29CFR 1910.1030- Bloodborne Pathogens-Standard Number 1910/1030 – Standard Title: Bloodborne Pathogens- Subpart Number: Z-Subpart Titil: Topic and Hazardous Substances

Bloodborne Pathogens

Preparation

1. Read Applicable Background information and related Company Policy Chapter.
2. Make _____ Copies of this Lesson Plan for Personnel
3. Make Transparency, procure transparency pens, etc.
4. Coffee, tea, snacks

Material

1. Personal Protective Equipment

Objective

By the end of this session, personnel shall be able to describe:

1. What is a Bloodborne Pathogen
2. What are HIV (AIDS), Hepatitis B & Hepatitis C and how they are transmitted
3. Guidelines for handling BBP and other body fluids
4. Decontamination and Sterilization Procedures
5. Personal Protective Equipment
6. What to do in the event an exposure occurs

Background

Bloodborne pathogens are microorganisms carried by human blood (and other body fluids) and cannot be seen with the naked eye. They can be spread through contact with infected blood. If they get into the bloodstream, an individual may become infected and sick.

Most personnel cannot reasonably anticipate coming into contact with blood during their day-to-day work duties. That's why it's imperative that all personnel understand the danger of exposure to bloodborne pathogens and ways to minimize their risk.

"**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*.

Notes

Lesson

What is a Bloodborne Pathogen?

Bloodborne pathogens are microorganisms such as viruses or bacteria that are carried in blood and can cause disease in people. There are many different bloodborne pathogens including malaria, syphilis, and brucellosis, but *Hepatitis B (HBV)* and the *Human Immunodeficiency Virus (HIV)* are the two diseases specifically addressed by the OSHA Bloodborne Pathogen Standard.

Bloodborne pathogens may be present in blood and other materials, such as:

- body fluids containing visible blood
- semen and vaginal secretions
- torn or loose skin

Bloodborne pathogens can cause infection by entering the body through:

- open cuts and nicks
- skin abrasions
- dermatitis
- acne
- mucous membranes of the mouth, eyes or nose

What are HIV (AIDS), Hepatitis B & Hepatitis C and how they are transmitted

The most common bloodborne pathogens are HIV, Hepatitis B, and Hepatitis C:

HIV (AIDS)

HIV, the human immuno-deficiency virus, attacks the body's immune system causing it to weaken and become vulnerable to infections that can lead to a diagnosis of acquired immune deficiency syndrome or AIDS.

HIV is transmitted mainly through sexual contact and sharing contaminated needles, but also may be spread by contact with infected blood and body fluids. HIV is NOT transmitted indirectly by touching or working around people who are HIV-positive.

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HIV (AIDS)(continued)

Employees can prevent getting HIV by stopping the passage of the virus from a person who has HIV to them. In many instances, the employee has control over the activities that can transmit HIV. Since HIV is most frequently transmitted by sharing needles or through sexual intercourse, employees can stop transmission by refusing to engage in these behaviors.

Estimates on the number of people infected with HIV vary, but some estimates suggest that an average of 35,000 people are infected every year. By the year 2002, it is possible that 2%-9% of the American population will be infected, or 5 to 15 million people. Many people who are infected with HIV may be completely unaware of it.

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 or medical care in situations involving fresh blood or other potentially infectious materials. It is estimated that the chances of contracting HIV in a workplace environment are only 0.4%. However, because it is such a devastating disease, all precautions must be taken to avoid exposure.

AIDS infection essentially occurs in three broad stages. The **first stage** happens when a person is actually infected with HIV. After the initial infection, a person may show few or no signs of illness for many years. Eventually, in the **second stage**, an individual may begin to suffer swollen lymph glands or other lesser diseases which begin to take advantage of the body's weakened immune system. The second stage is believed to eventually lead to AIDS, the **third and final stage**, in all cases. In this stage, the body becomes completely unable to fight off life-threatening diseases and infections.

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.

Notes

Hepatitis B

Hepatitis is a general term used to describe inflammation (swelling) of the liver. Alcohol, certain chemicals or drugs, and viruses such as hepatitis A, B, C, D, E and G may cause hepatitis.

