

BLOODBORNE PATHOGENS (BBP)

COURSE OBJECTIVES

After completion of this Computer Assisted Instruction Program, the participant will be able to do the following:

- Define "bloodborne pathogens"
- Identify the three most commonly encountered bloodborne pathogens
- Identify who is eligible for Hep B vaccination
- List two methods of transmission of BBP between patients and staff
- Describe appropriate use of Personal Protective Equipment
- Identify at least three types of engineering controls that help prevent sharp injuries
- List two work practice controls which reduce BBP exposure risk
- Identify two tasks related to good housekeeping practices
- Identify two instances when biohazardous labels should be used
- Describe the procedural response to a BBP exposure

The **Occupational Safety and Health Administration (OSHA)** has determined that health care workers face a significant health risk as a result of occupational (on the job) exposures to bloodborne pathogens. The OSHA Bloodborne Pathogen (BBP) Standard was established to protect employees from all occupational exposures to blood and other potentially infectious material.

The Needlestick Safety and Prevention Act signed into law Jan. 18, 2001 was the first revision to the Bloodborne pathogen standard. This act required OSHA to establish requirements that employers identify and provide effective and safe medical devices. This law also requires healthcare systems to develop an Exposure Control Plan. The STVHCS Exposure Control Plan is written as Policy Memorandum 001-04-27. The Exposure Control Plan identifies the risk category for a BBP exposure of each employee by job description and describes specific measures to minimize the risk of exposure. In addition, the policy describes specific procedures that must be followed in order to reduce the risk of a BBP exposure.

Bloodborne Pathogens are microorganisms that enter the bloodstream causing infection and disease. In addition to blood and blood products as a possible source of infection, OSHA has defined other types of potentially infectious materials (OPIM)

- Human body fluids including semen, vaginal secretions, cerebrospinal, synovial, pleural, pericardial, peritoneal, and amniotic fluid
- Unfixed tissue or organs
- Blood, organs, tissues from infected experimental animals as well as cultures or solutions containing BBP such as Hepatitis B, or HIV

The **OSHA Bloodborne Pathogen Standard** is a federal law (29CFR190.1030), which requires employers and employees to follow certain

precautions. This standard was designed to protect the health care worker. If correctly applied this also contributes to improved infection control practices.

Although a variety of pathogens can be transmitted following exposure to blood, the three major organisms of concern in the health care setting include the following:

1. **Hepatitis B Virus (HBV)** can cause lifelong infection, cirrhosis of the liver, liver cancer, liver failure, and death. In the U.S. it is estimated that there are 1 – 1.5 million chronically infected Americans. Each year in the U.S. more than 200,000 people of all ages get Hepatitis B and about 5000 people die from hepatitis B. The risk of infection following exposure from a needle contaminated with HBV is estimated at about 17%. The Hepatitis B vaccine is highly effective against the transmission of this disease. The vaccine is available to STVHCS employees without cost. Employees who provide direct patient care and refuse to be vaccinated must sign a declination form indicating they are refusing the vaccination.
2. **Hepatitis C Virus (HCV)** Hepatitis C Infection is the most common chronic bloodborne infection in the U.S. The Centers of Disease Control (CDC) has estimated (1999) that 3.9 million Americans have been infected with HCV. Symptoms of HBV are milder (or they may not be present) than that those of HBV. HBC is more likely to cause a chronic carrier state and more likely to lead to cirrhosis, liver cancer, and death. Routine testing has only been widely used since 1989. The rate of transmission from a contaminated needle stick is about 1.8%.
3. **Human Immunodeficiency Virus (HIV)** is the virus that causes AIDS. The virus attacks the body's immune system reducing the ability to fight disease. It is estimated that 860,000 persons in the U.S. and 10-12 million people world wide are infected with HIV. HIV may be carried for as long as 10 years before the infected person is aware of it. During this time the

virus can be transmitted to others. Studies show the transmission rate from an HIV contaminated needle is about 0.3%.

