Infection Control
Bloodborne Pathogens
Bloodborne Pathogens

Bloodborne pathogens are microorganisms that are present in human blood and can cause disease in humans.
Approximately 5.6 million workers in health care and other facilities are at risk of exposure to bloodborne pathogens such as human immunodeficiency virus (HIV – the virus that causes AIDS), the hepatitis B virus (HBV), and the hepatitis C virus (HCV).

OSHA’s Bloodborne Pathogens standard prescribes safeguards to protect workers against the health hazards from exposure to blood and other potentially infectious materials, and to reduce their risk from this exposure.
Some Workers Who are at Risk

- Physicians, nurses and emergency room personnel
- Orderlies, housekeeping personnel, and laundry workers
- Dentists and other dental workers
- Laboratory and blood bank technologists and technicians
- Medical examiners
- Morticians
- Law enforcement personnel
- Firefighters
- Paramedics and emergency medical technicians
- Anyone providing first-response medical care
- Medical waste treatment employees
- Home healthcare workers
How does exposure occur?

• Most common: needle sticks
• Cuts from other contaminated sharps (scalpels, broken glass, etc.)
• Contact of mucous membranes (for example, the eye, nose, mouth) or broken (cut or abraded) skin with contaminated blood
Exposure Control Plan

- Community Services Exposure Control Plan is located on **Homeplate** in the **Safety Plan Folder**. If you have difficulty accessing this a supervisor can help you.
- The Plan includes information presented as part of this training as well as specific procedures for reducing exposure to bloodborne pathogens.
- The Plan is updated annually.
- The OSHA regulations on which the Plan is based is available on-line or by contacting the Nursing Department located at 452 Delaware Avenue.
Exposure Control Plan

• Identifies jobs and tasks where occupational exposure to blood or other potentially infectious material occurs.

• Describes how the employer will:
  • Use engineering and work practice controls
  • Ensure use of personal protective equipment
  • Provide training
  • Provide medical surveillance
  • Provide hepatitis B vaccinations
  • Use signs and labels
Preventing the spread of Bloodborne Pathogens

- Universal Precautions
- Engineering Controls
- Safer Medical Devices
- Workplace Controls
- Personal Protective Equipment (PPEs)
Universal Precautions

- Treat all human blood and certain body fluids as if they are infectious
- We observe Universal Precautions in all situations where there is a potential for contact with blood or other potentially infectious materials
Engineering Controls

These controls reduce employee exposure by either removing the hazard or isolating the worker. Examples:

- Sharps disposal containers
- Self-sheathing needles
- Safer medical devices
  - Needleless systems
  - Sharps with engineered sharps injury protections
**Sharps Disposal**

- Contaminated needles should not be bent, recapped or removed
- Sharps container should be kept as close as possible to the point of use
- Sharp containers need to be kept in an upright position
- Contact your Site RN or Nursing Supervisor when your sharps container is $\frac{3}{4}$ full.
Personal Protective Equipment

• Specialized clothing or equipment worn by an employee for protection against infectious materials
• Must be properly cleaned, laundered, repaired, and disposed of at no cost to employees
• Must be removed when leaving area or upon contamination
Examples of PPE

- Gloves
- Gowns
- Face shields
- Eye protection
- Personal clothing designated for the workplace
- Mouthpieces and resuscitation devices
Precautionary measures that reduce the likelihood of exposure to bloodborne pathogens by altering the way a task or procedure is performed.
If . . .

Employees can be removed from exposure to the potential hazard by changing the way they do their jobs,

Then . . .

The hazard can be eliminated with a work practice control.
Work Practice Controls (cont’d)

Examples in our field...

- Personal hygiene
- Housekeeping and maintenance
- Job rotation of workers
Employees required to use PPE must be trained to know at least the following:

• When PPE is necessary
• What type of PPE is necessary
• How to properly put on, take off, adjust, and wear
• Limitations of the PPE
• Proper care, maintenance, useful life and disposal
Eye Protection

What are some of the causes of eye injuries in our field?

