

Bloodborne Pathogens in the Healthcare Setting



This course is a training program designed to provide students with the necessary knowledge to help reduce or eliminate the occupational risk of bloodborne pathogens in various healthcare settings. The goal of this course is to help students understand the risks and develop behaviors to help protect them when exposed to potentially infectious materials, such as blood.

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OSHAcademy Course 656 Study Guide

Bloodborne Pathogens in the Healthcare Setting

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Contact OSHAcademy to arrange for use as a training document.

This study guide is designed to be reviewed off-line as a tool for preparation to successfully complete OSHAcademy Course 656.

Read each module, answer the quiz questions, and submit the quiz questions online through the course webpage. You can print the post-quiz response screen which will contain the correct answers to the questions.

The final exam will consist of questions developed from the course content and module quizzes.

We hope you enjoy the course and if you have any questions, feel free to email or call:

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Course Introduction

This course is designed to provide students with the necessary knowledge to help reduce or eliminate the occupational risk of bloodborne pathogens in various healthcare settings. The goal of this course is to help students understand the risks and develop behaviors to help protect them when exposed to potentially infectious materials, such as blood.

This course is based on both 655 Bloodborne Pathogens in the Workplace and 755 Bloodborne Pathogens Program Management. However, it also includes additional information on needlestick safety, universal precautions, laboratory safety, and more.

OSHA requires bloodborne pathogens training meet the specific needs of the employee, such as those working in the healthcare industry. This course is designed to help meet those specific needs.

This course supports OSHA training requirements for bloodborne pathogens in a healthcare setting. Students can ask questions and get feedback through our website or by email while taking the course. This is a very important aspect of online training and is required to meet OSHA standards.

This course is consistent with OSHA Bloodborne Pathogens Standard 29 CFR 1910.1030.

Module 1: What are Bloodborne Pathogens?

What are bloodborne pathogens?

Bloodborne pathogens are infectious materials in blood that can cause disease when transmitted from an infected individual to another individual through blood and certain body fluids.

Bloodborne pathogens can cause serious illness and death. The most common illnesses caused by bloodborne pathogens are hepatitis B (HBV), hepatitis C (HCV), and acquired immunodeficiency syndrome (AIDS) resulting from human immunodeficiency virus (HIV).

Who is covered by OSHA's Bloodborne Pathogens standard?

The standard applies to all employees who have **occupational exposure to blood or other potentially infectious materials (OPIM)**.

- Occupational exposure is defined as "reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or OPIM that may result from the performance of the employee's duties."
- Blood is defined as "human blood, human blood components, and products made from human blood."

Other potentially infectious materials (OPIM) means:

- a. The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids;
- b. Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and
- c. HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

What is the purpose of OSHA's Bloodborne Pathogens standard?

The purpose of the standard is to minimize or eliminate occupational exposure to disease-carrying microorganisms, or pathogens, that can be found in human blood and body fluids.

Who must be trained under OSHA's Bloodborne Pathogens standard?

OSHA has mandated annual training is required for all employees with potential occupational exposure. This means if there is a reasonable possibility an employee might be exposed to blood or other potentially infectious materials (OPIM), they must receive training to minimize or eliminate their risk to potential exposure.

What are the primary bloodborne pathogens?

The primary bloodborne pathogens are:

- Hepatitis B Virus (HBV)
- Hepatitis C Virus (HCV)
- Human immunodeficiency virus (HIV)

Other commonly recognized pathogens transmitted by body fluids include:

- West Nile Virus
- Malaria
- Syphilis

OSHA has determined employers can minimize or even eliminate occupational bloodborne hazards by developing and enforcing a combination of exposure control strategies which work for all bloodborne diseases. It is not enough for an employer to provide bloodborne pathogens training. They must also have a formal exposure control plan documented and implemented.

Training Is Not Enough; An Employer Must Implement A Formal Exposure Control Plan

Scenario

Stanley is an employee for a small manufacturing company. One of Stanley's job responsibilities is to respond to medical emergencies that might happen in the warehouse. Stanley has worked for his employer for five years and has never had to respond to an emergency.

Does Stanley still need to receive annual bloodborne pathogens training?

Yes!

The frequency in which an employee is exposed to potential bloodborne pathogens is not the standard used to determine the need for training. Because there is a reasonable possibility that Stanley might be exposed to bloodborne pathogens as an employee, he must receive annual training. Neither Stanley nor his employer can predict when he might need to provide emergency medical care.

Module 1 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. As part of Kevin's job, he is required to provide emergency first aid to employees that become injured or ill while at work. What are the three primary bloodborne pathogens Kevin must be aware of due to occupational exposure?**
 - a. West Nile Virus, Influenza, and Malaria
 - b. Hepatitis B, Syphilis, and Malaria
 - c. Hepatitis B, hepatitis C, and human immunodeficiency virus
 - d. Human immunodeficiency virus, Influenza, and Small Pox

- 2. Samantha is an employee covered by the OSHA Bloodborne Pathogens Standard 29 CFR 1910.1030. How often must she complete bloodborne pathogen training?**
 - a. once
 - b. annually
 - c. every 2 years
 - d. every 4 years

- 3. What is the purpose of OSHA's Bloodborne Pathogens standard?**
 - a. To ensure companies don't unnecessarily provide bloodborne pathogens training
 - b. To minimize or eliminate occupational exposure to pathogens that can be found in inorganic matter
 - c. To minimize or eliminate occupational exposure to disease-carrying microorganisms found in human blood and body fluids
 - d. To increase the likelihood employees are exposed to bloodborne pathogens

- 4. Who is covered by OSHA's Bloodborne Pathogens standard?**
 - a. Only public employees
 - b. Only EMT's, Nurses, and Doctors
 - c. Employees who DO NOT have occupational exposure to blood or other potentially infectious materials (OPIM)
 - d. All employees who have occupational exposure to blood or other potentially infectious materials (OPIM)

5. OSHA's Bloodborne Pathogens Standard, defines occupational exposure as _____.

- a. reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or OPIM that may result from the performance of the employee's duties
- b. reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or OPIM while at home
- c. exposing your employer to legal liability
- d. skin contact with chemical solutions while in the performance of the employee's duties

Module 2: Specific Bloodborne Pathogens

Hepatitis B Virus (HBV)

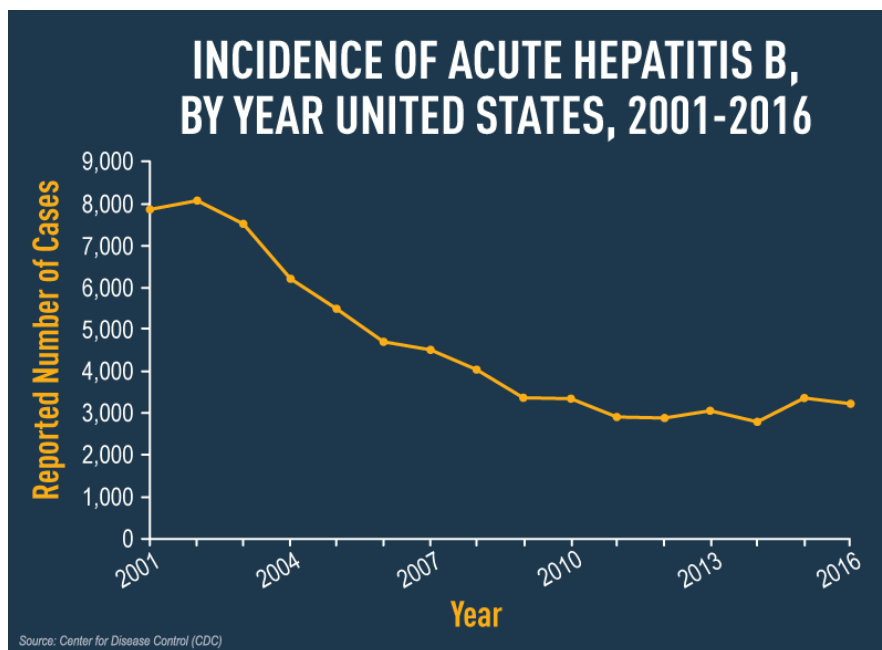
The hepatitis B virus (HBV) is one of the primary causes of hepatitis, an infection which causes inflammation of the liver. Complications of hepatitis include cirrhosis (scarring) of the liver, liver cancer, and liver failure. There is no known cure for the hepatitis B virus. In the United States, approximately 15 to 25 percent of people infected with HBV will die because of the illness.

According to the Hepatitis B Foundation, thousands of people in the United States and 600,000 people worldwide die from hepatitis B-related liver disease annually.

The Center for Disease Control (CDC) reported 2,953 confirmed acute cases of hepatitis B in 2014. The CDC estimates 19,200 people were infected with the hepatitis B virus the same year.

