



# **Post-Exposure Prophylaxis (PEP) and Universal Precautions**

**Part B Module B2  
Session 4**



# Objectives

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1. Discuss rationale for post-exposure prophylaxis of HIV
2. Discuss post sexual exposure prophylaxis
3. Describe the various PEP regimens and when to use which ones
4. Discuss issues and concerns that HCWs might have about working with HIV-infected persons

# Background/rationale of PEP

- There is limited evidence available to suggest that antiretroviral medications are efficacious when taken prophylactically.
- It is biologically possible that PEP medications taken soon after exposure to HIV can prevent HIV infection.
- Benefits of preventing infection usually outweigh risks of PEP
- In particular, one study of PEP following occupational exposure to HIV showed an 81 percent reduction in risk of seroconversion when medications were started, on average, 4 hours after exposure.

# Occupational Exposures

Relative risk of viral transmission with sharps injury from infected source:

- HBV  
(HbsAG positive + unvaccinated HCW) 37% to 62%
- Source HbsAG positive 23% to 37%
- Source HbsAG negative 1.8%
- HIV 0.3%

*So, risk of HBV >>> risk of HIV for percutaneous injury*

# Management of Occupational Blood Exposure



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- Immediate care: wash wounds with soap and water or antiseptic solutions; flush mucous membranes with water
  - Notify supervisor and/or occupational health team
- Risk assessment: Type of fluid and type of exposure
- Evaluate source: Test source for HIV serology (rapid test if available)
- Exposed person: Test exposed person and initiate PEP as quickly as possible



## Risk by exposure mode

It is important to understand the relative risk of HIV infection as depicted below

Exposure	Risk/10,000 Exposures
Needle sharing	67
Percutaneous (occupational exposure)	30
Receptive anal intercourse	10 to 30
Receptive vaginal intercourse	8 to 20
Insertive vaginal sex	3 to 9
Insertive anal sex	3

Am J Med 1999; 106:324,; Ann Intern Med 1996;125:497; J Acquir Immune Defic Syndr 1992;5:1116;  
N Engl J Med 1997;336;1072.



## Post-sexual exposure prophylaxis

- Not enough evidence to recommend PEP following casual sexual exposure
- In event of sexual abuse or rape
  - Provide counseling/support because of the assault
  - Recommended to be counseled for PEP if victim is negative
  - If victim is already positive, refer for counseling and appropriate management
  - If perpetrator's HIV status is positive or cannot be determined, treat victim as high risk exposure

- It is important to consider PEP medications as one important part of the larger post-assault treatment program. Specialized counseling is another critical aspect of the post-assault treatment.



## HIV PEP

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- A. Through June 2000 there were 56 confirmed transmissions (in the U.S.) from an infected source to a HCW. All involved blood, bloody body fluids, or high titer viral cultures; 48 of the 56 exposures were sharps injuries; 5 were mucous membranes/non-intact skin exposures; and 2 had both types of exposure.
- B. Potential sources of transmission (with no confirmed cases with occupational exposures): semen, vaginal secretions, tissue or cerebrospinal, peritoneal, pericardial, synovial or amniotic fluid.
- C. PEP should be started as soon as possible; **if delay exceeds 72 hours expert consultation is suggested**

- D. Prophylaxis should be continued for 4 weeks if tolerated
- E. Exposed person should be reevaluated within 72 hours as additional information about the source is obtained, including serologic status, VL, current treatment, any resistance test results, or information about factors that would modify recommendations
- F. ELISA or rapid tests should be used to monitor for seroconversion

Perform at baseline and at 3 months and 6 months post exposure.

VL tests for screening are not recommended

- HCWs should be asked to commit to behavioral measures, e.g., sexual abstinence or condom use for several weeks to two months.
  - The greatest risk is during the first 6 to 12 weeks postexposure.
  - If patient was indeed infected, VL will be high right after infection and pt will be most infectious at this time
  
- G. Female HCWs with known or possible pregnancy should be treated as anyone else, except for selection of drugs, which should involve a discussion of benefits and risks between the HCW and her care provider. EFV and the combination d4T and ddI should be avoided.

