

OCCUPATIONAL EXPOSURE TO HIV, HCV, HBV

Angelique Ramirez, MD
Medical Director, Parkland Occupational Health Services

Adapted from content by Joanne Phillips, RN, MS, New York/New Jersey AIDS Education and Training Center

Objectives

- Identify the modes of occupational HIV transmission that occur in health care workers.
- Review federal and state governmental agency requirements for management of occupational exposure to HIV and recommendations for postexposure prophylaxis.
- Review opportunities for prevention of occupational exposure

Important Blood-Borne Pathogens

- Human immunodeficiency virus (HIV)
- Hepatitis B virus (HBV)
- Hepatitis C virus (HCV)

HIV Transmission

- Perinatal transmission during pregnancy, labor and deliver, or breastfeeding
- Occupational exposure via needle stick or exposure to eyes, nose, or open wound
 - Since 1981 there have been 57 documented cases of occupational transmission in the US
- Blood transfusion or organ donation from an HIV infected donor (rare in US)

Healthcare Worker Definition


- “All paid and unpaid persons working in healthcare settings who have the potential for exposure to infectious materials including body substances, contaminated medical supplies and equipment and contaminated environmental





Governmental Requirements

- **OSHA 1990**
- **OSHA Revisions Nov. 1999**
- **H.R. 5178 – “The Needlestick Safety and Prevention Act”- Nov. 2000**



OSHA'S 1999 & H.R. 5178 - Who has to comply?

- Hospitals
- Alternate site facilities
- Clinical laboratories
- Any facility covered by BBP Standard

Basic Requirements – OSHA & H.R. 5178

- Update BBP Exposure Control Plan – include evaluation and implementation of safer medical devices designed to eliminate or minimize occupational exposure. Review and update plan **annually**.
- Continuously monitor effectiveness of engineering controls
- Update employee training to include HCV and use of safer medical devices



Cont. OSHA & H.R. 5178

Exceptions to Sharps Safety Devices

- Market Availability
- Patient Safety
- Safety Performance
- Availability of Safety Performance Information

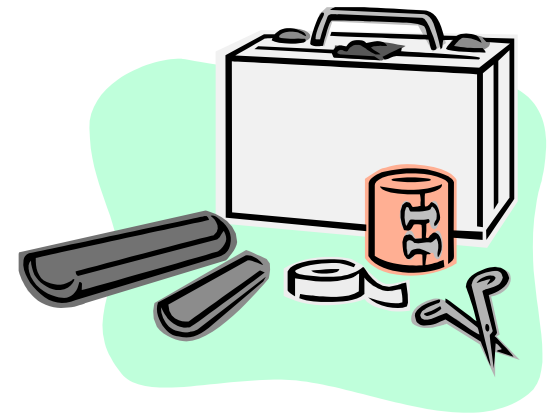
Cont. OSHA & H.R. 5178 –Sharps Injury Log

- Requires each health care facility to maintain a sharps injury log with detailed information on percutaneous injuries.
- Including:
 - Date and time of exposure
 - Type and brand of device involved in the exposure incident
 - Department where exposure occurred and
 - An explanation of how it occurred



What to do if an Occupational Exposure Occurs

- Know the protocol for your site/facility
- Counseling and prompt medical evaluation
- First aid
- Treatment should start immediately within 2 hours
- Immediate postexposure baseline serologies
- Employee can refuse testing and/or PEP
- Documentation



Post-exposure Management: Wound Care

- Clean wounds with soap & water
- Flush mucous membranes with water
- No evidence of benefit for:
 - application of antiseptics or disinfectants
 - squeezing puncture site
- Avoid use of bleach & other caustic agents



Exposure Report

- Date & time of exposure
- Details of procedure being performed
- Details of exposure, needle in use
- Details about exposure source
- Details about exposed person
- Details about counseling, PEP and follow-up



Baseline Clinical History

- Current medications
- Underlying medical conditions (i.e renal or hepatic disease)
- Pregnancy
- Breast feeding

Baseline Serologies

Source patient

- HBsAg
- Anti-HCV
- Rapid anti-HIV

*Confirm (+) antibody test.

*Consider testing for HCV RNA at 4-6 weeks.

