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Basic Life Support Introduction

Important Terms
Fear of being sued has caused reluctance for people to become rescuers in emergency situations. However, initial rescuers are rarely sued and in most emergencies you are not legally required to provide first aid.

Good Samaritan Law – provides protection against lawsuits for persons who are acting in good faith, while providing reasonable first aid. These laws are not a substitute for competent first aid or for staying within the scope of rescuer training. Laws vary from state to state, and it is important to become aware of your state’s guidelines.

Although laws vary, Good Samaritan protection generally applies when the rescuer is:
- Acting in an emergency situation
- Acting in good faith, indicating that he or she has good intentions
- Acting without compensation
- Not guilty of malicious misconduct or gross negligence toward the patient (intentionally NOT follow established medical guidelines)

Duty to Act – requires an individual to provide first aid when they have a legal duty. If a rescuer does not have a legal duty to provide care he or she is not required to provide first aid.

Duty to act may imply in the following situations:
- When it is a requirement of employment. If you are designated as responsible for providing first aid to meet Occupational Safety and Health Administration (OSHA) requirements and you are called to emergency, you are required to provide first aid. (some examples of occupations that may require a duty to act include, but are not limited to: park rangers, athletic trainers, law enforcement officers, life guards, teachers)
- When a pre-existing responsibility to a person exists. If you have a pre-existing relationship and are responsible for a person, for example a parent, you must give first aid if they need it (some examples of pre-existing relationships are parent/child, driver/passenger).

Consent- permission from a responsive (alert) person allowing you to provide care.

Implied Consent - when a patient is unconscious, it is understood that if the person were alert and responsive, he or she would request and allow you to provide care.

Abandonment - when a rescuer initiates care and fails to continue to provide care until EMS or a second rescuer takes over.

Negligence - when you have a duty to respond to an emergency situation and you fail to provide care or give in appropriate care which causes injury or harm.

Universal Precautions - wearing gloves, gowns, masks, and other protective devices every time you provide care in situations where you may come into contact with bodily fluids.

Clinical Death - when a patient’s breathing and heartbeat stops. There is a high likelihood that patients who are clinically dead for less than 6 minutes can be revived with little to no cellular damage.

Biological Death - when a patient’s breathing and heartbeat stops. Persons who are clinically dead for 10 minutes or more may have irreversible damage to brain cells and tissues. Reviving a patient is not likely, however it is not impossible.
Rescuer Concerns

Safety
- Rescuers should never enter unsafe situations. If your safety or that of the patient’s is at risk, do not attempt to provide care. Instead call 911 and wait for EMS support to arrive.

Infectious Disease
- Using personal protective devices, such as gloves, masks, gowns, etc... can reduce your exposure to infectious diseases.

Lawsuits
- States have Good Samaritan laws in place to provide protection for rescuers who are acting in good faith, in situations where the rescuer does not have a legal duty to provide care.

Hurting a Patient
- Patients who are clinically dead are helped when provided care and not often made worse with rescue efforts.

Inability to Save Patient
- Rescuers should focus on providing care to the best of their ability. Basic life support efforts can improve a patient’s chance of survival. Rescuers who have provided care in traumatic situations may feel overwhelming emotions. If a rescuer continues to experience depressed like symptoms it is important to seek support from an outside resource.

Personal Protective Equipment (PPE)
Personal protective equipment should be used by medical professional, when available, prior to providing care. This equipment is designed to minimize and/or prevent exposure to infectious diseases and bodily fluids.

Gloves
- Always use when providing care
- Check for rips, tears or damage before providing care
- Remove any jewelry that may damage or cause tears
- If you have a latex allergy use alternative vinyl or nitrile gloves
- Remove gloves using skin to skin and glove to glove method
  - Using gloved hand, pinch the wrist of the other gloved hand
  - Pull the glove off while turning inside out, place in palm of gloved hand
  - Using bare hand place fingers inside wrist of gloved hand and remove inside out, collecting the gloves inside each other
  - Dispose of gloves in an appropriate container

Rescue mask/Face shield
- Always use when providing rescue ventilation
- Mask or shield should have a one-way valve to prevent exposure to bodily fluids
- Dispose of mask/shield in an appropriate container

Gowns
- Use when working in emergency situations where exposure to bodily fluids is likely
- Dispose of contaminated gown in an appropriate container
BLS Basics

Assess the Scene
Check the scene for safety hazards BEFORE providing care, it is important to ensure if you and the patient(s) are in a safe location, free of imminent danger or hazards.

