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Intro - Purpose

First Aid/CPR Why are you here?

Accidents are going to happen whether you are at work, home or play. According to recent statistics, \$48.2 billion is spent by insurance groups on injuries in the workplace each and every year.

While safe practice at home and at work can help reduce these injuries, the fact of the matter is statistics do not lie. So, because injuries and illnesses will occur, an effective solution is to have effective first aid. Effective and quick response times can make the difference between survival and death.

In 2015, approximately 350,000 adults in the United States experienced nontraumatic out-of-hospital cardiac arrest (OHCA) attended by emergency medical services (EMS) personnel.

Despite recent gains, less than 40% of adults receive layperson-initiated CPR, and fewer than 12% have an automated external defibrillator (AED) applied before EMS arrival.

After significant improvements, survival from OHCA has plateaued since 2012. (American Heart Association)

Good Samaritan Laws

Because we want to encourage bystanders to help a person in need, all states have passed some sort of Good Samaritan Laws. These laws protect a bystander if they:

- Are providing care of only what they have been taught as a first responder.
- Are not careless in the delivery of the care.
- Receive no remuneration for the care they give.

Remember, you are not required to provide the full extent of what has been taught in this class, such as rescue breaths, but you have a moral responsibility to stay with the injured person until someone more experienced, such as an emergency responder is able to take over.

Initial Assessment/Emergency Scenes/Risk Assessment/Evaluation

When you come upon a situation where there is a need for first aid, there are several things that need to be considered:

- Is the scene safe. There may be spilt chemicals or gases that have leaked or spilled. If the accident is an automobile accident, then your personal safety is also a concern.
- If it is an accident involving down powerlines or electrical wires, do not approach the victim until it can be determined that the power has been deenergized.
- Your hesitancy may make a difference on the future of the injured person.
- Your personal safety by wearing personal protective equipment such as gloves and a face shield.

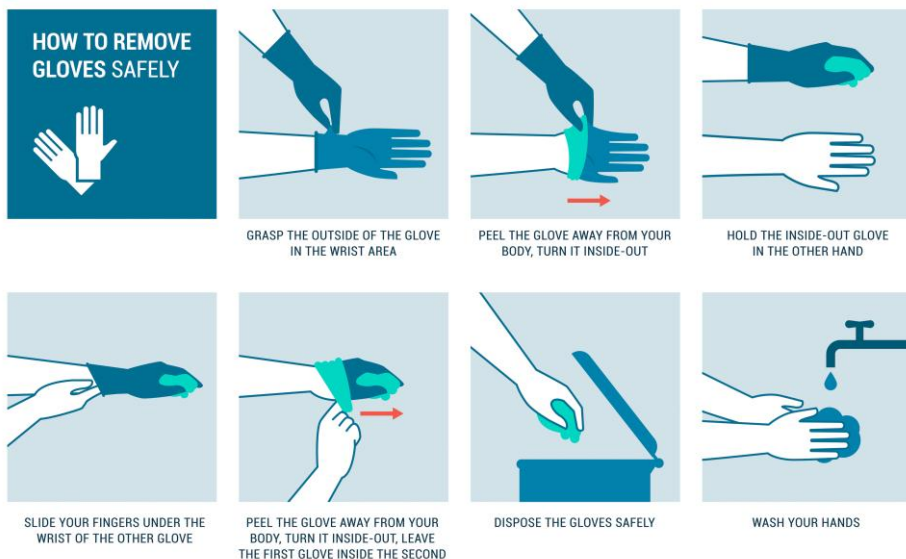
Infectious Bloodborne Diseases



Infectious diseases include HIV hepatitis B and C. HIV is a sexually transmitted disease and dies immediately upon exposure to air. Hepatitis B and C can live outside the body for up to 10 days and therefore of greater concern when providing first aid. This is why using proper PPE and clean up procedures are essential.

If there is an exposure to blood, it is important to secure the area and provide proper clean up procedures. Standard clean up involves a diluted bleach solution of 1:16 with water. This will be discussed later. Your company may have an infectious disease and pathogen program.

Skill Set: Glove Removal



After you have decided to help and the scene is safe, your quick thinking will be your next best decision. The goal of a first responder is to render first and then get someone else to replace you as soon as possible. This is typically an EMT or paramedic.

There are typically two situations that you would encounter, a responsive or unresponsive person. Everyone has the right to refuse aid. A normal person would not refuse help therefore an unresponsive person is considered to give implied consent.

If a person is clearly in need of aid, you can always call 911 and let them decide to render aid or ask for police

assistance. Again, once you have decided to help, remain with the person until someone with equal or greater ability is able to take over.

Once you have assessed the situation, the next step is to call 911. This decision needs to be made in the first few seconds of your assessment. In most situations 911 is the call but there are some areas that use a different system. Always know your emergency procedures before you need them. Sometimes this is a remote job where normal phone services are unavailable.

When you call 911 be ready to provide all the necessary details that might be needed for additional help such as:

- Address or crossroad where help is needed.
- Extent of the injuries or type of injury.
- Is the injured person responsive.
- Is a stroke or heart attack suspected.

Ideally it is best to have another person there to help with emergency care and communication on phone with dispatcher.

Unresponsive Patient



Approach the person and tap the shoulder and shout to see if they are responsive.

- Check for breathing. Do not check for a pulse. This should take less than 10 seconds. Once there is evidence of no breathing, immediately call 911 and begin CPR. If an AED is available have someone bring it to you. Gasping is not normal breathing.
- Three people involved is ideal; one person in charge and performing CPR, one person on the phone, and one person getting the AED.
- If they are breathing, either monitor them for breathing or put them in a recovery position. A reason for not moving might be if you suspect spinal injury.
- Check for obstructions in airway. Clear if easily done. Do not push an object further down the throat.
- Begin with chest compressions 2 inches deep and at a rate of 100-120bpm.
- Place victim on their back and kneel as close to their side as possible.

- With your upper body over theirs, arms straight and hands together, use gravity to depress their chest.
- Allow chest to fully recoil.
- Minimize interruptions.
- If giving rescue breaths, perform at 30:2 (compressions: breaths)
- Compressions alone are sufficient as long as 911 is on the way.
- If possible, change compressors every 2 minutes.
- Do not hesitate in giving CPR, your hesitancy reduces the chances of survival by 10% every minute. Even if the person is not having a heart attack, harm to the victim is low.

The biggest risk is not doing something. Whether it's concerns about legality, propriety or breaking bones, there is actually more potential harm by not doing or participating in providing bystander CPR when somebody collapses in front of you. If someone's heart has stopped, "they're already dead." So any problems caused by CPR are not as bad as not doing CPR.

If you're wary of breathing into a stranger, then do not. These days, training emphasizes hands-only CPR for the first few minutes, which has been shown to be as effective as conventional CPR with rescue breaths in the first few minutes after cardiac arrest in adults and teens.

Mouth-to-mouth resuscitation – two rescue breaths after every 30 compressions – is important, however, for infants and children and if someone's heart stopped because of choking or drowning. If you don't want to or do not feel confident, compressions-only is still great. Remember many people will not even stop to help.

ABCs

An easy way to remember the steps are **ABC**:

- **Airway**



- Clearing liquids and solids
- Recovery position

- **Breathing**



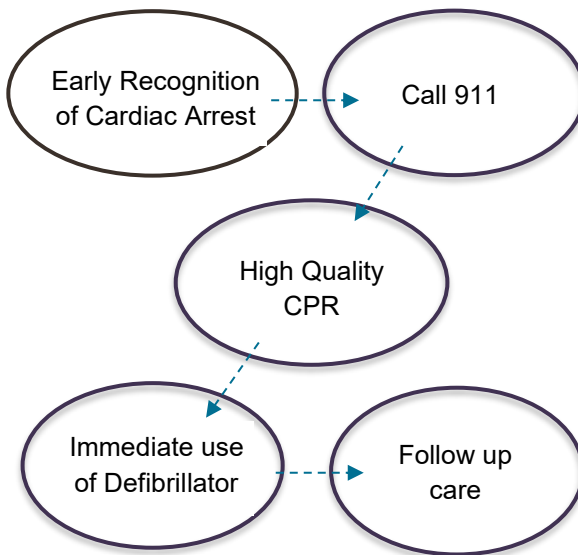
- Head tilt, chin lift

- **Compressions**

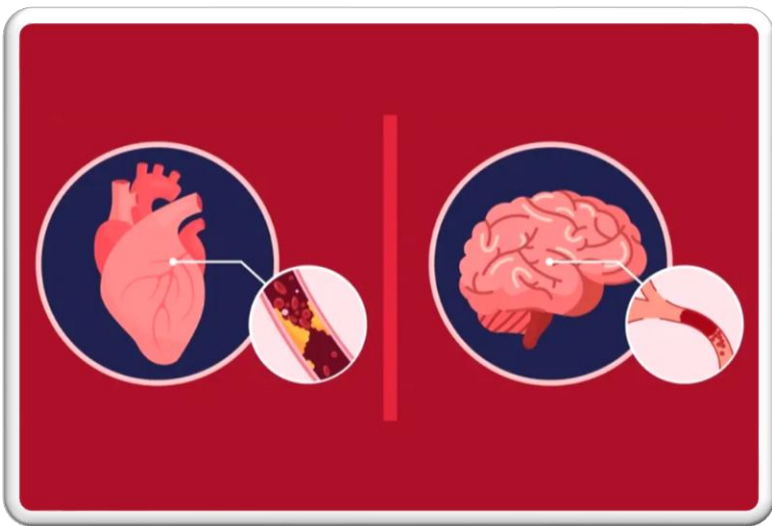


- Technique/Position
- Rate 100bpm-120bpm

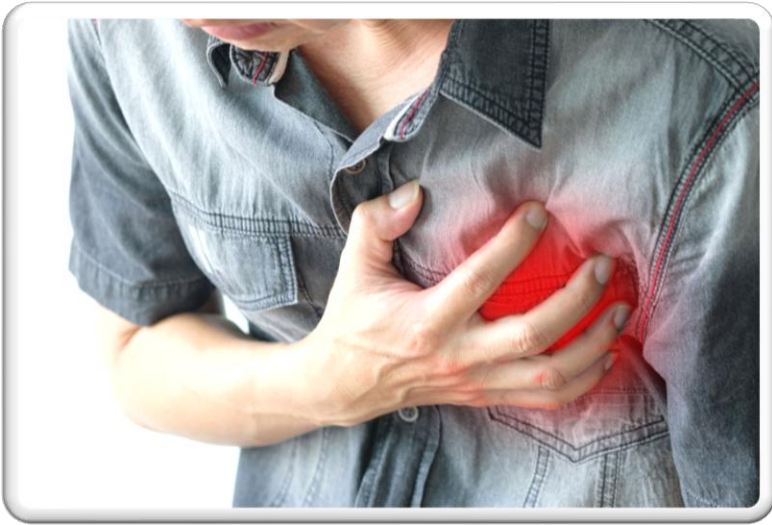
The Chain of survival is:



