



WHITMAN COLLEGE

# **Bloodborne Pathogens**

Employee training on the hazards of  
bloodborne pathogens in the  
workplace

# Bloodborne Pathogens (BBP) Training



**WISHA** Department of Labor & Industries

## Occupational Exposure to Bloodborne Pathogens

Chapter 296-823 WAC

September 2004 Edition

Washington Industrial Safety & Health Act

F414-073-000

09/2004 printing



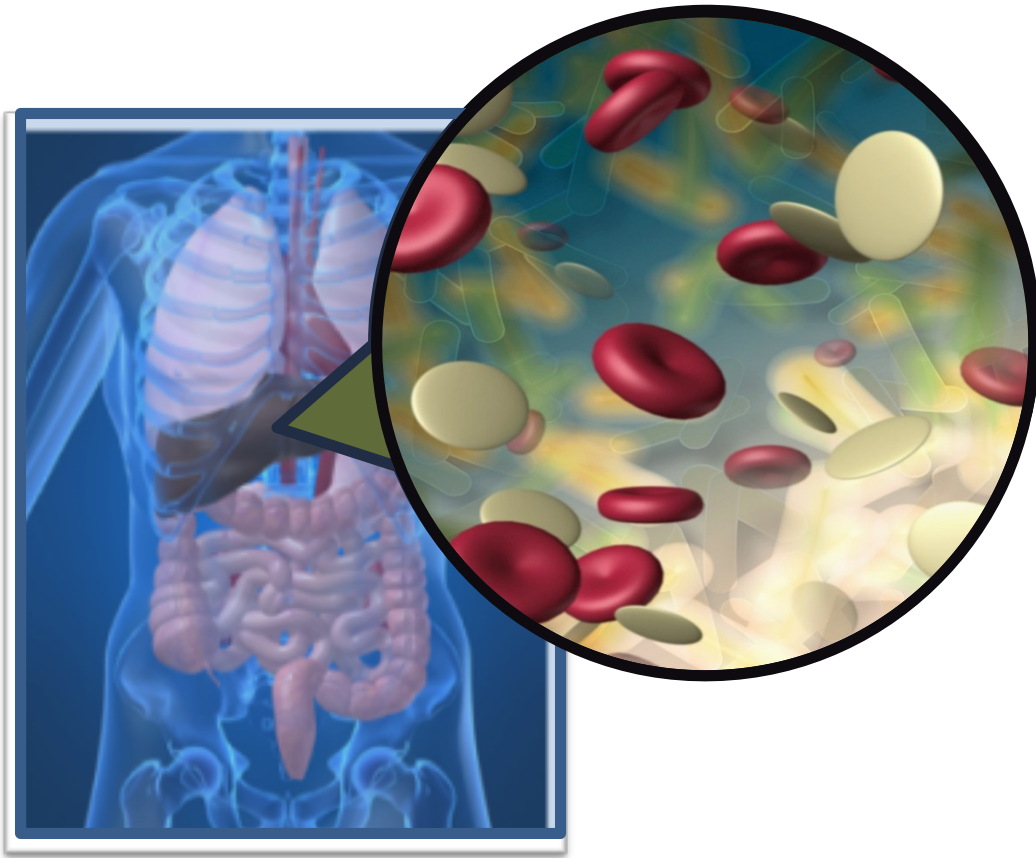
[Link to Bloodborne Pathogen Rule](#)

# What this training will cover

- What are bloodborne pathogens and how are they transmitted
- Our exposure control plan to protect you from BBP
- How to recognize the workplace activities that could expose you to blood and other possibly infectious materials
- Methods that will prevent or reduce exposure including equipment and safer medical devices, work practices and personal protective equipment
- General information about personal protective equipment
- Hepatitis B vaccine
- What to do if you are exposed to BBP
- What BBP signs and labels mean
- A question and answer session with our trainer

# Bloodborne Pathogens (BBPs)

BBPs are primarily Hepatitis B & C and HIV viruses present in blood, or in:



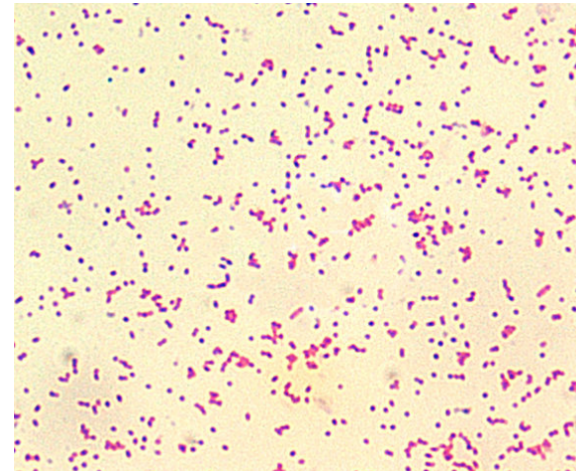
**O**ther  
**P**otentially  
**I**nfectious  
**M**aterials  
**(OPIIM)**



