



# First Aid & CPR

**Pulse Training Programs**



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# INTRODUCTION

First Aid: The emergency treatment given to a sick or injured person prior to receiving regular medical care.

Developed in the late 1800's, first aid has long been used as first line medical treatment for sick or injured persons. The need for first aid was first recognized in the early 18<sup>th</sup> century during wartime. It was discovered that by providing some initial treatment to soldiers before they could be treated by a doctor was improving the soldiers' outcome. With such success on the battlefield, it was determined that civilians could be taught to use these basic principles to help their family and friends in a crisis.

Although classes today are much more advanced than those of the 18<sup>th</sup> century, the basic premise is the same...*to help others in need*. This class was designed to give the reader basic knowledge of some common emergencies and equip them with the tools necessary to recognize and treat those emergencies.

Life-threatening emergencies can happen anywhere and at any time. By attending this course you have shown a desire to be prepared for what could happen. While this manual is not intended to provide you with absolute treatments, it is intended to provide you with treatment guidelines. Every situation is different, therefore you are required to assess the situation, determine the best course of action based on your knowledge and common sense, and then act upon your decision.

In order to provide you with the best possible learning experience, *Pulse* instructors are medically trained. Many of the instructors are EMT's or Paramedics working in the field and have first-hand experience of the emergencies presented in this text. Thank you for your interest in helping others, we hope that this class exceeds your expectations.

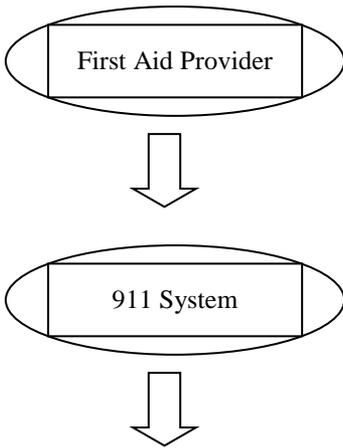
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# THE EMERGENCY MEDICAL SERVICES SYSTEM

## Overview of the EMS System

As a trained first aid provider you become a vital link in the Emergency Medical Services System (EMS). The treatment you provide prior to EMS arrival may prevent further injury or illness. There are six main components that make up the EMS system.



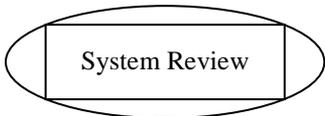
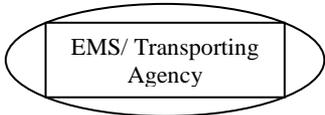
This category includes people who are trained in first aid, CPR, AED or have other medical training. These are the people who will provide the initial care to the patient. By attending this class you have become the first link in the EMS System!

This includes emergency call handling and dispatching the appropriate resources. There are two types: Basic 911 and Enhanced 911. When a call is placed in an area with enhanced 911 the address and phone number of the caller is automatically displayed to the dispatcher.

Some EMS systems use Emergency Medical Dispatchers (EMD). These specially trained dispatchers will provide the caller with information to begin providing aid to the victim prior to EMS arrival.

### *Cell Phones & 911*

When calling 911 from your cell phone be sure that you give the city and state that the emergency is in. Depending on which cell tower you are hitting you may be in one city but reaching the 911 center for another. It has happened where First Responders and Paramedics have been dispatched to the same street name but in a different city from the emergency.



Generally, first responders include the fire and police departments, however, the degree of training for police varies greatly. Some officers do not have any medical training, some are trained at a basic first aid level, but others may be trained at the EMT level. The fire department is usually the first to arrive and provide initial care and stabilization of the patient.

There are four levels of training for professional first responders: First Responder, EMT-Basic, EMT-Intermediate, and EMT-Paramedic.

Usually consisting of paramedics, the EMS component is responsible for ensuring treatment and safe transport of the patient.

Upon arrival at the Emergency Department the patient is evaluated and treated by trained nurses and physicians.

The EMS system is constantly under review and scrutiny. If problem areas are identified changes in the system can be made.

## Roles & Responsibilities of the First Aid Provider

Quick recognition of the illness or injury and quick activation of the EMS system are two important steps to ensuring a better outcome for the patient. By taking the time to learn first aid and CPR you are also ensuring that should someone collapse in front of you they will also get the quick treatment and/or CPR that just might save their life.

As a trained First Aid Provider you become a vital link in the EMS chain. You may be the first on scene and have to assess the situation. You may have to determine if the scene is safe, what the best access is to the patient, what the nature of the illness or injury is, how many patients are involved, and the best initial treatment for the patient. You will also have to inform the first responders and EMS crews of your findings and what you have done for the patient while trying to keep yourself safe, comfort the patient and family members, and maintain your composure. This is not an easy task. Through refresher courses and continuing education your actions will become second nature.

## The Well-Being of the First Aid Provider

When providing first aid to an ill or injured person you may be faced with many difficulties.

*You are working in your backyard when you suddenly hear someone screaming for help. You run over to help and discover that your neighbor was cleaning the gutters on his two-story house when he fell off the roof. He is unconscious with a copious amount of blood coming from his head. The victim's wife is frantic and screaming at you to do something...*

Can you imagine how stressful this situation might be if you were actually there? The reality is that you could find yourself in this situation or one similar at any given time. It is how you deal with the stress of these unusual events that will determine your response to the situation. This is called **critical incident stress** and it

can include more than just the stress during the emergency. It also includes the emotional response that the rescuer has. The rescuer may experience a range of emotions after an incident including but not limited to:

- a. Irritability
- b. Anxiety
- c. Guilt
- d. Loss of Appetite
- e. Difficulty sleeping or having nightmares

If you should experience any of these symptoms after an incident get help immediately. Sometimes talking about the situation with someone who was there during the incident, a counselor, or a trusted friend or family member will help get your fears or concerns out in the open and enable you to move past the incident. There are also professional organizations that may be able to help such as Fire Department Chaplains, your own clergy person, or the instructor who taught this class. As previously mentioned, all *Pulse* instructors have field experience. They should be able to identify with the feelings that you are having.

## Patient Confidentiality

While it is appropriate to talk with a professional about the events of an emergency try to maintain confidentiality outside of that environment. The patient you treat may have a medical condition or illness that they do not want others to know about. It is important to honor the patient's wishes to keep the details private. After all, you would not want your private details spread around.



## SCENE SAFETY

**Scene Survey:** An assessment of the scene that will help determine when and how the first aid provider will treat the patient.

The scene survey begins as soon as you realize there is an emergency. You take in all the information that is presented to you and form an impression of what the problem is. Is there a life-threatening emergency? Is it safe for you to approach the patient? Are there any other patients? Are there any bystanders? These are all questions that you must ask yourself before providing aid.

There are, however, four major things you must take into consideration when surveying the scene.

1. ***Protect yourself.*** Decide if it is safe to approach the victim.
2. ***Protect the victim.*** Are they lying in traffic? Are they outside in snowy or rainy weather?
3. ***Protect the bystanders.*** Ensure that the bystanders are acting in a safe and prudent manner so they will not become a victim also.
4. ***Decide if the scene is safe.*** If it is not safe, stay out!

So what constitutes an unsafe scene? Each scene will be different, therefore, every scene will need to be scrutinized before entering. Use your eyes, ears, nose and hands, but NO taste, to determine if the scene is safe. You can also use your instinct. If the scene doesn't feel safe, do not enter.

### Unsafe Scenes

Do not enter the scene if any of the following are present:

- Fire or smoke
- Hazardous Material
- Violent victim or bystanders.
- Downed power lines.
- Any other potentially dangerous conditions exist.



## LEGAL ISSUES

**Scope of Practice:** the procedures you are allowed to perform according to your training. For example: You may apply direct pressure to stop bleeding but you may not start an IV.

### Good Samaritan Statute

The following is an example of a Good Samaritan Statute. Every state has its own definition; therefore, you will need to refer to your own state statutes for your protection.

#### PERSONS RENDERING EMERGENCY CARE OR TRANSPORTATION- IMMUNITY FROM LIABILITY

Any person, who without compensation or the expectation of compensation renders emergency care at the scene of an emergency or who participates in transporting, not for compensation, an injured person for emergency medical treatment shall not be liable for civil damages resulting from any act or omission in the rendering of such emergency care or in transporting such persons, other than acts or omissions constituting gross negligence or willful or wanton misconduct.

#### DEFINITIONS

**Emergency Care:** Care, first aid, treatment, or assistance rendered to the injured person in need of immediate medical attention and includes providing or arranging for further medical treatment or care for the injured person. Except with respect to the injured person or persons being transported for further medical treatment or care, the immunity granted does not apply to the negligent operation of any motor vehicle.

**Scene of an Emergency:** the scene of an accident or other sudden or unexpected event or combination of circumstances which call for immediate action.

## Moral & Ethical Responsibilities

By taking this class and becoming trained you have also accepted a moral responsibility to help an injured or ill person in need regardless of their age, race, gender, or financial status.

## The Acceptance of Care

A responsive ill or injured person has the right to accept or refuse medical care. Before providing care to anyone you must first receive their consent before administering aid. There are three major types of consent:

Expressed Consent: Verbal consent that you receive from the victim. This can be done by first identifying yourself, tell the victim you are trained in first aid and would like to help them, and if they say it is okay then you may render care.

Implied Consent: Implied consent is when a person is unconscious or otherwise unable to answer for themselves. The law assumes that person would want life-saving measures to be performed.

Minor Consent: This type of consent is similar to implied consent, however, it deals with minors. The law assumes that the parent or guardian would want life-saving procedures performed on their child if they are not present to give consent. This becomes tricky however. You must take into account the age and size of the victim. A 17 year-old 250 lb male may not want your help for his cut hand but a 10-year-old that has been hit by a car and is unconscious requires help.

In all these situations you are looking at “life-threatening” situations. You cannot and should not force yourself on someone who does not want your help. Remember, an adult can refuse medical care even after they have agreed to it and you have started care. If you are ever in doubt whether or not to start care in a life-threatening situation, err on the side of the victim and start care. Just remember...DO NO FURTHER HARM!

Once you have started care you should not leave the patient until:

- ✓ Someone of equal or higher certification arrives to relieve you.
- ✓ You are too exhausted to continue. (i.e. performing CPR)
- ✓ The patient refuses further care.
- ✓ The scene becomes unsafe to you as a rescuer. (i.e. your surroundings or patient becomes dangerous.)

Here are some definitions that you should be familiar with:

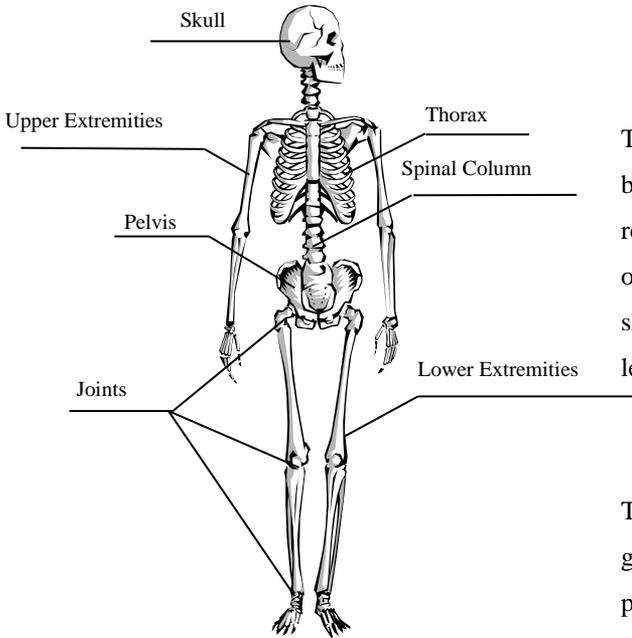
Assault: an action that makes someone fear that they will be harmed.

Battery: the unlawful touching of another person without their consent.  
Forcing care upon someone who has refused your care.

Abandonment: Terminating care when care is still needed without ensuring that care will still be provided by someone with the same or higher level certification as yours.

Negligence: Failing to meet the standard of care for first aid which results in further injury to the victim.

# THE HUMAN BODY



## The Skeletal System

The skeletal system provides the body with its shape and is responsible for protecting the vital organs. The components of the skeletal system are shown to the left.