There are three main types of circulatory disorders. Heart Attack, Cardiac Arrest and Stroke. Letting 911 know that you suspect a stroke will help them determine what drugs to use. If the victim is alert, the following list can help you when assessing. If the victim passes out then the above procedures including the use of an AED are to be followed.



Heart Attack - Circulation Disorder



Could be blocked artery(s) stopping or restricting the flow of blood. Symptoms typically increase over time.

- Symptoms
 - Chest Pain-most common symptom
 - Body Aches also discomfort in one or both arms
 - Shortness of Breath
 - Vomiting or nausea for women
 - Cold Sweats or sweating for no reason
 - Rapid or irregular heart rate

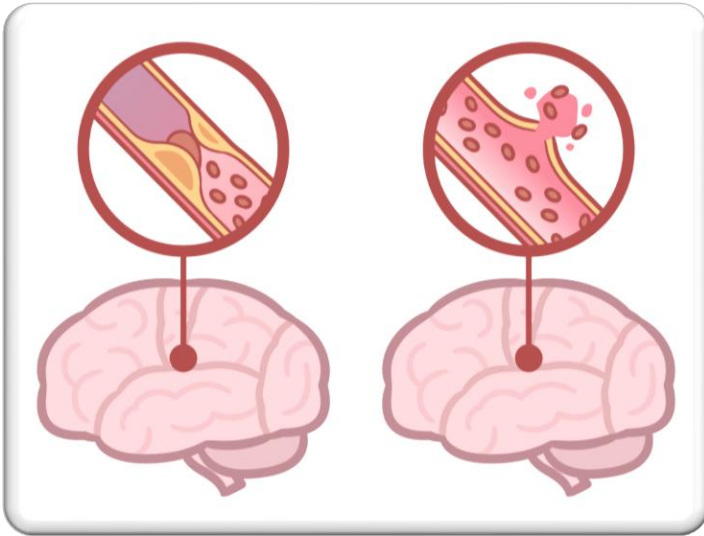
Cardiac Arrest - “Electrical Disorder”

Rhythm of the heart stops or is interfered

- Symptoms
 - Loss of consciousness
 - Dizziness
 - Fatigue

- Blackout
- Chest Pain
- Not breathing or difficulty breathing
- Extreme Palpitation

Stroke - Brain Disorder



Usually a blockage caused by a blood clot can also lead to bleeding in the brain; “aneurysm”.

- Symptoms
 - Typically no pain or discomfort
 - Loss of feeling or inability to move
 - Mental Confusion
 - Disrupted Speech
 - Blurred Vision

Since reacting **FAST** to a stroke is important, here is something to help remember:

- **Face:** Is the face numb or does it droop on one side?

- **Arms:** Is one arm numb or weaker than the other? Does one arm stay lower than the other when trying to raise both arms?
- **Speech:** Is speech slurred or garbled?
- **Time:** If you answered yes to any of the above, it's time to call emergency services immediately.

The risk of disability decreases if clot-busting drugs are administered within 4.5 hours. According to guidelines from the American Heart Association (AHA) and American Stroke Association (ASA).

AED (Automated External Defibrillator)



For an Adult

1. Turn the AED on.
2. Expose the victim's bare chest and make sure it is dry.
3. Remove any metal jewelry or accessories on the victim. Shave the person's chest if hair is present. If the victim is a female with an underwire bra, remove it to prevent electrical conduction. Wipe the chest to remove moisture if needed.
4. Apply the AED pads to the chest area. Look at pads for picture of placement.
 - Place one pad on the upper right side of the victim's chest, just below the collarbone.
 - Place the other pad on the lower left side of the victim's chest. The lower left ribs below the armpit is the best location for placement on this side.
5. If two rescuers are present, one person can perform CPR while the other is responsible for applying the pads correctly. However, if you are the only one near the victim, alternate between administering CPR and operating the AED.
6. Follow the AED prompts
 - Position the AED near the victim's head and turn on the device. You'll see either a button to turn on the AED, or simply be able to lift the lid in order to power it on. As the AED is turned on, it will display a series of prompts, such as how to attach the cables for the defibrillator pads into your AED, usually on top of the device. Follow these prompts.
7. The AED machine will analyze the victim's heart rhythm to see if an electrical shock is needed. The device will alert you if the CPR you've been doing prior to retrieving

the device needs to continue. Make sure everyone stands clear and does not touch the victim.

8. There are two possible prompts after the AED analyzes the heart's rhythm:
 - Shock Advised: The victim has no pulse. The AED delivers an electrical shock to restore the heart's normal rhythm.
 - No Shock Advised: The victim has regained a pulse but is not moving or breathing. A shock from the AED is not needed. Continue with CPR until professional emergency responders or other healthcare providers arrive on the scene.
9. Shock the victim.
10. The AED has advised that you shock the victim. Shout "clear!" to ensure everyone stands clear of the victim. Then press the shock button on the AED. One electric shock will be delivered through the pads in an effort to restart the victim's heart. You'll see the victim move due to the shock's force.
11. After the shock, give 30 chest compressions and two breaths.
12. Over the next two minutes, you'll return to CPR, following a pattern of compressions and quick breaths. You may see the victim regain consciousness in this stage. After two minutes has passed, let the AED reanalyze for a heart rhythm. It can tell you if another shock is needed and if you need to stop CPR.



For Children

1. For children ages 1-8 or under 55lbs, after you've turned on the AED and exposed the victim's chest, apply pediatric pads to the chest. In the event you don't have pediatric pads, you may use an AED with adult pads. Just make sure the heart is in between the pads.
2. You can then follow the AED prompts, shock the victim as necessary, administer CPR and see if the device instructs you to shock the victim again upon another analysis. See above for more details on this process.

For Infants

For infants (less than 1 year old), you'll have a few extra considerations for operating an AED and administering CPR:

1. ***Don't shake them to see if they respond!*** Tap their feet or stroke them by the arm or head.
2. Check for rise and fall of breathing.
3. Your rescue breaths for CPR need to be ***more delicate***. Do not blow fully into the infant's mouth and risk hurting their airways. Instead, blow from your cheeks, not a deep inhale and exhale.
4. For check compressions, don't use your full hand(s). Instead, take ***two fingers, place them in the center of the infant's chest and compress about one and a half inches deep***.

Your rhythm for performing CPR will be the same.

Remember to use pediatric pads if at all possible but if one is not available, use an AED with adult pads and settings. It is important that the pads do not touch. If necessary place one pad on their back and one pad on their chest.

Using an AED on a Pregnant Woman

1. Call 911 and clearly inform them the patient is pregnant.
2. Begin CPR: Lay the woman flat on her back (supine position) and start chest compressions (100-120 bpm). After 30 compressions, give two rescue breaths. Repeat this pattern.
 - When the AED arrives, power it on and follow its instructions. The steps and process for using the AED will be close to:
 - Expose the patient's chest, removing any undergarments or jewelry.

- Place the AED pads on the patient's dry skin as instructed. Pad placement is the same for pregnant women.
 - The AED will analyze the heart rhythm. If a shock is required, ensure everyone is clear before delivering the shock.
 - Continue CPR after the shock, following the AED's instructions to administer subsequent shocks as needed, until emergency medical services arrive.
3. If the patient revives, carefully roll her onto her left side to improve blood flow to the heart and baby.
 4. Emergency services will take over treatment and transport the patient to the hospital for further evaluation and potential emergency c-section.

Trouble shooting and Other Items

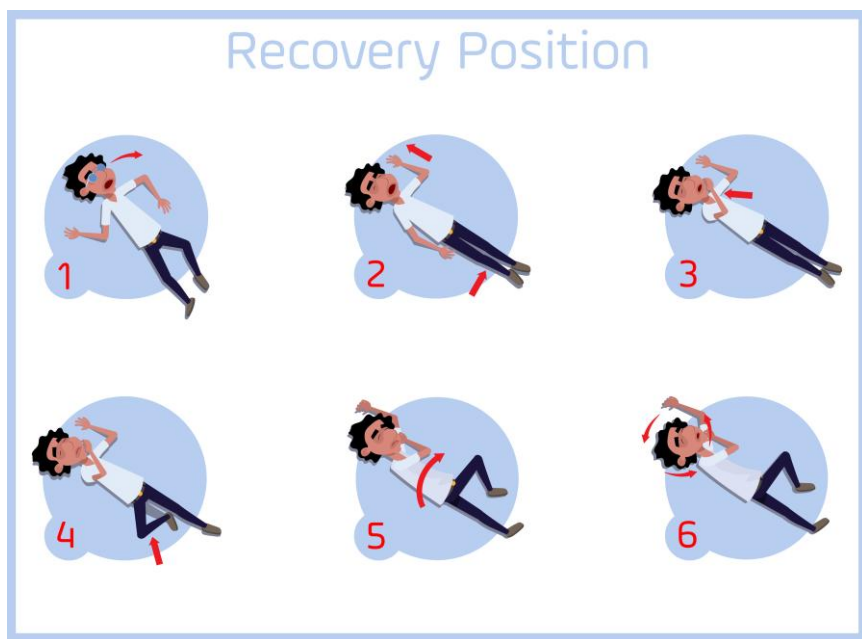
Even though AEDs are easy to use, there are some items needing to be discussed.

