

## EXPOSURE TO INFECTIOUS DISEASES AND ENVIRONMENTAL HAZARDS

### 1. OSHA Bloodborne Pathogen (BBP) Training for Medical Students At-Risk

#### Introduction:

The Occupational Safety and Health Administration's (OSHA) Bloodborne Pathogen Standard (29 CFR 1910.1030) applies to persons (students) who, in the normal course of his or her job, has the potential for exposure to blood or other potentially infectious materials. Personnel who require this training include any person who, in the normal course of his or her job, has the potential for exposure to blood, body fluids, body tissues or sharps.

#### A. Medical Student Training Requirements

Students who require training – All medical students are at risk and must complete the OSHA Bloodborne Pathogen (BBP) training upon enrollment and annually thereafter to meet OSHA bloodborne pathogen training standards.

#### B. OSHA Bloodborne Training Program

Completing this web-based program meets both the initial and annual training requirements. Students are expected to complete the online course and quiz prior to the start of classes for the academic year. A score of  $\geq 70\%$  on the quiz is required for certification. Failure to complete the annual training course could have significant repercussions regarding your continued enrollment as a medical student at the University of Central Florida.

#### Definitions:

(taken from [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=standards&p\\_id=10051](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10051))

**Standard (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.

**Bloodborne Pathogens (BBP):** 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).

**Contaminated sharps:** 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.

**Workplace and engineering controls:** 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.

**Other potentially infectious materials:** (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.

## 2. Exposure Control Plan

- A. The Exposure Control Plan describes the rationale, policies and procedures, and the interventions available for COM students who have the potential for exposure to blood, other body fluids, or other potentially infectious materials during the normal course of their student activities.
- B. The College of Medicine and affiliated clinical education facilities have designated representatives who are charged to be a liaison between the College of Medicine and the Infectious Disease offices of affiliated clinical education facilities.
- C. Classes on prevention of exposure to infectious diseases and environmental hazards will occur at matriculation orientation and at the beginning of each academic year. Medical students will also receive specific training on use of personal protective equipment including appropriate fit testing of N-95 masks.

## 3. Bloodborne Pathogens

Policies and procedures concerning bloodborne pathogen exposures and exposures to communicable diseases (e.g., tuberculosis, chicken pox) are in place at each of the major clinical teaching facilities. During orientation programs an overview of procedures is presented. Familiarize yourself with the policies and procedures of each clinical facility and carefully comply with all requirements in case you are injured or exposed to communicable disease.

All needle sticks and other exposures to blood or other potentially infectious body fluids should be immediately reported to your supervisor and to the designated contact at the facility where the incident occurs.

- A. Routes of transmission  
BBPs can enter the body via needle stick, cuts with contaminated instruments or glass, or through abraded skin. They can also enter if a splash occurs on the eyes, nose or mouth.

Some important things to remember about exposures:

- Needle size: Larger-gauge needles are riskier than smaller gauge needles.
- Needle type: Hollow-bore needles are riskier than solid suture needles.
- Needles with a syringe of fluid attached are more risky than needles alone.

The following sequence outlines the likelihood of infection: Deep puncture with fluid injection > deep puncture without fluid > superficial puncture > superficial scratch with bleeding > mucous membrane exposure > non-intact skin exposure > aerosol of blood.

Types of body fluid:

- Blood is the riskiest body fluid.
- Bloody body fluids are riskier than body fluids without blood.

#### B. Risk awareness

Remember: The greater the inoculum, the greater the risk.

#### C. Human Immunodeficiency Virus (HIV)

- The amount of circulating virus in patient blood is highest when the patient has advanced AIDS and/or is experiencing acute anti-retroviral syndrome.
- Almost all seroconversions (presence of HIV antibody in the blood) occur when the patient is symptomatic with a high viral load or has advanced AIDS.
- Florida has the third highest number of adult AIDS cases in the US and the second highest number of pediatric AIDS cases.  
([http://www.doh.state.fl.us/disease\\_ctrl/aids/updates/facts/usfl.html](http://www.doh.state.fl.us/disease_ctrl/aids/updates/facts/usfl.html))
- In 1983, 240 AIDS cases were reported in the US; by 2003, 750,000 cases had been reported.
- Between 1993 and 2000, the number of people living with AIDS increased 119% in the southeast.
- Through December 2001, the CDC received voluntary reports of 57 documented and 140 possible episodes of HIV transmission to healthcare personnel in the United States ([http://www.cdc.gov/ncidod/dhqp/bp\\_hcp\\_w\\_hiv.html](http://www.cdc.gov/ncidod/dhqp/bp_hcp_w_hiv.html)).
- The risk of acquiring HIV, if a positive source patient has HIV and the exposed person does not, is 0.3%, i.e., 3 chances in a 1000.
- Highly active antiretroviral therapy (HAART) can be utilized within 1-2 hours post exposure.

