Louisville Metro Department of Public Health & Wellness

Bloodborne Pathogens Training Module
This training is intended for all employees who have a reasonable likelihood of being exposed to bloodborne pathogens on the job, such as physicians, nurses, medical assistants, or laboratory technologists.

Even if your normal job duties do not put you at risk of occupational exposure to bloodborne pathogens, this training will help you to develop a better understand of what bloodborne pathogens are, how to protect yourself from them and what to do if you come across blood in the workplace.

During this training session, you will learn what bloodborne pathogens are, how they are transmitted, the potential hazards you could be exposed to on the job and how to protect yourself from these hazards.

Everyone should know the basics on how to minimize the risks.
Training Objectives

By the end of this training session, you will be able to:

- Identify bloodborne pathogens on the job
- Recognize types of potentially infectious materials
- Understand modes of transmission
- Be aware of possible exposure incidents
- Know what precautions to take to protect yourself from exposure to bloodborne pathogens
- Know the procedures to follow if you are exposed
- Understand your rights after an exposure

In this training, you will be provided with the education necessary to protect yourself from bloodborne pathogens on the job. It is up to you to use the information you will learn and apply it to your work environment each and every time there is a potential for occupational exposure to bloodborne pathogens.
The OSHA standard

• The OSHA Bloodborne Pathogen Standard (29 CFR 1910) requires all employers to have a written Bloodborne Pathogen Exposure Control program.

• This program must contain a list of all job classifications in which employees have or may possibly have occupational exposure to bloodborne pathogens and a list of the specific tasks and/or procedures which they perform that puts them at risk.

• The written plan must also include engineering and work practice controls in place to reduce exposure, methods of training to communicate hazards to employees, procedures for making available the Hepatitis B vaccine, post-exposure evaluations, recordkeeping and the procedures to follow while investigating exposure incidents.

• The written program must be reviewed annually, updated as necessary, and must be accessible to employees.

• Employers must provide Bloodborne Pathogen safety training on a yearly basis to all employees who may be exposed to bloodborne pathogens during their normal job responsibilities.
What are Bloodborne Pathogens?

Bloodborne Pathogens are microorganisms such as viruses or bacteria that are present in blood and bodily fluids that can cause disease in humans. There are many different types of bloodborne pathogens such as malaria, syphilis, Human Immunodeficiency Virus (HIV), Hepatitis B (HBV) and Hepatitis C (HCV). HIV, HBV and HCV are of special concern because if you are exposed to them you can become infected and carry the disease for life.

• Microorganisms that are present in blood and can cause disease in humans
• Examples of bloodborne pathogens include:
  ▪ Human Immunodeficiency Virus (HIV)
  ▪ Hepatitis B (HBV)
  ▪ Hepatitis C (HCV)
Human Immunodeficiency Virus (HIV)

Human Immunodeficiency Virus is the virus that causes AIDS (Acquired Immune Deficiency Syndrome). The HIV virus destroys the body’s ability to fight infections by attacking and damaging the cells of the immune system. Once infected by HIV, it may take anywhere from one to ten years to develop into full blown AIDS, which is characterized by the development of opportunistic diseases such as pneumonia or tuberculosis.

There are over 1 million people infected with HIV/AIDS in the United States, and 50,000 more are infected each year. Approximately 18% do not know they are infected.

Symptoms of HIV can vary, but often include a flu like illness, fever, fatigue, rash, headache, and swollen lymph nodes. An infected person can carry the virus for years before symptoms occur. You can not tell whether or not someone has HIV just from looking at them. Many people are infected with the virus and are not aware of it. An HIV antibody test is the only way to know for sure if you have HIV.

The HIV virus is a fragile virus that does not survive long outside of the body. When HIV infected blood is dried, there is virtually no risk of transmitting the disease even if you have contact with it.

Currently, there is no cure and no vaccine for HIV/AIDS.
Hepatitis B (HBV)

Hepatitis B is a virus that attacks the liver and can lead to chronic liver disease, cirrhosis (scarring) of the liver, liver cancer, liver failure or death. About 10% of infected adults cannot clear the infection and develop chronic HBV.

There are currently 1.4 million people chronically infected with HBV in the United States.