- Always dry the person. If they are in the water they must be removed.
- It is acceptable to use the AED on metal grating.
- If AED does not get a reading from the victim, check that wires are plugged in and that protective plastic is removed from pads
- If AED flashes low battery, it will still work. Make sure the battery is replaced as soon as possible.
- If someone has a medical device such as a pacemaker, continue with correct pad placement.
- If a medical patch is seen, remove it if it is in the way of the pads.
- Never remove the pads even if the person is alert. This is a job for the paramedics.

- When you see evidence of movement from the victim, stop CPR but leave the pads on.

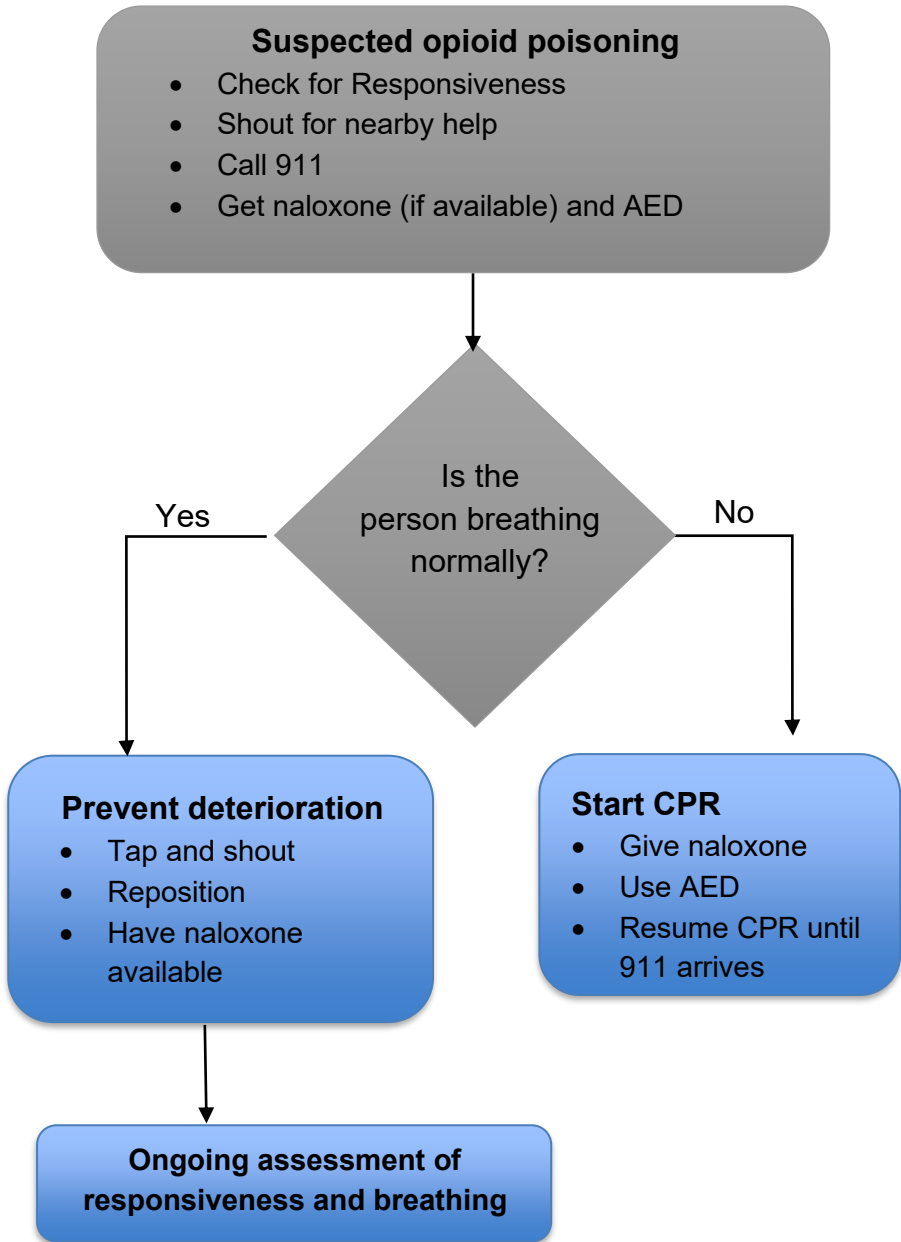
Assessment of unconscious person with normal breathing

If normal breathing* is found, place the uninjured person in the recovery position. If you are unsure what to do, immediately call 911 and do not leave the person alone. If they happen to quit breathing you may need to perform CPR.



*Normal breathing is regular and relaxed. If gasping or short burst of breathing are evident, assume that they are not breathing and start CPR.

Opioid-Associated Emergency



Choking



Choking happens when an object lodges in the throat or windpipe blocking the flow of air. In adults, it is usually a piece of food. Young children can choke on the many things they put into their mouth. Choking is life-threatening. It cuts off oxygen to the brain. Give first aid as quickly as possible if you or someone else is choking.

Watch for these signs of choking:

- One or both hands clutched to the throat
- A look of panic, shock or confusion
- Inability to talk
- Strained or noisy breathing
- Squeaky sounds when trying to breathe
- Cough, which may either be weak or forceful
- Skin, lips and nails that change color turning blue or gray
- Loss of consciousness

If a choking person can cough forcefully, let the person keep coughing to see if they can dislodge the object.

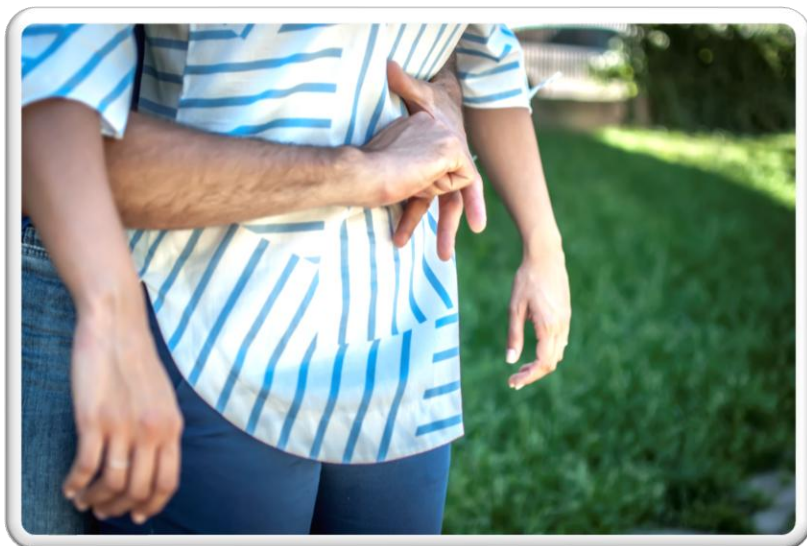
If a person cannot move air through their throat then provide first aid to the person.

The American Red Cross recommends the following steps:

- Give five back blows. Stand to the side and just behind a choking adult. For a child, kneel down behind. Place your arm across the person's chest to support the person's body. Bend the person over at the waist to face the ground. Strike five separate times between the person's shoulder blades with the heel of your hand.
- Give five abdominal thrusts. If back blows don't remove the stuck object, give five abdominal thrusts.
- Alternate between five blows and five thrusts until the blockage is dislodged.

It's OK not to use back blows and use the abdominal thrust instead. Both approaches are acceptable for adults and children older than age 1.

To give abdominal thrusts to someone else:



- **Stand behind the person.** For a child, kneel down behind. Place one foot slightly in front of the other for balance. Wrap your arms around the waist. Tip the person forward slightly.
- **Make a fist with one hand.** Put it just above the person's navel.
- **Grasp the fist with the other hand.** Press into the stomach, also called the abdomen, with a quick, upward thrust — as if trying to lift the person up. For a child, use gentle yet firm pressure to avoid damaging the internal organs.
- **Give five abdominal thrusts.** Check if the blockage has been removed. Repeat as needed.

If you're the only rescuer, give back blows and abdominal thrusts first. Then call 911 or your local emergency number for help. If another person is there, have that person call for help while you give first aid.

If the person becomes unconscious, start standard cardiopulmonary resuscitation (CPR) with chest compressions and rescue breaths.

If the person is pregnant or if you can't get your arms around the stomach, give chest thrusts:

- Put your hands at the base of the breastbone, just above the joining of the lowest ribs.
- Press hard into the chest with a quick thrust. This is the same action as abdominal thrusts.
- Repeat until the blockage is removed from the airway.

To clear the airway of an unconscious person:

- **Lower the person onto the floor**, with the back on the floor and arms to the sides.
- **Clear the airway.** If you can see the object, reach a finger into the mouth to sweep out the object. Never finger sweep if you can't see the object. You risk pushing the blockage deeper into the airway. This is very risky with young children.
- **Begin CPR if the person still doesn't respond.** If the airway is still blocked, use chest compressions such as those that are used in CPR to remove the stuck object. Only use two rescue breaths per cycle. Recheck the mouth regularly for the object.