- Acids and other caustic liquid chemicals that might splash
- Blood and other potentially infectious body fluids that might splash, spray, or splatter
Hand Protection
When do we need to wear gloves?

- When touching blood and other potentially infectious materials
- When handling items or surfaces soiled with blood or other potentially infectious materials
- When there are cuts, breaks or openings in the skin
- When touching mucous membranes and non-intact skin
When to wear gloves?

• It is not necessary to wear gloves during routine interactions with people, even if they are known to carry bloodborne pathogens.
Glove Removal and Disposal

• 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.
Glove Removal and Disposal

- 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
Medical Gloves

- **Remember:**
  - Medical gloves are not puncture resistant
  - Always change gloves between clients
  - Always change gloves whenever they become soiled or contaminated
  - Remove gloves prior to writing in logs, answering phones, opening refrigerator, etc.
  - Gloves are disposable; do not wash or reuse.
  - Gloves are not 100% protective against infectious agents.
- **Always wash hands after glove removal**
Hand Washing

Wash your hands when...

• Going on and off duty
• Preparing, serving or eating food
• Administering medications, before and after each Individual
• Before and after going to the bathroom
• After clean-up procedures
• Immediately washing will reduce the risk of infection.
Wash Your Hands Thoroughly

- Turn on warm, running water and thoroughly wet hands and wrists. Keep hands lower than elbows.
- Apply soap and work up a good lather.
- Wash hands at least 30 seconds.
- Rinse hands well, keeping your fingers downward.
Wash Your Hands Thoroughly

- Turn off faucet using a clean paper towel
- Apply lotion because soap tends to be very drying to the skin
Body Fluid Cleanup Procedures

- Put on gloves
- Get Spill Kit

First Aid and Spill Kit Locations

- **IRA** – First Aid Kit and Spill Kit in Medication Room
- **Office Buildings** – First Aid Kit and spill kit at Reception Desk
- **Transportation** – First Aid Kit on vehicle; return to the closest office or IRA for Spill Kit
The Spill Kit Contains

- Bodily fluid pick-up guide
- Absorbent packet
- Scooper/Scraper
- Shoe covers
- Gown
- Biohazard bags
- Clean bags
- Clean-up towels
- Face shield
- Exam gloves, and
- Germicidal wipes
Spill Kits

• Click the link below to view a video.

https://www.youtube.com/watch?v=vdJHJCZdvaA
Body Fluid Cleanup Procedures

- Remove visible material with absorbent towels
Body Fluid Cleanup Procedures

- Area should be decontaminated for 10 minutes using a 10% bleach solution or an EPA approved disinfectant.
- Once the area has been disinfected, dry area with absorbent towels and dispose of towels in a biohazard bag.
Regulated Waste

Must be placed in closeable, leak-proof containers built to contain all contents during handling, storing, transporting or shipping and be appropriately labeled or color-coded.
Laundry

• Handle contaminated laundry as little as possible and use PPE
• Must be bagged or containerized at location where used
• No sorting or rinsing at location where used
• Must be placed and transported in labeled or color-coded containers
What to do if an exposure occurs?

- Wash exposed area with soap and water
- Flush splashes to nose, mouth, or skin with water
- Irrigate eyes with water or saline
- Report the exposure using Agency Employee Incident/Accident Form
- Seek a healthcare professional
Biohazard Warning Labels

- Warning labels required on:
  - Containers of regulated waste
  - Refrigerators and freezers containing blood and other potentially infectious materials
  - Other containers used to store, transport, or ship blood or other potentially infectious materials

- Red bags or containers may be substituted for labels
As with any exposure, first aid should be done immediately after a needle stick or other sharps injury.

All sharps injuries need to be reported immediately.

A sharps injury log is maintained by the Human Resources Department.
What to do in the event of an exposure...

