BLOODBORNE PATHOGENS

INTRODUCTION

This course is intended for individuals who may be exposed to bloodborne pathogens. It meets the requirements for training as specified in 29 CFR 1910.1030, Occupational Safety and Health Standards (OSHA), subpart Z, Toxic and Hazardous Substances, Bloodborne Pathogens.

The Occupational Safety and Health Administration (OSHA) published the final occupational exposure to bloodborne pathogen standard on December 6, 1991. The standard applies to all employees who have the potential for occupational exposure to either blood or to other potentially infectious materials. Occupational exposure is defined as a reasonably anticipated contact with blood or other potentially infectious material during the performance of an employee’s job duties.

The Centers for Disease Control (CDC) estimates that nearly 8500 bloodborne pathogens infections occur each year. Includes 2100 cases of hepatitis resulting in 400 hospitalizations. 200 deaths occur each year from exposure to the hepatitis viruses. The most dangerous instances occur from needlesticks.

Additionally, improper disposal and handling procedures expose employees such as housekeepers, those who provide medical equipment repairs, laundry works and custodial employees.

Thus it is important to focus on minimizing the risks. In this course you will learn how to take precautions and what to do if exposed to a bloodborne pathogen.
OBJECTIVES

Successful completion of this course fulfills the OSHA training requirement that individuals who may come into contact with blood or other potentially infectious materials be trained annually. This course covers:

- What are Bloodborne Pathogens?
- Exposure risks
- Prohibited actions
- Universal precautions
- Protective equipment
- Sharps, signs and labels
- Proper waste handling
- What to do if exposed

DEFINITIONS

For purposes of this course, the following apply:

**Blood** means human blood, human blood components, and products made from human blood.

**Bloodborne Pathogens** means pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV), and hepatitis C Virus (HCV).

**Clinical Laboratory** means a workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials.

**Contaminated** means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.
**Contaminated Laundry** means laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.

**Contaminated Sharps** means any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.

**Decontamination** means the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

**Engineering Controls** means controls (e.g., sharps disposal containers, self-sheathing needles, safer medical devices, such as sharps with engineered sharps injury protections and needleless systems) that isolate or remove the bloodborne pathogens hazard from the workplace.

**Exposure Incident** means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

**Handwashing Facilities** means a facility providing an adequate supply of running potable water, soap, and single-use towels or air-drying machines.

Licensed Healthcare Professional is a person whose legally permitted scope of practice allows him or her to independently perform the activities required by paragraph (f) Hepatitis B Vaccination and Post-exposure Evaluation and Follow-up.

**HBV** means hepatitis B virus.

**HIV** means human immunodeficiency virus.

**Needleless systems** means a device that does not use needles for:

1. The collection of bodily fluids or withdrawal of body fluids after initial venous or arterial access is established;
2. The administration of medication or fluids;
3. Any other procedure involving the potential for occupational exposure to bloodborne pathogens due to percutaneous injuries from contaminated sharps.
**Occupational Exposure** means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

**Other Potentially Infectious Materials** means (1) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; (2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and (3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

**Parenteral** means piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

**Personal Protective Equipment** is specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.

**Regulated Waste** means liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

**Research Laboratory** means a laboratory producing or using research-laboratory-scale amounts of HIV or HBV. Research laboratories may produce high concentrations of HIV or HBV but not in the volume found in production facilities.

**Sharps with engineered sharps injury protections** means a non-needle sharp or a needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with a built-in safety feature or mechanism that effectively reduces the risk of an exposure incident.

**Source Individual** means any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the
employee. Examples include, but are not limited to, hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment facilities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.