To clear the airway of a choking infant younger than age 1:

- **Sit and hold the infant facedown on your forearm.** Rest your forearm on your thigh. Hold the infant's chin and jaw to support the head. Place the head lower than the trunk.
- **Thump the infant gently but firmly five times on the middle of the back.** Use the heel of your hand. Point your fingers up so that you don't hit the back of the

infant's head. Gravity and the back thumps should release the blockage.

- **Turn the infant faceup on your forearm if breathing hasn't started.** Rest your arm on your thigh. Place the infant's head lower than the trunk.
- **Give five gentle but firm chest compressions with your fingers.** Place two fingers just below the nipple line. Press down about 1 1/2 inches. Let the chest rise between each compression.
- **Repeat the back thumps and chest compressions if breathing doesn't start.** Call for emergency medical help.
- **Begin infant CPR if the airway is clear but the infant doesn't start breathing.**

If you're alone and choking:

Call 911 or your local emergency number right away. Then, give yourself abdominal thrusts to remove the stuck object.

- Place a fist slightly above your navel.
- Grasp your fist with the other hand.
- Bend over a hard surface. A countertop or chair will do.
- Shove your fist inward and upward.

To Review:

Recognize a severe airway blockage

- Makes the choking sign
- Cannot breathe, cough, speak or make sounds
- Ask, "Are you choking" If they nod yes, say, "Can I help you"

Give thrusts slightly above the belly button until:

- Object is forced out or

- Person can breathe and make sounds or
- Person becomes unresponsive

If the person stops responding

- Shout for help
- Call 911 and put on speaker mode
- Provide CPR as needed
- Look in mouth. If you see an object, take it out but do not force it further down the throat.
- Continue CPR until someone else arrives, typically this will be a paramedic.

There are suction devices on the market that reduce the impact of direct thrusts to the victim. They are used to clear the airway for use in choking emergencies on anyone 12 months old and up. Anyone using one of these devices will need further training. Typically they are used after an abdominal thrust is first attempted.

Responsive Person

If the person is responsive or responds to stimulation and is fully awake and does not appear to have a life-threatening condition:

- Interview the person (or bystanders, if necessary), ask questions about signs and symptoms, allergies, and medications and medical conditions
- Do a focused check based on what the person told you, how the person is acting and what you see
- As you check the person, looking for any signs of injury such as lumps, discolored skin or any other signs of injury.
- Look for swelling and ask person if they have any pain.

- Take note of any medical identification tags and ask if they have any allergies or are taking any medication that may have caused this condition.
- If you suspect an head, neck or back injury, immediately instruct the victim to remain still.

Note: Do not ask the person to move if you suspect a head, neck or spinal injury. Do not ask the person to move any area of the body that causes discomfort or pain.

After completing the above, CALL 9-1-1 and get any needed equipment, or tell someone to do so (if needed). Then, give care based on the condition found and your level of training.

Do not leave the victim alone.

Seizures

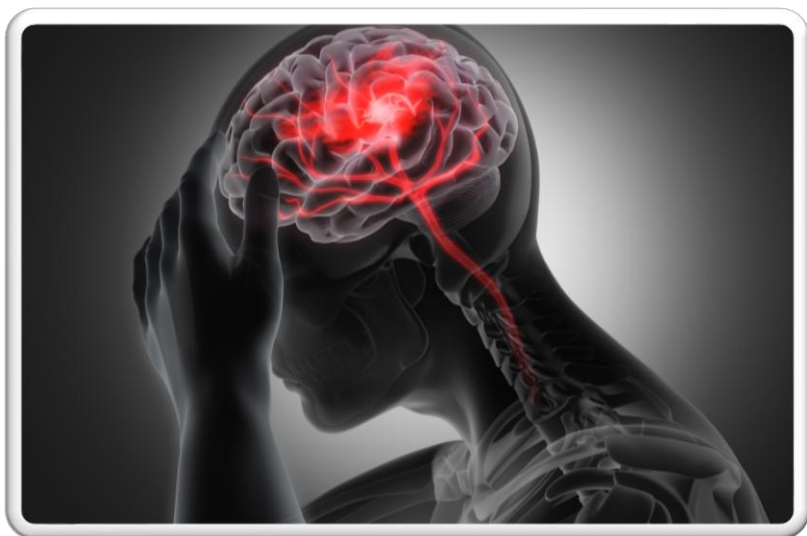
The general principles of first aid management of seizures are to:

- Ensure an open airway
- Prevent injury

Do not restrain the victim during a seizure. Do not try to open the victim's mouth or try to place any object between the victim's teeth or in the mouth. Placing an object in the victim's mouth may cause dental damage or aspiration.

It is not unusual for the victim to be unresponsive or confused for a short time after a seizure.

Shock



If a person shows evidence of shock and is responsive and breathing normally, it is reasonable to place or maintain the person in a position lying on their back with their face upward.

Early signs can be difficult to detect. They may appear restless or uneasy. They might even appear confused. The skin may become cool or clammy as the body pulls the blood to the core of the body.

If there is no evidence of trauma or injury (eg, simple fainting, shock from nontraumatic bleeding, sepsis, dehydration), raising the feet about 6 to 12 inches from the above position is an option that may be considered while awaiting arrival of EMS. If blankets are available and the victim appears cold cover them. Maintain normal body temperature, do not overheat them.

Do not raise the feet of a person in shock if the movement or the position causes pain.

Hypoglycemic

Hypoglycemia can manifest as a variety of symptoms, including:

- Confusion
- Altered behavior
- Diaphoresis (profuse perspiration artificially induced)
- Tremulousness (characterized by or affected with trembling or tremors)



Diabetics who display these symptoms should be assumed by the first aid provider to have hypoglycemia.

If the person is unconscious, exhibits seizures, or is unable to follow simple commands or swallow safely, the first aid provider should call for EMS immediately

For an individual with suspected hypoglycemia who is awake and able to swallow, the first aid provider should encourage the individual to swallow glucose (eg, tablets, liquid, gel) or dietary sugars* when glucose tablets are not available. Emergency services should be activated if symptoms do not resolve within 10 minutes or symptoms worsen.

****Orange juice (unsweetened, from concentrate),
Jelly beans, Sucrose candy (Skittles), Glucose
71%/oligosaccharides 29% candy (Mentos),
Fructose (fruit leather, such as Stretch Island),
Whole milk***

For diabetics with symptoms of hypoglycemia, symptoms may not resolve until 10 to 15 minutes after ingesting glucose tablets or dietary sugars.

First aid providers should therefore wait at least 10 to 15 minutes before calling EMS and re-treating a diabetic with mild symptomatic hypoglycemia with additional oral sugars.

For an individual with suspected hypoglycemia who is not awake or not able to swallow, it is not recommended to administer glucose orally; it is not recommended to administer glucose orally; for these individuals, emergency services should be active immediately.

Presyncope

Syncope is a transient loss of consciousness that results from global cerebral hypoperfusion. It can lead to falls and injuries. Many victims of syncope have recurrent episodes.

The underlying physiology conditions is decreased blood return to the heart, leading to decreased cardiac output, decreased global cerebral perfusion, and subsequent loss of consciousness.

The symptoms preceding loss of consciousness are known as presyncope and can last for a few seconds before onset of vasovagal and orthostatic syncope. Associated signs and symptoms include:

- Pallor (an unhealthy pale appearance)
- Sweating
- Lightheadedness
- Visual changes and
- Weakness

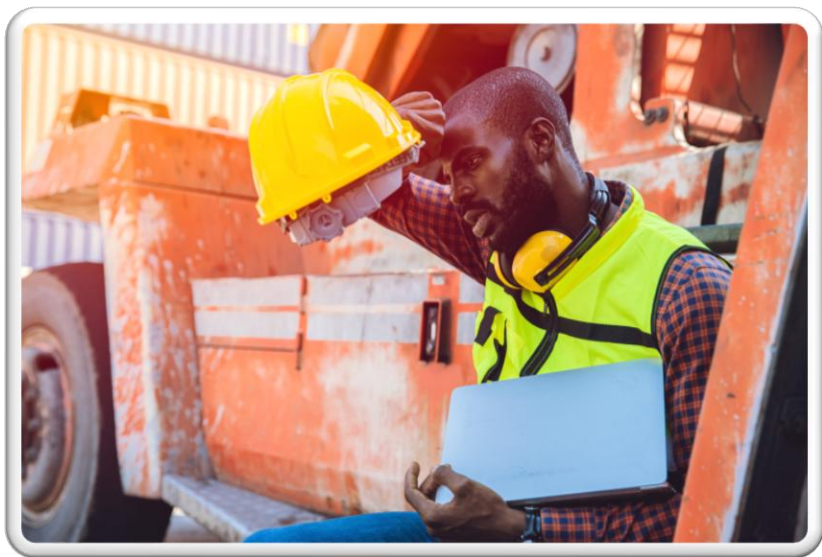
Presyncope presents recognizable signs and symptoms and a period during which rapid first aid treatment could improve symptoms or prevent syncope from occurring.

If a person experiences signs or symptoms of presyncope, the priority for that person is to maintain or assume a safe position such as sitting or lying down. Once the person is in a safe position, it can be beneficial for that person to use physical counterpressure maneuvers to avoid syncope such as hand grip or arm tensioning.

If no improvement occurs within 1 to 2 minutes or if symptoms worsen or reoccur, providers should initiate a call for additional help.

The use of physical counterpressure maneuvers is not suggested when symptoms of a heart attack or stroke accompany presyncope.

Heat Emergencies



Heat-induced symptoms, often precipitated by vigorous exercise, may include heat cramps, heat exhaustion, and heat stroke. Best practice is to start well hydrated and take water breaks and shade breaks as needed.

