Bloodborne Pathogens (BBP) and First Aid

National Health Care Provider Solutions

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NATIONAL HEALTH CARE PROVIDER SOLUTIONS

BLOODBORNE PATHOGENS (BBP) AND FIRST AID

Bloodborne Pathogens (BBP) and First Aid
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CONTENTS

1 OVERVIEW

Welcome to the Save a Life Initiative: Bloodborne Pathogens Course. This course is intended to help you prepare to address the health concerns inherent in caring for others and the possible damage the microscopic world can inflict. Unlike traditional academic curricula, you will learn actionable ways to practice and prepare for the bacteria and pathogens you may encounter in your career. If you become exposed to bloodborne pathogens, you will have the knowledge to reduce the chances of disease transmission and protect others, including co-workers and patients, from possible infection.

This course consists of the materials and information necessary to protect yourself and those around you from being exposed to blood or blood-containing items that you may come into contact with throughout the course of your job.

This training may be required as part of your training for bloodborne pathogens by your employer. In addition, such training is required annually by the Occupational and Safety Health Administration (OSHA). Your employer will provide you with additional training, which will be referred to as an Exposure Control Plan (ECP), on bloodborne pathogens as indicated by your role and responsibilities in your organization.

1.1 COURSE OBJECTIVES

1. Identify sources of bloodborne pathogens.
2. Understand the risks involved when caring for people where you may come into contact with blood.
3. Learn how to clean up blood and blood-containing fluids appropriately.
4. Understand the importance of personal protective equipment (PPE) for preventing transmission of bloodborne pathogens.
5. Explain how bloodborne pathogens are transmitted.
6. Learn how to avoid exposure to bloodborne pathogens from the use of sharps.
7. Learn how to respond if exposure does occur.
8. Create a core sense of responsibility among participants to prevent future incidence of exposure to bloodborne pathogens.

Upon completion of this course, you will be able to take an active role in reducing bloodborne pathogen transmission in the workplace. While the roles of different employees may have varying levels of patient contact, the potential for exposure to bloodborne pathogens is ever-present.

2 INTRODUCTION

This section discusses background information on bloodborne pathogens, why training is necessary and takes a closer look at the importance of the Exposure Control Plan.

2.1 WHY IS TRAINING IN BLOODBORNE PATHOGENS REQUIRED?

A health care facility is made up of many more people than direct-care staff. Employees in a facility may include nurses, unit coordinators, quality-assurance personnel, administrative professionals, sanitation workers and more. Although many employees may not be directly involved with patients, the potential for exposure to pathogens is always present.

OSHA also mandates all employees who work in an environment where exposure to bloodborne pathogens is likely must complete training to reduce and prevent bloodborne pathogen exposure.

2.2 WHAT IS AN EXPOSURE CONTROL PLAN?

An ECP is a plan that directs how employees respond to exposure to pathogens and typically includes the following:

- A briefing of personnel who may be exposed to pathogens directly.
- A list of all employee responsibilities that may result in exposure.
- Rules set to ensure compliance to OSHA and the requirements of other governing bodies, such as the Joint Commission.
- Rules regarding research or production of antibodies of deadly bloodborne pathogens, such as Hepatitis B and the human immunodeficiency virus (HIV).
- Proactive vaccination protocols for Hepatitis B.
- Communication measures used to educate employees, such as this course.
- Recordkeeping policies for any such exposure.
- Policies for immediate actions after exposure.

2.3 WHAT EXACTLY ARE BLOODBORNE PATHOGENS?

Bloodborne pathogens are basically any germ or organism that resides in an infected person's bloodstream. These pathogens may be transmitted by any substance that may contain blood, including sneeze droplets, urine, feces, seminal fluid and all other bodily fluids.

Most bloodborne pathogens do not cause immediate symptoms, but they can still be transmitted to other individuals. Furthermore, some bloodborne pathogens can result in death.

2.3.1 A CLOSER LOOK AT BLOODBORNE PATHOGENS:

2.3.1.1 Hepatitis B And C Viruses

The symptoms of Hepatitis B and C include jaundice (yellowing of the skin and whites of the eyes), fatigue, abdominal pain, nausea, vomiting, diarrhea, loss of appetite and liver damage.

There is a vaccine available for Hepatitis B. If you have not been vaccinated previously, an employer is required to provide one if you may be exposed to Hepatitis B. It is part of the three-set series, and each dose must be spaced out by approximately one month.

If you have started the series and failed to complete it, your employer may send you for a blood draw to verify the presence of Hepatitis B antibodies.

2.3.1.2 Hiv

The symptoms of HIV infection can mirror many of the symptoms of the flu. However, general symptoms may include fatigue, appetite changes, unexplained fever and swollen glands. Moreover, HIV infection increases risk of contracting other diseases and developing acquired immune deficiency syndrome (AIDS).

2.3.1.2 Contact Does Not Always Equal Illness

The information about bloodborne pathogens can be disheartening, but exposure does not mean you become infected. Following proper protocols can help reduce your risk of infection.

2.4 HOW TO REACT TO BLOODBORNE PATHOGENS IN THE WORKPLACE

Exposure to bloodborne pathogens in the workplace can literally happen anywhere, including bathrooms, patient rooms, hallways and laboratories. These steps can teach you how to respond ***(Figure 1)***.

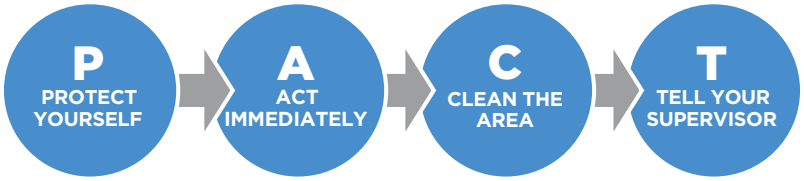


Figure 1

1. Protect Yourself.
2. Act Immediately.
3. Clean the area.
4. Tell your supervisor.

3 PROTECT YOURSELF FROM BLOODBORNE PATHOGENS

Bloodborne pathogens cannot survive for extended periods outside of the body, but they can survive in bodily fluids for days or weeks. Although infection is not imminent, bloodborne pathogens can enter the body from any mucus membrane, including minor scrapes or cuts. Therefore, protecting yourself is the first step toward preventing transmission.

3.1 WHAT DOES IT MEAN TO PROTECT YOURSELF?

Protecting yourself includes understanding bloodborne pathogens, where they may be, taking standard, universal precautions, following handwashing protocols and thinking about your actions in advance.

3.1.1 ALWAYS THINK ABOUT YOUR ENVIRONMENT TOO.

An environment can be unsafe. Other employees, family members or other events must always be considered before you begin dealing with possible bloodborne pathogen exposure.

Imagine a car accident victim who has suffered severe wounds. Make sure the scene of the accident is safe before you proceed.

Figure 2

3.1.2 FOLLOW UNIVERSAL PRECAUTIONS.

Universal precautions are simple. They dictate that until proven otherwise, any bodily fluid may contain the bloodborne pathogens that could kill you.

In other words, wear appropriate personal protective equipment as needed to prevent exposure, which includes the following:

- Gloves ***(Figure 2a)***
- Goggles ***(Figure 2b)***
- Face shield ***(Figure 2c)***
- Mask ***(Figure2d)***
- Waterproof gown ***(Figure 2e)***
- CPR mouth shields, "mouth guard" ***(Figure 2f)***

3.1.3 WHAT TYPE OF PPE IS NEEDED?

The type of PPE depends on the unique circumstances of each case. If blood is likely to come into contact with your clothing, wear a waterproof, disposable gown. Always wear gloves, and if spurting or coughing is likely, a face shield or mask may be needed.

