Researchers using human blood and other potentially infectious human material face an occupational risk of exposure to [bloodborne pathogens](http://www.cdc.gov/bioterrorism/transmission.html). The Occupational Safety and Health Administration (OSHA) and the Department of Industry, Labor and Human Relations require that the University of South Alabama and its employees meet minimum requirements to reduce this risk. *(Acknowledgment: University of Kentucky and University of Washington-Madison)*

### We are required to:

- Develop an exposure control plan that identifies employees with occupational exposure
- Implement methods to comply with provisions for worker protection, including universal precautions, safe handling of sharps, specimens, and regulated waste
- Provide personal protective clothing and equipment
- Use warning labels and signs to identify hazards
- Train all employees on occupational risks and methods to reduce risks
- Maintain records of employees training and medical evaluations
- Provide hepatitis B vaccine to employees with anticipated exposure to bloodborne pathogens at no cost to employees
- Provide medical evaluation after exposure incidents

This training material provides information from and about the standard as well as the necessary background for department chairs and faculty to implement the bloodborne pathogens standard in their work areas.

### Summary of Responsibilities

#### University Responsibilities

1. Review OSHA Bloodborne Pathogen (BBP) Standard and updates
2. Adopt a Bloodborne Pathogens Policy, including an Exposure Control Plan
3. Provide hepatitis B vaccine at no charge to employees at risk *(as determined by the USA Biosafety Manual and Exposure Control Plan)* for occupational exposure to human blood and other potentially infectious materials (OPIM) for bloodborne pathogens
4. Establish employee training requirements
5. Maintain employee medical records for hepatitis B vaccine and biohazardous injury management

#### Department/Unit Responsibilities

1. Identify the person(s) who, as part of his/her assigned duties will implement the Bloodborne Pathogens Policy
2. Review Exposure Control Plan on an annual basis
3. Identify all employees at risk for occupational exposure to human blood and OPIM
4. Provide personnel protective equipment (PPE) and "engineered controls" for all employees at risk for exposure to BBP
5. Train employees initially and annually to lab specific BBP risks and maintain Training Records
### Employee Responsibilities

1. Employees at risk *(as determined by the USA Biosafety Manual and Exposure Control Plan)* for occupational exposure to human blood or OPIM must receive hepatitis B vaccine or sign a declination form.
2. Must receive annual training on BBP in accordance with the current BBP Standard.
3. Use the appropriate PPE/engineered controls and safe work practices (handwashing, no recapping of needles by hand, etc.) at their work site.
4. Initiate first aid if they incur a biohazardous exposure (puncture, laceration, splash to mucous membrane).
5. Notify supervisor and seek medical care as soon as possible after an occupational exposure to human blood/OPIM has occurred.

### Requirements for Training

The OSHA rule mandates that the training program meet the following objectives.

**Upon completion of the Bloodborne Pathogens rule training program, the employee will:**

1. Know how to access a copy of the regulatory text of this standard and an explanation of its contents.
2. Have a general understanding of the epidemiology and symptoms of bloodborne diseases.
3. Be able to relate the modes of transmission of bloodborne pathogens.
4. Be familiar with the USA’s exposure control plan and know how to acquire a copy of the written plan.
5. Demonstrate the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials.
6. Understand the use and limitations of methods that will prevent or reduce exposure including appropriate engineered controls, work practices, and personal protective equipment.
7. Identify the types, proper use, location, removal, handling decontamination, and disposal of personal protective equipment.
8. Select the appropriate personal protective equipment for assigned activities.
9. Understand the following aspects of the hepatitis B vaccine: Efficacy, safety, method of administration, the benefits of being vaccinated, that the vaccine will be offered free of charge.
10. State the appropriate actions to take and persons to contact in an emergency involving human blood or other potentially infectious materials.
11. Follow USA’s procedure if an exposure incident occurs, including the method of reporting the incident and the medical follow up that will be made available.
12. Be aware of the post-exposure evaluation and follow up that the employer is required to provide for the employee following an exposure incident.
13. Identify the signs and labels and/or color coding required by this rule.
14. Have an opportunity for interactive questions and answers with a qualified person conducting the training session.
Why do I need bloodborne pathogens training?

The Occupational Safety and Health Administration (OSHA) requires that all employees who have the potential for exposure to bloodborne pathogens (BBP) must be provided with certain protections by their employer. These protections are outlined in detail within OSHA's Bloodborne Pathogens Standard, 29 CFR 1910.1030 available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051

The University of South Alabama must follow the requirements set forth by OSHA to ensure the safety of its own employees.

