Preventing Exposure to Bloodborne Pathogens

Refresher Training
Workplaces with occupational exposure to blood and OPIM

Reasonably anticipated skin, eye, mucous membrane, or parenteral contact

Universal Precautions-treat blood and body fluids as infectious

Hazard communication- training, labeling, exposure control plan
Accidents as well as routine activities - potential for occupationally acquired infection

Infectious agents
- HIV, Hep B & C
- GI pathogens, rabies, influenza

Live and work with some degree of risk
Plan using principles of biosafety

Risk assessment
- What are the hazards?
- How can I get hurt?
- What can I do to protect myself?

Minimize risks
- Infectious disease process
- Exposure risks
- Control measures
Infectious Disease Process

- Reservoir
- Means of escape
- Mode of Transmission
- Means of entry
- Susceptible host
- Infectious agent
- Work Practices/Equipment
  - PPE
  - Immunization/Preventive Therapy
  - Surveillance
  - Sanitation/Disinfection
Exposure Risks

- Transmission of BBP can occur via:
  - Contact with blood, bodily fluids
    - Needlestick
    - A break in the skin (cut, burn, lesion, etc.)
    - Mucous membranes (eyes, nose, mouth)
    - Indirect contact
Transmission of other pathogens can occur via:

- **Inhalation**
  - TB, influenza
  - Aerosol generating procedures

- **Ingestion**
  - Salmonella, Cryptosporidium
  - Poor hygiene
HIV

- May carry virus without developing symptoms
- Very fragile virus
- Fever, swollen neck glands, sweats, rash, malaise, sore throat, headache
- Risk for disease progression (HIV → AIDS) increases with duration of infection
- No vaccine!
Hepatitis B

- Long incubation period
- Clinical presentation from asymptomatic to liver failure
- Malaise, anorexia, vomiting, fever, rash, joint pain, jaundice
- Survive in dried blood for one to two weeks
- Acute to chronic infection
- Vaccine available
Hepatitis C

- Similar to Hepatitis B - associated with chronic hepatitis, cirrhosis, and liver cancer
- Most acute presentations lead to chronic infection
- Chronic Hepatitis C major cause of cirrhosis
- Common indication for liver transplantation in adults
- No vaccine
Universal/Standard precautions
- Exposure control plan
- Immunization
- Engineering controls
- Work practices and containment
- Personal protective equipment
- Waste disposal
- Emergency procedures
Exposure Control Plan

- Comply with OSHA 29 CFR Part 1910.1030
- Control measures
- Workplace specific
- Accessible to employees
Infectious Materials

- Treat all blood and bodily fluids as potentially infectious
  - Semen and vaginal secretions
  - Body cavity fluids such as pleural, cerebrospinal, pericardial, peritoneal, synovial, and amniotic
  - Any body fluids visibly contaminated with blood
  - Body fluid where it is difficult to differentiate
- Any unfixed tissue or organ (other than intact skin) from a human (living or dead)
- Human and primate cell lines
- Blood, organs, & tissues from animals infected with HIV, HBV, or other BBPs
Immunization

- Blood and bodily fluids
  - Hepatitis B
- Work with animals
  - Tetanus, rabies
- Other vaccines for research
  - Varicella, influenza, hepatitis A
Biological Safety Cabinet

- Conduct procedures with potential for aerosols and splashes
- High concentrations, large volumes
- HEPA filtration
- Establish workflow
- Slow, controlled movements
- Avoid overloading interior space
- Don’t block front grilles
Hazardous Work Practices

- Routine procedures can result in potential hazards
  - Opening a tube, pipetting, centrifugation
  - Using syringes, recapping needles
Work Practices and Containment

- Alter practices to reduce likelihood of exposure
  - Use caution when handling needles and other sharps - eliminate if possible
  - **No recapping** of needles - dispose directly in sharps container
  - Transport specimens/samples in leak-proof secondary containers
- Centrifuge secondary containment
  - Sealed safety cups, sealed rotors with O rings
- Work behind a splash shield
- Safer sharps
- Wipe surfaces, equipment with disinfectant
- Use appropriate signage
- Thoroughly wash hands after removing gloves, handling infectious materials, before eating
Personal Protective Equipment

- The right form of protection depends on work tasks and situations
- Gloves prevent direct contamination
- Mask, eye protection, face shield - if splashes to the face
- Protect skin, clothing - lab coat, gown
- Remove PPE in public spaces