3.1.4 REMEMBER POSSIBLE ALLERGIES TO LATEX

Take Note

Some people may be allergic to materials used in the manufacture of PPE. For example, a person may be allergic to latex gloves. If a person is unable to provide allergy information, default to the use of non-latex gloves to be safe.

Figure 3

3.2 FOLLOW HANDWASHING PROTOCOLS

1. Turn on the faucet to warm water. You want the water to be warm, but avoid scalding, painful temperatures. If the towel dispenser is not automatic, make sure you can access the towel without touching the towel with dirty hands. For example, the small wheel on the side may need to be turned.
2. Wet your hands thoroughly.
3. Apply soap, and work your hands into a lather vigorously. Clean all surfaces of the hands, including two inches up your wrists ***(Figure 3a)***.
4. Wash under your fingernails by making a scratching motion from side to side in the palm of your opposing hand.
5. Rinse from the wrists toward the fingertips. Avoid touching the basin of the sink or any other surface while rinsing.

6. Towel off. Throw the used paper towel away ***(Figure 3b)***.
7. Use a new towel to turn off the water. DO NOT USE THE NOW WET TOWEL TO TURN OFF THE WATER. IT WILL PROVIDE A VEHICLE FOR PATHOGENS TO GET BACK TO YOUR HANDS ***(Figure 3c)***.
8. Use a new towel to open the door.

3.3 THINK BEFORE YOU DRINK.

When it's break time, it can be tempting to head straight for your drink or snack. However, you should always wash your hands before ever touching something that will come into contact with your mouth. This includes food, tobacco, vaporizers, drinks and makeup.

3.4 LEARN TO IDENTIFY BIOHAZARD SYMBOLS.

Biohazard symbols indicate what type of pathogens may be present inan area. A biohazard symbol tend to have bright orange or red-orange backgrounds with letters indicating biohazard ***(Figure 4)***.

Your workplace has specific rules regarding where biohazards may be discarded, so check with your supervisor or ECP for guidance.

Figure 4

Take Note

Never discard biohazardous waste in ordinary trash cans.

4 ACT WHEN YOU COME INTO CONTACT WITH BLOOD

Coming into contact with blood includes blood on your PPE and/or yourself. Even with following all the previous proactive measures to prevent exposure, you may experience times where your skinor other bodily surfaces do come into contact with them. This section will teach you how to respond to such an event.

4.1 IMMEDIATE ACTION IS ESSENTIAL FOR DIRECT EXPOSURE TO MUCUS MEMBRANES

1. Take gloves off.
2. Wash hands and any exposed skin.
3. Rinse mucus membranes with copious amounts of water.
4. Report the incident.
5. Follow through with employer protocols.

Figure 5

4.2 HOW DO YOU REMOVE GLOVES PROPERLY?

Removing gloves is not as simple as it sounds. Follow these steps to remove gloves without touching the dirty side to your skin.

1. Grip the outside of one glove near the wrist ***(Figure 5a)***.
2. Pull upward slightly until the glove comes off smoothly.
3. Cup the old glove in the hand with the remaining glove still on. Using your clean hand, slide your fingers beneath the surface of the glove near the wrist ***(Figure 5b)***.

4. Peel the glove towards your fingers, encasing the first glove in it ***(Figure 5c)***.
5. Dispose of the contaminated gloves properly, such as in a biohazard bag or in a plastic bag to seal the hazard until placement in an appropriate biohazard container.
6. Wash your hands.

4.3 WHAT ABOUT DISPOSAL OF SHARPS?

Sharps are another source of possible exposure to bloodborne pathogens. Sharps include needles, lancets or any object that is used to pierce the skin.

Sharps should always be disposed of in a puncture-resistant sharps container ***(Figure 6)***. These will have the biohazard symbol and indicate "sharps" somewhere on the container.

Figure 6

4.3.1 WHO CAN COME INTO CONTACT WITH SHARPS?

Disposal workers, sanitation and janitorial employees and everyone who is present where that container goes can come into contact with sharps after they are used. In addition, staff members should discard sharps in an appropriate container immediately after use, reducing the chances of sticking themselves or another person in the process.

4.3.2 RECAPPING NEEDLES IS NOT ACCEPTABLE!

Never try to recap sharps. Most have arecapping proof design, and if you do recap sharps, your facility could be fined for doing so.

5 CLEAN UP THE MESS

Bodily fluids, including blood, can result in messes in your facility. Sheets may contain blood or blood-containing items after they come into contact with a patient. In some cases, the level of bleeding may result in significant quantities of blood. Follow this section to learn how to clean up the mess properly.

5.1 KNOW WHAT TO DO

Your facility will have a policy for addressing large areas of blood or blood-containing fluids. This may include placing blood-containing sheets in specialized cleaning bins. Your employer will have a policy for what steps you do and do not need to take for cleaning up blood or bodily fluids. That policy supersedes this information.

5.2 CLEAN UP THE AREA IMMEDIATELY

1. Put on PPE.
2. Use absorbents, such as solidifier, to absorb most of the fluid. This may also include using a towel to soak up the fluid.
3. Use approved disinfectant cleaners. Some cleaners may not be allowed in your facility. Follow your organization's protocols, and use the appropriate, approved disinfectant for sanitizing the area.
4. Dispose of cleaning materials appropriately.

6 REPORT EXPOSURE TO BLOOD OR BLOOD-CONTAINING FLUIDS IMMEDIATELY

If blood or bodily fluids from another person do come into contact with your skin or mucus membranes, you must act immediately. Reporting the incident to your supervisor is the only way to address the possible health consequences from exposure.

1. Why Is Immediate Reporting Necessary? Exposure to bloodborne pathogens cannot be reversed, but you can help prevent the progression or incubation of an infection. For example, antiretroviral medications must be started within hours of exposure to HIV to give you the best chance for avoiding infection.
2. Are Results of Exposure Available Immediately? Upon exposure, your employer will likely draw a baseline set of bloodwork immediately. However, this only shows what you have been exposed to previously. Results of any possible infections from a new exposure may not be possible for several days or weeks. Retesting at intervals after exposure may be necessary for billing/ insurance purposes.
3. What Is an OSHA Form 300? This form is required by OSHA to document and track the incidence workplace injuries and "possible" illnesses causes from a person's duties and responsibilities on the job. Although some employers may continue using paper-based versions of this report, electronic reporting may be used as well. Follow the policy of your employer in reporting the incident.
4. Will an Employer Provide Care For Your Exposure? Unfortunately, every facility is different, and only your employer can provide information on what is and is not covered for your unique circumstances. Your employer may offer financial coverage for your exposure, and you may be asked to submit to a medical evaluation or submit relevant medical information after an incident. However, this information is kept confidential.

6.1 WHO IS SUBJECT TO OSHA REGULATIONS?

These regulations affect anyone who has a reasonable likelihood that they will come into contact with blood or bodily fluids while working. Determining reasonable likelihood is as simple as being in the same room, hallway or general vicinity as an ill person in the facility.