Employees who are most likely to be involved in occupational exposures to BBPs include the following:

1. Physicians, Nurses, Paramedics and Phlebotomists
2. Laboratory and Blood Bank Personnel
3. Environmental Management Service and Laundry staff
4. Home Care and Long Term Care providers
5. Research Laboratory staff

Methods of transmission of bloodborne pathogens can occur in a variety of methods. The most common mode of transmission to HCWs is a sharps injury from a contaminated item (scalpel blade, needle, surgical instruments, etc).

Transmission can also occur if a BBP comes in contact with mucous membranes of the HCW. This can result from a splash to the eyes, nose, or mouth. Contact of blood or OPIM with non-intact skin also has been associated with transmission of BBP's to HCWs.

Standard Precautions are required by law to be practiced by all Health Care Workers. This means that **all** blood and body fluids must be treated as if they can transmit bloodborne pathogens to the caregiver. Standard Precautions are designed to reduce the risk of transmission of pathogenic microorganisms from both recognized and unrecognized sources of infection in the health care setting. Using Standard Precautions means you must take steps to protect yourself and others from the risks associated with BBPs.

Personal Protective Equipment (PPE) may be required based on the activity being performed. Examples of PPE include: gloves, gowns, aprons, face shields, masks, resuscitation mouth pieces, and ambu bags. It is essential that PPE be worn when appropriate and also that it is removed and disposed of correctly. This means it must not contaminate you or the environment.

Gloves are the most frequently used type of PPE. They provide a barrier between your hands and infectious material. Latex-free exam gloves and surgical gloves are used for medical, dental, and laboratory procedures. Heavy duty utility gloves should be used for housekeeping activities and for laundry workers handling soiled linen. Gloves should be examined for integrity (holes and tears) before using them. Disposable gloves are intended for single patient use only and you should not attempt to clean or decontaminate them.

Gowns are worn to protect skin and prevent soiling of clothing during procedures where splashes or sprays of blood or OPIM are anticipated. Contaminated gowns or clothing should be removed as soon as possible to prevent employee exposure. Contaminated apparel from work areas where exposure to blood or OPMI occurs should not be worn outside of that area. Scrub suits are not considered PPE since they offer minimal or no resistance to fluid penetration

Masks and Eye protection must be worn to protect mucous membranes during patient care activities when splashes or sprays are anticipated. Prescription eyeglasses are not considered adequate protection because they do not protect from the potential for exposure through open areas at the top and side of the eyewear.

Resuscitation devices including pocket masks and ambu bags must be used as part of the resuscitation procedure.

Engineering Controls are physical or mechanical systems used to eliminate hazards at their source and prevent staff exposures. Engineering controls include (but are not limited to) the following:

- Hand Antisepsis facilities must be available at or near the point of care
- Sharps containers are properly located and at the proper height

- Sharp safety devices are used and training on their use is provided
- Biohazard waste bags are located in patient care areas

Work Practice Controls are specific procedures or policies that must be followed to reduce your risk of exposure to blood or OPIM. Examples of work practice controls include:

- Hand hygiene policy which provides specific guidance on when and how to perform hand hygiene
- Place sharps in sharps containers immediately after use
- Do not bend or recap needles
- No eating or drinking in patient care areas
- Use leak proof specimen containers
- Proper segregation of trash

Housekeeping, good housekeeping protects health care workers and is every workers responsibility. Disinfectant wipes are available for use in clinical areas to disinfect hard surfaces i.e. counters, exam tables, computer keyboards, stethoscopes. Gloves must be worn when handling environmental wipes

- Each work area must be cleaned at least once per shift
- Place sharps and infectious waste in designated containers
- Decontaminate equipment before sending it for repair
- Handle laundry as little as possible and carry it away from your body
- Clean equipment and surfaces as soon as possible after contact with blood or OPIM

Labels must warn of the presence of a bloodborne pathogen. Biohazardous labels must be placed on contaminated equipment, specimen containers, bags containing biohazardous items (red trash bags), and they may be placed on doors to areas where infectious agents are present (i.e. research areas).