Hepatitis B can be either acute or chronic.

- Acute hepatitis B virus infection is a short-term illness that occurs within the first 6 months after someone is exposed to the hepatitis B virus. Acute infection can, but does not always, lead to chronic infection.
- Chronic hepatitis B virus infection is a long-term illness that occurs when the hepatitis B virus remains in a person's body. Chronic hepatitis B is a serious disease that can result in long-term health problems and even death.



Symptoms of HBV

Symptoms of HBV infection include, but are not limited to:

- loss of appetite
- fatigue
- fever
- nausea, vomiting, and/or abdominal pain
- joint pain
- jaundice seen in the eyes

Jaundice, also called icterus, is a yellowing of the skin or eyes and occurs in the more serious phase of hepatitis B virus. Hepatitis B can damage the liver, resulting in decreased liver function. As the liver's ability to filter waste from the blood decreases, the concentration of waste in the blood increases.

Jaundice, a symptom of hepatitis B, often first appears in the eyes. Only about 30 to 50 percent of individuals infected with hepatitis B virus show symptoms. It is important to understand even without symptoms, HBV-infected individuals are still infectious to others.

[Click here to view the CDC fact sheet for Hepatitis B.](#) (PDF)

Exposure

An exposure that might place a worker at risk for HBV, HCV, or HIV infection is defined as:

- a. A percutaneous injury (e.g., a needlestick or cut with a sharp object); or
- b. Contact of mucous membrane or non-intact skin (e.g., exposed skin that is chapped, or afflicted with dermatitis) with blood, tissue, or other body fluids that are potentially infectious.

Indirect exposure from contaminated objects is a risk because hepatitis B virus can remain infectious on environmental surfaces for up to a week (7 days) in the form of dried blood. This means you must always treat blood, wet or dry, as infectious!

You must always treat blood, wet or dry, as infectious!

Vaccination

A vaccination to prevent hepatitis B virus infection is available. The hepatitis B vaccine series is a sequence of three shots, typically given one month apart, that stimulate a person's natural immune system to protect against the virus. After the vaccine is given, the body makes antibodies to protect a person against the virus. Antibodies are specialized proteins found in the blood that produce an immune response to a virus invading the body. These antibodies are stored in the body to guard against future infections. They will fight off an infection if a person is exposed to the hepatitis B virus in the future.

Scenario

Michelle is a custodian in a public elementary school. At the end of each school day, she cleans and vacuums the building, including the school's health room. While cleaning the health room she notices some dried blood on the floor.

Should Michelle be concerned about exposure to hepatitis B virus?

Yes.

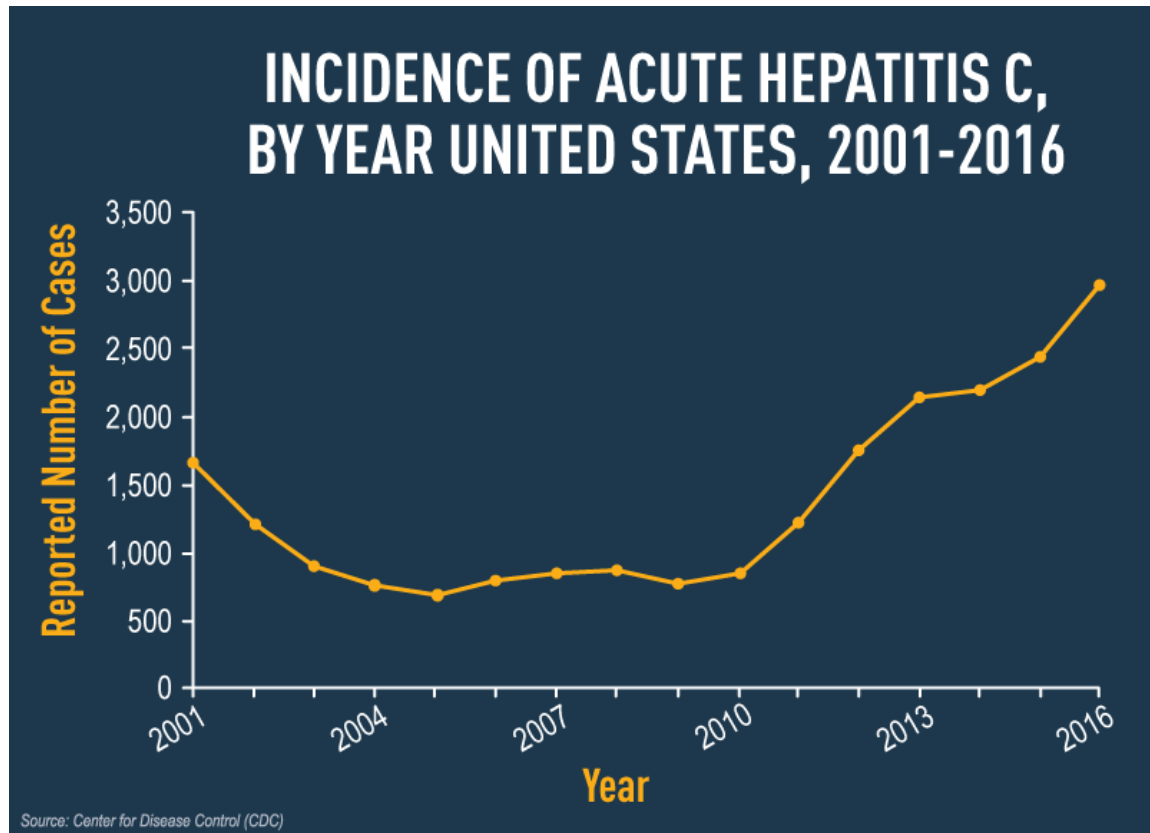
Any blood, wet or dry, has the potential to carry infectious hepatitis B virus. As a result, Michelle must take precautions to prevent potential exposure to bloodborne pathogens, including hepatitis B virus.

Hepatitis C Virus (HCV)

The hepatitis C virus (HCV) is also a significant cause of severe liver damage and death.

Hepatitis C kills more Americans than any other infectious disease. Deaths associated with hepatitis C reached 18,153 in 2016, according to surveillance data released by the Centers for Disease Control and Prevention (CDC).

About 3.5 million Americans are currently living with hepatitis C and roughly half are unaware of their infection. Approximately 1 to 5% of people infected with hepatitis C virus die as a result of the long-term damage caused to the liver and body.



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Incidence of acute HCV

Approximately 70%-80% of people with acute hepatitis C do not have any symptoms. Some people, however, can have mild to severe symptoms soon after being infected, including:

- fever
- fatigue
- loss of appetite
- nausea
- vomiting
- abdominal pain
- dark urine

- gray-colored bowel movements
- joint pain
- jaundice (yellow color in the skin or eyes)

[Click here to view the CDC fact sheet for Hepatitis C.](#) (PDF)

If symptoms do occur, the average incubation period is 45 days after exposure, but this can range from 14 to 180 days.

Many people infected with the hepatitis C virus do not develop symptoms.

Hepatitis C virus-infected individuals are infectious to other people, whether they show symptoms or not. Interestingly, the hepatitis C virus is strictly a human disease. It is not known to cause disease in any animals.

Blood testing for hepatitis C virus was not available until 1992. As a result, blood donation agencies did not screen for hepatitis C virus. Many hepatitis C virus infections occurred as a result of receiving blood products from infected individuals. Today, testing for hepatitis C is common place and should occur after any exposure to potential bloodborne pathogens.

There is no vaccine for hepatitis C.

Treatment

According to the CDC, approximately 15% to 25% of people infected with acute hepatitis C will naturally be able to clear the infection from their body without treatment.

There are several medications available to treat chronic hepatitis C, including newer, more effective drugs with fewer side effects.

Around the World

According to the World Health Organization (WHO), 1.75 million people are infected with the hepatitis C virus each year. Approximately 71 million people are chronically infected and at risk of developing liver cirrhosis and/or liver cancer. About 400,000 people worldwide die from hepatitis C-related liver diseases each year.

Decontamination

Any blood spills - including dried blood, which can still be infectious - should be cleaned using a dilution of one-part household bleach to 10 parts water. Gloves should always be worn when cleaning up blood spills.

Scenario

Manuel is a nurse working nights in the local hospital. During a shift in the emergency department he is stuck with a used needle that punctures his skin and draws blood.

Is Manuel at risk for contracting hepatitis C?

Yes.

After a needlestick or sharps exposure to hepatitis C-positive blood, the risk of infection is approximately 1.8%. Manuel should immediately report the potential exposure and follow his employer's exposure control plan to ensure he receives proper medical treatment and testing.

Human Immunodeficiency Virus (HIV)

The human immunodeficiency virus (HIV) is the virus responsible for causing acquired immunodeficiency syndrome (AIDS).

