



# Bloodborne pathogens and Standard Precautions



## Teaching plan

*To use this lesson for self-study, the learner should read the material, do the activity, and take the test. For group study, the leader may give each learner a copy of the Learning Guide and follow this Teaching Plan to conduct the lesson.*

### Objectives

Participant will be able to:

- Discuss harmful organisms that may be present in blood.
- Demonstrate precautions to prevent the spread of bloodborne diseases.
- Discuss procedures to follow after exposure to blood or body fluids.
- Understand the importance of vaccination against Hepatitis B.

### Lesson

Write this matching quiz on a board or poster. Do not draw the connecting lines.

Pathogens	There is no vaccine against it.
Hepatitis B	These should be used with certain types of diseases.
Hepatitis C	There is a vaccine against it.
Standard Precautions	This is the best way to prevent the spread of disease.
Additional Precautions	These are tiny organisms that can cause disease.
Handwashing	These should be used at all times.

Ask a participant to draw one line matching an item in the left column with an item in the right column. Encourage the participant to ask others in the group for opinions if needed. Do the same thing with five other participants, until all the lines have been drawn connecting the phrases.

Hand out copies of the learning guide to participants. Lecture on the material in the guide, allowing for questions and discussion. Or, ask participants to read portions of the guide and tell the rest of the group what they learned.

Discuss the pyramid chart until everyone understands it. You may want to post it on an employee bulletin board as a reminder of infection control precautions. If possible, demonstrate proper handwashing technique and have participants practice.

Look at your matching quiz on the board again. Ask participants whether they need to change anything. Correct anything that was not matched to the right phrase.

Administer the test and grade it. Give certificates to those with at least 10 points.

**Test answers:** 1. HIV, HBV, HCV; 2. T; 3. Three; 4. T; 5. F; 6. F; 7. T; 8. 10–15; 9. d; 10. a. Frequent, thorough handwashing; b. Wear gloves; c. Mask, eye protection, gown; d. Sharp items. Ten correct answers out of fifteen points are required for certificate.



# Bloodborne pathogens and Standard Precautions



## Learning guide

**Why is it important to protect yourself from contact with blood and body fluids?**

**Although they can't be seen, there are hundreds of tiny organisms living in blood and other body fluids that can cause disease in humans. They are called "bloodborne pathogens."**

Some of these organisms are harmless and can be handled easily by the body's immune system, but others can cause severe illness, such as hepatitis or AIDS.

### **Bloodborne diseases: HIV, Hepatitis B, Hepatitis C**

Bloodborne pathogens include the hepatitis B virus (HBV), the hepatitis C virus, the human immunodeficiency virus (HIV) that causes autoimmune deficiency syndrome (AIDS), and others.

These pathogens are transmitted through contact with infected body fluids such as blood, semen, and vaginal secretions. Exposures occur (a) if the skin is punctured by a contaminated needle, razor, or other sharp item or (b) when broken skin or mucous membranes are splashed with blood or body fluid. Fortunately, most exposures do not result in infections.

**Standard Precautions** are designed to prevent transmission of HIV, HBV, and HCV. Standard Precautions must be observed in all situations where there is potential for contact with blood or other potentially infectious body fluids.

*Standard Precautions* apply to:

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>• Blood</li><li>• Semen</li><li>• Vaginal secretions</li><li>• Saliva</li><li>• Cerebrospinal fluid</li><li>• Synovial fluid</li><li>• Pleural fluid</li><li>• Peritoneal fluid</li></ul> | <ul style="list-style-type: none"><li>• Pericardial fluid</li><li>• Amniotic fluid</li><li>• Feces</li><li>• Nasal secretions</li><li>• Sputum</li><li>• Sweat</li><li>• Tears</li><li>• Urine</li><li>• Vomitus</li></ul> |
|---|--|

Treat all human blood and body fluids as if they are infectious.  
Remember who you are protecting—**YOURSELF!**

## Standard Precaution #1: Handwashing

Handwashing is the single most important thing you can do to prevent the spread of infection. Thorough handwashing removes pathogens from the skin.