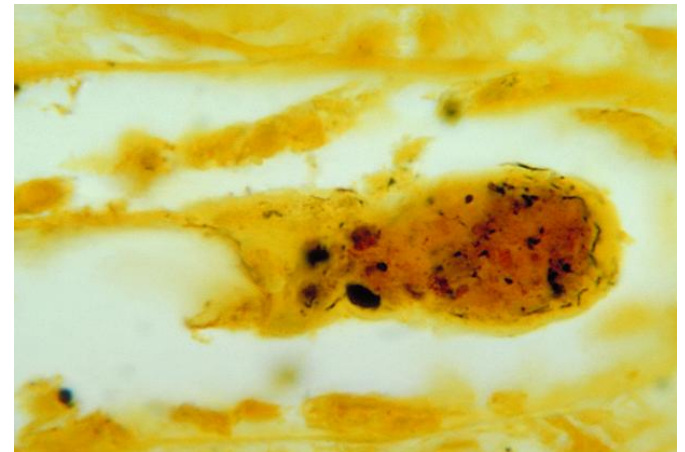
# Lesser known Bloodborne Pathogens

Lesser known BBPs include:

- Syphilis
- Babesiosis
- Brucellosis
- Leptospirosis
- Arboviral infections
- Relapsing fever
- Creutzfeld-Jakob Disease
- Human T-lymphotrophic virus Type I
- Viral Hemorrhagic Fever



Brucellosis bacteria



Leptospira bacteria in kidney tissue

# Bloodborne Pathogens - OPIM

OPIM includes the following:

- Semen
- Vaginal secretions
- Pleural, cerebrospinal, pericardial, peritoneal, synovial, and amniotic body fluids
- Saliva with blood in dental procedures
- Any body fluids visibly contaminated with blood
- Undifferentiated body fluids
- Any unfixed tissue or organ (other than intact skin) from a human (living or dead)
- HIV, HCV or HBV-containing cultures (cell, tissue, or organ), culture medium, or other solutions
- Blood, organs, & tissues from animals infected with HIV, HCV, HBV, or other BBPs

# Transmission of BBPs

Bloodborne pathogens can enter your body through:

- Contaminated instrument injuries
- A break in the skin (cut, lesion, etc.)
- Mucus membranes (eyes, nose, mouth)
- Other modes



Photo by Jason Rogers in Creative Commons



Photo by Sharroa Gott in Creative Commons

# Viral Hepatitis—General Facts

The virus attacks the liver causing inflammation, enlargement, and tenderness.

Infections can be acute or chronic.

Liver damage can range from mild to fatal.



# Hepatitis B Virus - HBV

Can live for 7+ days in dried blood

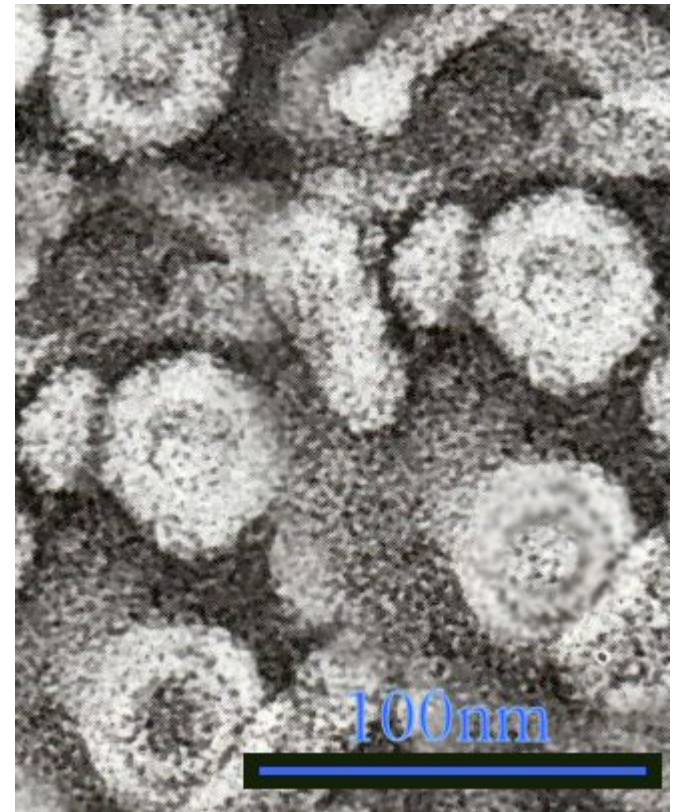
100 times more contagious than HIV

46,000 new infections per year

1.25 million carriers

3,000 deaths/year

No cure, but there is a preventative vaccine





# Hepatitis B Transmission

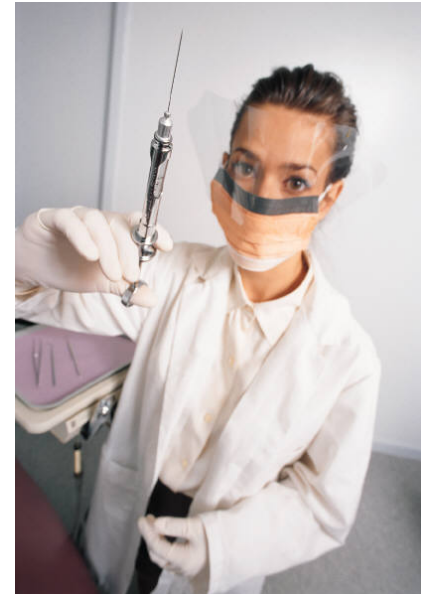
Unprotected sex with infected partner



Sharing needles during injecting drug use

From infected mother to child during birth

Sharps/needle sticks



# Hepatitis B Symptoms

- Flu-like symptoms
- Fatigue
- Abdominal pain
- Loss of appetite
- Nausea, vomiting
- Joint pain
- Jaundice