**Sterilize** means the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

**Universal Precautions** is an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

**Work Practice Controls** means controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

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**What Are Bloodborne Pathogens?**

Some common bloodborne pathogens are:

**Human Immunodeficiency Virus (HIV)**

AIDS, Acquired Immunodeficiency Syndrome, was first reported in the United States in 1981 and has since become a major worldwide epidemic. AIDS is caused by the human immunodeficiency virus (HIV). By killing or damaging cells of the body's immune system, HIV progressively destroys the body's ability to fight infections and certain cancers. People diagnosed with AIDS may get life-threatening diseases called opportunistic infections, which are caused by microbes such as viruses or bacteria that usually do not make healthy people sick. As of December 2001, occupational exposure to HIV has resulted in 57 documented cases of HIV seroconversion (indicates infection by the HIV virus) among healthcare personnel (HCP) in the United States.

The following risk estimates were obtained from the Centers for Disease Control and Prevention:

- The average risk of HIV infection after a needlestick or cut exposure to HIV-infected blood is 0.3% (i.e., three-tenths of one percent, or about 1 in 300). Stated another way, 99.7% of needlestick/cut exposures do not lead to HIV infection.
• The risk after exposure of the eye, nose, or mouth to HIV-infected blood is estimated to be, on average, 0.1% (1 in 1,000).
• The risk after exposure of the skin to HIV-infected blood is estimated to be less than 0.1%. A small amount of blood on intact skin probably poses no risk at all. There have been no documented cases of HIV transmission due to an exposure involving a small amount of blood on intact skin (a few drops of blood on skin for a short period of time). The risk may be higher if the skin is damaged (for example, by a recent cut) or if the contact involves a large area of skin or is prolonged (for example, being covered in blood for hours).

**Hepatitis B Virus (HBV)**

In 2010, an estimated 38,000 persons in the U.S. were infected with HBV. People of all ages get hepatitis B and about 3,000 die per year of as a result of HBV. You get hepatitis B by direct contact with the blood or body fluids of an infected person. Hepatitis B is not spread through food or water or by casual contact. Health-care workers who have received hepatitis B vaccine and have developed immunity to the virus are at virtually no risk for infection. For an unvaccinated person, the risk from a single needlestick or a cut exposure to HBV-infected blood ranges from 6-30% and depends on the hepatitis B e antigen (HBeAg) status of the source individual.

There are medications available to treat long-lasting (chronic) HBV-infection. These work for some people, but as of yet, there is no cure for hepatitis B when you first get it. That is why prevention is so important. Hepatitis B vaccine is the best protection against HBV. Three doses are commonly needed for complete protection.

Your employer is required to make the hepatitis B vaccination available to you if you have a risk for occupational exposure. These vaccinations are free of charge to employees, are available at reasonable times and places, are administered under the supervision of a licensed physician or other healthcare practitioner, are administered according to the current recommendations of U.S. Public Health Service, and finally they are available to you within 10 days of the start of your employment.

As an employee who has potential exposure to BBP, the University will provide this vaccine at no cost to you. To arrange for this vaccination series, contact your supervisor and University Health Services at 584-4457.
Hepatitis C Virus (HCV)

Hepatitis C is a liver disease caused by the hepatitis C virus (HCV), which is found in the blood of persons who have this disease. HCV is spread by contact with the blood of an infected person. It is not spread by casual contact. Population-based studies indicate that 40% of chronic liver disease is HCV-related, resulting in an estimated 12,000 deaths each year. Based on limited studies, the risk for infection after a needlestick or cut exposure to HCV-infected blood is approximately 1.8%. The risk following a blood splash is unknown, but is believed to be very small; however, HCV infection from such an exposure has been reported.

Less common, but still potentially present are the biological agents that cause:
- Syphilis
- Malaria
- Babesiosis
- Brucellosis
- Leptospirosis
- Arboviral infections
- Relapsing fever
- Creutzfeldt-Jacob disease

Because bacteria and viruses may be present long before patients demonstrate any symptoms, all blood should be considered a potential source of exposure.

Exposure Risks

The majority of exposures result from needlesticks, but all sharps should be considered a risk since we have no way of knowing if they are contaminated with infected blood.
What is classified as an Exposure to bloodborne pathogens?