Heat cramps are painful involuntary muscle spasms that most often affect the calves, arms, abdominal muscles, and

back. First aid for heat cramps includes rest, cooling off, and drinking an electrolyte-carbohydrate mixture, such as juice, milk, or a commercial electrolyte-carbohydrate drink. Stretching, icing, and massaging the painful muscles may be helpful. Exercise should not be resumed until all symptoms have resolved.

Heat exhaustion is caused by a combination of exercise-induced heat and fluid and electrolyte loss through sweat. Signs and symptoms may start suddenly and include:

- Nausea
- Dizziness
- Muscle Cramps
- Feeling Faint
- Headache
- Fatigue
- Heavy Sweating

Heat exhaustion is a serious condition because it can rapidly advance to heat stroke which can be fatal. Treat heat exhaustion vigorously by having the victim lie down in a cool place, take off as many clothes as possible, cooling with a cool water spray, and encouraging the victim to drink cool fluids, preferably containing carbohydrates and electrolytes.

Heat stroke and exertional hyperthermia are emergency condition characterized by a core temperature greater than 40°C (104°F) (severe hyperthermia) and central nervous system dysfunction (eg, confusion, seizures, coma). For these individuals, it is important to bring the body's temperature down as quickly as possible to reduce the risk

of organ injury or death. Immediately activate the EMS system and begin immediate cooling.

For adults and children with exertional hyperthermia or heat stroke, first aid providers should move the individual from the hot environment, remove excess clothing, limit exertion, and activate emergency services.

For adults and children with exertional hyperthermia or heatstroke, it is reasonable to initiate immediate active cooling by using whole-body (neck down) cool- to cold-water immersion when safe, until a core body temperature of $<39^{\circ}\text{C}$ (102.2°F) is reached or neurological symptoms resolve.

For adults and children with exertional hyperthermia or heatstroke, it may be reasonable to initiate other forms of active cooling, including commercial ice packs, cold showers, ice sheets and towels, cooling vests and jackets, evaporative, fanning, or a combination of techniques, when water immersion is not available.

Hypothermia



Hypothermia is caused by exposure to cold. The urgency of treatment depends on the length of exposure and the victim's body temperature. Ideally we want to be proactive so that Hypothermia and Frostbite never occur.

Begin rewarming a victim of hypothermia immediately by moving the victim to a warm environment, removing wet clothing, and wrapping all exposed body surfaces with anything at hand, such as blankets, clothing, and newspapers.

If the hypothermia victim is far from definitive health care, begin active rewarming, although the effectiveness of active rewarming has not been evaluated. Active rewarming should not delay definitive care.

Potential methods of active rewarming include placing the victim near a heat source and placing containers of warm, but not hot, water in contact with the skin.

Frostbite



Frostbite usually affects an exposed part of the body such as the extremities and nose.

In case of frostbite, remove wet clothing and dry and cover the victim to prevent hypothermia.

Transport the victim to an advanced medical facility as rapidly as possible.

Do not try to rewarm the frostbite if there is any chance that it might refreeze or if you are close to a medical facility.

Minor or superficial frostbite (frostnip) can be treated with simple, rapid rewarming using skin-to-skin contact such as a warm hand.

Severe or deep frostbite should be rewarmed within 24 hours of injury and this is best accomplished by immersing the frostbitten part in warm (37° to 40°C or approximately body temperature) water for 20 to 30 minutes.

Chemical warmers should not be placed directly on frostbitten tissue because they can reach temperatures that can cause burns.

Following rewarming, efforts should be made to protect frostbitten parts from refreezing and to quickly evacuate the patient for further care.

Drowning

Outcome following drowning depends on the duration of the submersion, the water temperature, and how promptly CPR is started.

Remove the victim rapidly and safely from the water, but do not place yourself in danger.

You can start rescue breathing while the victim is still in the water, providing that it does not delay removing the victim from the water.

Do not waste time trying to remove water with abdominal or chest thrusts as there is no evidence that water acts as an obstructive foreign body. In addition, the abdominal thrusts may result in expulsion of stomach contents that can be aspirated. In addition, the expelled stomach contents can

obstruct the upper airway, interfering with delivery of rescue breaths.

Start CPR and, if you are alone, continue with about 5 cycles (about 2 minutes) of chest compressions and breaths before activating EMS.

If 2 rescuers are present, send 1 rescuer to activate EMS immediately, and retrieve emergency equipment, including an AED, if one is nearby.

Burns



Burns can come from a variety of sources such as hot water (scalds) and fire. It is known that applying ice directly to a burn can cause tissue ischemia.

Don't apply ice directly to a burn; it can produce tissue ischemia.

Cool thermal burns with cool or cold potable water as soon as possible and for at least 10 minutes.

If cool or cold water is not available, a clean cool or cold, but not freezing, compress can be useful as a substitute for cooling thermal burns.

Care should be taken to monitor for hypothermia when cooling large burns. This is particularly important in children, who have a larger body surface area for their weight than adults have.

Burn Dressing

After cooling of a burn, it may be reasonable to loosely cover the burn with a sterile, dry dressing. Leave blisters intact because this improves healing and reduces pain.

Loosely cover burn blisters with a sterile dressing but leave blisters intact because this improves healing and reduces pain.

After cooling of a burn, in general, it may be reasonable to avoid natural remedies, such as honey or potato peel dressings.

In remote or wilderness settings where commercially made topical antibiotics are not available, it may be reasonable to consider applying honey topically as an antimicrobial agent.

Chemical Burns

Brush powdered chemicals off the skin with a gloved hand or piece of cloth.

Remove all contaminated clothing from the victim, making sure you do not contaminate yourself in the process. In case of exposure to an acid or alkali on the skin or eye, immediately irrigate the affected area with copious amounts of water.

Concussion

The classic signs of concussion after head trauma include feeling stunned or dazed, or experiencing:

- Headache,
- Nausea,
- Dizziness and unsteadiness (difficulty in balance)
- Visual disturbance,
- Confusion, or loss of memory (from either before or after the injury)

The various grades and combinations of these symptoms make the recognition of concussion difficult. Changes in symptoms may be subtle and yet progressive.

First aid providers are often faced with the decision as to what advice to give to a person after minor head trauma: an incorrect decision can have long-term serious or even fatal consequences.

Any person with a head injury that has resulted in a change in level of consciousness, has progressive development of signs or symptoms as described above, or is otherwise a cause for concern should be evaluated by healthcare provider or EMS personnel, as soon as possible.

Using any mechanical machinery, driving, cycling, or continuing to participate in sports after a head injury should be deferred by these individuals until they are assessed by a healthcare provider and cleared to participate in those activities.

Spinal Motion Restriction



Unless victim is not breathing do not attempt to manipulate the spinal cord. Have the victim stay in the position found until EMS can assess their condition.

The terms spinal immobilization and spinal motion restriction have been used synonymously in the past. Because true spinal immobilization is not possible, the term spinal motion

restriction is now being used to describe the practice of attempting to maintain the spine in anatomical alignment and minimize gross movement, with or without the use of specific adjuncts such as collars.

With a growing body of evidence showing more actual harm and no good evidence showing clear benefit, we recommend against routine application of cervical collars by first aid providers.

If a first aid provider suspects a spinal injury, he or she should have the person remain as still as possible and await the arrival of EMS providers

Sprains and Strains



Soft-tissue injuries include joint sprains and muscle contusions.

Cold application decreases hemorrhage, edema, pain, and disability, and it is reasonable to apply cold to a soft-tissue injury.

Cooling is best accomplished with a plastic bag or damp cloth filled with a mixture of ice and water; the mixture is better than ice alone.

Freezable gel packs do not cool as effectively as an ice-water mixture.

To prevent cold injury, limit each application of cold to periods ≤ 20 minutes. If that length of time is uncomfortable, limit application to 10 minutes. Place a barrier, such as a thin towel, between the cold container and the skin.

First aid providers may consider applying a compression wrap during the recovery of an ankle sprain or strain to promote comfort if they are trained to apply a compression wrap.

Heat application to a contusion or injured joint is not as good a first aid measure as cold application.

Suspected Fracture



Long bone fractures may at times be severely angulated.

In general, first aid providers should not move or try to straighten an injured extremity.

Based on training and circumstance (such as remote distance from EMS or wilderness settings, presence of vascular compromise), some first aid providers may need to move an injured limb or person. In such situations, providers should protect the injured person, including splinting in a way that limits pain, reduces the chance for further injury, and facilitates safe and prompt transport.

If an injured extremity is blue or extremely pale, activate EMS immediately.

Eye Injury - Chemical burns

Chemicals common at home or in the workplace can easily get splashed into your eyes. It is important to wear safety glasses when handling toxic or abrasive chemicals and use caution with household cleaners in order to prevent injury.

First aid care for chemical burns includes:

- Remain calm and keep your eyes open until they can be flushed. Closing your eyes traps the chemical in and does further damage.
- Flush eyes generously with water for 15 to 20 minutes. Make sure you keep your eyes open during flushing.
- Get immediate medical care.



You can also call your local poison control center for instructions. Be prepared to give information about the name and type of chemical, if possible.

Eye Injury - Foreign object

The eye often cleans itself of debris with tearing, so no treatment is needed until you are certain the eye cannot remove the object by itself.

First aid care for foreign objects in the eyes includes:

- Don't rub your eyes.
- Lift the upper eyelid up and out over the lower lid, and then roll your eyes around.
- Flush your eyes generously with water, and keep your eyes open during flushing.
- Repeat the previous steps until the object is eliminated.
- Follow up with a doctor to make sure all debris is gone and the eyes have not been scratched or damaged. Your doctor may evaluate you for damage by using a special eye drop that fluoresces under a certain type of light; it will help reveal any cuts or scratches in the cornea.

