BLOODBORNE PATHOGENS
MODULE 1

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Welcome to Bloodborne Pathogens

This module is the first of three modules for this topic. During the modules you will answer Quick Quizzes to help you review and test your understanding; these are not scored.

There is also a short Final Quiz at the end of the third module, which will be scored. It is necessary to pass with a score of 80% or better to receive credit for these modules. This first module takes 20 minutes to complete.

Here's what we will cover for Module 1:

1. Why Take Bloodborne Pathogens Training?
2. Definition
3. At-Risk Employees
4. Types of Bloodborne Pathogens
5. Bloodborne Pathogen Transmission
6. Engineering Controls
7. Exposure Control Plan

Why take Bloodborne Pathogens training?

Employees in many industries are at risk:

Approximately 5.6 million employees in the health care, dentistry, hospitality and other industries can reasonably be expected to come into contact with blood or other potentially infectious materials (OPIM). They are at risk for Bloodborne Pathogen exposure.

Regulations and standards have been set:

The Occupational Safety and Health Administration (OSHA) has set a Bloodborne Pathogens standard which mandates safeguards to protect employees against the health hazards associated with the exposure to blood, needles, bodily fluids and OPIM.

What are Bloodborne Pathogens?

- Bloodborne Pathogens are pathogenic micro-organisms that may be present in human blood and can cause disease in humans.
- Pathogens found in blood and OPIM include the following: human immunodeficiency virus (HIV), which causes AIDS; hepatitis B virus (HBV); hepatitis C virus (HCV); syphilis and malaria.
- There are many Bloodborne Pathogens and although this training only specifically addresses a few, they should all be considered.

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The Bloodborne Pathogens Standard:

- Covers all employees who could be “reasonably anticipated” to face contact with blood and other potentially infectious materials as the result of performing their job duties.
- **Does not** cover those who engage in “Good Samaritan” acts, such as assisting a coworker with a nosebleed, because it is not considered an occupational exposure. This training is not a substitute for detailed first aid training.

However, if an employer allows trained employees to assist with first aid treatment on a “Good Samaritan” basis, it is considered best practice to implement the key elements of a bloodborne pathogen program.

Who Is At Risk For Exposure?

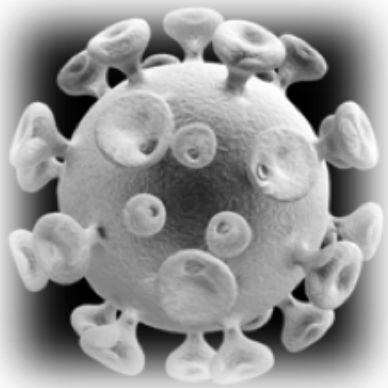
Those who are likely to come into contact with blood or OPIM are considered at risk, including those working in medicine, housekeeping, labs and law enforcement. The list below is not comprehensive, but a representation of those who may have contact.

- Physicians, nurses and emergency room personnel
- Orderlies, housekeeping personnel and laundry employees
- Dentists and other dental employees
- Laboratory and blood bank technologists and technicians
- Medical examiners
- Morticians
- Law enforcement personnel
- Firefighters
- Paramedics and emergency medical technicians
- Anyone providing first-response medical care
- Medical waste treatment employees
- Home healthcare employees

Types of Bloodborne Pathogens

Bloodborne Pathogens include:

- Malaria
- Syphilis
- Brucellosis
- Hepatitis B (HBV) and C
- Human immunodeficiency virus (HIV)



Human immunodeficiency virus (HIV)

Although these are all pathogens transmitted through human blood and fluid, only hepatitis B, C and HIV are the ones directly regulated. As a type of universal precaution, all human blood and fluid should be treated as infectious to assure protection.

