



*Georgia Department of Technical  
and Adult Education*

# **Bloodborne Pathogens**

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Published December 2002  
(C121002)





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# Introduction

A bloodborne pathogen is a specific cause of disease, such as a virus or bacteria. “Bloodborne” means carried by or in blood and certain other body fluids. AIDS, hepatitis B and C, malaria, and syphilis are examples of diseases that are caused by bloodborne pathogens.

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## Objectives

Upon completion of this course, you will be able to:

- Discuss bloodborne pathogens,
- Identify two bloodborne pathogens of concern in the workplace,
- Explain how bloodborne pathogens are transmitted,
- List four high risk factors, and
- Discuss the precautions to be used in the workplace.



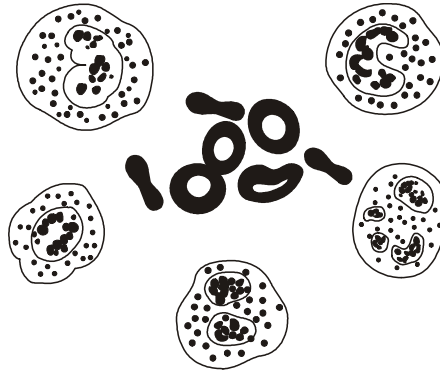


# What Are Bloodborne Pathogens?

Two types of pathogens of concern in the workplace are:

1. Hepatitis B Virus (HBV)
2. Human Immunodeficiency Virus (HIV)

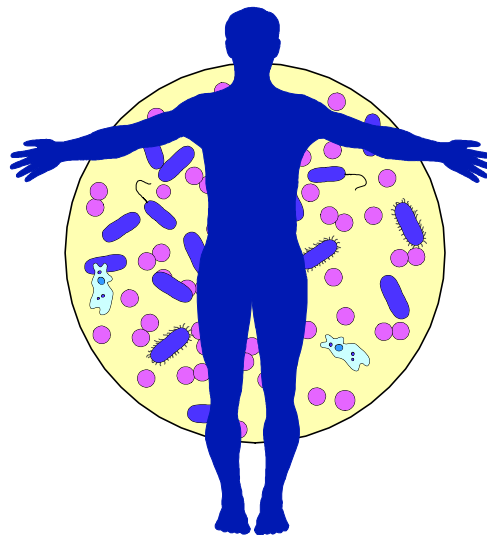
Hepatitis B is much more contagious than HIV.



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## Hepatitis B Virus (HBV)

The HB Virus infects the liver: it's more common than HIV and is a greater risk on the job. Many HBV infected people have no problems or symptoms. Some, however, do develop serious or fatal problems such as cirrhosis, liver cancer, or chronic liver disease. There is a vaccine for HBV which is dispensed in three doses. Any employee at risk should take the vaccine.



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## Human Immunodeficiency Virus (HIV)

HIV causes AIDS, it attacks the body's immune system, reducing its ability to fight disease.

To protect yourself against HIV and HBV, avoid direct exposure to infectious blood or body fluids - the prime transmitters of HBV and HIV.





# Signs and Symptoms

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## Signs and Symptoms of (HVB)

Discuss and list different signs and symptoms of HVB.

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## Signs and Symptoms of (HIV)

Discuss and list different signs and symptoms of HIV.

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# Transmission

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## Transmission Mediums

Body Fluids that can transmit infection are:

- Blood
- Semen
- Vaginal secretions
- Cerebrospinal fluid (brain and spinal fluid)
- Synovial fluid (lubricating fluid of joints and tendons)
- Pleural fluid (fluid around the lungs)
- Pericardial fluid (fluid around the heart)
- Peritoneal fluid (fluid in the abdomen)
- Amniotic fluid (fluid that surrounds an embryo)
- Saliva (in dental procedures)

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## Transmission Routes

HIV and hepatitis are transmitted only in the following ways:

- 1.
- 2.
- 3.