What will I learn from this program?

The purpose of this training program is to provide general awareness regarding the precautions you should be taking if you are an employee, student, or other individual working with blood or other potentially infectious materials (OPIM). Additionally, supervisors and administrators will learn about their responsibilities to ensure the protection of employees and students. This course is only part of a comprehensive BBP training program. Worksite-specific training will still need to be conducted by the PI, supervisor, or other responsible individual(s). For purposes of training, the term contaminated means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on the surface.

What are some diseases caused by bloodborne pathogens?

Bloodborne pathogens are disease causing agents present in blood or OPIM. There are many diseases caused by bloodborne pathogens, such as herpes, syphilis, malaria, babesiosis, brucellosis, leptospirosis, arboviral infections, and cytomegalovirus. However, acquired immunodeficiency syndrome (AIDS) and hepatitis are the bloodborne diseases that cause the most concern in occupational settings. The information that follows is essential in understanding how human immunodeficiency virus (HIV) and various hepatitis viruses are transmitted, and how to prevent exposure at work.

How does HIV cause AIDS?

HIV destroys a certain kind of blood cells--CD4+ T cells (helper cells)--which are crucial to the normal function of the human immune system. In fact, loss of these cells in people with HIV is an extremely powerful predictor of the development of AIDS. There is a strong connection between the amount of HIV in the blood and the decline in CD4+T cell numbers and the development of AIDS. Reducing the amount of virus in the body with anti-HIV drugs can slow this immune destruction.

How is HIV transmitted?

HIV is spread through human body fluids, most commonly blood and semen and unfixed organs or tissues. It has also been transmitted less frequently by vaginal secretions and breast milk. Although it has been isolated from saliva, tears, and urine, these fluids have not been implicated in the transmission of HIV. Saliva in dental procedures is considered infectious because of the inevitable presence of blood.

HIV is not transmitted through surface contact with dried blood. Incorrect interpretation of conclusions drawn from laboratory studies have unnecessarily alarmed some people. To obtain data on the survival of HIV, laboratory studies have required the use of artificially high concentrations of laboratory-grown virus. Although these unnatural concentrations of HIV can be kept alive for days or even weeks under precisely controlled and limited laboratory conditions, CDC studies have shown that drying of even these high concentrations of HIV reduces the amount of infectious virus by 90 to 99 percent within several hours. Since the HIV concentrations used in laboratory studies are much higher than those actually found in blood or other specimens, drying of HIV-infected human blood or other body fluids reduces the theoretical risk of environmental transmission to essentially zero.
What are the symptoms of AIDS?

In some individuals, a flu-like illness occurs within 1 to 6 weeks after exposure to the virus. After a long, symptom-free (latent) period of up to 7 to 10 years, HIV-infected individuals become symptomatic. The symptoms include, but are not limited to:

- Enlarged Lymph Nodes
- Malaise
- Headache
- Diarrhea
- Night Sweats

Individuals with AIDS develop certain types of tumors or infections caused by "opportunistic" bacteria, fungi, viruses, and parasites that infrequently cause infections in otherwise healthy people. These opportunistic infections are the usual cause of death.

What is my risk of becoming infected with HIV at work?

HIV is not efficiently transmitted through workplace exposures. From 1980 to 1999, the Center for Disease Control (CDC) documented 56 cases of occupationally acquired HIV transmission. "Documented" cases are healthcare workers who have contracted HIV through a work-related injury. All other risk factors were ruled out and exposure on the job was documented. Of the 56 confirmed cases, 48 occurred through parenteral exposure (piercing the skin with a HIV-contaminated sharp object). Eight occurred by splashing or splattering of blood or OPIM to the eyes, nose, or mouth. There were 136 possible cases in the same time period. The "possible" cases in healthcare workers have been investigated and are without identifiable behavioral or transfusion risks. Although each person had experienced exposure to blood or body fluids, or laboratory solutions containing HIV, a specific work-related incident resulting in a HIV-positive blood test was not documented.

How do these CDC statistics translate to actual risk to workers? The probability of becoming infected following a work-related exposure to a known HIV positive source is only about 0.4%.

If the probability of becoming infected with HIV at work is so remote, then why worry?