Determine
- If it is safe to help
- number of patients
- if you will need additional assistance from EMS
- what personal protective devices are readily available to you

Assess the Patient
- Check the person for responsiveness
  - Tap on patient’s shoulder and shout “Are you okay?”
  - Look at the person’s chest and face
  - Determine if the patient is breathing normally
    - Agonal breathing is not normal breathing and needs care
- Call 911 or direct a bystander call 911 and return
  - Caller should give dispatcher patient’s location, details of emergency situation including how many patients are injured and what treatment is occurring
- Check for pulse (about 10 seconds)
- Request AED machine, if available

If you are alone:

 Adults:
  - FIRST call 911
  - Retrieve AED, if available
  - Perform CPR cycle until EMS takes over or you are too tired to continue

 Children and Infants:
  - FIRST complete five cycles (about 2 minutes) of CPR
  - Call 911
  - Perform CPR cycle until EMS takes over or you are too tired to continue

Always provide care first for unresponsive patients of hypoxia arrest (i.e. lack of oxygen to the brain due to drowning, injury, drug overdose, stroke, etc...). When assessing the scene, be sure to assess approximate age and size of the patient. Suggested guidelines for administering CPR are as follows:

- Adult CPR: should be administered to patients who have reached the onset of puberty and older.
- Child CPR: should be administered to patients who have not reached the onset of puberty and are not considered infants (approximately 1 year to the onset of puberty).
- Infant CPR: should be administered to patients who are younger than toddler aged (approximately birth to 1 year).

Chain of Survival

ACTIVATE EMS  EARLY CPR  EARLY DEFIBRILLATION  EARLY ADVANCED CARE
The Chain of Survival is a common way of describing the order in which rescuers should provide care for a patient of cardiac arrest. Early action can improve the chance of a patient’s survival.

- **Link One: Early Access**
  Rescuer recognizes early warning signs and immediately calls 911 to activate EMS (emergency medical services) to provide early access to care.

- **Link Two: Early CPR**
  Rescuer immediately begins CPR cycle to continue minimal supply of blood to the patient’s heart and brain until defibrillator and EMS personnel take over.

- **Link Three: Early Defibrillation**
  Rescuer utilizes AED (automated external defibrillator) to administer a shock to the patient which may restore the heartbeat in some instances.

- **Link Four: Early Advanced Care**
  EMS arrives and provides advanced cardiac life support care to patient of sudden cardiac arrest. In addition, EMS may provide IV fluids, medications, and use advanced airway devices.

**Compressions - Airway - Breathing**

**C-A-B (Compressions-Airway-Breathing) Order**
- Begin Compressions
- Open Airway with head tilt–chin lift method
- Check Breathing AT THE SAME TIME

**Head Tilt-Chin Lift Method**
Place one hand on the forehead to tilt the patient’s head back. AT THE SAME TIME place the other hand under the patient’s chin, lift the chin to open the airway and displace the tongue. Look into the patient’s mouth for an obstruction. If you see an obstruction, remove it immediately.

**Rescue Breaths**
Keep airway open with head tilt-chin lift method. Administer one rescue breath (1 second). Observe chest for rise and fall. If breath does not go in, re-tilt head and administer second rescue breath (1 second). Observe chest for rise and fall AT THE SAME TIME as administering rescue breaths.

Use one of the following methods to administer rescue breaths:
- Mouth-to-barrier
- Mouth-to-nose
- Mouth-to-stoma

Chest compressions, which keep oxygen flowing to the brain, is the single most important factor in life saving procedures. Chest compressions should be administered immediately following rescue breaths that do or do not appear to go into lungs.

**Chest Compressions**
Chest compressions should be swift and consistent, at a rate of 100 per minute. Place the heel of the dominant hand at the correct location on the adult or child patient’s chest. Use two fingers in the correct location of the infant’s chest.

**Use**
- Adult: Two hands (heel of dominant hand)
- Child: One hand (heel of dominant hand)
- Infant: Two fingers

**Depth**
- Adult: At least 2 inches
• Child: At least 1/3 depth of the body (or 2”)
• Infant: At least 1/3 depth of the body (or 1 ½”)

Position
• Adult and child: Center of chest between nipples
• Infant: On the breastbone, just below nipple line

Rate
• 100 compressions per minute

CPR Cycle
Perform 30 compressions then administer 2 rescue breaths
• At a rate of 100 compressions per minute
• Check for signs of breathing (rise/fall of chest)

Continue CPR cycles until:
• AED becomes available
• Patient shows signs of life
• A second rescuer takes over
• EMS takes over
• You are too tired to continue

Identify Airway Obstruction

Partial air exchange
• Mild: patient is able to produce forceful cough
• Severe: patient is able to produce weak, ineffective cough
• Complete blockage: patient is unable to breathe, cough or speak

Common causes for airway obstruction
• Tongue, foreign object, vomit, allergic reaction, spasm, swelling