[More information about Hepatitis B](#)

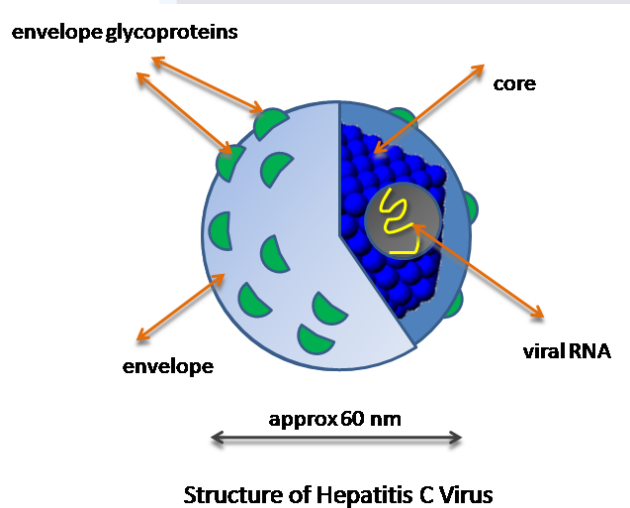


# Hepatitis C Virus (HCV)

The most common chronic bloodborne infection in the U.S.

12,000 deaths from HCV infections each year

No vaccine currently available



## Progression of Hepatitis C

For Every  
**100**  
People Infected  
with the  
Hepatitis C Virus

**75–85**  
Will Develop  
Chronic Infection

**60–70**  
Will Develop Chronic  
Liver Disease

**5–20**  
Will Develop  
Cirrhosis

**1–5**  
Will Die of Cirrhosis  
or Liver Cancer

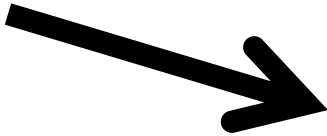
OVER TIME



# Hepatitis C Symptoms

Flu-like symptoms

Jaundice



Fatigue

Dark urine

Abdominal pain

Loss of appetite

Nausea



# Hepatitis C Transmission

Transmitted by:

Injecting drugs

Hemodialysis (long-term)

From infected mother to child during birth

Occupational exposure to blood—mostly  
needlesticks

Sexual or household exposures—rare

[More information about Hepatitis C](#)



Photo by Neil Hester in Creative Commons



# Human Immunodeficiency Virus (HIV)

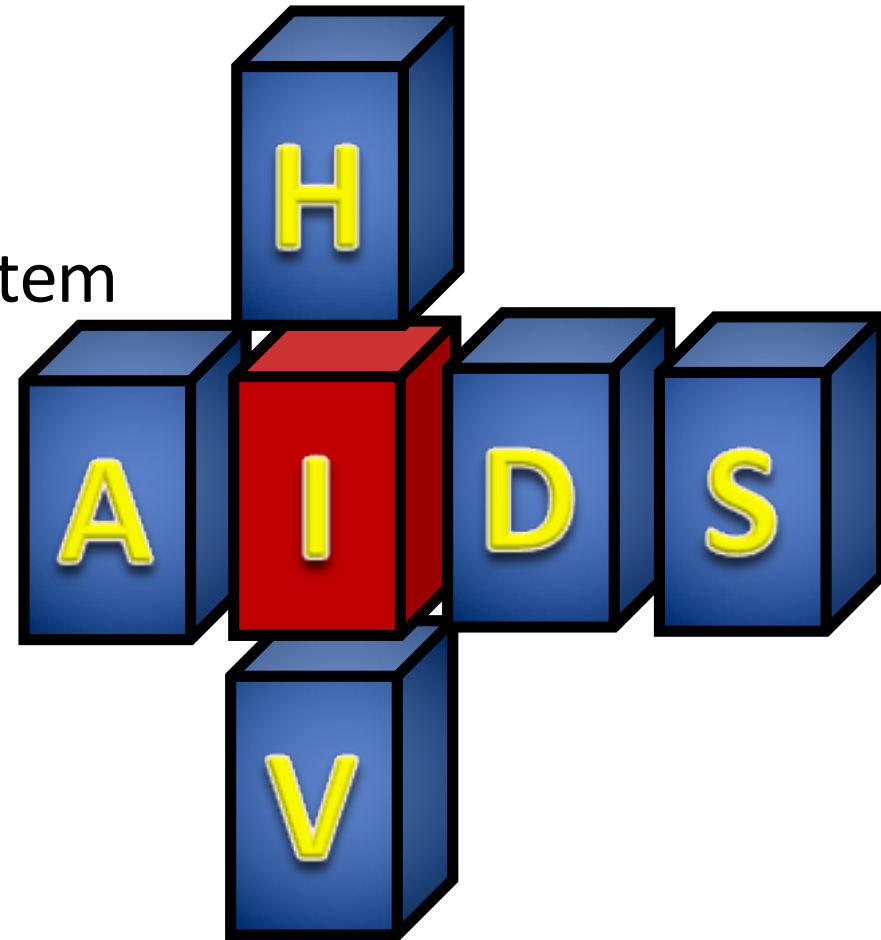
Fragile—survives only  
a few hours in dry environment