AIDS is uniformly fatal. Although combinations of drugs called antiretroviral agents and protease inhibitors have been used to delay the onset of AIDS in infected persons, there is still no cure.

How will I keep from becoming infected with HIV at work?

Universal Precautions

The cornerstone of protection against bloodborne pathogens is universal precautions. Universal precautions is the practice of treating all human blood and certain human body fluids as if they are known to be infectious for HIV, HBV, and other bloodborne pathogens. Strict adherence with universal precautions (appendix 1) is the only line of defense against work-related infection with HIV, because there is no vaccine.

What is viral hepatitis?

Hepatitis is a serious disease caused by a virus that attacks the liver. There are various strains of viral hepatitis which can cause lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure, and death.
How is viral hepatitis transmitted?

Like HIV, Hepatitis B virus (HBV), hepatitis C virus (HCV), and hepatitis D virus (HDV) are transmitted by percutaneous and mucosal exposures to blood and OPIM. Exposure to hepatitis A or hepatitis E is usually associated with unsanitary conditions (fecal - oral route). HAV and HEV are not bloodborne pathogens and therefore are not included in OSHA’s Bloodborne Pathogens Standard.

Which strain of hepatitis virus is of greatest concern in the occupational setting, and what is my risk of becoming infected at work?

HBV is of greatest concern in the occupational setting for several reasons. There is a relatively high risk of becoming infected following an exposure. In fact, exposure to a known contaminated source results in a 37 - 62% likelihood of infection. The chance of developing clinical hepatitis following exposure is 22 - 31%. Like HIV, HBV is most efficiently transmitted through percutaneous exposure. However, unlike HIV, HBV can readily be transmitted through surface contact with dried blood or OPIM. HBV infections that occur in workers with no history of nonoccupational exposure or occupational percutaneous injury might have resulted from direct or indirect blood or body fluid exposures that inoculated HBV into cutaneous scratches, abrasions, burns, other lesions, or on mucosal surfaces. HBV has been demonstrated to survive in dried blood at room temperature on environmental surfaces for at least 1 week. The potential for HBV transmission through contact with environmental surfaces has been demonstrated in investigations of HBV outbreaks among patients and staff of hemodialysis units.
What are the clinical symptoms of Hepatitis B?

Symptoms of hepatitis B include:

- Headache
- Malaise
- Loss of Appetite
- Nausea
- Fever
- Jaundice
- Dark Urine

The incubation period, or the time period from initial infection to the onset of symptoms is 4 - 28 weeks.

How will I keep from becoming infected with HBV at work?

Unlike HIV, there is a vaccine for HBV. The primary measure for prevention of hepatitis B is immunization; hepatitis B can be prevented using either preexposure prophylaxis (preventive treatment) with hepatitis B vaccine or postexposure prophylaxis with hepatitis B immune globulin (HBIG) and hepatitis B vaccine. The OSHA bloodborne pathogens standard requires that all employees with occupational exposure, or "the reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials", must be offered the vaccine at no cost. The vaccine is safe and effective. There is no evidence which indicates that the hepatitis B vaccine can cause chronic illnesses. Although the vaccine will impart immunity in over 95% of individuals who receive it, no vaccine is 100% effective. Thus, adhering to universal precautions is also fundamentally important.

Are there any other strains of bloodborne hepatitis that are significant in the occupational setting?

There is also a risk of infection with Hepatitis C virus (HCV) and Hepatitis D virus (HDV) for employees who have occupational exposure to blood or OPIM. Like HBV, HCV, and HDV can result in acute or chronic infection. No products are available to prevent hepatitis C, and development of a vaccine for this disease is proving to be difficult because an effective protective antibody response has not been demonstrated following HCV infection. Thus, the primary strategy for hepatitis C prevention is the strict observance of universal precautions. Because HDV infection is dependent on HBV for replication, immunization to prevent HBV infection, through either pre- or postexposure vaccination, can also prevent HDV infection.

What do I need to know about OSHA’s Bloodborne Pathogens Standard?

If you are a supervisor, PI, or any other individual responsible for implementing the worksite BBP program, you must know the general requirements of the standard, and see that these requirements are implemented in the workplace. If you are an employee or student, you must understand and follow all workplace rules and policies implemented to prevent exposure to BBP. To accomplish these objectives, each workplace must have a written exposure control plan (ECP). An ECP is a comprehensive, workplace - specific document that outlines in detail all measures that will be taken to eliminate or minimize employee exposure. An ECP is a manual for how to work safely with blood and OPIM. It is a living document. In other words, an ECP must reflect what is actually occurring in the workplace, from the broadest departmental policies to the most specific work practice instructions. Supervisors must make the workplace ECP available to employees, and review the plan as a part of employee training.