7 FIRST AID

First aid refers to the emergency or immediate care you should provide when a person is injured or ill until full medical treatment is available. For minor conditions, first aid care may be enough. For serious problems, first aid care should be continued until more advanced care becomes available.

The decision to act appropriately with first aid can mean the difference between life and death. Begin by introducing yourself to the injured or ill person. Explain that you are a first aid provider and are willing to help. The person must give you permission to help them; do not touch them until they agree to be helped. If you encounter a confused person or someone who is critically injured or ill, you can assume that they would want you to help them. This is known as "implied consent."

7.1 FIRST AID BASICS

The first step in any emergency is the recognition of the problem and providing help. When in doubt or when someone is seriously injured or ill, you should always activate the emergency response system by calling 911. If you're not sure how serious the situation is, the 911 operator will ask you a series of questions to determine the seriousness of it.

Remain on the line until additional help arrives, or until the 911 operator tells you to hang up. Emergency system dispatchers can guide you through the steps of performing cardiopulmonary resuscitation (CPR), using an automatic external defibrillator (AED), or delivering basic care until additional help arrives.

Whether you are at home, work, or school, know where the first aid kit and the AED are kept and be familiar with their contents. Know how to activate the emergency response system (by calling 911 if in the United States). Be aware of any policies in the workplace regarding medical emergencies.

After determining the problem, the next step in providing help is to determine the unresponsiveness of the injured or ill person. The best way to determine this is to tap the person and talk loudly to them: "Are you okay?" After determining unresponsiveness, yell for help. Look for any medical identifications, such as a necklace or a bracelet. This may provide a valuable clue to the cause of the situation.

7.2 SCENE SAFETY

Assessing the safety of the surroundings is critical when approaching any scene. You do not want to become another person who is injured or ill so look for any potential dangers. Remove the person from any dangers, such as presence of water at the scene. Be especially alert to avoid danger from automobile traffic.

7.3 HANDWASHING AND PERSONAL PROTECTIVE GEAR

Handwashing is essential in prevention of disease and illness. Wash your hands after each episode of care and after taking off gloves. Also, be sure to wash the injured/ill person's hands at the first opportunity. When a sink is not available, use hand sanitizers. (Most hand sanitizers are alcohol-based and are substitute for hand washing when needed.)

Figure 7

Proper handwashing technique is fairly simple:

- Completely wet your hands and generously apply soap.
- Rub vigorously for at least 20 seconds (Figure 7).
- Rinse your hands with plenty of running water.
- Dry your hands with a towel or air dryer.

Using personal protective gear is an important strategy to minimize the risk of blood and bodily fluid exposure. If the person is bleeding, always wear gloves and protective eyewear when giving first aid care. The universal precaution is to use personal protective equipment whenever there is possible exposure to blood or bodily fluids; it reduces the risk for both the rescuer and the injured/ill person to be exposed to a blood borne disease. Gloves protect your hands from exposure to blood and other bodily fluids while eye protection prevents accidental exposure from splashing fluids.

Consider a pocket mask as part of your personal protective gear as it provides safety during rescue breathing. Be sure to dispose of all equipment that has touched bodily fluids in a biohazard bag when available.

Figure 8

When taking off the gloves, avoid touching the outer contaminated surface. Slowly pull one glove off while turning it inside out ***(Figure 8a)***. Place the glove in the palm of the other gloved hand ***(Figure 8b)***, and then remove the second glove while turning it inside out ***(Figure 8c)***.

7.4 FIRST AID KIT

Consider purchasing a commercially available first aid kit or making your own. Having one available around the house, in your car, and at your place of work is essential.

Common items found in a first aid kit are:

- (Sterile) Gauze
- Antiseptic wipes and swabs
- Absorbent compresses
- Antibiotic cream
- Burn ointment
- Mask for breathing (rescue breathing/CPR)
- Chemical cold pack
- Eye shield and eye wash
- First aid reference guide that includes local phone numbers

Figure 9

7.5 SELF-ASSESSMENT FOR FIRST AID

1. What is the first question you must ask before you respond to any first aid situation?
    a. Age of the injured or ill person
    b. Safety of the scene
    c. Nature of the injury
    d. Time of the injury

2. Which of the following are considered personal protective equipment?
    a. Gloves
    b. Mask
    c. Eye shield
    d. All of the above

3. What is the recommended amount of time to wash your hands?
    a. 10 seconds
    b. 20 seconds
    c. 1 minute
    d. 4 minutes

7.6 ANSWERS

1. B
2. D

   Personal protective equipment is essential when responding to any first aid or emergency situation. It is difficult to predict if the person will vomit, is bleeding, or is seriously injured.

3. B

   Vigorously rub your hands together using soap and water for at least 20 seconds and rinse thoroughly before and after every episode of care.

8 MEDICAL PROBLEMS

Medical problems can range from very minor to life-threatening emergencies. Rescuers trained in first aid must be prepared to respond appropriately.

8.1 BREATHING PROBLEMS

Breathing problems can arise from underlying lung diseases such as asthma or emphysema, as well as from illnesses such as pneumonia. Be aware that the other body system problems such as heart attack, stroke, seizure, or anxiety can all result in breathing issues as well.

Signs of a breathing problem include fast or shallow breathing, noisy breathing, producing unusual sounds, or the inability to talk due to breathlessness. Persons with asthma often make a musical sound when breathing, which can be heard as wheezing. Severe allergic reactions can also cause wheezing. High-pitched sounds during inhalation may suggest a partial blockage of the upper airway.

Persons who have asthma or chronic lung disease are generally familiar on how to use their breathing medications. Common medications include albuterol and atrovent inhalers. The use of a spacer (a tube attached to the inhaler that holds the medication until the person breathes it in) can improve the effect of these medications. A person in severe distress may be unable to properly use their inhaler. Call 911 if the person appears in significant distress.

Technique for using an inhaler:

6. Shake the inhaler canister.
7. Place the opening of the inhaler into the spacer if available.
8. Instruct the person to fully exhale.
9. Place the spacer or inhaler into their mouth.
10. Simultaneously have the person inhale slowly and deeply while pressing down on the top of the inhaler canister.
11. Instruct the person to hold their breath for up to 10 seconds if possible.
12. Be prepared to repeat if respiratory problems persist.
13. Stay with the person until the symptoms improve or until emergency response arrives.

Figure 10

Figure 11

8.2 ALLERGIC REACTIONS

Allergic reactions can arise from insect stings, from adverse reaction to foods and medications, or from environmental triggers such as pollens, dust, or chemical fumes. Bee, wasp, or hornet stings can produce rapid and potentially fatal reactions while common food triggers include nuts, eggs, and fruits. Symptoms may be mild, such as itching and hives, or severe causing life-threatening swelling of the airway, lips, and tongue.

Epinephrine can be a life-saving medication and should be given at the first sign of a severe allergic reaction. Commercially available epinephrine pens, such as EpiPen, are simple to use.

The basic instructions for using epinephrine pens are as follows:

1. Form a fist around the pen and remove the safety release cap ***(Figure 11a** & **11b)***.
2. Place the orange end of the pen against the outer mid-thigh (with or without clothing) ***(Figure 11c)***.
3. Push down hard until a click is heard or felt, and hold the pen in place for 10 seconds ***(Figure 11d)***.
4. Remove the pen and massage the injection site for 10 seconds.
5. Properly dispose of the used device in a sharps container ***(Figure 11e)***.
6. Note the time of the injection.
7. Seek medical care.

