

OSHA Blood-borne pathogen  
Pre-reading

After reading assignment the student should be able to:

- Give a basic explanation of the epidemiology and symptoms of bloodborne disease.
- List the modes of transmission of bloodborne pathogens.
- Design an exposure control plan.
- Identify the likely activities in with Trigger Point Dry Needling that may involve exposure to blood and other infections.
- List methods that will prevent or reduce exposure including appropriate controls, work practices, and personal protective equipment.
- Explain how to properly dispose of used needles, equipment, and soiled material.
- List information on efficacy, safety, method of administration, the benefits of being vaccinated for hepatitis B vaccine.
- Describe actions to take as a Physical Therapist and persons to contact in an emergency involving blood or other potentially infectious materials
- Identify the signs and labels and/or color coding required for needles and hazardous material disposal

INTERACTION AND FOLLOW UP QUESTIONS WILL BE ADDRESSED DURING LEVEL I AND LEVEL II TDN COURSES.

As part of the procedural guidelines for DN, physical therapists must practice consistent with the OSHA Blood Borne Pathogens standard ([osha.gov](http://osha.gov)), which applies to all occupational exposure to blood or other potentially infectious materials. According to the OSHA Blood Borne Pathogens Standard, “gloves shall be worn when it can be reasonably anticipated that the employee may have hand contact with blood, other potentially infectious materials, mucous membranes, and non-intact skin.” As DN creates “non-intact skin” and recent research has shown that the most common adverse event of dry needling is minor bleeding, it follows that the OSHA Blood Borne Pathogens Standard applies.

**List of terms:**

- Blood means human blood, human blood components, and products made from human blood.
- Bloodborne Pathogens means 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 means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

- Contaminated Laundry means laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.
- Contaminated Sharps means 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.
- Decontamination means the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.
- Engineering Controls means 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.
- Exposure Incident means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.
- Handwashing Facilities means a facility providing an adequate supply of running potable water, soap and single use towels or hot air drying machines.
- HBV means hepatitis B virus. HIV means human immunodeficiency virus.
- Occupational Exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.
- Other Potentially Infectious Materials means (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.
- Parenteral means piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.
- Personal Protective Equipment is specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard are not considered to be

personal protective equipment.

- Regulated Waste means liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.
- Sterilize means the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.
- 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.
- Work Practice Controls means controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

**Bloodborne Pathogens** are microorganisms (such as viruses) that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV), hepatitis C (HCV) and human immunodeficiency virus (HIV).

For disease to be spread, it requires that all of the following conditions be present:

- An adequate number of pathogens, or disease-causing organisms.
- A reservoir or source that allows the pathogen to survive and multiply (e.g., blood).
- A mode of transmission from the source to the host.
- An entrance through which the pathogen may enter the host.
- A susceptible host (i.e., one who is not immune). Effective infection control strategies prevent disease transmission by interrupting one or more links in the chain of infection.

### **Modes of Transmission**

- Direct contact -occurs when microorganisms are transferred from one infected person directly to another person. For example, infected blood from one person enters a caregiver's body through an open cut.
- Indirect contact- involves the transfer of an infectious agent through a contaminated object or person. For example, a caregiver doesn't wash hands in-between caring for someone

with infected body fluids and other patients. For Example, Parenteral contact with a needle stick.

- Airborne transmission— occurs when droplets or small particles contain infectious agents that remain effective over time and distance in the air. Tuberculosis is a common disease spread this way. Bloodborne pathogens are not typically spread this way.