What are the fundamental components of an ECP?

The 5 fundamental components of an ECP are:

1. Exposure Determination
2. Methods of Compliance
3. Hepatitis B Vaccination
4. Communication of Hazards
5. Post Exposure Evaluation and Follow Up
Each lab must develop a written Exposure Control Plan indicating those job classifications and the tasks and procedures which involve potential exposure. The plan also includes an indication of the required engineering and work practice controls, personal protective equipment, housekeeping, labeling, training, and medical surveillance functions that will be instituted.

A model Exposure Control Plan is available in the USA Biosafety Manual and Exposure Control Plan.

Next we will discuss each of these 5 components in detail. Examples of each component will be provided.

1. Exposure Determination
An exposure determination is simply a listing of all employees with Occupational Exposure (those who may become exposed to blood or OPIM), and the tasks and procedures in which exposure may occur. Below is an example of an exposure determination as it should appear in the ECP.

<table>
<thead>
<tr>
<th>Employees or Job Titles with Occupational Exposure</th>
<th>Tasks / Duties</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI</td>
<td>List all tasks that may involve exposure to blood or OPIM</td>
</tr>
<tr>
<td>Research Assistants</td>
<td>List all tasks that may involve exposure to blood or OPIM</td>
</tr>
<tr>
<td>Lab Technicians</td>
<td>List all tasks that may involve exposure to blood or OPIM</td>
</tr>
<tr>
<td>First Aid Responders</td>
<td>List all tasks that may involve exposure to blood or OPIM</td>
</tr>
</tbody>
</table>

2. Methods of Compliance
Methods of compliance are all protective work practices, policies, rules, and controls, from the broadest to the most specific. Broad policies include a statement within the ECP that all employees will follow universal precautions, or that eating, drinking, storing food, mouth pipetting, smoking, applying lip balm, cosmetics, or contact lenses in the work area is prohibited.

In addition to broad policies, the ECP should also contain task-specific descriptions of safe practices to be utilized in the workplace. Examples of task-specific methods of compliance are:

- How/when to wear personal protective equipment (PPE). Below is an example of a PPE/task specification table as it should appear in the ECP. Please consult your workplace ECP for actual PPE/task specifications. All contaminated PPE must be discarded before leaving the work area.

<table>
<thead>
<tr>
<th>PPE</th>
<th>Task(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloves, Lab Coat</td>
<td>All laboratory activities. Always wear gloves while in work areas</td>
</tr>
<tr>
<td>Splash Goggles / Facial Shield</td>
<td>pipetting, vortex mixing of unsealed containers, and decanting liquids</td>
</tr>
<tr>
<td>Utility Gloves, Apron</td>
<td>Cleaning spills of blood or OPIM; Cleaning contaminated broken glass or other contaminated sharps.</td>
</tr>
<tr>
<td>Gloves, Microshield</td>
<td>Providing first aid / CPR.</td>
</tr>
</tbody>
</table>
How to dispose of regulated waste:

1. Before removing disposable gloves, gather all contaminated materials together and put them in a biohazard (red) bag. These bags should be labeled with the universal biohazard symbol.
2. Make sure the bag is intact and that there is no danger of leaking. If the bag is torn or punctured or is contaminated on the outside, place the bag inside a second biohazard bag.
3. Strip off disposable gloves from the wrist, turning them inside out so that the "clean" side is on the outside. Drop them into the red bag along with the other contaminated materials. Close the bag by handling only the clean outside surfaces. DO NOT throw the biohazard bag into the regular trash.
4. Wash hands with soap and water.
5. Follow USA policy for disposal of biomedical waste. A flow diagram should be available in the lab outlining appropriate segregation of materials, packaging, labeling and disposal of biomedical waste materials.

Sharps Container:
All sharps must be placed into a sharps container. Regulated sharps include razor blades, lancets, needles, syringes, intravenous tubing. Sharps container should be discarded when ⅞ full and meet the fill line indicator and placed in a biohazard bag.

How to wash hands properly

Proper handwashing is one of the most important infection control measures for employees working with blood or OPIM. Handwashing facilities must be available within the facility to all employees with occupational exposure.