Antihistamines, such as diphenhydramine (Benadryl®), are also important in the treatment of severe allergic reactions. Be aware that epinephrine will wear off, and the persons receiving an injection should be evaluated at an appropriate medical facility.

8.3 HEART DISEASES

Heart disease remains the leading cause of death in the United States. Your prompt actions can mean the difference between life and death during a heart attack. If the person is experiencing a heart attack, blocked blood flow to the heart tissue results in muscle death. (Keep in mind the mantra: Time Is Muscle.) Prompt response and medical attention is critical in limiting damage to the heart muscle.

Chest discomfort can be described as ache, pressure, squeezing, or crushing. Certain persons such as women and diabetics are less likely to have classic signs of a heart attack. These individuals may simply experience nausea or unexplained fatigue. Shortness of breath could be the only sign of an impending heart attack for some individuals.

Denial often adds a significant delay in seeking care. Many persons argue that they are too young or too healthy to have a heart attack. Even those with minimal risk factors can suffer a heart attack.

Aspirin keeps blood clots from growing larger and may reduce the severity of a heart attack. If there is no true allergy to aspirin, no serious bleeding, and no signs that suggest a stroke, give aspirin to the person.

When caring for a person who may be having a heart attack, do the following:

1. Keep the person and yourself calm.
2. Have the person sit or lie down.
3. Activate the emergency medical system by calling 911.
4. Give 2 to 4 baby aspirins or half to a full adult aspirin tablet. Make sure the aspirin is not enteric coated.
5. Be prepared to administer CPR. Heart attacks can become fatal quickly.

A heart attack is a life-threatening medical emergency. Persons with symptoms of a heart attack should be transported to the hospital via emergency medical services (EMS). Do not allow a person suspected of having a heart attack to drive themselves to the hospital. Encourage the person to wait until EMS arrives. If they refuse, find someone to go with them.

8.4 FAINTING

Fainting is a common reaction to a variety of conditions. Individuals may faint at the sight of blood or during periods of intense emotional stress. More serious conditions, such as an abnormal or erratic heart rhythm, can also cause fainting. Also, severely dehydrated persons may faint when standing up suddenly. The body's reaction to the decreased blood flow to the brain causes the person to pass out. By lying down, blood flow to the brain is improved.

When caring for a fainting person, do the following:

1. Ensure safety of the scene.
2. Help the person lie down.
3. Elevate their legs if possible.
4. If there is no rapid improvement or the person becomes unresponsive, call 911.

A person can also faint while seated in a chair. In this case, help them to the floor. Be aware of the potential for injury if the person has fallen. If the person does not quickly regain consciousness, immediately call 911. Keep in mind that fainting can be caused from a wide range of problems, some of which can be life-threatening. If you are unsure of the cause of fainting, call 911.

8.5 LOW BLOOD SUGAR IN PERSONS WITH DIABETES

Diabetes affects a person's ability to regulate blood sugar. Fluctuations in blood sugar in either direction can produce symptoms. Persons with diabetes can experience low blood sugar due to illness, stress, skipping meals, or taking too much insulin.

Low blood sugar can cause altered states of consciousness such as agitation, confusion, and loss of consciousness. Very low blood sugar can result in excessive tiredness, weakness, and even seizure-like activity.

When dealing with a person suspected of having low blood sugar, do the following:

1. Give them a sugar-containing beverage, such as fruit juice, milk, or a soft drink.
2. Encourage them to sit or lie down.
3. Call 911.
4. If their symptoms improve, encourage them to eat.

Glucose gel and tablets are available and are a good way to quickly increase blood sugar. Alternatives to gels and tablets include packets of sugar, honey, or jelly from restaurants which may be readily available. Consider keeping any of these in the first aid kit.

If a person with diabetes is unable to sit up or swallow safely, do not give them anything to eat or drink. This could result in choking or aspiration.

8.6 STROKE

A stroke, sometimes called a brain attack, is a medical emergency caused by a blocked blood vessel or bleeding in the brain.

Persons experiencing a stroke will have symptoms that can include the following:

- Slurred or unintelligible speech
- Facial droop
- Numbness
- Weakness on one side of the body
- Difficulty walking or maintaining balance
- Loss of vision
- Severe headache
- Loss of consciousness

Stroke is a neurological emergency, so time is critical.

If you suspect a person is having a stroke, do the following:

1. Immediately call 911.
2. Help the person sit or lie down.
3. Retrieve an AED and first aid kit.
4. Record the time that neurologic symptoms were noted and the last time the person was free of symptoms.
5. Be prepared to perform CPR if needed.

8.7 SEIZURES

Seizures result in abnormal body motion due to an irregular electrical discharge in the brain. Seizures can involve one or both sides of the body. Many seizures result in rhythmic jerking motions, but some seizures may result in a blank stare type of behavior. A person having a seizure may fall to the ground, bite their tongue, and lose control of bowel and bladder. Seizures are often accompanied by a brief period of unresponsiveness.

Causes of seizures or seizure-like activity include epilepsy, low blood sugar, head injury or trauma, heart disease, ingestion of a toxin, or heat-related illness.

When caring for a person experiencing a seizure, do the following:

1. Help them to the ground if needed.
2. Clear the area around them to prevent injury.
3. Place a small pillow or towel under their head.
4. Call 911.

After the seizure is over, do the following:

1. Feel the person's pulse. (Keep in mind that heart problems can cause seizure-like activity.)
2. Position the person on their side to reduce the chance of choking on vomit. (Persons may throw up after a seizure.)
3. Stay with them until help arrives.

Do not attempt to restrain a person having a seizure. Also, do not try to open their mouth or put anything between their teeth.

A victim experiencing an absence or staring-type seizure will have their eyes open but will not respond to you. These episodes are generally brief and not associated with jerky body motion or loss of consciousness. This type of event should be treated like any other seizure and a medical evaluation is warranted.

8.8 SHOCK

Shock can be caused by overwhelming infection, blood loss, severe allergic reaction, severe dehydration, or heart problems. When blood flow is significantly reduced, the body does not receive an adequate supply of oxygen, and shock occurs. Victims experiencing shock may lose consciousness or fail to respond.

Signs and symptoms of shock include:

- Poor skin color that is pale, gray, or bluish
- Dizziness and lightheadedness
- Nausea or vomiting
- Behavior change such as agitation, confusion, or unresponsiveness
- Clammy skin

When confronted with a person in shock, do the following:

1. Activate the emergency response system by calling 911.
2. Help the person lie down and elevate their legs.
3. Cover the person with blankets to keep warm.
4. Be prepared to perform CPR.
5. Stay with the person until help arrives.

8.9 SELF-ASSESSMENT FOR MEDICAL PROBLEMS

1. Which of the following signs is most consistent with a stroke?
    a. Confusion
    b. Chest pain
    c. Facial droop
    d. Nausea

2. You notice that a person has experienced a significant amount of blood loss, has pale skin color, and is becoming confused. What is most likely the cause?
   a. Seizure
   b. Stroke
   c. Low blood sugar
   d. Shock

3. Which of the following is not appropriate when caring for a person having a seizure?
   a. Clear the area.
   b. Immediately call 911.
   c. Protect the person from injury.
   d. Place an object between teeth to prevent tongue biting.

8.10 ANSWERS

1. C
   Facial droop, slurred speech, numbness, and weakness are all focal neurological signs that are consistent with a stroke.