The symptoms of Hepatitis B include jaundice, fatigue, abdominal pain, loss of appetite, nausea and vomiting. These symptoms can occur anywhere from one to six months after the initial exposure to HBV, and 30% of infected people have no symptoms at all. Hepatitis B can be chronic, meaning you will have it for the rest of your life. Even with treatment, it can be fatal.

HBV is a resilient virus that can survive for up to seven days outside of the human body. It can survive on work surfaces such as tables, machinery, a knife blade, or sharp metal until the contaminated area has been properly cleaned and disinfected.

The good news is there is a vaccine which has been available since 1982 to protect against contracting the disease if you are exposed.
Hepatitis C (HCV)

Hepatitis C also attacks the liver and can lead to cirrhosis (scarring) of the liver, liver cancer or death.

It is the most common bloodborne infection in the United States, with over 3.2 million people chronically infected. It is the leading cause of cirrhosis and liver cancer, and the most common reason for liver transplantation.

The symptoms of HCV include a flu like illness, fatigue, nausea, vomiting, dark colored urine, jaundice and abdominal pain. If symptoms occur, they can take up to 6 months to develop, and 60% to 70% of infected people have no symptoms at all.

As little as 25% of the 4 million people infected with HCV, actually know that they are carrying the virus.

Hepatitis C can be chronic and fatal. 75 - 85% of people infected with HCV will develop chronic Hepatitis C, which is responsible for 15,000 deaths each year.

HCV can survive outside the human body in dried blood for up to 4 days.

Unlike Hepatitis B, there is no effective vaccine available.
Potentially Infectious Materials

Bloodborne Pathogens are carried primarily in blood, however they can be found in other potentially infectious materials as well.

The following may contain bloodborne pathogens:

- Blood and blood components and any bodily fluid that is visibly contaminated with blood
- Human bodily fluids
  - Semen & vaginal secretions
  - Synovial fluid (fluid found in joints)
  - Amniotic fluid (fluid surrounding an unborn fetus during pregnancy)
  - Pericardial fluid (fluid around the heart)
  - Pleural fluid (fluid around the lungs)
  - Peritoneal fluid (fluid in the abdominal area)
  - Cerebrospinal fluid (CSF, fluid from the spinal cord)
- Any body tissue or organs
- Any bodily fluid that cannot be identified
Modes of Transmission

- Contact with another person’s blood or bodily fluids on non-intact skin
- Contact with another person’s blood or bodily fluids on mucous membranes such as your eyes, nose or mouth
- Contact with contaminated sharp objects
Modes of Transmission (cont’d)

You can contract bloodborne pathogens such as HBV, HCV, or HIV when potentially infectious materials enter your body. These viruses can enter your body through the following ways:

• **Non-Intact Skin** - The human skin acts as a barrier against bloodborne pathogens; however, when it is compromised, it loses its ability to protect you. Lacerations, burns, blisters, open wounds, sores, acne, rashes, and small breaks in the skin such as paper cuts provide a direct route for bloodborne pathogens to enter your body. All non-intact skin should be covered in the workplace.

• **Mucous Membranes** - Bloodborne pathogens can enter your body through your mucous membranes such as your eyes, nose or mouth. This can occur if blood or bodily fluids splash, or if you rub your nose, eyes or mouth while wearing a contaminated glove.

• **Contact with Sharp Objects or Needles** - Bloodborne pathogens can also be transmitted through contact with a contaminated sharp object or needle. In medical settings, needles are common and are a hazard if not handled properly. In addition, broken glass, or sharp blades such as scalpels, are of concern. If you come in contact with a contaminated sharp object such as these and injure yourself, the bloodborne pathogen can be introduced into your blood stream. An example of this might be an accidental needle stick after the needle has been used to give an injection to a patient. Another example might be getting a patient’s blood into an open wound during a finger stick procedure.
Possible Exposure Incidents

There are many different possible exposure incidents that can take place at work that may put you at risk for being exposed to bloodborne pathogens.

