Employee Health
Infection Control

Topics

- Tuberculosis
- Bloodborne Pathogens-Hep B & C/HIV
- Occupational Exposures
- Exposure Control Plan
- Hand Hygiene
- When to Stay at Home
Tuberculosis Overview

Lewis and Thurston County are considered low risk communities, therefore we do not do annual skin tests.

We do skin test upon exposure.

At Providence St. Peter and Centralia Hospital we the PAPR system instead of the N95 Respirator mask.
Bloodborne Pathogens Training
Types of Bloodborne Pathogens we will focus on:

- Hepatitis B Virus (HBV) ➢ Hepatitis B
- Hepatitis C Virus (HCV) ➢ Hepatitis C
- Human Immunodeficiency Virus (HIV) ➢ AIDS

Note: A person can have co-infections - two or more infections in the body at the same time. For example: a person having HIV/HCV co-infection has both HIV and HCV.)
“Bloodborne Pathogens are microorganisms that are present in blood or other potentially infectious materials (OPIM) and can cause disease.

“’Blood’ includes human blood, human blood components, products made from human blood, and also medications derived from blood (e.g., immune globulins, albumin, etc.).”
Bloodborne Pathogens (BBPs) Can be found in the following OPIMS

- Semen
- Vaginal secretions
- Body fluids (such as cerebrospinal, synovial, and amniotic fluid)
- Any body substances visibly contaminated with blood
- Tissues such as biopsy samples and organs
- Saliva in dental procedures
Transmission of BBPs

Bloodborne Pathogens can enter your body through:

- a needle stick or sharps injury
- a break in the skin (cuts, rash, dermatitis)
- contact with mucus membranes
- sexual contact
- other modes depending on the organism
Transmission of BBPs

Risk of infection depends on several factors at the time of exposure:

- which pathogen
- route of exposure: splash vs. needle stick
- the amount of infected blood / OPIM in the exposure
- the amount of virus in the blood / OPIM
- whether or not there was post-exposure treatment

Courtesy of Owen Mumford, Inc.
Viral Hepatitis - General Overview

The liver:

- Largest gland in the body
- Weighs about 3 lbs
- Removal of waste products
- Vitamin & Mineral storage
- Drug breakdown & removal
- Synthesis of plasma proteins & clotting factors
Viral Hepatitis –
“Viral hepatitis infections can be acute (short-term) or some can become chronic (long-term) and last the rest of one’s lifetime.

- The word *hepatitis* means inflammation of the liver
- Hepatitis is also the name of a family of viral infections that affect the liver in the following ways
  - inflammation, enlargement, and tenderness
  - acute and chronic infections
  - possible liver damage ranging from mild to fatal

Courtesy of Schering Corporation
Viral Hepatitis

Symptoms

- Flu-like symptoms
- Fatigue
- Abdominal pain
- Loss of appetite
- Nausea / Vomiting
- Joint pain
- Jaundice
- Dark urine

Normal eyes

Jaundiced eyes
**HBV-Hepatitis B**

**Clinical Features**

- *Incubation period from time of exposure to onset of symptoms = 6 weeks – 6 months*
  - *average is around 90 days*

- **Acute Illness (jaundice) = ~90%**

- **Chronic Infection (carrier) = ~10%**

- *Immunity possible after acute infection*
HBV - Hepatitis B

HBV Transmission

- Unprotected sex with multiple partners
- Sharing needles during injecting drug use
- From infected mother to child during birth
- Sharps/needle sticks
HCV - Hepatitis C

General Facts

- The most common chronic bloodborne infection in the U.S.
- 3.2 million Americans infected
- ~17,000 new infections per year
- Leading cause of liver transplantation
- 40-49 year olds have highest prevalence of chronic Hep C
- 12,000 deaths from chronic disease/year
- No broadly effective treatment
- No vaccine available
HCV-Hepatitis C
Clinical Features

• Incubation period = 2 weeks – 7 months; if symptoms do occur, they do so an average of 6-7 weeks after exposure
• Acute Illness (jaundice) = ~ 20%
• No signs or symptoms = ~75%
• Chronic Infection (carrier) = 75-85%
• No protection from future infection
HCV-Hepatitis C in Washington State

- 66% of the people infected in our state do not know it
- 8X as many cases of HCV as cases of HIV/AIDS
- ~80% of people who have ever injected street drugs or shared drug “equipment” are infected
HCV - Hepatitis C

