Bloodborne Pathogens

The Occupational Safety and Health Administration (OSHA) Bloodborne Pathogens Standard dictates specific practices and requirements that employers must have in place to prevent exposure of these pathogens to employees who could reasonably expect to come into contact with blood or other potentially infectious materials (OPIM) as part of their job responsibilities. OPIM may include: blood products, semen, vaginal secretions, respiratory secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva from dental procedures, unfixed tissue or organs (other than intact skin), or any other body fluid that is visibly contaminated with blood.

Occupational exposures can occur from puncture injuries involving potentially contaminated equipment, blood or OPIM coming into contact with non-intact skin, or a splash of blood or OPIM into mucous membranes. After an occupational exposure to blood or OPIM, the risk of infection with bloodborne pathogens depends on the specific virus and the type of exposure. Bloodborne pathogens of concern included in the Standard are Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and Human Immunodeficiency Virus (HIV).

To reduce or eliminate the hazards of occupational exposures to bloodborne pathogens in the work environment, the OSHA Bloodborne Pathogen Standard requires employers to implement an Exposure Control Plan (ECP) with details on employee protection measures. Employees should familiarize themselves with their company or institutional ECP and refer to it if an exposure incident occurs.

If you have any questions about the Bloodborne Pathogens Standard or Exposure Control Plan, contact Infection Prevention & Control

Hepatitis B Virus –

For individuals who have **not been vaccinated**, the risk of transmission after exposure due to a sharps injury is about 1 in 5. Signs and symptoms of an infection with Hepatitis B include nausea, vomiting, and in some cases, a rash, joint pain, and jaundice. Approximately one-third of infections may be asymptomatic. The incubation period is 45-180 days. Vaccinated employees will be given a booster dose after a high risk exposure. Unvaccinated employees should receive both HBIG and Hepatitis B vaccine ASAP.

Hepatitis C Virus –

The risk of transmission after exposure due to a sharps injury is about 1 in 50. Signs and symptoms of Hepatitis C infection include abdominal discomfort, nausea, vomiting and rarely jaundice. Approximately 75-85% of individuals infected show no signs or symptoms. The incubation period is 14-180 days. There is no prophylaxis for Hepatitis C.

Human Immunodeficiency Virus –

The risk of transmission after exposure due to a sharps injury is about 1 in 300, while the risk of transmission after mucous membrane exposure is less than 1 in 1000. Signs and symptoms of HIV infection include swollen lymph nodes, rash, and flu-like illness within a few weeks of exposure, before progressing to severe immunodeficiency. The infection may initially be asymptomatic. Prophylaxis should be given ASAP after high risk exposure to prevent infection.

Hepatitis B Vaccine:

Vaccination is the best way to prevent Hepatitis B. The process of Hepatitis B vaccination consists of a series of three shots. One month after the first shot the individual receives the second shot, with the third shot following five months after the second. Booster shots are also available if there is an outbreak of Hepatitis B. Once an individual receives the vaccination they do not need to get the series again.

Per the CDC, more than 90% of healthy adults develop adequate antibody responses after three intramuscular (usually deltoid muscle) doses of Hepatitis B vaccine. However, there is an age-specific decline in immunogenicity. After age 40 years, approximately 90% of recipients respond to a three-dose series, and by 60 years, only 75% of vaccines develop protective antibody titers.

The OSHA Standard requires employers to offer the Hepatitis B vaccine at no charge to all employees who have a potential for exposure to blood and OPIM during their job duties. This includes all employees in the healthcare setting. If you have not already received the vaccine and are interested in seeing if it is appropriate for you, contact your employer.

Waste Disposal

Regulated waste includes any liquid or semi-liquid blood or OPIM, any type of contaminated material that would release blood or OPIM in a liquid or semi-liquid state if compressed, any type of contaminated material that is covered with dried blood or OPIM and is capable of releasing these materials if handled, contaminated sharps or needle sticks, and any pathological microbiological wastes that contain blood or OPIM.

Regulated infectious waste must be disposed of into proper containers/bags that are identified with the "universal biohazard symbol" (see image on right). This symbol indicates that infectious waste is contained and should be disposed of appropriately.

Sharps should be dropped into puncture resistant red biohazard sharps containers at the point of use. Do not recap needles. Sharps containers should always be kept in a secured area in the medical center and not left unattended in public access areas.

Non-regulated waste includes any waste that is not generated by a medical facility or health-related work environment. This waste may be disposed of in regular plastic trash bags if it has been decontaminated before disposal. Furthermore, these bags must be labeled, dated, and signed verifying that decontamination of the bag's materials has occurred according to standard procedures and pose no health risk.

Exposure Prevention

- **Standard Precautions** (also known as universal precautions) must be practiced when there is a possibility of exposure to any blood or OPIM. During care for any patient, one should assume that an infectious agent could be present in the patient's blood, body fluids, secretions (except sweat), non-intact skin, or mucous membranes.
- **Transmission-based Precautions** are used in addition to standard precautions. These include contact precautions, droplet precautions, and airborne precautions.
- **Engineering Controls** are measures that isolate or remove the bloodborne pathogens hazard from the workplace, such as needleless systems and safety syringes. Where Engineering Controls will reduce employee exposure either by removing, eliminating, or isolating the hazard, they must be used, and documented in the ECP.
- **Work Practice Controls** are measures that reduce the likelihood of exposure by altering the manner in which a task is performed. Some examples of Work Practice Controls include prohibiting eating, drinking, smoking, and handling contact lenses in work areas where there is a reasonable likelihood of occupational exposure, as well as disposing of contaminated needles in appropriate sharps containers immediately following use.