Caring for Airway Obstruction

Responsive adult or child: Heimlich Maneuver
• Abdominal thrusts just above navel
• Continue until object is removed or patient is unresponsive
• Chest thrusts should be used for larger or pregnant patients

Responsive infant
• Support infant’s head and lay face-down over your forearm
• Support forearm with thigh
• Give five back blows
• Roll infant face up
• Check for breathing
• Continue until object is removed or patient is unresponsive

Unresponsive adult or child (if breath does NOT go in)
• Re-tilt head
• Reattempt breath
• Begin CPR
• Check airway
• Remove object

Unresponsive infant (if breath does NOT go in)
- Re-tilt head
- Reattempt breath
- Begin CPR
- Check airway
- Remove object
Anatomy and Health Risks

Anatomy

The lungs, heart and brain function interdependently. Appropriate oxygen and blood supply are crucial components of healthy functioning.

The **Cardiovascular System** includes the heart, arteries, capillaries and veins. Responsible for carrying blood throughout the body.

**Heart**
- A healthy heart has four chambers
- About the size of the fist
- Located just under the breastbone, on the left side of the chest
- Pumps the blood to the brain, lungs and throughout the body

**Signs of Cardiovascular Failure:**
- Angina - condition of marked pain caused by inadequate blood supply to the heart
- Heart attack - acute myocardial infarction (AMI)

**Respiratory System** is made up of the organs in the body that help patients breathe. Includes the lungs, nasal cavity, pharynx, larynx, trachea, bronchi, bronchioles, alveoli and diaphragm.

**Lungs**
- A healthy patient has two lungs
- Breathing through the lungs delivers oxygen to the body and takes carbon dioxide away from the body.

**Signs of Respiratory Distress:**
- Hypoxia - oxygen deficiency in the tissues
- Airway obstruction
- Agonal gasps - abnormal, labored and inadequate breathing (gasp, spasms and strange vocalizations)
- Rapid, deep or irregular breathing
- Cyanosis - bluish discoloration of the skin due to inadequate oxygenation or poor circulation

**Nervous System** is made up of the brain, spinal cord, sensory organs and all of the nerves that connect these organs to the rest of the body.

**Brain**
- Sends signals to tell the body what to do
- Brain cells need oxygen for survival
- Controls respiration and circulation

**Signs of Nervous System Disruption:**
- Stroke

**Cardiovascular Disease**

Cardiovascular disease causes damage to the heart and surrounding blood vessels, which often leads to heart attack or stroke. The key to preventing cardiovascular disease is to focus on maintaining a healthy weight and diet, while engaging in regular physical activity, lowering daily stress and not smoking.

It is important to understand that risk factors for cardiovascular disease include those that can be controlled and those that are uncontrollable.
Controllable Risk Factors

- Obesity
- Lack of regular exercise
- High cholesterol levels
- Cigarette smoking
- High blood pressure
- High fat diet
- High stress level
- Uncontrolled diabetes

Uncontrollable Risk Factors

- Heredity
- Race
- Sex
- Age
- Safety

***Cardiovascular disease, including heart disease and stroke, is the leading cause of death worldwide

- Rescuers should never enter unsafe situations. If your safety or that of the patient’s is at risk, do not attempt to provide care. Instead call 911 and wait for EMS support to arrive.

Cardiac Arrest

Cardiac arrest is a serious cardiac event. Although cardiac arrest is often confused with heart attack, it is different. Cardiac arrest occurs suddenly and often without warning. It is triggered by an electrical malfunction in the heart that causes an irregular heartbeat (arrhythmia). Cardiac arrest is reversible for most patients, if treated within minutes. Early recognition of signs and symptoms can improve a patient’s chance of survival. Survival rates after a cardiac arrest decrease by 7%-10% for every minute defibrillation is delayed.

Signs and Symptoms of Cardiac Arrest

- Sudden loss of responsiveness (patient does not respond to tapping on shoulder)
- Does not respond when asked, “Are you okay?”
- Patient may experience one or all of the following symptoms:
  - Nausea
  - Sweating
  - Shortness of breath
  - Denial
  - Feeling of overall weakness
  - Chest discomfort-pressure, tightness that may or may not radiate to jaw and arms
  - 1/3 of female patients do NOT experience chest pain and are more likely to experience shortness of breath, extreme fatigue or flu-like symptoms

Treating Cardiac Arrest

If patient is NOT breathing:

- Call or direct a bystander to call 911
- Retrieve AED, if available
- Check breathing
• Begin CPR (if the patient is **NOT** breathing on only gasping)
  o Patients in cardiac arrest often have **agonal gasps**
  o **Agonal gasps** do not provide adequate oxygen to the body and can be described as snoring, gurgling, moaning, snorting, agonal or labored breathing
  o Healthcare providers must be able to distinguish between agonal gasps and adequate breathing
• Continue CPR cycles until EMS or second rescuer takes over, AED becomes available or you are too tired to continue

If patient is breathing:
• Call or direct bystander to call 911
• Encourage patient to remain calm and in a comfortable position (recovery position if possible)
• Offer 1 adult dose or two low dose of aspirin, if no known allergy
• Stay with patient until EMS arrives
• If patient becomes unresponsive - **begin CPR**

**Heart Attack**
A heart attack occurs when the flow of blood to the heart is blocked, most often by some type of fatty build up. A heart attack is the death or damage to the heart muscle and may lead to a patient’s death. A heart attack usually develops within the first 4 hours of after the onset of symptoms. A heart attack increases the chance of cardiac arrest in patients and unlike with a cardiac arrest, the heart usually does not stop beating. Early recognition of signs and symptoms can improve a patient’s chance of survival.

**Signs and Symptoms of Heart Attack**
• Pain, fullness, and/or squeezing sensation of the chest
• Jaw pain, toothache, headache
• Shortness of breath
• Nausea, vomiting and/or general upper abdominal discomfort
• Heartburn and/or indigestion
• Arm pain (commonly in the left arm, but may be both)
• Overall fatigue
• Sweating
• Some patients (about ¼ of all heart attacks) are silent, without chest pain or symptoms

***Women, the elderly and people with diabetes are more likely to have atypical signs of a heart attack – ache in the chest, heartburn or indigestion, or an overall uncomfortable feeling in the back, jaw, neck or shoulder

**Treating a Heart Attack**

If patient is **NOT** breathing:
• Call or direct a bystander to call 911
• Retrieve AED, if available
• Check breathing
• Begin CPR (if the patient is **NOT** breathing on only gasping)
  o Patients in cardiac arrest often have **agonal gasps**
  o **Agonal gasps** do not provide adequate oxygen to the body and can be described as snoring, gurgling, moaning, snorting, agonal or labored breathing
  o Healthcare providers must be able to distinguish between agonal gasps and adequate breathing
• Continue CPR cycles until EMS or second rescuer takes over, AED becomes available or you are too tired to continue
If patient is breathing:
- Call or direct bystander to call 911
- Encourage patient to remain calm and in a comfortable position (recovery position if possible)
- Offer 1 adult dose or two low dose of aspirin, if no known allergy
- Stay with patient until EMS arrives
- If patient becomes unresponsive - begin CPR

Stroke
A stroke occurs when the blood supply to the patient’s brain is interrupted or severely reduced by a blood clot, which deprives the brain tissue of oxygen and vital nutrients. A stroke is sometimes called a “brain attack”. Early recognition of signs and symptoms can improve a patient’s chance of survival.

Signs and Symptoms of Stroke
- Facial droop
- Sudden numbness or weakness of the arm, leg or face – especially on one side of the body
- Sudden confusion, difficulty speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness or loss balance/coordination
- Sudden severe headache with no known cause

FAST Stroke Assessment:
- F – Facial drop
- A – Arm weakness
- S – Speech difficulty
- T – Time to call 911

Treating a Stroke

Recognize the signs and symptoms of a stroke.
- Call or direct a bystander to call 911
- Do NOT give the patient anything to eat or drink
- Encourage the patient to remain calm and quiet
- Monitor patient and be prepared to perform CPR
- Most strokes are preventable – see cardiovascular controllable risk factors
  - More than half of strokes are caused by uncontrolled hypertension or high blood pressure making it the most important risk factor to control
- Medical treatments may be used to control high blood pressure and/or manage atrial fibrillation among high-risk patients
- Carotid endarterectomy (removal of blockages in artery)
- Angioplasty/stents (opening of blocked blood vessel)
- If patient becomes unresponsive – begin CPR
- Continue CPR cycle until a second rescuer or EMS arrives and takes over, or you are too tired to continue
Adult CPR

Assess the Scene
- Determine
  - If it is safe to help
  - Number of patients
  - If you will need additional assistance from EMS
  - What personal protective devices are readily available to you

Assess the Patient
- Check the person for responsiveness
- Tap on patient’s shoulder and shout “Are you okay?”
- Look at the patient’s chest and face
- Determine if the patient is breathing normally
  - Agonal breathing is NOT normal breathing and needs care

Activate EMS
- Call 911 or direct a bystander to call 911 and return
- Caller should give dispatcher patient’s location, details of emergency situation including how many patients are injured and what treatment is occurring
- Request AED machine, if available

Check Pulse
- Check for pulse (about 10 seconds) in the carotid artery in the neck
- If unable to locate a pulse, do not waste valuable time searching, immediately begin CPR

CPR Cycle
Begin cycles of **30 compressions** (at a rate of 100-120 per minute) and then administer **2 rescue breaths**

Compression depth:
- **Adult**: At least 2 inches, but no more than 2.4 inches

Position:
- On the breastbone (sternum) of chest between nipples

C-A-B Order
Rescuers should assume cardiac arrest has occurred when encountering adults who have collapsed or are found unconscious. Immediately call or have a bystander call 911 and begin CPR.