Hepatitis B virus (HBV)

Let's take a look at Hepatitis B. "Hepa" refers to the liver and "itis" refers to inflammation. The Hepatitis B virus:

- Is a viral infection and causes inflammation of the liver.
- Transmits primarily through blood to blood contact.
- Can also cause jaundice, vomiting and, in rare cases, death.
- Leads to serious conditions such as cirrhosis and liver cancer.
- Can survive in dried blood for up to seven days.
- Has no known cure or treatment.
- Has an available vaccine.

Hepatitis B virus

Hepatitis B virus (HBV)

The Hepatitis B virus vaccine will be offered to all employees reasonably expected to have exposure to the virus free of charge upon employment.

The vaccine is only effective if it is administered prior to exposure

Hepatitis B virus

Hepatitis C virus (HCV)

Now let's look at the Hepatitis C virus. Of the three bloodborne pathogens, HCV remains viable outside the body the longest.

Unlike Hepatitis B, Hepatitis C does not have a vaccine that can prevent infection if an exposure occurs. People can be "carriers" of Hepatitis C without symptoms or disease manifestation.

Hepatitis C virus

Hepatitis C virus (HCV)

- Similar to HBV, can cause jaundice, fatigue, abdominal pain, loss of appetite, intermittent nausea and vomiting.
- Can lead to chronic liver disease and death.
- Medications can suppress the virus, but treatments have a low success rate.
- Survives outside the body for several days.
- Can be carried by people, called carriers, who do not have symptoms of the disease.

Hepatitis C virus

Human Immunodeficiency Virus (HIV)

Lastly, let's take a look at HIV:

- Attacks the body's immune system, weakening it so that it cannot fight other deadly diseases.
- Causes acquired immunodeficiency syndrome (AIDS). AIDS is a fatal disease and, while treatment for it is improving, there is no known cure.
- The HIV virus is very fragile and will not survive for more than a few hours outside of the human body.
- Employees providing first aid or medical care in situations involving fresh blood or other potentially infectious materials are particularly at risk.

Human Immunodeficiency Virus (HIV)

There is no vaccine currently to prevent HIV infection if an exposure does occur; a great deal of research is being conducted to develop a vaccine to prevent the virus from attacking the body.

The mortality rate is still high from HIV infection because there is not a comprehensive cure.

Many people die of related diseases as a result of a weakened immune system, such as tuberculosis, fungal infection and viral herpes.

Quick Quiz

Which of the following are considered bloodborne pathogens?

A. Hepatitis B
B. Hepatitis C
C. HIV
D. All of the above

Quick Quiz

Which of the following are considered bloodborne pathogens?

A. Hepatitis B
B. Hepatitis C
C. HIV
D. **All of the above**

Pathogen sources:

Generally, bloodborne pathogens are transmitted through contact with infected human blood and other potentially infectious materials (OPIM), such as:

- Semen.
- Vaginal secretions.
- Cerebrospinal fluid (brain spinal cord).
- Synovial fluid (joints).
- Pleural fluid (chest cavity).
- Peritoneal fluid (abdomen).
- Amniotic fluid (fluid around fetus).
- Saliva (if blood is present).
- Any unfixed tissue or organ from a human, living or dead, except intact skin.
- Any blood, cultures or animal tissue infected with or containing HIV, HBV or HCV.

Many state occupational safety and health programs have more detailed lists of other potentially infectious materials (OPIM), including drug products and materials derived from human blood and source material.

Any time human blood is present, it is always considered potentially infectious and must be handled as such.

Entry Methods:

Unbroken skin forms an impervious barrier against bloodborne pathogens. If you have an open wound, you should not assist individuals with first aid.

Some guidelines:

If you must perform first aid, cover all open cuts and wounds using a bandage and/or protective gloves to prevent contact with blood or OPIM. Also be sure to wear protective gloves when cleaning up blood or other OPIM.

Note that infected blood can enter your system through the following:

- Open sores
- Small cuts or scratches
- Abrasions
- Acne
- Damaged or broken skin, such as sunburn or blisters
- Dried and cracked skin, which can be the result of dermatitis from contact with a chemical or plant or due to seasonal variability in humidity.