## The Muscular System

The Muscular System also helps give the body its shape and protect vital organs; however it also is what makes the body

## The Nervous System

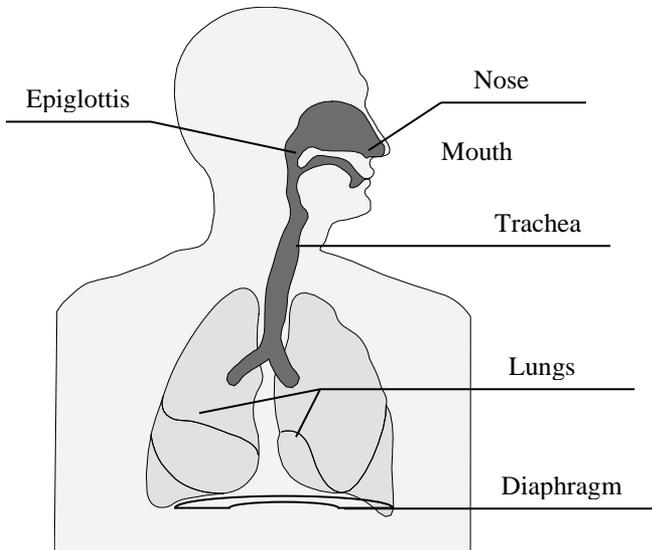
The nervous system is your body's command center. It is comprised of the brain, spinal cord and the peripheral nervous system. The Nervous System is responsible for controlling the voluntary and involuntary activities of the body. It is also responsible for actions, emotions and thinking.

## Skin

The skin is the body's first line of defense against infection causing bacteria. It also protects the body from the environment and helps regulate body temperature. The skin works with the nervous system as it senses heat, cold, touch, pain, etc.

## The Respiratory System

The purpose of the respiratory system is to bring oxygen into the body, and at the same time get rid of carbon dioxide. To accomplish this, one must breathe. The diaphragm moves down, allowing oxygen to be sucked in, the chest gets bigger as the lungs fill with oxygen. Once inside the lungs, oxygen and carbon dioxide exchange and the diaphragm moves up, causing the oxygen-depleted air to escape. There are some things to consider however when dealing with the respiratory system. There are some important differences between adults, infants and children. With infants and children, their airways are smaller and can be obstructed more easily. Their tongues are bigger and take up more space in their mouths, and their trachea is more flexible, thus the reason for the “sniffing position.” One last important thing to remember about infants and children is generally the primary cause of cardiac arrest is respiratory arrest.



# The Circulatory System

Made up of the heart, blood and blood vessels the job of the circulatory system is to ensure that the body's tissues are fed with oxygen and nutrients. The Circulatory System also takes the waste products from the tissues and disposes of them. Let's take a closer look at the components of this system.

## BLOOD

This is the fluid of the circulatory system. The blood carries the oxygen and nutrients throughout the body.

## HEART

The heart is a muscular organ that pumps 24/7 to ensure that the blood is distributed throughout the body. The heart has four chambers, or ventricles. The left ventricle is the area that is responsible for actually pumping the blood throughout the body. There are three places where this process can be felt the best: the carotid artery, femoral artery and the radial artery.

## BLOOD VESSELS

There are three types of blood vessels: Arteries, veins and capillaries. Arteries are the vessels that carry blood away from the heart and deliver it to the rest of the body. The major arteries in the body are: The carotid, femoral, brachial, and radial. Veins carry blood back to the heart to get reoxygenated. Veins are broken down into smaller vessels – the capillaries. These tiny vessels are located everywhere in the body, but carry a large burden. Capillaries are responsible for the oxygen and carbon dioxide exchange.

# MOVING PATIENTS

There may come a time when you find yourself in a situation where someone is ill or injured, but you are unable to provide care to them due to their position or the area is unsafe for you to enter.

Whenever possible leave the patient where they are and let the EMS crew move him or her. It will not help the patient if you are killed or injured trying to rescue them from a dangerous situation. Remember Rule #1 – PROTECT YOURSELF FIRST!

Here are some key points about proper lifting technique:

- ✓ Use your legs, not your back.
- ✓ Keep the patient's weight as close to your body as possible.
- ✓ Consider the weight of the victim, and ask for help if needed. If your patient weighs 300 lbs and you only weigh 90 lbs, you will probably need some help moving that patient.
- ✓ Lift without twisting and position your feet properly.
- ✓ Be sure to communicate with other helpers so you are all moving the same way at the same time.

## Emergency Moves

When moving a trauma patient there is the possibility of worsening a spinal injury. To reduce the risk of increasing an injury, always try to pull the victim in the direction of the long axis of the body. While it does not allow for adequate protection of the spine, it will cause the spine and limbs to align itself into its natural position. The following pictures show different moves that can be used to move patients quickly and safely.



Clothes Drag



Shoulder Drag



Foot Drag



Blanket Drag

## Positioning the Victim

An unresponsive, ill person should be placed into the recovery position. This will help keep their airway open and allow any secretions to drain. This is achieved by rolling the patient onto his or her side as shown below.



- ✓ A trauma victim should not be moved if at all possible until EMS arrives.
- ✓ The following types of patients may be allowed to remain in the most comfortable position for them:
  - Patients with severe pain (i.e. abdominal pain, fractures that do not involve neck or back pain).
  - Patients who are nauseated or vomiting.
  - Conscious patients who are short of breath.

**REMEMBER: THE PATIENT SHOULD ONLY BE MOVED WHEN THERE IS AN IMMEDIATE DANGER OR CARE CANNOT BE PROVIDED BECAUSE OF THE PATIENT'S POSITION OR LOCATION.**

# INITIAL ASSESSMENT

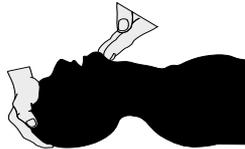
Before you begin treating any patient, three things must be done. You must check the Airway, Breathing and Circulation or ABC's. This first step is called the initial assessment. It must be performed on EVERY patient to determine the severity of the illness or injury. Not every patient, however, will require you to touch them to assess their ABC's. A person who is alert and talking to you obviously has an airway, is breathing and has a pulse. An unconscious person though requires you to actually touch and assess them. To assess them, follow your ABC's.

PLEASE REEF #3- A = AIRWAY



## Open the Airway

If the patient is lying face down, the patient must be gently rolled over to their back. This will make your assessment easier and allow you to open the airway. For an unconscious patient, try to arouse the patient. You can do this by tapping the patient's shoulder and shouting at them to see if they wake up or stir at all. If you do not get a response you need to *open the airway*. In a medical or non-traumatic incident use the head tilt, chin lift method to open the airway. This is performed by placing two fingers of one hand under the chin and the palm of the other hand on the forehead. Lift up under the chin, tilting the head back.



Head-tilt, Chin Lift

This first step is very important. The patient cannot breathe or inhale oxygen without an open airway. Sometimes if a patient has stopped breathing, just opening the airway will allow them to begin breathing on their own again. Once you have opened the airway you must maintain the airway by keeping it clear. If the patient vomits or has excess fluid in their mouth or throat they need to be placed in the recovery position to allow it to drain. If the patient aspirates or inhales the fluids into their lungs, they can develop an infection or pneumonia. For an elderly patient or a patient in poor health, an infection can be fatal. Refer back to PULSE RULE #2- VOMIT IS BAD.

**D I I C E D I I I E # 1    D \_ B R E A T H I N G**



### Look, Listen & Feel

Check for breathing. While maintaining an open airway, place your cheek next to the patient's nose and mouth. **LOOK** for rise and fall of the chest, **LISTEN** for breathing, and **FEEL** for any air movement on your cheek. This step should take a few seconds.

## **DRUGS RULE #5 - C - CIRCULATION**



### **Begin Chest Compressions**

The next step is to provide circulation of the blood for the patient. You will first attempt to completely expose the chest. This includes removing all clothing and undergarments. You will want to find the center of the chest. An easy way to do this is to find the imaginary line between the armpits. This is generally the center. You will then place both hands over the sternum or breast bone and compress about 1/3 of the total body width.

## **DRUGS RULE #6 - D - DEFIBRILLATION**



If you have an Automated External Defibrillator (AED), use it.

An AED is a machine that is used for cardiac arrest patients. It delivers an electrical shock to the heart in an attempt to restart the heart. If you have been trained in the use of an AED, attach it to the patient and use it according to your training.



## CPR

There are many things that can cause cardiac arrest. Sometimes it is trauma, sometimes it is an illness. This book will cover only a few of the possible causes. Simply put, CPR stands for Cardiopulmonary Resuscitation, or revival of the heart and lungs. The body's tissues begin to die within just 4-6 minutes after the heart and lungs have stopped. That is why it is so important to begin CPR immediately. Early CPR can increase a victim's chance for survival and can possibly minimize or slow brain damage. CPR works because rescue breathing gives the patient oxygen and chest compressions circulate the oxygen through the blood to the rest of the body. As you will see below in the "8 Minute Factor", every minute counts when it comes to calling 911, starting CPR or placing an AED on the patient.

### The 8-minute Factor

Most times when you are providing first aid or CPR to a patient it will take EMS about 8 minutes to arrive.

Here is a breakdown of what happens when an emergency call is placed:

- ~1 min = Call is placed to 911 & EMS is dispatched.
- ~1 min= For EMS to respond
- ~5 min= National Avg. for EMS to arrive on scene.
- ~1 min= After arrival on scene to arrive at the patient's side.

Total Response Time = 8 minutes

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## INFECTIOUS DISEASES

There are many risks associated with providing first aid. One of the biggest risks is infectious diseases. They range from the common cold and flu to more serious diseases such as Hepatitis B and HIV/AIDS. Below are brief descriptions of some diseases and their methods of transmission.



**Common Cold:** Transmitted by contact with saliva. This can be either a sneeze, cough or direct contact.

**Meningitis:** Spread through secretions of the airway, such as through coughing or kissing.

**Tuberculosis:** This disease is passed through the air. When airborne particulates of the disease are released into the air (i.e. coughing) they may be picked up by another person when they breathe in that particulate.

**Hepatitis A:** Hepatitis is a disease that affects the liver. Hepatitis A can be contracted through contact with feces.

**Hepatitis B:** Spread through blood or body fluids.

**Hepatitis C:** Yet another strain of Hepatitis, this disease can only be passed through blood to blood contact.

**HIV/AIDS:** This disease is spread through blood or body fluids.

### Two Rules of Infectious Disease Control

1. "If it's wet and not yours, don't touch it!"
2. "If you do touch it, there should be a barrier between you and the patient."

Although the actual likelihood of contracting a disease is slim, the damage that these diseases can do to someone's life is the very reason that it is recommended you wear protective equipment or **body substance isolation (BSI)** while giving first aid. Some equipment that might be handy to have would be latex or synthetic gloves, eye protection (glasses or goggles), a face mask, and a pocket shield with a one-way valve in case you need to perform rescue breathing or CPR.



Regardless of your protective equipment, **ALWAYS** wash your hands with soap and water after contact with any victim. If any body fluids get on your clothing remove contaminated clothes as soon as possible. If you have equipment that has been contaminated, clean it immediately or dispose of it.

If you are exposed to body fluids while on the job follow these simple steps:

- ✓ **STOP** what you are doing.
- ✓ **WASH** your hands and exposed body areas with soap and water.
- ✓ **REPORT** the incident to your employer immediately.

If you are exposed outside of work, follow the first two steps.



## HAZARDOUS MATERIALS IN THE WORKPLACE



The Emergency Planning and Community Right-to-Know Act of 1986 was developed to provide the public with information regarding hazardous chemicals that they are exposed to on a daily basis. The Community Right-to-Know Reporting Requirements state that all employers are required to post information about any chemicals that are present at their worksite. As an employee, it is important that you are aware of where the chemicals are located, what to do in case of a spill, and how to provide first aid specific to that chemical.

Some companies have thousands of chemicals at their location. Attempting to memorize everything about every chemical would be impossible; therefore, MSDS or Material Safety Data Sheets were created. There should be at least one MSDS sheet for every chemical stored at a facility. The MSDS will provide valuable information such as the chemical ingredients, what to do in case of a fire, what to do in case of a spill, first aid treatment, and much more. In order for these sheets to be effective, however, the employee must know where they are kept. If you are unsure of where your employer keeps them it would be wise to find out.