2. D
   This is a classic presentation of shock because of blood loss, and it is a medical emergency. Other causes of shock include infection, severe allergic reactions, severe dehydration, and heart problems.

3. D
   Do not attempt to open the mouth or place anything between the teeth. This may result in injury to the person or the rescuer.

9 TRAUMATIC INJURIES

First aid providers are often called to assist with traumatic injuries. Knowing how to respond to a variety of situations is important for first aid providers. First aid responders are valuable in providing initial care and assisting more skilled providers in delivering care to the seriously injured persons.

9.1 CONTROLLING BLEEDING

Blood loss often gets the most attention. Many times the amount of bleeding is overestimated and draws attention to wounds when more serious injuries should be dealt with first. Whenever confronted with bleeding, perform a quick overview of the person to make sure something more serious is not being overlooked.

Always use personal protective equipment prior to caring for an injured and bleeding person. The person can be instructed to perform some self-care while you put on your protective gear.

The most effective way to stop bleeding from a wound is to apply direct pressure. Use a dressing and your gloved hand to apply firm and direct pressure to the injured area. Continue to hold the pressure until the bleeding stops. If there are multiple wounds, apply pressure dressings to the worst injuries first, and then to the lesser bleeding injuries. The person may temporarily be able to assist by holding pressure on some areas.

Very small wounds such as scrapes can heal more rapidly by using an antibiotic salve. Ask the person if they have any allergies before applying the antibiotic salve. Thoroughly wash minor scrapes and abrasions with soap and water before bandaging.

Massive bleeding can occur due to extreme injuries such as open fractures or deep lacerations. When direct pressure does not control bleeding, a tourniquet may be required. Tourniquets can consist of a blood pressure cuff, belt, or premade versions. Although commercially prepared tourniquets are more effective than improvised ones, if none is available, one can be made quickly using a piece of cloth and stick-like object. Understand that application of a tourniquet is painful but may be necessary to prevent life-threatening blood loss. Tourniquet use is difficult and can be dangerous if done incorrectly. Direct pressure should be applied first.

To apply a tourniquet, do the following:

1. Put on personal protective gear.
2. Apply tourniquet approximately two inches above wound.
3. Tighten until the bleeding stops.
4. Record the time the tourniquet was applied.
5. Call 911.
6. Stay with the person and do not release tourniquet until advanced help assumes care.

Figure 12

Certain situations may produce massive internal bleeding that is not visible when examining the person. This may occur from trauma, falls from a height, car accidents, or crush injuries. Penetrating injuries caused by a knife or gunshot may produce devastating internal bleeding with very little external blood loss. Immediately call 911 whenever these injuries are suspected. Help the person lie down and remain still. Check for signs and symptoms of shock. You may need to cover the person to keep them from getting cold. Stay with them until advanced help arrives.

9.2 TEETH INJURIES

Teeth may be broken, chipped, or completely knocked out of the mouth. Always use gloves when handling another person's teeth.

Sometimes teeth can be re-implanted and should be transported with the person to the dentist or to the medical facility. Always handle teeth gently and avoid touching the roots. Gently wash the tooth with clean water but never scrub it or its roots. A tooth can be transported in milk, saline solution, or under a cooperative person's tongue. The person must see a dentist or a medical provider immediately.

If a tooth is simply loose, have the person bite down on a piece of gauze and call their dentist. Chipped or cracked teeth can be quite painful. If blood is visible at the crack, prompt dental care is required to prevent loss of the tooth. Injured teeth may later begin to turn color. This suggests an injury to the nerve, and a visit to the dentist is warranted.

9.3 NOSEBLEEDS

Nosebleeds can be quite dramatic and are often messy. Be sure to wear personal protective equipment and eye protection when attending to nosebleeds. Persons with nosebleeds often swallow a fair amount of blood, which may result in vomiting. Therefore, you should prepare for the worst.

After ensuring that the scene is safe and protective equipment is on, press both sides of the nostrils just below the bony portion of the nose for a minimum of 5 to10 minutes. If bleeding continues, try holding pressure for an additional 10 minutes. If bleeding continues after this, seek further medical care. If the victim has trouble breathing or show signs of severe distress, call 911.

Figure 13

9.4 PUNCTURES AND IMPALED OBJECTS

Puncture wounds and impaled objects pose special risk to the injured person. Puncture wounds may penetrate deeper than is apparent and injure sensitive structures such as nerves, muscles, tendons, or blood vessels. Control the bleeding from puncture wounds with direct pressure, and then seek further medical attention. Puncture wounds may carry germs deep within a wound and may result in serious infections. Therefore, any serious puncture wound should be evaluated by a professional as soon as possible.

Impaled objects must be left in place. It is important to understand that the object may pinch off a blood vessel, and removal of the object may result in massive blood loss from an injured blood vessel. Stabilize impaled objects with gauze and dressings and transport the person to the emergency department.

9.5 EYE PROBLEMS

Common eye injuries can result from direct blows, foreign bodies, orinadvertent scratching of the eye. Symptoms include immediate pain, tearing, changing vision, and redness. Bruising and bleeding can also occur. More serious injuries include punctures and lacerations.

Simple irritants such as dust or debris can be flushed using water. Any chemical exposure to the eye should be flushed with copious amounts of water; and you should call 911. Special equipment can be required to adequately irrigate the eye, so you should seek professional care.

If a more serious injury to the eye is suspected, call 911. Protect both eyes with a bandage or eye shield. Because the eyes work in pairs, leaving one eye uncovered causes both eyes to move when the good eye tracks objects. Covering both eyes minimizes the movement of the injured eye. However, doing so leaves the person effectively blind, which can be dangerous and frightening to the person. Never leave a person with both eyes bandaged alone. They will require verbal cues about their environment around them as well as reassurance. A physician skilled in eye care must evaluate these injuries.

Figure 14

9.6 HEAD INJURIES

Head injuries can accompany any traumatic event.

Signs and symptoms of a head injury or traumatic brain injury include the following:

- Confusion
- Headache
- Nausea and vomiting
- Memory loss
- Loss of balance and coordination
- Seizure
- Loss of consciousness

Figure 15

A person demonstrating any of the above should be further evaluated by a physician. Head injuries can be devastating and have lifelong consequences resulting in loss of function and decreased productivity. Permanent disability can occur in more severe cases. Protect the person from further injury by stabilizing the head and neck manually and prepare them for transport to advanced medical care. Observe closely for changes in condition. Be prepared to start CPR if the person becomes unconscious.

9.7 SPINE INJURIES

Spine injuries can occur from a fall, diving, car accident, sporting event, or almost any other physical activity. Head injuries may accompany spine injuries. A high index of suspicion must be maintained and efforts must be made to protect against further injury to the spine and the spinal cord.

Figure 16

The following increase the risk of a spine injury:

- Age greater than 65 years
- Bicycle or motorcycle crash
- Car accident
- Fall from heights
- Pain in the midline of the neck or back overlying the bony prominences
- Numbness, tingling, or weakness
- Intoxication or substance use
- Other distracting painful injuries

Injuries to the spine can be unstable. Unnecessary movement of the person can result in spinal cord injury and permanent paralysis. When performing first aid on a person with a suspected spine injury, avoid bending, flexing, or twisting the person's head or neck. If they begin to vomit, stabilize their head and neck by placing both hands on the side of the head and neck, and assist them to their side. Maintain stabilization until advanced help arrives. Also, call 911 as soon as possible.