Apply First Aid or other steps necessary to individual exposed

Notify a supervisor/ utilize on-call procedure (Supervisor will report incident to 620 Mailbox)

Seek medical attention as needed as soon as supervisor has arranged for proper staffing ratios – not to exceed two hours post exposure (if applicable) – Health Works or Primary Care Provider (At no cost to employee)

Complete an employee incident report within 24 hours post exposure – forward to supervisor
**Community Services Employee/Property Incident Report**

*Must be completed within 24 hours of accident - Do not leave spaces blank*

If the question does not apply please write N/A for not applicable

<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
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<tbody>
<tr>
<td>Employee Involved</td>
<td></td>
</tr>
<tr>
<td>Location of Incident</td>
<td></td>
</tr>
<tr>
<td>List employee’s time shift started on date of incident</td>
<td></td>
</tr>
<tr>
<td>Reported to Supervisor</td>
<td>Name __________ Date __________ Time __________ am/pm</td>
</tr>
<tr>
<td>Reported to On-Call (After hours only)</td>
<td>Name __________ Date __________ Time __________ am/pm</td>
</tr>
<tr>
<td>Reported to Benefit Specialist</td>
<td>Name __________ Date __________ Time __________ am/pm</td>
</tr>
<tr>
<td>Reported to B&amp;P On-Call (Property damage/Fire only)</td>
<td>Name __________ Date __________ Time __________ am/pm</td>
</tr>
</tbody>
</table>

Check all that apply:
- Injury Type I – minor not requiring medical treatment
- Injury Type II – requiring medical treatment – supervisor calls box 620 at 180 Oak
- Exposure to Bloodborne Pathogens – ex. needle prick, bite, exposure (see section below)
- Property Damage/Fire
  - Personal
  - Agency
- Theft
  - Personal
  - Agency
- Automobile Accident – please attach ALL accident related paperwork including insurance information of other party, MV 104 and police reports- supervisor calls box 620 at 180 Oak

Describe exactly how incident/accident occurred and what (if any) body part(s) were injured, be specific:

Name of person(s) that witnessed the incident (if none, write "no one")

Could this incident/accident been prevented?  □ No  □ Yes
If yes: how?

Medical follow up required  □ No  □ Yes  Physician’s Name __________
Lost time from work  □ No  □ Yes  Dates __________
Return to Work  □ No  □ Yes  Date __________

**Exposure to Bloodborne Pathogens:** Please be advised we encourage all staff that have been exposed to a Bloodborne pathogen to seek medical attention.

Were you wearing Personal Protective Equipment (PPE)?  □ No  □ Yes  If yes, list: __________

Did the PPE fail?  □ No  □ Yes  If yes, explain how:

What bodily fluid(s) were you exposed to? Please be specific:

Did a foreign body (needle, nail, etc) penetrate your skin?  □ No  □ Yes  If yes, what object? __________

Was any fluid injected into your body?  □ No  □ Yes  If yes, what fluid? __________ How much? __________

By signing this document, I understand that, due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring an infectious disease. I have been given the opportunity to seek medical attention, at no charge to me.

To the Best of my knowledge the statements provided on this form are true I understand that any falsification of information on this form will make me liable for fraud prosecution to the full extent of the law.

Employee Signature __________ Date __________

**Over for Supervisor Investigation Report- COMPLETION REQUIRED**
Summary

- OSHA’s Bloodborne Pathogens standard prescribes safeguards to protect workers against the health hazards from exposure to blood and other potentially infectious materials, and to reduce their risk from this exposure.

- Implementation of this standard not only will prevent hepatitis B cases, but also will significantly reduce the risk of workers contracting AIDS, Hepatitis C, or other bloodborne diseases.
Types of Bloodborne Pathogens

HIV/AIDS
Hepatitis A
Hepatitis B
Hepatitis C
Bloodborne Pathogen Transmission

Person-to-Person contact with infected person’s blood and/or bodily fluids in situations when open skin or mucous membranes create entrance point for contaminated blood or other infectious body fluids.

- Sexual - Anal, Vaginal, Oral
- Needle Sticks
- Infected fluid to broken skin
- Infected fluid to eyes, nose, mouth
- In-utero
- During Birth
- Breastfeeding
Bloodborne Pathogens:

HIV and AIDS
What Is HIV?

