BLOODBORNE PATHOGENS

Bloodborne Pathogens

Communication of Hazards to Employees

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Session Objectives

- You will be able to:
  - Identify bloodborne pathogens (BBPs)
  - Understand how diseases are transmitted
  - Determine your risk of exposure
  - Protect yourself from exposure through prevention
  - Respond appropriately if exposed
  - Understand your right to medical evaluations

Bloodborne Pathogens Law

California Code of Regulations, Title 8, Section 5193
Bloodborne Pathogens

- Requirements
  - A written Exposure Control Plan (ECP)
  - Engineering and work practice controls
  - Personal protective equipment (PPE)
  - Training

Bloodborne Pathogens Law (cont.)

- Medical surveillance
- Free hepatitis B vaccination
- Signs and labels
- Other equipment and procedures

Exposure Control Plan (ECP)

- Identifies jobs and tasks for potential exposure
- Describes engineering and safe work practices (PPE)
- Outlines training requirements
- Identifies the placement and use of signs and labels
- Explains how to decontaminate equipment and work surfaces

ECP (cont.)

- Describes how biohazard waste is handled
- Explains the recordkeeping requirements
- Employers must update the Exposure Control Plan (changes, documentation yearly)

Record Keeping

- Medical records must be kept for the duration of employment plus 30 years.
- It must be confidential and it must include name and social security number vaccination status and results.
- Training records must be maintained for three years.
- Medical records must be available to the employee.
- Exposure incident investigation reports.

What Are Bloodborne Pathogens?

- Microorganisms present in human blood that can cause disease
  - Viruses, bacteria, parasites, fungi
- Primary bloodborne pathogens
  - Human immunodeficiency virus (HIV)
  - Hepatitis B virus (HBV)
  - Hepatitis C virus (HCV)
  - These microorganisms can be transmitted through contact with contaminated blood and body fluids mixed with blood.

Who is infected?

- In Santa Clara County 3000 – 5000 people with HIV/AIDS
  - Half of infections are people under 25 years of age
- Over 100,000 people have Hepatitis B and C
  - Hepatitis B is among the top three causes of liver cancer worldwide
  - The bay area is the epicenter of liver cancer in the USA
  - About 1/200 people infected as adults with HBV will die of liver disease within a few weeks of developing symptoms
  - Less than 1/10 people infected as adults will develop chronic HBV infection
  - Many people are unaware they are infected

Are You at Risk

- Custodians
  Needles in garbage, Clean up of spills
- Groundkeeper
  Needles, Glass,Contaminated paper etc
- Housekeeper
  Needles, Feminine hygiene products, Bathroom spills, Dormitories cleanup
- Plumber
  Body fluids, Wires, Cuts, Bathroom plumbing repairs.
- People cleaning up counters in research or other laboratories involved with human or animal blood.

Routes of Exposure

- Contact with a co-worker who suffers a bleeding injury
- Contact with blood while administering first aid
- Touching a contaminated surface
- Assigned to clean up blood
- Contact with contaminated paper products or equipment in rest rooms
- Using a tool covered with dried blood
- Needle sticks or sticks with a sharp object that can penetrate the skin

How are you exposed?

- Infected blood enters body through:
  - Open cuts, abrasions, dermatitis, acne, broken skin
  - Mucous membranes of the eyes, mouth, nose and other openings
  - Needle sticks, sharp objects that can penetrate the skin

Modes of Transmission

- Bloodborne pathogens such as HBV and HIV can be transmitted through contact with infected human blood and other potentially infectious body fluids such as:
  - Semen
  - Vaginal secretions
  - Cerebrospinal fluid
  - Synovial fluid
  - Pleural fluid
  - Peritoneal fluid
  - Amniotic fluid
  - Saliva (in dental procedures), and
  - Any body fluid that is visibly contaminated with blood

Transmission of Pathogens

- Bloodborne pathogens are NOT transmitted by way of…
  - Touching an infected person,
  - Coughing or sneezing,
  - Using the same equipment, materials, toilets, water fountains