9.8 BONE AND JOINT INJURIES

Bone and joint injuries are common occurrences in daily life. Physically active people such as those participating in sports are more likely to suffer these types of injuries. The elderly and the infirm are also at high risk for fall related sprains, strains, and breaks. Sprains occur when excessive force or abnormal motion stretches a joint beyond a normal degree. The result of a sprain is pain, swelling, and even bruising. It is impossible to rule out a fracture without an x-ray.

The first aid care for both sprains and broken bones includes the following:

1. Ensure the scene is safe and wear personal protective equipment.
2. Apply gauze to any open wounds.
3. Apply an ice pack to the injured area for up to 20 minutes.
4. Encourage further evaluation by a health care provider and avoid use of the injured part.

Call 911 if any of the following are present:

- Open wound over a joint
- Abnormal position or bent extremity
- Obvious joint dislocation

Consider the following as special circumstances that should be discussed:

An open or compound fracture occurs when the bone breaks through the skin. Do not attempt to push the bone back in and/or straighten the extremity. Bones that are in an abnormal position or bent should be splinted in place. Do not attempt to manipulate or correct an abnormally positioned bone or joint.

A splint can protect an injured extremity. A splint can be made by using magazines, wood, or rolled up towels. Pad the injured extremity, if possible, by using a towel or cloth. Place splint material on either side of the injured extremity and secure in place using tape or gauze. Make sure that the splint is not too tight. The fingertips or toes in a splinted extremity should remain warm and pink. Seek immediate care in a medical facility.

Amputations occur when part of the body is accidentally cut off. Because surgeons may be able to reattach an amputated part, it should always be transported to the hospital with the person.

When dealing with an amputation, do the following:

1. Ensure scene safety, get the first aid kit, and put on personal protective equipment.
2. Activate the emergency response system by calling 911.
3. Apply direct pressure to the bleeding area using gauze.
4. Locate the amputated body part and care for it as instructed below.
5. Stay with the person until more advanced care arrives.

To care for an amputated part, do the following:

1. Wear personal protective equipment.
2. Locate the amputated part.
3. Gently rinse the amputated part with clean water.
4. Wrap the amputated part in gauze and place it in a plastic bag. Seal the plastic bag.
5. Fill up another bag with ice, and place the first bag with the amputated part in the ice bag. Seal the ice bag.
6. Write the person's name on the bag.
7. The amputated part and the person should be transported together to the hospital.

9.9 BURNS AND ELECTRICAL INJURIES

Burns can occur from direct contact with any heat source, electricity, or certain chemicals. Burns can vary from minor superficial burns to very deep burns that damage muscles, tendons, nerves, and even bones. High-voltage electrical injuries can produce devastating injuries and can be fatal. Any person sustaining an electrical injury requires an evaluation in the emergency department.

Small burns can be treated with first aid by doing the following:

1. Ensure that the source of the burn has been dealt with, and the scene is safe.
2. Wear personal protective equipment, and get the first aid kit.
3. Rinse the burn in cool or cold water.
4. Apply antibiotic or burn cream if no allergies exist.
5. Cover with a clean, dry non-stick dressing.
6. Have the person follow up with a health care provider.

Figure 17

Do not apply ice to a burn. This technique will result in a cold injury on top of a burn and cause further tissue damage.

Call 911 when the following occur:

- A large burn
- Burns on face, hands, or genitals (Burns to skin over joints, such as the backs of the knees, also require special treatment as constant motion will make healing more complicated.)
- Difficulty breathing
- A fire
- Possibility of carbon monoxide exposure

Stop, drop, and roll is the best way to put a fire out from the person. You can also smother the person with a wet blanket to extinguish the flames. Remove the blanket after the fire is out.

When caring for a person with a large burn, do the following:

1. Ensure that the scene is safe.
2. Call 911.
3. Put on personal protective equipment and get the first aid kit.
4. Remove the person's clothing and jewelry if possible.

9.10 SELF-ASSESSMENT FOR TRAUMATIC INJURIES

1. You are treating a person with a large laceration to the arm. Direct pressure is not controlling the bleeding. What is the next step?
   a. Apply tourniquet.
   b. Go for help.
   c. Start an IV.
   d. Await additional help.

2. A 20-year-old person dove off the end of the dock. Upon reaching the surface of the water, they do not appear to be moving. What is the likely cause?
   a. Heart attack
   b. Low blood sugar
   c. Neck injury
   d. Mammalian diving reflex

3. You respond to an archery range due to an injury. The person has an arrow impaled in their groin. Which of the following is the best option?
   a. Push the arrow through the other side of the leg and remove.
   b. Stabilize the arrow in place.
   c. Remove the arrow and apply direct pressure.
   d. Apply tourniquet, and then remove the arrow.

9.11 ANSWERS

1. A
   Severe bleeding that is not controlled by direct pressure must be dealt with quickly. A tourniquet is a temporary control measure and could be life-saving.

2. C
   Diving into shallow water is a common cause of cervical spine injury and potential paralysis.

3. B
   Impaled objects must be left in place. Attempts at removal in the field can lead to uncontrollable hemorrhage and death. Stabilize the object in place. Then transport the person to a hospital for further care.

10 ENVIRONMENTAL INJURIES AND ILLNESSES

Our growing quest for outdoor adventures often leads to injury and illness as a result of specific factors related to the environment that frequently require first aid care.

10.1 BITES AND STINGS

Insect bites and stings are a common and an annoying occurrence. Most bites are minor but the potential for a serious allergic reaction does exist.

Be alert for any signs or symptoms of a severe allergic reaction, as this must prompt immediate 911 notification.

Bites and stings caused by insects such as spiders, scorpions, and fire ants can cause local reactions, but on occasion more serious systemic reactions can occur ***(Figure 18a)***.

Signs and symptoms that suggest a more serious reaction include:

- Nausea or vomiting
- Severe pain at the site
- Abdominal pain
- Difficulty breathing
- Muscle rigidity
- Headache
- Decreased responsiveness

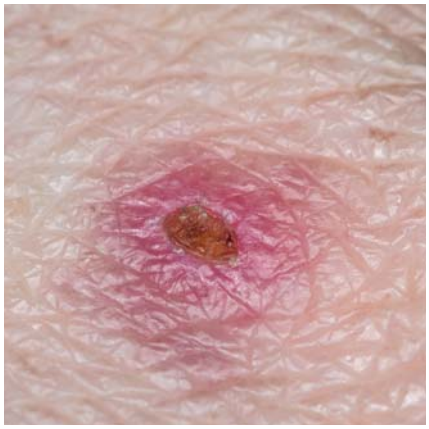


Figure 18a

The black widow spider bite is known to cause severe abdominal pain that can mimic appendicitis in children.

Ticks carry a variety of diseases, and one must be vigilant for signs and symptoms for up to one month after exposure. Signs of a tick-borne disease include fever, headache, joint pain, and skin rash. To remove an attached tick, grasp it by the head with tweezers and pull straight out. Clean the area with soap and water or an alcohol swab. If the tick bite occurred in a geographic area where tick-borne disease occurs, seek medical treatment for possible prophylactic antibiotic therapy.

Figure 18b

Lyme disease can produce a distinctive "bull's eye" rash ***(Figure 18b)***. Seek medical treatment.