An exposure incident is a specific eye, mouth, mucous membrane, or parenteral contact with blood or other potentially infectious materials. This means that if any blood or other potentially infectious material contacts the eyes, mouth, nose, or non-intact skin of another person, an exposure incident has occurred. The contact could come from a splash, a mist from dental equipment, needlestick or even providing first aid to someone with a cut.

A bloodborne pathogen is a bacteria or a virus that may be present in human blood and is capable of causing disease in humans. These pathogens include, but are not limited to the hepatitis viruses and the human immunodeficiency virus. Other potentially infectious materials (OPIM) include human body fluid which includes: semen, vaginal secretions, cerebrospinal fluid, synovial or joint fluid, pericardial fluid, peritoneal fluid, amniotic fluid and saliva in dental procedures. Tears and urine are not included in this definition.

OPIM also includes any body fluid that is visibly contaminated with blood. It includes all body fluids in situations where it is difficult or impossible to differentiate between the types of body fluids present. It also includes any unfixed tissue or organ other than intact skin from a human whether they are living or dead. It includes HIV containing cells or tissue cultures, organ cultures and HIV or hepatitis B virus containing culture medium or other solutions. Finally, it includes blood, organs and other tissues from experimental animals infected with the HIV virus or hepatitis B virus.

Contaminated is defined as the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Decontamination means the use of physical or chemical means to remove, to inactivate, or to destroy bloodborne pathogens from a surface or an item so the item is no longer capable of transmitting infectious particles and it is rendered safe for handling, use, or disposal.

An exposure incident is defined as employee contact with blood or other potentially infectious materials during the performance of their job duties. This contact includes exposure of the eye, mouth, mucous membranes and other non-intact skin. The exposure may also result from parenteral contact with blood or other potentially infectious materials.
Prohibited Actions

The use of public toilets, telephones and drinking fountains does not increase your risk to bloodborne pathogens.

There are number of myths that are associated with the acquisition of bacteria and viruses in the workplace. These include concerns about infected toilet seats, shaking hands, use of public telephones, and use of public drinking fountains. None of these activities have been associated with exposure to the organisms responsible for blood-borne diseases.

The bloodborne pathogen standard lists several activities that have been shown to increase the risk of exposure to employees. These prohibited activities include the recapping of any needle using two hands, the use of your mouth on a pipette in the laboratory, the bending or breaking of used needles, and any eating, drinking, smoking, the application of cosmetics or the handling of contact lenses in areas where there is a potential for occupational exposure. Food and beverages should not be stored where blood or other potentially hazardous materials may also be present.

The three most common ways to expose oneself to risk are:

1. Placing a hand in a sharps container
2. Recapping a needle
3. Improper cleanup of a sharps spill

In the workplace most exposures occur through needlesticks or cuts from sharp objects. These sharp objects may or may not be contaminated with an infected patient's blood or other potentially infectious material from the patient. Since we have no way of knowing whether they are contaminated we must assume all sharps a risk and eliminate the potential for exposure. It is important to remember that exposure may also occur through contact of your eyes, nose, mouth or skin with the patient's blood or other potentially infectious material.

Occupational exposures can be reduced using universal controls in combination with personal protective equipment and engineering and work practice controls.
Remember it is possible to become infected with some of these pathogens through sexual contact with an infected partner. Barrier contraceptives have been shown to reduce this risk. These exposures are not covered by this standard.

**Universal Precautions**

Universal controls reduce the likelihood of exposure by altering the manner in which a task is performed. Examples include the following: avoiding the bending of breaking of needles or the unnecessary handling of sharp objects, washing your hands immediately upon removing your gloves, immediately cleaning up any contaminated surface or equipment, and finally prohibiting of food or smoking in all areas were exposures may occur.

Universal precautions mandate that we treat all human blood and some human body fluids as if known to be infectious with bloodborne pathogens. In dental settings saliva is considered to be infectious because the likelihood of blood contamination is very high. Use of universal protections is observed to avoid contact with these materials.