For additional information about handwashing and hand antisepsis in health-care settings, and specific recommendations regarding hand-hygiene practices, see the [CDC Guideline for Hand Hygiene in Healthcare Settings](https://www.cdc.gov/hai/pdfs/handwashing/cdc_hand_hygiene_guideline.pdf).

How to conduct routine cleaning and decontamination:

For routine cleaning, use an apply an [EPA registered tuberculocidal disinfectant](https://www.epa.gov/pesticide-registration) or an EPA registered disinfectant that is labeled as effective against HIV and HBV. Spray the disinfectant onto contaminated surfaces and allow ten minutes before wiping. A 1:10 solution of 5.6% household bleach is effective. When using any commercial sterilant, be sure to read the directions on the label for additional use instructions. The ECP should have a schedule for routine cleaning of potentially contaminated surfaces or equipment in the workplace.
How to clean spills or contaminated surfaces:

1. The appropriate PPE must always be used when cleaning potentially contaminated surfaces. The first step is to contain the spill. For small spills, gauze or paper towels should be placed over the blood or OPIM for containment and absorption.

2. Next, apply a disinfectant. This can be 1:10 dilution of 5.6% household bleach (sodium hypochlorite) or other commercially available EPA registered tuberculocidal sterilants.

3. Use paper towels or a dust pan and broom to remove the materials.

4. Dispose of the contaminated materials in a properly labeled, closable regulated waste container. When cleaning larger amounts of blood or OPIM, work slowly and carefully to avoid splashing. If the contaminated area involves a volume of blood or OPIM that cannot be safely handled by employees, call Safety and Environmental Compliance at 460-7070 for assistance.

5. Once contaminated materials are removed from the surface, reapply the sterilant and allow ten minutes before wiping again.

3. Hepatitis B Vaccination
This component of the ECP should describe the steps the employer must take to ensure the successful completion of the hepatitis B vaccination series for all employees with occupational exposure. For example, the following general information should be included:

The vaccine is given in three stages:

1. The initial injection
2. A second injection one month later
3. A third injection 6 months after the first injection

All three injections are necessary to ensure immunity. There is no evidence that the vaccine has ever caused Hepatitis B, and the incidence of side effects is low.

Some possible side effects are:

- Tenderness and redness at the site of the injection
- Low grade fever
- Rash, nausea, joint pain, and mild fatigue have been reported on rare occasions

Persistent side effects that do not go away after 48 hours should be reported to your doctor. The HBV vaccine must be provided at no cost to employees. You may refuse the vaccine. However, you must complete the Hepatitis B Acknowledgment form as part of this training. (appendix 2)

Additionally, specific instructions about how to receive the vaccine should be included. The following example is an acceptable procedure for obtaining the hepatitis B vaccination series for USA employees, and can be used in any USA worksite-specific ECP:

Receiving the HBV Vaccination
Each University department must ensure that the hepatitis B vaccine is administered at no cost to its employees. If you have occupational exposure to bloodborne pathogens, ask your supervisor or PI for instructions on receiving the hepatitis B vaccine. The Office of Research Compliance and Assurance at 460-6625 will coordinate scheduling of the hepatitis B vaccine.
4. Communication of Hazards
This part of the ECP describes labeling and training requirements. The biohazard label (see right) must be placed on all containers of blood or OPIM. The container for storage, transport, or shipping shall bear this label and be closed prior to being stored, transported, or shipped. When a facility utilizes Universal Precautions in the handling of all specimens, the labeling/color-coding of specimens is not necessary provided containers are recognizable as containing specimens. This exemption only applies while such specimens/containers remain within the facility. Labeling or color-coding is required when such specimens/containers leave the facility.

5. Post Exposure Evaluation and Follow–Up
An exposure incident is a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral (e.g. needle stick) contact with blood or OPIM that results from the performance of an employee’s duties. If an exposure incident occurs, it is essential to ensure the proper medical evaluation and follow up for the exposed individual. These post-exposure services will be furnished to you at no cost to you, in accordance with the Bloodborne Pathogens Standard. If you have any direct exposure to human blood or OPIM, **immediately wash the affected body part with soap and water, and notify your supervisor.** If required, appropriate medical treatment will be available through Student Health Services who will assess your exposure and offer you the appropriate post exposure medical treatment and counseling. Prompt medical attention may reduce the risk of serious health consequences after an exposure incident. The employee will complete the Report of Accident/Incident form located on Human Resources site: [http://www.southalabama.edu/humanresources/employee_accident_incident.pdf](http://www.southalabama.edu/humanresources/employee_accident_incident.pdf) and use the information to determine appropriate controls or protective measures to prevent a recurrence of the exposure incident. The injury form will need to be reviewed and signed by the Supervisor. Copies should be submitted to the Office of Research Compliance and Assurance, CSAB 128.