** Repeat at 12 months if source is HCV (+)

Exposed HCW

- HBsAb
- Anti-HCV, repeat in 4-6 mo if source is positive*
- ALT, repeat in 4-6 mo. if source (+)
- Anti-HIV, repeat at 6 & 12 weeks, 6 months if source (+)** or if 4th generation 6 weeks, and 4 months

HIV EXPOSURE



Updated Guidelines

- Updated USPHS Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Postexposure Prophylaxis
 - Sept. 2013 *Infection Control and Hospital Epidemiology*, Vol. 34, No. 9

Potential Exposure to HIV

- Percutaneous injury
 - Needlestick or cut with a sharp object
- Mucous membrane or non-intact skin
 - Chapped, abraded, dermatitis
- Comes into contact with:
 - Blood
 - Tissue
 - Bodily fluids:
 - Semen
 - Vaginal secretions
 - Cerebrospinal fluid
 - Synovial fluid
 - Pleural fluid
 - Peritoneal fluid
 - Pericardial fluid
 - Amniotic fluid

Note: Feces, nasal secretions, saliva, sputum, sweat, tears, urine, and vomitus are not infectious unless **visibly bloody**



Risk for HIV Transmission

- After percutaneous exposure to HIV-infected blood = 0.3%
- After exposure to mucous membrane = 0.09%
 - Lower for exposure to non-intact skin and fluids other than blood
- Risk for transmission increases when:
 - Device is visibly contaminated with blood
 - Needle was in patients vein or artery
 - The injury is deep
 - The person is terminally ill with AIDS

Initiating PEP

- PEP is recommended in situations where a HCP has been exposed to a source person who has HIV infection or for whom there is reasonable suspicion of HIV infection.
 - PEP should be discontinued if the source patient is HIV negative.

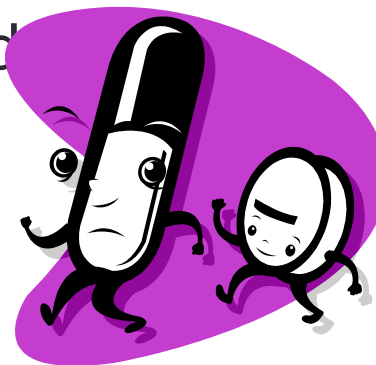


Consult an HIV Expert if

- It is more than 72 hours after exposure
- Unknown source
 - Use of PEP decided on a case by case basis
 - Consider the severity of the exposure and epidemiologic likelihood of HIV exposure
 - Do not test instruments for HIV
- HCP is pregnant or breastfeeding
 - Do not delay initiating PEP while awaiting expert consultation
- Known or suspected resistance of source virus
- Toxicity of initial PEP regimen
- Serious medical illness in the exposed person
 - I.e. renal disease, multiple drug interactions
- PEPLine available 888-448-4911

PEP Regimens

- ALL occupational exposures to HIV should be treated with a 3 drug antiretroviral (ART) regimen
 - Severity of exposure is no longer used to determine the number of drugs to be offered
 - PEP should be given ASAP after exposure and taken for 4 weeks
- Preferred Regimen:
 - Raltegravir 400 mg PO twice daily plus Emtricitabine/Tenofovir 1 tab PO daily
 - Several alternative regimens are described in the guidelines
- Drugs not recommended or contraindicated
 - Didanosine
 - Nelfinavir
 - Tipranavir
 - nevirapine



Follow-up of HIV exposed Healthcare Personnel

- Counseling
 - Use of barrier contraception esp. the first 6-12 weeks after exposure
 - Possible drug toxicities with PEP
 - Possible drug interactions with PEP
 - The need for adherence to PEP
- Re-evaluate 72 hours after exposure
- Testing:
 - HIV testing at baseline, 6 weeks, 12 weeks, and 6 months
 - If 4th generation p24 antigen/AB testing used: HIV testing at baseline, 6 weeks, and 4 months
 - CBC, renal and hepatic function tests at baseline and 2 weeks
 - More frequently if abnormalities detected

HEPATITIS B POST-EXPOSURE PROPHYLAXIS

Up to 31% risk
to unvaccinated HCW.

Updated USPHS Guidelines for the Management of Occupational Exposures to HBV, HCV and HIV and Recommendations for Postexposure Prophylaxis June 29, 2001 MMWR Vol. 50, No. RR-11

Preventing HBV Infection

• Vaccinate

- Prevalence of HBV 10 times higher in HCP than general populations prior to vaccination and adoption of standard precautions.