Wash hands before and after all client or body fluid contact. Immediately wash hands and other skin surfaces that are contaminated with blood or body fluids. When wearing gloves, wash hands as soon as the gloves are removed.

Germicidal handrubs are recommended **only** when you can't wash.

### Proper handwashing procedure

1. Remove watch or push it up your arm. You should not wear rings or bracelets at work.
2. Do not touch the sink with your hands while you are washing, and stand back from the sink to keep it from touching your clothes.
3. Use warm water. Hot water may dry skin.
4. Either bar soap or liquid soap is okay. If using a bar, rinse it first and hold it the whole time you are lathering. Soap does not have to be an antiseptic type, unless you are doing an invasive procedure such as catheterization.
5. Wet your wrists and hands.
6. Apply plenty of soap. Work up a thick lather all over your hands and wrists, between your fingers and thumbs, and on the back of your hands and wrists.
7. Vigorously rub all areas of your hands, fingers, and wrists for **a minimum of 10-15 seconds**. Sixty seconds is better.
8. Clean under your nails by using the nails on your other hand, or rub your nails into the palm of your other hand. Clean around the top of your nails.
9. Rinse with warm water, letting water run down from wrists to fingertips and into the sink.
10. Dry with a clean paper towel and throw it away.
11. Turn off the faucet with a clean, dry paper towel and throw the towel away.
12. Use lotion on your hands to prevent irritation and chapping, which makes skin more prone to infection.

## Standard Precaution #2: Gloves

- Use gloves in all situations where you may come in contact with blood or body fluids.
- Use gloves for client care involving contact with mucous membranes, such as brushing teeth.
- Change gloves and wash hands between client contacts.
- Use gloves when you have scrapes, scratches, or chapped skin.
- Do not wash or disinfect disposable gloves for reuse.



### **Standard Precaution #3: Protective barriers**

Protective barriers, including gloves, reduce the risk of your skin or mucous membranes being exposed to potentially infective blood and body fluids. You should wear the appropriate barriers for the work you are doing.

Employers must provide suitable personal protective equipment (PPE) in the right sizes. Protective equipment includes gloves, gowns, masks, eye protection, face shields, mouthpieces, resuscitation devices, etc. Hypoallergenic gloves, glove liners, powderless gloves, or other alternatives must be available for those who are allergic to latex gloves.



The equipment you need depends on your work. When splashing of blood or body fluids is likely, wear the following PPE in addition to gloves:

- Mask if your face could be splashed with blood or body fluids.
- Eye protection if your eyes could be splashed with blood or body fluids.
- Gown if your clothing or skin could be splashed.

### **Standard Precaution #4: Proper disposal of sharp items**

A “sharp” is any object that can penetrate the skin, such as needles, scalpels, broken glass, broken capillary tubes, and exposed ends of wires. A sharp is contaminated if it has been in contact with blood, body fluids, or body tissues.

Contaminated sharps must be disposed of properly. Follow your organization’s policies. A puncture-proof biohazardous container must be used in care facilities. Biohazardous waste from facilities (not from client’s homes) must be disposed of by specially licensed companies.



- Be careful to prevent injuries from needlesticks and other sharp instruments after procedures, when cleaning used instruments, and when disposing of used needles. Do not recap or manipulate needles.
- Nursing and personal care facilities should be using, or planning to use, needleless injection systems or needles with injury protection. If you must use a regular needle, remember:
  - Do not recap needles. If it is absolutely necessary to recap a needle, use one hand to slide the needle into a cap lying on a flat surface. Do not hold the cap in your other hand while recapping.

### **Tips:**

- Use thick rubber household gloves to protect your hands during housekeeping chores or instrument cleaning involving potential blood contact.
- Treat all linen soiled with blood or body secretions as potentially infectious.
- Surfaces that have been contaminated with blood or body fluids should be cleaned with a disinfectant according to your organization’s policies.