### Section 4 - First Aid Measures CHLORINE

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**First Aid:**

**EYE:** FLUSH WITH WATER 15 MINUTES, GET MEDICAL ASSISTANCE.

**SKIN:** WASH WITH WATER. **INHALATION:** REMOVE FROM EXPOSURE, GIVE ARTIFICIAL RESPIRATIONS IF NEEDED, GET MEDICAL ATTENTION. **INGESTION:** INDUCE VOMITING.

---

Above: Example of an MSDS sheet for Chlorine. All MSDS sheets provide a first aid treatment section.

Use common sense when approaching a scene with hazardous materials. Be aware of the potential problems of entering an area where there is a victim down, but there is also a chemical spill or leak. Remember- ***Your safety always comes first!*** You do not want to become a victim yourself. If you find yourself in this situation, call 911 immediately. If there is a chemical placard or marker, give that information to the 911 dispatcher. Keep all bystanders away from the area and keep yourself upwind from the scene.

One way to ensure that you are far enough away from a chemical leak is to hold your hand up like you are giving a “thumb’s up”. Close one eye and place your thumb over the scene, if you can see any part of the scene, you are too close. This method is called the “Rule of Thumb” and should be used any time there is a chemical leak or spill.

For example, let’s say that the truck in the pictures below has an unknown chemical leaking from the back. Using the rule of thumb, you would need to back up until you could no longer see the truck behind your thumb.





## BLEEDING

There are two classifications of bleeding. They are internal and external. External bleeding is further divided into three more classifications: Arterial, Venous & Capillary bleeding.

Arterial Bleeding: The most serious type of bleeding. This type of bleeding can cause the person to lose a significant amount of blood in a very short amount of time. It is characterized as *Bright red spurting blood.*

Venous Bleeding: Serious bleeding can result from trauma to a vein. This type of bleeding is characterized by *dark red blood with a steady flow.*

Capillary Bleeding: This type of bleeding is common in scrapes and minor cuts. It usually is a bright *red color* (not as bright as arterial bleeding though) with a *very slow flow.*

It typically takes about 10 minutes for the body to form a clot to control bleeding. However, if the patient is taking aspirin or blood thinners, the body may be unable to form its own clot. Therefore, the bleeding must be stopped using an alternative method.

### WHAT TO LOOK FOR WITH EXTERNAL BLEEDING

- ✓ Most of the time external bleeding will be obvious.
- ✓ Sometimes moving the patient or removing some clothing will reveal external bleeding.

### TREATMENT

- ✓ If bleeding is severe, call 911 right away.
- ✓ Use Direct Pressure
  - With a gloved hand, place gauze or other bandage over the wound and hold pressure.
- ✓ Elevate the injury
  - Elevate the injury above the level of the heart. Do not elevate any limb with a fracture.
- ✓ Use Pressure Points
  - Apply pressure to pressure points such as the brachial or femoral artery.

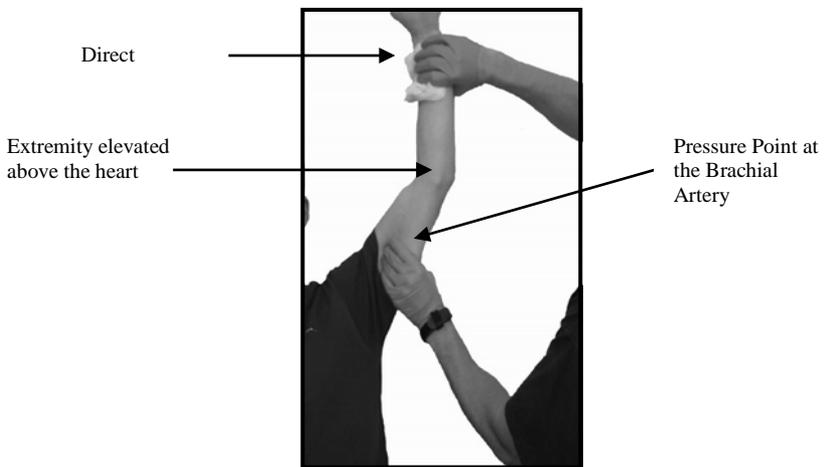
## WHAT TO LOOK FOR WITH **INTERNAL** BLEEDING

- ✓ Altered level of consciousness.
- ✓ Dark, tarry stools
- ✓ Coughing up bright, red blood.
- ✓ “Coffee ground” vomit.
- ✓ Large areas of bruising anywhere on the body.
- ✓ Signs of shock

## TREATMENT

- ✓ Scene safety
- ✓ CALL 911
- ✓ Assess ABCs.
- ✓ Do not give the patient anything to eat or drink.
- ✓ Lay the patient in the shock position.
- ✓ If the patient begins to vomit, roll them onto their side.
- ✓ Keep the patient warm.
- ✓ Monitor ABCs until EMS arrives.

Never pull away the dressing once it is in place. You do not want to destroy any clots that have formed. Always add more gauze to the top of the other dressing.



Direct Pressure, Elevation & Pressure Points

# NOSEBLEEDS

Most nosebleeds can easily be controlled within just a few minutes.

However, stubborn bleeds require extra attention. If the patient is on any type of blood thinners, this will make controlling the bleeding more difficult. The two most important things to remember for nosebleeds are: there is a potential for airway obstruction and serious blood loss.

## TREATMENT

- ✓ The most important thing with treating a nosebleed is to ensure that the patient has an open airway at all times.
- ✓ Have the patient **sit up and lean forward**.
- ✓ Do not allow the patient to swallow any blood as this can lead to nausea or vomiting.
- ✓ Pinch the nostrils shut.
- ✓ Apply an ice pack over the top of the nose.
- ✓ If the bleeding cannot be controlled CALL 911.
- ✓ Treat for shock.



# SOFT-TISSUE INJURIES

**Soft-tissue injury:** Any trauma or injury to the tissues of the body, including the skin, muscles, fatty tissue or blood vessels.

There are 5 types of soft-tissue injuries that you may see: Amputation, Puncture, Avulsion, Laceration or Abrasion.

## Amputation

Amputation: The separation of an extremity from the body.

There may or may not be bleeding with an amputation depending upon how the part was severed.

### WHAT TO LOOK FOR:

- ✓ Severed limb or other body part.
- ✓ Signs of shock
- ✓ Bleeding

### TREATMENT

- ✓ CALL 911
- ✓ Assess ABCs.
- ✓ Control any bleeding.
- ✓ Treat for shock.
- ✓ If you can find the amputated part, wrap it up in dry sterile gauze and place in a plastic bag.
- ✓ Place the bag into another bag with ice. You want to keep the part cool but do not want to freeze it.

## Puncture Wounds

Puncture Wound: A wound caused by a pointed object that enters the body.

Always be aware that a puncture wound can cause significant damage internally that you cannot see. You must assume that there is internal bleeding even if you cannot see it. Puncture wounds include injuries such as gunshot wounds, stabbings, glass, wood, or any other object that can penetrate the skin. Always look for an exit wound with puncture type injuries; you may have two wounds that need attention.

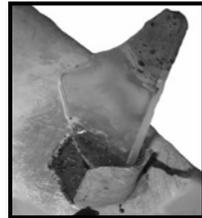
## Impaled Objects

Impaled Object: Any object protruding from the body.

Remember that an impaled object is a type of puncture wound. There may be additional damage that has been done on the inside of the body that you may not be able to see. Be prepared to treat this patient for shock.

### WHAT TO LOOK FOR:

- ✓ Any object protruding from the body.
- ✓ Bleeding
- ✓ Signs of shock
- ✓ Multiple open wounds



### TREATMENT

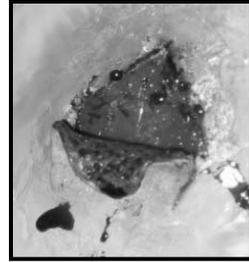
- ✓ CALL 911
- ✓ Assess ABCs
- ✓ NEVER remove the impaled object. (If the impaled object is in the cheek and is obstructing the airway, it may be removed but this is the only instance you would remove an impaled object)
- ✓ Stabilize the impaled object and control any bleeding
- ✓ Treat for shock.

## Avulsions

Avulsion: the tearing of the skin so that the skin is either torn away or left as a loose flap of skin.

### TREATMENT

- ✓ CALL 911
- ✓ Assess ABCs
- ✓ Replace the flap of skin over the site and dress with dry, sterile bandages.
- ✓ Control bleeding.
- ✓ Treat for shock.



## Laceration

Laceration: a cut caused by a sharp object.

### TREATMENT

- ✓ If there is severe uncontrolled bleeding, CALL 911 right away.
- ✓ Follow treatment guidelines for controlling bleeding.

## Abrasion

Abrasion: minor scrapes and scratches.



This type of injury is usually more painful than dangerous. It occurs when some of the layers of the skin have been rubbed off or scratched. It is commonly seen in bicycle or motorcycle accidents when the rider hits the pavement. The biggest complication from this injury is possible infection if the wound is not cleaned properly.

# EYE INJURIES

## Foreign Objects

This could be a small speck of dirt or a chemical that has entered the eye.

### WHAT TO LOOK FOR

- ✓ Pain to the eye.
- ✓ Redness of the sclera (white portion of the eye)
- ✓ Excessive tearing
- ✓ Swelling of the tissue around the eye.

### TREATMENT



- ✓ Try flushing the eye with water for 15-20 minutes or until the object is removed from the eye.
- ✓ If you are unable to remove the small foreign object, or the patient still has significant pain in the eye, they will need to be seen by an optometrist or physician.
- ✓ Bandage both eyes and contact a physician as soon as possible.

## Impaled Objects in the Eye

### TREATMENT

- ✓ CALL 911
- ✓ Assess ABCs
- ✓ Immobilize the object.
- ✓ Cover both eyes when bandaging.



# BURNS

There are three types of burn injuries. They are superficial or first degree, partial-thickness or second degree, and full thickness or third degree. The severity of the burn is determined by the size and depth of the burn.

## Superficial Burns

This type of burn only involves the top layer of skin called the epidermis.

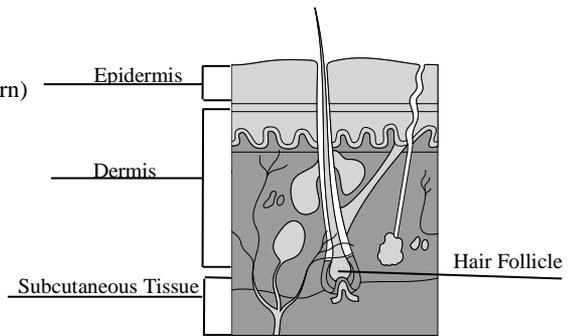
This is the mildest type of burn. A good example of this type of burn is sunburn.

### WHAT TO LOOK FOR:

- ✓ Red skin (looks like a sunburn)
- ✓ Pain over burn area.
- ✓ No blisters.

### TREATMENT

- ✓ Stop further burns.
- ✓ Flush area with cool water.
- ✓ Remove any loose clothing or jewelry.
- ✓ Treat as you would a mild sunburn.



## Partial-Thickness Burns

This burn involves the first two layers; the epidermis and the dermis. It produces blisters that may or may not be open. Special care must be taken if there are open blisters as they can introduce infection into the body.

### WHAT TO LOOK FOR:

- ✓ White to red skin
- ✓ Blisters to the skin
- ✓ Painful to touch.

## TREATMENT

- ✓ Stop further burns.
- ✓ CALL 911
- ✓ Assess ABCs.
- ✓ Remove any loose clothing or jewelry for a minor burn.
- ✓ Wrap area with DRY sterile dressings to prevent contamination.
- ✓ Keep the patient warm. Burn patients can lose the ability to regulate their own temperature if it is a large burn. Ensure that they are staying warm.

## Full-Thickness Burns

The most serious type of burn, a full-thickness burn affects all the layers of the skin and tissues. It destroys the body's first line of defense (the skin) against contamination and infection. A full-thickness burn can even burn as far down as the bone.