Attacks the human immune system

One million+ infected in U.S

Cause of AIDS

Vaccine not yet available



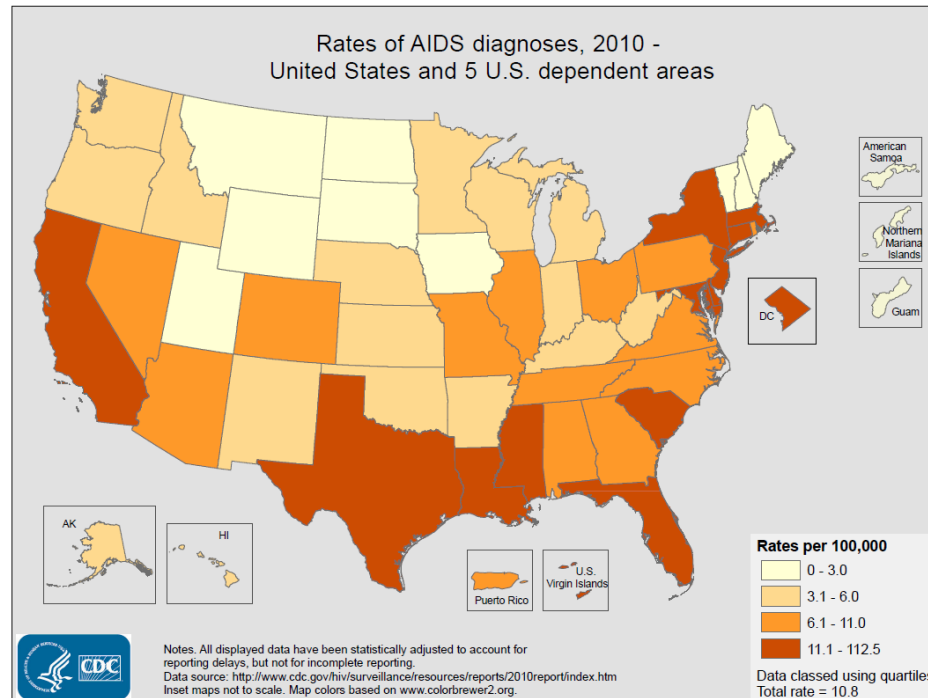
# HIV infection = AIDS

Many have no symptoms or mild flu-like symptoms

Most infected with HIV eventually develop AIDS within 10-12 years

Opportunistic infections & AIDS-related diseases—TB, toxoplasmosis, Kaposi's sarcoma, oral thrush

Available treatments do not yet cure



# How is HIV transmitted?

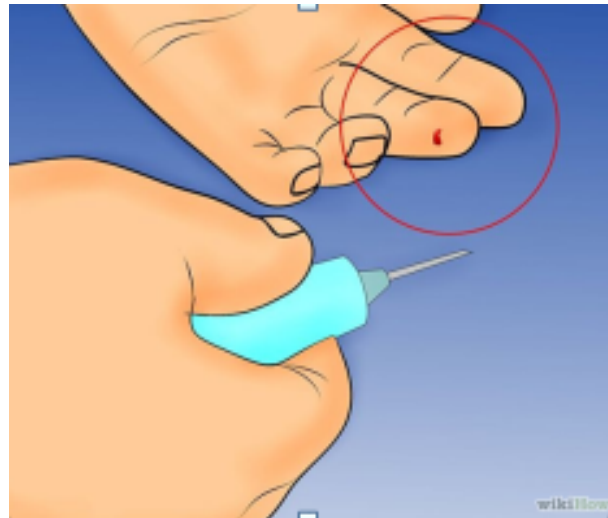
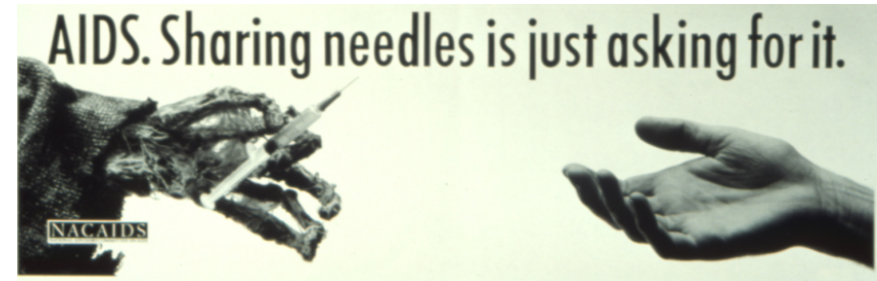
Sharing needles or syringes

Sexual contact

From HIV-infected women to their babies during pregnancy or delivery

Breast-feeding

Needlesticks (rare)