Use the **C-A-B** (Compressions-Airway-Breathing) Order
- Begin 30 Compressions
- Open Airway with head tilt–chin lift and check breathing, **AT THE SAME TIME**
- Give 2 rescue Breaths

Compressions
For an unconscious adult immediately begin 30 chest compressions, at a rate of 100-120 compressions per minute. Administer to the breastbone (sternum).

Compressions should be **swift, hard** and **consistent** with a depth of at least **2**, but no more than **2.4 inches** of the chest. Avoid leaning on the patient’s chest between compressions to allow for full chest recoil.

Airway
Open the patient’s airway, using the head tilt-chin lift method and **AT THE SAME TIME** check for breathing (5-10 seconds). Look into the patient’s mouth for an obstruction. If you see an obstruction, remove it immediately.

If the patient is breathing:
• Place the patient in the recovery position
  If the patient is not breathing:
  • Administer - Rescue breaths

Breathing
Administer 2 rescue breaths (1 second each).
If the first breath does not make the chest rise:
  • Re-tilt the head and try the breath again
After administering 2 rescue breaths
  • Resume compressions

Continue CPR Cycle until:
• AED becomes available
• Patient shows signs of life
• A second rescuer takes over
• EMS arrives and takes over
• You are too tired to continue
Child CPR

Assess the Scene
- Determine
  - If it is safe to help
  - Number of patients
  - If you will need additional assistance from EMS
  - What personal protective devices are readily available to you

Assess the Patient
- Check the person for responsiveness
- Tap on patient’s shoulder and shout “Are you okay?”
- Look at the patient’s chest and face
- Determine if the patient is breathing normally
  - Agonal breathing is NOT normal breathing and needs care

Activate EMS
- Call 911 or direct a bystander to call 911 and return
- Caller should give dispatcher patient’s location, details of emergency situation including how many patients are injured and what treatment is occurring
- If you are alone, complete 5 cycles of CPR (about 2 minutes) BEFORE calling for help
- Request AED machine, if available

Check Pulse
- Check for pulse (about 10 seconds) in the carotid artery in the neck
- If unable to locate a pulse, do not waste valuable time searching, immediately begin CPR

CPR Cycle
Begin cycles of 30 compressions (at a rate of 100-120 per minute) and then administer 2 rescue breaths

Compression depth:
- Child: At least 1/3 of the child's body (approximately 2”)

Position:
- On the breastbone (sternum)

C-A-B Order
Rescuers should assume cardiac arrest has occurred when encountering adults who have collapsed or are found unconscious. Immediately call or have a bystander call 911 and begin CPR.

Use the C-A-B (Compressions-Airway-Breathing) Order
- Begin 30 Compressions
- Open Airway with head tilt–chin lift and check breathing, AT THE SAME TIME
- Give 2 rescue Breaths

Compressions
For an unconscious child, immediately begin 30 chest compressions, at a rate of 100-120 per minute. Administer on the breastbone (sternum), using one hand for children under the onset of puberty.

Compressions should be swift, hard and consistent with a depth of at least 1/3 of the child's body (or 2”). Avoid leaning on the patient’s chest between compressions to allow for full chest recoil.
Airway
Open the patient’s airway, using the head tilt-chin lift method and AT THE SAME TIME check for breathing (5-10 seconds). Look into the patient’s mouth for an obstruction. If you see an obstruction, remove it immediately.

If the patient is breathing:
- Place the patient in the recovery position
If the patient is not breathing:
- Administer - Rescue breaths

Breathing
Administer 2 rescue breaths (1 second each).
If the first breath does not make the chest rise:
- Re-tilt the head and try the breath again

After administering 2 rescue breaths
- Resume compressions

Continue CPR Cycle until:
- AED becomes available
- Patient shows signs of life
- A second rescuer takes over
- EMS arrives and takes over
- You are too tired to continue
Infant CPR

Assess the Scene
- Determine
  - If it is safe to help
  - Number of patients
  - if you will need additional assistance from EMS
  - What personal protective devices are readily available to you