HIV is the infectious agent that causes AIDS
Acquired Immunodeficiency Syndrome

HIV infection + immune system damage

AIDS
Epidemiology: USA

- Numbers of AIDS deaths are falling
- Number of AIDS diagnosis are falling
- Rates of HIV infection have **NOT** changed
- Trends
  - **Gay, bisexual, and other men who have sex with men (MSM) of all races and ethnicities** remain the population most profoundly affected by HIV. (MSM accounted for 52% of all people living with HIV infection in 2009)
  - **Heterosexuals and Injection Drug Users** also continue to be affected by HIV. (25% of estimated new HIV infections in 2010 and 27% of people living with HIV infection in 2009)
  - **Blacks/African Americans** continue to experience the most severe burden of HIV, compared with other races and ethnicities. (approximately 12% of the U.S. population, but accounted for an estimated 44% of new HIV infections in 2010)
  - **Hispanics/Latinos** are also disproportionately affected by HIV. (16% of the population but accounted for 21% of new HIV infections in 2010)
HIV Transmission

• Requires
  • Infected body fluid
  • Entry of infected fluid into the body
• Can survive less than an hour in the environment.
Post Exposure

• Treatment with antiretroviral drugs after an exposure to HIV.

• Must be started within 72 hours (sooner the better) and continued for a month.

• 80% reduction in HIV infections for occupational exposures.

• Preventing exposures is key
How is HIV diagnosed?
The Antibody Test

• Highly reliable
  • Negative predictive value
    • 85% at 3-6 weeks
    • 99% at 3 months

• May be negative during the “window period”
Stages of Infection

- Exposure
- Primary Infection/Antibody Development
- Asymptomatic Period
  - 7-12 yrs average
- AIDS
Acute HIV Infection

- Symptoms occur 2-6 wks after exposure
- 75% - 90% have symptoms
  - Fever
  - Rash
  - Sore throat
  - Enlarged lymph nodes
Other Common HIV-related Problems

- Fatigue
- Weight loss
- Depression
- Neuropathy
- Nausea
- Diarrhea
HIV Treatments

- Antiretrovirals
- Immune-based therapies
- Vaccines
- Complementary therapies
Bloodborne Pathogens:

HEPATITIS A and Vaccine
Hepatitis A

• Entry into mouth, Viral replication in the liver
• Incubation period 28 days (range 15-50 days)
• Symptoms (Illness not specific for Hep A)
  • Flu-like Symptoms
  • Jaundice
• Vaccine – 1 Dose with booster six-months later
Bloodborne Pathogens:

HEPATITIS B and Vaccine
Hepatitis B

- May retain infectivity for more than 7 days at room temperature
- Incubation period 60-150 days (average 90 days)
- Symptoms (At least 50% of infections asymptomatic)
  - Fatigue
  - Nausea
  - Poor Appetite
  - Fever
  - Vomiting
  - Joint Pain
  - Jaundice
  - Illness not specific for hepatitis B
- Cirrhosis – Liver Cancer
• The risk of infection after exposure to infected blood varies by bloodborne pathogen. The risk of transmission after exposure to HIV-infected blood is about 0.3%, whereas it is estimated to be up to 100 times greater for hepatitis B virus (30%) and could be as high as 10% for hepatitis C virus.
Hepatitis B Vaccination

• Is available, free of charge, to all employees at risk of exposure and may be obtained on company time at appropriate providers:
  • ECMC
  • Healthworks
• Employees who decline must sign a declination form
• Requires three doses
Adults at Risk for Infection

- People engaging in unsafe sexual activity.
- Intravenous Drug Users
- Residents and staff of facilities for developmentally disabled persons
- Healthcare and public safety workers with risk for exposure to blood or blood-contaminated body fluids
- Persons with end-stage renal disease

*Persons with more than one sex partner during the previous 6 months*
Bloodborne Pathogens:

HEPATITIS C
What is Hepatitis C?