The ECP should have a listing of procedures to be followed, and a responsible person listed to ensure implementation of the procedures. **The following example is a viable post exposure follow up procedure and can be used in the worksite-specific ECP:**

- Immediately wash the exposed skin with soap and water and flush the other areas with water.
- Notify your supervisor immediately after washing.
- Your supervisor should contact the Office of Research Compliance at 460-6625. They will schedule an appointment at the Student Health Center for a post-exposure examination. Alternatively, Student Health may be contacted at 460-7151
APPENDIX 1

Universal Precautions for Handling Human Blood, Body Fluids and Tissues in Research Laboratories

1. Assume **ALL** human blood, plasma, serum, body fluids (semen, saliva, tears, cerebrospinal and amniotic fluid, milk and cervical secretions) and tissues to be contaminated with Human Immunodeficiency Virus (HIV) and/or Hepatitis Viruses (e.g., HBV) or other Bloodborne Pathogens (See attached partial listing). Handle these human biohazards with appropriate care!

2. Gain knowledge-Be prepared:
   
   a. Personnel should understand their risk categorization before initiating work:

   * **Category I & II:** Personnel occupationally, occasionally or frequently exposed to blood, body and tissues.

   * **Category III:** Personnel never perform tasks with or around such materials.

   b. Be familiar with the CDC/ NIH Manual "Biosafety in Microbiological and Biomedical Laboratories," view biosafety videos and be familiar with the USACOM Biosafety Manuals. Ask your supervisor to explain any procedures or concepts not clear to you before beginning work.

   c. Category I and II personnel must be offered the Hepatitis B vaccination.

3. **Remember:** The most susceptible route of laboratory infection for HIV and HBV is by accidental needle sticks, contamination of the mucous membranes, or through broken, abraded or irritated skin. Use appropriate caution and protection to prevent such contact.

4. Avoid spilling, splashing or open aerosolization of human blood or body fluids. Wear latex gloves, protective lab garments and face/eye shields when handling human materials

5. Understand the principles of good microbiological practice before working with biohazardous materials. Examples include use of aseptic technique, proper decontamination procedures, emergency biohazard spill management and proper use of biosafety equipment. Develop proficiency before beginning work.

6. Use Biosafety Level-2 work practices, containment and laboratories when handling human materials where droplet and aerosol production are likely. Avoid aerosol generating activities in handling human materials. When such procedures are necessary, use biosafety cabinets or other containment and personal protective equipment.

7. When culturing or manipulating known HIV or HBV, use Biosafety Level-3 (BL-3) procedures. Any procedure which requires concentration of HIV, HBV or other human viruses from human materials should be handled under BL-3 containment and handling conditions. Use appropriate biosafety level conditions (BL-2 or BL-3) when handling non-human primates and other animals inoculated with human pathogenic materials.

8. Dispose of human and animal biohazardous waste or materials in accordance with CDC/ NIH biosafety and institutional guidelines.

9. Decontaminate laboratory protective garments, gloves and protective equipment to render them non-infectious.

10. Clean all work areas and equipment used in handling human biohazardous materials with proven disinfectant (e.g., 1: 10 dilution of Clorox) when concluding work to protect personnel from accidental infection.
11. Assume human serological and biological reagents (e.g., antibody, antigen or antisera) used in the laboratory are contaminated with HIV or other viruses and handle accordingly.

12. Understand your facility's medical surveillance program and be familiar with the appropriate standard operating procedures for accidental exposure to human materials. Specific measures must be followed as per CDC/NIH Guidelines in the Universal Precautions. The specimens involved must be identified and tested for HIV and HBV and procedures followed.

13. Report every accident to your supervisor.

14. Responsibility for instituting, training and monitoring of biosafety practices in laboratories handling human materials, HIV or HBV rests with the Laboratory Director or the designated Principal Investigator (PI). These individuals must categorize positions, provide facilities, biosafety equipment, biosafety procedures and training to employees accepting such work assignments to permit the safe conduct of the work. These responsible individuals must ascertain the proficiency of the employee in performing the assigned task before permitting the work to begin.