Assess the Patient
- Check the person for responsiveness
- Tap on patient’s shoulder and shout “Are you okay?”
- Look at the patient’s chest and face
- Determine if the patient is breathing normally
  - Agonal breathing is NOT normal breathing and needs care

Activate EMS
- Call 911 or direct a bystander to call 911 and return
- Caller should give dispatcher patient’s location, details of emergency situation including how many patients are injured and what treatment is occurring
- If you are alone, complete 5 cycles of CPR (about 2 minutes) BEFORE calling for help
- Request AED machine, if available

Check Pulse
- Check for pulse (about 10 seconds) in the brachial artery inside the upper arm, between the elbow and the armpit
- If unable to locate a pulse, do not waste valuable time searching, immediately begin CPR

CPR Cycle
Begin cycles of **30 compressions** (at a rate of 100-120 per minute) and then administer **2 rescue breaths**

Compression depth:
- Infant: At least 1/3 of the child’s body (approximately 1 ½”)

Position:
- On the breastbone (sternum), just below the nipple line

C-A-B Order
Rescuers should assume cardiac arrest has occurred when encountering adults who have collapsed or are found unconscious.
Immediately call or have a bystander call 911 and begin CPR.

Use the C-A-B (Compressions-Airway-Breathing) Order
- Begin 30 Compressions
- Open Airway with head tilt–chin lift and check breathing, AT THE SAME TIME
- Give 2 rescue Breaths

Compressions
For an unconscious infant, immediately begin 30 chest compressions, at a rate of 100-120 per minute.
Administer on the breastbone (sternum), using two fingers.

Compressions should be swift, hard and consistent with a depth of at least 1/3 of the infant’s body (or 1 ½”). Avoid leaning on the patient’s chest between compressions to allow for full chest recoil.
Airway
Open the patient’s airway, using the head tilt-chin lift method and AT THE SAME TIME check for breathing (5-10 seconds). Look into the patient’s mouth for an obstruction. If you see an obstruction, remove it immediately.

If the patient is breathing:
  • Place the patient in the recovery position
If the patient is not breathing:
  • Administer - Rescue breaths

Breathing
Administer 2 rescue breaths (1 second each).

If the first breath does not make the chest rise:
  • Re-tilt the head and try the breath again

After administering 2 rescue breaths
  • Resume compressions

Continue CPR Cycle until:
  • AED becomes available
  • Patient shows signs of life
  • A second rescuer takes over
  • EMS arrives and takes over
  • You are too tired to continue
Two Rescuer CPR

Assess the Scene
- Determine
  - If it is safe to help
  - Number of patients
  - If you will need additional assistance from EMS
  - What personal protective devices are readily available to you

Assess the Patient
- Check the person for responsiveness
- Tap on patient’s shoulder and shout “Are you okay?”
- Look at the patient’s chest and face
- Determine if the patient is breathing normally
  - Agonal breathing is NOT normal breathing and needs care

Activate EMS
- Call 911 or direct a bystander to call 911 and return
- Caller should give dispatcher patient’s location, details of emergency situation including how many patients are injured and what treatment is occurring
- Request AED machine, if available

Check Pulse
- Primary checks for pulse (about 10 seconds)
- Adult and Child
  - In the carotid artery in the neck
- Infant
  - In the brachial artery, inside the upper arm
- If unable to locate a pulse, do not waste valuable time searching, immediately begin CPR
- Use the C-A-B Order

C-A-B Order
Rescuers should assume cardiac arrest has occurred when encountering adults who have collapsed or are found unconscious. Immediately call or have a bystander call 911 and begin CPR.

Use the C-A-B (Compressions-Airway-Breathing) Order
- Begin 30 Compressions
- Open Airway with head tilt–chin lift and check breathing, AT THE SAME TIME
- Give 2 rescue Breaths

Adult 2 Rescuer CPR
Primary rescuer (ventilator) and secondary rescuer (compressor) begin CPR after determining responsiveness and checking for pulse.
- Secondary rescuer calls for a switch after every 5 CPR cycles of 30 compressions, at a rate of 100-120 per minute, and 2 rescue breaths (about every 2 minutes)
- Primary rescuer (at the head) finishes 2 rescue breaths, BEFORE moving into position to begin compressions
- Switch should take no more than 10 seconds
- Recheck pulse every 2 minutes

***If primary rescuer starts CPR alone, the secondary rescuer should take over compressions when he or she arrives
Primary (Ventilator) Rescuer
- At the head of patient
- Determines responsiveness
- Checks pulse
- Begins compressions

Secondary (Compressor) Rescuer
- At the chest of patient
- Activates EMS
- Calls for switch (every 5 CPR Cycles)
- Administers first 2 rescue breaths