You can't catch HIV through casual contact, such as touching, hugging, being coughed on or sneezed on or working around someone who has AIDS. Family members and health care workers who are constantly around patients with AIDS do not catch AIDS when they use proper precautions.



# Risk Factors and Behaviors

In light of what we know about the way the HBV and HIV virus are transmitted, risk of exposure to either virus is increased for people who:

- Have unprotected sex or multiple partners.
- Have unprotected sex with an IV drug user.
- Have shared needles while using drugs.
- Have occupational exposure to the blood or body fluids of others.
- Between 1978 and the spring of 1985, received blood or blood products in transfusion.
- Between 1978 and the spring of 1985, received an organ transplant.
- Received artificial insemination from an untested donor.
- Between 1978 and the spring of 1985, received treatment for a clotting disorder.
- Have been exposed to blood or body fluids of a person known to have AIDS or be HIV-positive.
- Are immigrants from high risk areas (southeast Asia, Africa, Southern and Central Europe):
  - Have tattoos.
  - Are family of infected persons.





# Personal Protective Equipment

"Universal Precautions" is the name used to describe a prevention strategy in which all blood and potentially infectious materials are treated as if they are, in fact, infectious, regardless of the perceived status of the source individual. In other words, whether or not you think the blood/body fluid is infected with bloodborne pathogens, you treat it as if it is. This approach is used in all situations where exposure to blood or potentially infectious materials is possible. This also means that certain engineering and work practice controls shall always be utilized in situations where exposure may occur.

Probably the first thing to do in any situation where you may be exposed to bloodborne pathogens is to ensure you are wearing the appropriate personal protective equipment (PPE). For example, you may have noticed that emergency medical personnel, doctors, nurses, dentists, dental assistants, and other health care professionals always wear latex or protective gloves. This is a simple precaution they take in order to prevent blood or potentially infectious body fluids from coming in contact with their skin. To protect yourself, it is essential to have a barrier between you and the potentially infectious material.

## **Discuss and List 4 Rules to Follow with PPE:**

- 1.
- 2.
- 3.
- 4.

If you work in an area with routine exposure to blood or potentially infectious materials, the necessary PPE should be readily accessible. Contaminated gloves, clothing, PPE, or other materials should be placed in appropriately labeled bags or containers until it is disposed of, decontaminated, or laundered. It is important to find out where these bags or containers are located in your area before beginning work.

This approach is used in all situations where exposure to blood or potentially infectious materials is possible. This also means that certain engineering and work practice controls shall always be utilized in situations where exposure may occur.

## **Gloves**

Gloves should be made of latex, nitril, rubber, or other water impervious materials. If glove material is thin or flimsy, double gloving can provide an additional layer of protection. Also, if you know you have cuts or sores on your hands, you should cover these with a bandage or similar protection as an additional precaution before donning your gloves. You should always inspect your gloves for tears or punctures before putting them on. If a glove is damaged, don't use it! When taking contaminated gloves off, do so carefully. Make sure you don't touch the outside of the gloves with any bare skin, and be sure to dispose of them in a proper container so that no one else will come contact with them either.



Always Check  
your gloves for  
damage before  
using them!!



### **Goggles**

Anytime there is a risk of splashing or vaporization of contaminated fluids, goggles and/or other eye protection should be used to protect your eyes. Again, bloodborne pathogens can be transmitted through the thin membranes of the eyes so it is important to protect them. Splashing could occur while cleaning up a spill, during laboratory procedures, or while providing first aid or medical assistance.



### **Face Shields**

Face shields may be worn in addition to goggles to provide additional face protection. A face shield will protect against splashes to the nose and mouth.



### **Aprons**

Aprons may be worn to protect your clothing and to keep blood or other contaminated fluids from soaking through to your skin. Normal clothing that becomes contaminated with blood should be removed as soon as possible because fluids can seep through the cloth to come into contact with skin. Contaminated laundry should be handled as little as possible, and it should be placed in an appropriately labeled bag or container until it is decontaminated, disposed of, or laundered.