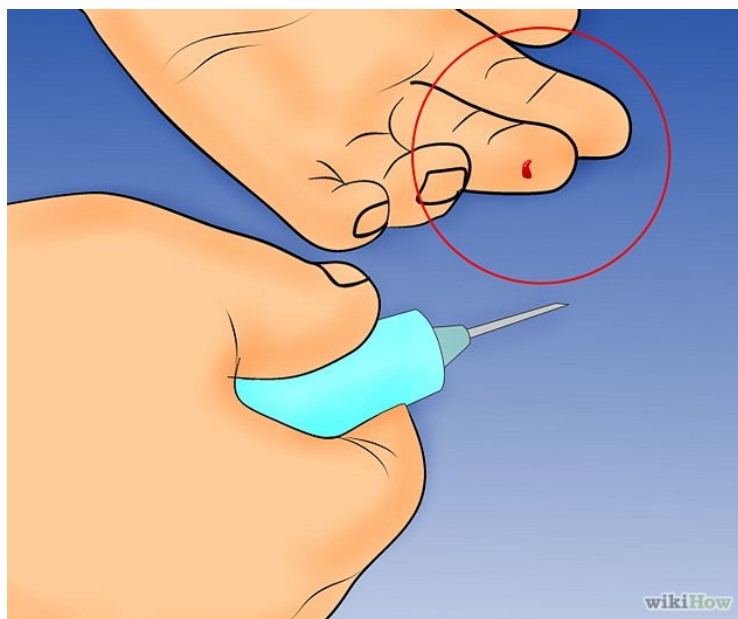


# Exposure to BBPs at Work

## Some Definitions

“Occupational Exposure” means *reasonably anticipated* skin, eye, mucous membrane, or piercing of the skin, contact with blood or OPIM that may result from the performance of an employee's duties.

“Exposure Incident” means an *actual* eye, mouth, other mucous membrane, non-intact skin or skin piercing contact with blood or OPIM while performing your work duties.



# How people can be exposed to BBPs at work

- Handling syringes or other sharps
- Cleaning up broken containers containing blood or OPIM
- Transferring a body fluid from a container
- Dental work involving blood exposure
- Surgery or any other healthcare work involving exposure to body fluids
- Restraining an infected combative patient, suspect, or inmate
- Handling laundry contaminated with blood or OPIM
- Cleaning surfaces contaminated with blood or OPIM
- Disposing of bloodborne pathogen hazardous waste
- Picking up discarded syringes in public places
- Providing emergency first-aid treatment



# What are “Sharps”?

Needles

Syringes

Lancets

Auto Injectors

Infusion Sets

Connection needles/sets

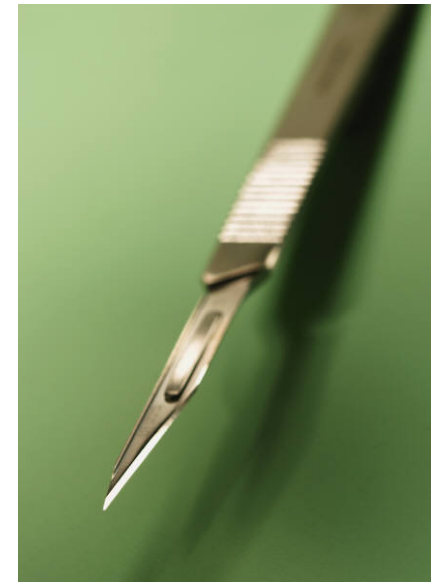
Scalpels

Razors or other blades

Broken glass or plastic containers



Photo from FDA





# Risk of Infection

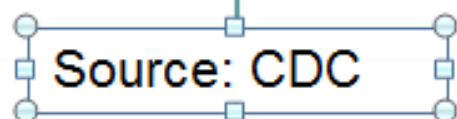
(from a contaminated sharps injury)

HIV  $\longrightarrow$  0.3 % (1 in 300)

Hepatitis C  $\longrightarrow$  1.8 % (5.4 in 300)

Hepatitis B  $\longrightarrow$  23-62% (69-186 in 300)

(HBV vaccine is 90% effective)



*Preventing sharps injuries is the best way  
to protect yourself from infection*

# Our BBP Exposure Control Plan

The purpose is to eliminate or minimize your risk of exposure

The Control Plan includes:

Exposure determination

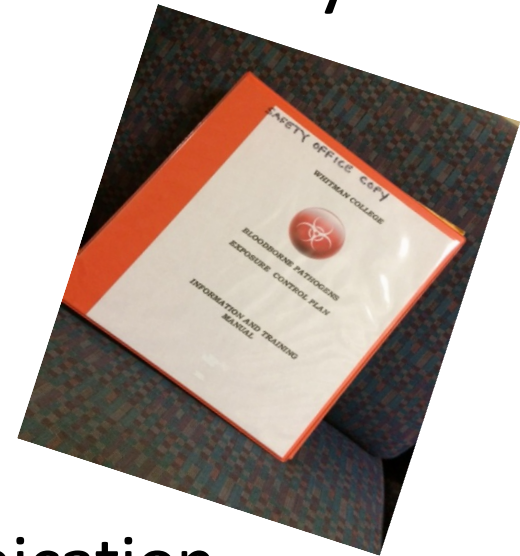
Exposure controls

Training and hazard communication

Hepatitis B vaccine

Post exposure evaluation & follow-up

Recordkeeping



Copies of our plan are located in: Departments with “at risk” employees and in the Environmental Health and Safety Office

# Exposure Determination

At our site ALL employees have occupational exposure to bloodborne pathogens in the following job classifications:

| <b>Job Title</b>      | <b>Department/Location</b> |
|-----------------------|----------------------------|
| Nurse/health care aid | Welty Health Center        |
| Security Officers     | Security                   |

The following are job classifications in our establishment in which SOME employees have occupational exposure to bloodborne pathogens:

| <b>Job Title</b>             | <b>Department/Location</b> | <b>Task/Procedure</b> |
|------------------------------|----------------------------|-----------------------|
| Athletic Fields<br>Caretaker | Grounds Department         |                       |
|                              |                            |                       |

# BBP Exposure Controls

- Universal precautions (or an equivalent system)
- Equipment and safer medical devices
- Safe work practices
- Personal protective equipment
- Housekeeping
- Laundry handling
- Handling BBP waste materials



# Exposure Controls

## **Universal precautions**

A system of infection control that treats all human blood and OPIM as if it is infected with a bloodborne disease.