- Hepatitis B is a serious, sometimes fatal disease, caused by a virus that infects and attacks the liver. The virus is transmitted through direct contact with infected blood, semen, or vaginal fluid. It is primarily spread through sexual contact.
- In studies that examine transmission following injections into the skin, HBV is 100 times more contagious than HIV.
- **HBV can also be transmitted indirectly because it can survive on surfaces dried and at room temperature for at least a week!** That's why contaminated surfaces are a major factor in the spread of HBV.
- Each year there are up to 200,000 new infections and 5,000 hepatitis B related deaths in the U.S. (compared to 40,000 new HIV infections per year.
- One in approximately 20 persons now has, or will one day have, hepatitis B
- Transmission of hepatitis B is preventable:
- Use latex condoms during sex
- Do not share needles
- Use universal precautions in the workplace
- Get the hepatitis B vaccination

Symptoms:

The symptoms of HBV are very much like a mild "flu". Initially there is a sense of fatigue, possible stomach pain, loss of appetite, and even nausea. As the disease continues to develop, jaundice (a distinct yellowing of the skin and eyes), and a darkened urine will often occur. However, people who are infected with HBV will often show no symptoms for some time. After exposure it can take **1-9 months** before symptoms become noticeable. Loss of appetite and stomach pain, for example, commonly appear within 1-3 months, but can occur as soon as 2 weeks or as long as 6-9 months after infection.

Notes

Hepatitis C

Hepatitis is a general term used to describe inflammation (swelling) of the liver. Alcohol, certain chemicals or drugs, and viruses such as hepatitis A, B, C, D, E and G may cause hepatitis.

- Hepatitis C is a serious, often fatal disease, caused by a virus that infects and attacks the liver. HCV is more common than hepatitis B and ranks slightly below alcoholism as a cause of liver disease.
- However, HCV is not as infectious as HBV because there are generally lower levels of the hepatitis C virus in the blood than of the hepatitis B virus
- HCV is primarily transmitted through blood-to-blood contact -- most commonly through shared needles. The risk of transmitting HCV through sexual contact appears to be low, but precautions should be taken anyway. HCV cannot be transmitted by casual contact such as shaking hands or sharing bathroom facilities.
- Up to 180,000 people may become infected with HCV each year in the U.S.
- Transmission of hepatitis C is preventable:
- Use latex condoms during sex
- Do not share needles
- Use universal precautions in the workplace
- HOWEVER, unlike hepatitis B, currently there is NO VACCINE for hepatitis C. And also unlike HBV, there is no drug to prevent HCV infection after an exposure.

Symptoms:
Very similar to hepatitis B

Guidelines for Handling BBP and other body fluids

Many personnel are concerned that HIV may be spread through contact with blood and other body fluids when an accident occurs at work.

HIV, as noted earlier, has been found in significant concentrations in blood, semen, vaginal secretions, and breast milk. Other body fluids, such as feces, urine, vomit, nasal secretions, tears, sputum, sweat, and saliva do not transmit HIV unless they contain visible blood.

Notes

Guidelines for Handling BBP and other body fluids (cont.)

Notes

However, these body fluids do contain potentially infectious germs from diseases other than AIDS. **If an individual has contact with any of these body fluids, they are at risk of infection from these germs**. The risk of transmission of these germs depends on many factors, including the type of fluid contacted, the type of contact made, and the duration of the contact.

Very simply, it is good hygiene policy to treat all spills of body fluids as ***infectious*** in order to protect personnel from becoming infected with any germs and viruses. The procedures outlined below offer protection from all types of infection, and should be followed routinely.

How Should Blood and Body Fluid Spills be Handled?

Whenever possible, employees shall wear disposable, waterproof gloves when they expect to come into direct hand contact with body fluids (when treating bloody noses, handling clothes soiled by incontinence, or cleaning small spills by hand). Gloves used for this purpose shall be put in a plastic bag or lined trash can, secured, and disposed of daily. Hands should always be washed after gloves are removed, even if the gloves appear to be intact.

If an employee has unexpected contact with body fluids or if gloves are not available (for example, applying pressure to a bleeding wound), the employee shall wash their hands and other affected skin for at least 10 seconds with soap and water after the direct contact has ended. This precaution is recommended to prevent exposure to other pathogens, not just HIV. As has been discussed, blood, semen, vaginal secretions, and blood-contaminated body fluids transmit HIV. Wiping a runny nose, saliva, or vomit does not pose a risk for HIV transmission.