Common Exposure Routes

- A splash or splatter of human blood or OPIM coming into contact with mucous membranes, such as the eyes, nose, mouth or broken skin.
- Parenteral contact. This is when the pathogen enters directly into blood or muscle tissue and can occur via:
  - Injection from a needle.
  - Cuts from other contaminated sharps like scalpels, broken glass, etc.

Quick Quiz

It is only necessary to wear protective gloves if you are likely to have contact with blood from someone who has a bloodborne pathogen

A. True
B. False

Quick Quiz

It is only necessary to wear protective gloves if you are likely to have contact with blood from someone who has a bloodborne pathogen

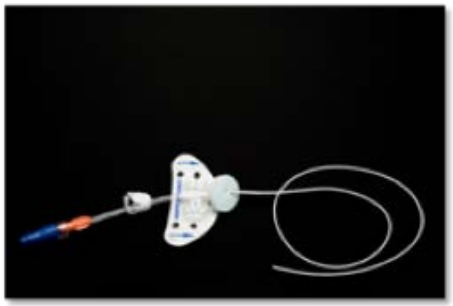
A. True

B. **False**

Always be sure to wear protective gloves when cleaning up blood or any other potentially infectious materials (OPIM). All human blood and fluid should be treated as infectious to assure protection.

These controls reduce exposure by removing the hazard or isolating the employee. Examples of engineering controls include:

- Sharps disposal containers.
- Self-sheathing or retracting needles.
- Medical safety devices.
- Needleless systems, as shown here, used for administering fluid in an IV system.
- Sharps with engineered injury protection.



A sharps container must be:

- Red or labeled with a biohazard sign.
- Leak-proof.
- Puncture-resistant.
- Located as close as possible to the work surface.
- Kept upright during use.
- Inspected and replaced when two-thirds full.
- Closed when full.
- Transported in a secondary container if leakage is possible.
- Disposed of as regulated waste, following local and federal requirements.

Medical safety devices

Another example of an engineering control are medical safety devices.

Needleless systems: Devices that do not use needles, such as Luer taper systems, for the collection or withdrawal of body fluids or for the administration of medication or fluids.

Sharps that have engineered sharps injury protection: These have a built-in safety feature or mechanism that reduces the risk of an exposure incident. They include non-needle sharps and needle devices used for withdrawing body fluids, accessing a vein or artery or administering medications or other fluids.
Your program must review these devices to determine the safest approach.

Quick Quiz

Choose the most correct answer.

Engineering controls reduce exposure to bloodborne pathogens by:

A. Removing the hazard or isolating the employee.
B. Not allowing work to be done around blood.
C. Finding cures for the viruses.
D. All of the above

Quick Quiz

Choose the most correct answer.

Engineering controls reduce exposure to bloodborne pathogens by:

A. **Removing the hazard or isolating the employee.**
B. Not allowing work to be done around blood.
C. Finding cures for the viruses.
D. All of the above

An **Exposure Control Plan** is a written document that describes how the employer will comply with requirements and implement policies and procedures. It must be accessible and communicated to employees.

An Exposure Control Plan:

- Identifies the jobs and tasks where occupational exposure to blood or other potentially infectious material occurs.
- Describes how the employer will:
  - Use engineering and work practice controls.
  - Assure use of personal protective equipment.
  - Provide training.
  - Provide medical surveillance.
  - Provide hepatitis B vaccinations.
  - Use signs and labels.

Training must be:

- Provided at no cost to employees during working hours.
- Provided at the time of the initial assignment to a job with occupational exposure and at least annually thereafter.
- Provided additionally when existing tasks are modified or new tasks are required which affect an employee's occupational exposure.
- Recorded and maintained for three years.

Best Practices to Avoid Exposure

- Don’t sling trash bags over your shoulder to carry
- Don’t let trash bags drag against your thighs or calves. Hold them at a distance from your body
- Never push down trash in containers with your hands. Always use a barrier device.
- Don't carry trash from the bottom or against your body.