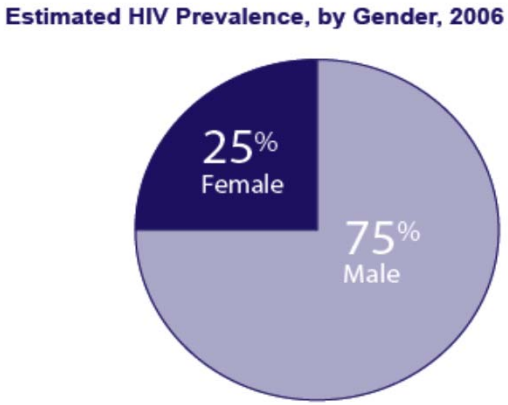
Detail the primary pathogens

- HIV
- Hepatitis B
- Hepatitis C

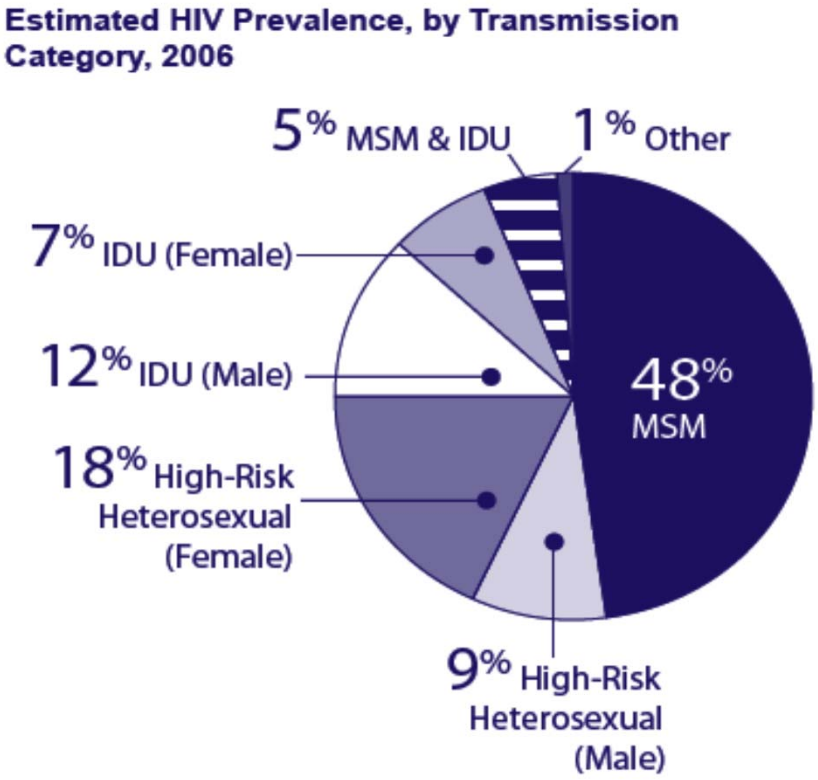
HIV/AIDS

- One million people with HIV in USA
- 40,000 new infections a year
- No vaccine
- Medication is available but very costly
- HIV attacks and depletes the human immune system
  - Early HIV symptoms resemble common cold or flu virus
  - HIV antibody test is the only way to know for sure
  - HIV does not survive outside the body
  - HIV leads to AIDS
  - No cure yet

HIV Prevalence by Transmission



- MSM – Men Sex w/Men
- IDU – Intravenous Drug Use



HIV/AIDS

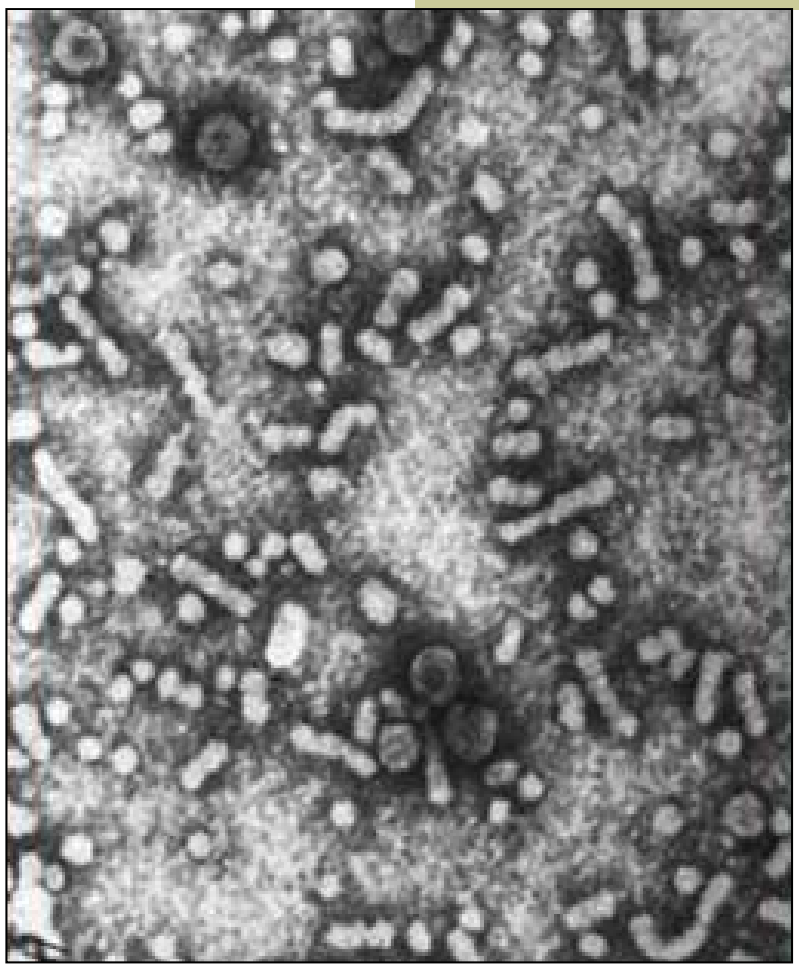
- Transmitted blood to blood, sex
- Virus attacks the immune system
- Symptoms – flu like after infection
- Needle stick probability of transmission is about 0.3%
- Can only live a few minutes outside the body
- Person can be infected with the virus for 8-10 years before getting sick.
- Usually vulnerable to infections that would not affect a healthy individual