**Centers for Disease Control  
two-tiered system to control  
disease transmission**

**TIER 2:  
Additional  
Precautions**

**Based on  
Type of Disease and  
How It Is  
Transmitted:**

- 1. Airborne**
- 2. Contact**
- 3. Droplet**

**TIER 1: Standard Precautions**

**Basic precautions to be used at all times,  
with all clients, to prevent transmission of  
bloodborne diseases:**

- 1. Frequent, thorough handwashing.**
- 2. Wear gloves when you might touch blood or  
body fluids.**
- 3. When splashing of blood or body fluids is  
likely, wear the following, depending on the  
situation:**
  - a. Masks**
  - b. Eye protection**
  - c. Gowns**
- 4. Safe use and disposal of sharp items.**

## **IF AN EXPOSURE OCCURS**

### **Immediately following an exposure to blood or body fluids:**

- Wash needlesticks and cuts with soap and water.
- Flush splashes to the nose, mouth, or skin with water.
- Irrigate eyes with clean water, saline, or sterile irrigants.

### **Next,**

- Report the exposure at once. Treatment may be recommended, and it should be started as soon as possible. See a medical professional.
- Discuss the possible risks and the need for treatment with the person managing your exposure.
- Remember that mandatory testing of a client is not legal. Clients who might be the source of an infection must give consent to be tested.

## **Workers' rights**

The Occupational Safety and Health Administration (OSHA) is a federal agency that guarantees rights to a safe workplace. Under OSHA's rules, workers who might be exposed to contaminated blood or body fluids have specific rights.

Employers must train workers who might be exposed to blood or body fluids about the hazards and how to protect themselves. This training must occur during working hours at orientation at no cost to the employee, and annually thereafter.

Standard precautions must be practiced at all times. Puncture-proof and leak-proof containers must be provided for disposal of sharp items. There must be a system for reporting exposures to blood or body fluids.

Employers must provide free hepatitis B vaccine, free protective equipment and free immediate medical evaluation and follow-up for anyone exposed to blood or body fluids. Employees must receive confidential treatment, and their medical records must be protected.

## **Workers' responsibilities**

- Always use standard precautions.
- Actively participate in evaluating safer equipment and encouraging your organization to purchase safer equipment. Be open to new products or practices that could prevent exposure and protect workers and clients.
- Be immunized against hepatitis B, getting the series of three injections.
- Report all exposures immediately after cleaning and disinfecting the exposed skin or mucus membranes.
- Comply with post-exposure recommendations of your organization.
- Support other workers who have been exposed. HIV-infected workers who continue working deserve support and confidentiality.
- Know your own HIV / HBV / HCV status. If you are positive for any of these viruses, you do not pose a risk for clients if you don't do invasive procedures.

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## Human Immunodeficiency Virus (HIV) is the virus that causes AIDS

### Risk of infection after exposure

- Needlestick is the most common cause of work-related infection.
- Risk factors include the amount of blood or fluid, the puncture depth, and the disease stage of the infected person.
- The average risk of HIV infection after a needlestick or cut exposure is 1 in 300. The risk after exposure of the eye, nose, skin, or mouth to positive blood is less than 1 in 1000. If the skin is damaged, the risk may be higher.

### Treatment after exposure

- There is no vaccine against HIV.
- Post-exposure treatment is not always recommended. A physician or exposure expert should advise you.
- Drugs used to prevent infection may have serious side effects.
- Perform HIV-antibody testing for at least 6 months after exposure.

99.7% of needlestick/cut exposures do not result in HIV infection.

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## Hepatitis B Virus (HBV)

### Risk of infection after exposure

- Hepatitis B vaccine prevents this disease. Persons who have received the vaccine and developed immunity are at virtually no risk for infection. A series of three (3) injections are required, given initially, then 1–2 months later, then 4–6 months after the first injection.
- Workers should be tested 1–2 months after the vaccination series to make sure the vaccination has provided immunity.
- For the unvaccinated person the risk from a single needlestick or cut exposure ranges from 6%–30%, depending on the level of virus in the infected person's blood. A higher concentration of virus makes it more likely that someone exposed to that blood will become infected.

### Treatment after exposure

- Everyone with a chance of exposure to blood or body fluids should receive hepatitis B vaccine, preferably during training, *unless it is contraindicated because of allergies, pregnancy, or potential pregnancy*.
- Hepatitis B immune globulin (HBIG) effectively prevents HBV infection after exposure. Recommendations for post-exposure management of HBV may include HBIG and/or hepatitis B vaccine. The decision to begin treatment is based on several factors, such as:
  - Whether the source person is positive for hepatitis B.
  - Whether the worker has been vaccinated.
  - Whether the vaccine provided immunity.