• More contagious than HIV, but less deadly
• Affects the Liver
• Can live for weeks outside the human body
• In many cases, may develop into a chronic condition:
  • Cirrhosis
  • Liver cancer
  • Liver Failure
Hepatitis C Transmission

- Sexual Contact
- Needle Sticks
- Human Bites (from saliva)
- Tattoos/ear piercing with infected needle
- Intravenous Drug Users
- Personal Items that may contain body fluid such as shaver, razor, toothbrush.
Symptoms of Hepatitis C

• Usually no recognizable Symptoms
• Some people experience Flu-Like symptoms such as:
  • Loss of appetite
  • Nausea
  • Vomiting
  • Fever
  • Weakness
  • Tiredness
  • Mild abdominal pain
• Rare Symptoms include dark urine and jaundice
CDC Vaccines and Immunization Contact Information

• Telephone  800.CDC.INFO

• Email  nipinfo@cdc.gov

• Website  www.cdc.gov/vaccines
Airborne Pathogens:

TUBERCULOSIS
Transmission of Tuberculosis

- Spread by droplet nuclei
- Expelled when person with infectious TB coughs, sneezes, speaks, or sings
- Close contacts at highest risk of becoming infected
- Transmission occurs from person with infectious TB disease (not latent TB infection)
Transmission and Pathogenesis
Why Is TB Increasing?

Multiple contributing factors:

• Homelessness
• Intravenous drug use
• Overcrowding in institutional settings
• HIV infection
• Drug-resistant strains of TB
• Reduced TB control and treatment resources
• Immigration from high TB prevalence areas
Where Is TB Found in the Workplace?

- Healthcare Facilities
- Correctional Institutions
- Homeless Shelters
- Long-term Care Facilities for the Elderly
- Drug Treatment Centers
Persons at Higher Risk for Exposure to or Infection with TB

- Medically underserved, low-income populations
- High-Risk Racial or Ethnic Minority Populations
- Close contacts of person known or suspected to have TB
- Intravenous Drug Users
- Foreign-born persons from areas where TB is common
- Residents and employees of high-risk congregate settings
- Health care workers who serve high-risk clients
Conditions That Increase the Risk of Progression to TB Disease

• HIV infection
• Substance abuse
• Recent infection
• Immunosuppressive therapy
Drug-Resistant TB

- Drug-resistant TB transmitted same way as drug-susceptible TB
- Drug Resistance occurs when a person does not complete the prescribed round of antibiotics and become sick again
- Non-adherence to treatment is a major problem in cases of TB
## Classification System for TB

<table>
<thead>
<tr>
<th>Class</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No TB Exposure/Not Infected</td>
<td>No History of Exposure/Negative Reaction to PPD</td>
</tr>
<tr>
<td>1</td>
<td>TB Exposure/No Evidence of Infection</td>
<td>History of Exposure Negative Reaction to PPD</td>
</tr>
<tr>
<td>2</td>
<td>TB Infection/No Disease</td>
<td>Positive Reaction to PPD Negative Bacteriologic studies No Clinical, Bacteriological, or Radiographic evidence of Active TB</td>
</tr>
<tr>
<td>3</td>
<td>TB, Clinically Active</td>
<td>Clinical, Bacteriological, or Radiographic evidence of Current Disease</td>
</tr>
<tr>
<td>4</td>
<td>TB/Not Clinically Active</td>
<td>History of Episodes of TB, or Abnormal but Stable radiographic findings Positive Reaction to PPD Negative Bacteriologic studies And No Clinical, Bacteriological, or Radiographic evidence of Active TB</td>
</tr>
<tr>
<td>5</td>
<td>TB suspected</td>
<td>Diagnosis pending</td>
</tr>
</tbody>
</table>
Administering the Tuberculin Skin Test

- Inject under the skin
- Produce small “bump”

Reading the Tuberculin Skin Test

- Read reaction 48-72 hours after injection
Symptoms of Pulmonary TB

Productive, prolonged cough, duration of 3-weeks

• Chest Pain
• Fever
• Chills
• Night Sweats
• Appetite Loss
• Weight Loss
• Easy Fatigability
Preventing and Controlling TB

Three priority strategies:

• Identify and treat all persons with TB disease

• Identify contacts to persons with infectious TB; evaluate and offer therapy

• Test high-risk groups for Latent TB Infection; offer therapy as appropriate
The Facts About MRSA
What is MRSA?