Statistics

- 38,500 new cases of HIV/AIDS in adults, adolescents, and children were diagnosed in 2015.
- As of 2015, approximately 1.1 million people are living with HIV. The CDC estimates 15% of people living with HIV do not know they are infected.
- As of December 31, 2013, 58 confirmed occupational transmissions of HIV and 150 possible transmissions had been reported in the United States.
- As of 2016, there are about 36.7 million people living with HIV around the world, with only 53% receiving treatment.
- In 2016, about one million people died from AIDS-related illnesses around the world.

The human immunodeficiency virus attacks and suppresses the immune system, reducing a person's ability to fight infection. The virus specifically targets the cells crucial for fighting infection from pathogens. This allows diseases and infections to progress without resistance.

Within a few weeks of being infected with HIV, some people develop flu-like symptoms that last for a week or two, but others have no symptoms at all. People living with HIV may appear and feel healthy for several years. However, even if they feel healthy, HIV is still affecting their bodies. Untreated early HIV infection is also associated with many diseases including cardiovascular disease, kidney disease, liver disease, and cancer.

Scenario

Stacy is a police officer employed by the city of Denver, Colorado. She is regularly required to respond to emergency medical situations, often arriving before the local ambulance company. As a result, Stacy is frequently exposed to human blood.

Is Stacy likely to contract HIV from exposure to infected blood?

No.

If Stacy follows universal precautions she is not likely to contract HIV. Universal precautions involve the use of protective barriers such as gloves, gowns, aprons, masks, or protective eyewear.

HIV is spread only in certain body fluids from a person who has HIV. These fluids are blood, semen, pre-seminal fluids, rectal fluids, vaginal fluids, and breast milk. It can take many years before an HIV-infected person displays symptoms of the disease.

Symptoms include:

- enlarged lymph nodes
- fatigue
- frequent fevers
- persistent or frequent yeast infections of the mouth or vagina
- persistent or frequent skin rashes
- short-term memory loss
- weight loss
- enlarged liver and spleen

As with hepatitis B virus and hepatitis C virus, it is important to understand that individuals with HIV are potentially infectious to others, even though they may have no observable symptoms.

Presently, there is no known cure for HIV. Treatment for HIV is called antiretroviral therapy or ART. If people with HIV take ART as prescribed, their viral load (amount of HIV in their blood) can become undetectable. If it stays undetectable, they can live long, healthy lives. Today, someone diagnosed with HIV and treated before the disease is far advanced can live nearly as long as someone who does not have HIV.

HIV cannot reproduce outside the human body. It is not spread by:

- air or water

- insects, including mosquitoes. Studies conducted by CDC researchers and others have shown no evidence of HIV transmission from insects
- saliva, tears, or sweat: There is no documented case of HIV being transmitted by spitting.
- casual contact like shaking hands or sharing dishes
- closed-mouth or "social" kissing

All reported cases suggesting new or potentially unknown routes of transmission are thoroughly investigated by state and local health departments with assistance, guidance, and laboratory support from CDC.

Disease Comparison

Of the three major bloodborne pathogens, hepatitis B virus is the most contagious. Approximately 33% of individuals exposed to hepatitis B virus will become infected. Of those individuals exposed to hepatitis C virus, only about 2% will become infected.

Comparatively, HIV is much less contagious than either form of hepatitis. About 0.33%, or 1 in 300, people exposed to HIV will become infected with the virus.

Despite these statistics, every exposure has the potential to transmit bloodborne pathogens and must be considered significant.

Module 2 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. The hepatitis B virus (HBV) may remain infectious on contaminated objects or surfaces for up to _____.**
 - a. 3 hours
 - b. 24 hours
 - c. 3 days
 - d. 7 days

- 2. What is the primary organ hepatitis B damages over time?**
 - a. Skin
 - b. Liver
 - c. Eyes
 - d. Heart

- 3. Persons newly infected with hepatitis C are usually _____.**
 - a. children
 - b. chronically ill
 - c. symptomatic (have symptoms)
 - d. asymptomatic (symptom-free)

- 4. Which of the three major bloodborne pathogens is the most contagious, with 33% of those exposed becoming infected?**
 - a. Hepatitis B virus (HBV)
 - b. Hepatitis C virus (HCV)
 - c. Human immunodeficiency virus (HIV)
 - d. H1N1 Influenza (Swine Flu)

5. Which of the following are body fluids that can spread HIV?

Module 3: Transmitting Bloodborne Pathogens

Fluids that Spread Bloodborne Pathogens

The transmission of bloodborne pathogens from one person to another occurs through the transfer of infected body fluids.

Common body fluids which can transmit pathogens include:

- blood
- cerebral spinal fluid
- semen
- vaginal secretions

Semen and vaginal secretions can transmit bloodborne pathogens, but only during sexual contact.

Wearing disposable gloves can help protect you from accidental exposure to bloodborne pathogens.

Fluids that Do Not Spread Bloodborne Pathogens

Some body fluids have no documented risk of transmitting pathogens, including:

- sweat
- saliva
- urine
- feces

Although the risk of contracting a pathogen from these bodily fluids might be low, you may not always be able to tell which fluids you are handling, or whether an injury has mixed them with blood.

For example, a severe abdominal injury could cause blood to be present in urine or feces. Therefore, it is best to protect yourself from ALL bodily fluids.

How Bloodborne Pathogens are Transmitted

Non-occupational bloodborne pathogens are most commonly transmitted through:

- sexual contact; or
- sharing hypodermic needles.

Occupational bloodborne pathogens are most commonly transmitted through:

- puncture wounds from a sharp or contaminated object, such as broken glass; or
- from a splash of blood to the mucous membranes of the eyes, nose, or mouth.

Protect Yourself from All Bodily Fluids

It's important to remember the hepatitis B virus can remain infectious outside of the body for up to 7 days. For this reason, it is essential that cleanup and decontamination of contaminated objects and surfaces be performed as soon as possible. This will reduce the risk of indirect contact resulting in a bloodborne exposure incident.

Understanding how bloodborne pathogens are transmitted will help reduce your risk of exposure and infection.

Casual social contact, such as shaking hands, hugging, or sharing a telephone or tool, does not transmit bloodborne pathogens.

Direct contact with blood or other potentially infectious bodily fluid can cause an exposure incident. Indirect contact with a contaminated object, such as a countertop, bedding, or clothing, can also cause an exposure incident.

Scenario

Jasmine is a daycare worker taking care of children between the ages of 6 months and 12 years. Kevin is a 3-year-old child at the daycare center and has been complaining of a stomachache. Suddenly Kevin begins to vomit unexpectedly. After Kevin's parents have been called to pick him up, Jasmine is asked to clean up the mess.

Should Jasmine be concerned about bloodborne pathogens?

Yes!

Although vomit is not documented as a risk for transmitting bloodborne pathogens, it is often impossible to determine if there is blood mixed in with the vomit. Even a very small amount of blood has the potential to transmit disease. You should always prevent contact with bodily fluids, regardless of whether blood is visible in the fluids.

Module 3 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Trent is an employee for a local ambulance company. As part of his job Trent is routinely exposed to patient blood and other bodily fluids. Which of the following actions would most likely transmit a bloodborne pathogen from a patient to Trent?**
 - a. Having a patient's blood splashed into Trent's eyes
 - b. Shaking a thankful patient's hand
 - c. Using the telephone at the hospital
 - d. Pushing a wheelchair

- 2. Why is it important to assume all bodily fluids may be capable of transmitting bloodborne pathogens?**
 - a. Because it's an OSHA requirement
 - b. Because there might be unseen blood mixed with the fluids
 - c. Because bloodborne pathogens are in all bodily fluids
 - d. Because it's best to do so to avoid litigation

- 3. Which of the following is a common way non-occupational bloodborne pathogens are transmitted?**
 - a. Having blood splashed into eyes
 - b. Shaking a patient's hand
 - c. Sharing hypodermic needles
 - d. Puncture wounds from sharp object

- 4. How long can the hepatitis B virus remain infectious outside of the body?**
 - a. 14 days
 - b. 7 days
 - c. 5 days
 - d. 3 days

5. Which of the following examples describe an indirect exposure to potential bloodborne pathogens?

- a. Holding an infected patient's clothing
- b. Shaking hands with an infected patient
- c. Contact with a patient's bedding
- d. Being splashed with a patient's blood

Module 4: The Exposure Control Plan

The Exposure Control Plan

An employer exposure control plan (ECP) is a requirement of 29 CFR 1910.1030(c) of the Bloodborne Pathogens Standard established by the Occupational Safety and Health Administration (OSHA). The purpose of the ECP is to establish procedures to eliminate or minimize employee exposure to bloodborne pathogens.

