Bloodborne Pathogen and Airborne Precautions

Diseases of Bloodborne Pathogens

Bloodborne pathogens are microorganisms such as viruses or bacteria that are carried in blood and other body fluids and can cause disease in people. These pathogens include, but not limited to, Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and Human Immunodeficiency Virus (HIV).

Hepatitis B (HBV)

"Hepatitis" means "*inflammation of the liver,"* and, as its name implies, Hepatitis B is a virus that infects the liver. There is no "cure" or specific treatment for HBV, but many people who contract the disease will develop antibodies, which help them get over the infection and protect them from getting it again. It is important to note, however, that there are different kinds of hepatitis, so infection with HBV will not stop someone from getting another type. The Hepatitis B virus is very durable, and it can survive in dried blood for up to seven days. For this reason, this virus is the primary concern for employees in the healthcare industry.

Symptoms:

The symptoms of HBV are very much like mild "flu." As the disease continues to develop; jaundice (yellow skin) and darkened urine will often occur. After exposure it can take 1-9 months before symptoms become noticeable.

Hepatitis C (HCV)

Hepatitis C virus (HCV) infection is the most common chronic bloodborne infection in the United States. Most people with this virus are chronically infected and might not be aware of their infection because they are not clinically ill.

HCV is transmitted primarily through exposures to blood. Risk factors include blood transfusion, injecting drug use, exposure from a sex partner or household member who has had a history of hepatitis.

Symptoms:

Many patients have no symptoms prior to development of liver cirrhosis (damage). The present symptoms are usually mild fatigue, poor appetite, joint and body aches, nausea, and mild abdominal discomfort.

Human Immunodeficiency Virus (HIV)

A virus called the human immunodeficiency virus, or HIV causes AIDS, or acquired immune deficiency syndrome. Once a person has been infected with HIV, it may be many years before AIDS actually develops. HIV attacks the body's immune system, weakening it so that it cannot fight other deadly diseases. 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 very long outside of the human body. It is primarily of concern to employees providing first aid in situations involving fresh blood or other potentially infectious materials. Because it is such a devastating disease, all precautions must be taken to avoid exposure.

Symptoms:

Symptoms of HIV infection can vary, but often include weakness, fever, sore throat, nausea, headaches, diarrhea, a white coating on the tongue, weight loss, and swollen lymph glands.

Modes of Transmission

Bloodborne pathogens such as HBV, HCV and HIV can be transmitted through contact with infected human blood and other potentially infectious body fluids such as: semen, vaginal secretions, saliva (in dental procedures), and any body fluid that is visibly contaminated with blood. It is important to know how exposure and transmission are most likely to occur in your job duties. HBV and HIV are most commonly transmitted through:

- Sexual Contact
- Sharing of hypodermic needles
- From mothers to their babies at/before birth
- Accidental puncture from contaminated needles, broken glass, or other sharps
- Contact between broken or damaged skin and infected body fluids
- Contact between mucous membranes and infected body fluids

Anytime there is blood-to-blood contact with infected blood or body fluids, there is a slight potential for transmission. Unbroken skin forms the best barrier against bloodborne pathogens. However, infected blood can enter your system through: open sores, cuts, abrasions, acne or any damaged or broken skin such as sunburn or blisters. Bloodborne pathogens may also be transmitted

through the mucous membranes of the eyes, nose, or mouth. For example, a splash of contaminated blood to your eye, nose, or mouth could result in transmission.

Patient receiving blood transfusion or organ/tissue transplants are at an extremely low risk of contracting HIV.

HIV is not transmitted by day-to day contact in social settings, schools or in the workplace such as shaking someone's hand or hugging them, kissing, using the same toilet, sheets, towel, eating utensils or drinking from the same glass or playing sports.

The average risk from injuries involving HIV infected needles or sharps are 1 in 300 or 0.3%. The risk for infection from a bloody splash to mucus membranes or open skin is very low, less than 1 in 3,000.