The best way to reduce risk is to eliminate the hazard. Solutions such as needle free injections can eliminate the hazards of handling needles. OSHA maintains a website that provides information regarding possible solutions for bloodborne pathogens and needlestick hazards, including a wide range of equipment such as sliding sheath needle guards, needleless injection systems, retractable needles and needleless IV systems. In October of 2003, OSHA published its opinion on disposal of contaminated needles and blood tube holders used for phlebotomy. In this opinion OSHA stated that "Removing contaminated needles and reusing blood tube holders can pose multiple hazards." "Single-use blood tube holders, when used with engineering and work practice controls, simply provide the best level of protection against needlestick injuries. That is why the standard generally prohibits removing needles and re-using blood tube holders."
OSHA's Bloodborne Pathogens Standard prohibits the removal of contaminated needles from medical devices unless the University can demonstrate that it is necessary for a specific medical or dental procedure. When performing a blood drawing procedure, OSHA requires the disposal of blood tube holders with a safety needle attached immediately after each patient's blood is drawn. Implementation of training and engineering controls is required to reduce percutaneous, or needlestick, injuries in workplaces. The University needs to comply with OSHA’s rules regarding the use of engineering controls and to accomplish this, relies on principal investigators and other front line managers to work with employees to review available effective and safer medical devices.

When performing any task that may involve contact with blood or bodily fluids, the following precautions need to be taken:

1. Always wear gloves whenever there is a possibility of contact with blood or bodily fluids. Additional Personal Protective Equipment (PPE) may also be needed, (see the table below).
2. Always wash hands with soap and water after removing gloves.
3. If direct contact is made with blood or bodily fluids, wash the affected area thoroughly with soap and water and rinse under a stream of water.
4. Employees with cuts or other open wounds should take extra precautions to ensure that any open cuts or wounds are bandaged and protected from exposure by any additional barriers as necessary.
5. Clean up blood and body fluids spills with a 10% solution of bleach or another EPA-approved disinfectant, see Lists D and E.
6. Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in all laboratories and shipping and receiving areas. Food or beverages should not be stored in refrigerators or freezers or on shelves or in cabinets or on countertops where blood or other hazardous materials may also be present.
7. All sharps must be placed in a puncture resistant, non-spillable disposable sharps container bearing a biohazard label.
8. Biohazardous waste must be double bagged and boxed to prevent leaks and spills.
9. Avoid overfilled sharps containers and biowaste containers, dispose of the containers when 2/3 full.

**Standard Precautions in Hospitals**

In 1996, the Centers for Disease Control and Prevention published guidelines for the prevention of infections in hospitals. These standard precaution guidelines define all body fluids and materials as potentially infectious. The
definition of standard precautions includes not only the fluids and materials covered by universal precautions, but expands this definition to include all body fluids and substances. OSHA considers implementing the concept of standard precautions an acceptable alternative to universal precautions provided that all other provisions of the bloodborne pathogens standard are met by the employer.

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**Protective Equipment**

Personal protective equipment (PPE) must be used if a potential exists for exposure after all reasonable engineering and work practice controls have been instituted. PPE includes clothing or equipment that is worn by an employee for protection against a hazard. Employees are required to use equipment when it is provided by the employer.

### Personal Protective Equipment Guidelines

<table>
<thead>
<tr>
<th>Protective Equipment</th>
<th>When to Use</th>
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<tbody>
<tr>
<td>Examination Gloves</td>
<td>Any potential contact of the hands with blood or other body fluids or with materials contaminated with blood or body fluids. Thin gloves are not used for chemicals or other forms of protection</td>
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<tr>
<td>Gloves (non-exam)</td>
<td>A more durable glove material is required (e.g., maintenance work, housekeeping, chemical work etc.)</td>
</tr>
<tr>
<td>Face and eye protection (goggles, glasses with side shields, and)</td>
<td>Any potential for contact with eyes or face, (e.g. potential splashes, sprays, splatter, or droplets of infectious materials)</td>
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</table>
Before putting on gloves, check for tiny punctures, discoloration, and other physical defects. Dispose of gloves after use. Under NO circumstances should disposable latex or vinyl gloves be washed or disinfected for reuse.