Does your employer have an exposure control plan?

A written ECP outlines the strategies necessary to eliminate or minimize employee occupational exposure to bloodborne pathogens. This site-specific plan identifies all employee classifications which have occupational exposure to bloodborne pathogens and other potentially infectious materials.

Additional components of an ECP are:

- Engineering and work practice controls
- Personal protective equipment (PPE)
- Housekeeping
- Containment and labeling of potentially infectious materials

Another key component of the plan includes listing the site-specific means by which the facility will reduce the employee risk. These methods include appropriate training, the communication of hazards, hepatitis B vaccinations for any employee who has occupational risk of exposure, methods for post-exposure evaluation and follow-up, proper recordkeeping, and a sharps injury log.

Your employer's exposure control plan (continued)

The plan should also describe the procedure for investigating and evaluating the circumstances surrounding an exposure incident to quickly provide effective follow-up care to exposed employees. The investigation will also help each site team learn from accidents and establish new measures to prevent them from happening again.

The written ECP must be accessible to all employees. It must be reviewed and updated annually or when alterations in procedures create the possibility of new occupational exposures. Additionally, non-managerial employees who provide direct patient care must be asked to

provide input in the identification, evaluation, and selection of effective controls to isolate or remove bloodborne pathogens from the workplace.

Although an employee's job description may include information regarding potential exposure to bloodborne pathogens, it may not be legally required. The employer's exposure control plan must identify all specific procedures an employee performs which may expose them to bloodborne pathogens.

Employees Must Have Access To Their Employer's Exposure Control Plan (ECP)

Scenario

Steven is a new employee for AAA Manufacturing. He has been hired as a supervisor to oversee line production on the swing-shift. As a supervisor, he is expected to provide emergency medical care if an employee becomes injured or sick.

Should Steven's position be classified as having occupational exposure to bloodborne pathogens?

Yes!

Although providing emergency medical care is not Steven's primary responsibility, it is part of his job classification. As a result, Steven does have the potential for occupational exposure to bloodborne pathogens. Steven's employer must ensure he has the proper training and equipment to provide medical care safely and with minimal risk of occupational exposure.

Module 4 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Which of the following is NOT a characteristic of an effective exposure control plan?**
 - a. It is site-specific
 - b. It defines employee classifications that have exposure
 - c. It has procedures to reduce risk of exposure
 - d. It identifies all infected employees

- 2. The purpose of the Exposure Control Plan (ECP) is _____.**
 - a. to establish procedures to create or increase employee exposure to bloodborne pathogens
 - b. to help employees after they've been exposed to bloodborne pathogens
 - c. to establish procedures to eliminate or minimize employee exposure to bloodborne pathogens
 - d. to reduce the employer's legal liability after an employee is exposed to bloodborne pathogens

- 3. The following is a component of an Exposure Control Plan (ECP): _____.**
 - a. the release of potentially infectious materials
 - b. personal protective equipment (PPE)
 - c. monetary controls
 - d. purchasing controls

- 4. Employees must have access to their employer's exposure control plan (ECP).**
 - a. True
 - b. False

5. When must an Exposure Control Plan (ECP) be reviewed and updated?

- a. Semi-annually and when alterations in procedures create the possibility of fewer occupational exposures.
- b. Annually or when alterations in procedures create the possibility of new occupational exposures.
- c. Every two years
- d. Every four years

Module 5: Recognize the Potential for Exposure

Employer Responsibilities to Identify Jobs at Risk

Employers must identify job classifications in which employees have occupational exposure, as well as the associated tasks and procedures in which there is a potential of exposure to blood or other infectious materials. Employers must review job classifications annually to ensure proper procedures and training is established.

What jobs are most at risk of exposure?

Occupations with a likely chance of occupational exposure include:

- first aid providers
- teachers
- daycare workers
- housekeepers
- lab workers
- firefighters
- Emergency Medical Technicians (EMTs) and paramedics
- law enforcement agents
- medical and dental personnel

An employer must review every job classification and make a determination of the potential occupational exposure for that position. Failure to properly identify potential occupational exposure can result in warnings or fines issued by OSHA.

If an occupational exposure does occur, it is important for you to follow the employer's written procedures for handling medical self-care and evaluation, as well as documenting the circumstances of the exposure.

Scenario

Maria is an employee for a local hospital and works in their housekeeping department.

Is it Maria's responsibility to know what her occupational exposure is?

No.

It is the employer's responsibility to ensure each employee is properly trained and understands their potential occupational exposure. Further, the employer is responsible for documenting the training and maintaining all associated records. Maria has the responsibility to follow the established procedures identified in her employer's exposure control plan and ask questions if needed.

It is important to know if your job classification puts you at risk for occupational exposure. If your job classification does put you at risk, be aware that specific tasks or procedures in your job may still have the potential for exposure.

Module 5 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Sarah has just been assigned new job responsibilities after receiving a promotion at work. Where should Sarah look to determine if her new responsibilities create an occupational exposure to bloodborne pathogens?**
 - a. Exposure control plan
 - b. Job applications
 - c. Standard operating procedure
 - d. Employee handbook

- 2. How often must employers review job classifications to ensure proper procedures and training are established?**
 - a. Every two years
 - b. Whenever the employer feels like it
 - c. Semi-annually
 - d. Annually

- 3. Employers must identify _____ in which employees have occupational exposure to bloodborne pathogens or OPIM.**
 - a. situations
 - b. most likely scenarios
 - c. job classifications
 - d. potential occurrences

- 4. An employer must review every job classification and associated _____ in which there is a potential for occupational exposure to bloodborne pathogens and OPIM.**
 - a. tasks and procedures
 - b. times and dates
 - c. the probability and severity
 - d. the likelihood for accidents

- 5. Failure of an employer to properly identify a potential occupational exposure can result in warnings or fines issued by OSHA.**
- a. True
 - b. False

Module 6: Exposure Control Methods

Methods to Control The Risk Of Exposure

The recommended infection-control concept called "universal precautions" advocates everyone's blood and body fluids be considered potentially infectious. This eliminates the difficulty in determining risk individually. Remember, although some body fluids have not been documented to transmit pathogens, it is sometimes impossible to tell if blood or another potentially infectious fluid is present.

The two essential control strategies employees use to eliminate or minimize the transmission of bloodborne diseases in the workplace are:

- engineering controls, and
- work practice controls.

Engineering Controls

Engineering controls minimize exposure in the workplace either by removing or isolating the hazard, such as providing a sharps container for needles, splash guards, and mechanical pipetting devices.

Engineering controls are all about the equipment used to minimize exposure.

- The Sharps container for needles is a good example of an engineering control.
- Employers will examine and maintain or replace engineering controls on a regularly scheduled basis.

Work Practice Controls

Work practice controls focus on the way tasks are performed. For example, using disposable gloves when performing emergency care is considered a work practice control. Another example of work practice controls is to perform all actions involving potentially infectious material in a way as to minimize splattering, splashing, and spraying. Proper handling and disposal of needles or sharps, contaminated bandages, gauze, or linens is also essential.

Work practice controls are all about how tasks are performed to minimize exposure.

Safe work practices include eliminating eating, drinking, smoking, applying make-up or lip balm, or handling contact lenses in locations with potentially infectious material. In healthcare

facilities, employees are prohibited from wearing artificial nails. Food and drink must not be kept in a refrigerator, freezer, shelf, or in the general area where blood or other potentially infectious material are kept.

Wash your hands!

Hand washing after an exposure can reduce your risk of infection.

Your employer must provide readily accessible hand-washing facilities or antiseptic hand cleanser or wipes if hand-washing facilities are not available.

Perform hand washing immediately after any exposure, even if you were wearing gloves. Vigorous scrubbing with soap or alcohol-based foam or gel and warm water is considered the most effective technique. This will further reduce your risk of infection resulting from an exposure.

Prohibited Practices

Practices that are completely prohibited in the workplace include: bending, recapping, and removing contaminated needles, shearing or breaking needles, and mouth pipetting or suctioning of potentially infectious material.

These practices significantly increase the risk of exposure. As a result, they should never be performed by employees.

Antiseptic hand cleaner in conjunction with clean cloth/paper towels or antiseptic towelettes are examples of acceptable alternatives to running water.

However, when these types of alternatives are used, employees must wash their hands (or other affected areas) with soap and running water as soon as feasible.

This alternative would only be acceptable at worksites where soap and running water are not feasible.

Scenario

Dr. Kramer owns and operates a small dental clinic in San Francisco, CA. As part of her exposure control plan, she requires her employees to wash their hands before and after working with any patients. She also requires new gloves be used with every patient.

Is this an example of engineering controls or work practice controls?