# Exposure Controls

## Equipment and safer medical devices

Sharps with engineered sharps injury protections (SESIP)

Needleless systems

Self-blunting needles

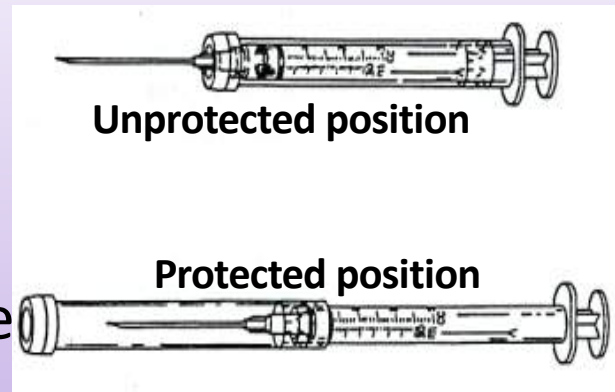
Plastic capillary tubes



Photo by Richardelainecharber in Wikipedia  
Commons for public domain

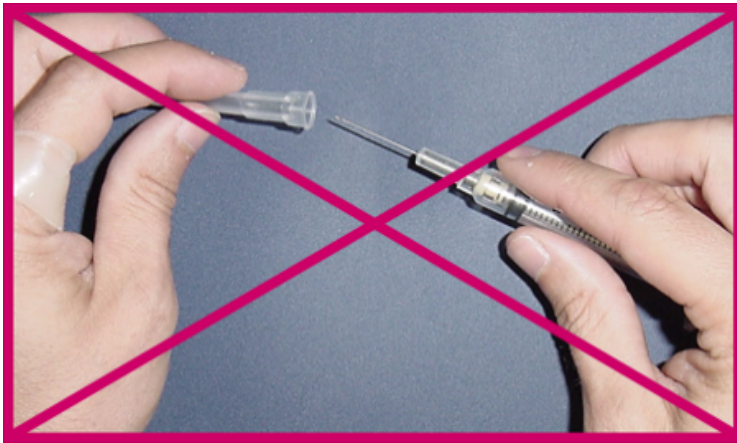
Vacutainer kit

Example of  
needle guard  
with protected  
sliding sheath  
that is pushed  
forward after use  
and locks



# Safe needle handling practices

Do the job/task in safer ways to minimize any exposure to blood or OPIM.



No recapping!

- Don't bend, recap, or remove needles or other sharps.
- Don't shear or break needles.
- Place contaminated reusable sharps immediately in appropriate containers until properly decontaminated.



Don't let this happen to you!



Video Clip



# Handling Discarded Syringes



Photo by Val Savarese in Creative Commons

[Picking up discarded syringes](#)



Image by Massachusetts Dept. of Labor Standards

# Needle/Sharps Disposal

Sharps disposal containers must be:

Closable

Puncture-resistant

Leak-proof

Labeled or color-coded

Upright, conveniently placed in area where sharps used



# Barriers and shields for laboratory workers

## Hood Barrier



## Centrifuge Shield



Photos courtesy of WA State Department of Labor & Industries, DOSH Lab, Photographer Victoria Jenichen

# Hoods and Biological Safety Cabinets

A barrier plus ventilation control provides added protection.





# Other Safe work practices

Don't ever pipette or suction blood or OPIM by mouth.



Remove gloves or other protective clothing before leaving work area.



Wash hands after each glove use immediately after an exposure.



# More Safe work practices

Don't eat, drink, smoke, apply cosmetics or lip balm, or handle contact lenses in any work areas where there is the possibility of exposure to blood or OPIM.



Don't place food or drink in refrigerators, freezers, shelves, cabinets, countertops or bench tops in any other work areas where blood or OPIM is located.



# Cleaning Contaminated Surfaces

All work surfaces and equipment contaminated with blood or OPIM must be cleaned up with an appropriate disinfectant as soon as possible or according to our written schedule as follows:



# Clean-up of spills and broken glassware/sharps

Use paper/absorbent towels or absorbent powders to soak up the spilled materials

Clean the area with 10% bleach or EPA-registered disinfectant.

Saturate the spill area with disinfectant. Leave for 10 minutes (or as specified by product manufacturer) or allow to air dry.

Properly dispose of paper towels and cleaning materials into proper waste containers.





# Spills and Sharps Cleanup

During clean-up of spills and broken glassware/sharps contaminated with blood or OPIM:

Wear protective eyewear and mask if splashing is anticipated.

Remove glass and other sharps materials using a brush and dust pan, forceps, hemostat, etc. Don't use your hands.

Properly discard all materials into a sharps or puncture-resistant biohazardous waste container.