HCV Transmission

- Injecting drug use
- Hemodialysis (long-term)
- Blood transfusion and/or organ transplant before 1992
- From infected mother to child during birth
- Occupational exposure to blood - mostly needle sticks
- Not efficiently transmitted sexually
- Household exposures - rare

In Washington State 66% of the people infected do not know it

There are 8 times as many cases of HCV as cases of HIV/AIDS
Health Care Workers and BBPs

Occupational Transmission

Risk of infection following needle stick / cut from a positive source:

- HBV: 6%-30% 
- HCV: 1.8% (average) 
- HIV: 0.3%
HIV / AIDS

**HIV** stands for **Human Immunodeficiency Virus**

**AIDS** stands for **Acquired ImmunoDeficiency Syndrome**
AIDS is defined by a specific set of clinical conditions caused by HIV

- HIV attacks the immune system damaging the body’s ability to fight disease
- Fragile – few hours in dry environment
- Everyone who has AIDS has HIV, but not everyone who has HIV has AIDS
- Medical treatment can delay the onset of AIDS
Human Immunodeficiency Virus (HIV)

HIV Transmission

- Sexual contact
- Sharing needles and/or syringes
- From HIV-infected women to their babies during pregnancy or delivery
- Breast-feeding
- Needle sticks
CONDITIONS FOR HIV TRANSMISSION

- HIV is not spread by casual contact, it must be acquired
- Three conditions must be met in order for HIV to be transmitted
  1. HIV source
  2. Sufficient dose of the virus
  3. Access to the bloodstream of another person
HUMAN IMMUNODEFICIENCY VIRUS (HIV)

HIV Infection → AIDS

- Many have no symptoms or mild flu-like symptoms
- Most infected with HIV eventually develop AIDS
- Incubation period ≈10-12 yrs from HIV progression to AIDS without treatment
- Opportunistic infections & AIDS-related diseases - TB, Kaposi’s sarcoma, many others
- Treatments are limited / No cure
How prevalent is HIV/AIDS in the US?

- The CDC estimates that about 1 million people in the U.S. are infected with HIV
  - ~25% of these people are undiagnosed and unaware that they are infected

- In 2007 there were 42,655 new cases of HIV/AIDS infections diagnosed in the U.S.
  - 74% of those were males
How prevalent is HIV/AIDS in the US?

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How prevalent is HIV/AIDS in WA state compared to the rest of the US?

- First case of AIDS in WA state reported in 1982
- As of December 31, 2008:
  - there were a total of 10,121 persons living with HIV disease in WA state
  - 57% of these people with HIV disease have AIDS
- 85% of all HIV cases diagnosed 2003-08 were male
- There are an average of 560 new cases of HIV disease each year in WA state
- Most people with HIV disease diagnosed 2003-08 were between the ages of 30-39 (40-49 was a close second).
HIV Testing

**Anonymous Testing**
- Client doesn’t give their name

**Confidential Testing**
- Client gives their real name and information is kept in medical records
- Results are confidential

**Informed Consent**
- With rare exceptions, HIV testing can only be done with the person’s consent
REPORTING REQUIREMENTS FOR HIV/AIDS

• AIDS and HIV are reportable conditions in Washington State

• HIV+ results obtained through anonymous testing are not reported until this person seeks medical care for conditions related to HIV/AIDS.

• Federal Law requires that states take action to notify all spouses/ex-spouses of HIV-infected persons going back 10 years

  • WA state law requires public health officials to assist with notification of partners/spouse of their possible exposure to HIV.
HIV / AIDS are considered disabilities under:

- the Washington State Law Against Discrimination
- the Federal Americans with Disability Act of 1990
Difficult Realities

• In 2007, the largest number of new HIV/AIDS diagnoses was for persons aged 40-44.
  • Many have families
  • 35-40% will progress from HIV → AIDS within 12 months

• Infections & malignancies that accompany AIDS as well as certain medications can disfigure the body

• Men who have sex with men and injected drug users may already be subject to social discrimination and may encounter even more social discrimination
PERSONAL IMPACT OF HIV/AIDS

Loss of:
- income / savings
- health insurance
- emotional support
- housing

Facing:
- premature death
- infections / malignancies
- disfigurement
- social discrimination

Guilt
Grief
Helplessness
Rage
“Numb”
FAMILIES & CARE PROVIDERS

- Often feelings of family members and caregivers will mirror those of the patient
  - sadness
  - anger
  - vulnerability
  - helplessness
  - isolation
STAGES OF GRIEF & PSYCHOLOGICAL SUFFERING

- Chronic Grief:
  
  Before the grieving process for one death is complete, more people have died.