Work practice controls

Dr. Kramer is requiring her employees to do something to reduce the risk of occupational exposure. Work practice controls focus on the actions taken to minimize exposure.

Module 6 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. The recommended infection-control concept called "universal precautions" advocates everyone's blood and body fluids be considered _____.**
 - a. potentially non-infectious
 - b. not harmful
 - c. not infectious
 - d. potentially infectious

- 2. The two essential control strategies employees use to eliminate or minimize the transmission of bloodborne diseases in the workplace are _____.**
 - a. elimination and administrative controls
 - b. substitution and elimination controls
 - c. administrative and substitution controls
 - d. engineering and work practice controls

- 3. Which of the following is an example of a work practice control?**
 - a. Disposable gloves
 - b. Eliminating the need to use gloves during first aid
 - c. Using disposable gloves as required
 - d. Replacing disposable gloves with reusable gloves

- 4. You should _____ before doing anything else after an exposure to bloodborne pathogens or OPIM.**
 - a. wash all exposed body parts
 - b. report the exposure to a supervisor
 - c. wash your clothes
 - d. take a break to calm down

- 5. When exposed to bloodborne pathogens, antiseptic hand cleaner in conjunction with clean cloth/paper towels is only an acceptable alternative to washing your hands when soap and running water are not feasible.**
- a. True
 - b. False

Module 7: Needlestick Safety

Introduction

More than 8 million healthcare workers in the United States work in hospitals and other healthcare settings. Precise national data are not available on the annual number of needlestick and other percutaneous injuries among healthcare workers; however, estimates indicate that 600,000 to 800,000 such injuries occur annually. About half of these injuries go unreported.

Always report needlestick injuries to your employer to ensure you receive appropriate follow-up care.

Most reported needlestick injuries involve nursing staff; but laboratory staff, physicians, housekeepers, and other healthcare workers are also injured. Some of these injuries expose workers to bloodborne pathogens that can cause infection. The most important of these pathogens are HBV, HCV, and HIV. Infections with each of these pathogens are potentially life threatening and preventable.

The emotional impact of a needlestick injury can be severe and long lasting, even when a serious infection is not transmitted. This impact is particularly severe when the injury involves exposure to HIV. In one study of 20 healthcare workers with an HIV exposure, 11 reported acute severe distress, 7 had persistent moderate distress, and 6 quit their jobs because of the exposure. In addition to the exposed healthcare worker, colleagues and family members may suffer emotionally.

Needles Usually Associated Needlestick Injuries

Healthcare workers use many types of needles and other sharp devices to provide patient care. However, data from hospitals show only a few types of needles and other sharp devices are associated with the majority of injuries. Needles often associated with needlestick injuries include:

- hypodermic needles
- blood collection needles



Blood collection needles are commonly associated with accidental needlestick injuries.

- suture needles
- needles used in IV delivery systems

Work Practices Increasing the Risk of Needlestick Injuries

Past studies have shown that needlestick injuries are often associated with these activities:

- recapping needles
- transferring a body fluid between containers
- failing to dispose of used needles properly in puncture-resistant sharps containers

Past studies of needlestick injuries have shown that 10% to 25% occurred when recapping a used needle. Although recapping by hand has been discouraged for some time and is prohibited under the OSHA bloodborne pathogens standard [29 CFR 1910.1030] unless no alternative exists, 5% of needlestick injuries in hospitals are still related to this work practice. Injury may occur when a healthcare worker attempts to transfer blood or other body fluids from a syringe to a specimen container (such as a vacuum tube) and misses the target. Also, if used needles or other sharps are left in the work area or are discarded in a sharps container that is not puncture resistant, a needlestick injury may result.

Safer Medical Devices

Safer medical devices must be evaluated annually for its effectiveness in preventing occupational exposures to blood and other potentially infectious materials. Selecting a safer device based solely on the lowest cost is not appropriate, and selection must be based on employee feedback and device effectiveness. If commercially available safer devices are available and appropriate, the use of the safer devices must be implemented.

Examples of safer medical devices are:

- a syringe with a protective shield surrounding the needle; or
- a syringe with a retractable needle; or
- a lancet with a retractable blade; or
- a device with a blunt tip; or

- a device that has no needle.

Preventing Needlestick Injuries

Needlestick safety can best be addressed in the setting of a comprehensive prevention program that considers all aspects of the work environment and that has employee involvement as well as management commitment.

You can help protect yourself from needlestick injuries by:

- avoiding the use of needles where safe and effective alternatives are available
- helping your employer select and evaluate devices with safety features that reduce the risk of needlestick injury
- using devices with safety features provided by your employer
- avoiding recapping needles
- planning for safe handling and disposal of needles before using them
- promptly disposing of used needles in appropriate sharps disposal containers
- reporting all needlestick and sharps-related injuries promptly to ensure you receive appropriate follow-up care
- telling your employer about any needlestick hazards you observe
- getting a hepatitis B vaccination



Case Studies

The following case reports briefly describe the experiences of three healthcare workers who developed serious infections after occupational exposures to bloodborne pathogens. Their cases illustrate preventable hazardous conditions and practices that can lead to needlestick injuries.

Case 1

A hospitalized patient with AIDS became agitated and tried to remove the intravenous (IV) catheters in his arm. Several hospital staff members struggled to restrain the patient. During the struggle, an IV infusion line was pulled, exposing the connector needle that was inserted into the access port of the IV catheter. A nurse at the scene recovered the connector needle at the end of the IV line and was attempting to reinsert it when the patient kicked her arm, pushing the needle into the hand of a second nurse. The nurse who sustained the needlestick injury tested negative for HIV that day, but she tested HIV positive several months later.

Case 2

A physician was drawing blood from a patient in an examination room of an HIV clinic. Because the room had no sharps disposal container, she recapped the needle using the one-handed technique. While the physician was sorting waste materials from lab materials, the cap fell off the phlebotomy needle, which subsequently penetrated her right index finger. Approximately 2 weeks after the needlestick, the physician developed flu-like symptoms consistent with HIV infection. She was found to be positive for HIV when tested 3 months after the needlestick exposure.

Case 3

A nurse sustained a needlestick injury to her finger while removing a hypodermic needle from a patient's arm. At the time of the injury, the source patient had apparent acute non-A, non-B hepatitis. The nurse developed hepatitis 6 weeks after the needlestick injury. Her liver enzymes remained elevated for nearly a year. Later examination of serum samples from the nurse and the source patient showed that both persons were infected with HCV.

Source: NIOSH Publication No. 2000-108

Module 7 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Why should you report needlestick injuries to your employer?**
 - a. To ensure you are held accountable
 - b. To ensure you receive appropriate follow-up care
 - c. So your employer doesn't get fined by OSHA
 - d. So the patient is held accountable

- 2. _____ has been discouraged for some time and is prohibited under the OSHA bloodborne pathogens standard, unless no alternative exists.**
 - a. Reporting needlestick injuries to your employer
 - b. Wearing disposable gloves
 - c. Using new, clean needles
 - d. Recapping needles by hand

- 3. Needles most often associated with needlestick injuries include all of the following, except _____.**
 - a. hypodermic needles
 - b. blood collection needles
 - c. suture needles
 - d. vaccination needles

- 4. Which practice could likely result in an accidental needlestick injury?**
 - a. Removing the cap from an unused needle
 - b. Putting a used needle in a sharps container
 - c. Recapping a used needle
 - d. Immediately removing used needles from the work area

5. Which of the following is NOT considered a safe medical device?

- a. Syringe with a protective shield surrounding the needle
- b. Syringe with a retractable needle
- c. Device with no needle
- d. Lancet with non-retractable blade

Module 8: Universal Precautions

"Universal precautions," as defined by the CDC, are a set of precautions designed to prevent transmission of human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other bloodborne pathogens when providing first aid or healthcare. Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV, HBV and other bloodborne pathogens.

Application of Universal Precautions

Universal precautions apply to blood, other body fluids containing visible blood, semen, and vaginal secretions. Universal precautions also apply to tissues and to the following fluids: cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids. Universal precautions do not apply to feces, nasal secretions, sputum, sweat, tears, urine, and vomitus unless they contain visible blood. Universal precautions do not apply to saliva except when visibly contaminated with blood or in the dental setting where blood contamination of saliva is predictable.

Personal Protective Equipment

Universal precautions involve the use of personal protective equipment such as gloves, gowns, aprons, masks, or protective eyewear, which can reduce the risk of exposure of the healthcare worker's skin or mucous membranes to potentially infective materials. In addition, under universal precautions, it is recommended that all healthcare workers take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices.

Pregnant healthcare workers are not known to be at greater risk of contracting HIV infection than are healthcare workers who are not pregnant; however, if a healthcare worker develops HIV infection during pregnancy, the infant is at risk of infection resulting from perinatal transmission. Because of this risk, pregnant healthcare workers should be especially familiar with, and strictly adhere to, precautions to minimize the risk of HIV transmission.