## WHAT TO LOOK FOR:

- ✓ Dry, leathery looking skin.
- ✓ White, brown or charred skin.
- ✓ If the burn has damaged nerves, the patient may not have feeling over the burned area.
- ✓ Minor burns around the area that may cause pain.

## TREATMENT

- ✓ CALL 911 RIGHT AWAY.
- ✓ Assess ABCs.
- ✓ Cover the burned area with DRY, sterile dressings to prevent further contamination.
- ✓ Treat for shock
- ✓ Continue to monitor ABCs, especially with burns involving the face. If superheated gases are inhaled, the airway can also be burned.

Can't decide how to treat the burn? Try this...

"If it is a large burn, **COVER IT**. If it is a small burn, **COOL IT**."

## ELECTROCUTION

The most important thing to be concerned about on the scene of electrical emergencies is your safety! Be sure that the electricity has been turned off before approaching the patient! You can be electrocuted just by touching the patient. There are many causes of electrocutions. They range from industrial accidents, auto accidents with downed power lines, or injuries sustained in the home. While causing burns, electrical injuries can cause significant internal damage to the body. Be prepared to treat other life-threatening injuries before tending to the burn.

### THINGS TO LOOK FOR:

- ✓ Downed power lines or other signs of live electricity.
- ✓ Altered level of consciousness or unconsciousness.
- ✓ Cardiac Arrest.
- ✓ Respiratory distress or arrest.
- ✓ Entrance and Exit wounds
- ✓ Bone fractures
- ✓ Possible seizures

### TREATMENT

- ✓ Scene Survey. Be sure that the electricity is off and it is safe for you to enter!
- ✓ CALL 911
- ✓ Assess ABCs.
- ✓ CPR if needed. (If you have an AED and have been trained to use it, apply the machine to the patient.)

- ✓ Treat burn wounds. Be sure to look for both the entrance and exit wound and dress both appropriately.
- ✓ Treat for shock.
- ✓ Monitor ABCs until EMS arrives.

## DROWNING

Drowning: Any death that occurs as a result of suffocation by water or other liquid.

Near-Drowning: Survival of a drowning incident.

This type of emergency also requires a diligent scene survey. Every year there are reported cases of a rescuer drowning trying to save a person struggling in the water. Many times the victim survives but the rescuer does not. Never approach a struggling victim unless you are specifically trained to do so. Not all drownings occur in lakes, rivers or streams. Small children can drown in washing machines, toilets, buckets of water, etc. Drownings can and do occur in just a few inches of water.

### THINGS TO LOOK FOR:

- ✓ Unconscious, floating face down.
- ✓ A swimmer that appears exhausted or in distress can quickly lead to a drowning.
- ✓ Anyone who goes under but does not come back up, including someone diving into the water.

### TREATMENT

- ✓ Your safety is your first priority!
  - Be sure you know how to swim if the water is deep
  - Never approach a combative or panicked patient. Never allow the patient to touch you.

- ✓ CALL 911
- ✓ If there is a neck or back injury, leave the patient in the water if possible. If you need to provide rescue breathing, log roll the patient & use the modified jaw-thrust maneuver to open the airway. Only remove the patient if you need to perform chest compressions.
- ✓ If the patient is conscious and does not have a neck or back injury, remove them from the water.
- ✓ Assess ABCs.
- ✓ Perform CPR or rescue breathing as needed.
- ✓ Keep the patient warm.
- ✓ All near drowning or drowning victims need to be evaluated by a physician at your local emergency department.

## BROKEN BONES

Fracture: A break in a bone that results in a complete break, chip or crack. A fracture is further

divided into two types: closed and open fractures. An *open fracture* is one that you can see. It occurs when the bone ends have protruded through the skin. A *close fracture* is one that is not as obvious. While sometimes you can see the bone pushing on the skin, other times you may not see anything. You will have to rely on what the patient tells you.

Dislocation: The displacement of a joint. This type of injury is often obvious but can result in a fracture as well.

Sprains: The stretching or tearing of *ligaments*.

Strains: The stretching or tearing of *muscles*.

These types of injuries are particularly difficult to distinguish without an x-ray. Your treatment will be the same for all of these injuries. Your main concern is going to be to splint the injury in the position found. This will prevent further movement and injury to the extremity. When applying the splint be sure to splint the joint above and below the injury site.

#### THINGS TO LOOK FOR:

- ✓ Extreme Pain
- ✓ Deformity, swelling or bruising
- ✓ Open wounds
- ✓ Numbness or loss of circulation to extremity.

#### TREATMENT

- ✓ CALL 911 if needed.
- ✓ Assess ABCs
- ✓ Manually stabilize the injury.
- ✓ Cover any open wounds to prevent further contamination and control any bleeding.
- ✓ Splint the injury in the position you find it in. Remember to immobilize the joint above and below the injury.
- ✓ Apply ice packs to the area.
- ✓ Monitor patient until EMS arrives.

#### Types of Splints

- ✓ Sam-splints
- ✓ Cardboard
- ✓ Pillow
- ✓ Padded Splint
- ✓ Triangular Bandage
- ✓ Sling & Swathe
- ✓ Inflatable
- ✓ Makeshift Splints (i.e., long sticks, newspaper, etc.)

# HEAD, NECK & BACK INJURIES

## Head Injuries

Just like fractures, a head injury can be an open or closed injury. The skull itself can be fractured, or the brain can be injured. There are two types of brain injuries: concussion and contusion. A *concussion* is a minor injury to the brain. It may only show as a headache or it may show as slight memory loss. A *contusion* is more serious. A contusion is another word for bruise. So, in a brain contusion there has been bruising to the brain. This results in bleeding around the brain. Since the brain is housed in a hard bony skull, there is no place for the blood to go and it can put pressure against the brain. The pressure then results in loss of consciousness, memory loss, and other serious symptoms. If left untreated, bleeding in the brain can be deadly. Both types of injuries can have the same symptoms and therefore should be treated the same.

### WHAT TO LOOK FOR:

- ✓ Altered level of consciousness or unconscious.
- ✓ Lacerations or bruising to the scalp.
- ✓ Bruising behind the ears or under the eyes, or bleeding from the ears or mouth.
- ✓ Deformity to the head.
- ✓ Memory loss.
- ✓ Unequal pupil size.
- ✓ Combative or aggressive behavior.
- ✓ Nausea or vomiting.
- ✓ Headache

## TREATMENT

- ✓ CALL 911
- ✓ Assess ABCs. If needed, open the airway using the modified jaw-thrust maneuver.
- ✓ Provide manual cervical spine immobilization.
- ✓ Provide rescue breathing or CPR as needed.
- ✓ If the patient is conscious, encourage them to stay still and not move their neck due to a possible neck injury.
- ✓ Control any bleeding. The scalp is very vascular and can bleed profusely even from a minor injury.
- ✓ Bandage any wounds.
- ✓ Prepare for the patient to vomit. If they do, try to keep their body as straight as possible and roll them onto their side.
- ✓ Treat for shock.
- ✓ Monitor the ABCs until EMS arrives.

## Neck & Back Injuries

The spinal column runs from the base of your skull all the way down your back. Its purpose is to protect your spinal cord. There are many different events that can damage the spinal cord, resulting in permanent and irreversible damage. Some of these are: auto accidents, diving injuries, falls, and head trauma. Of course there are many more things that can cause spinal cord injuries, these are just a few. Just because someone has pain in their neck or back, doesn't necessarily mean that they have damaged their spinal cord. There are other soft tissue injuries that can result, such as muscle strains in the neck or back. The treatment, however, will be the same for all neck or back pain. Just as in fractures, it is impossible to tell if there is a serious injury without an x-ray or other definitive treatment.

## WHAT TO LOOK FOR:

- ✓ Deformity to the neck or back.

- ✓ Pain in the neck or back.
- ✓ Numbness, tingling or weakness in the extremities.
- ✓ Paralysis of extremities.
- ✓ Shortness of Breath
- ✓ Loss of bowel or bladder control.



Manual cervical spine immobilization

## TREATMENT

- ✓ CALL 911
- ✓ Assess ABCs.
- ✓ Provide manual cervical spine immobilization.
- ✓ If the patient is conscious, encourage them to stay still and not move their neck.
  - Always assume that an unconscious trauma patient has a neck or back injury and treat for such.
- ✓ Open the airway using the jaw-thrust maneuver.
- ✓ Provide Rescue breathing and CPR as needed.
  - Never move a neck or back injury patient unless CPR is needed and you are unable to adequately perform it.
  - If the patient does have to be moved, use one of the techniques described in the section titled “Moving Patients.”
- ✓ Control any bleeding.
- ✓ Prepare and treat for shock.
- ✓ Keep the patient warm.
- ✓ Monitor the ABCs until EMS arrives.



# FIRE

According to the United States Fire Administration, there are over 4,000 deaths and more than 25,000 injuries every year due to fires in the United States. The estimated monetary loss from these fires is nearly 10 billion dollars. Here are some practical fire safety tips to help you prevent this from happening to you.

## SMOKE DETECTORS

Every home should have at least one working smoke detector. Ideally, a smoke detector would be placed inside of each bedroom. The batteries should be changed at least once a year. One easy way to remember to change the battery is to change your battery when you change your clocks. Twice a year when you “spring forward” or “fall backward,” change the batteries in your smoke detectors. Do this and you will never have to wonder if your batteries are still good.

## HAVE AN ESCAPE PLAN

- ✓ Every family should make an escape plan and practice it! Be sure that everyone knows how to escape the house and what to do when they get out.
- ✓ Identify a meeting place where everyone can be accounted for.
- ✓ Never open a hot door.
- ✓ Crawl and stay low to evacuate the house.
- ✓ Once out, stay out and CALL 911.

## ELECTRICAL SAFETY

- ✓ Never use extension cords as permanent means for electricity.
- ✓ Do not run wires under rugs or furniture, and always replace worn electrical cords.
- ✓ Unplug and repair or replace any malfunctioning appliances.

## MATCHES & LIGHTERS

- ✓ Teach children that matches and lighters are not toys.
- ✓ Keep matches & lighters out of the reach of children.
- ✓ Always buy childproof lighters.



# MOTOR VEHICLE ACCIDENTS

Since the majority of motor vehicle accidents (MVAs) occur on roadways, your scene survey is very important. Rescuers are killed every year on roadways while tending to patients. Here are some tips to assist you should you come upon an emergency on the road.

- ✓ Scene Survey.
  - If the vehicle is on fire or in an otherwise unsafe condition, do not approach it.
- ✓ If the vehicles are still drivable, get them pulled off to the shoulder of the road.
- ✓ CALL 911
- ✓ Ensure that you have the proper protective equipment for handling potentially bloody patients.
  - Gloves, goggles, etc.
- ✓ Assess all victims for injuries.
- ✓ If anyone is complaining of neck or back pain:
  - If they are still in the vehicle, have them remain there.
  - If they are outside the vehicle, have them hold as still as possible.
  - Initiate manual cervical spine immobilization by holding the head still.
- ✓ If you have an unconscious patient:
  - Open the airway using the modified jaw-thrust maneuver.
  - Only remove the patient if they are in imminent danger, or you must perform CPR.
  - Maintain an open airway.
  - Provide Rescue Breathing or CPR as needed.
  - Monitor ABCs until EMS arrives.



## ADULT CPR

- ✓ Establish Unresponsiveness.
  - Ask the patient if they are okay.
  - Gently tap their shoulder to see if you can elicit a response.
  
- ✓ CALL 911
  
- ✓ Begin your initial assessment.



## A- AIRWAY

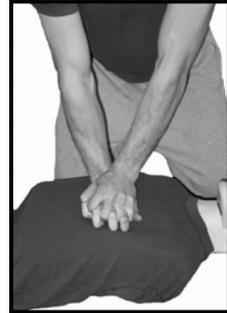
- ✓ Open the airway using the head-tilt, chin-lift.