HIV/AIDS Exposure

- If appropriate anti HIV drugs are given with a few hours of a serious exposure event, the resk of infection can be reduced by over 80%.
- If exposed report immediately to your supervisor and seek medical attention.

Hepatitis B Virus (HBV)

- 1 million people infected
  - Symptoms
    - Jaundice, fatigue, and abdominal pain
    - No appetite, nausea, and vomiting
  - Vaccine is available
  - HBV can survive outside the body over 60 days.



Significance of Hepatitis B

- One in 20 people has Hepatitis B
- There are app.. 200,000 new infections a year
- 5000 death a year
- 85% of people can control the virus
- 15% have long term illness and liver damage

Hepatitis B Vaccination

- Safe when given to infants, children, and adults and is usually given as a 3-4 shot series over a 6-month period
- The Hepatitis B Vaccine is very effective at preventing Hepatitis B virus infection and provides a lifetime immunity.
- Booster doses are recommended only for hemodialysis patients and people with weakend immune systems.
- Anyone who has been exposed to Hepatitis B should get the vaccine and/or a shot called Hepatitis B Immune Globulin (HBIG) within 24 hours to prevent infection.

Hepatitis C Virus (HCV)

- HCV is the most common chronic bloodborne infection—3.9 million infected
- Symptoms can take years to manifest and are the same as for Hepatitis B.
  - Flu-like symptoms, jaundice, dark urine, and fatigue
  - Loss of appetite, nausea and vomiting, and abdominal pain
- There are about 180 thousand new infections a year compared to about 40 thousand for Hepatitis B
- 70-80% get chronic liver infections compared to about 1% for Hepatitis B
- Treatment is marginally effective

Significance of Hepatitis C

- 180,000 of new infections a year
- 10,000 death a year
- Expected to triple in the next 10 years
- Damage to liver over many years
- 70-80% get chronic liver infection and liver failure

Symptoms for all Hepatitis

- Fatigue
- Loss of appetite
- Nausea and vomiting
- Joint pain
- Stomach pain
- Jaundice
- Dark urine

What not to worry about

- Need direct blood to blood contact for transmission
- Hep B, Hep C, HIV are not as a rule found in saliva, urine sweat, tears unless visible blood is present
- You do not contact HIV by touching, sharing food or utensils or touching a toilet seat. Hep A can be transmitted by water or food.

Bloodborne Diseases— Any Questions?

- Do you understand:
  - The definition of bloodborne pathogens?
  - Transmission of bloodborne pathogens?
  - How you could be exposed?

Protect Yourself

- Take universal precautions
- Use personal protective equipment
- Follow safe work practices
- Get the hepatitis B vaccination
- Follow decontamination and disposal procedures

Take Universal Precautions

- Treat all blood and body fluids as if infected
- Use barrier protection (gloves, masks, aprons, eyewear) to avoid contact with infected body fluids
- Immediately clean up and decontaminate surfaces and equipment