# Hepatitis C Virus (HCV)

Infection with HCV carries a great potential for chronic liver disease and can lead to liver failure, liver transplants, and liver cancer.

## **Risk of infection after exposure**

- Hepatitis C Virus (HCV) is a growing problem.
- The risk for infection after a needlestick or cut exposure to HCV-infected blood is 1.8%.
- The risk after a blood splash is unknown but is believed to be very small; however, HCV infection from such an exposure has been reported.

## **Treatment after exposure**

- There is no vaccine against hepatitis C and no treatment after an exposure that will prevent infection.
- Immune globulin (HBIG) is not recommended.
- Following recommended infection control practices is vital.
- There are several tests that should be performed in the weeks after an exposure and for 4–6 months afterward. Confer with a physician or an exposure specialist.

## **Additional Precautions for infection control**

If you know or suspect that a client has a disease that is spread in one of the following ways, use these extra precautions, **in addition to Standard Precautions**:

**Airborne** germs can travel long distances through the air and are breathed in by people. Examples of diseases caused by airborne germs: TB, chickenpox, shingles.

- Wear a mask. If the client has, or might have, tuberculosis, wear a special respiratory mask (ask your supervisor). A regular mask will not protect you.
- Remind the client to cover nose and mouth when coughing or sneezing.
- Treat the client's used tissues or handkerchiefs as infected material.

**Contact** germs can cause the spread of disease by touch. Examples of diseases caused by contact germs: pink-eye, scabies, wound infections, MRSA.

- Wear gloves.
- Treat bed linens, clothes, and wound dressings as infected material.
- Wear a gown if the client has drainage, has diarrhea, or is incontinent.
- Use a disinfectant to clean stethoscopes, blood pressure cuffs, or other equipment.

**Droplet** germs can travel short distances through the air, usually not more than three feet. Sneezing, coughing, and talking can spread these germs. Examples of diseases caused by droplet germs: flu, pneumonia.

- Wear a mask when working close to the client (within three feet).
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## Bloodborne pathogens and Standard Precautions test

Name \_\_\_\_\_ Date \_\_\_\_\_ Score \_\_\_\_\_

**Circle or write the answer or answers. Ten correct answers are required to pass.**

1. Name three bloodborne pathogens: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.  
(worth three points)
2. All workers with a chance of exposure to blood or body fluids should receive Hepatitis B vaccine unless they shouldn't take it for medical or pregnancy reasons.  
True or False
3. Hepatitis B immunization requires a series of \_\_\_\_\_ injections.
4. Persons who have received HBV vaccine and developed immunity are at virtually no risk for infection for hepatitis B. True or False
5. There is a vaccine against HIV. True or False
6. Most exposures lead to HIV infection. True or False
7. There is no vaccine against hepatitis C and no treatment after an exposure that will prevent infection. True or False
8. Proper handwashing requires lathering with soap for at least \_\_\_\_\_ seconds.
9. The first thing you should do if you are exposed to blood or body fluids is:
  - a. Wash needlesticks and cuts with soap and water.
  - b. Flush splashes to the nose, mouth, or skin with water.
  - c. Irrigate eyes with clean water, saline, or sterile irrigants.
  - d. All of the above, depending on the area of the body exposed.
10. Standard precautions involve four basic things. Fill in the blanks below (four points).
  - a. \_\_\_\_\_, \_\_\_\_\_.
  - b. \_\_\_\_\_ when might touch blood or body fluids.
  - c. Wear \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_ when splashing of blood or body fluids is likely, depending on the situation.
  - d. Safely use and dispose of \_\_\_\_\_.



# Certificate of Achievement

Presented to

\_\_\_\_\_

(Name of Participant)

for completing the one-hour course

*Bloodborne Pathogens  
and  
Standard Precautions*

Date \_\_\_\_\_

Organization \_\_\_\_\_

Presented by \_\_\_\_\_  
(Signature of presenter or write "self study")