Personal Protective Equipment (PPE)

OSHA requires the use of PPE to reduce employee exposure to hazards when engineering and administrative controls are not feasible or effective in reducing exposures to acceptable levels. Always wear PPE in a work environment where exposure is possible and remove PPE before leaving your work area. If PPE is torn, punctured, or has lost its ability to function as a proper barrier to bloodborne pathogens, remove it immediately and replace it with a properly functioning PPE. Select PPE based on the potential mode of exposure:

- Type of PPE
- Type of Potential Exposure to Blood/OPIM
- Gloves
- Hand contact
- Gown
- Splash/splatter to clothes
- Facial protection
- Splash/splatter to eyes, nose, or mouth

Situations for glove usage include:

- Wound dressing changes
- Performing oral care and suctioning
- Collecting lab specimens (urine, sputum, blood, gastric secretions, etc.)
- Inserting an IV catheter, urinary catheter, rectal tube, etc.
- Changing diapers
- Emptying surgical drains
- Emptying urinary drainage bags
- Handling nasogastric tubes, gastric tubes
- Handling IV and Foley catheters
- Giving injections

Situations for facial protection include:

- Performing oral care and suctioning (trach. care)
- Assisting during any invasive procedure
- Working with surgical drains, urinary drainage bags, and rectal tubes
- Performing tasks involving large amount of body fluids (peritoneal dialysis, thoracentesis, paracentesis, etc.)
- Inserting an IV catheter, urinary catheter, rectal tube
- Conducting cleaning, disinfection, or sterilization activities
- Working with patients known with cough, vomiting, etc.
- Collecting and working with lab specimen (urine, blood, drainage, etc.)
- During labor and deliveries (wear goggles and surgical mask at all times)
- Removing or discontinuing IV's, arterial lines, central venous lines

When you are finished with your tasks, any contaminated PPE should be properly disposed in correctly labeled containers until disposal, decontamination, or laundering.

Hand washing is one of the simplest and most effective practices that can be used to prevent the transmission of bloodborne pathogens. Hand hygiene should always be performed between patient contact, after contact with body fluids or contaminated objects, and after removing PPE. To avoid opening scabs or other skin sores, the use of soft, antibacterial soap rather than an abrasive soap is recommended.

Post Exposure Management

If an employee has a blood or OPIM exposure, it is important to follow the proper procedure set forth by your healthcare facility. These procedures are directed by OSHA guidelines.

For employees who have had occupational exposure to a bloodborne pathogen, medical records must be kept for those events for the duration of their employment at the company plus 30 years. These records are to remain confidential and must consist of employee information including name, social security number, and the results of medical exams, medical testing, and follow-up procedures, as well as any vaccinations that have taken place.

These medical records must be made available to the specific employee and anyone with written consent given by the specific employee. At no time are they to be made available to the employer.

Post-Exposure Responsibilities

1. **Immediately** perform first aid: wash the puncture/cut well with soap and water or flush mucous membranes with water.
2. **Immediately** report the exposure (some prophylaxis needs to be started within hours after exposure). Reports should include detailed information about the exposure, including the type and brand of instrument that caused the incident.
3. Based on the report, PEP medications will be prescribed to employee, if indicated, based on the type and severity of the exposure in accordance with current CDC recommendations for post-exposure prophylaxis to bloodborne pathogens.
4. Employee (and source patient, if available) will receive baseline testing for Hepatitis B surface antibody, Hepatitis C antibody and HIV antibody.
5. Employee will be notified of source patient's blood borne pathogen test result (if available).
6. If employee is placed on PEP medications, they may require extended follow-up and referral to an Infectious Disease physician.

Each facility has their own process in which the OSHA guidelines will be followed. Check with the facility staff to ensure that you follow the appropriate process.

Referenced Material

- OSHA Bloodborne Pathogen Standard: https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051
- Course: Bloodborne Pathogens – P.A.C.E. https://www.healthstream.com/hlc/common/course/quicklinks.aspx?oid=783832c3-0131-dc11-9c76-001aa01ee736&quickLink=YT0xJnRzPTIwMjItMDQtMDFUMjI6MzQ6MzMmY2lkPWMwY2E0NmE0LTJkMjUtZWIxMS04MGQ5LTAwNTA1NmIxNDIwNCZjdj0w
- Course: Bloodborne Pathogens and Sharps Safety https://www.healthstream.com/hlc/common/course/quicklinks.aspx?oid=783832c3-0131-dc11-9c76-001aa01ee736&quickLink=YT0xJnRzPTIwMjItMDQtMDFUMjI6MzY6NDMmY2lkPTE3YmQ5OTQ4LTlmN2YtZTMxMS1iOTI4LTAwMTUxNzFjNWJiMyZjdj0w