

Eastern Michigan University Athletic Training Education Bloodborne Pathogens Training

Bloodborne Pathogens are pathogenic microorganisms that are present in human blood and other potentially infectious materials (OPIM) and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV). “Hepatitis” means “inflammation of the liver”.

Hepatitis B virus (HBV)

Sources: Hepatitis Foundation International

http://www.hepfi.org/living/liv_abc.html#basics_hep_B

Centers for Disease Control and Prevention

<http://www.cdc.gov/ncidod/diseases/hepatitis/b/faqb.htm>

<http://www.cdc.gov/ncidod/diseases/hepatitis/b/fact.htm>

What is Hepatitis B?

- Hepatitis B is an inflammatory liver disease caused by the hepatitis B virus.
- Hepatitis B virus results in liver cell damage that can lead to scarring of the liver (cirrhosis) and increased risk of liver cancer in some people.
- It is 100 times more infectious than HIV, has no cure, and can be fatal.
- In a dried state, HBV may remain viable on surfaces for up to 1 week and maybe longer.
- It is the only bloodborne disease with a vaccine available for protection.

Transmission

HBV is transmitted primarily through “blood to blood” contact, by accidental needle sticks or other contaminated sharps injuries, sexual contact, mucous membrane contact, and through open cuts. Risk most often occurs in unprotected direct or indirect contact with infected blood. It is not transmitted by casual contact.

Symptoms

- Many people with newly acquired hepatitis B have no symptoms at all or they may be very mild and flu-like – loss of appetite, possible stomach pain, nausea, fatigue, muscle or joint aches, mild fever, possibly jaundice (yellowish tinge to the skin), and darkened urine.
- Symptoms may not become noticeable for 1-9 months, after exposure.

Disease Outcome

- **Acute infection:** 95% of infected adults develop antibodies and recover spontaneously within six months. Upon recovery, they develop immunity to the virus and they are not infectious to others.
- **Chronic infection:** 5% of infected adults become carriers of the virus, are chronically infected, and can infect others. The HBV virus remains in blood and body fluids – they may or may not show outward signs or symptoms.

Preventing HBV Infection - things you can do:

- Get the HBV vaccinations - vaccination provides protection for more than 15 years, and possibly a lifetime. HBV booster shots are not recommended.
- Wear gloves and other personal protective equipment when cleaning up blood and other potentially infectious materials.
- Cover any broken skin and rashes with bandages.
- Clean up any blood spills with an EPA-registered tuberculocidal disinfectant.

Hepatitis C virus (HCV)

Sources: Hepatitis Foundation International

http://www.hepfi.org/living/liv_abc.html#basics_hep_C

Centers for Disease Control and Prevention

<http://www.cdc.gov/ncidod/diseases/hepatitis/c/faq.htm>

<http://www.cdc.gov/ncidod/diseases/hepatitis/c/fact.htm>

What Is Hepatitis C?

- Hepatitis C virus (HCV) causes inflammation of the liver.
- Many infected individuals show no signs or symptoms.
- Hepatitis C is a slow-progressing disease that may take 10-40 years to cause serious liver damage in some people.

Transmission

- Injection drug use is the primary risk for HCV infection (60% of new cases).
- The hepatitis C virus is found mainly in blood.
- HCV is not spread through kissing or casual contact.
- HCV may be transmitted by using razors, needles, toothbrushes, nail files, a barber's scissors, tattooing equipment, body piercing or acupuncture needles if these items are contaminated by blood of an infected person.
- HCV may be transmitted by accidental needle sticks – needles contaminated with HCV-positive blood.
- HCV is not able to reproduce outside the human body.
- HCV is rarely spread through sexual contact.

Symptoms

- Most people who are infected with the HCV do not have symptoms and are leading normal lives.
- If symptoms are present, they may be very mild and flu-like – nausea, fatigue, loss of appetite, fever, headaches, and abdominal pain.
- Most people do not have jaundice although jaundice can sometimes occur along with dark urine.

Preventing HCV Infection

- There is no vaccine to prevent HCV. Vaccines for Hepatitis A and B do not provide immunity against hepatitis C.
- Avoid handling anything that may have the blood of an infected person on it.
- Handle needles and sharps with extreme caution – never recap, bend, or shear needles or separate the needle from syringe. Use sharps containers for disposal.

Human Immunodeficiency virus (HIV)

Source: Centers for Disease Control and Prevention (CDC)

<http://www.cdc.gov/hiv/general.htm>

What is HIV?