15. Laboratory personnel have a clear responsibility to fully understand and consistently adhere to the biosafety practices detailed in the Biosafety Manual as well as to the biosafety guidelines detailed here and by the CDC and NIH. Responsibility for conscious or thoughtless non-compliance with or violation of these guidelines falls on the laboratory worker.
PARTICIPATION IN HEPATITIS-B VACCINATION PROGRAM

The USA College of Medicine offers a voluntary Hepatitis-B immunization program for all personnel handling animals. This program includes three (3) injections over a 7 month period. The immunization is available through the USA Student Health Center. There will be no charge to the employee for these appointments.

Hepatitis-B is a viral disease of humans that affects the liver and other organs. Some people with the disease develop a long-lasting form that can lead to severe liver dysfunction or liver cancer. Those infected with the virus can become carriers--infecting others without becoming sick themselves. Hepatitis is primarily transmitted through human blood and body fluids.

Hepatitis-B has a prevalence in this part of the U.S. sufficient to warrant vaccination of health workers. College of Medicine employees may be assigned to areas where human blood and body fluids are sometimes handled. It is for these reasons that Hepatitis-B immunization is offered, without charge, to all COM employees.

Although the Hepatitis-B immunization program is considered safe, possible side effects may occur. Pain, redness, swelling, or itching at the injection site are the most common side effects. More serious side effects are possible, but are very rare. Possible adverse reactions to Hepatitis-B vaccine can be discussed with the nurse administering the vaccination.

Employee’s Name (printed)

☐ I accept the free combination vaccines against Hepatitis A and Hepatitis B virus [HA/BV] by my employer. I understand that this immunization will, in all likelihood, protect me only against Hepatitis A and Hepatitis B virus infection and not against other Hepatitis viruses or other bloodborne pathogens [e.g., Hepatitis C, HIV, etc.]. Efficacy of the Hepatitis A and Hepatitis B vaccine and vaccination series is not guaranteed by your employer, but by the manufacturer of the Hepatitis A/B vaccines. The U.S. Public Health Service recommends the combination Hepatitis A/B vaccines against Hepatitis A and Hepatitis B virus for individuals 18 years of age or older whose occupation puts them at high risk of acquiring Hepatitis A/B virus.

☐ I accept the free immunizations against Hepatitis B virus provided by my employer. I understand that this immunization will, in all likelihood, protect me only against hepatitis B virus infection and not against other hepatitis viruses or other bloodborne pathogens (e.g. hepatitis C, HIV, etc.). Efficacy of the HBV vaccine is not guaranteed by the employer, but by the HBV vaccine manufacturer. The U.S. Public Health Service recommends the HBV immunization for health care workers.

☐ I refuse the hepatitis B immunization. I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

☐ I have already been vaccinated against hepatitis B virus on or about __________________________. Proof of vaccination is attached.

Employee Signature: ____________________________ Date: ____________________________
Bloodborne Pathogens Post Test

Answer all of the following questions, sign, date and return test to the Office of Research Compliance and Assurance, CSAB 128 or clayton@usouthal.edu for grading. You must get 88% of the questions correct to pass this course. A certificate will be generated for you if you have passed the test.

Question 1
Bloodborne pathogens are disease-causing microorganisms present in _____:
- A) Blood and OPIM (Other Potentially Infectious Materials).
- B) Blood and all body fluids.
- C) Blood and all body substances.
- D) Blood and OPIM (Optimally Potent Infectious Materials)

Question 2
Under the Occupational Safety and Health Administration Bloodborne Pathogens Standard, ________ is responsible for ensuring that employees are protected against exposure to blood or OPIM:
- A) The U.S. Department of Labor.
- B) The employer.
- C) The U.S. Department of Agriculture and NASA.
- D) The employee.