#### D. Hepatitis B Virus (HBV)

(<http://www.cdc.gov/hepatitis/HBV/HBVfaq.htm>)

- An estimated 800,000 – 1.4 million persons in the United States have chronic HBV infection.

- Healthcare personnel who have received hepatitis B vaccine and developed immunity to the virus are at virtually no risk for infection.
- For a susceptible person, the risk from a single needlestick or cut exposure to HBV-infected blood ranges from 6-30% and depends on the Hepatitis Be antigen (HBeAg) status of the source individual.
- HBV can survive outside the body at least seven days and still be capable of causing infection.

E. Hepatitis C Virus (HCV)

(<http://www.cdc.gov/hepatitis/HCV/HCVfaq.htm>)

- There are now over 3 million cases of HCV in the US; it is the most common chronic bloodborne infection in the United States.
- Highest prevalence groups include IV drug users, chronic hemodialysis patients, and recipients of clotting factor concentrates made before 1987 (when more advanced methods for manufacturing those products were developed).
- After infection, HCV may be clinically silent for years. After infection, 85% develop chronic Hepatitis C.
- Chronic HCV infection is the leading indication for liver transplants in the United States.
- Treatment is difficult to tolerate (pegylated interferon and ribavirin for 12 months).
- There is no preventive vaccine and no post-exposure prophylaxis.
- The risk of acquiring HCV, if a source patient has HCV and the exposed person does not is approximately 1.8%.

#### 4. Work Practice and Engineering Controls

A. Sharps containers:

- Place all needles, syringes, sharps, broken or unbroken glass and plastic ware in red sharps containers.
- Label sharps container with biohazard symbol and user's address.
- Seal containers when three quarters full.

B. Double corrugated boxes or large sharps containers:

- Are available for large contaminated objects such as suction liners.
- Must be labeled with biohazard symbol and address.

C. Safer medical devices:

- Include retractable scalpel blades, needles with attached safety devices, blunted suture needles, retractable phlebotomy needles, needle IV systems, etc.
- These devices are to be evaluated and implemented, as appropriate, by each departmental area.
- Documentation of the evaluation and rationale for usage or non-usage of devices is required.

## 5. Hepatitis B Vaccination

(<http://www.cdc.gov/hepatitis/HBV/HBVfaq.htm>)

- A. The Hepatitis B Vaccine is:
- Genetically engineered, non-replicative, safe and widely available.
  - Given in a series of three injections: Day 0, 1 month, and 6 months, respectively, after the first dose.
  - Post-vaccine quantitative titers are recommended at least 2 months, post-vaccine.
  - Prior to admission to the College of Medicine, all M.D. students must have begun or completed (including the post-vaccine quantitative titer) the Hepatitis B vaccine series.

## 6. Personal Protective Equipment

- A. Gloves
- Are indicated when touching blood, bloody body fluids, and items or surfaces soiled with blood or body fluids.
  - Inspect gloves frequently for holes, tears or deterioration.
  - Double gloving decreases the chances of inoculation by 50%.
  - Do not wash or reuse gloves.
  - Wash hands after removing gloves.
- A. Face shields/goggles
- Indicated when droplets or splashes to mucous membranes are anticipated.
  - Goggles must have side protectors to prevent eye splashes.
- B. Gowns/lab coats/aprons
- Are indicated when direct contact with potentially infectious material is likely.
  - Should be removed when leaving patient room/work area.
- C. Masks
- Are indicated when droplets or airborne transmission is likely.
  - The N- 95 disposable respirator mask is preferable.
- D. Handwashing
- Wash for 10 seconds with friction and lather if hands are visibly soiled.
  - Wash after removing gloves and when leaving work area.
  - Alcohol gel is an acceptable alternative to soap and water if hands are not visibly soiled.