- *Staphylococcus aureus* or “staph” bacteria commonly live on the skin and in noses of healthy people
  - Usually staph bacteria are harmless
  - Staph bacteria may cause an infection if they enter the body through a break in the skin
  - These infections can usually be treated with antibiotics
MRSA is a type of staph bacteria that has become resistant to methicillin and other antibiotics commonly used to treat staph infections

- MRSA stands for: Methicillin Resistant Staphylococcus aureus
- MRSA infections can range from very minor to life-threatening
- MRSA bacteria can live on surfaces for several days
MRSA occurs most frequently among persons in hospitals and other healthcare facilities.

MRSA is becoming more common in the community -- especially in contact sports, schools and dormitories.

The good news about MRSA is that it is usually treatable and is highly preventable.
Most commonly, MRSA causes skin infections that may look like:

- Spider bites
- Large, red, painful lumps under the skin
- A cut that is swollen, hot and filled with pus

In rare cases, MRSA can cause pneumonia and infections in the blood, bones and urine.
How is MRSA Spread?

- MRSA spreads through direct contact with:
  - The skin of someone who has MRSA
  - Personal items of someone who has MRSA such as towels, clothing and razors
  - Objects that have MRSA bacteria on them such as desks, door knobs or phones
Who is at risk for MRSA?

- ANYONE can get MRSA – those most at risk:
  - Spend a lot of time in crowded places such as hospitals, schools or dorms
  - Share sports equipment
  - Share personal hygiene items
  - Play contact sports
  - Overuse or misuse antibiotics
If MRSA is Suspected...

- Seek medical attention before the condition gets worse
  - Call your primary care physician
  - If you don’t have a physician, call 234-LIFE to get a referral
  - Visit an urgent care or ER

- Cover wounds and change dressing daily

- Avoid spreading the infection by:
  - Washing hands frequently
  - Not sharing personal items
  - Cleaning with disinfectant
How is MRSA Treated?

- MRSA should **always** be treated by a health care professional.
- Treatment **may** include one or more of the following:
  - Draining, cleaning and covering wounds until healed
  - Antibiotics
  - Reducing bacteria on the skin
People With MRSA Should...

- Keep wounds covered with a dry bandage until healed
- Wash clothing and uniforms after each use
- Disinfect athletic equipment after using
- Shower immediately after physical activity which generates a sweat
- Not share personal hygiene items such as bar soap, towels or razors
People With MRSA Should...

- Wash their hands frequently
- Regularly clean and disinfect surfaces that are frequently touched using either:
  - Anti-bacterial cleaners such as Lysol Kitchen Spray or Clorox Wipes
  - A solution of 1 part bleach to 10 parts water
- Notify coaches and trainers
- Follow school policy for reporting skin infections
Laundry Precautions for MRSA

- Use the following precautions when doing laundry of someone with MRSA:
  - Hold dirty items away from your body to prevent getting bacteria on your clothes
  - Wear disposable gloves if laundry is soiled by body fluids or drainage from a sore
  - Use warm or hot water
  - Use bleach if possible
  - Dry clothes in a hot dryer rather than hanging on a clothesline
  - Wash hands after handling dirty laundry and before handling clean laundry
Return to Work

- People with MRSA should follow their healthcare provider’s recommendations about return to work or school

- In general, people with MRSA can attend work or school if:
  - Lesions can be covered with a dry bandage
  - Good hygiene can be practiced
The most effective way to prevent the spread of MRSA is frequent hand washing:

- Use warm soapy water or a hand sanitizer with 60% alcohol
- Scrub for 20 seconds
- Dry hands thoroughly with paper towel
- Use paper towel to turn off faucet
INFECTION CONTROL TEST
Congratulations!!

Please click the link below and fill out the form to receive credit for this course.

https://docs.google.com/forms/d/1bVibSP0zkPbchossc67LO3345HPk4a8D0tb_AA6L_Ng/viewform