Scenario

Robert is interviewing for a nursing position with St. Vincent Hospital in Portland, OR. During the interview he is asked to explain the difference between "universal precautions" and "personal protective equipment".

How should Robert answer this question?

Personal protective equipment refers to equipment designed to reduce or prevent exposure to blood or other potentially infectious materials. Examples of personal protective equipment are: disposable gloves, gowns, face masks, eye shields, and lab coats.

Universal precautions include the use of personal protective equipment, but also include engineering and work practice controls designed to prevent exposure to blood and other potentially infectious materials.

Module 8 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

1. _____ is/are a key component of universal precautions.
 - a. Personal protective equipment
 - b. Employee safety
 - c. Needles
 - d. Blood

2. Under universal precautions, blood and certain body fluids are considered potentially infectious for _____.
 - a. all bloodborne and airborne pathogens
 - b. HIV, HBV, and other bloodborne pathogens
 - c. Aids, HCV, and airborne pathogens
 - d. HBV, HCV, and HIV

3. When do universal precautions apply to saliva?
 - a. Never
 - b. Only when blood is present or expected
 - c. Sometimes
 - d. Always

4. Universal precautions NEVER apply to urine.
 - a. True
 - b. False

Module 9: Personal Protective Equipment

Using Personal Protective Equipment (PPE)

Personal protective equipment (PPE) is specialized clothing or equipment that protects you from exposure to blood or other potentially infectious material.

Personal protective equipment is designed to keep blood and other potentially infectious material away from your skin, eyes, and mouth.

Examples of PPE include: disposable gloves, gowns, laboratory coats, protective face shields, resuscitation masks or shields, and mouth pieces. Any equipment necessary to prevent exposure to blood or other potentially infectious material is considered PPE.

Effective PPE

Effective personal protective equipment must not allow potentially infectious materials to pass through or reach your skin, eyes, mouth, or clothes under normal conditions of use.

General work clothes, such as uniforms, pants, shirts, or blouses, which are not intended to function as a protective barrier against hazards, are not considered to be PPE.

Employer Responsibilities

An employer must ensure employees use appropriate personal protective equipment.

Your employer must make PPE available to you in the appropriate size and at no cost. Non-latex alternatives must also be made available to employees who have allergic sensitivity to latex. Employers must also properly clean, launder, repair, replace, or dispose of contaminated PPE as needed at no cost to the employee.

Employees should never take contaminated clothing home to be washed. This can increase the chance of accidental exposure to themselves and their family.

Employees should never take contaminated clothing home to be washed.

Disposable Gloves

Disposable gloves should be a standard component of emergency response and first aid equipment and should be worn by anyone initiating emergency care.

It is best to always wear disposable gloves when providing first aid care.

Replace your gloves as soon as possible if they are torn, punctured, contaminated, or if their ability to function as a barrier is compromised.

Remove contaminated gloves by turning them inside out. Be careful to prevent any splashing or spraying of potentially infectious material. You should always wash your hands after removing your gloves, even if you don't think they were contaminated.

Face Shields

Wear face shields when splashes, sprays, spatters, or droplets of infectious material pose a hazard to your eyes, nose, or mouth. It is always better to be prepared and wear a face shield if there is any chance of potential exposure to your eyes, nose, or mouth.

Pocket CPR Mask and Gloves

Use a disposable ventilation mask or shield with a one-way valve to prevent an exposure when performing rescue ventilations during CPR. It is common for patients to vomit during CPR due to excess air in the stomach.

Contaminated Protective Equipment

Place contaminated protective equipment in appropriately designed areas or containers for cleaning or disposal. These areas or containers should be properly labeled and identified in your employer's exposure control plan.

Scenario

Sarah is a medical laboratory technician. As part of her job duties she analyzes blood and body fluid samples. Sarah was recently reprimanded for not wearing disposable gloves to perform her work duties. She tells her supervisor the gloves make it hard for her to handle the collection containers and that she would prefer not to wear gloves.

What should Sarah's supervisor tell her?

Sarah's supervisor must tell her the use of personal protective equipment is not optional. She must wear the gloves. The supervisor should also ask Sarah if the gloves are the correct size and fit for her hands. If the gloves are not the correct size, then this issue must be resolved as well. Only under very rare circumstances can an employee decline the use of personal protective equipment.

Module 9 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Is it acceptable for an employee to take contaminated clothing home to be washed?**
 - a. Yes
 - b. No
 - c. Maybe

- 2. All of these are examples of personal protective equipment, EXCEPT _____.**
 - a. disposable gloves
 - b. laboratory coat
 - c. thermometer
 - d. safety glasses

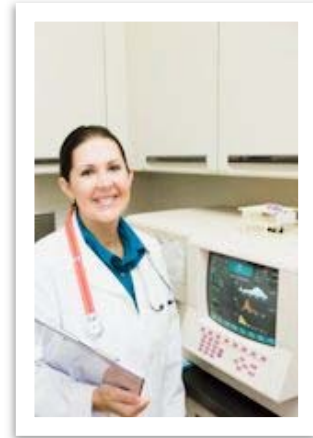
- 3. Effective personal protective equipment _____.**
 - a. includes general clothing, such as uniforms
 - b. must not allow potentially infectious materials to reach your skin
 - c. does not protect you from potentially infectious materials
 - d. includes general shirts and pants

- 4. Remove contaminated gloves by _____.**
 - a. cutting them off
 - b. ripping them off
 - c. turning them inside out
 - d. pulling them off and spraying infectious material across the room

- 5. Place contaminated protective equipment in _____.**
 - a. a garbage bag laying on the floor
 - b. a stainless-steel garbage can with no garbage bag
 - c. appropriately designed areas or containers for cleaning or disposal
 - d. a plastic basket labeled "reuse"

Module 10: Laboratory Safety

The bloodborne pathogens standard has two classifications for laboratories: (1) a **clinical laboratory** is a workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials, and (2) a **research laboratory** is a laboratory producing or using research-laboratory-scale amounts of HIV or HBV.



"Clinical (or diagnostic) laboratories" are hospital labs, free-standing clinical or diagnostic labs, labs in dental or medical offices, blood and plasma center labs, dental labs, and laboratories preparing a substance or mixture from human blood or blood components. Laboratories that conduct research using blood or blood components but do not produce or use concentrated amounts of HIV or HBV, would also be considered a clinical (or diagnostic) laboratory.

"Research laboratories" means a laboratory producing or using research-laboratory scale amounts. Research laboratories may produce high concentrations of HIV or HBV but not in the volume found in the production facilities. Production facilities may produce high volumes of HIV or HBV, but not high concentrations of the viruses.

Clinical and Diagnostic Laboratory Safety

Clinical and diagnostic laboratories must follow the general provisions of the bloodborne pathogens standard, including but not limited to, needlestick and sharps safety, engineering controls, work practice controls, universal precautions, and the use of personal protective equipment.

Additional laboratory safe practices include:

- careful monitoring of work behaviors and habits to prevent exposures
- no mouth pipetting or suctioning of blood or other potentially infectious materials
- no eating, drinking, smoking, applying cosmetics or lip balm, or handling of contact lenses in work areas where there is a reasonable likelihood of exposure to bloodborne pathogens

- no storage of food or drink in refrigerators, freezers, shelves, cabinets or on countertops or bench tops where bloodborne pathogens or other potentially infectious materials are present
- use splatter guards to prevent exposure
- use sensor or foot/knee/elbow-controlled sinks to operate hand-washing facilities without using hands
- use biological safety cabinets when required
- centrifuge tubes with caps

Research Laboratory Safety

In addition to the general provisions of the bloodborne pathogens standard, research laboratories must also follow additional guidelines established by section 29 CFR 1910.1030(e) of the standard.

Waste materials:

- All regulated waste must be either incinerated or decontaminated by a method, such as autoclaving, that is known to effectively destroy bloodborne pathogens.
- Contaminated materials that are to be decontaminated away from the work area must be placed in a durable, leak-proof, labeled or color-coded container that is closed before being removed from the work area.

Access:

- Laboratory doors must be kept closed when work involving HIV or HBV is in progress.
- Access to the work area must be limited to authorized persons.
- Access doors to the work area must be self-closing.
- Work areas must be separate from areas that are open to unrestricted traffic within the building.
- The surfaces of doors, walls, floors, and ceilings in the work area must be water resistant so they can be cleaned easily.

Labels:

- When other potentially infectious materials or infected animals are present in the work area, a hazard warning sign with the universal biohazard symbol must be posted on all access doors.