Remove gloves before touching common surfaces!!
Waste Disposal

- Red bag
  - Soft, non-sharps items
  - Do not overfill
  - Cover when not in use
  - Grab and lift from top
Sharps disposal

- Items capable of causing puncture wounds
- Rigid, leak proof container
- No recapping!!
Spill Cleanup

- Must wear gloves
- Face, eye protection, and protective gowns if splash hazard
- Disinfect area (e.g., 1:10 household bleach)
- Segregate waste
Emergency Procedures

- If skin cut or punctured
  - Encourage bleeding
  - Wash with soap and water
  - First aid

- If splash to face or unprotected skin
  - Flush with water

- Report incident to supervisor
- Seek medical evaluation
- Complete Injury/Illness report
Summary

- Infectious organisms present in blood
- Treat all blood and bodily fluids as potentially infectious - Universal Precautions
- Use appropriate personal protective equipment, engineering controls, and work practices when handling potentially infectious materials
- It is possible to protect yourself....
Transmission of Diseases

Organisms can enter the body via

- **Inhalation**
  Air

- **Ingestion**
  Contaminated food, water

- **Contact**
  Bloodborne
Transmission

Bloodborne Pathogens can enter your body through:

- A break in the skin (cut, burn, lesion, etc.)
- Mucous membranes (eyes, nose, mouth)
- Indirect contact
- Sexual contact
True or False

According to Universal Precautions, only blood is treated as potentially infectious

False
Bloodborne Pathogens

Disease-causing microorganisms that are present in human blood

- Hepatitis B Virus (HBV)
- Human Immunodeficiency Virus (HIV)
- Hepatitis C Virus (HCV)
- Others include: syphilis, malaria, brucellosis, West Nile virus, CJD
Along with blood, infectious materials include

A. Tears, saliva, urine
B. Unfixed human tissues and semen or spinal fluids
C. All of the above

B
True or False

I have a much greater chance of contracting hepatitis B than HIV from a contaminated needle

True
True or False

In an occupational setting, the highest potential risk of contracting HIV is from a needlestick

True
True or False

Transfusion is currently an important source of infection for hepatitis C

False
Answer

Flu-like symptoms, loss of appetite, weight loss, skin rashes, immune suppression.

What are symptoms of HIV infection?
True or False

Hepatitis C is often not recognized because of its long incubation period (10-40 years)

True
Answer

Flu-like symptoms, fatigue, jaundice, and abdominal pain possibly resulting in liver disease

What is hepatitis infection?
The ______ is an effective protective measure even when given after an exposure.

hepatitis B vaccine
Transmission of bloodborne pathogens may occur

A. If you were stuck with a contaminated needle or splashed in the face with blood
B. In any social situation such as sharing food or living space
C. When you sit on the toilet seat
Sharps disposal and red bag waste containers, biological safety cabinets, and safer needles are all examples of __________ controls

Engineering
Engineering Controls

Safer Needles

- New requirements and additional definitions
- Engineered sharps injury protections and needleless systems
- Isolate or remove BBP hazard
- Substitute whenever feasible
- Employees involved in selection
Appropriate work practice controls include

A. Eating and drinking when working with potentially infectious materials
B. Exposing mucous membranes to splashing
C. Washing hands after removing gloves or contacting potentially infectious materials
D. Recapping needles after use
Personal Protective Equipment (PPE)

Provision and Use

- PPE based on anticipated exposure and appropriate for the task
- Trained in proper use of equipment
- If damaged or contaminated, remove as soon as possible
- Remove all PPE before leaving workplace
Gloves are the minimum PPE when handling any BBP material.
Incidents where there are large volumes of fluids or where splashing may occur, additional protection such as ______, ______, and/or ______ may be necessary.

Eyewear, mask, gown
True or False

The more experienced I am at performing a task the less need there is for me to wear PPE

False
Housekeeping

- Routinely clean and decontaminate surfaces and equipment (e.g., 1:10 household bleach)
- Always use tongs, forceps or a brush and dust pan to pick up contaminated sharps
Wastes and sharps are

A. Placed in red biohazard bags or sharps containers
B. Put in the dumpster behind the building
C. Tossed along the roadway

A
Spill Cleanup

- MUST WEAR GLOVES!
- Face, eye protection, and protective gowns if splash hazard
- Disinfect area (e.g., 1:10 household bleach)
- Soiled towels and PPE in red biohazard bags
- Too much to handle? Call 911
True or False

After a possible exposure, you should immediately wash with soap and water and notify your supervisor

True