HBV Prophylaxis of HCW

Mark HCW medical chart either:

- Vaccinated – known responder
- Vaccinated – known non-responder
- Vaccinated – response unknown
- Unvaccinated

Hepatitis B Postexposure Management

| Exposed person | Treatment if source: | | Source not tested or unknown |
|---|---|----------------------|--|
| | HBsAg-positive | HBsAg-negative | |
| Unvaccinated | HBIG* x 1 & initiate HBV vaccine | Initiate HBV vaccine | Initiate HBV vaccine |
| Previously vaccinated, known responder | No treatment | No treatment | No treatment |
| Known nonresponder (after 2 full series) | HBIG x 2 | No treatment | If known high-risk source, may treat as if source were HBsAg positive |
| Response unknown | Test exposed for anti-HBs. 1) If inadequate [^] , HBIG x1 plus HBV vaccine 'booster' dose. 2) If adequate no Rx. | No treatment | Test exposed for anti-HBs: If inadequate initiate re-vaccination. If adequate no Rx. |

HBIG dose 0.6ml/kg IM, adequate anti-HBs >10mIU/ml

HEPATITIS C POST- EXPOSURE FOLLOW-UP

~ 1.8 percent risk of disease transmission following a
needle stick exposure to HCV

Postexposure Management HCV

- There is no prophylaxis
 - Take steps to avoid needle stick injuries



Postexposure Management HCV

- For the source, perform testing for anti-HCV.
- For the person exposed to an HCV-positive source
 - --- perform baseline testing for anti-HCV and ALT activity; and
 - --- perform follow-up testing (e.g., at 4--6 months) for anti-HCV and ALT activity (if earlier diagnosis of HCV infection is desired, testing for HCV RNA may be performed at 4--6 weeks).
- Confirm all anti-HCV results reported positive by enzyme immunoassay using supplemental anti-HCV testing
- Refer HCV infected HCP to a specialist for timely medical management

Preventing Transmission

- Needlestick Precautions

DO:

- Use protective/safety devices
- Review and revise procedures
- Slow down and THINK
- Dispose of needles IMMEDIATELY
- Use puncture-resistant, properly identified containers

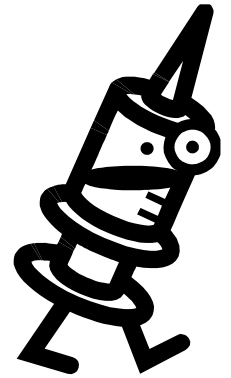


Preventing Transmission

- Needlestick Precautions

AVOID:

- Improper needle disposal
- Recapping syringes
- Carrying or laying down needles before discarding
- Bending, breaking, or manipulating needles



Preventing Transmission

- Use Standard Precautions Consistently
 - Wash hands
 - Wear personal protective equipment (PPE)
 - Gloves
 - Gowns
 - Masks
 - Eye protection
 - Use warning labels and signs to identify hazards
 - Clean and decontaminate environment, equipment and work surfaces



Preventing Transmission

- When Biohazard is Present in Environment
 - NO Eating
 - NO Drinking
 - NO Applying cosmetics or lip balm
 - NO Manipulating contact lenses
 - NO Smoking
 - NO Mouth pipetting

Safe Injection Practices

- A safe injection...
 - Does not expose the provider to any avoidable risk
 - Does not harm the recipient
 - Does not result in waste that is dangerous to other people
 - World Health Organization

PROTECTING HCW AND PATIENTS

What happens when Safe Injection Practices (SIP) are not followed?

- Improper use of syringes, needles, and medication vials has resulted in:
 - Infection of patients with bloodborne viruses, including hepatitis C virus, and other infections
 - Notification of thousands of patients of possible exposure to bloodborne pathogens and recommendation for HCV, HBV, and HIV testing
 - Referral of providers to licensing boards for disciplinary action
 - Legal actions such as malpractice suits filed by patients



SAFE INJECTION PRACTICES COALITION (SIPC)

PEP Management Resources

- National Clinicians' Post-exposure Hotline: 888-448-4911
- Needlestick! : www.needlestick.mednet.ucla.edu
- Hepatitis Hotline: 888-443-7232
- CDC reporting: 800-893-0485
- Pregnancy Registry: 800-258-4263
- FDA (unusual/severe toxicities): 800-332-1088
- HIV/AIDS Treatment Information Service:
www.hivatis.org

THANK YOU!