Some of the common examples are:

- **During an accident** - If an employee working near you is injured, you can get splashed by blood. If an employee is bleeding and you decide to help them without wearing gloves, you put yourself at risk of exposure to bloodborne pathogens.
- **While administering first aid** - First aid responders can be exposed while administering first aid such as applying a gauze bandage to a bleeding wound.
- **When cleaning up after an accident** - You can be exposed to bloodborne pathogens when you are cleaning up blood or other potentially infectious materials after an industrial accident.
- **While performing medical duties** - You can be exposed while administering injections, conducting exams, during phlebotomy, finger sticks, handling cultures and patient specimens, and conducting in-office tests.
- **While conducting laboratory tests** - Duties such as removing blood tube tops, serum separation, centrifugation, putting specimens into instruments, handling specimens, and routine cleanup/disinfecting are actions during which you may be exposed to bloodborne pathogens.
Preventing Exposure

So far, you have learned what bloodborne pathogens are and what could put you at risk for coming in contact with bloodborne pathogens. Now let’s discuss what we can do to prevent exposure on the job.

There are several different ways that we can prevent occupational exposure.

- Always use Standard (formerly Universal) Precautions
- Follow safe work practice controls and procedures
- Use engineering controls
- Provide post exposure evaluations, treatment and follow up
Standard Precautions

Using Standard Precautions is the best way to protect yourself from bloodborne pathogens.

Standard Precautions means to treat all blood, bodily fluids, tissues, organs and any potentially infectious materials as if they are infected with a bloodborne pathogen such as Hepatitis B, Hepatitis C, or Human Immunodeficiency Virus (HIV).

As far as you are concerned, every single drop of blood you come across is infected with a bloodborne pathogen such as HIV, no exceptions!

You can not tell if blood is infected with a bloodborne pathogen just by looking at it, which is why it is extremely important to always use universal precautions each and every time you are performing a job duty that may put you at risk!

• Treat all blood and bodily fluids as if they ARE infected with a bloodborne pathogen.

• Assume every drop of blood you come across is infected – NO EXCEPTIONS!
Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) provides a protective barrier between your body and blood or bodily fluids in which you may come in contact. Wearing PPE is extremely important, because by avoiding direct contact with blood or bodily fluids you are eliminating your exposure to them.

Some different types of PPE that you may be required to wear are:

- **Gloves** - Nitrile or latex gloves should be worn anytime there is a possibility that you may come in contact with blood or bodily fluids. Drawing blood, handling patient specimens, administering first aid, cleaning up after an industrial accident, cleaning and disinfecting bathroom facilities and emptying trash are all examples of job duties that require the use of nitrile or latex gloves.
- **Safety Glasses or Goggles** - Safety glasses and goggles should be worn anytime there is a possibility of blood or bodily fluids splashing or coming in contact with your eyes.
- **Face Masks, Lab Coats/Fluid Resistant Gowns, and Shoe Covers** - Face masks, lab coats, fluid resistant gowns, and shoe covers should be worn to protect your face and clothing whenever there is a possibility of spurting or splashing blood.
Order of Donning PPE

Donning PPE (putting it on) has a preferred order, as follows:

1. Put on lab coat or gown
2. Put on respirator or mask, if required for task
3. Put on face shield, goggles or safety glasses, if required for task
4. Put on gloves

Order of Doffing PPE

Doffing PPE (removing it) has a preferred order, as follows:

1. Remove gloves
2. Remove face shield, goggles or safety glasses, if required for task
3. Remove lab coat or gown
4. Remove respirator or mask if required for task

Personal Protective Equipment (PPE)

PPE must be maintained in good condition. If your PPE becomes torn or damaged it is no longer effective against protecting you from bloodborne pathogens. It must be immediately removed and replaced with new PPE.

There are two main types of PPE.

- **Disposable PPE** must only be worn one time and then immediately discarded in the appropriate containers.

- **Reusable PPE** can be reused after being laundered, but must always be placed in the proper laundry receptacles.

*Remember - PPE creates a protective barrier against transmission of bloodborne pathogens. Make sure that you wear the appropriate PPE required for the job duty you are performing.*
Work Practice Controls and Procedures

Safe work practice controls and procedures must be followed at all times while performing job duties.

• You must always wear the appropriate PPE to protect yourself from exposure to bloodborne pathogens. Put on PPE following the correct order of donning. Remember, do not touch your face, eyes, nose or mouth while wearing a contaminated glove.

