Bloodborne Pathogens

Definition of Bloodborne Pathogens

Bloodborne Pathogens are infectious microorganisms in human blood that can cause disease in humans. These pathogens include, but are not limited to, Hepatitis B (HBV), Hepatitis C (HCV) and Human Immunodeficiency Virus (HIV).

General Explanation of the Epidemiology and Symptoms of Bloodborne Pathogens

Healthcare workers can be exposed to a number of bloodborne pathogens. These infections are very serious and could be fatal. The bloodborne pathogens that are known to be the most serious threat are Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and Human Immunodeficiency Virus (HIV). HIV is the virus that causes AIDS.

Hepatitis B transmission occurs when a person is exposed to the blood of infected individual. It is a disease that is caused by a virus that attacks the liver. It can cause lifelong infection, cirrhosis of the liver, cancer of the liver, liver failure and even death. About 30% of infected individuals have no signs or symptoms. Common signs and symptoms include jaundice, fatigue, abdominal pain, loss of appetite, nausea, vomiting and joint pain. There is a vaccine available to help prevent Hepatitis B infection and it has been proven to be highly effective.

Hepatitis C is spread by contact with the blood of an infected individual. It is a disease that is caused by a virus that attacks the liver. 80% of infected individuals show no signs or symptoms. Signs and symptoms of HCV infection include jaundice, fatigue, dark urine, abdominal pain, loss of appetite and nausea. There is no vaccine available to prevent Hepatitis C infection. Interferon and Ribavirin are two of the drugs that have been used for the treatment of individuals diagnosed with chronic HCV.

Human Immunodeficiency Virus is the virus that causes AIDS. An individual can become infected when their broken skin or mucous membranes are exposed to infected blood, semen or vaginal secretions. Infected pregnant women can also pass HIV to their baby during pregnancy and delivery, as well as through breast-feeding. Signs and symptoms of HIV infection include rapid and unexplained weight loss, dry mouth, recurring fever, profuse night sweats, swollen lymph glands, persistent diarrhea, Pneumonia, depression, memory loss, various neurological disorders, white spots or unusual blemishes on the tongue or in the mouth or throat and/or red, brown, pink or purplish blotches on the skin or inside the nose, mouth or eyelids. There is currently no available vaccine to prevent HIV infection. Antiretroviral medications are used to control the reproduction of the virus and to slow its progression. There is currently no cure.
**Tasks In A Healthcare Facility That May Potentially Expose People to Blood and Other Potentially Infectious Materials**

- Assistance in surgical procedures and other invasive procedures
- Changing dressings (wound care)
- Decontaminating surgical instrumentation
- Drawing blood
- Endoscopy
- Handling of needles, sharps and surgical instruments
- Handling soiled waste, linen or other materials
- Handling specimens
- Initiating IV fluids or Heparin locks
- Injections
- Insertion of arterial or central lines or temporary pacemakers
- Insertion of catheters
- Responding to Codes
- Suctioning

**Methods to Prevent or Reduce Exposure Including Universal Precautions, Personal Protective Equipment (PPE), Engineering Controls, and Work Practices**

*Universal Precautions* is an approach to infection control to treat all human blood and certain human body fluids as if they were known to be infectious and includes the practice, of avoiding contact with patients' bodily fluids by means of the wearing of nonporous personal protective equipment.

*Personal Protective Equipment (PPE)* is specialized clothing or equipment worn for protection against a hazard and is located throughout healthcare facilities and is considered to be mandatory. Proper PPE can be department specific and is provided at no cost. The types of PPE available are gloves (disposable exam and heavy duty), goggles, face masks (N-95, surgical and laser), gowns (water resistant and impermeable), shoe covers, hair bonnets and face shields. Wear gloves when touching blood, body fluids, secretions, excretions, mucous membranes, non-intact skin and any contaminated items. Gloves must be changed between tasks and procedures. Gowns protect your clothing and possible strike-through to your skin. Face masks protect you from breathing in infectious microorganisms. They also protect others when you have respiratory associated illnesses. Shoe covers, hair bonnets and face shields also provide protection from, as well as the spread of infection.