## B- BREATHING

- ✓ Look, Listen & Feel for normal breathing.
- ✓ If the patient is not breathing, move to circulation

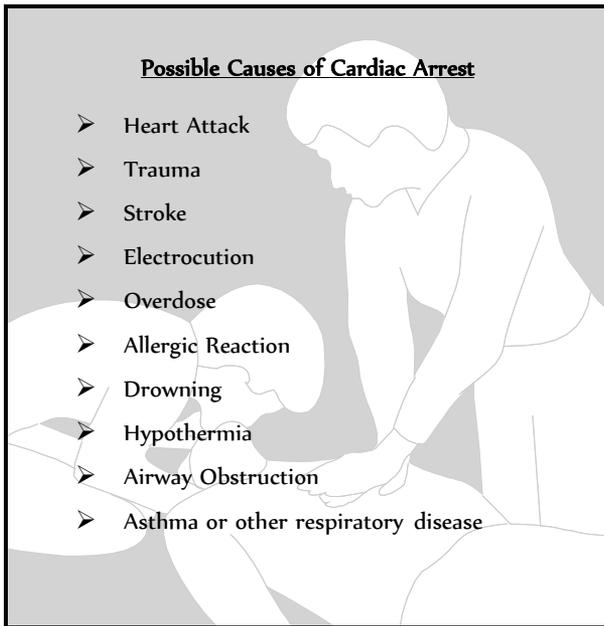
## C- CIRCULATION

- ✓ Begin chest compressions.
- ✓ You will give **200 compressions for 2 minutes**. After 2 minutes switch with Someone and make sure 9-1-1 was called.
- Continue this sequence until an AED arrives, the victim begins to move or breathe on their own, EMS professionals arrive, or you are too exhausted to continue.
- ✓ The average adult's heart beats 60-100 times per minute and they breathe on average 12-20 times per minute. The goal of CPR is to artificially maintain those numbers.



**Possible Causes of Cardiac Arrest**

- Heart Attack
- Trauma
- Stroke
- Electrocutation
- Overdose
- Allergic Reaction
- Drowning
- Hypothermia
- Airway Obstruction
- Asthma or other respiratory disease



## CHILD CPR

- ✓ Establish Unresponsiveness.
- ✓ Ask the patient if they are okay.
- ✓ Gently tap their shoulder to see if you can elicit a response.



- ✓ Begin your initial assessment.



### A- AIRWAY

- ✓ Open the airway using the head-tilt, chin-lift.



## B- BREATHING

- ✓ Look, Listen & Feel for the patient breathing.
- ✓ If the patient is breathing, CALL 911.
- ✓ If the patient is not breathing, move to circulation

## C- CIRCULATION

- ✓ Begin chest compressions.
- ✓ You will give **200 compressions for 2 minutes**

Perform 2 minutes of CPR before leaving to call 911 or retrieve the AED machine.

- Continue this sequence until an AED arrives, the victim begins to move or breathe on their own, EMS professionals arrive, or you are too exhausted



- ✓ For children, compressions are given using the heel of **1 or 2** hands, placed between the armpit line.

## INFANT CPR

- ✓ Establish unresponsiveness. Tap the bottom of the baby's foot, and talk to the baby. "Baby, Baby are you okay?"
- ✓ Begin your initial assessment.

### A- AIRWAY

- ✓ Open the baby's airway to a neutral position. A baby's trachea is very flexible and tipping the head back too far can close off the airway.
- ✓ Placing a towel or other object under the baby's shoulders will help keep the airway in a neutral position.

### B- BREATHING

- ✓ If the baby is not breathing, continue to Circulation



## C- CIRCULATION

- ✓ Begin chest compressions. Place two fingers just below the nipple line.
- ✓ You will give **200 compressions for 2 Minutes**
- ✓ Perform 2 minutes of CPR before leaving to call 911.
- ✓ Continue this sequence until an AED arrives, the victim begins to move or breathe on their own, EMS professionals arrive, or you are too exhausted to continue.



**REMEMBER:** Children usually suffer cardiac arrest from a respiratory problem and adults usually from some type of cardiac problem or illness. For this reason, with children and infant **ONLY** if you are alone perform two minutes of CPR then call 911.

### **Important Definitions**

**Adult:** 9 years or older

**Child:** 1-8 years

**Infant:** Birth-1 year

## AIRWAY CONSIDERATIONS

Dentures - If the patient has dentures, try to leave them in place. You can remove them if they are blocking the airway but leaving them in place will help keep the shape of the mouth thus making ventilations easier.

Air in the Stomach - If you are trying to force too much air into the lungs some of this air will go into the stomach. You will see the abdomen become large and the patient may vomit. The effectiveness of your CPR will also decrease. If the patient does vomit, carefully roll them onto their side, clear the airway, roll them back and continue Rescue Breathing or CPR.

Facial Trauma - This can be especially troublesome. If the patient has extensive facial trauma it may be impossible to ventilate them. Be sure that 911 has been called immediately and do the best you can to get oxygen into the patient. If the patient requires CPR and you are unable to ventilate due to the facial trauma, continue with just chest compressions until help arrives.

## CHOKING ADULT

People can choke on just about anything that goes in their mouth. One of the leading causes of choking in adults is meat or other foods. When the object is swallowed, instead of sliding down the esophagus to the stomach, it blocks the trachea or windpipe. This poses a huge threat to the person's life. If the object is not cleared within a few minutes the lack of oxygen may cause permanent brain damage or even death.

## TREATMENT FOR A CHOKING VICTIM

- ✓ Ask the patient if they are choking. If they are coughing and can get some air, encourage them to continue coughing until the object is expelled.
- ✓ If there is another person with you, have them Call 911 while you are assisting the patient.
- ✓ If the patient is unable to talk but is still conscious, step behind the patient and wrap your arms around their abdomen. You will need to perform abdominal thrusts. Find the top of the patient's hips with one hand. Slide your hand to the center of the abdomen. With the other hand, make a fist and place it above your first hand with your thumb against the patient's abdomen. With both hands, push quickly inward and upward until the object is expelled, the patient can breathe on their own, or they become unconscious.



- ✓ If the patient becomes unconscious start CPR. Open the airway, Look, Listen, and Feel. If you are unable to see, hear or feel anything look into the airway to see if you can visualize the object. If you do not see anything begin chest compressions.



- ✓ Never blindly stick your fingers into the patient's mouth to retrieve the object. This can lodge the object further into the airway.

- ✓ If you are alone and choking, Call 911 immediately. Even if you are unable to speak the dispatcher will know that there is a problem and send help.

## CHOKING CHILD

The procedures for a choking child are very similar to that of an adult with a few exceptions.

- ✓ Remember that children are smaller and will not require as much force as an adult when performing the abdominal thrusts.
- ✓ You also want to remember that you will probably need to kneel down to perform adequate abdominal thrusts.
- ✓ NEVER do a blind finger sweep into a child or infant's mouth. You may push the object further back into the airway.

## CHOKING INFANT

- ✓ CALL 911
- ✓ Place baby on one arm, with head pointing toward the ground. Let gravity help you! Give the baby 5 back blows.
- ✓ Turn the baby over. Give 5 chest compressions between the nipple line.
- ✓ Continue this procedure until the object is dislodged or the baby becomes unconscious.
- ✓ If the baby becomes unconscious you will attempt to give the baby a breath.



- Give 5 firm back blows
- Turn the baby over
- Give 5 chest compressions
- Look into the mouth. Do you see anything? If no, go to next step..
- Repeat this pattern until EMS arrives.



# HEART DISEASE

One of the leading causes of cardiac arrest is heart disease. Some causes of heart disease are preventable and some are not. These causes are called “risk factors.” Research has shown that these risk factors can significantly increase the likelihood of someone developing heart disease. The more risk factors, the greater the chance of heart attack or stroke.



## RISK FACTORS THAT CANNOT BE CHANGED:

- ✓ Age
- ✓ Gender
- ✓ Race
- ✓ Family History

## RISK FACTORS THAT CAN BE CHANGED

- ✓ Smoking Tobacco
- ✓ High Cholesterol
- ✓ High Blood Pressure
- ✓ Low physical activity level
- ✓ Obesity
- ✓ Stress

✓ Diabetes

## CHEST PAIN

While there are many different causes for chest pain, treat all chest pain as if it were a possible heart attack. A heart attack usually occurs when the vessels that supply the heart with oxygen become blocked or partially blocked. As the heart demands oxygen the vessels are unable to deliver it. In return, the muscle begins to die resulting in the heart attack. This condition is dangerous not only because it can result in death, but if the patient survives they may be left with impaired heart function.

### MOST COMMON SIGNS & SYMPTOMS OF A HEART ATTACK

- ✓ Chest Pain or discomfort
  - Can be described as crushing, pressure, squeezing sensation, or a tight band around their chest.
- ✓ Pain in the jaw, neck or arms (usually the left).
- ✓ Weakness
- ✓ Nausea or Vomiting
- ✓ Sweating
- ✓ Shortness of Breath
- ✓ Loss of Consciousness
- ✓ Sudden Death

These are only some of the signs and symptoms that may be seen with a heart attack. A heart attack victim may show all of these or they may show none of them. The most important thing to do when someone is experiencing signs of a possible heart attack is to Call 911 immediately.

### TREATMENT

- ✓ Call 911.
- ✓ Have the patient sit down or lie down and rest.

- ✓ Remind the patient if they have been prescribed Nitroglycerin to take it according to their doctor's orders.
- ✓ Monitor the patient's pulse rate and respirations.
- ✓ Be prepared to perform CPR. If you are trained to use an AED have that immediately available.

## RESPIRATORY EMERGENCIES

There are two types of breathing: effective and ineffective. Effective breathing means that the body is getting all the oxygen that it needs as well as getting rid of all the carbon dioxide that it needs. Inadequate breathing means that the body is either not getting enough oxygen, not getting rid of enough carbon dioxide or both. If ineffective breathing is left untreated the person could go into respiratory failure, or worse, die from the condition. When someone reaches a stage of ineffective breathing they begin to feel short of breath. For most people this is a terrifying experience.

### Signs of Effective Breathing

- ✓ Breathing between 12 & 20 breaths per minute (bpm)
- ✓ Chest rises and falls with ease.
- ✓ Pink, warm & dry skin
- ✓ Regular breathing pattern

### Signs of Ineffective Breathing

- ✓ Breathing <8 bpm or >24 bpm
- ✓ Pale or blue skin
- ✓ Cool, clammy skin
- ✓ Shallow or irregular breathing

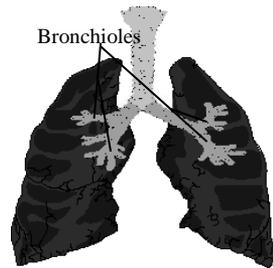
# Asthma

Asthma is a disease that results in the narrowing of the air passages in the lower airway. More specifically, these air passages are called the bronchioles. The bronchioles branch off the trachea and feed into the lungs, supplying the lungs with oxygen. In patients with asthma these passages can spasm either from a muscle spasm or excess mucous. These spasms leave the patient feeling short of breath. As the patient fights to breathe they are able to inhale but struggle to exhale the breath. This can produce a wheezing sound. If left untreated the passages can become so narrow that the patient stops breathing.

Attacks can be brought on by a number of causes ranging from exercise, stress, or allergies. Most asthma patients have a prescribed inhaler that they use to help clear an asthma attack. An asthmatic patient's condition can change very rapidly, therefore, it is important to get help immediately if the patient's medication is not helping.

## WHAT TO LOOK FOR:

- ✓ Shortness of Breath
- ✓ Wheezing
- ✓ Unproductive cough
- ✓ Restlessness, anxiety or confusion
- ✓ Rapid Breathing
- ✓ Pursed lips or nasal flaring



## TREATMENT

- ✓ CALL 911
- ✓ If patient has not already done so, have them use their inhaler or medication.

- ✓ Keep patient calm. Many asthma attacks are made worse due to excitement or fright.
- ✓ Allow patient to find a position of comfort. One that allows them to breathe easier.

## COPD

COPD is short for *Chronic Obstructive Pulmonary Disease*. This term refers to diseases such as emphysema and chronic bronchitis. This condition affects up to 20% of the adult population in the United States. COPD is usually the cause of prolonged exposure to cigarette smoke. These patients are generally over 50 years old and have a long history of smoking. They usually have a chronic cough and like asthma patients, have difficulty exhaling air.

These patients also can have their condition deteriorate rapidly. Regardless of the cause, for respiratory distress call 911 and have the patient rest in a position of comfort. EMS will have the proper tools to assist these types of patients.