• You must disinfect contaminated areas, including any contaminated equipment, counter tops and work surfaces at least once daily or immediately after any spill.

• Remove all contaminated PPE before leaving the area, following the correct order of doffing. Do not touch door handles, cabinets or faucets with contaminated gloves on. Always remove your gloves and wash your hands immediately afterwards. Gloves are not a substitute for hand washing!

• Hand hygiene is an important work practice control. Hands should be washed using warm water and soap prior to applying any PPE, including gloves, after removing gloves and after each patient procedure, before leaving the work area, after touching a potentially contaminated work surface, before and after eating, and after using the restroom.
Work Practice Controls and Procedures (cont’d)

• PPE and waste products such as paper towels, gauze or bandages contaminated with blood or bodily fluids must be disposed of properly in biohazard containers.

• Never eat, drink, smoke, apply cosmetics or lip balm, or handle contact lenses, in an area where there is the potential for bloodborne pathogen exposure.

• Do not store food or drinks in bathrooms, first aid rooms, laboratory or examination rooms or in areas where blood or bodily fluids may be present.

• Never clean up broken glass or other sharps with your hands. Use broom, dust pan, tongs or forceps to avoid cutting yourself.
Engineering Controls

Engineering controls are designed to eliminate or remove hazards that may put you at risk of being exposed to bloodborne pathogens.

Examples of engineering controls are as follows:

• The use of labeled biohazard waste bags and leak-proof trash cans to isolate hazards.
• Sharps containers that are labeled, leak-proof and color coded, are a means of disposal for sharps that may be used in the work environment.
• Self sheathing needles (“safer needles”) retract immediately to eliminate the hazard of recapping the needle.
• Hand washing facilities to practice good hand hygiene.
First Aid Response

In an emergency situation, you will need to act quickly, however you must always make time to put your PPE on!

- Remember to always use Standard Precautions and treat all blood and bodily fluids as if they are infected with a bloodborne pathogen.

- Encourage the injured person to administer self-care until you have properly put on all necessary PPE.

- When giving cardio pulmonary resuscitation, (CPR), always use a one way valve mask to protect yourself if the victim vomits. Remember- vomit can contain blood which would put you at risk for contracting a bloodborne pathogen!
Housekeeping & Accident Clean Up

If your job responsibilities include cleaning up after an accident, make sure that you always use Standard Precautions by treating all blood and bodily fluids as if they are infected with bloodborne pathogens. Always wear the proper PPE needed to protect yourself (Standard Precautions).

Steps to cleaning and disinfecting after an accident:

- Block off access to the area
- Wipe up any excess blood or bodily fluids with paper towels, rags or absorbent powder
- Dispose of it in biohazard waste bags
- Cover area with an EPA approved disinfectant solution
- Let it sit for at least 10 minutes (be sure to follow disinfectant instructions for contact time) which is the time needed to kill all bloodborne pathogens
- Wipe up any excess solution and discard in a biohazard waste bag
Waste Disposal

Always use Standard Precautions when you may come in contact with bloodborne pathogens!

It is very important that all waste contaminated with blood or bodily fluids is disposed of properly in leak proof containers.

There are different disposal methods required depending on the type of waste you are disposing.

There are two main types of medical wastes:
- Regulated Waste
- Un-Regulated Waste

We will discuss each type of waste in more detail in the following slides.
Regulated Waste

Regulated waste is considered to be:
• Any liquid or semi-liquid blood or bodily fluid
• Any contaminated waste that would release blood or bodily fluid if compressed
• Any item caked with blood
• Contaminated sharps, such as needles, blades, and broken tubes
• Any pathological and microbiological wastes containing blood or other potentially infectious materials

All regulated waste must be labeled with the Universal Biohazard Waste Symbol and the word “Biohazard”.

This is mandatory to meet the Environmental Protection Agency’s (EPA) requirement for labeling regulated medical waste.
Non-Regulated Waste

Non-regulated waste is medical waste that is absorbed and will not release any liquid when compressed. It does not have as many requirements as regulated waste.

Some examples of non-regulated waste are contaminated gauze bandages, paper towels, and disposable PPE where all blood or bodily fluids are absorbed. Band-aids and other bandages are typically not considered a regulated waste.

