliver a series of up to 5 back slaps, mid-way between the infant’s shoulder blades. (Be careful not to deliver slaps too low – below the level of the infant’s shoulder blades.)
- If the object does not come out, support the back of the infant’s head and turn the infant over onto your other forearm.
- Support your forearm on your thigh or lap, being careful to keep the infant’s head lower than his torso.
- Using two fingers of your other hand, do up to 5 chest thrusts, with fingers on the center of the breastbone, just below the nipple line, exactly the way you do chest compressions for CPR.
- Repeat sequences of up to 5 back slaps, and up to 5 chest thrusts, until the object comes out or the infant stops responding.
- If the infant stops responding call 911 and start the steps of CPR.

Begin the steps of CPR:

- Do 30 chest compressions, using two fingers on the infant’s breastbone, just below the nipple line.
- Open the airway – each time you open the airway to give breaths, open the mouth to look for the object. If you see the object and can safely remove it, do so. If you don’t see the object, or can’t safely reach it, continue with the steps of CPR.
- Give 2 Breaths (re-positioning the head after the first breath, if it does not go in.)
- Do 30 Chest Compressions.
- Repeat the sequence of 30 compressions and 2 breaths (checking the infant’s mouth for the object before giving breaths) until help arrives or you can use the AED.

Infants who have choked on a hard object should ALWAYS see a healthcare provider!!

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