Airborne

Tuberculosis (TB) is caused by a bacterium called *Mycobacterium tuberculosis*. The bacteria usually attack the lungs, but TB bacteria can attack any part of the body such as the kidney, spine, and brain. If not treated properly, TB disease can be fatal.

How TB Spreads

TB is spread through the air from one person to another. The TB bacteria are put into the air when a person with TB disease of the lungs or throat coughs, sneezes, speaks, or sings. People nearby may breathe in these bacteria and become infected.
TB is NOT spread by

- shaking someone's hand
- sharing food or drink
- touching bed linens or toilet seats
- sharing toothbrushes
- kissing

Latent TB Infection and TB Disease. Not everyone infected with TB bacteria becomes sick. As a result, two TB-related conditions exist: latent TB infection and TB disease.

Latent TB Infection

TB bacteria can live in the body without making you sick. This is called latent TB infection. In most people who breathe in TB bacteria and become infected, the body is able to fight the bacteria to stop them from growing. People with latent TB infection do not feel sick and do not have any symptoms. People with latent TB infection are not infectious and cannot spread TB bacteria to others. However, if TB bacteria become active in the body and multiply, the person will go from having latent TB infection to being sick with TB disease.

TB Disease

TB bacteria become active if the immune system can't stop them from growing. When TB bacteria are active (multiplying in your body), this is called TB disease. People with TB disease are sick. They may also be able to spread the bacteria to people they spend time with every day.

Many people who have latent TB infection never develop TB disease. Some people develop TB disease soon after becoming infected (within weeks) before their immune system can fight the TB bacteria. Other people may get sick years later when their immune system becomes weak for another reason.

For people whose immune systems are weak, especially those with HIV infection, the risk of developing TB disease is much higher than for people with normal immune systems.

Exposure Control Plan (ECP)

OSHA requires agencies to have a written Exposure Control Plan (ECP) that's made available to every health care employee. The ECP manuals are located in the Human Resources office.
The ECP will:

- Identify the personnel at greatest risk of exposure.

- Analyze the potential hazards of each job.
- Determine what measures will be taken to reduce the risk of exposure to BBP on the job.
- Measures to take if an exposure to BBP has occurred.

Reducing Your Risks

Reducing your risk of exposure to bloodborne pathogens means you need to do more than wear gloves. To protect you effectively use:

- Personal protective equipment
- Engineering Controls
- Receive the Hepatitis B vaccine

Engineering controls are mechanical systems that are in place to minimize hazards at the source. Their effectiveness usually depends on you and using them appropriately. Examples of engineering controls are sharps containers, and red biohazard bag.

- Sharp Containers are puncture resistant, leak proof containers used for disposal of contaminated broken glass, needles or lancets. Sharps containers are located in the office.

Biohazard Sign

A Biohazard symbol is a florescent orange-red symbol marked BIOHAZARD. This symbol is the universal symbol for bio hazardous materials. This symbol warns you that the container holds blood or other potentially infectious material.

Work Practice Controls

Work practice controls are specific procedures you must follow on the job to reduce your exposure to blood or other potentially infectious materials. These practices would include the use of universal precautions, personal hygiene and hand washing.

Universal Precautions

Most approaches to infection control are based on the concept of "Universal Precautions," treating all blood and body fluids as if they were potentially infectious. Remember that there are many people who carry infectious diseases that have no visible symptoms and no knowledge of their condition. *Using Universal Precautions resolves this uncertainty by requiring you to treat all human blood and body fluid as if they were known to be infected with HIV, HBV or other bloodborne pathogens.*

Airborne Precautions: Patients known or suspected to be infected with microorganisms transmitted by airborne droplets containing microorganisms that remain suspended in the air and that can be dispersed widely by air currents within a room or over a long distance. Patient placed in private room with negative airflow. For TB and SARS: staff entering the room must be fit tested for an N95 respirator masks. For chicken pox, shingles, or measles cone masks shall be used but negative airflow is not necessary. Gowns and gloves are worn if soiling is likely.

Droplet Precautions: Used for patient known or suspected to be infected with microorganisms transmitted by droplets that can be generated by patient during coughing sneezing, talking or the performance of procedures. Mask, gowns, and gloves are worn.

