Bloodborne Pathogen Exposures: HIV Post Exposure Prophylaxis with Rapid HIV Testing of Source; Mucous Membrane Exposures

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Outline

• Bloodborne pathogens lists
• Exposure types
• Risk of transmission based on exposure
• VCUHS data of occupational bloodborne pathogen exposures
• PPE: for mucous membrane exposures
• PEP and Rapid HIV Testing- new protocol
Potential Bloodborne Pathogens

- Human Immunodeficiency Virus (HIV)
- Hepatitis Viruses
- As well as agents that cause...
  - Babesiosis
  - Brucellosis
  - Leptospirosis
  - Creutzfeldt-Jakob Disease
  - HTLV-1 Infections
  - Arboviral Infections
  - Malaria
  - Relapsing Fever
  - Viral Hemorrhagic Fever
  - Syphilis
Transmission of these agents in the workplace can occur through the following routes:

- **Parenteral exposure** - The pathogen is introduced directly into the body through a break in the skin, needlestick, or through a cut with a contaminated instrument or glass.

- **Mucous membrane exposure** - Exposure through contact of a mucous membrane in the eye, nose or mouth.
Risk of Infection after Contact with Infected Blood

**Percutaneous exposure:**

Prospective studies of several thousand HCWs indicate that the risk of seroconversion:

HIV-infected blood is approximately 0.3%.

Hepatitis B depends on the e antigen (e Ag) status of the patient.
If the patient's blood is positive for the e Ag
the risk of transmission -30% or about 100 times that of HIV.

HCV infection is 3% to 10% or about 10 times the risk following a single exposure to HIV-infected blood.
Risk of Infection after Contact with Infected Blood

- Mucous Membrane Exposure:
  - Risk of HIV Transmission
    - 0.09 % risk of transmission after a mucous membrane exposure to HIV infected blood.
  - Hepatitis B and C
    - Risk of transmission not well documented
    - Presumed to be less than in percutaneous injury
  - Although the risk of transmission associated with mucous membrane exposures is less, it is not negligible
Roughly 1/3 of all employee bloodborne pathogen exposures at VCUHS are Mucous Membrane
Personal Protective Equipment

PPE includes masks, masks with faceshields and goggles.

PPE equipment can be found in isolation carts, and wall mounted PPE storage units.
Mucous Membrane Exposures Can be Prevented!!!!!!

• PPE: Masks, faceshields / goggles
  • MUST BE WORN IN ANY PROCEDURE OR PATIENT CARE ACTIVITY THAT POSES A RISK OF BLOOD OR BODY FLUID SPLASH/SPLATTER/AEROSOLIZATION.
  • The include:
    • Phlebotomy and blood cultures
    • Suctioning of gastric or respiratory secretions
    • Removal of medical devices
      – CVC, ET tubes, Foley catheters, IV lines
**Reveal**: Rapid HIV Test
MedMira Laboratories

- Rapid HIV test performed on patient serum
  - HIV antibody test
    - SENSITIVITY: 99.8%
      - All positive tests are confirmed by western blot
  - Processing time for the test (upon receipt by the laboratory) is about 20-30 minutes.
- It is critical that the source blood be drawn immediately and delivered to the laboratory in an expeditious manner.
New PEP Algorithm

Did a percutaneous or MM exposure occur that carries significant risk of transmission of HIV?

Yes

Have fewer than 36 hours elapsed since the exposure occurred?

Yes: Proceed with Rapid HIV Testing

Sample must be obtained STAT (serum separator) and sent via pneumatic tube to Immunology Lab

Is the source patient HIV infected as determined by rapid testing?

No

PEP not indicated; no follow-up needed

PEP not optimal but should be considered. If considered- proceed with rapid HIV testing of source and follow algorithm accordingly.

Yes

Initiate HAART (IF SOURCE IS POSITIVE - 3 DRUGS ARE PREFERRED)
THESE ARE STANDING ORDERS:
• Recommended regimen: zidovudine 300 mg po bid + lamivudine 150 mg po bid (or Combivir 1 bid)
PLUS
Nelfinavir 1250mg po bid with food
• Perform baseline confidential HIV testing of the exposed healthcare worker within 72 hours of initiating HAART
• Refer to Employee health for additional management: HAART, Hepatitis B and C

Source patient’s serologic test is confirmed HIV negative and there is no evidence of acute retroviral syndrome in the source patient.

Stop PEP

Source patient’s serologic test is confirmed HIV positive or indeterminate, or serology is unable to be obtained.

Continue PEP for 4 weeks

NO

NO

NO

NO

NO

PEP not indicated; no follow-up needed
Conclusion-1

- Mucous membrane blood and body fluid exposures are known risk factors for the transmission of HIV and Hepatitis B/C
- Of all blood and body fluid exposures at VCUHS; mucous membrane exposure account for 30% nearly *every year*.
- *PPE* (masks, faceshields or goggles) must be worn when a patient care activity poses a risk of BBF splash, spray or aerosolization.
Conclusion –2

What should you do?

• Be sure you communicate this information to your staff and tell them it is your expectation that they comply.
• Be sure that supplies are available for staff.
• Be sure to remind and re-educate when you see non-compliance.
• Document repeated non-compliance, to protect you and the institution.
Conclusion-3

• New PEP protocol
  • Rapid HIV testing will now be employed
    • Processing time is about 20-30 minutes upon receipt of the source patient’s blood
    • Blood must be obtained from the source in an expeditious manner
    • Rapid HIV test results will be reported back to the PEP member
  • Standing orders for Antiretrovirals; 3 regimen HAART