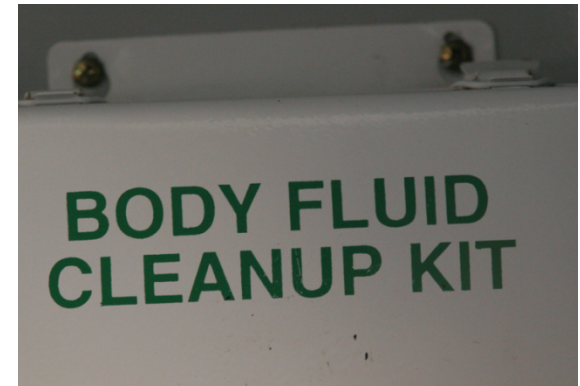


Photo by Emily Hoyer in Creative Commons



Photo courtesy Kansas City First Aid

# Personal protective equipment (PPE)

You must wear all required PPE. We provide you with all necessary PPE at no cost including one or more of the following:

Gowns

Gloves

Lab coats

Shoe covers



Face shields or masks

Eye protection

Resuscitation devices

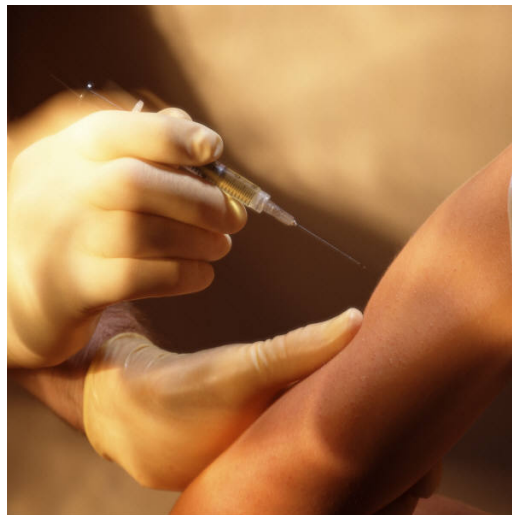


Photo by "Hospital" in Creative Commons

Our PPE contact person is: Kathy Rogers, Safety Coordinator

# Gloves must be worn whenever:

- you have hand contact with blood, OPIM, mucous membranes or non-intact skin,
- you draw blood, insert an IV or do other vascular access procedures,
- you handle or touch items or surfaces contaminated with blood or OPIM



# Removing Gloves Safely



Video clip



# PPE – Eye/Face Protection

You must wear either a full face shield or combination of eye protection and mask if splashes, sprays or spatters of blood or OPIM to the face could occur.



photo from CDC

# PPE - Protective Clothing

Appropriate protective clothing must be worn if splashes to skin or regular clothes could occur. They include one or more of the following:

- Lab coat
- Gown
- Apron
- Shoe cover
- Face mask
- Eye shield or goggles





# Workers Who Perform Resuscitation Procedures

Appropriate resuscitation equipment is provided, either:

Masks,

Mouthpieces,

Resuscitation bags, or

Shields/overlay barriers



Photo courtesy of UNFPA in Creative Commons



Photo by Rene Passat in Creative Commons

[Procedures for paramedics](#)

# Handling regulated waste containers

- Close immediately before removing or replacing.
- Place in second container if leaking possible or if outside contamination of primary container occurs.
- Do not re use any biohazard waste container.



# Hepatitis B Vaccine for exposed workers

No cost to you

3 shots: 0, 1, & 6 months

Effective for 95% of adults

Post-vaccination testing for high risk workers

If not vaccinated, post-exposure treatment with Immune globulin & vaccination shots is done

If you decline, you must sign a “Declination Form”

Vaccine available at later date if desired



If you have an exposure to blood or OPIM, immediately do the following:



Photo from Wikipedia and creative commons

Thoroughly clean the affected area.

Wash needlesticks, cuts, and skin with soap and water.

Flush splashes to the nose and mouth with water.

Irrigate eyes with clean water, saline, or a sterile irrigant.

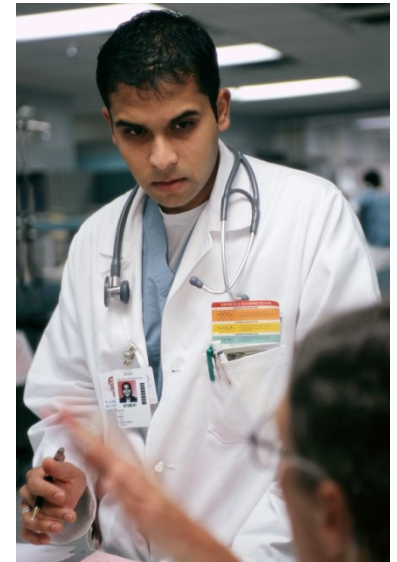
Report exposure to your supervisor, or the person responsible for managing exposures.

# Post-Exposure Evaluation

We will provide the following:

A post-exposure medical evaluation and follow-up to for you:

- at no cost
- confidential
- to include testing for HBV, HCV, HIV
- preventive treatment when indicated



With their consent, we will test blood of known source person if their HBV/HCV/HIV status is unknown, and provide the results to you.

# Biohazard labels and signs:

Containers with blood or OPIM must have the biohazard symbol

Labels attached securely to any containers or items containing blood/OPIM

Red bags/containers may substitute for labels

Signs are posted at entrance to specified work areas



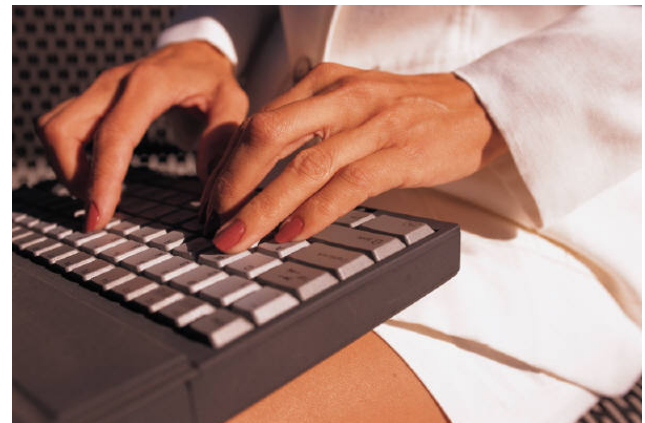


# Recordkeeping –Medical Records

These records are confidential and include:

- Hepatitis B vaccination and post-exposure evaluations
- Health care provider's written opinions
- Information provided to healthcare provider as required

Must be maintained for length of employment + 30 years



# Sharps Injury Log

We document sharps injuries in a separate sharps injury log. The injury is recorded as a confidentiality case.