Hand washing:
Proper handwashing requires the use of soap and warm water and vigorous washing under a stream of running water for at least 10 seconds. If hands remain visibly soiled, more washing is required. Scrubbing hands with soap will suspend easily removable soil and microorganisms, allowing them to be washed off. Running water is necessary to carry away dirt and debris. Rinse your hands under running water and dry them thoroughly with paper towels or a blow dryer. When hand-washing facilities are not available, use a waterless antiseptic cleanser, following the manufacturer's directions for use.

Disinfectants:
An EPA approved germicide or a solution of 99 parts water to 1 part household bleach (or ¼ cup bleach to one gallon of water) will inactivate HIV, and should be used to clean all body fluid spills. Higher concentrations of bleach can be corrosive, and are unnecessary. Surfaces should be cleaned thoroughly prior to disinfection.

Disinfecting Hard Surfaces and Caring for Equipment:
Although hard surfaces have not been found to be a means of transmitting HIV, it is good hygiene policy to clean any soiled hard surfaces thoroughly. To do this, scrub the surface to remove any soil and apply a germicide (like the bleach/water solution described above) to the equipment used. Mops should be soaked in this solution after use and rinsed thoroughly with warm water. The solution should be promptly disposed of down a drainpipe. Remove gloves and discard them in appropriate receptacles, and wash hands as described above.

Laundry Instructions for Clothing Soiled with Body Fluids:
It is important to remember that laundry has never been implicated in the transmission of HIV. To ensure safety from transmission of other germs, contaminated clothes must be laundered with soap and water to eliminate potentially infectious agents. The addition of bleach will further reduce the number of potentially infectious agents. Clothing soaked with body fluids may be washed separately from other items. Pre-soaking may be required for heavily soiled clothing. Otherwise, wash and dry as usual, following the directions provided by the manufacturer of the laundry detergent. If the material can be bleached, add ½ cup of household bleach to the wash cycle. If the material is not colorfast, add ½ cup of non-chlorine bleach to the wash cycle.

It is good hygiene to treat all bodily fluids as infectious.

Decontamination and 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 to use**.

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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, then gently pour your 10% solution of bleach over the towels or rags, and leave it for *at least 10 minutes*. This will help ensure that the 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 (be it scalpels, microscope slides, broken glass, saw blades, tweezers, mechanical equipment upon which someone has been cut, first aid boxes, or whatever) you should leave your 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, re-usable gloves, buckets, pails, etc.

Personal Protective Equipment

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.**

Notes

Rules to follow:

- Always wear personal protective equipment in exposure situations.
- Remove PPE that is torn or punctured, or has lost its ability to function as a barrier to bloodborne pathogens.
- Replace PPE that is torn or punctured.
- Remove PPE before leaving the work area.

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 your work.

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 in contact with them, either.

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.

Notes

What to do in the event an exposure occurs

If you are exposed, you should:

1. Wash the exposed area thoroughly with soap and running water. Use non-abrasive, antibacterial soap if possible.
    - If blood is splashed in the eye or mucous membrane, flush the affected area with running water for at least 15 minutes.
2. Report the exposure to your supervisor as soon as possible.
3. Fill out an exposure report form, if you desire. This form will be kept in your personnel file for 40 years so that you can document workplace exposure to hazardous substances. This report is available from your supervisor or from the Safety and Health Manager.
4. You may also go to your personal physician to request blood testing or the Hepatitis B vaccination if you have not already received it.

Employees who have routine exposure to bloodborne pathogens (such as doctors, nurses, first aid responders, etc) 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

In these cases they need not be offered the series.

Although the vaccine must be offered to you by your employer, you do not have to accept that offer. You may opt to **decline** the vaccination series, in which case you will be asked to sign a declination form. **Even if you decline the initial offer, you may choose to receive the series at anytime during your employment thereafter**, for example, if your are exposed on the job at a later date.

As stated earlier on this page, if you are exposed to blood or potentially infectious materials on the job, you may request a Hepatitis B vaccination at that time. If the vaccine is administered immediately after exposure it is extremely effective at preventing the disease.

The Hepatitis B vaccination is given in a series of three shots. The second shot is given one month after the first, and the third shot follows five months after the second. This series gradually builds up the body's immunity to the Hepatitis B virus.

Notes

Closure

If you are working in an area where there is reasonable likelihood of exposure, **you should never**:

- Eat
- Smoke
- Apply lip balm or lipstick or cosmetics
- Handle contact lenses

No food or drink should be kept in refrigerators, freezers, shelves, cabinets, or on counter tops where blood or potentially infectious materials are present.

What questions do you have?

Notes