If visible, remove a bee stinger by scraping it away. Wash the area with cold water and apply ice. Stay with the person for at least 30 minutes as some allergic reactions can be delayed in onset.

A bite from an animal such as a raccoon, bat, skunk, fox, or coyote carries the highest risk of rabies. Always make sure the scene is safe when giving first aid to any person with an animal bite. Contact the emergency response system as an animal control officer may be able to capture the animal and determine the risk of rabies. Clean the wound with soap and water and control bleeding by applying direct pressure. Animal bites are prone to infection and can cause further injury due to the puncture nature of the wound. Seek medical care by a qualified health care professional for any bite that breaks the skin, or if there is concern about rabies or other infection.

Snakebites require medical attention. If the pain is getting worse, swelling occurs, bruising develops, or systemic signs (nausea and vomiting) develop, a poisonous snakebite has occurred. Call 911 and do not delay medical attention. Make sure the scene is safe, and the snake is no longer a threat. Keep the person calm and try to avoid moving the extremity that was bitten. Remove any constricting clothing and jewelry from the affected area. Gently wash the affected area with soap and water if available. Additional care is required in a hospital setting. Do not apply a tourniquet.

10.2 TEMPERATURE RELATED ILLNESSES

Heat-related illnesses can occur due to extremes of temperature, particularly in the elderly, and during vigorous exercise. Illnesses include heat cramps, heat exhaustion, and heat stroke.

Heat cramps result in painful muscle spasms of the extremities, the back, and the stomach. Sweating and headache may accompany the cramps. Symptoms most often resolve with resting, cooling-off, and drinking water, a sports drink, or a similar electrolyte solution. Light stretching and massage can also be helpful.

Heat exhaustion is more serious. Signs of heat exhaustion include dizziness, vomiting, muscle cramps, fatigue, increased sweating, and lightheadedness.

Immediately move the person to a cooler environment if possible. Have the person lie down and loosen or remove as much clothing as possible. Use cool water to spray them and fan if available. A cool damp cloth can be used as an alternative. Encourage them to drink water or a sports drink. Remain with them until the emergency medical response arrives.

Heat stroke is life-threatening, and immediate action is required. Signs and symptoms of heat stroke include confusion, loss of consciousness, dizziness, muscle cramps, vomiting, and seizures. If you think the person is having a heat stroke, immediately call 911.

When treating a person with heat stroke, immediately do the following:

1. Assess scene safety, wear protective equipment, and obtain first aid kit and AED.
2. Use a spray bottle with cold water and a fan, if available, as rapid cooling is imperative.
3. If the person is able, encourage them to drink water, a sports drinks, or an electrolyte solution.
4. Continue to cool the person until their behavior returns to normal or until advanced help arrives.

10.2.1 SUNBURN

Exposure to the UV radiation from sunlight can result in sunburn. Sunburn can be minor or result inblistering and sloughing ***(Figure 19)*** of skin. Avoidance of additional sun exposure is key. Encourage hydration and drinking of extra fluids. Topical aloe vera can provide symptomatic relief. If not allergic, ibuprofen can also help alleviate some of the discomfort.

Figure 19

10.2.2 FROSTBITE

Exposure to cold can result in frostbite and is most common in extremities such as ears, nose, fingers and toes. Wind chill increases the risk of frostbite. In severe frostbite cases, ice crystals form in the tissues and destroy cells resulting in permanent damage. The skin will appear waxy and white or yellow-gray. The area will be cold and numb and may feel like a block of wood. The tissue will be firm and will not move or compress easily when squeezed.

To provide first aid for frostbite, do the following:

1. Get the person to a warm place.
2. Call 911.
3. Remove any constricting clothing and all jewelry from the affected body part.
4. Remove all wet clothing.
5. Redress in dry, warm clothing and cover with a heavy blanket.
6. The frostbitten extremity should be quickly rewarmed in hot water (104°F).

Do not rub, squeeze, or slap the affected extremity as this may increase tissue damage. Do not rewarm a frozen extremity if there is a risk of refreezing. Seek further care from a health care professional.

10.2.3 HYPOTHERMIA

Hypothermia is a potentially life-threatening condition when the body temperature falls dangerously low. Hypothermia can even develop in non-freezing temperatures.

Signs and symptoms of hypothermia are:

- Behavior change (confusion or lethargy)
- Paradoxical undressing
- Shivering (but stops as hypothermia worsens)
- Muscle stiffness
- Cold skin
- Decreased respiratory effort
- Progression to unresponsiveness and death

Rapid action is required to care for a hypothermic person.

Call 911 immediately and do the following:

1. Remove the person from the cold and get them to a warm environment.
2. Remove any wet clothing and dry the person.
3. Redress in dry, warm clothing and cover with a blanket.
4. Cover the head as it is a source of significant heat loss.
5. Be prepared to perform CPR. Stay with the person until advanced help arrives.

10.3 TOXIN AND POISON EXPOSURE

The list oddf toxins and potential poison exposures is extensive and beyond the scope of this handbook. Some basic concepts that are universally applicable for first aid providers are included in this handbook.

A material safety data sheet (MSDS) is required to be available where chemicals are in use in businesses and institutions. The data sheets provide information about the composition of various chemicals and are useful when contacting poison control.

To provide first aid in these situations, do the following:

1. Call 911.
2. Ensure the scene is safe and wear personal protective equipment.
3. Get the first aid kit and the AED.
4. Tell the dispatcher the chemicals involved if possible.
5. Remove the person from the toxin or poison and seek a well-ventilated area if possible.
6. Remove saturated clothing if present.
7. Follow any recommendations from the 911 dispatcher or the MSDS sheet.
8. Stay with the person until advanced help arrives.
9. If CPR is required, ensure a mask is used if possible.

When treating any toxin and poison exposures, the eyes should be flushed with copious amounts of water. Acids and alkaline solutions are particularly caustic and can lead to particularly caustic and can lead to permanent vision impairments or loss

10.4 SELF-ASSESSMENT FOR ENVIRONMENTAL INJURIES AND ILLNESSES

1. A child was bitten by something and now complains of severe abdominal pain. What is most likely the cause?
   a) Black widow spider
   b) Hornet sting
   c) Fire ant
   d) Tick

2. You are treating a person with a frostbite. What is the best way to warm up their feet?
   a) Soak in hot water.
   b) Rub vigorously.
   c) Slap and then massage.
   d) Soak in room temperature water.

3. A factory worker is sprayed in the face by an unknown chemical. Which of the following actions is time critical?
   a) Contacting their personal physician
   b) Having them sit down
   c) Copious irrigation of the eyes
   d) Prophylactic CPR

10.5 ANSWERS

1. A
   Black widow spider bites can produce systemic signs and symptoms. A rigid abdomen is classic for this type of poisonous bite in children and can even mimic acute appendicitis.

2. A
   Soak the affected extremity in hot water of approximately 104 °F. Avoid rubbing, slapping, squeezing, or vigorously massaging as this may cause further tissue damage.

3. C
   The eyes should be flushed with copious amounts of water when a chemical exposure occurs. Acids and alkaline solutions are particularly caustic and can lead to permanent vision impairments or loss.

11 WHAT'S NEXT?

Keep any records or certificates you receive to prove you have completed training, which will need to be repeated one-year following your completion of this course as well.