- HIV (human immunodeficiency virus) is the virus that causes AIDS. **AIDS** stands for **Acquired Immunodeficiency Syndrome**. *Acquired* means that the disease is not hereditary but develops after birth from contact with a disease causing agent (in this case, HIV). *Immunodeficiency* means that the disease is characterized by a weakening of the immune system. *Syndrome* refers to a group of symptoms that collectively indicate or characterize a disease. In the case of AIDS this can include the development of certain infections and/or cancers, as well as a decrease in the number of certain cells in a person's immune system.
- AIDS weakens the body's immune system so that it cannot fight other deadly diseases. AIDS is a fatal disease. There is no cure and no vaccine for AIDS.

Transmission

- The HIV virus will not survive long outside of the human body. HIV particles are reduced by 90-99% within several hours upon drying.
- Employees providing first aid or medical care involving fresh blood are at-risk.
- Transmission may occur through accidental needle-sticks, sexual contact, open cuts, or mucous membranes of the eyes or inside of the nose.
- Biting is not a common way of transmitting HIV; however, severe trauma with extensive tissue tearing and damage and presence of blood would be of concern.
- Saliva, tears, and sweat - HIV has been found in saliva and tears in very low quantities from some AIDS patients. However, finding a small amount of HIV

in a body fluid does not necessarily mean that HIV can be *transmitted* by that body fluid. HIV has *not* been recovered from the sweat of HIV-infected persons. Contact with saliva, tears, or sweat has *never* been shown to result in transmission of HIV.

- HIV is not spread by causal contact.

Symptoms

Many people who are infected with HIV do not have any symptoms at all for many years. Symptoms include:

- rapid weight loss; dry cough; recurring fever or profuse night sweats; profound and unexplained fatigue; swollen lymph glands in the armpits, groin, or neck; diarrhea that lasts for more than a week; and white spots or unusual blemishes on the tongue, in the mouth, or in the throat
- pneumonia; red, brown, pink, or purplish blotches on or under the skin or inside the mouth, nose, or eyelids; and memory loss, depression, and other neurological disorders

Prevention of Bloodborne Diseases

- Gloves should be worn during contact with blood or other body fluids that could possibly contain visible blood, such as urine, feces, or vomit.
- Cuts, sores, or breaks on exposed skin should be covered with bandages.
- Hands and other parts of the body should be washed immediately after contact with blood or other body fluids, and surfaces soiled with blood should be disinfected appropriately.
- Needles and other sharp instruments should be handled very carefully and according to recommendations for health-care settings. Never re-cap or bend needles. Dispose of needles in puncture-proof sharps containers.
- Clean up any blood spills with an EPA-registered tuberculocidal disinfectant.

Hepatitis A virus (HAV)

Source: Centers for Disease Control and Prevention

<http://www.cdc.gov/ncidod/diseases/hepatitis/a/faq.htm>

<http://www.cdc.gov/ncidod/diseases/hepatitis/a/fact.htm>

Hepatitis A virus (HAV) is not a bloodborne pathogen.

- HAV is found in the stool (feces) of persons with hepatitis A.
- HAV is usually spread from person to person by putting something in the mouth (even though it may look clean) that has been contaminated with the stool of a person with hepatitis A. This is called “fecal-oral” transmission.

- There is no chronic (long-term) infection.
- Once you have had hepatitis A you cannot get it again.
- There is a vaccine available for protection – advised if traveling to certain regions.

Modes of Transmission

It is important to know how bloodborne diseases are transmitted so that you may take protective measures when providing first aid or cleaning up blood. Bloodborne pathogens are spread through infected human blood and other potentially infectious materials (OPIM) such as 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. In situations where it is difficult or impossible to differentiate between body fluids – they are considered potentially infectious.

Basics of Infections

All of these factors must be present for a potential exposure to occur:

1. The infected source must have an infectious agent in the blood or other potentially infectious material.
2. An entry site must be present.
3. A potential route of transmission must be present – such as a contaminated sharp object.
4. An unprotected, susceptible person is contaminated through non-intact skin.

Exposure Control Plan

To prevent occupational exposure to bloodborne pathogens and to protect you, Asheboro City Schools has made an Exposure Control Plan available to you. A copy is kept in the main office at each school, is available on the ACS website (faculty/staff section), and is placed in the new employee orientation manual. You may also request a copy by contacting the Bloodborne Pathogens Coordinator or obtain via the ACS website (Faculty/Staff section).

The Exposure Control Plan addresses: employee responsibilities, exposure determination, safe work practices and engineering controls, personal protective equipment, housekeeping, communication of hazards to employees, the

Hepatitis B vaccination, post-exposure follow-up, and record keeping and surveillance.

How am I exposed at work?

Anytime there is “blood-to-blood” contact with infected blood or other potentially infectious materials, there is potential for transmission.