Engineering controls and work practices:

- All activities involving other potentially infectious materials must be conducted in biological safety cabinets; no work with these infectious materials may be conducted on the open bench.
- Each work area shall contain a sink for washing hands and a readily available eye wash facility; the sink shall be foot/knee/elbow or sensor operated and located near the exit door of the work area.

Needlestick or sharps safety:

- Hypodermic needles and syringes shall be used only for parenteral injection and aspiration of fluids from laboratory animals and diaphragm bottles.
- Extreme caution must be used when handling needles and syringes.
- A needle shall not be bent, sheared, replaced in the sheath or guard, or removed from the syringe following use.
- The needle and syringe must be promptly placed in a puncture-resistant container and decontaminated before reuse.

Scenario

Ben is a medical laboratory technician working in a local hospital. Before each shift, Ben buys a large cup of coffee from the hospital food court. While working, Ben keeps his cup of coffee on a table in the lab away from his work station.

Is Ben following the bloodborne pathogens standard?

No.

The standard clearly states that drinks cannot be kept in a work area where there is reasonable exposure to blood or other potentially infectious materials. Food and drink must be kept in designated areas completely free of reasonable exposure. One concern OSHA has expressed with keeping drinks in a work area is the potential for contaminating the drink container, potentially resulting in an indirect exposure.

Module 10 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Clinical laboratories perform diagnostic screening procedures on blood or other potentially infectious material.**
 - a. True
 - b. False

- 2. Research laboratories produce high concentrations of ____.**
 - a. bloodborne pathogens
 - b. HIV
 - c. HBV
 - d. both B and C

- 3. When is it okay to eat or drink in a clinical laboratory?**
 - a. Sometimes
 - b. Never
 - c. Always

- 4. What kind of a label is required when potentially infectious material or animals are present in a research laboratory?**
 - a. Do not enter sign
 - b. Hazard warning sign
 - c. Unauthorized entry prohibited
 - d. Enter at your own risk

Module 11: Hepatitis B (HBV) Immunization

Getting vaccinated

The best way to prevent hepatitis B is by getting vaccinated.

The hepatitis B vaccine is considered one of the safest and most effective vaccines ever made. Numerous studies looking at the vaccine's safety have been conducted by the Centers for Disease Control and World Health Organization.

The rate of hepatitis B infections has declined by about 82% since 1991, when vaccination against HBV began.

Your employer must offer you a hepatitis B vaccination series if you have a risk of occupational exposure to blood or other potentially infectious materials. Your employer must pay for the cost of the vaccination series. You must be offered the vaccination before you undertake tasks that expose you to potentially infectious materials, and at a reasonable time and location.

Three shots!

The hepatitis B immunization series requires three separate injections.

The hepatitis B vaccine is very effective in protecting against the hepatitis B virus. Approximately 90 percent of people who receive the vaccine will become fully immune to the virus. It is given in a series of three shots. The entire series of shots is required to provide full immunity. The vaccine is safe with very few adverse reactions.

Typical Vaccination Schedule:

The first injection can be administered at any given time. The second injection must be given at least one month after the first, and the third injection must be given six months after the first.

A licensed physician or other healthcare professional will perform or supervise the vaccinations.

Your employer does not have to offer you the vaccination series if you have previously received the complete series or have tested as immune to HBV.

You can decline the vaccination for hepatitis B after being informed of the risks and benefits. To do this, you must sign a declination form. If you initially decline the vaccination for hepatitis B, you can later request it from your employer at no charge.

There are currently two vaccines used to prevent hepatitis B infection in the United States. Neither vaccine contains blood products. You cannot get hepatitis B from these vaccines.

Scenario

Tony has just been accepted to a local paramedic training program. Before beginning the program, the school requires students to receive the hepatitis B vaccination and pay for it themselves.

Is the school required to pay for the vaccination?

No.

Typically, only employers are required to pay for the hepatitis B vaccination series. Post-secondary schools can require the vaccination series as an admissions requirement and require the applicant to pay for the cost. There have been instances where public school districts (K-12) have been required to pay for the vaccination series if there is a potential for the student to be exposed to bloodborne pathogens as part of their coursework.

Module 11 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Kristina has just been hired for a position which is classified as having occupational exposure. Kristina's employer offers to pay for the hepatitis B vaccination series. Can Kristina decline the vaccination series?**
 - a. Yes
 - b. No
 - c. Maybe

- 2. The _____ vaccine is very effective, with 90% of people becoming fully immune.**
 - a. HIV
 - b. hepatitis A
 - c. hepatitis B
 - d. hepatitis C

- 3. The hepatitis B vaccine is considered one of the safest and most effective vaccines ever made.**
 - a. True
 - b. False

- 4. Your employer does not have to offer you the vaccination series if _____.**
 - a. you have previously received the complete series or have tested as immune to HBV
 - b. you have tested immune to HCV
 - c. you have tested immune to HIV
 - d. you have previously received one shot of the vaccination series

- 5. You cannot get hepatitis B from either of the hepatitis B vaccines that are available.**
 - a. True
 - b. False

Module 12: When an Exposure Occurs

What to do When You are Exposed

When an exposure occurs, immediate self-care is the highest priority. Flush potentially contaminated materials from the mucous membranes of the eyes, nose, and mouth with large amounts of running water.

Allow a puncture wound from a potentially contaminated sharp object to bleed. Wash the wound with soap and water.

Wash potentially contaminated material off your skin with soap and water as quickly as possible after an exposure. Washing is especially important when you have cuts, rashes, or scrapes on your skin.

When available, use a face and eye wash station to flush the eyes, nose, or mouth if they are exposed to blood or bodily fluids.

What do you do next?

After self-care, report the exposure incident without delay. This allows for timely testing of the source individual and, if necessary, the employee.

You will be directed to a healthcare professional for medical evaluation as soon as possible after receiving the source individual's test results. The evaluation will document the route of exposure and how the exposure occurred. There is no cost to you for this evaluation.

Post-Exposure Therapy

If you are exposed to HIV-infected blood, most medical facilities offer short-term therapy called Post-Exposure Prophylaxis (PEP). This therapy must begin as soon as possible after the exposure. PEP can reduce the risk of getting HIV by as much as 80 percent.

The evaluation will also include counseling and education regarding the testing process and the ramifications of the exposure. This includes sexual practices information for the six-month post-exposure evaluation period.

The employer must obtain and provide the worker with a copy of the evaluating healthcare professional's written opinion within 15 days of completion of the evaluation. According to OSHA's standard, the written opinion should only include: whether hepatitis B vaccination was recommended for the exposed worker; whether or not the worker received the vaccination, and that the healthcare provider informed the worker of the results of the evaluation and any

medical conditions resulting from exposure to blood or OPIM which require further evaluation or treatment. Any findings other than these are not to be included in the written report.

Scenario

Patrick is a nurse working in the emergency department of the local hospital. During one of his shifts he is accidentally jabbed by a used needle. The needle punctures his skin and draws blood.

What should Patrick do?

Immediate self-care is Patrick's first priority.

He needs to allow the puncture wound to bleed, hopefully flushing any contaminants out of his body. Next, he should wash the affected area thoroughly with soap and water.

After self-care, Patrick needs to report the incident to his direct supervisor, so an injury report can be completed. Patrick will then be seen by a healthcare professional to determine the best course of treatment for him. Sometimes it is possible to test for various diseases if the exposure source can be identified. This is not always possible.

Module 12 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. While providing first aid treatment to a fellow employee, Maria had blood sprayed into her eyes. What should Maria do first?**
 - a. Provide immediate self-care
 - b. Report the incident to her supervisor
 - c. Go to a hospital
 - d. Continue working

- 2. If your eyes, nose, or mouth are exposed to blood or bodily fluids you should _____.**
 - a. use a washcloth to wipe your face off
 - b. flush the eyes, nose, and mouth with large amounts of running water
 - c. take a shower within 24 hours of exposure
 - d. apply baking soda to the eyes, nose, and mouth to absorb any contaminated materials from the mucus membranes

- 3. If you have potentially contaminated material on your skin, the first thing you should do is _____.**
 - a. lay down and elevate the contaminated area
 - b. seek medical attention
 - c. apply ice
 - d. wash with soap and water as soon as possible

- 4. You are exposed to contaminated material and finish immediate self-care. What do you do next?**
 - a. Go home and try to forget about the exposure.
 - b. Catch a movie to take your mind off the exposure.
 - c. Report the exposure incident without delay.
 - d. You write about the exposure incident in your personal journal.

5. If you are exposed to HIV-infected blood, most medical facilities offer short-term therapy called Post-Exposure Prophylaxis (PEP).

- a. True
- b. False

Module 13: Housekeeping

What is housekeeping?

"Housekeeping" refers to ensuring a worksite is maintained in a clean and sanitary condition.

An employer must implement an appropriate written schedule for cleaning and determine the best method to decontaminate each location within a facility.