Bloodborne pathogens can be deadly, and not understanding them will lead to infection. Protect yourself by committing this information to memory now, and spend your time enjoying your job, not fearing exposure.

Schedule and begin your on-site training, if required by your facility, to complete the mandated bloodborne pathogens training for your workplace.

12 ADDITIONAL TOOLS

12.1 MEDICODE

With MediCode, you no longer will have to carry a set of expandable cards with you at all times while at work. You will never have to waste valuable time in an emergency situation searching through multiple algorithms until you find the right one. All of the algorithms are now accessible from the palm of your hand, and you will be selecting your desired algorithm by memory in no time. Choose between multiple viewing options and easily share algorithms with co-workers and friends through email and social media.

To improve functionality and speed in obtaining your desired algorithm as quickly as possible in an emergency, they have been divided between BLS, ACLS , PALS and CPR. All are accessible from the home screen. The individual algorithms included within this app are:

- Basic Life Support (BLS)
- Advanced Cardiac Life Support (ACLS)
- Pediatric Advanced Life Support (PALS)
- Cardiopulmonary Resuscitation (CPR) AED, and First Aid

12.2 CERTALERT+

CertAlert+ is the perfect app to minimize a potential area of stress and distraction in your life. With CertAlert+, you will have all your licenses and certifications in one place anytime you need them. We will keep track and remind you when your expiration date approaches, and we will help you with your registration whenever possible.

With CertAlert+, you can:

- Compile all required licenses and certifications in one location.
- Take photos (front and back) of certification cards and licenses for simple reference.
- Record all expiration dates and store with ease.
- Choose when you want to be reminded of your approaching expiration dates.
- Send all license or certification information directly to your email after exporting from the app.
- Quick access to easily register for online certification and recertification courses.

13 BLOODBORNE PATHOGENS REVIEW QUESTIONS

1. What is an exposure control plan?
    a. A plan that directs employees how to respond to exposure to radiation.
    b. A plan that directs employees how to respond to exposure to too much sunlight.
    c. A plan that directs employees how to respond to exposure to pathogens.
    d. A set of optional guidelines to prevent the transmission of bloodborne pathogens.

2. Which is not an example of a bloodborne pathogen?
    a. HIV
    b. Hepatitis B
    c. Hepatitis C
    d. All of the above are bloodborne pathogens

3. After cleaning up some blood, you have just removed your gloves. What is the next immediate action to take?
    a. Wash your hands
    b. Go back to work
    c. Go get something to eat
    d. Go to the break room for some water

4. What is the best way to protect yourself from bloodborne illness?
    a. Use waterless hand sanitizer to wash hands
    b. Use personal protective equipment
    c. Not receiving the Hepatitis B vaccination
    d. Use cloth gloves

5. How should you wash your hands after exposure to blood or body fluids?
    a. With waterless hand sanitizer
    b. With warm water
    c. There's no need to if you were wearing gloves
    d. With soap and large amounts of warm water

6. When cleaning up an area that may have been exposed to a bloodborne pathogen, you should
    a. Use personal protective equipment
    b. Use absorbent material to soak up the fluid
    c. Disinfect the area
    d. All of the above

7. What are bloodborne pathogens?
    a. Normal body tissues present in blood.
    b. Tiny organisms that can only be transmitted when sneezing.
    c. Harmful bacteria and viruses found in blood and body fluids.
    d. Bacteria that rarely make people sick.

8. Which is the correct order for responding to a bloodborne pathogen exposure?
    a. I. Act Immediately II. Tell Your Supervisor III. Protect Yourself IV. Clean the Area
    b. III, I, IV, II
    c. I, II, III, IV
    d. I, III, II, IV
    e. II, III, IV, I

9. What is the best motto to remember for universal precautions?
    a. Any possible infection will always result in bleeding.
    b. Anyone with an bloodborne infection will transmit it to someone else.
    c. Blood and feces are the only reasons you would need to follow universal precautions.
    d. Any blood or bodily fluid should be treated as containing the deadliest type of pathogen.

10. How long can bloodborne pathogens survive outside of the body, and how do you know it is safe to touch dried blood or bodily fluids?
    a. Two hours; dried blood can be touched without gloves after two weeks for the purposes of exposure control.
    b. Depends on the specific pathogen; any type of dried blood or bodily fluids should always be considered hazardous for the purposes of exposure control.
    c. Up to two weeks; any dried blood or bodily fluid-containing items should always be considered hazardous for the purposes of exposure control.
    d. Indefinitely; any type of dried blood can be immediately touched without personal protective equipment.

13.1 ANSWERS

1. C
   A plan that directs employees how to respond to exposure to pathogens.

2. D
   All of the above are bloodborne pathogens

3. A
   Wash your hands

4. B
   Use personal protective equipment

5. D
   With soap and large amounts of warm water

6. D
   All of the above

7. C
   Harmful bacteria and viruses found in blood and body fluids.

8. A
   III. Protect Yourself, I. Act Immediately, IV. Clean the Area, II. Tell Your Supervisor

9. D
   Any blood or bodily fluid should be treated as containing the deadliest type of pathogen.

10. B
    Depends on the specific pathogen; any type of dried blood or bodily fluids should always be considered hazardous for the purposes of exposure control.

14 WHO IS THE DISQUE FOUNDATION?

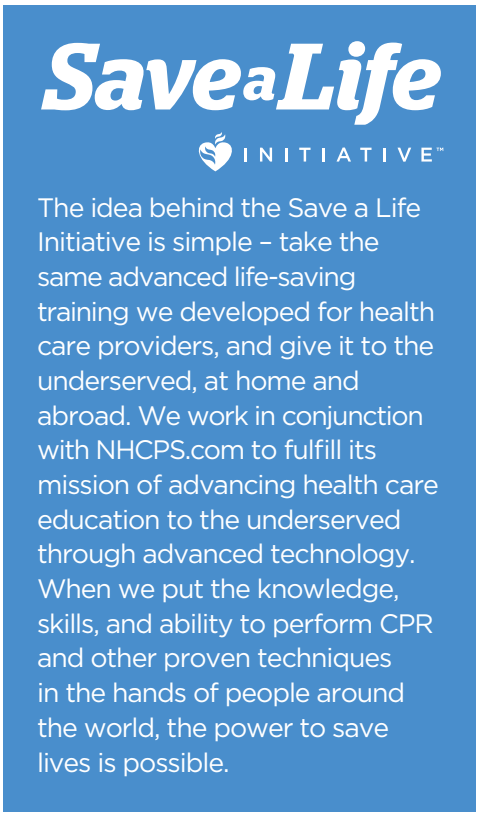
Advancing health care education to the underserved around the world.

The Disque Foundation was created for the sole purpose to empower others to save lives! We do this by providing advance healthcare education to underserved populations of the U.S. and the world, through the use of technology.

To fulfill this mission, we have created the Save a Life Initiative. Through our partnership with National Health Care Provider Solutions (NHCPS) we offer the world's first free life support training courses online. Saving lives means giving others the chance to make a difference in the world. Our goal is to empower a million people with the ability to safe a life by 2020.

How can I help?

Through the help of committed supporters like yourself, the Disque Foundation will have the ability to grow and expand our cause across the globe. Help us by making a tax-deductible gift to the Disque Foundation. A gift of any size will help support our mission, and your generous contribution will go directly to strengthening our efforts to empower others to save lives.



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For more information contact us at info@disquefoundation.org.