The following information is recorded in the log:

Type and brand of device involved.

Work area where exposure occurred.

An explanation of how the incident occurred.



# Recordkeeping

## Training records

Dates of training

Content summary

Trainer name & qualifications

Attendee's names & job titles

Maintained for 3 years



# More information

## L & I Bloodborne Pathogen Webpage

The screenshot shows the Washington State Department of Labor & Industries website. The header includes navigation links for Home, en Español, and Contact, along with a search bar. The main navigation menu features Safety & Health, Claims & Insurance, and Workplace Rights. The breadcrumb trail indicates the path: Home > Safety > Topic Center > A-Z Safety & Health Topics > Bloodborne Pathogens (BBP) (Needlesticks). The page title is "Bloodborne Pathogens (BBP) (Needlesticks)". The content area provides a definition of BBPs, lists examples of workers at risk, and includes a sidebar with a photo of a worker and a caption: "Nationally, industry exposure to needle sticks and sharp objects is a leading cause of occupational injury and illness." A sidebar menu on the left lists: Topic Center, A-Z Safety & Health Topics, Certification & Permits, Advisory Committees, and Safety & Health Grants.

## CDC Bloodborne Pathogen Webpage

The screenshot shows the CDC website page for Bloodborne Pathogens. The header includes CDC Home, the CDC logo, and the text "Centers for Disease Control and Prevention, CDC 24/7: Saving Lives. Protecting People.™". There is a search bar and a link to "A-Z Index for All CDC Topics". The main heading is "Workplace Safety & Health Topics". The breadcrumb trail is "NIOSH > Workplace Safety and Health Topics > Diseases & Injuries". The page title is "BLOODBORNE INFECTIOUS DISEASES: HIV/AIDS, HEPATITIS B, HEPATITIS C". A red-bordered box highlights "EMERGENCY NEEDLESTICK INFORMATION". The "Overview" section states: "Exposures to blood and other body fluids occur across a wide variety of occupations. Health care workers, emergency response and public safety personnel, and other workers can be exposed to blood through needlestick and other sharps injuries, mucous membrane, and skin exposures. The pathogens of primary concern are the human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV). Workers and employers are urged to take advantage of available engineering controls and work practices to prevent exposure to blood and other body fluids." A sidebar menu on the left lists: Workplace Safety and Health Topics, Industries & Occupations, Hazards & Exposures, Diseases & Injuries, Bloodborne Infectious Diseases (HIV/AIDS, Hepatitis B & C), Emergency Needlestick Information, Universal Precautions for Preventing Transmission of Bloodborne Infections, General Resources on Bloodborne Pathogens, Preventing Needlesticks and Sharps Injuries, and Engineering Controls and Personal Protective Equipment (PPE). A photo of a hand disposing of a needle into a red sharps container is visible on the right.

# Quiz Question 1

Which of the following is not considered OPIM?

- a) Blood
- b) Tears
- c) Body fluids containing blood
- d) Semen

# Quiz Question 2

Which of the following infections can be prevented with a vaccine?

- a) HIV
- b) Hepatitis A
- c) Hepatitis B
- d) Hepatitis C



# Quiz Question 3

What are Universal Precautions?

- a) What everybody does with bloodborne pathogens
- b) Protective methods used throughout the world
- c) treating all blood as if it is contaminated with BBP
- d) Methods used to treat someone with Hepatitis C

# Quiz Question 4

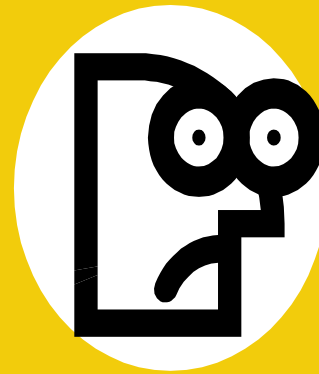
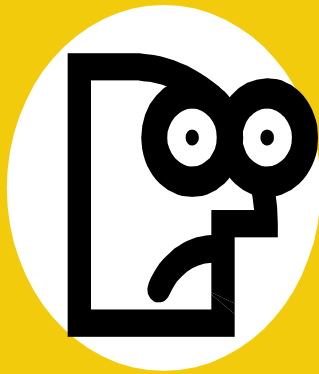
When does a face shield have to be worn?

- a) when handling blood sample vials
- b) When there is a risk of splash to the eyes
- c) In a medical laboratory setting
- d) Around patients known to be HIV positive

# Quiz Question 5

When is a post-exposure medical evaluation required?

- a) Whenever you have a needlestick
- b) After having the hepatitis B vaccination
- c) Whenever you have to pick up contaminated syringes
- d) After you handle blood-contaminated laundry



**It's QUESTION TIME !!**