## Hyperventilation

Many things can cause people to hyperventilate including anxiety attacks, stress, fear, or even an underlying medical condition. It is caused by the patient breathing too fast which causes the body to get rid of too much carbon dioxide. This makes the patient feel short of breath and thus a vicious cycle has begun.

### WHAT TO LOOK FOR:

- ✓ Anxiety
- ✓ Numbness or tingling in the lips, hands or feet
- ✓ Cramping in the hands or feet
- ✓ Loss of consciousness

### TREATMENT

- ✓ Call 911
- ✓ Assess the ABCs
- ✓ Try to calm the patient and have them take slow, deep breaths
- ✓ Since the cause could be a serious medical condition, do not have the patient

# ALLERGIC REACTIONS

An allergic reaction is caused by the body's response to a certain substance. This response can be mild or severe and can occur in a very short amount of time. A mild response might be red and itchy skin, but a severe response could be swelling of the airway. If a patient reacts within a few minutes of the contact of the substance and is displaying signs of shock, call 911 immediately as this patient is possibly having a life-threatening emergency.

## WHAT TO LOOK FOR:

- ✓ Burning, itching or red skin
- ✓ Hives anywhere on the body.
- ✓ Possible chest pain
- ✓ Shortness of breath and/or wheezing respirations
- ✓ Swelling of the face, tongue or airway.
- ✓ Restlessness
- ✓ Loss of consciousness
- ✓ Signs of shock –  
See Pulse Rule #9

## TREATMENT

- ✓ Call 911
- ✓ Assess the ABCs

### Possible Causes of Allergic Reactions

- ✓ Food (i.e. peanuts, shellfish)
- ✓ Medications
- ✓ Insect Bites
- ✓ Bee Stings
- ✓ Chemicals

- ✓ Ask if patient has medications for this condition and if so, if they have taken it.
- ✓ Monitor patient's breathing and be prepared to take over if patient stops breathing.

## DIABETIC EMERGENCIES

### Hypoglycemia

One of the common diabetic emergencies you may encounter is hypoglycemia or low blood sugar. This emergency occurs when the patient has too much insulin in their system. This can happen because the patient hasn't eaten on time, they have been under stress, they have been exercising, or they have injected themselves with too much insulin. The body then begins to burn all of the remaining sugar trying to keep up with the insulin. The result of this is usually an altered level of consciousness that leads to unconsciousness, then death.

People with diabetes often wear medical alert tags that identify them as a diabetic should they become unconscious or otherwise incapacitated. Sometimes people with low blood sugar can act like they are intoxicated, when in fact they are having a true medical emergency.

### WHAT TO LOOK FOR:

- ✓ Known diabetic
  - If you do not know the patient, look for a medical alert necklace or bracelet.
- ✓ Rapid change in behavior
- ✓ Altered level of consciousness (Patient may be combative, angry, or "out of it")
- ✓ Pale, clammy skin
- ✓ Dizziness
- ✓ Fainting, seizure or coma



## TREATMENT FOR DIABETIC PATIENTS



- ✓ Call 911
- ✓ Assess ABCs
- ✓ If the patient is conscious, ask them 2 questions:
  - *Are you a diabetic?*
  - *Can you swallow?*
    - If they answer "yes" to both these questions, give them sugar.
      - This can be orange juice, soft drinks, or even plain white sugar.
      - Never give anything with artificial sweetener such as a diet soda.
- ✓ If the patient is unconscious or not alert, wait for EMS arrival before trying to give anything by mouth..

## STROKE

A stroke or brain attack occurs when the brain's oxygen supply is suddenly cut off. This can result from an artery in the brain that begins to bleed or a clot that becomes lodged somewhere in the brain. The end result can be devastating for the patient. As you will recall from the chapter on heart disease, the risk factors that determine who is at risk for heart disease also applies to stroke. Now there are TWO good reasons to make positive lifestyle changes.

Time is crucial in a stroke victim! There is a short window of time when certain medications can be given that may drastically improve the patient's overall

outcome. People have been known to arrive at the hospital with significant paralysis and other symptoms, yet leave the hospital with no deficits.

#### WHAT TO LOOK FOR:

- ✓ Headache
- ✓ Dizziness
- ✓ Confusion
- ✓ Loss of Consciousness
- ✓ Numbness or paralysis on one side of the body, including the face
  - The patient may also describe the extremity as feeling “heavy”
- ✓ Slurred Speech
- ✓ Unable to speak.
  - Some stroke victims can understand what is being said to them, but are unable to get the words out. Sometimes this may be the only sign that you will see.

#### TREATMENT

- ✓ CALL 911.
- ✓ Assess ABCs
- ✓ Have the patient sit or lie down.
- ✓ If the patient has an altered level of consciousness, place them in the recovery position with the affected side down.
- ✓ Treat for shock and keep the patient warm.

# SEIZURE

Seizures are caused by irregular electrical brain activity. When someone thinks of seizures generally they think about the wild jerking movements by the patient. Not all seizures have that type of activity however. Some people may have seizures where they just stare at something. Others have Petit Mal seizures where only one side of their body moves. People have seizures for many different reasons but every first-time seizure is an emergency. This is the body's way to signal that there is something wrong. When someone is in seizure the brain is not getting oxygen. This could result in death of brain tissue and permanent brain damage.

There are medications that are very effective at controlling seizures. Most people with a history of seizures will be on these types of medications, however, if they have stopped or forgotten to take their medication they could be at risk for a seizure. Many people with epilepsy might even be able to tell you when they are about

## Possible Causes of Seizures

- ✓ **Epilepsy**
- ✓ **Brain Tumor**
- ✓ **Infection**
- ✓ **High Fever**
- ✓ **Diabetes**
- ✓ **Stroke**
- ✓ **Head Injury**
- ✓ **Drug Overdose**

to have a seizure. Some report having an "aura" just before a seizure. This could be a certain taste, smell or general feeling they have just before a seizure.

Do not be surprised if an epileptic patient refuses your help after the seizure has stopped. Unless you suffer from seizures these patients will know more about their condition than you and have probably dealt with similar episodes many times before. They have a routine they go through before and after a seizure.

Another type of seizure that you are likely to encounter is a febrile seizure. This type of seizure is generally seen in children and is caused from a high fever. The seizure usually lasts just a minute or two but for the parent witnessing it the seizure appears to last forever.

A seizure consumes a lot of energy and oxygen. After the seizure the patient will be tired, groggy and confused. The patient will slowly become more coherent over time until they return to their normal mental state. This is called the *postictal* phase. This phase of the seizure can last anywhere from just a few minutes up to 30+ minutes. Be aware that a postictal patient may also act aggressive or combative. Their body has just taken a tremendous insult and while it is trying to regain oxygen and return to normal, the patient may act out of character. Do not take it personally and do not lash out at the patient. They cannot control how they are acting when they are postictal.

### **WHAT TO LOOK FOR:**

There are different types of seizures, so signs and symptoms may vary.

- ✓ No movement, altered level of consciousness
- ✓ Abnormal eye movement
- ✓ Shaking or convulsing of the upper & lower extremities.
- ✓ High Fever
- ✓ Incontinence

### **TREATMENT**

- ✓ CALL 911
- ✓ Protect the patient. If you witness the start of the seizure, help the patient to the ground.
- ✓ Clear away the area around the patient.
- ✓ Do not try to stop the convulsing and do not place anything in the mouth.

**PULSE RULE #0 – Treat the Worst Here for the**



## SHOCK

Shock develops when the body is not able to get enough oxygen to its tissues. The most common cause of shock is blood loss; therefore, this is the one we will focus on. When the body is injured or otherwise bleeding, it will try to compensate for the loss by making the blood vessels smaller. This moves the blood away from the extremities and more toward the core of the body. It tries to keep blood flow to the vital organs such as the brain, heart, lungs and kidneys. As the patient continues to bleed the body tries harder to compensate. The body eventually comes to a point where it is unable to stop or control the bleeding and cannot keep up with oxygen demands from the vital organs. The body will begin to go into shock. One of the most important things that you can do to provide care for a patient with the potential for shock is to prevent it. Once the body is unable to compensate it will be much more difficult to reverse the shock. Once the body reaches the point where shock is irreversible, death soon follows.

### *The Golden Hour*

The “Golden Hour” refers to the first sixty minutes after the patient has sustained a significant injury. During this time the patient’s body is trying to compensate for the injury. If the patient can be treated and transported to the hospital within this time-frame their chances for survival are greatly increased. Your

goal as a first aid provider is to recognize the injury, activate the EMS system or call 911 as quickly as possible, and treat for shock while waiting for EMS to arrive.

### WHAT TO LOOK FOR:

- ✓ Altered level of consciousness
- ✓ Pale, cool, & clammy skin
- ✓ Shallow, rapid breathing
- ✓ Weak, rapid pulse
- ✓ Blue lips
- ✓ Nausea and/or vomiting

### TREATMENT

- ✓ CALL 911
- ✓ Assess the ABCs.
- ✓ Control any bleeding that you can see.
- ✓ If there is no suspected spinal injury, lower extremity fractures or pelvis fractures, place patient in the shock position.
- ✓ If you suspect any of the above, lay the patient down flat and have them lie as still as possible.
- ✓ Keep the patient warm
- ✓ Even if the patient states they are thirsty, do not give anything by mouth!



The Shock Position

## POISONING EMERGENCIES

**Poison:** Any substance that is toxic to the body.

There are four ways that someone can be poisoned: Inhalation, Ingestion, Absorption, or Injection.

### Inhaled Poisons

Inhaled poisonings occur when a person has inhaled a vapor, gas or spray. Examples of inhaled poisons are: Natural Gas, Carbon Monoxide, chlorine, ammonia, insect sprays, etc.

Your scene survey is very important in this instance. If the scene is unsafe, **DO NOT ENTER!** The same fumes or vapors that brought down the patient will likely harm you as well.

#### WHAT TO LOOK FOR:

- ✓ Shortness of Breath or not breathing
- ✓ Coughing
- ✓ Altered Level of Consciousness
- ✓ Dizziness
- ✓ Headache
- ✓ Nausea or vomiting
- ✓ Pale skin

## TREATMENT

- ✓ CALL 911
- ✓ Do not attempt to care for the patient if the scene is unsafe.
- ✓ If the scene is safe for you to enter, take patient to a well ventilated place.
- ✓ Once it is safe, assess ABCs.
- ✓ Monitor patient and be prepared to provide CPR or rescue breathing.

## Carbon Monoxide

Carbon Monoxide can be found in places such as fires, car exhaust, or furnaces. Without proper ventilation carbon monoxide can be very deadly. It can kill or impair a person without them even knowing it. This colorless, odorless gas can make the victim feel that they may be ill with the flu when actually they are slowly being poisoned. This is most often seen during the winter months when people are more apt to use their furnace or other alternative heating sources indoors. The furnace may be malfunctioning and the victims not know it. Be aware that if an entire family has fallen ill at the same time with the same symptoms, this could possible be the cause.

Signs and symptoms are similar to inhaled poisons, and the treatment is the same.

## Ingestion

Ingestion is the most common type of poisoning. About 80% of all poisonings are through ingestion. This is especially common in children as they are more apt to place something harmful in their mouth. It is important to find out what the substance was that has been ingested and how much was ingested. In the case of medications, if the patient is unable to tell you how many they ingested find out how many pills were in the bottle to start with, what the fill date was, and figure out how many pills should be left. Then, compare that number to how many are actually left. This will give you a rough idea of how many are missing and were possibly taken. If



the ingestion was a plant or flower, take a sample to give to EMS crews when they arrive.

#### WHAT TO LOOK FOR:

- ✓ Altered level of consciousness or unconscious.
- ✓ Seizures
- ✓ Nausea, vomiting or diarrhea.
- ✓ Burns or stains around the mouth.
- ✓ Abnormal odors at the scene, or coming from the patient.
- ✓ Pain in the mouth & throat.

#### TREATMENT FOR INGESTED POISONS

- ✓ CALL 911
- ✓ Assess ABCs
- ✓ Call Poison Control (if you weren't already transferred by the 911 dispatcher)
- ✓ Follow the directions of Poison Control until EMS arrives.
- ✓ If the patient vomits:
  - Place in recovery position if altered level of conscious.
  - If alert & oriented, have patient sit up.
- ✓ Be prepared to perform rescue breathing or CPR.