# Decontamination & Sterilization

All surfaces, tools, equipment and other objects that come in contact with blood or potentially infectious materials must be decontaminated and sterilized as soon as possible. **Equipment and tools must be cleaned and decontaminated before servicing or being put back into use.**

Decontamination should be accomplished by using:

- A solution of 5.25% sodium hypochlorite (household bleach/ Clorox) diluted between 1:10 and 1:100 with water. The standard recommendation is to use at least a quarter cup of bleach per one gallon of water.
- Lysol or some other EPA-registered tuberculocidal disinfectant. Check the label of all disinfectants to make sure they meet this requirement.

If you are cleaning up a spill of blood, you can carefully cover the spill with paper towels or rags, and leave it for at least 10 minutes. This will help ensure that any bloodborne pathogens are killed before you actually begin cleaning or wiping the material up. By covering the spill with paper towels or rags, you decrease the chances of causing a splash when you pour the bleach on it.

If you are decontaminating equipment or other objects, you should leave the disinfectant in place for at least 10 minutes before continuing the cleaning process.

Of course, any materials you use to clean up a spill of blood or potentially infectious materials must be decontaminated immediately, as well. This would include mops, sponges, reusable gloves, buckets, pails, etc.





# Common Questions

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**Discuss with the class:**

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## **HBV**

**What symptoms do I have if I am suffering from hepatitis B infection?**

Many people with HBV do not have any symptoms and feel perfectly well. Occasionally, the hepatitis B infection may become active and make the patient feel ill with nausea, have a loss of appetite, and become jaundiced.

**What kind of outlook can I expect if I have a hepatitis B infection?**

Many patients with the hepatitis B infection can expect to lead a full and normal life. It is most important to regard yourself as a normal individual who happens to be infected with hepatitis B. However, it is important to take precautions not to spread the disease and to get medical checkups regularly.

**Can I get hepatitis from the vaccine?**

No. The hepatitis vaccine is a safe and highly purified vaccine. It does not contain any blood products or living or dead viruses.

**What should be done if the second or third vaccine dose is delayed?**

If the doses are delayed for less than one year, the remaining doses can be resumed to complete the vaccination without the need to restart the vaccination series. If the lapsed doses are more than one year apart, extra doses or restarting of the series may be required for high risk individuals.

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## **HIV**

### **What will the AIDS test tell me?**

A positive result indicates the presence of antibodies to HIV, which has been found in people with AIDS.

### **Does a negative test mean that I am not infected?**

Unfortunately, no. Although the test is reliable, there is a “window”- some say it’s six to twelve weeks, some say longer-when you could be developing the antibody, but the test will still be negative. That’s why you need to be retested at six to twelve weeks and again in 6 months.

If you test negative, but still carry HIV, it is still possible to transmit the virus. **Counseling will be provided when you receive your test results whether they are negative or positive.**

### **What happens if I test HIV positive?**

Currently, there is no known therapy to reverse antibody status. If an employee tests HIV positive, we recommend ongoing medical monitoring and possible anti-retroviral (contains RNA for protein productions) drugs.

### **What is the prognosis?**

Research indicates that HIV - positive individuals will eventually develop AIDS. Currently, there is no treatment for AIDS and it is generally believed to be eventually fatal. As discussed previously, there is a vaccine for hepatitis B which is available to all employees at risk.

### **What HIV symptoms should I watch for?**

Almost half of the people who contract HIV experience a flu-like illness six to twelve weeks after exposure. Employees who experience an exposure incident should report any illness that feels like the flu or mononucleosis, especially if it is accompanied by fever, rash, or swollen glands.