When wearing gloves or other PPE, employees should not touch non-contaminated surfaces with contaminated materials such as gloves. It is particularly important to avoid touching the face or mouth with gloves or other PPE.

Protective eyewear or face shields should be worn during procedures where contact of the face or eyes with blood or body fluids is possible.

During performance of CPR, pocket masks must be used to prevent exchange of body fluids.

Personal Protective Equipment for bloodborne pathogens should be immediately removed when contaminated and placed in a biohazard waste container for disposal and/or decontamination.

If performing an operation that may generate splashes, wearing an apron or disposable coveralls made of waterproof material is recommended.

**Reducing or Eliminating the Bloodborne Pathogens from Surfaces or Materials**

The proper clean-up of work areas that may have been contaminated is one of the most important prevention activities. Since bacteria and viruses are not visible to the human eye it may not be readily apparent to anyone else that a contamination has occurred. You must ensure the safety of yourself and your coworkers by decontaminating any surface or equipment that may have been
contaminated. All surfaces and devices that might've been contaminated by splashes, spills, or contact with blood or other potentially infectious materials must be decontaminated with disinfectant solutions. All work surfaces must have a written schedule for cleaning and decontaminating that is adjusted based on the type of surface to be cleaned, their potential for contamination, their location within the facility, and finally the type of task or procedure that is performed on the surface.

Three terms are used to describe the level of removal for biological agents. It is important that you know the differences in these terms.

**Disinfection** - chemical or physical treatment that destroys most biological agents, except spores

**Decontamination** - chemical or physical treatment that destroys most biological agents to a low level, but not necessarily zero

**Sterilization** - chemical or physical treatment that completely destroys all living organisms (never to zero). Common sterilants are:

1) Alcohols
2) Sodium hypochlorite (bleach)
3) Iodophores (Wescodyne)
4) Phenols (Lysol)
5) UV lights
6) Autoclaves

**Cleanup Procedures**

The proper cleanup of work areas that may have been contaminated is one of the most important prevention activities. Since bacteria and viruses are not visible to the human eye, it might not be readily apparent to anyone else that a contamination has occurred. You must ensure the safety of yourself and your co-workers by decontaminating any surface or equipment that may have been contaminated. All surfaces and devices that may have been contaminated by splashes, spills or contact with blood or other potentially infectious materials must be cleaned with a disinfectant solution. All work surfaces must have a written work schedule for cleaning and decontamination that is adjusted based on the type of surface, potential for contamination, the location within the facility, and the type of task or procedure that is performed on the surface.
Spills

Small low hazard spills of potentially infectious materials can be cleaned up with diluted (10%) chlorine bleach solution. Once the materials have been collected/absorbed dispose of clean up materials in a biohazard box. If the spill is high hazard, concentrated virus preparations etc. or a large spill (one that you feel you cannot clean safely), immediately leave the area and call the University Dispatch Center at 556-1111 or 911.

Sharps, Signs and Labels

Sharps are discarded medical articles that may cause puncture wounds or cuts. Examples of sharps are:

1) Hypodermic needles and syringes
2) Pasteur pipettes
3) Scalpel blades
4) Disposable razors
5) Suture needles

Sharps are dangerous objects and are required to be disposed of in “Sharps Containers”. Once the container is filled it must be disposed of properly.

Signs and Labels

OSHA requires that warning labels are posted on:
1. Containers of regulated waste
2. Refrigerators and freezers containing blood and other potentially infectious materials
3. Other containers used to store, transport, or ship blood or other potentially infectious materials

Warning labels must be used to identify containers used to house, store, or transport blood or other potentially infectious materials in the workplace. The warning labels must include the universal biohazard symbol followed by the term biohazard. The background of the label must be a fluorescent orange or orange red color with lettering or symbols on the label created using a contrasting color. The warning labels must be attached to the following:

- All containers of regulated waste
- Refrigerators or freezers containing blood or potentially infectious materials
- Any other container used to store, transport, or ship blood or other potentially infectious materials.