Contact Precautions: Used for specified patients suspected to be infected with epidemiologically microorganisms that can be transmitted by direct contact with the patient. Gloves and gowns shall be worn. Masks are used as needed for dressing changes.

Personal Hygiene

Here are some controls based on personal hygiene that you must follow to decrease your risk of exposure. Do not eat, drink, smoke, apply cosmetics, lip balm or handle contact lenses where there is a reasonable likeliness of occupational exposure. Minimize splashing, spraying, spattering and generation of droplets when attending to an injured patient or co-worker. Do not keep food and drink in refrigerators, freezers, shelves, cabinets or on countertops where blood or other potentially infectious materials are present.

Handwashing

The most important work place practice control is hand washing. Good hand washing keeps you from transferring contamination from your hands to other parts of your body or other surfaces you may contact later. You should wash your hands with nonabrasive soap and running water every time you remove your gloves and other personal protective equipment. If your skin or mucous membranes come in direct contact with blood or other body fluids, wash or flush the area with water immediately. Where hand washing facilities are not available, such as the playground, you should use antiseptic towelettes or hand cleanser. Use these as a temporary measure only. You must still wash your hands with soap and running water as soon as you can.

Personal Protective Equipment (PPE)

The type of personal protective equipment (PPE) appropriate for your job, varies with the task and the degree of exposure you anticipate. Equipment that protects you from contact with blood or other potentially infectious materials may include gloves, masks, gowns face shields, goggles and/or resuscitation mouthpieces. PPE must be appropriate for the task and fit properly to protect you from BBP. You must use appropriate PPE each time you perform a task with potentially infectious material. PPE is considered appropriate if it doesn't permit blood or other potentially infectious material to pass through or reach clothing, skin, eyes, mouth or other mucous membranes under normal condition of use.

Gloves: are the most commonly used PPE. Gloves should be made of latex, impervious materials. 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 putting on 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! Gloves are available in office.

Glove Removal:

Gloves should be removed when they become contaminated or damaged, or immediately after finishing the task. You must follow a safe procedure for glove removal, being careful not to contaminate your hands.

- With both hands gloved, peel one glove off from top to bottom and hold it in the gloved hand.
- With the exposed hand, peel the second glove from the inside, tucking the first glove inside the second.
- Dispose of the entire bundle promptly.
- Never touch the outside of the glove with bare skin.
- Every time you remove your gloves wash your hands with soap and running water as soon as possible.

Goggles and Face Shields:

Anytime there is a risk of splashing or vaporization of contaminated fluids; goggles, face shields and/or other protection should be used to protect your face. Splashing could occur while cleaning up a spill, or while providing first aid or medical assistance.

Aprons/Cover gowns:

Aprons/gowns 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 and come into contact with skin.

Hepatitis B Vaccinations

Employees who have routine exposure to bloodborne pathogens (such as; nurses, certified nurse assistance and those who perform patient care) shall be offered the Hepatitis B vaccine series at no cost to themselves unless:

- They have previously received the vaccine series.
- Antibody testing has revealed they are immune.
- The vaccine is contraindicated for medical reasons.

The series consists of 3 vaccinations given over a 6-month period of time. Even if you decline the initial offer, you may choose to receive the series at any time during your employment thereafter, for example, if you are exposed on the job at a later date. If the vaccine is administered immediately after exposure it is extremely effective at preventing the disease. There is no danger of contracting the disease from getting the vaccine, and once vaccinated, a person does not need to receive the series again. If you feel you are at risk in your job position and are interested in the Hepatitis B vaccination, please contact the office.

Post Exposure Follow Up

In the event that you are exposed to bloodborne pathogens while at work, please follow these steps:

1. Seek first aid (as soon as possible) after the incident occurs
2. Wash/flush area exposed to BBP with soap and water.
3. Inform your supervisor or designee immediately of exposure.
4. Fill out an "Incident report"
5. Seek medical attention from your work med.

Protecting yourself from bloodborne diseases on the job requires knowing the facts and taking sensible precautions.