### **How Are Bloodborne Pathogens Spread?**

- Bodily fluids, especially those visibly contaminated with blood, have the potential to transmit disease
- Cerebrospinal fluid (Brain)
- Synovial fluid (Joints)
- Pleural fluid (Lungs)
- Amniotic fluid (Uterus)
- Pericardial fluid (Heart)
- Peritoneal fluid (Abdomen)
- Semen
- Vaginal secretions
- Blood
- Any body fluid contaminated with blood
- Body fluids that cannot be recognized
- Sexual contact is the primary mode of transmission for Bloodborne Pathogens, however the risk of exposure does exist while providing medical or first aid care
- When a contaminated sharp object cuts or punctures the skin. (Parenteral examples: needle stick, illegal drug usage, cut from broken glass, bite)
- When an infected body fluid gets into an open cut or mucous membrane (inside eyes, mouth, ears or nose)
- When a contaminated object touches inflamed skin, acne, or skin abrasion

## How Are Bloodborne Pathogens NOT spread?

- Intact skin is wonderfully created as our first defense against disease. Bloodborne Pathogens cannot “soak” through normal intact skin
- Casual contact like handshakes, hugging, sharing food, doorknobs, sneezing, toilet seats, swimming pools, etc.

## HIV / AIDS

HIV attacks your body's ability to protect itself against disease and it causes AIDS.

Approximately 1.1 million people in the US are living with HIV/AIDS. Approximately 50,000 people become infected with HIV each year. About 14,000 people every year in the USA die from AIDS.

Symptoms may or may not be present. You may be infected for years and not know it. Only a blood test can determine the infection, not symptoms: Fever Fatigue Weight loss Rash

The HIV virus is fragile and dies within seconds outside the body. The amount of HIV present in the body fluid and the conditions will determine how long the virus lives.

HIV is primarily spread by sexual contact with an infected person or by sharing needles and/or syringes (primarily for drug injection). Babies may become infected before/during birth or through breast-feeding. Only a fraction of less than 1% of the people contract the virus from providing medical care.

HIV it is not spread by casual contact like handshakes, sharing food, doorknobs, sneezing, toilet seats, swimming pools, etc

There is no vaccination.

## Hepatitis B

Hepatitis B virus reproduces in the liver causing inflammation and possibly cirrhosis or liver cancer.

HBV affects over 1.25 million people in the US. About 70,000 people/year become infected with HBV. Each year, about 5,000 people die as a result of liver disease caused by HBV. Infections have decreased since 1982 because of the HBV vaccine.

Symptoms may or may not be present. The older, the more apt to have symptoms. Only a blood test can determine the infection. Symptoms may include:

- Yellow skin (jaundice)
- Yellowing eyes
- Tiredness
- Loss of appetite, nausea
- Dark urine
- Clay-colored bowel movements
- Joint pain
- Abdominal discomfort

Up to 100 times easier to catch than HIV. HBV can live outside of body for at least 7 days and longer.

90% adults who contract hepatitis B clear the virus from their systems within a few months and develop immunity. About 10% become chronic- -the virus stays in the blood, infecting liver cells damaging them over time.

HBV is primarily spread by sexual contact with an infected person, sharing needles and/or syringes (primarily for drug injection), from an infected mother to her baby during birth, or sharps exposures on the job.

However, still like HIV it is not spread by casual contact like hand shakes, sharing food, doorknobs, sneezing, toilet seats, swimming pools, etc.

## **Hepatitis B Vaccine**

Hepatitis B virus can survive outside the body at least 7 days. During that time, the virus can still cause infection if it enters the body of a person who is not infected. Booster doses of hepatitis B vaccine are not recommended. Immune memory remains indefinitely following immunization.

The HBV vaccine must be offered free to employees who face occupational exposure to bloodborne pathogens.

Occupationally exposed employees include those who:

- Administer first aid
- Provide medical aid to students
- Assist in bathroom care
- Work in medical or dental offices
- Perform custodial duties involving the cleaning and decontamination of surfaces that may be contaminated with blood and or other potentially infectious materials (OPIM).
- Handle Regulated medical waste

If an employee does not want the vaccine a declination statement must be signed. Sample HBV Vaccine Declination Statement 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.

## **Hepatitis C**

HCV reproduces in the liver causing inflammation and possibly cirrhosis or liver cancer. Disease can incubate for decades

4.1 million carriers in the USA. About 26,000 new cases each year. Deaths from chronic disease each year: 8,000-10,000

About 80% of exposed people develop a chronic infection. 20% are able to clear the virus by naturally building immunity.