Direct transmission - Infected blood enters your bloodstream through an open cut, abrasion, sore, acne, damaged or broken skin such as blisters or sunburn, mucous membranes of the eyes, nose, or mouth

Indirect transmission - touch contaminated object or surface and transfer the infection to your mouth, eyes, nose, or open skin

Accidental injury - accidentally injure yourself with a contaminated sharp object such as broken glass, sharp metal, needle, or knife.

Employee Protection Methods

Never underestimate the dangers of bloodborne pathogens. Always practice “**Universal Precautions**” - treat all blood/body fluid as if it is infected.

Personal Protective Equipment (PPE)

Rules:

1. Always protect yourself first before becoming exposed to blood or body fluids and have a barrier between you and the potentially infectious material.
2. Always have PPE readily available and wear in exposure situations.
3. Remove PPE that is torn, punctured, or of poor quality.
4. Replace torn or punctured PPE.
5. Put contaminated PPE in plastic-lined containers with the biohazard label.

Gloves:

1. Should be of water impervious materials such as latex or rubber
2. Cover any open cuts or sores on your hands with bandages before gloving.
3. Latex-free gloves are available for those with latex allergies.
4. Inspect gloves for tears or punctures before putting them on. If a glove is damaged, don't use it. Wear 2 pairs if gloves are of flimsy, thin material.
5. Remove contaminated gloves carefully – never touch the outside of the gloves with any bare skin.

6. Dispose of contaminated gloves in such a way that no one else will come in contact with them.
7. Put contaminated gloves in a plastic-lined container with the biohazard label.

Goggles and face shields:

1. Should be worn with there is a risk or splashing or splattering of contaminated fluids.
2. Splashing could occur while cleaning up a blood or while providing medical assistance or first aid.
3. A face shield provides extra protection to the face and will protect the nose and mouth.

Aprons and shoe covers:

1. May be worn to protect your clothing and shoes
2. Keeps blood or other contaminated fluids from soaking through to your skin

Resuscitation devices – use for Cardiopulmonary Resuscitation (CPR). Never perform mouth-to-mouth CPR.

Blood spill clean-up kits – available for classrooms and on buses

**If you're in a situation where you don't have the standard PPE, improvise!
Use a plastic bag, towel, or other barrier to avoid direct contact.**

Hygiene Practices

Handwashing

1. Handwashing is one of the most important practices used to prevent the spread of all bloodborne pathogens and other infections.
2. Thoroughly wash hands and other exposed skin as soon as possible following an exposure incident.
3. Thoroughly wash hands as soon as possible after removing gloves and PPE.
4. Use non-abrasive, antibacterial soap - harsh abrasive soaps may damage skin and open fragile sores or scabs.
5. When handwashing facilities aren't readily available, use antiseptic cleansers in conjunction with clean cloth/paper towels or antiseptic towelettes and wash hands with non-abrasive, antibacterial soap and running water as soon as feasible.

In areas of likely exposure:

1. Never eat, drink, smoke, apply cosmetics/lip balm, handle contact lenses, or put food or drink in refrigerators, freezers, shelves, cabinets, or on counter tops where blood or potentially infectious materials are present.
2. Minimize blood splashing and splattering in emergency situations.

Clean-up & Decontamination

An EPA-registered tuberculocidal disinfectant solution (e.g. Sanimaster IV, Zorbacide, Lysol) must be used to clean and decontaminate surfaces and work areas that come in contact with blood or other potentially infectious materials. Call a custodian to clean up and decontaminate such areas in the schools.

If you are cleaning up a spill of blood, carefully cover the spill with paper towels or cloths – then carefully pour the cleansing solution – and leave it for **10 minutes** to kill any bloodborne pathogens. Use this method when cleaning contaminated equipment, first aid boxes, and other items. Remember to decontaminate any mops, sponges, pails, etc. that were used in the clean up process.

Although not recommended in the school setting, a solution of household bleach diluted between 1:10 and 1:100 with water is effective for decontamination. The standard recommendation is to use at least $\frac{1}{4}$ cup bleach per one gallon of water. Bleach is ineffective if not mixed properly, has a very short shelf life, must be used within 24 hours after mixing, lacks the ability to cleanse, is relatively toxic, is very corrosive to metals, and damages many materials.

Bleach is a hazardous chemical and is caustic!

To determine if a cleaning solution is EPA-registered: Read the label!

How to dispose of waste contaminated with blood/body fluids

1. Wear gloves.
2. Place contaminated items in a leakproof bag.

3. Remove gloves using proper method – never let bare skin touch contaminated gloves.
4. Place securely fastened bag in a plastic lined trash container.
5. Label the container or bag with biohazard label as appropriate.