### **Will my employer know the results of my test?**

No. The health care professional will give the results of your tests to you only. All records, including test results, relating to an exposure incident are **Strictly Confidential.**



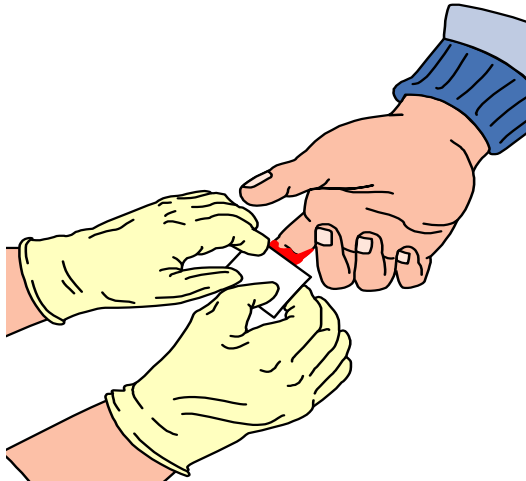
# Precautions

The following precautions should be taken by anyone who has had an exposure incident so that others are not exposed.

- Inform sexual or needle-sharing partners so they can be tested for the virus.
- Inform physicians and other health care givers so they can protect themselves.
- Don't give any blood, tissue, organs, or semen.
- Remove the organ donor designation from your driver's license.
- Hold off on getting pregnant until your health care provider says it is okay.
- If you are pregnant, get counseling.
- Don't breast-feed.
- Be careful not to expose others to your blood or bodily fluids.
- Don't share personal items such as toothbrushes, razors, etc.
- Use a bleach solution of 1:10, 70% isopropyl alcohol or other EPA-approved germicide to clean up any spills of blood.
- Refrain from sexual activity, or at least take the following precautions:
  - Limit the number of partners
  - Use latex condoms from start to finish, even if your partner is HIV-positive.

Job situations which may result in exposure include:

- Job duties that bring you into contact with needles or other sharp objects such as glass that might be contaminated with infected blood.
- Providing emergency first-aid assistance to co-workers.



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**Discuss with the class other circumstances in which exposure is possible:**

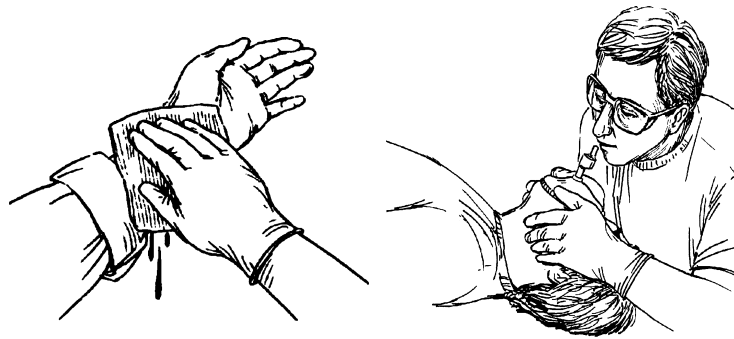
It is important that you use universal precautions to prevent becoming infected by contaminated blood. Universal precautions means that all blood and body fluids are considered a potentially infectious.



When first aid measures are needed, make sure that you adhere to the following:

1. **Mouth-to-Mouth Breathing** – The safest course of action is to use a breathing mask whenever you are called on to give mouth-to-mouth resuscitation.
2. **Controlling Bleeding** – To help the victim without infecting yourself (or the victim), wear rubber gloves.

While chance of infection on the job are small, why take unnecessary risks with your life? Following the necessary safety precautions is the best way to minimize risks.







# Summary

Bloodborne pathogens are a very real risk in the workplace. However, protective measures are in place for employees at risk. To avoid infection of bloodborne pathogens, it is very important to follow all precautions.

Knowing how infection occurs is the first step in preventing the spread of disease. Certain factors and behaviors put employees at risk. Avoid these behaviors as much as you can.

Education combined with practicing safe behaviors can save your life.