  - people who work with and care for people with AIDS
  - people living with HIV/AIDS
HIV infection affects people from all ethnic groups, genders, ages, and income levels, but some groups have been significantly affected by the AIDS epidemic.

- Men who have sex with men
- IV drug users
- People with hemophilia
- Women
- People of color
Health Care Workers and BBPs

Occupational Transmission

#1 is needle sticks
#2 is cuts from other contaminated sharps (scalpels, broken glass, etc.)
#3 is contact of mucous membranes or broken skin with contaminated blood

Source: CDC [1999]
Health Care Workers and BBPs
Occupational Transmission

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Source: CDC [1999]
Exposure Control Plan

To minimize your risk of exposure to bloodborne pathogens

• Identify employees who are most at risk
• Education
• Hepatitis B Vaccine
• Post exposure evaluation & follow-up
• Review equipment and practices
• Record keeping

Located at: Employee Health
Exposure Controls
Reducing your risk

- Standard Precautions
- Safer Medical Devices
- Personal protective equipment

- **Everything** properly labeled
- Hazardous material disposal
- Practice safe work habits
Exposure Controls

Treat all blood and OPIM as if known to be infectious with a bloodborne disease.
Exposure Controls

Equipment and Safer Medical Devices
Sharps disposal containers

- 20% of HIV infections due to needle sticks involved disposal of the needle

- PSPH has implemented new sharps containers
Exposure Controls
Safer Medical Devices and Practices

- Sharps with engineered sharps injury protections (SESIP)
- Needleless systems
- Plastic IV capillary tubes
- Don’t bend, recap, or remove needles or other sharps
- Place contaminated, reusable sharps immediately in appropriate containers
Exposure Controls
Personal Protective Equipment (PPE)

You must wear all required PPE. PSPH provides you with PPE at no cost:

- Gloves
- Lab coats
- Shoe covers
- Gowns
- Face shields or
- Masks with eye protection
- PAPR

**DO NOT wear yellow isolation gowns as warm-up jackets**
Exposure Controls

Safe Work Practices
Clean-up spills, biohazard waste, and broken glassware/sharps

✓ Clean the area with Hospital Approved disinfectant. (We use a quaternary cleaner in most areas)

✓ Saturate the spill area with disinfectant. Follow directions on bottles for contact time

✓ Know where to find plans & policies related to hazardous waste materials in Docushare.
Exposure Controls

Laundry

- Wear PPE per Standard Precautions when handling dirty laundry

- All laundry is processed as if it is highly contaminated
And Remember…

Please! Don’t overfill those laundry bags!
Exposure Controls
Communication of Hazards

- Labels attached securely to any containers or items containing blood/OPIM
- Red bags/containers may substitute for labels
- Signs posted at entrance to specified work areas
Exposure Controls

What goes into the Regulated Waste Containers

• Items contaminated with liquid/semi-liquid blood or OPIM

• Items caked with dried blood or OPIM that are capable of releasing these materials

• Pathological and microbiological wastes containing blood or OPIM
Management of Occupational Exposure

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

- Thoroughly clean the affected area with soap and water
- Flush with water splashes to the nose and mouth
- Irrigate eyes with clean water or sterile saline
- Report exposure to your supervisor and Employee Health and fill out an Incident Report Form
Management of Occupational Exposure

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Management of Occupational Exposure

- Report the exposure to Employee Health immediately and they will walk you through the protocol

  - Employee Health Services = 3-4341
    » 0730-1630 Monday - Friday

  - Injury Report Line = 3-5000
    » for after hours and weekends
Management of Occupational Exposure

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Management of Occupational Exposure

PSPH Responsibility

- Provide immediate post-exposure evaluation and follow-up to exposed employee:
  - At no cost
  - Confidential
  - Testing for HBV, HCV, HIV
  - Preventive treatment when indicated

- Test blood of source person if HBV/HCV/HIV status unknown (if possible)
Exposure Controls

Hand Hygiene and Glove Use

如果您戴手套，是否仍然需要洗手？

YES!