Red Bags

1. Red bags are **only** to be used for waste that is saturated with blood or other contaminated waste.
2. Red bags are **not** to be placed in regular trash cans and shall **not** go to a landfill
3. A biohazard pick-up company must be called for proper disposal.

Contaminated clothing

<http://www.cdc.gov/ncidod/hip/STERILE/laundry.htm>

Although soiled clothing may harbor large numbers of pathogenic microorganisms, the risk of actual disease transmission is negligible. Rather than rigid rules and regulations, common-sense hygienic practices are recommended.

1. Wear gloves and other appropriate protective apparel.
2. Handle soiled items as little as possible and with minimal agitation to prevent gross microbial contamination of the air and of others.
3. Place soiled items in a plastic leakproof bag.
4. Place a biohazard label on the bag as appropriate.

Contaminated Sharps

“Contaminated Sharps” means any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, and broken glass.

1. Use a brush and dustpan or tongs to pick up broken glass and other sharp objects. Never directly use your hands.
2. Place the items in a closable, leakproof, puncture resistant container with a biohazard label attached.
3. Never reach into a trash container or push trash down with hands or feet
4. Use a properly labeled sharps container for needles.
5. Never recap, bend, break, or shear needles.
6. Wear gloves!

7. Replace sharps containers when full – never overfill.
8. Sharps containers are stocked in the health room of each school.
9. To dispose of filled sharps container, contact the Maintenance Facility Office.

Contaminated sports items and equipment

Use an EPA-registered tuberculocidal disinfectant solution to clean and decontaminate sports items and equipment that has come in contact with blood and other potentially infectious materials. Follow the clean up and decontamination guidelines.

Biohazard Warning Labels

Place a warning label on containers used to dispose of items containing blood or other potentially infectious materials. Labels may be obtained from the BBP Coordinator, safety supervisor, or school nurse. The label is orange or orange-red background with a universal symbol in a contrasting color:



Emergency Procedures

In an emergency situation involving blood or potentially infectious materials, always use “Universal Precautions” and minimize your exposure by wearing gloves and other appropriate personal protective equipment items such as goggles and other barrier devices. For mouth-to-mouth resuscitation, use pocket masks. For student accidents, complete an Accident Form.

What to do if exposed

1. Wash the exposed area with non-abrasive, antibacterial soap and running water.
2. Flush exposed eye or mucous membrane with running water for at least 15 minutes.
3. Immediately report the exposure to your supervisor
4. Take the completed form to First Care for a post-exposure medical evaluation – you may request blood testing and/or the Hepatitis B vaccination if you have not already received it.

Hepatitis B Vaccinations

The 3-shot Hepatitis B vaccination series is offered at no cost for employees working in at-risk positions unless already vaccinated, antibody testing reveals immunity, or the vaccine is medically contraindicated. These vaccinations are also offered to employees, regardless of “at-risk” status, as part of the staff wellness program.

**Eastern Michigan University
Athletic Training Education Program
BBP Quiz**

1. Bloodborne pathogens may enter your bloodstream through:
 skin abrasions
 open cuts
 accidental needle sticks
 all of the above
2. Which disease is **not** bloodborne?
 Hepatitis A
 Hepatitis B
 Hepatitis C
 HIV
3. Bloodborne pathogens may enter your bloodstream through:
 skin abrasions
 open cuts
 accidental needle sticks
 all of the above
4. Observing “universal precautions” means treating all blood and body fluids as if infectious.
 True
 False
5. Wearing gloves is one of the most important personal protective measures for preventing an exposure to blood borne pathogens.
 True
 False
6. If you wear gloves when cleaning up blood or body fluids, it is not necessary to wash your hands afterwards.
 True
 False
7. If you are exposed to blood or other potentially infectious materials on the job, you may get a vaccine for which bloodborne disease?
 HIV
 Hepatitis B
 Hepatitis C
 all of the above
8. Which bloodborne disease causes the highest rate of infection?
 HIV
 Hepatitis B
 Hepatitis C
 all of the above
9. To dispose of waste contaminated with blood or other potentially infectious materials, place contents:
 in a leak proof bag with a biohazard label attached

- in a plastic-lined trash container with a biohazard label attached
- all of the above
- neither of the above

10. In a dried state, which of the following may remain viable on surfaces for up to 1 week and maybe longer?

- HIV
- Hepatitis B virus
- Hepatitis C virus
- neither HIV, Hepatitis B virus , or Hepatitis C virus

My signature on this form assures that I:

1. have completed the BBP training material and BBP quiz
2. will report IMMEDIATELY to my supervisor if I come in direct contact with blood or other potentially infectious materials

Signature

Date