Child and Infant 2 Rescuer CPR
Primary rescuer (ventilator) and secondary rescuer (compressor) begin CPR after determining responsiveness and checking for pulse.
- Secondary rescuer should call for a switch after every 10 CPR cycles of 15 compressions, at a rate of 100-120 per minute, and then 2 rescue breaths (about every 2 minutes)
- Primary rescuer (at the head) finishes 2 rescue breaths, BEFORE moving into position to begin compressions
- Switch should take no more than 10 seconds
- Recheck pulse every 2 minutes

***If primary rescuer starts CPR alone, the secondary rescuer should take over compressions when he or she arrives

Primary (Ventilator) Rescuer
- At the head of patient
- Determines responsiveness
- Checks pulse
- Begins compressions
  - Child (under the onset of puberty): One hand on the breastbone (sternum)
  - Infant: 2 thumbs at the breastbone, under the nipple line, with hands encircling chest

Secondary (Compressor) Rescuer
- At the chest of patient
- Activates EMS
- Calls for switch (every 5 CPR cycles)
- Administers first 2 rescue breaths

Bag Valve Mask
If a bag-valve mask is available
- Attach it to a source of oxygen (set at 12-15L/min)
- If oxygen is not available remove the residual bag reservoir and use room air
- Use the “C-E” or “2 thumbs up” technique to seal the bag valve to the patient’s face
- Use remaining fingers from both hands to hold the jaw of the patient up to seal the mask
- Squeeze the bag fully so that the patient’s chest rises.
• When the patient’s chest rises stop squeezing the bag to avoid over inflation and avoid the risk of forcing air into the stomach.
• Ventilate at
  o 1 breath every 6 seconds for and adult
  o 1 breath every 6 seconds for a child or infant
• If advanced air-way is in place, perform 1 breath every 6 seconds and avoid hyperventilating the patient
• In some instances, an adult mask turned upside down can be used for an infant.

If a bag-valve mask is NOT available or ineffective
• Revert to using mouth to mask or face shield delivery method for rescue breaths
About AED

An Automated External Defibrillator (AED) is an electronic device that is used to deliver an electric shock to reset a patient’s heart when it has stopped beating normally. It is critical that an AED is used as soon as possible, as the likelihood of a successful defibrillation diminishes significantly over time. Defibrillation survival rates increase to greater than 50% when early defibrillation occurs. For each minute defibrillation is delayed, the patient’s chance of survival decreases by about 10%.

***AED’s are designed for use on adult victims, however most can be adapted to use with pediatric pads for victims who are children or infants

About AED

- Analyzes the victim’s heart rhythm
- Determines and advises when shock is needed
- Delivers electrical shock to victim in cardiac arrest
- Reestablishes a heart rhythm which will generate a pulse

AED Design

- On/Off Button
- Cable and pads (electrodes)
- Defibrillation capable
- Voice prompts to guide defibrillation
- Battery operated for mobile use

AED Use Overview

- Place the unit between you and patient – by patient’s shoulder
- Turn the unit on
- Apply AED pads to bare chest and the cable to AED unit
- Stand clear
  - Wait for unit to analyze the heart rhythm
- Deliver shock, if needed
- Perform CPR

AED Basics

CPR must be started and continue until defibrillator (AED) becomes available.

If an AED becomes available

- Remove patient from any standing water or metal surfaces
- Dry chest if noticeably wet
- Remove hair from chest enough for pads to make good skin contact
- If victim has a transdermal medication patch, remove the patch and wipe the area clean prior to attaching pads
- Use appropriate AED pads

Adult and Child AED Use

- Place the AED by the patient’s shoulder
- Turn on the AED and follow voice prompts

  Adult: use adult AED pads
  - AED pads should not touch
  - Place AED one pad directly below the clavicle on the right sternal boarder
  - Place the other AED pad lateral to the left nipple with the top of the pad a few inches below the axilla
If patient has a permanent pacemaker, or implanted defibrillator, place the AED pad at least 1 inch to the side of the implanted device

**Child:** use pediatric (child) AED pads
- AED pads should not touch
- Place AED one pad directly below the clavicle on the right sternal border
- Place the other AED pad lateral to the left nipple with the top of the pad a few inches below the axilla

**Infant:** use pediatric (child) AED pads
- AED pads should not touch
- A manual defibrillator is preferred for infants less than 1 year of age.
- If a manual defibrillator is not available, an AED with a pediatric dose attenuator is suggested, if neither are available, an AED without a dose attenuator may be used.
- Smaller infant, the pediatric AED pads should be placed in the anterior-posterior position