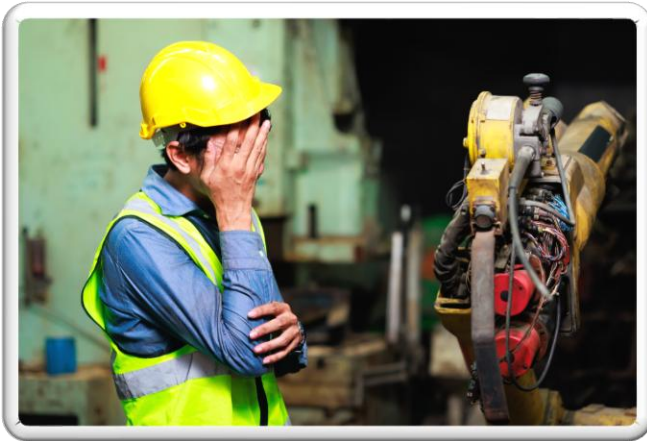
If there is an object embedded in the eye, do NOT remove it, as this may cause further damage. Instead, cover the eye with an eye shield or gauze and seek prompt medical attention. Cover both eyes if possible to avoid eye movement.

Blows to the eye

Impact to the eye is another form of eye trauma. Minor blows can often be managed at home. Any eye injury should be monitored for signs of a serious injury or potential infection.

First aid care for a blow to the eyes includes:

- Gently place a cold compress over your eye in 5- to 10-minute intervals. Do not place ice directly on the skin. Instead, use a cloth in between the ice and skin.
- Call your doctor. They may want to examine the eye for potential damage. If the trauma was significant (for example, skull fracture or displaced bones), you will need to go to an emergency department for immediate evaluation.
- After 24 hours, switch to warm compresses. This will help lessen bruising.



Seek immediate medical attention if you notice any of the following symptoms:

- drainage from the affected eye
- vision changes
- persistent pain
- any visible abnormalities or bleeding in the sclera, which is the white part of the eye

Cuts or puncture wounds on the eye or lid

You should seek immediate medical care if you suffer this type of injury. However, you need to follow some basic first aid steps to ensure proper safety and support.

Here are some first aid tips for treating cuts and puncture wounds:

- Do not wash the eye or lid.
- If there is an object embedded in your eye, do NOT remove it. Doing so can cause further damage.
- Cover the eye with an eye shield. If you don't have one available, place the bottom half of a paper cup over your eye and tape over it gently to secure it to your face.
- Seek prompt medical attention.

Bleeding



Control of bleeding is an important first aid skill.

Call 911 if:

- Bleeding is severe
- You suspect internal bleeding
- There is an abdominal or chest wound
- Bleeding can't be stopped after 10 minutes of firm and steady pressure
- Blood spurts out of wound

To Stop Bleeding:

- Apply direct pressure on the cut or wound with a clean cloth, tissue, or piece of gauze until bleeding stops.
- If blood soaks through the material, don't remove it. Put more cloth or gauze on top of it and continue to apply pressure.
- If the wound is on the arm or leg, raise limb above the heart, if possible, to help slow bleeding.
- Wash your hands again after giving first aid and before cleaning and dressing the wound.
- Do not apply a tourniquet unless the bleeding is severe and not stopped with direct pressure.

To Protect the Wound:

- Apply antibiotic cream to reduce risk of infection and cover with a sterile bandage.
- Change the bandage daily to keep the wound clean and dry.

Tourniquets



Tourniquets are used when all other options to stop bleeding have failed. This includes elevating the limb above the heart and applying direct pressure to the wound for 15 minutes to allow a clot to form. If these efforts don't work, a tourniquet may be the only option.

Emergencies in which a tourniquet may be indicated include:

- Car accidents with major crush or blunt force injuries
- Gunshot wounds
- Deep cuts or lacerations, including stabbings
- Crushed or severed limbs

Because the rate of complications is low and the rate of hemostasis is high, first aid providers may consider the use

of a tourniquet when standard first aid hemorrhage control does not control severe external limb bleeding.

A tourniquet may be considered for initial care when a first aid provider is unable to use standard first aid hemorrhage control, such as during a mass casualty incident, with a person who has multisystem trauma, in an unsafe environment, or with a wound that cannot be accessed.

A manufactured tourniquet should be used as first-line therapy for life-threatening extremity bleeding and should be placed as soon as possible after the injury.

A makeshift tourniquet is simple and comprised two parts:

- A bandage: You can use any piece of material that is at least 2 to 3 inches wide and overlaps when wrapped around the limb. The cloth should be sturdy and flexible, but not too slippery or stretchy. It could be a bandage, a strip of cloth, or even a T-shirt.
- A windlass: This is a rod or stick that you twist to tighten the tourniquet. It needs to be sturdy enough not to break while twisting. Options include a heavy stick, a pair of chopsticks, a screwdriver, or a thick spoon handle.

What Not to Use:

- Belts are not ideal for tourniquets as they are too rigid to be twisted tightly. Synthetic or silk scarves or ties are too slippery and can easily come undone. Zip ties and cords are also not ideal as they can cause severe blood vessel and nerve damage.

- Pencils and pens are not ideal for windlasses as they can easily break as you twist them.

Specifically designed tourniquets appear to be better than ones that are improvised.

Step 1: Find the Source of the Bleeding

If possible, have the injured person lie down. This will make it easier for you to find the exact source of bleeding as quickly as possible.

If 911 is on the line, place them on speaker phone so that you can keep them apprised of your actions and they can help you make the appropriate decisions every step of the way.

Step 2: Apply Pressure

Once you find the source of the bleeding, apply direct pressure to the wound. If the bleeding does not significantly slow or stop after 15 minutes of uninterrupted pressure, you will need to find or make a tourniquet.

If the injured person is awake and alert, tell them what you intend to do. They need to know that the process can be extremely painful but that the intention is to save their limb or even their life.

Step 3: Position the Tourniquet

The tourniquet needs to be applied to the bare skin, so you'll need to cut, tear, or remove any clothing around the wound.

Next, position the tourniquet several inches above the injury closest to the heart. For example, if the injury is below the elbow, you will need to tie the tourniquet above the elbow. Never place the tourniquet directly on the joint as this can cause permanent nerve, joint, or blood vessel injury.

Secure the tourniquet around the limb with a common square knot. This is done by tying the fabric as you would a shoelace but without making a bow.

Step 4: Add a Windlass

Next, grab the object you intend to use as a windlass. Place it on top of the square knot, then tie the loose ends of the tourniquet around it with another square knot.

Step 5: Tighten the Tourniquet

Tighten the tourniquet around the limb by twisting the windlass. Keep an eye on the bleeding and take note of when it starts to slow. Continue twisting until the bleeding has stopped or is significantly reduced.

When the bleeding has stopped sufficiently, secure the windlass by tying one or both ends to the injured person's arm or leg.

Step 6: Time It

Tourniquets cannot be applied for longer than two hours.

Make note of the time you put the tourniquet on. You can do this by marking "T" with the date and time on the person's forehead or another easy-to-see place. This will help the emergency staff know what to do when they arrive.

Do Not Remove a Tourniquet

A tourniquet should never be loosened or removed by anyone other than a healthcare provider in the emergency department.

Common Tourniquet Mistakes

- **Waiting too long:** You need to recognize when a tourniquet is needed and be able to act quickly. When an injured person loses too much blood, they can go into shock. This happens when the blood volume and blood pressure drop so low that organs start to fail and death can occur.
- **Applying a tourniquet loosely:** Loose tourniquets are not effective because they do not sufficiently stop the blood flow. This may be the result of choosing a fabric that is too slippery or stretchy.
- **Not applying a second tourniquet:** It is good to know beforehand that a second tourniquet is sometimes necessary, particularly if a person is large or has large limbs.
- **Loosening a tourniquet:** Tightening and then loosening a tourniquet allows blood to rush back to the injury, which can severely damage blood vessels. This is why it is important to tell the person being treated to expect pain.

once a tourniquet is applied (at least until 911 help arrives).

- Leaving it on too long: A tourniquet should not be left in place for more than two hours. When used for longer than this, it can cause permanent damage to muscles, nerves, and blood vessels.

Open Chest Wounds



Management of an open chest wound in out-of-hospital settings is challenging and requires immediate activation of EMS.

Improper use of a dressing or device could lead to air trapping in the lung and fatal tension pneumothorax (a condition in which air or other gas is present in the pleural cavity and which occurs spontaneously as a result of disease or injury of lung tissue).

We recommend against the application of an occlusive (complete obstruction of air) dressing or device by first aid providers for individuals with an open chest wound.

In the first aid situation, it is reasonable to leave an open chest wound exposed to ambient air without a dressing or seal.

If a nonocclusive dressing, such as a dry gauze dressing, is applied for active bleeding, care must be taken to ensure that saturation of the dressing does not lead to partial or complete occlusion.

If care is a must, follow these steps:

- Sterilize your hands with soap and water.
- Put on gloves or other hand protection.
- Remove any loose clothing or objects covering the wound. Don't remove clothing that's stuck to the wound.
- Keep a hand over the wound while preparing a dressing. Protect your hand with a glove or other hand protection. If possible, have someone else put their hand over the wound. If no one else is available, have the injured person cover the wound with their hand if they're still able to do so.
- Find a chest seal or sterile, medical-grade plastic, or tape to seal the wound. If you don't have medical plastic, use a clean Ziploc bag or a credit card for the wound. Use your hands if you have no other option.
- If possible, ask the person to breathe out to release any excess air.
- Place tape, plastic, or a chest seal over any hole that's sucking in air, including entry and exit wounds. Make sure no air enters any wound.