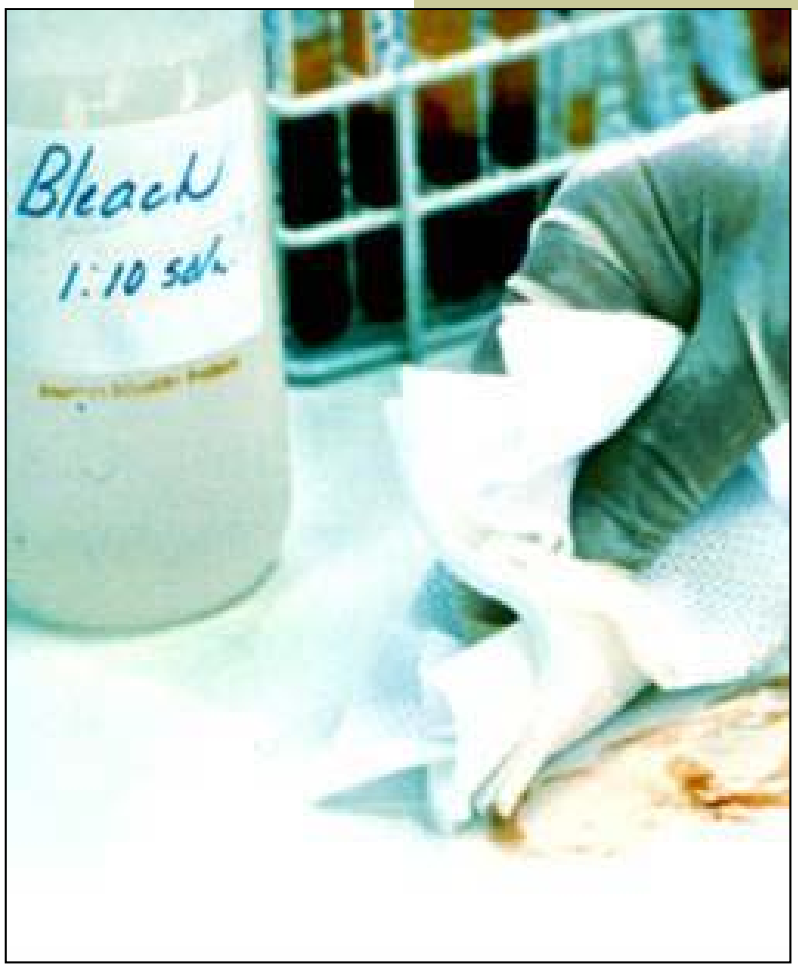


Image Credit: OSHA

Use Personal Protective Equipment

Demonstrate Glove Removal!

- Barrier protection prevents exposure
- Use gloves when cleaning up
- Eyewear or masks protect against splashes
- Protective clothing or aprons protect against spurting blood

Avoid Puncture Wounds

- Use tongs, forceps, or similar tools to pick up contaminated items, especially to protect against sharp objects

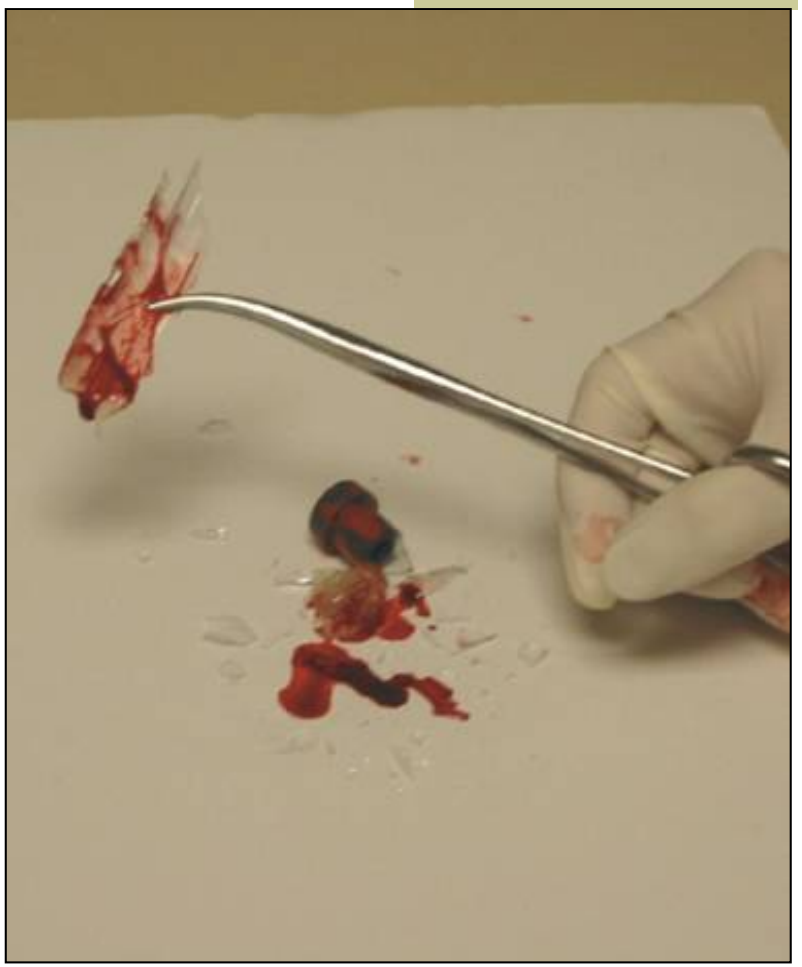


Image Credit: State of WA-WISHA Services

Safe Work Practices—Do's

- Remove contaminated PPE and clothing before leaving the work area
- Disinfect contaminated equipment
- Wash up immediately after exposure
- Seek immediate medical attention
- Double-glove to reduce contamination risk
- Dispose of contaminated items properly