Symptoms are not a reliable way to detect HCV. A blood test is needed. Symptoms may look the same as HBV.

Unlike HIV or HBV, HCV is spread primarily through parenteral contact:

- Illegal injection drug use
- Transfusion or transplant from infected donor
- Tattoos

Occupational exposure to blood mostly through needle sticks

It is also spread through:

- Birth to HCV-infected mother
- Multiple sex partners

THERE IS NO CURE OR VACCINATION

## **DN PRECAUTIONARY ACTIONS**

Universal Precautions: treat all body fluids from every person as potentially infectious.

Follow the recommendations in the employer's Bloodborne Pathogens Exposure Control Plan

An employer's Bloodborne Pathogens Exposure Control Plan should include:

- Various levels of risk of employees that may have occupational exposure
- Training requirements
- Work practice controls
- Engineering controls
- Procedure for an exposure incident

### **Use Personal Protective Equipment (PPE)**

**Gloves, CPR shields, masks, gowns, eye protection**

Know where PPE is at your workplace

Know what PPE is available and how to use it

Make sure first-aid kits and emergency supplies include disposable gloves and CPR face shields or rescue masks

Follow your facility's procedures for handling laundry General Laundry procedures:

- Wear PPE
- Keep contaminated laundry separate from other laundry
- Bag potentially contaminated laundry where it is used
- Use leak-proof bags for wet laundry
- Transport in properly labeled bags

The Needlestick Prevention Act requires appropriate, commercially available, and effective safer medical devices designed to eliminate or minimize occupational exposure

Needles and other sharps must be discarded in rigid, leak-proof, puncture resistance containers

Do not bend, shear, break or recap needles. If you must recap, use one-handed method.

### **Hazardous Material Disposal**

Liquid or semi-liquid blood or other potentially infectious materials (OPIM)

Contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed

Dispose of in a properly labeled biohazard container: either a red bag or container labeled in orange or orange-red with the Bio-Hazard symbol.



Properly labeled and bundled waste needs to be handled according to your facility's disposal procedures.

### **Clean Up Procedures**

Use a solution of 1 part household bleach to 10 parts water or 1/4 cup bleach to a gallon of water.

Other commercial disinfectants registered with the EPA as effective against HIV/HBV may be used. Check the label.

Use Personal Protective Equipment.

If a Body Fluid Spill Kit is available, use according to manufacturer's directions

First, put on Personal Protective Equipment

Remove visible material with absorbent towels

If any sharp object or broken glass is visible, remove with tongs or dust pan and place in a ridged sealable container. Never use bare hands.

Spray disinfectant on contaminated area and let stand for several minutes

Once the area has been disinfected, dry area with absorbent towels and dispose of towels in regular trash

### **Glove Removal**

Grip one glove near the cuff and peel it down until it comes off inside out. Cup it in the palm of your gloved hand

Place two fingers of your bare hand inside the cuff of the remaining glove

Peel that glove down so that it also comes off inside out and over the first glove.

Properly dispose of the gloves.

### **Wash hands well:**

Wet your hands and apply liquid, bar, or powder soap.

Rub hands together vigorously to make a lather and scrub all surfaces.

Continue for 20-30 seconds! It takes that long for the soap and scrubbing action to dislodge and remove stubborn germs. Need a timer? Imagine singing "Happy Birthday" all the way through—twice!

Rinse hands well under running water.

Dry your hands using a paper towel or air dryer.

If possible, use your paper towel to turn off the faucet.

### **Exposure Incident**

An exposure incident is defined as a specific mucous membrane, broken skin, or puncture contact with blood or OPIM that results from the performance of an employee's duties.

If you think you've been exposed, decontaminate, report to supervisor, and seek medical treatment. An immediate confidential medical evaluation and follow-up needs to be conducted by a physician.

Complete forms as soon as possible after incident. Don't delay medical treatment to fill out paperwork. Forms and continued action will proceed according to employer's policies and procedures.