您是否在戴上手套之前或脱下手套之后进行手部卫生？

BOTH!
Hand Hygiene

Scenarios

The nurse uses Purell after taking Mr. Smith’s blood pressure.

As she leaves the room she answers a call from the lab on her portable phone.

Does she need to do hand hygiene again before she takes Mrs. Jones’ blood pressure?

YES!
One more slide promoting hand hygiene

The picture on the left shows the imprint of a healthcare worker’s hand after performing an abdominal exam on the patient. The red colonies are MRSA. This patient was found to be colonized (a carrier) of MRSA.
Stay home when you are sick

• Fever >100

• Diarrhea / Vomiting

• Cough (if > than 3 weeks, see Employee Health)

• Keep vaccinations current:
  – Annual influenza vaccination
  – Chickenpox
  – Hepatitis B
  – Tetanus

• Do you think you might have what many of your coworkers have?

“For cryin’ out loud! Would you just take a sick day for once in your life!”
Infection Control: *Isolation Signs*

**Stop**

*Visitors: check in at nurses’ station before entering*

- **Green**
  - Gloves
  - Goggles

Everyone must sanitize their hands with Purell or soap & water when entering this room.

*Use yellow for patients with VRE*

**Stop**

*Visitors: check in at nurses’ station before entering*

- **Green**
  - Gloves

Everyone must sanitize their hands with Purell or soap & water when exiting this room.

*Use green for patients with MRSA*

**Stop**

*Visitors: check in at nurses’ station before entering*

- **Orange**
  - Gloves

Everyone must sanitize their hands with soap & water when exiting this room.

*Use orange for patients with C. difficile*

**Stop**

*Standard precautions PLUS*

- Equipment (check all that apply): Gloves, Goggles, Gown, Mask, PAPR / HEG, Dedicated Patient Care Equipment, STOP sign on both sides of Door

Housekeeper removes sign after final cleaning and disinfection.

*Use this sign for all other patients requiring isolation (other than VRE, MRSA or C. diff)*
# Patient Management

## Isolation Precautions

<table>
<thead>
<tr>
<th></th>
<th>MRSA</th>
<th>VRE or ESBL</th>
<th>Clostridium difficile</th>
<th>MRSA</th>
<th>Listeria</th>
<th>RSV</th>
<th>Influenza</th>
<th>DROPLET PRECAUTIONS</th>
<th>AIRBORNE PRECAUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Precautions</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Contact Precautions</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Airborne Precautions (negative pressure room and PAPR or N95 masks for all individuals entering the room)</td>
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<tr>
<td>Droplet Precautions (surgical mask)</td>
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</tbody>
</table>

## Required PPE

<table>
<thead>
<tr>
<th></th>
<th>Gloves</th>
<th>Gown</th>
<th>Mask</th>
<th>Eye protection</th>
<th>N95 / PAPR</th>
<th>Immunity (had disease or vaccination)</th>
<th>Patient Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

## Hand Hygiene

<table>
<thead>
<tr>
<th></th>
<th>Alcohol based hand rub</th>
<th>Antimicrobial Soap</th>
<th>Regular soap and water</th>
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<tbody>
<tr>
<td></td>
<td>X</td>
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</tr>
</tbody>
</table>

## Patient Transport

<table>
<thead>
<tr>
<th></th>
<th>Limit movement to essential medical purposes only (supervised)</th>
<th>Place mask on patient to minimize dispersal of droplets when outside the room</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>X</td>
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</table>

## Cleaning, Disinfection of Equipment

<table>
<thead>
<tr>
<th></th>
<th>Daily disinfection of high touched surfaces with hospital approved disinfectant</th>
<th>Terminal clean with bleach/water sol. 1:9 (10% sol.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>X</td>
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</tbody>
</table>

## Visitor

<table>
<thead>
<tr>
<th></th>
<th>Instructed on Hand hygiene</th>
<th>Gloves if patient contact</th>
<th>Mask (surgical) within 3 ft of pt</th>
<th>Attak or N95 for airborne</th>
<th>Immunity (had disease or vaccination)</th>
<th>Gown for patient contact</th>
<th>Discourage children from visiting</th>
</tr>
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<tr>
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</table>

## Isolation Precautions Legend

- Yellow = VRE
- Green = MRSA
- Orange = C.diff.