- **Wait** for AED to analyze the rhythm
- If a shock is indicated
  - Do **NOT** touch the patient
  - **Ensure no one else is touching the patient**
  - Press the shock button
- **After shock is delivered**
  - Keep pads on the patient
  - Complete 2 minutes of CPR cycle
  - Reassess the patient’s condition
  - Follow AED voice prompts
- Continue following AED voice prompts, administering CPR cycle and AED shock until
  - The patient shows signs of life
  - A second rescuer or EMS takes over
  - You are too tired to continue
- **If NO shock is indicated**
  - Continue CPR cycle if the victim is unresponsive
  - Continue CPR until a second rescuer or EMS takes over or you are too tired to continue
Airway Obstruction

People can accidentally choke on many types of objects. Small foods, such as hard candy, peanuts, and grapes can be considered major offenders due to their shape and size. Nonfood items such as balloons, marbles, toys and coins can often become choking hazards for children and infants.

Identifying Airway Obstructions

When an object becomes lodged in the airway it can be considered a mild to severe airway obstruction, depending on the patient’s inability to breathe. Good air exchange and the ability to make forceful coughing efforts, is usually present in a mild airway obstruction. If a patient experiences a mild airway obstruction, the patient should be encouraged to continue coughing until the obstruction has been removed.

Signs of a severe airway obstruction include all or one the following:
- Breathing becoming more difficult
- Weak and ineffective cough
- Inability to speak or breathe
- Skin, beds of fingernails, and area in and around mouth may appear bluish gray (indicating cyanosis)

Patients with a severe airway obstruction will have poor air exchange and may need immediate care. Patients with a complete airway obstruction will have little to no air exchange and will need immediate care.

Choking Patients

The universal distress signal for choking is grasping the throat. Choking patients may try to speak and grasp their neck in an attempt to alert others. It is important to recognize the signs of choking, as not all patients know or use the universal distress signal. Caring for an airway obstruction for an adult and child are the same while caring for an infant with a severe airway obstruction is different.

Airway Obstruction - Responsive Adult or Child

Check patient for choking. Elicit response to question, “Are you choking?” Observe signs of obstruction (speaking and breathing).

Begin Heimlich Maneuver:
- Move behind the patient
- Reach around the patient’s waist with both arms just above the navel
- Place a fist with the thumb side against the patient’s abdomen
- Grasp the fist with other hand
- Press into the abdomen with quick inward and upward thrusts
- Continue administering thrusts until the object is removed or the patient becomes unresponsive
- If unable to move behind the patient, have patient lay on the ground and administer abdominal thrusts using both hands in the same location as if they were standing
- If patient becomes unresponsive, stops breathing and loses consciousness, immediately call or have a bystander call 911 and perform CPR cycles
- Continue CPR cycles until a second rescuer or EMS takes over, you are too tired to continue, or patient begins breathing
- If victim begins breathing, place in recovery position until EMS arrives

Pregnant women, in the late stages of pregnancy should NOT be given the Heimlich Maneuver from behind. Instead rescuer should administer abdominal thrusts to patient while she is lying on the ground.

Airway Obstruction - Responsive Infant

Check patient for choking. Observe signs of obstruction (speaking and breathing).
- Support the infant’s head, neck, and back with hand and forearm
- Use thigh to support your arm
Give strong five back blows
- Turn the infant over, supporting the head and neck, using your leg or nearby object.
- Check mouth and throat for obstruction.
- Give five chest compressions, using two fingers and check airway again.

Repeat these steps until the object is removed. If the victim becomes unresponsive, stops breathing and loses consciousness, immediately call or have a bystander call 911 and Perform CPR Cycle.

**CPR Cycle - Unresponsive Choking Patient**

Administer **2 rescue breaths**
- If first breath does not make chest rise, re-tilt head and give second breath
- After second breath - begin compressions
- Each time you open the airway to give a breath look for an object in the mouth or throat and if seen, remove it.

Continue CPR cycles of **30 compressions, at a rate of 100-120 per minute** and then administer **2 rescue breaths**

Compression depth:
- **Adult:** At least 2 inches of the chest, but no more than 2.4”
- **Child:** At least 1/3 depth of the child’s body (or 2”)
- **Infant:** At least 1/3 depth of the infant’s body (or 1 ½”)

Position:
- **Adult/Child:** On the breastbone (sternum),
- **Infant:** On the breastbone, just below the nipple line

Continue CPR until:
- AED becomes available
- Patient shows signs of life
- A second rescuer takes over
- EMS arrives and takes over
- You are too tired to continue

**Tongue and Airway Obstruction**

Airway obstruction in an unresponsive patient lying on his or her back is usually the result of the tongue relaxing in the back of the mouth, restricting air movement. Opening the airway with the head tilt-chin lift method may be all that is needed to correct this problem.