## Absorption

Absorption poisonings occur when a toxic substance has entered the body through the skin. Most times you will see some type of damage to skin whether it is

a chemical burn or redness. As previously mentioned scene safety is paramount in these emergencies. Always make sure it is safe to enter before trying to provide aid.

### WHAT TO LOOK FOR:

- ✓ Skin damage
- ✓ Headache
- ✓ Altered Level of Consciousness
- ✓ Signs of shock

### Examples of Absorbed Poisons

- ✓ Poison Ivy/ Oak
- ✓ Mercury
- ✓ Chemicals
- ✓ Lead
- ✓ Weed Killer

### TREATMENT

- ✓ CALL 911 & Poison Control.
- ✓ Scene Survey
- ✓ Avoid contact with the substance.
- ✓ Remove the substance from the patient, including brushing off dry chemicals.
- ✓ Remove contaminated clothing.
- ✓ Flush the skin for at least 20 minutes unless it is a chemical that reacts with water.
- ✓ Wash skin with soap and water.

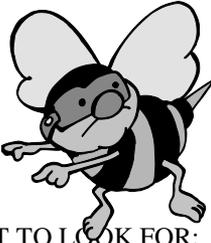
## Injected

There is a wide range of ways one can become injected with a poison. One way is through an insect bite or sting. While you might not think of this as a “poison,” if you are allergic to the venom, it will act as a poison in your system. You will see allergic reactions and possibly anaphylactic shock with these patients. Please refer to the “Allergic Reactions” section for the signs to look for and treatment.

Another source of injected poisons is through needles. Drug users commonly use hypodermic needles to inject the drug into their bloodstream. The drug takes effect very quickly this way. Once the drug is injected there is no way to

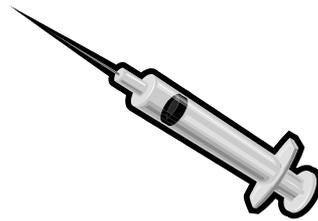


reduce or take away the effects. These patients may become ill or unconscious very quickly.



**WHAT TO LOOK FOR:**

- ✓ Altered level of consciousness or unconscious.
- ✓ Redness of the skin.
- ✓ Puncture wounds to the skin.
- ✓ Pain, swelling or redness at the wound site.
- ✓ Nausea or vomiting
- ✓ Headache
- ✓ Dizziness
- ✓ Allergic reaction or Anaphylactic Shock.



**TREATMENT**

- ✓ CALL 911
- ✓ Determine that the scene is safe. This also includes watching for exposed needles which may poke you.
- ✓ Assess ABCs.
- ✓ Refer to “Bites & Stings” section for treatment of such injuries
- ✓ Try to determine what substance was injected.
- ✓ Be prepared to assist ventilations or start CPR.

## ANIMAL BITES

An animal bite can be a very serious injury. If the skin is punctured it leaves the patient at risk for infection. The bite can also damage an artery or vein causing serious bleeding. Never try to capture the animal after it has bitten someone. This could put you in danger if the animal turns on you.

### WHAT TO LOOK FOR:

- ✓ Bleeding, bruising or deformity at the bite area.
- ✓ Pain at the site.

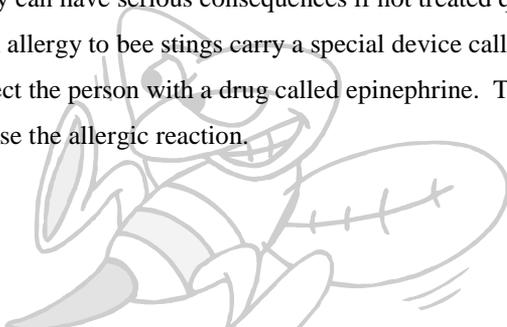


### TREATMENT

- ✓ CALL 911
- ✓ Determine scene safety. Ensure that the animal is not a threat.
- ✓ Assess the ABCs.
- ✓ Control bleeding as needed.
- ✓ Dress & bandage wounds.

## BEE STINGS

A bee sting becomes dangerous when the person stung has an allergy to the venom. This allergy can have serious consequences if not treated quickly. Some people who have an allergy to bee stings carry a special device called an epi-pen. This device can inject the person with a drug called epinephrine. The epinephrine will hopefully reverse the allergic reaction.



## WHAT TO LOOK FOR:

- ✓ Redness, pain or swelling at the sting site.
- ✓ Hives, redness or itching over entire body.
- ✓ Possible chest pain
- ✓ Shortness of breath and/or wheezing respirations
- ✓ Swelling of the face, tongue or airway.

## TREATMENT:

- ✓ Loss of consciousness
  - ✓ CALL 911 IMMEDIATELY
- ✓ Signs of shock
  - ✓ Assess ABCs
  - ✓ If patient has been prescribed an epi-pen and are displaying shortness of breath or swelling in their airway, help them retrieve it so they may self-administer the medication.
  - ✓ If a stinger is present remove it with a scraping motion. Use a hard straight edge such as a credit card or driver's license.
  - ✓ Continue to monitor the ABCs and if patient becomes unconscious prepare for rescue breathing or CPR.

# ENVIRONMENTAL EMERGENCIES

## Heat Emergencies

**Hyperthermia:** Exposure to heat that causes the core body temperature to rise above normal.

During regular daily activities, exercise, or on a very hot day the body attempts to maintain the body at its optimal temperature of 98° F. One of the ways this is accomplished is through sweating. When the body loses its ability to adequately lose the heat, the person can become very ill, and if left untreated they

could die. There are three main types of heat emergencies: heat cramps, heat exhaustion and heat stroke.

## Heat Cramps

Heat cramps are most likely caused by an electrolyte imbalance. The body loses heat and fluids faster than it is being replaced. This condition is usually seen after a person has been exercising or been inside a hot environment. It results in severe cramping of the muscles usually in the legs or abdomen.

### WHAT TO LOOK FOR:

- ✓ Sweating
- ✓ Cramping of the legs or abdomen
- ✓ Normal body temperature

### TREATMENT

- ✓ Take patient to a cooler environment.
- ✓ Have the patient rest until cramps ease.
- ✓ Have patient drink plenty of fluids. Do not give patient any type of salty drinks. They need to replace the fluid, not the electrolytes.

## Heat Exhaustion

Heat exhaustion occurs when the body begins to sweat but then is unable to cool down. This results in more sweating and the person then loses too much fluid and becomes severely dehydrated. This is most commonly seen in people who are exercising or working in a hot environment.

### WHAT TO LOOK FOR:

- ✓ Prolific sweating.
- ✓ Possible leg or abdominal cramping.
- ✓ Pale, cool skin
- ✓ Thirst



- ✓ Exhaustion
- ✓ Nausea or vomiting
- ✓ Dizziness or weakness
- ✓ Elevated body temperature

## TREATMENT

- ✓ Move patient to a cooler environment.
- ✓ Remove any extra layers of clothing. Be careful not to cool this patient too quickly as the body will begin to shiver and result in more body heat being produced.
- ✓ If the patient is NOT nauseated, have them SLOWLY drink fluids such as water or an electrolyte solution.
- ✓ If the patient is conscious, place them in the shock position (lying on back with legs elevated).
- ✓ Continue to monitor ABCs.
- ✓ CALL 911 if:
  - The patient's condition does not improve or it gets worse,
  - The patient has an altered level of consciousness.
  - The patient's body temperature remains high.
  - The patient has multiple medical problems, is very young or elderly.
  - You are uncomfortable treating the patient and believe that more advanced care is needed.

## Heat Stroke

This is the most serious of the heat emergencies. The body is no longer able to sweat and the core body temperature rises dangerously high. If left untreated, this condition will lead to certain death. This patient needs RAPID cooling.

WHAT TO LOOK FOR:

- ✓ Extremely high body temperature
- ✓ Altered level of consciousness or unconsciousness
- ✓ Hot, dry skin (although it may be slightly sweaty, typically it is dry)
- ✓ Coma
- ✓ Seizures

## TREATMENT

- ✓ CALL 911
- ✓ Assess ABCs
- ✓ Begin rapid cooling:
  - Move patient to cooler environment
  - Remove all clothing
  - Use wet towels, fans and/or ice packs to cool patient
- ✓ Continue to monitor ABCs until EMS arrives.

## Cold Emergencies

**Hypothermia:** When the core body temperature drops below normal.

There are two types of cold emergencies that you may have to deal with; frostbite and hypothermia.

### Hypothermia

When the body detects that it is too cold the body begins to shiver to produce heat. The more heat that needs to be produced the more inundated the body becomes. Soon it will not be able to keep up with the demand for heat and will start to shut down. The surprising thing about hypothermia is that it can occur even in warm temperatures. Depending on the person's age and medical health, hypothermia can strike on a 70° day. It can occur while someone is inside their house. The only

thing required for hypothermia to strike is that the body has to lose heat to its surrounding environment.

Mild hypothermia may only show some of these sign & symptoms, however the colder the patient the worse the symptoms will be.

#### WHAT TO LOOK FOR:

- ✓ Decreased core body temperature.
- ✓ Skin that is cool or cold to the touch.
- ✓ Shivering
- ✓ Altered level of consciousness.
- ✓ Memory loss
- ✓ Poor coordination skills
- ✓ Rigid muscles
- ✓ Weakness
- ✓ Speech problems
- ✓ Unconsciousness

#### TREATMENT

- ✓ CALL 911
- ✓ Assess ABCs
- ✓ Handle these patients VERY gently, as rough handling could cause their hearts to go into a dangerous arrhythmia.
- ✓ Bring patient to a warmer environment. Be careful not to overheat the patient, as rapid temperature changes can be dangerous in an already fragile body.
- ✓ Have patient lie down and rest.
- ✓ Remove any wet clothing and cover patient with a blanket.
- ✓ Monitor ABCs until EMS arrives.

## Frostbite

Frostbite occurs when the tissues of the body become frozen. The body is trying to keep the core and vital organs warm so it shunts blood from the extremities.

Shunting the blood leaves the extremities vulnerable to cold exposure. The tissues become very cold and eventually freeze. This is especially dangerous if left untreated because the cells can be irreversibly damaged. The most common places that frostbite occurs are the fingers, toes, ears and nose.

#### WHAT TO LOOK FOR:

##### *Early Stage*

- ✓ Blanching of the skin
- ✓ Cold, pain or numbness to area
- ✓ The area is still soft
- ✓ Patient will feel tingling when the area is warmed.

##### *Late Stage*

- ✓ White skin, that appears waxy
- ✓ Swelling
- ✓ Blisters
- ✓ The area feels hard
- ✓ When warmed, the area might appear purple.



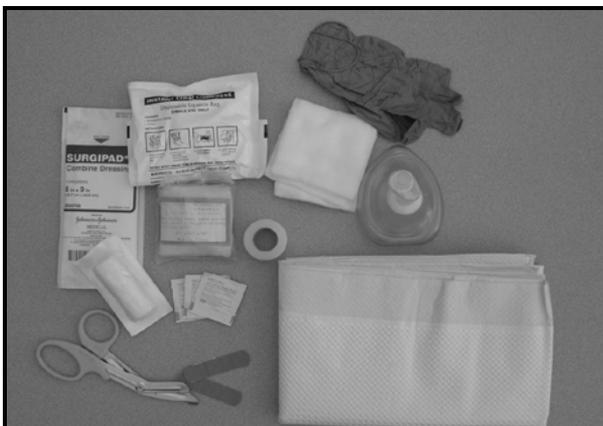
#### TREATMENT

- ✓ Perform scene survey.
- ✓ CALL 911
- ✓ Assess ABCs
- ✓ Move patient to a warmer environment and protect from further injury.

- ✓ Remove any wet or tight clothing.
- ✓ Cover the area with dry, sterile dressings.
  - Never rub or massage the area.
  - Keep blisters intact.
  - Do not attempt to rewarm the area.
- ✓ Monitor patient until EMS arrives.

