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

Gonzalo Bearman MD, MPH

March 9th, 2004

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 througha 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*

VCUHS

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!!!!!!

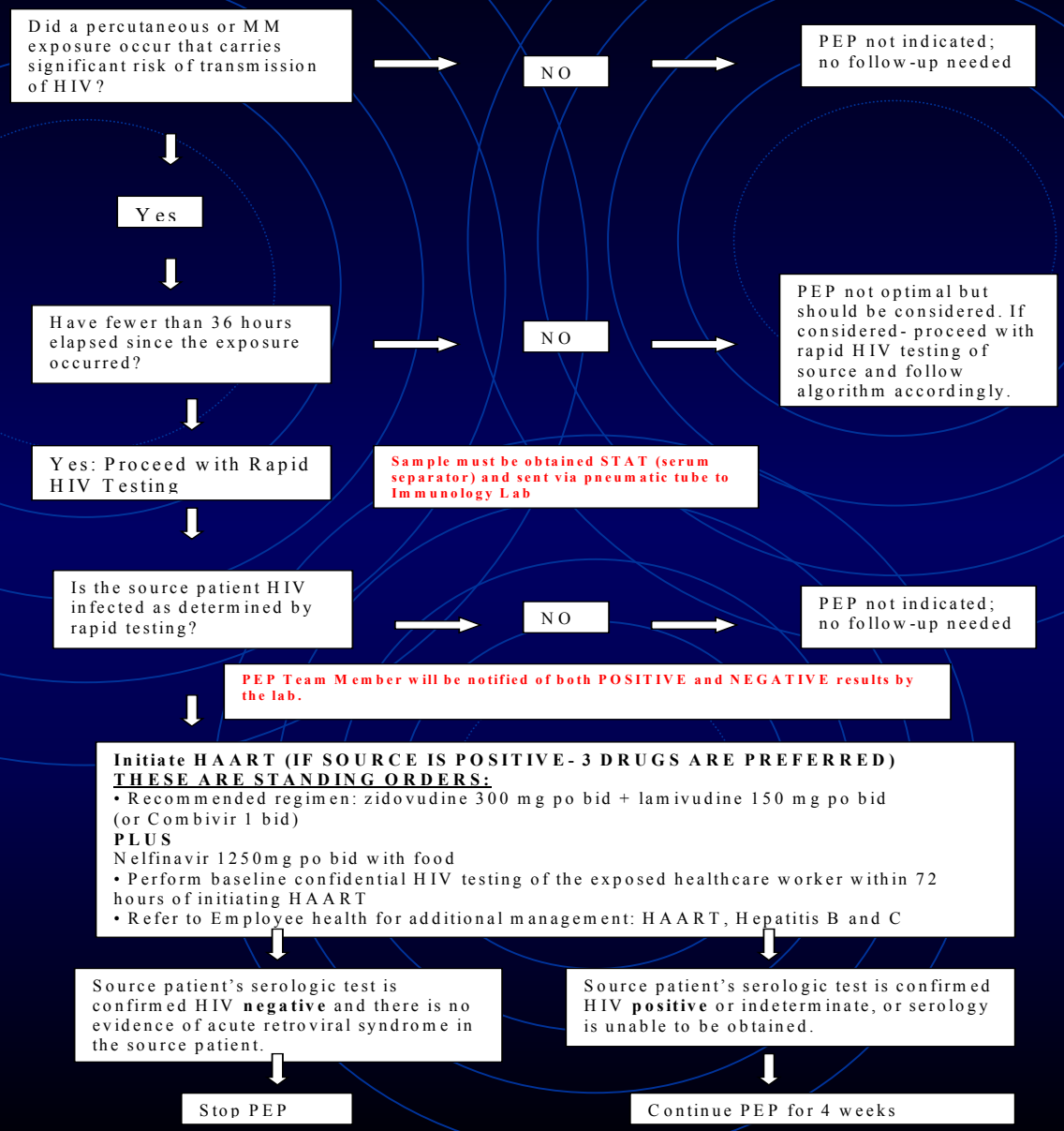
- PPE: Masks, faceshields / goggles
  - MUST BE WORN IN ANY PROCEDURE OR PATIENT CARE ACTIVITY THAT POSES A RISK OF BLOOD OR BODY FLUID SPLASH/SPLATTER/AEROSOLIZATION.
  - The include:
    - Phlebotomy and blood cultures
    - Suctioning of gastric or respiratory secretions
    - Removal of medical devices
      - 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 the source blood be drawn immediately and delivered to the laboratory in an expeditious manner

New PEP Algorithm



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 20-30minutes 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