- Secure the tape or seal with occlusive dressing or similar wrapping material that can create a water and airtight seal. **Make sure the seal has at least one open side to let out air without letting air in.**
- Remove the seal if you notice symptoms of tension pneumothorax, or a buildup of air in the chest. This happens when a lung leaks air into the chest and builds pressure. This can cause extremely low blood pressure (shock) and be fatal. Symptoms include crackling sounds when the person breathes in or out (subcutaneous emphysema), lip or finger blueness (cyanosis), enlarged neck veins (jugular vein distention), short, shallow breaths, and one side of the chest appearing larger than the other.

Keep the person on their side unless this makes it harder for them to breathe. Let out as much excess air as possible from the chest while making sure that the person can still breathe.

Various Topics

Snake Bites



Do not apply suction as first aid for snakebites. Suction has no clinical benefit and it may aggravate the injury.

Applying a pressure immobilization bandage with a pressure around the entire length of the bitten extremity is a reasonable way to slow the dissemination of venom by slowing lymph flow.

For practical purposes pressure is sufficient if the bandage is comfortably tight and snug but allows a finger to be slipped under it.

Jellyfish Stings

To inactivate venom load and prevent further envenomation, jellyfish stings should be liberally washed with vinegar (4% to

6% acetic acid solution) as soon as possible for at least 30 seconds

If vinegar is not available, a baking soda slurry may be used instead.

For the treatment of pain, after the nematocysts are removed or deactivated, jellyfish stings should be treated with hot-water immersion when possible.



Instruct the victim to take a hot shower or immerse the affected part in hot water (temperature as hot as tolerated, or 45°C if there is the capability to regulate temperature), as soon as possible, for at least 20 minutes or for as long as pain persists. If hot water is not available, dry hot packs or, as a second choice, dry cold packs may be helpful in decreasing pain but these are not as effective as hot water.

Topical application of aluminum sulfate or meat tenderizer, commercially available aerosol products, fresh water wash, and papain, an enzyme derived from papaya used as a local medicine, are even less effective in relieving pain

Pressure immobilization bandages are not recommended for the treatment of jellyfish stings because animal studies show that pressure with an immobilization bandage causes further release of venom, even from already fired nematocysts.

Insects



Nearly everyone has been bitten or stung by an insect at one time or another. Whether you've been attacked by a mosquito, fly, bee, wasp, ant, or other bug, insect bites and stings usually cause a mild reaction. Your body reacts to venom or other proteins that insects inject into you or transfer to your body through their saliva. This can result in symptoms at the site of the bite or sting, such as:

- redness
- swelling
- pain
- itching

The severity of your symptoms can vary, depending on the type of insect that bites or stings you. Some people also develop a severe allergic reaction to insect stings or bites. Bee and wasp allergies are particularly common. A severe allergic reaction can cause:

- hives
- abdominal cramps
- nausea and vomiting
- swelling of your face, lips, or throat
- breathing problems
- shock

If you or someone you know begins to experience these symptoms shortly after being bitten or stung by an insect, call 911 or local emergency services. A severe allergic reaction that affects multiple parts of your body is called anaphylaxis. It can be life-threatening if not treated promptly.

First Aid Treatment

If someone shows signs of a severe allergic reaction, help them get emergency medical attention and follow the steps in the next section. If they show no signs of a severe reaction, treat the site of the bite or sting for minor symptoms:

- If the insect's stinger is still embedded in their skin, remove it by gently scraping a flat-edged object, such as a credit card, across their skin. Avoid using tweezers to

remove the stinger, since squeezing it may release more venom.

- Wash the area of the bite with soap and water.
- Place a cold compress or ice pack on the area for about 10 minutes at a time to help reduce pain and swelling. Wrap any ice or ice packs in a clean cloth to protect their skin.
- Apply calamine lotion or a paste of baking soda and water to the area several times a day to help relieve itching and pain. Calamine lotion is a type of antihistamine cream.

Emergency treatment for a severe allergic reaction



If you suspect someone may be having a severe allergic reaction:

- Ask someone else to call 911, or local emergency services, right away. If you're alone, contact emergency services before you provide other treatment.
- Ask the person whether they carry an epinephrine auto-injector. If they do, retrieve it for them and help them use it according to the label directions.

- Encourage them to remain calm, lie down quietly with their legs elevated, and stay still. If they start to vomit, turn them onto their side to allow the vomit to drain and prevent choking.
- If they become unconscious and stop breathing, begin CPR. Continue it until medical help arrives.

To avoid making matters worse, don't apply a tourniquet. You should also avoid giving them anything to eat or drink.

Spiders



Most spider bites are relatively harmless. Anywhere from several hours to a day after you get bitten, you may notice symptoms similar to those of an insect sting or bite. At the site of the bite, you may experience:

- redness
- swelling

- pain
- itching

Some types of spiders can cause more serious reactions, including black widow and brown recluse spiders. If you know what to look for, it's easy to identify both of these species.

Black widow spider venom causes problems with your nervous system. Within a few hours of being bitten, you may notice intense pain at the site of the bite. You may also experience other symptoms, such as chills, fever, abdominal pain, nausea, and vomiting.

Fully grown brown recluse spiders are larger than black widow spiders. They're about 1 inch in length. They vary in color from yellowish tan to dark brown. They have a violin-shaped marking on the surface of their upper body, with the base of the violin facing toward their head and the neck of the violin pointing toward their rear.

Brown recluse spider bites cause damage to your skin. Within about eight hours of being bitten, you will experience redness and intense pain at the site of the bite. Over time, a blister will develop. When the blister breaks down, it will leave a deep ulcer in your skin, which can become infected. You also may develop symptoms such as fever, rash, and nausea.

First aid treatment

If you suspect that someone has been bitten by a brown recluse or black widow spider, help them get medical treatment immediately and follow the steps in the section. Otherwise, treat their spider bite like you would most insect bites and stings:

- Wash the area of the bite with soap and water.
- Place a cold compress or ice pack on the area for about 10 minutes to help reduce pain and swelling. Wrap any ice or ice packs in a clean cloth to protect their skin.
- Apply calamine lotion or a paste of baking soda and water to the injured area to help relieve itching and pain. Calamine lotion is a common antihistamine cream.

Emergency treatment for a brown recluse or black widow spider bite

If you suspect that someone has been bitten by a brown recluse or black widow spider:

- Contact their doctor or help them get emergency medical treatment immediately.
- Clean the area of the bite with soap and water.
- Encourage them to remain calm and still to reduce the spread of venom.
- Apply a cold compress or ice pack to the area of the bite. Wrap ice or ice packs in a clean cloth to protect their skin.
- If you can do so safely, take a description or picture of the spider that bit them. This can help medical professionals identify it and choose an appropriate course of treatment.

Don't apply a tourniquet. Avoid giving them anything to eat or drink.

Poisoning



In the United States, poisoning is the leading cause of injury death (the combination of planned or unplanned deaths) among individuals 1 to 44 years of age (CDC). Poisons can be ingested (swallowed), inhaled into the lungs, injected, or absorbed by the skin.

Childhood poisonings typically occur as a result of accidental ingestion of household chemicals, while adult poisonings are usually drug-related and result from unintentional drug overdose or accidentally on the jobsite.

Signs

The signs and symptoms of poisoning vary depending on the type of poison, how much poison was involved, and how the person was exposed. Signs and symptoms to be aware of include:

- Dizziness, disorientation, drowsiness, and faintness
- Nausea, vomiting, diarrhea, and stomach pain
- Rash
- Sores or redness around the mouth
- Drooling or foaming
- Trouble breathing
- Headache
- Shaking
- Seizures (uncontrolled electrical activity in the brain)

Common Types of Poisoning

The majority of poisonings are accidental and preventable. The five most common types of poisoning include food, carbon monoxide, household chemicals, alcohol, and drugs.

Food

Food poisoning is illness caused by food or water contaminated with pathogens (bacteria and viruses), parasites, or toxins. This can be caused by eating unwashed fruits and vegetables or eating raw meat, poultry, and seafood.

Depending on the type of food poisoning, symptoms can range from mild to severe. Common symptoms include an upset stomach, stomach cramps, nausea, vomiting, diarrhea, and fever.

Seek Immediate Help

If you have or suspect food poisoning, seek immediate medical attention if you experience these severe symptoms:

- Bloody diarrhea or diarrhea that lasts more than three days
- Frequent vomiting (which can lead to severe dehydration)
- High fever (temperature over 102 degrees, measured in your mouth)
- Signs of dehydration (very dry mouth or throat, little or no urination, or dizziness)

Carbon Monoxide

Carbon monoxide (CO) is a toxic gas produced by the burning of gasoline, wood, propane, charcoal, and other fuel. CO has no taste, smell, or color. If you inhale too much CO into your lungs, a dangerous condition known as carbon monoxide poisoning can occur.



CO easily enters the body through the lungs. When CO enters your bloodstream, it binds with greater affinity to

hemoglobin (the protein in red blood cells that transports oxygen throughout the body) than oxygen. This prevents oxygen from getting to tissues and cells, which can lead to serious tissue damage, even death.

Approximately 50,000 people in the United States visit the emergency department each year due to accidental CO poisoning (CDC). The most common symptoms of CO poisoning are headache, dizziness, weakness, nausea, vomiting, chest pain, and confusion. Serious complications such as brain, lung, and heart damage, and even death can occur.

Chemicals

Many household chemicals are poisonous, even if you are using them as directed. Household cleaners should also never be mixed, as they can create toxic gases.

For example, mixing bleach and ammonia produces chloramine gas, which can irritate the nose, throat, and lungs. In large concentrations, inhaling chloramine can lead to death.

Common household chemicals include antifreeze, motor oil, latex paint, batteries, all-purpose cleaners, bleach, pesticides, and more. Ingestion or inhalation of these chemicals can cause serious to life-threatening conditions, even death.