## STOCKING YOUR FIRST AID KIT

- ✓ Band Aids
- ✓ Medical Tape
- ✓ Alcohol Wipes
- ✓ Cold Packs
- ✓ Eye Patch
- ✓ Gauze Bandage Rolls
- ✓ 4" x 4" Gauze Pads
- ✓ Latex or Synthetic Gloves
- ✓ Scissors
- ✓ Triangular Bandage
- ✓ Tweezers
- ✓ 5" x 9" Dressing
- ✓ Emergency Blanket
- ✓ Pocket Face Mask or other CPR barrier device





**AED**

## LIMITED IMMUNITY FOR THE USE OF SEMIAUTOMATIC EXTERNAL DEFIBRILLATORS

On June 11, 1998 a new law went into effect to protect those trained to use AEDs. The following is a copy of Substitute House Bill 2998. To view the full house bill, refer to chapter 70.54 RCW. In Oregon please refer to Senate Bill 313 (June 4, 1999).

- (1) As used in this section, "defibrillator means a semiautomatic external defibrillator as prescribed by a physician licensed under chapter 18.71 RCW or an osteopath licensed under chapter 18.57 RCW.
- (2) A person or entity who acquires a defibrillator shall ensure that:
  - a) Expected defibrillator users receive reasonable instruction in defibrillator use and cardiopulmonary resuscitation by a course approved by the Department of Health.
  - b) The defibrillator is maintained and tested by the acquirer according to the manufacturer's operational guidelines.
  - c) Upon acquiring a defibrillator, medical direction is enlisted by the acquirer from a licensed physician in the use of the defibrillator and cardiopulmonary resuscitation.
  - d) The person or entity who acquires a defibrillator shall notify the local emergency medical services organization about the existence and the location of the defibrillator; and
  - e) The defibrillator user shall call 911 or its local equivalent as soon as possible after the emergency use of the defibrillator and shall assure that appropriate follow-up data is made available as requested by emergency medical service or other health care providers.
- (3) A person who uses a defibrillator at the scene of an emergency and all other persons and entities providing services under this section are immune from civil liability for any personal injury that results from any act or omission in the use of the defibrillator in an emergency setting.
- (4) The immunity from civil liability does not apply if the acts or omissions amount to gross negligence or willful or wanton misconduct.
- (5) The requirements of subsection (2) of this section shall not apply to any individual using a defibrillator in an emergency setting if that individual is acting as a good samaritan under RCW 4.24.300.

*So, what does this mean?*

This law means that in order to obtain an AED, you must follow these guidelines, and in doing so you are granted immunity from civil actions that may be brought against you as a result of the machine's use. So here it is in plain English:

To qualify for limited liability follow these guidelines:

- ✓ Obtain a prescription from a Washington State Certified Physician or Osteopath.
- ✓ Become trained to use the AED. You must use a program approved through the Washington State Department of Health.
- ✓ You must maintain and test the AED per the manufacturer's recommendations.
- ✓ You must appoint a physician to act as a medical director to oversee the AED use. This physician must be licensed in the use of AEDs and CPR.
- ✓ You must notify the local EMS agencies and make them aware that an AED is on site and its exact location.
- ✓ You must call 911 or your local equivalent as soon as possible after the emergency use of the AED.
- ✓ If requested, you must provide the data from the AED to emergency services personnel or other health care providers.
- ✓ Treat the patient within your scope of practice without gross negligence or further injury.

## AED OVERVIEW



AED: Automated External Defibrillator. A machine used in cardiac arrest that determines the patient's heart rhythm and if needed, uses electricity to correct an abnormal rhythm. This machine is also known as a semiautomatic external defibrillator.

Arrhythmia: an abnormal heart beat.

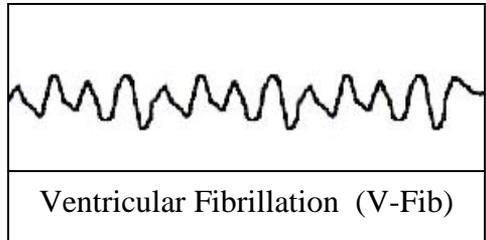
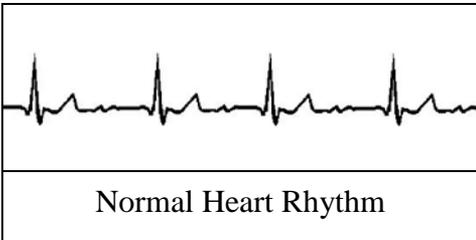
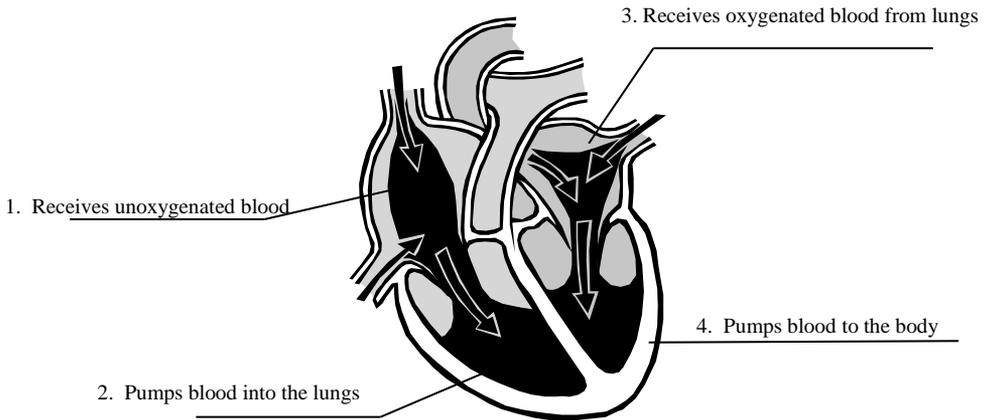
Sudden Cardiac Death: Resulting in cardiac arrest, sudden cardiac death occurs when the heart suddenly stops beating or develops a dangerous arrhythmia that is not life-sustaining. Early use of an AED can reverse sudden cardiac death in some cases.

Cardiac Arrest: When the patient is unconscious with no respirations and no pulse. Cardiac Arrest is determined during your initial ABCs assessment.

There are four chambers of the heart; the left and right atrium (on top), and the left and right ventricle (on the bottom). When all is well the right atrium receives blood from the body. It passes it to the right ventricle where it is pushed into the vessels of the lungs to get oxygenated. It then comes back to the left atrium down to the left ventricle and then pushed out to the body to re-oxygenate all the tissues. This process is all driven through an elaborate electrical system that stimulates that heart to beat. All the cells of the electrical system must be working together to achieve this complicated task. Sometimes, however, the cells start sending electrical

impulses at the wrong time. The heart gets confused and is unable to beat properly. Instead of beating, the heart “quivers”, producing an arrhythmia called ventricular fibrillation. Often times this is seen as sudden cardiac death. The patient will suddenly become unconscious with no pulse. This is the type of condition that the AED will detect and defibrillate. The defibrillator will send an electrical impulse through the heart that will hopefully “reset” the cells. It causes the cells to stop for a brief period and then restart. The hope is that when the cells restart, they will all be working together again.

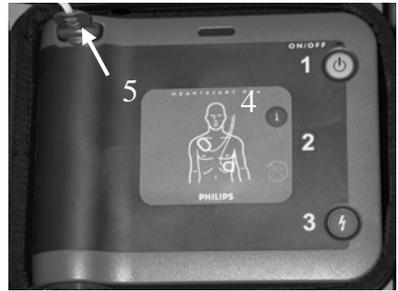
It is important to catch this rhythm as early as possible because the heart is not beating, and therefore the body is not getting any oxygen. The body will only be able to tolerate this rhythm for a short time before going into a rhythm that cannot be shocked with the AED. Early CPR can prolong the arrhythmia for a short time. CPR will hopefully buy a few minutes until an AED can be applied.



The rhythm on the left is what a normal heart should look like if placed on a heart monitor. The rhythm on the right is what the heart looks like when it is “quivering”. The AED will not shock a normal rhythm.

## THE AED MACHINE

1. Power Button
2. Self Analyzing
3. Shock Button
4. Information Button
5. Plug in electrodes



### Operation of the AED Machine

- ✓ Scene Survey. Is the scene safe for you to enter?
- ✓ CALL 911, retrieve the AED and bring it to the patient.
- ✓ SPECIAL NOTE: If patient is 1 to 8 years old, perform 2 minutes of CPR (200 compressions for 2 minutes) before applying and using the AED machine.
- ✓ Assess ABCs. If CPR is already in progress, apply the AED machine and allow it to analyze the patient.
  - Remove clothing from the patient’s chest and attach the AED electrodes to the patient’s chest.
  - One electrode on the upper right chest.
  - The other under the left breast.
  - Some electrodes have pictures showing proper placement.
  - Make sure the electrodes are attached securely to the chest.
- ✓ Place the AED at the patient’s head, plug in the electrode wires to the machine and turn it on.

- ✓ Press the “analyze” button.
- ✓ If shock is advised ensure everyone is clear and press the “shock” button.
- ✓ Immediately perform two minutes of CPR. After two minutes stop CPR and press the “analyze” button. Be sure that no one is touching the patient when the machine is analyzing.
- ✓ If shock is advised, shock patient again. If no shock is advised continue CPR.
- ✓ Continue until EMS arrives.

\* If you forget the sequence of actions the AED machine should prompt you what to do and when to do it.

### **Considerations for use of the AED**

- ✓ AEDs may be used on any patient EXCEPT infants under 1 year of age. You should use the adult electrode pads on any patient 8 years old and older. For patients 1 year to 8 years old, special pediatric electrode pads should be used. These special pads reduce the amount of energy delivered by the AED machine. If pediatric pads are unavailable, use adult electrode pads.
- ✓ When the chest is exposed check for any type of medication patch on the patient. It will need to be removed prior to placing the electrode patches on the patient.
- ✓ If the patient is hypothermic, limit the amount of shocks to 3 and continue CPR until EMS arrives.
- ✓ Do not place the electrode patches over an implanted defibrillator or pacemaker. These are generally found near the left shoulder, just below the collarbone.
- ✓ Avoid placing the electrodes over a traumatic injury.
- ✓ Avoid contact with metal objects while using the AED. Be sure to check the surface that the patient is lying on.

### **Precautions for the use of an AED**

- ✓ Never apply an AED to a patient who is NOT in cardiac arrest.
- ✓ Ensure that CPR has stopped and no one is moving the patient when the machine is analyzing.
- ✓ When shocking the patient, if you are operating the machine, it is YOUR responsibility to ensure that no one is touching the patient when you shock.
- ✓ This device uses an electrical current! If the patient is in the water remove them before applying the AED. Furthermore, ensure that the patient's chest is dry before applying AED.

### **Suggested Refresher Training**

- ✓ Pulse AED certification cards are valid for 2 years from the issue date, however, since this skill is not used often, we recommend refresher training every year.

## SAMPLE MEDICAL DIRECTOR AED PROTOCOL

### I. Initial Intervention

- A. Initial assessment (ABC's)
- B. If no pulse and UNWITNESSED arrest:
  - 1. **CPR** for 2 minutes.
  - 2. Attach defibrillation electrodes and press **Analyze**. Do Not Delay CPR
- C. If no pulse and Witnessed arrest:
  - 1. CPR, attach defibrillation electrodes and press **Analyze**. Do not delay CPR

### II. Defibrillation Sequence

- A. If shock advised, **defibrillate**..
  - 1. **CPR** for 2 minutes then check pulse
  - 2. If no pulse press **Analyze**
  - 3. **Defibrillate**. as prompted
- B. **CPR** for 2 minutes then check pulse
  - 1. If no pulse press **Analyze**
  - 2. **Defibrillate** as prompted
- C. Repeat until arrival of ALS personnel  
If V-fib persists, repeat CPR, analyze, defibrillate sequence until "No Shock Advised".  
-Note- Continue sequence until V-fib no longer present or patient converts to perfusing rhythm.

### III. Patient Regains Pulse (Return of Spontaneous Circulation)

- A. If the patient regains pulse or pulse present during the above sequence:
  - 1. Assess vital signs.
  - 2. Support airway and breathing.

#### IV. Other Considerations

- A. "No Shock Advised" and no pulse present
  1. Resume CPR and Re-Analyze after 2 min.
  2. Submit record to the MPD's office.

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For more information on Pulse Training Programs visit:  
[www.PulseFirstAid.com](http://www.PulseFirstAid.com)