Question 3
Although Human Immunodeficiency Virus (HIV) and Hepatitis B Virus (HBV) are of primary concern in the occupational setting, there are other bloodborne pathogens that pose a risk to occupationally exposed employees:
- A) True
- B) False

Question 4
HIV destroys a certain kind of blood cells that are crucial to the function of the _________:
- A) Cardiovascular System
- B) Lymphatic System
- C) Immune System
- D) Liver

Question 5
HIV is easily transmitted through contact with dried blood.
- A) True
- B) False

Question 6
HIV can be transmitted through the following:
- A) Blood
- B) Unfixed organs or tissues
- C) Urine
- D) Tears
- E) a, b, and d above.
- F) a and b above
Question 7
After a long, symptom-free (latent) period of up to 7 to 10 years, HIV-infected individuals become symptomatic. (It is noted that disease progression is variable depending on each patient)

A) True  
B) False

Question 8
HIV is not efficiently transmitted through workplace exposures.

A) True  
B) False

Question 9
In the occupational setting, the greatest risk of HIV infection occurs through:

A) A splash or splatter of blood or OPIM to the eyes  
B) parenteral exposures (e.g., needlestick)  
C) inhalation of blood or OPIM.  
D) inhalation of unfix ed organs or tissues

Question 10
Universal precautions is the practice of treating ___________ as if they are known to be infectious for HIV, HBV, and other bloodborne pathogens.

A) all people  
B) all body fluids  
C) all body substances  
D) all human blood and certain human body fluids

Question 11
HBV is of greatest concern in the occupational setting because:

A) There is a relatively high risk of becoming infected following an exposure.  
B) There is a relatively high chance of developing clinical hepatitis following exposure.  
C) HBV can readily be transmitted through surface contact with dried blood or OPIM  
D) All of the above.

Question 12
The PRIMARY measure for prevention of hepatitis B in the occupational setting is:

A) infection control  
B) jaundice  
C) avoidance of the occupational setting  
D) immunization

Question 13
There is no evidence which indicates that the hepatitis B vaccine can cause chronic illnesses.

A) True  
B) False

Question 14
No vaccine is available to prevent hepatitis C.

A) True  
B) False
Question 15
The primary strategy for hepatitis C prevention is:
☐ A) immunization
☐ B) universal precautions
☐ C) a and b above
☐ D) none of the above

Question 16
An exposure control plan (ECP):
☐ A) outlines in detail all measures that will be taken to eliminate or minimize employee exposure.
☐ B) must be workplace - specific
☐ C) must be accessible to employees
☐ D) all of the above

Question 17
The exposure determination of the ECP should include:
☐ A) all employees/job titles with occupational exposure
☐ B) all tasks in which exposure may occur
☐ C) all personal protective equipment to be utilized
☐ D) a and b above
☐ E) b and c above

Question 18
Personal protective equipment (PPE) for each task is:
☐ A) used at the discretion of the employee
☐ B) designated by the supervisor and specified within the ECP
☐ C) not necessary unless the task is labeled as "high risk"
☐ D) not required for students

Question 19
The term "contaminated" means:
☐ A) the presence of visible blood or other potentially contaminated materials on a surface
☐ B) the presence or the reasonably anticipated presence of blood or other potentially infectious materials on a surface
☐ C) an inordinately heavy amount of blood or other potentially infectious material on a surface
☐ D) none of the above

Question 20
If you notice that a sharps container is getting full, you should:
☐ A) Discard when ¾ full (at the fill line indicator) and placed in a biohazard bag
☐ B) inform your supervisor
☐ C) empty the sharps container into a properly lined, leak proof, puncture proof container
☐ D) recap the needles and flush them down the toilet

Question 21
The following commercial products can be used for decontamination:
☐ A) Any EPA registered tuberculocidal disinfectant
☐ B) Any EPA registered disinfectant that is labeled as effective against HIV and HBV
☐ C) A solution of bleach and water
☐ D) All of the above
Question 22
The cost of the HBV vaccine must be paid by the employee.
☐ A) True
☐ B) False

Question 23
Valid method(s) of compliance is/are:
☐ A) Eating, drinking, smoking, or applying cosmetics in the work area.
☐ B) Pipetting by mouth.
☐ C) Washing hands while in the work area.
☐ D) Wearing the appropriate personal protective equipment (PPE).
☐ E) C and D above

Question 24
Occupational exposure means that the potential exists for exposure to blood or other potentially infectious materials:
☐ A) True
☐ B) False

Question 25
An exposure incident refers to a specific event such as a needlestick, splash / splatter to the eyes, nose mouth, etc.
☐ A) True
☐ B) False

Name (Print)                      Date

Department                      Supervisor Name

- For Use By Office of Research Compliance -
☐ Initial pass
☐ Retake post test
☐ Retake pass

Reviewer’s signature                Date