**Proper Waste Handling**

The proper handling of contaminated equipment and or supplies is essential to protect all workers. Individuals who are downstream of direct patient care activities may be at risk if proper procedures are not instituted at the site where the initial risk of exposure occurred. An example of this is a laundry worker who has an exposure through contact with a needle while loading laundry into a washing machine. Improper disposal of the sharps object in dirty linens places this worker at risk. Whenever possible contaminated equipment and supplies should be handled as little as possible with minimal agitation. They should be bagged or containerized at the point of contamination and should not be sorted or rinsed under any circumstances at that location. All employees handling these materials should use personal protective equipment (PPE). All
contaminated equipment should be properly labeled and transported in clearly identified bags or transport containers.

What to Do If Exposed

The University of Cincinnati exposure control plan requires that the area of exposure be cleaned and irrigated with saline immediately after the exposure. After you clean the exposed area notify your supervisor immediately of any potential exposure. You should expect to receive a confidential medical evaluation and follow-up from trained medical personnel. Report your exposure on the UC accident report form A1352. Remember, your employer is responsible for evaluating and providing follow-up on all potential exposures. This follow-up includes documentation of the route of exposure and the circumstances under which the exposure occurred. It includes the collection of information relative to the HIV or hepatitis status of the patient, an evaluation post-exposure medical attention, the employer will provide counseling, and UC will evaluate all reports of illness in individuals with an exposure.

Most exposures to bloodborne pathogens do not result in infection. Unfortunately these bacteria and viruses cause symptoms that mimic many other diseases. Since these symptoms may not occur for many months after exposure to human blood or body fluids it is difficult for employees to tie their disease to their work exposure. If you believe that you been exposed you must notify your immediate supervisor for appropriate instructions. Your employer is responsible for investigating each exposure and for providing emergency care to employees with an exposure. It is very important that you follow the exposure control plan of your employer and that you seek immediate medical attention.

If someone has been exposed, it should be considered a medical emergency. They should:
• Cleanse the wound (if there is one) with saline. If there is no wound, wash the affected area immediately with soap and water.

• If the exposure occurs M-F, 8:00 AM-4:30 PM, report immediately to the University Health Services office (Holmes Bldg., 1st Floor, Room 1007, 584-4457). If the exposure occurs off-hours or on a weekend, immediately go to the University Hospital Emergency Room.

• After appropriate emergency medical treatment is obtained report the incident to your supervisor and fill out incident report form A-1352(a).

• In cooperation with the treating physician, arrange for source blood/other infectious material testing

If you are infected with the hepatitis B virus you’re not likely to become ill until six weeks after your exposure and it may take as long as six months before you show any signs or symptoms of the disease. Symptoms of hepatitis include abdominal pain, fever, chills, muscle and joint pain, and jaundice. If you're infected with the HIV virus you may experience a fever, swelling of the lymph nodes, diarrhea, skin rash and fatigue within 30 days. The symptoms of HIV infection often mimic those of the flu or other viral infections. Other symptoms or signs associated with HIV do not occur until the immune system is unable to defend the body against other microorganisms. In many patients an infection caused by these organisms is the first sign or symptom of an HIV infection.

In the event of an exposure to the HIV virus you need to be evaluated and treated within two hours of the exposure. Treatment has been shown to be most effective at preventing disease when it is administered within two hours of the exposure. It is very important that all exposures be identified and evaluated as soon as possible. Report all exposures to University Health Services at area code 513-584-4457. After hours and on weekends call 513-584-STIX.

**COURSE COMPLETION**

In order to receive a certificate of completion for this course, you must successfully complete the associated quiz. On the Bloodborne Pathogens course page, click where indicated to complete the test. Your certificate will be available for printing once you pass the quiz.