When using PPE:
- Wash your hands immediately or as soon as possible after removing gloves or other PPE
- Remove PPE after it becomes contaminated and before leaving the area in which you use it
- Used PPE may be disposed of in the trash unless saturated with blood or other potential infectious materials (OPIM)
- Contaminated PPE should be disposed of in red bag receptacles
- Wear appropriate face and eye protection when splashes, sprays, splatters, or droplets of blood or OPIM pose a hazard to the eye, nose or mouth (mucous membranes)
- Remove, immediately or as soon as possible, any garment contaminated by blood or OPIM, in such as way as to avoid contact with the outer surface of the PPE

To properly remove PPE:
- Remove gown by rolling it away from the body and pull gloves off as you remove the gown sleeves, using care not to touch the outer surfaces
- Remove face shield or goggles
- Remove mask
- Dispose of used PPE in nearest appropriate trash receptacle and perform hand hygiene

Various **Engineering Controls** are employed to prevent or minimize exposure to bloodborne pathogens. Some of these controls are needleless access devices on IV tubing and central line catheters, glove holders in patient care areas, one-handed sliding needle covers, puncture resistant sharps containers, safety syringes and PPE.

Common **Work Practices** include proper hand hygiene, respiratory/cough etiquette, needle, blade and instrument counts in the O.R. and processes for reacting to an exposure.

Around the world, thousands of people die every year due to nosocomial (healthcare acquired) infections. **Hand hygiene** is the single-most important means of preventing the transmission of harmful germs/microorganisms that spread infection, as well as healthcare associated infections. You should wash your hands before and after any patient contact to prevent transfer of microorganisms between patients. Hands should also be washed before and after touching non-contaminated items and environmental surfaces. Nails should be clean and neatly trimmed extending no longer than ¼ of an inch and artificial nails should never be worn in a healthcare environment.

The proper hand washing procedure is:
- Turn on the sink and get your hands wet with warm water
- Apply enough soap to cover all hand surfaces
- Rub hands palm to palm
- Rub right palm over left back of hand with fingers interlaced and vice versa
- Rub palm to palm with fingers interlaced
- Rub backs of fingers to opposing palms with fingers interlocked
- Rotational rubbing of left thumb clasped in right palm and vice versa
- Rotational rubbing backwards and forwards with clasped fingers of right hand in left palm and vice versa
• Rinse hands under water
• Dry thoroughly with a single use towel
• Use towel to turn off water and open door to prevent re-infection of your hands

The duration of this entire process should be 40-60 seconds.

Respiratory/cough etiquette suggests that you cover your cough or sneeze and use tissue/crux of your arm, not your hand, to cover the cough/sneeze. You should discard the tissue in a waste receptacle. Avoid touching your eyes, nose and mouth. You should practice proper hand hygiene and keep your distance from others and limit any close contact. Viruses and the Flu are highly contagious and are spread by contact with respiratory secretions. Contact includes coughing, sneezing, touching contaminated surfaces or items and sharing eating utensils and beverages. Clean your hands frequently.

Accurate count of sharps and instruments insures potential sources of contamination/infection are secured and appropriately handled at the point of use, minimizing the risk accidental exposure.

In the event of a contaminated mucous membrane exposure, immediately flush eyes, nose and mouth at the nearest eyewash station or with copious amounts of saline. The exposure should immediately be reported. Healthcare facilities are required to provide a post-exposure evaluation and follow-up to any occupationally exposed worker who experiences an exposure incident. An exposure incident is a specific eye, mouth, nose (mucous membrane), non-intact skin or sharps injury with blood or other potential infected material (OPIM). This evaluation and follow-up must be at no cost and includes documenting the route(s) of exposure and the circumstances.

***In order to receive a Certificate of Completion for the “Bloodborne Pathogen” education module, you must successfully complete the following quiz.