On the jobsite chemicals are commonly used and if a person is suspected of having inhaled a poison:

- Do not administer anything by mouth without the advice of a physician.
- Do not induce vomiting.
- Get the person to fresh air.
- Call 911 and have chemical information available.

Call Poison Control

If you think that you or a loved one has ingested chemicals, don't wait for signs that something is wrong. Call Poison Control right away at 800-222-1222.

Alcohol

Alcohol poisoning occurs when large quantities of alcohol are ingested in a short period of time (binge drinking). This can lead to a wide range of symptoms and complications, including seizures, cyanosis (blue coloration due to lack of oxygen in the blood), and hypothermia (low body temperature).

Alcohol poisoning is a serious condition. A high percentage of blood alcohol can cause the areas of your brain that support breathing, heart rate, and other critical functions to begin shutting down.

Drugs

Drug poisoning (or drug overdose) is the most common type of poisoning in adults. It occurs when drugs are abused or taken in large amounts.

When some drugs such as Tylenol (acetaminophen) are taken in too high of a dose, they can overwhelm the liver and render it unable to metabolize (break down) drugs. In doing so, drug poisoning can alter the way the liver functions, causing irrevocable liver damage or failure.

Excessive amounts of other drugs may damage various organ systems (such as the kidneys) or suppress functions such as breathing or blood circulation.

Bloodborne Pathogens

The following are some of the most common bloodborne pathogens. While others exist, these are the ones most frequently encountered. The most common routes of exposure include:

- A needlestick.
- Another sharps injury.
- An exposure to patient blood or other body fluids.
- If any of these occur, take the following steps:
- Wash needlesticks and cuts with soap and water.
- Flush splashes to the nose, mouth, or skin with water.
- Irrigate eyes with clean water, saline, or sterile irrigants.
- Report the incident to your supervisor.
- Immediately seek medical treatment.

Personal protective equipment (PPE)

Administrative and engineering controls are preferred methods of protecting healthcare workers, such as using tongs to pick up sharps or needles and placing them in a sharps container. However, using PPE such as gloves are a part of routine patient care. When protecting against bloodborne pathogens by touching patients and surfaces or splashes and sprays of blood and body fluids, PPE may include:

- Facial protection.
- Masks or face shields.
- Eye protection.
- Goggles or glasses with side protection.
- Gloves.

The following is detailed information about five of the most common BBP.

Hepatitis A

Hepatitis A is a highly contagious liver infection, according to the World Health Organization. The disease can result in liver inflammation and impair normal liver function.

The virus that causes hepatitis A can be transmitted through contact with an infected individual's blood or by unprotected sexual contact with that person. Hepatitis A may also be transmitted via contaminated food. Hepatitis does not cause long-term liver damage and does not become chronic.

The common symptoms of hepatitis A include:

- Fatigue
- Sudden nausea
- Sudden vomiting
- Abdominal discomfort or pain
- Clay-colored bowel movements

- Loss of appetite
- Low-grade fever
- Dark urine
- Joint pain
- Jaundice
- Intense itching

In the majority of cases, these symptoms are relatively mild and last a couple of weeks. In some cases, the symptoms are more pronounced and last for several months. If you find out you've been exposed to the virus, your physician can administer a vaccination that may prevent the development of the condition if you were infected. There is a vaccination available that protects against hepatitis A.

Hepatitis B

Hepatitis B is one of the three most common bloodborne pathogens and may cause a rather serious liver infection known as HBV, according to the Mayo Clinic.

The good news is, that in most cases, a hepatitis B infection lasts for under six months and resolves itself. The bad news is that there is no actual cure for the condition and, in some cases, hepatitis B becomes chronic. This results in the risk of serious medical issues that include:

- Liver failure
- Liver cancer
- Cirrhosis

The most common causes of hepatitis B transmission are:

- Sexual contact with an infected person
- Sharing needles
- Accidental needle sticks
- Mother to child (passed to an infant during childbirth)

The symptoms associated with hepatitis B include:

- Abdominal pain
- Dark urine
- Fever
- Joint pain
- Loss of appetite
- Nausea
- Vomiting
- Weakness
- Fatigue
- Jaundice

Hepatitis C

Hepatitis C is a virus transmitted via contact with certain bodily fluids, including blood and semen, of an infected person. It is most often transmitted via sexual contact, needle sharing, accidental needle sticks, and from mother to child during childbirth.

Approximately 4 million people in the United States have hepatitis C, but the disease has so few symptoms, many people are unaware they have it. The primary symptoms of hepatitis C are:

- Jaundice
- Stomach pain
- Loss of appetite
- Nausea
- Fatigue

Up to 85 percent of those infected end up developing chronic hepatitis C and run the risk of experiencing liver cancer and cirrhosis.

No vaccine exists to prevent hepatitis C. You can reduce the risk of transmission by engaging in safer sex practices, by not sharing needles, and by employing universal precautions

when exposed to blood and other human bodily fluids as well as needles.

HIV

The human immunodeficiency virus, or HIV, is a lentivirus, which is a medical subgroup of a retrovirus, according to the CDC. HIV is a common Bloodborne Pathogen that many people are aware of.

Without treatment, HIV can turn progress AIDS. the expected lifespan of a person diagnosed with HIV is between 9 and 11 years without medical intervention.

HIV is often transmitted through sexual contact. This includes transfer via blood, semen, pre-ejaculate, and vaginal fluids. It is also possible to contract HIV by sharing needles and via accidental needle sticks. Despite precautions and extensive safeguards, there remains a remote possibility of contracting HIV through a blood transfusion. An infected mother can pass the virus to her baby through breast milk.

The early symptoms of HIV are:

- Fever
- Sore throat
- Rash
- Nausea
- Vomiting
- Diarrhea
- Fatigue
- Swollen lymph nodes
- Muscle aches
- Headaches
- Joint pain

A person who experiences some of these symptoms on a persistent basis should seek medical testing. Only testing can confirm an HIV infection.

Brucellosis

Brucellosis is classified by the CDC as an infectious disease, caused by bacteria. The bacteria are found in many livestock animals including sheep, cattle, goats, pigs, as well as domestic animals like dogs.

Brucellosis is transmitted by eating the undercooked meat of an infected animal. The bacteria can also be transmitted by eating unpasteurized or raw dairy products from infected animals, and through broken skin when a person comes into contact with an infected animal.

Initial symptoms of infection include:

- Fever
- Sweats
- Malaise
- Headache
- Muscle or joint pain
- Fatigue
- Loss of appetite

In some cases, longer-term symptoms may arise and may become chronic. These include:

- Recurring fevers
- Arthritis
- Swelling of the heart, liver, spleen, or testicles
- Chronic fatigue
- Depression

In about 5 percent of all cases, a person will experience ongoing neurological symptoms.

Brucellosis can be controlled by fully cooking meat and consuming only fully pasteurized dairy products. People who

handle animal tissue should wear gloves, goggles, facemasks aprons and other personal protective equipment.

4 Methods of Compliance to Bloodborne Pathogens Standards

1. Exposure Control Plan (ECP): Develop and maintain a written plan detailing how the workplace will achieve compliance. This plan should be regularly reviewed and updated, especially when new procedures or tasks that affect occupational exposure are introduced.
2. Universal Precautions: Treat all human blood and certain human body fluids as if they were known to be infectious for HIV, HBV, and other bloodborne pathogens. It's a preventive measure to minimize risk.
3. Personal Protective Equipment (PPE): Provide, at no cost to the workers, appropriate PPE such as gloves, gowns, face shields, masks, and eye protection. Ensure that they are readily accessible, and that staff are trained in their use and disposal.
4. Training and Education: Conduct regular training for all employees who may encounter blood or other potentially infectious materials. The training should be comprehensive, covering the basics of bloodborne pathogens, methods of transmission, prevention measures, and the specifics of the company's ECP.

Post Incident Response

After someone experiences a traumatic event, their early responses can lead to distress that can interfere with coping. It is important to understand that injuries and illnesses affect people in different ways.

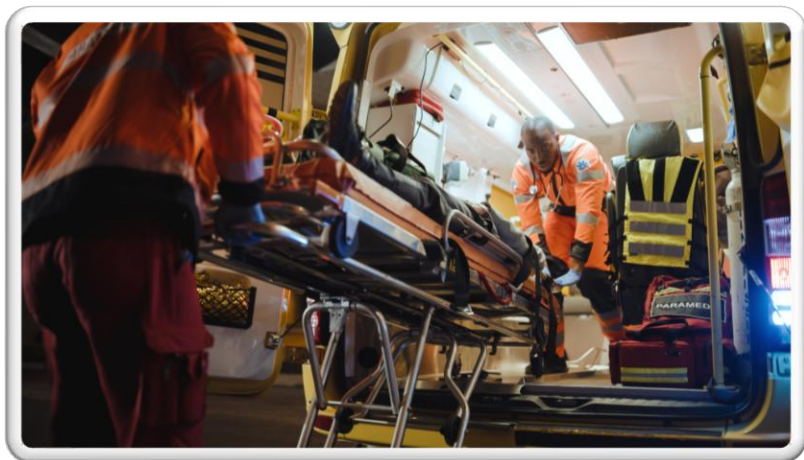
The goal of the intervention is to provide safety, stability, and resources to people in the immediate aftermath of a traumatic event to increase survivors' abilities to cope. Encourage the victim to get the after care they need to fully recover from the event.

Some common reactions might be:

- Confusion
- Fear
- Hopelessness
- Insomnia
- Pain
- Anger
- Grief
- Shock
- Guilt

When an emergency is over, it is not just the victim that may need emotional support. Often times it is the first aid provider that is left alone or with a feeling of guilt or any of the above-mentioned items. Maybe they think that they did not do enough.

Make sure that not only the victim but the responder gets the care needed.



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