Bloodborne Pathogens

Penn State University
Environmental Health & Safety
Diseases of Concern

- Hepatitis B (Serum Hepatitis)
- Hepatitis C (non-A non-B Hepatitis)
- HIV (Human Immunodeficiency Virus aka the AIDS Virus)
- Syphilis
- Malaria
Penn State’s Responsibilities

• To identify employees who have a reasonably anticipated risk of exposure to human blood and other potentially infectious materials

• To prepare an exposure control plan which identifies at-risk occupations and steps to be taken in the event of an exposure
Penn State’s Responsibilities

• To train workers on the risks of blood exposures, ways to protect themselves, and what to do if exposed
• To provide Hepatitis B vaccination to at-risk employees at no cost to the employee
Exposure Control Plan

- Contains a formal statement of policy
- Outlines methods of compliance
- Outlines medical evaluation and follow-up to exposure incidents
- Outlines training provided to at-risk employees
- Available from EHS and on web page
Hepatitis

• A generic term used to describe an inflammation of the liver
• Can be caused by chemicals, alcohol or by infectious agents
• Symptoms: fatigue, abdominal pain, loss of appetite, intermittent nausea, vomiting, jaundice (yellowing of the skin and whites of the eyes) in some cases
Hepatitis B (HBV)

- ~300,000 infections in US annually
- Only ~60% show symptoms
- Fatal in <<1% of cases
- 6-10% of those infected will become chronic carriers of the disease
- Vaccine has been available since 1982
- Incidence of disease down 55% since 1985
Hepatitis C (HCV)

• Symptoms same as HBV
• ~150,000 infections/year in US
• Only 25-30% symptomatic
• Causes chronic infection in >85% of cases
• Causes chronic liver disease in 70% of cases
• Leading reason for liver transplants
• Currently no vaccine available
HIV/AIDS

• 35,000 people infected each year

• Symptoms include: flu-like symptoms, fatigue, nausea, severe weight loss, diarrhea, chronic wasting disease

• Long period between exposure and appearance of symptoms

• Case fatality rate is ~70%

• Currently no vaccine, treatments limited
Modes of Transmission

• Needlestick/Sharp instrument injuries account for >60% of occupationally-acquired cases of bloodborne diseases
• Mucous Membrane exposures (splashes to eyes, nose & mouth area)
• Contact of infected blood with abraded skin
• Lifestyle factors: unprotected sex with multiple partners, needle sharing
Modes of Transmission

• Bloodborne pathogens are contact hazards; not transmitted by aerosol
• No evidence that HBV, HCV or HIV can be transmitted by rescue breathing or kissing
• Blood is primary body fluid of concern; also present in internal body fluids
• Present in saliva at very low levels (100X less than in blood)
Protective Measures

- Treat all blood and other body fluids as potentially infectious
- Use barriers to protect your skin (gloves) and face (goggles or face shield); use a mask when doing rescue breathing/CPR
- Wash hands after removing gloves
- Be extremely careful when using sharps; handle as little as possible
- Segregate and package all waste properly
Needlestick Prevention

- OSHA amended the Bloodborne Pathogen standard to require needlestick prevention devices be used whenever possible.
- Front-line employees who use needles must have input into the type(s) of devices purchased and used.
Needlestick Prevention Devices

- Syringe with retractable needle
- Blunt-tip blood-drawing needle

Sources: Health Devices Magazine, Industry advertising, and Chronicle research
STEVE KEARSLEY / SAN FRANCISCO CHRONICLE
Exposure Incidents

- If you become exposed to someone else’s blood, prompt medical attention is critical!
- Seek medical attention at the nearest hospital or clinic; Identify yourself as a PSU employee and that you have had a blood exposure.
- Physicians have standard protocols to be followed for exposure incidents - testing, counseling part of evaluation
Exposure Incidents

- HBV vaccination given within 24 hours of an exposure is as effective as pre-exposure vaccination
- MD will follow up all subsequent illnesses
- Due to long latency period of bloodborne pathogens, medical tracking may last >1 year from exposure
- Anti-HIV drugs (ie., AZT) sometimes used in high risk cases
Exposure Incidents

- Because of all these facts, all exposures must be considered serious and must be reported to your supervisor
- Supervisors must ensure that employees seek medical evaluation
- This is a life-and-death decision
  – IT’S YOUR LIFE!
Hepatitis B Vaccine

- Current vaccines are recombinant vaccines produced in Baker’s yeast; no whole virus
- Provides protective immunity in most persons under 65 and in good health
- Three immunizations given over a six month period
- Good for ~10 years; currently no booster recommended (except after exposure)
Signs and Labels

- At PSU, all laboratories that work with human blood or tissues have a Biohazard sign
Signs and Labels

• All equipment used for blood/tissue work must be labeled as well:

![Biohazard Sign](image)
Blood Spill Clean Up

- Wear gloves and long sleeves to protect yourself
- Make up fresh disinfectant (1:10 dilution of household bleach; Virex 64)
- Cover spills with paper towels; soak them with disinfectant; let sit 5-10 minutes
- Collect and bag all waste
- Wash your hands!
Summary

• Exposure to bloodborne pathogens is serious, and can be potentially life-threatening, but can be controlled by good common sense and proper work practices

• Practice good personal hygiene; do not eat, drink, smoke, apply cosmetics or handle contact lenses when working with or near potentially infectious material
Questions

• If you have any questions regarding this information, please contact Curt Speaker at 865-6391 or by email at:

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