Employee Exposure Plan is found in Policy Memorandum 001-04-27. The purpose of this policy is to establish guidelines for STVHSC health care workers to reduce or eliminate potential Bloodborne Pathogen Exposure.

The Procedural Response to Bloodborne Pathogen Exposure, Policy Memorandum 001-04-21 describes the steps to follow in the event of an exposure to a bloodborne pathogen. In general the steps are as follows:

1. Wash the exposed area immediately with an antimicrobial soap and water (preferred) or plain soap and water
2. Inform your supervisor
3. Report to Employee Health or the Urgent Care Clinic (the supervisor must release employees immediately to do this)
4. Upon returning to the work area, the employee and supervisor enter the BBP incident in the ASISTS program of DHCP.

If it is determined that there is a need for post exposure prophylaxis, it will be provided without cost to the employee. There is currently no prophylaxis for exposure to Hepatitis C.

BLOODBORNE PATHOGENS TRAINING

Mastery Exam

1. Which of the following is not a bloodborne pathogen
 - a. HIV
 - b. Hepatitis A
 - c. Hepatitis B
 - d. Hepatitis C
 - e. The AIDS virus

2. Bloodborne pathogens are found in all the following except
 - a. Blood
 - b. Synovial Fluid
 - c. Peritoneal Fluid
 - d. Perspiration
 - e. cerebrospinal Fluid

3. Which of the following is not considered Personal Protective Equipment?
 - a. Surgical scubs
 - b. Latex-free gloves
 - c. Gowns
 - d. Ambu bags
 - e. Masks with face shields

4. What is the most accurate description of "Engineering Controls"?
 - a. Policies developed to reduce the risk of BBP exposure
 - b. Governmental regulations to assure workplace safety
 - c. Electronic equipment designed to destroy bloodborne pathogens
 - d. Physical or mechanical systems used to eliminate hazards at their source and prevent staff exposures
 - e. Rules and regulations related to cleaning work areas

5. What is the correct order of steps to follow in the event you are exposed to a bloodborne pathogen?
 - a. Clean the exposure site, Notify your supervisor, Report to Employee Health(EHS) or the UCC

- b. Clean the area, Notify your supervisor, Enter the exposure into the ASISTS program
 - c. Notify your supervisor, Report to EHS or UCC, Initiate first aid to the affected area
 - d. Notify your supervisor, Enter the exposure in the ASISTS program, Report to EHS or the UCC.
 - e. Clean the area, Report to EHS, Notify your supervisor
6. Which of the following are work practice controls that reduce risk of employee exposure to blood or OPIM?
- a. placing sharps in sharps containers immediately after use
 - b. not bending or recapping needle
 - c. following the STVHCS hand hygiene policy
 - d. placing biohazardous waste in appropriate receptacles
 - e. All of the above are work practice controls
7. Which of the following engineering controls help eliminate hazards at their source?
- a. mounted hand hygiene products near the point of care
 - b. sharps containers next to the chair where blood is being drawn in the lab
 - c. biohazard signs posted on the dirty utility rooms
 - d. a self-activating needle sheath
 - e. Items a through d are all examples of engineering controls.
8. Which BLOODBORNE pathogen has an effective vaccine available to STVHCS employees?
- a. Hepatitis C
 - b. Ebola
 - c. HIV
 - d. Hepatitis B
 - e. Both b and c are correct
9. The most common sources of occupational bloodborne pathogen transmission from blood or OPIM are
- a. Injury from a sharp instrument such as a scalpel blade
 - b. a needlestick

- c. touching saliva with hands that have cracks
- d. splashes to the eyes
- e. both a and b!

10. Which of the following is NOT a true statement?

- a. Scrub suits are considered personal protective equipment.
- b. Protective eyewear must be used over prescription eyeglasses
- c. Laundry workers sorting linen must wear heavy-duty utility gloves.
- d. Gloves must be changed between each patient contact
- e. Gowns must be worn when blood or OPIM might contaminate the clothing of a health care worker.