There are absorbent powders specifically formulated to absorb excess blood or bodily fluids and turn them into a gel like substance. This can be used to turn a regulated waste into a non-regulated waste.

Non-regulated waste should be double bagged to prevent leaking and tied shut.
It is not a requirement to label non-regulated waste, however it is always a good idea to label it if possible.

**BEST PRACTICE** - Treat all potentially infectious waste as a regulated waste. Mandate the use of a biohazard label and/or red biohazard bags with the symbol already printed on them for all potentially infectious waste products in order to eliminate any confusion between regulated and non-regulated wastes.
Exposure Incident Response

An exposure incident is defined as an incident of direct contact with blood or other potentially infectious material. If you think that you have been exposed to bloodborne pathogens, you must take immediate action to reduce your chances of becoming infected.

- If you have had direct skin contact with blood or bodily fluids, immediately wash the area with warm water and non-abrasive, anti-microbial soap. Remember, if your skin is intact, it is not considered an occupational exposure.

- If blood or bodily fluids come in contact with your mucous membranes such as your eyes, nose or mouth, flush out the area with water for at least 15 minutes.

- If your clothing becomes contaminated, remove it and wash the area underneath with warm water and soap. Decontaminate clothing by washing it.

- Report any exposure incident to your supervisor. Your supervisor will investigate the incident to determine if exposure occurred and will provide the necessary medical treatment.
Post Exposure Evaluation

If you are exposed to blood or other potentially infectious materials on the job, you have the right to a confidential medical evaluation to determine if you were infected with a bloodborne pathogen. You have the right to accept or decline the medical evaluation.

The exposure incident will be investigated and documented. The source individual will be identified, if possible, and tested for bloodborne pathogens if consent is provided.

A blood test will also be given to the exposed employee to help determine if infection has occurred.

A healthcare professional will provide a written medical opinion to both the source individual and the exposed employee. Medical advice and emotional support are important factors in post-exposure follow up.

Remember, decisions involved in management of exposures can be complex.
Hepatitis B Vaccination

The Hepatitis B vaccine is available free of charge to all employees who are at risk of contracting bloodborne pathogens on the job as part of their normal job responsibilities. It is strongly recommended to protect against infection upon exposure to HBV.

The vaccine must be made available to all employees within 10 days of the initial assignment to job duties with any occupational exposure to bloodborne pathogens.

The vaccine is a series of three shots over a six month period. It has no known side effects.

If you chose not to receive the Hepatitis B vaccine, you must sign a vaccination declination form that states you were given the opportunity to receive the vaccine but chose not to.

If you change your mind at a later date, you can still receive the vaccine free of charge.
Review

Modes of Transmission - Bloodborne pathogens are transmitted through contact with blood or other potentially infectious materials that can enter the bloodstream.

Potentially Infectious Materials - Blood or any bodily fluid, tissue or organ can carry bloodborne pathogens.

Possible on the Job Exposure - Be aware of potential exposure on the job. Administering first aid, handling patient specimens, drawing blood, cleaning up after an industrial accident, disinfecting or cleaning bathroom facilities and emptying bathroom trash are all examples of potential exposure at work.

Prevention - To prevent exposure to bloodborne pathogens, a combination of engineering controls and work practices are used.

Standard Precautions - Using Standard Precautions means to treat all blood and bodily fluids as if they are infected with a bloodborne pathogen such as HBV, HCV, or HIV.

Wear Proper PPE - Gloves must always be worn when there is a potential for contact with blood or bodily fluids. Safety glasses, goggles, lab coats, gowns, and face masks are also available and must be used when necessary.

Exposure Incidents - Exposure incidents are when infectious materials enter non-intact skin such as open wounds, cuts, burns, or rashes, etc. or the mucous membranes of eyes, nose and mouth.

Exposure Response - If you have been exposed, wash area with soap and water or flush out your mucous membranes with water for 15 minutes and report the incident to your supervisor immediately.
Thank you for completing the Louisville Metro Department of Public Health and Wellness’s Bloodborne Pathogen Training Module.

There is a quiz associated with this training module. Please follow the directions on the TRAIN homepage to complete.