There are four types of regulated waste that require special handling:

1. Liquid or semi-liquid blood or potentially infectious materials
2. Contaminated items that could release potentially infectious material in a liquid or semi-liquid state
3. Items caked (solid or dry) with potentially infectious materials that are capable of releasing these materials during handling
4. Contaminated sharp objects

Potentially Biohazardous Waste

It is of the utmost importance that infectious waste be safely contained.

- Infectious waste should be placed in specially designed containers constructed to contain the contents.
- The containers need to be leak-proof, labeled or color coded, and closed prior to removal to prevent spills.
- If a container is leaking, place it in a secondary leak-proof container.

Contaminated Laundry

"Contaminated laundry" refers to laundry that is soiled with potential infectious material or that may contain sharp objects, such as needles.

When working with contaminated laundry, the following guidelines should be followed:

- Contaminated laundry should be handled as little as possible.

- Wear gloves when handling contaminated laundry, and place it in labeled, leak-proof bags or containers before transporting it.
- Never take contaminated protective clothing home for laundering, even if it is personal clothing.
- Pick up potentially contaminated broken glassware using mechanical means only, such as tongs, forceps, or brush and dustpan.
- Never use your hands, even if you are wearing gloves.

Contaminated items should not be stored or processed in a way that requires you to reach into containers.

Work practice controls should be established to prevent you from reaching into a container to remove potentially contaminated items, such as glassware or needles.

All equipment and work surfaces that could become contaminated should be cleaned and decontaminated routinely using an appropriate disinfectant while wearing PPE.

All pails, bins, and similar reusable receptacles should be decontaminated on a regular basis and as soon as possible after visible contamination is noticed.

Scenario

Kevin is a custodial engineer for a local middle school. As part of his job duties, he is required to clean the health room daily. It is common for students to have minor injuries or ailments, such as nose bleeds or a skinned knee, during the school day.

What housekeeping issues does Kevin face?

It is important all contaminated materials, such as bloody gauze, is contained, labeled, and disposed of properly. Kevin should wear PPE, such as gloves, when performing this task. Kevin should decontaminate the health room surfaces daily using an approved method and appropriate disinfectant. If visible blood or body fluids are present on a surface, the fluid should be cleaned, and the surface decontaminated immediately.

Module 13 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Is it acceptable for an employee to take contaminated clothing home to be washed?**
 - a. Yes
 - b. No
 - c. Maybe

- 2. One of the four types of regulated waste that requires special handling is _____.**
 - a. water with a concentration of bleach that is 5% or greater
 - b. liquid or semi-liquid blood or potentially infectious materials
 - c. cigarette butts
 - d. food wrappers or cups that have been used by persons with HIV

- 3. In regard to bloodborne pathogens and contaminated materials, what is "housekeeping"?**
 - a. An employer managing their financial books appropriately
 - b. When an employer lays off employees that cause trouble, especially employees that expose themselves to bloodborne pathogens
 - c. Employees cleaning and maintaining their own homes
 - d. An employer ensuring a worksite is maintained in a clean and sanitary condition

- 4. Infectious waste should be _____.**
 - a. placed in specially designed containers constructed to contain the contents
 - b. placed in any available garbage can
 - c. thrown out with all the other garbage
 - d. both B and C

- 5. Pick up potentially contaminated broken glassware using _____.**
- a. your bare hands
 - b. mechanical means only, such as tongs, forceps, or brush and dustpan
 - c. your hands while wearing gloves
 - d. both A and C

Module 14: Communicating a Hazard in the Workplace

Primary Methods of Communicating: Signs and Labels

Signs and labels that alert you to the presence of potentially infectious material and the risk of exposure are vital to a workplace with occupational exposure to potentially infectious materials.

Be sure you are aware of and abide by all signs and labels signaling hazards and hazardous material.

Signs should have a fluorescent orange or orange-red background with a black "biohazard" symbol in the foreground.

Labels must contain the biohazard symbol and must have the word "Biohazard" written on them.

A biohazard label or sign should be attached to each object or container of contaminated material by string, wire, adhesive, or another method that prevents loss or unintentional removal of the label or sign.

When red bags or containers with the biohazard symbol on them are used, a sign or label is not necessary.

Also, when medical laboratory personnel are drawing and testing blood samples, the individual containers housing potentially infectious materials do not need to be labeled.

Properly indicating contaminated material using labels and signs will greatly reduce the risk of accidental exposure to the contaminated material. It is important to maintain appropriate container labeling at all times.

Annual training must be conducted for all employees with occupational exposure.

Information and Training

All employees (including part-time and temporary employees) with occupational exposure in the organization should participate in a training program that is provided at no cost during working hours. The training materials used should be appropriate in content and vocabulary to the educational and literacy levels and are conveyed in the language of the employees.

The training materials should clearly state the objectives of the training. Trainers should be knowledgeable in the subject matter covered by the training program as it relates to the workplace. All employees should have an opportunity for interactive questions and answers

with the person(s) conducting the training. If computer or online training is used, it should provide an opportunity for a person knowledgeable about the training material to be available to answer questions.

Training Program Elements

The Bloodborne Pathogens training program should include information and explanations of at least the following:

- Epidemiology, symptoms, and modes of transmission of bloodborne diseases
- The Exposure Control Plan that has been implemented and how to obtain a copy of the written plan
- Appropriate methods for recognizing tasks and activities that may involve exposure to blood or OPIM
- Use and limitations of methods that will prevent or reduce exposures, including appropriate engineering, administrative or work practice controls, and personal protective equipment (PPE)
- The basis for selection of PPE
- Types, proper use, location, removal, handling, decontamination, and disposal of PPE
- Hepatitis B vaccination series, including its efficacy, safety, method of administration, benefits, and the fact that the vaccination will be offered to employees free of charge
- Appropriate actions to take and persons to contact in an emergency involving blood or OPIM
- Procedure to follow if an exposure incident occurs, including the:
 - Method of reporting the incident
 - Medical follow-up that will be made available
 - Procedure for recording the incident in the sharps injury log
 - Post-exposure evaluation and follow-up that will be made available to employees

- Signs, labels, and/or color coding that are used

Frequency of Training

Training should be provided at the time of employees' initial assignment (to tasks in which occupational exposure may occur) and at least annually thereafter (i.e., within one year of their previous training).

Additional training, limited to addressing the new exposures created, is provided to the employee whose occupational exposure is affected by:

- Introduction of new engineering, administrative, or work practice controls
- Changes or modifications in existing tasks or procedures
- Institution of new tasks or procedures

Scenario

Jennifer works for a computer parts manufacturer. One of her job duties is to perform housekeeping tasks for her section of the warehouse. During her last shift an employee was injured and required first aid treatment, producing contaminated clothing and personal protective equipment. This contaminated material needs to be labeled and disposed of.

How should Jennifer dispose of this contaminated material?

Jennifer needs to use appropriate personal protective equipment while working with the contaminated materials.

She must also place the contaminated material in a leak-proof bag that is labeled with the symbol and word "Biohazard".

Jennifer should then dispose of the bag based on her employer's exposure control plan.

Module 14 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

- 1. Signs used to warn of potential infectious materials should have a _____.**
 - a. fluorescent yellow background with a black "lightning bolt" symbol in the foreground
 - b. fluorescent red background with a black "radioactivity" symbol in the foreground
 - c. fluorescent orange or orange-red background with a black "biohazard" symbol in the foreground
 - d. red background with a black "skull" symbol in the foreground

- 2. A biohazard label or sign should _____.**
 - a. be attached to each object or container of contaminated material
 - b. be posted, at eye level, at the entrance of any room that contains biohazard material
 - c. not be necessary if the biohazard container is made of a clear material and has no indicators that contaminated material is inside
 - d. contain the contaminated materials symbol and the words "contaminated materials" written on it

- 3. All employees (including part-time and temporary employees) with occupational exposure in the organization should participate in a training program that is provided at no cost during working hours.**
 - a. True
 - b. False

- 4. Effective bloodborne pathogens training should contain information on each of the following, EXCEPT _____.**
 - a. the exposure control plan and how to obtain a copy of the written plan
 - b. recognizing tasks and activities that may involve exposure to blood or OPIM
 - c. types, proper use, location, removal, handling, decontamination, and disposal of PPE
 - d. target populations that have a greater chance of being infected with HIV and HBV

- 5. Training should be provided at the time of employees' initial assignment (to tasks in which occupational exposure may occur) and at least _____.**
- a. semi-annually thereafter (i.e., within six months of their previous training)
 - b. annually thereafter (i.e., within one year of their previous training)
 - c. every 2 years thereafter (i.e., within two years of their previous training)
 - d. every 3 years thereafter (i.e., within three years of their previous training)

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