Safe Work Practices— Don’ts

- No eating, drinking, cigarettes, cosmetics, or other personal items in any work areas where there is the possibility of exposure to blood
- Do not place or store food on bathroom shelves, cabinets, countertops, or work surfaces in any work areas where blood or body fluids may be present

General Decontamination

- Wear appropriate gloves and glasses to protect eyes, nose, mouth, and skin
- Use a body fluid disposal kit
- Use 10% bleach or EPA-approved, or SJSU approved disinfectant for spills
- Immediately dispose of contaminated items

- *What does SJSU use?*

Decontamination Involving Sharp Objects

- Remove glass and other sharp materials using a brush and dust pan, or tongs
- Do not use your hands
- Use paper/absorbent towels to soak up the residual liquids
- Disinfect all surfaces, and allow time to dry before using again

Biohazard Disposal— Regulated Waste

- Liquid or semi-liquid blood or “Other Potentially Infectious Materials” (OPIM)
- Contaminated sharp objects
- Items caked with dried blood or OPIM, capable of release during handling, such as a soaked rag.
- Pathological and microbiological wastes containing blood or OPIM

Label All Regulated Waste Containers

- Labels communicate a hazard
- Place regulated waste in containers that have the universal biohazard symbol
- The term “Biohazard” must be on the label
- Red bags or red containers can be substituted for labels

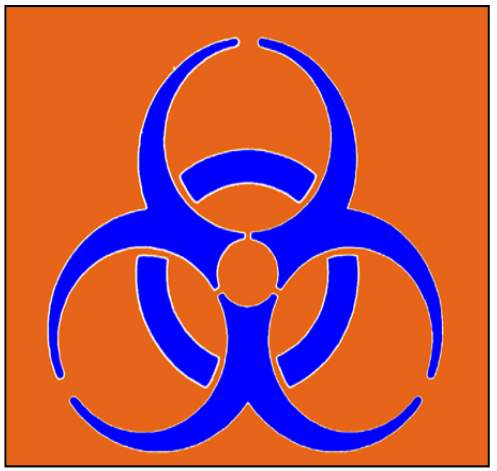


Image Credit: OSHA

Spill Kit Demonstration

- Use commercial spill kit or
- Use PPE (personal protective equipment)
- If possible place an absorbent paper or cloth gently over the spill
- Saturate the spill with disinfectant
- Wait at least five minutes before mechanically cleaning the spill
- Soak up spill with gel, powder ,cloth
- Use proper containers
- Follow disposal procedures

Exposure Incident

- Wash cuts and skin thoroughly with soap and water
- Rinse nose and mouth
- Flush eyes with clean water or sterile solution
- Clean all contaminated surfaces
- Report all incidents to immediate supervisor
- Use Student Health Center and another local medical facility for further workup

Hand Washing Technique

- Wet hands under warm running water.
- Thoroughly soap hands, rubbing all surfaces for at least 15 seconds.
- Rinse and dry hands with paper towel.
- Turn off water with the paper towel.
- Hand sanitizers are effective and contain alcohol.

Universal Precautions

- Treat all body fluids as if infected
- Take precautions with all work activities to protect yourself
  - Protective equipment such as gloves, bags, cloth
  - Appropriate containers
  - Proper clean up of spills

Protection and Prevention

- General protection for all Pathogens
  - Wash hands with soap and water or special wipes if water not available
  - Take precautions that the skin on the hands does not get to dry or chapped since that can give the germs a better opportunity to enter the body.

Universal Precautions

- Cover any opening in the skin with a dry bandage
- Wear gloves for any anticipated contact with body fluids
- If you wear gloves and you stick yourself with a needle or damage the gloves, you still have some protection
- Never intentionally pick up broken glass with bare hands or gloved hands
- Use dust pan and broom
- Never push trash down into cans with hands
- Carry away from body

If exposed, reiterated

- Flush area with water
- Wash
- Report immediately to supervisor
- Use Student Health Center or local clinic as directed for further work up