## 7. Exposure and Post-Exposure Prophylaxis

Through a waiver of the in-network requirements specified in the Aetna Student Health Services contract with UCF Health Services, BBP exposures and post-exposure prophylaxis can be obtained from immediately accessible medical facilities (both in-network and out-of-network) by medical students who are undergoing training in the clinical education environment in modules, clerkships, electives and selectives. Follow-up care for exposure must be obtained

through arrangements with UCF Health Services and their arrangement with in-network providers.

Note: Students will be responsible for deductibles specified in the Aetna Student Health policy.

- A. Immediate procedure:
- Remove bloodborne pathogen.
  - Sharps exposure – wash with soap and water. Students SHOULD NOT squeeze the affected area.
  - Mucous membrane exposure – flush with copious amounts of water.
  - Report any exposure to potentially infectious material to your clinical instructor, immediate supervisor (i.e. resident/attending) or appropriate personnel immediately.
  - Report within 1-2 hours of exposure to the appropriate individual or office, based on clinical setting as below:
- B. Florida Hospital (FH):
- Time of exposure: 7 a.m. – 3:30 p.m. (M, T, W, F), 8 a.m. – 3:30 p.m. (Thurs)
  - Report exposure to: Attending/Resident or other Immediate supervisor
  - Report to: Employee Clinic – (407) 303-7135, 2604 N Orange Avenue
  - Needlestick Hotline: (407) 200-4702
  - If during non-regular hours, weekends, or holidays, report to nearest FH emergency department.
- C. Lakeside Behavioral Healthcare, Inc.:
- Time of exposure: 8 a.m. – 5 p.m. (M-F)
  - Report exposure to: Human Resources Specialist and Immediate Supervisor
  - Report to: FH emergency department (407) 303-6611, 601 E. Rollins Street, Orlando
- D. Orlando Health:
- Time of exposure: 7 a.m. – 5 p.m. (M-F)
  - Report exposure to: Patient Care Coordinator (PCC)
  - Report to: Occupational Health (321) 841-5212, 818 Main Lane, 1st Floor
  - If during non-regular hours, weekends, or holidays, report to PCC and report to the emergency department (321) 841-5133.
- E. Orlando Veteran Affairs Medical Center:
- Time of exposure: 7:30 a.m. – 4 p.m. (M-F)
  - Report exposure to: Attending/Resident or other Immediate Supervisor
  - Report to: Occupational Health Provider, Dr. Yong Chen (407) 629-1599 ext. 6279
  - If during non-regular hours, weekends, or holidays, report to immediate supervisor and go to Winter Park Memorial Hospital Emergency Department (407) 646-7302, 200 N. Lakemont Avenue, Winter Park
- F. Pasadena Villas:
- Time of exposure: anytime

- Report exposure to: Human Resources Specialist and Immediate Supervisor
  - Report to: FH emergency department (407) 303-6611, 601 E. Rollins Street, Orlando
- G. Other Settings (Outpatient Setting):
- Time of exposure: 8 a.m. – 6 p.m. (M-F), 10 a.m. – 2 p.m. (Saturday)
  - Report exposure to: Clinical Instructor or other Immediate Supervisor
  - Report to: UCF Health Services (UCF Main Campus) (407) 823-2701
  - If during non-regular hours, weekends, or holidays, report to clinical instructor or other immediate supervisor and go to the nearest hospital emergency department.
- H. College of Medicine and UCF Health Services

All exposures will be reported to the Office of Student Affairs of the College of Medicine and to UCF Health Services. The Associate Dean for Students will provide assistance should you encounter difficulties and in informing and coordination of follow-up care with UCF Health Services.

Contact:

Dr. Marcy Verduin, Associate Dean for Students

(407) 266-1353, [mverduin@mail.ucf.edu](mailto:mverduin@mail.ucf.edu)

UCF Student Health Services

(407) 823-2701

Assistance in obtaining evaluation, prophylaxis and follow-up care can be obtained through the Office of Student Affairs for the College of Medicine and UCF Health Services. Code names are used for all laboratory testing performed through UCF Health Services to assure confidentiality.

## 8. Decontamination, Disposal and Transportation of Biohazardous Material

- A. Blood spills
- Put on gloves.
  - Remove any sharp objects with forceps.
  - Saturate the spill with one part of chlorine bleach to ten parts water (make fresh weekly).
  - Let stand 15-20 minutes.
  - Wipe up the spill with a paper towel.
  - Discard gloves and paper towels into a red biohazard bag.
- B. Biohazard bags
- Red, biohazard bags are indicated for non-sharps waste that is contaminated and distinguishable from general waste.
  - Red bags are to be 2-ply thickness and labeled with a biohazard symbol.
- C. Transportation of potentially infectious specimens
- Place the specimen in a sealed container (e.g. specimen cup, test tube).

- Place the sealed container in a secondary sealed container (e.g. freezer storage bag, plastic cooler) and line with absorbent material.
- Label the outside container with the biohazard symbol.

**Review:**

- Always practice Universal Precautions – assume all blood, bloody body fluids and tissue are positive for bloodborne pathogens such as HIV, Hepatitis B and Hepatitis C.
- Obtain Hepatitis B vaccine and quantitative titer.
- If exposure occurs, wash or flush area, report incident to immediate supervisor and access health within 1-2 hours of exposure.
- Remember the risk rule of three (the likelihood of getting infected with Hepatitis B, Hepatitis C or HIV after an exposure):
  - Hepatitis B: 30%
  - Hepatitis C: 3%
  - HIV: 0.3%
- Use of Personal Protective Equipment
  - Wear gloves to decrease inoculum from sharps injury.
  - Wear gowns, face shields and gloves to decrease extent of mucous membrane or skin exposure.
- Elimination of risky practices
  - Do not recap needles.
  - Do not overfill sharps containers.
  - Do not attempt invasive skills without training and/or supervision.
  - Contain sharps and other contaminated waste in identifiable biohazard containers.

## 9. HIV / AIDS Policy and Other Infectious Diseases

When an HIV infected individual comes to the attention of the university, whether student, faculty, or staff member, confidentiality of the individual as well as the individual's welfare and that of the university community must be respected. Other infectious diseases will be handled appropriately and reported according to State requirements.

At matriculation orientation all students will receive verbal and written protocols and procedure for care and treatment should exposure occur. Should an exposure occur students should immediately report exposure to any potentially infectious material (blood, open wounds, etc.) to their clinical instructor or appropriate agency.

The protocols are as follows:

- If HIV status of source is unknown, whenever possible rapid HIV testing will be performed on source.



- If exposure occurs during Health Services hours of operation and source HIV status is unknown, student will call Health Services 407-823-0260 to speak with the medical director or his or her designee.
- If exposure occurs after Health Service hours of operation, or source is known HIV positive, student will proceed to nearest hospital emergency department for evaluation and treatment as deemed necessary.
- The student's clinical instructor and the student will report the exposure to the College of Medicine.
- The incident, including the names of all contact points, will be documented by the Office of Student Affairs.
- The student assumes responsibility for all charges associated with diagnosis and treatment.

If exposure results in contraction of disease or disability, the student will be allowed to continue in the program to the extent that he or she does not pose a risk to self or others.

In addition to the above described procedure IMMEDIATELY following a needle stick, laceration or skin exposure to blood/body fluid, individuals should wash the site with soap and water. Students SHOULD NOT squeeze the affected area. Mucus membrane exposures should have the area rinsed with copious amounts of water. The evaluating physician shall determine the risk of transmission, prophylaxis recommendations and indicated follow-up.

Prophylaxis for Hepatitis B may be indicated, dependent on the status of the patient, the exposure and immunity of the student. When an exposed student is known to be immune to Hepatitis B, no prophylaxis or testing of the patient is needed. If a student is unsure of his or her status, laboratory testing can be performed to assess both the patient and student's status. If the student is not immune and the patient is positive for Hepatitis B, then the student should receive immune globulin and Hepatitis B vaccine series. Follow-up testing should be performed at six months to verify the student's Hepatitis B status.

When HIV post-exposure prophylaxis is indicated the most current antiretroviral medication(s) as outlined by the CDC will be employed. Students who opt to use antiretroviral therapy will be followed at UCF Health Services for the appropriate duration of therapy. Follow-up HIV studies will be recommended at 6 weeks, 12 weeks, 6 months and 12 months.

Source patients should also be tested for Hepatitis C. Exposed students should receive follow-up testing for this virus as outlined by the CDC.