## Drug selection for PEP

- Decisions should be made based in part on information about the SOURCE of exposure (i.e., the HIV-infected patient):
  - Is the patient on ART? Is the patient adherent?
  - What has been his/her response to therapy? (including VL at the time of exposure and history of HIV resistance testing)
- Health care workers often resist having serology done
  - But it is important because PEP is often inadequate for treatment of HIV
- Decisions should not delay initiation of PEP, and modifications can be made after information is obtained.



# Risk Categories for Post-Exposure Prophylaxis

- Low risk:
  - Solid needle, superficial exposure on intact skin
  - Small volume (drops of blood) on mucous membranes or non-intact skin exposures
  - Source is asymptomatic or viral load < 1500 copies/ml
- High risk:
  - Large bore needle, deep injury, visible blood on device, needle in patient artery/vein
  - Large volume (major blood splash on mucous membrane or non-intact skin exposures)
  - Source patient is symptomatic, acute seroconversion, high viral load

## Drug selection based on PEP risk

- Immediately after exposure, all exposed individuals should take PEP according to assumed risk.
  - Low risk: 2-drug combination
  - High risk: 3-drug combination
  - Take regimen for 28 days or until HIV test of patient and exposed person are negative
  - Do not give 2-drug combination to exposed person if it is determined that the exposed person is HIV-infected
    - Implications for resistance
    - Exposed person should be referred for further counseling and management
  - If source pt is on ARVs, take into consideration that resistant virus may be transmitted when choosing PEP regimen

## Drug selection for PEP, continued

Recommended 2-drug combinations	Recommended 3-drug combinations
<ul style="list-style-type: none"><li>▪ AZT (300 mg BD) + 3TC (150 mg BD) OR combivir one tab BD or</li><li>▪ d4T (40 mg BD) + 3TC (150 mg BD)</li></ul>	<ul style="list-style-type: none"><li>▪ Any of the 2 drugs combinations PLUS EFV or a protease inhibitor (EFV should be avoided if pregnancy is expected)</li></ul> <p>So, 2 drug combination PLUS</p> <ul style="list-style-type: none"><li>▪ EFV (600 mg QHS) or</li><li>▪ NFV (1250 mg BD) or</li><li>▪ LPV/r (400 mg/100 mg BD)</li></ul>

## Recommended schedule of investigations for PEP

Period	Recommended investigations
Baseline	HIV screening FBC LFTs Renal function tests
Two weeks	FBC LFT Renal function test
Three months	HIV screening
Six months	HIV screening

## Determining necessity of PEP by HIV status

Source patient	Exposed person	Action
Negative	Negative	<ul style="list-style-type: none"><li>•No PEP necessary</li></ul>
Negative or positive or unknown	Positive	<ul style="list-style-type: none"><li>•No PEP</li><li>•Counsel and refer for HIV management</li></ul>
Positive	Negative	<ul style="list-style-type: none"><li>•PEP x 4 wks</li><li>•Repeat exposed person's HIV test at 3 months and 6 months</li><li>•If person seroconverts, arrange for counseling and management</li></ul>
Unknown	Negative	<ul style="list-style-type: none"><li>•Assume source patient is positive and proceed accordingly</li></ul>

# Prevention: Universal precautions

- Adhering to universal precautions can prevent occupational exposure to HIV
- What are some of the universal precautions that health care workers should adhere to?

# Universal precautions, cont'd

Includes but is not limited to:

- Handwashing\*
- Barrier methods
  - Gloves for open wounds or for sores on HCW's hands
  - Face mask for splash risk
- Puncture-proof disposable containers for needles
- Not recapping needles

# Caring for the HIV-infected patient

- Health care workers should wash their hands before and after each patient. Keep in mind that we are more likely to spread disease to HIV-infected patients than their likelihood of spreading disease to us!
- We should not stigmatize those patients by wearing gloves or masks when they are not required
- If we adhere to universal precautions with all patients, it will be second-nature to us when we deal with HIV-positive patients

# Summary

- PEP can help prevent HIV infection
- Determine the HIV status of the exposed person before prescribing PEP
- Universal precautions may prevent occupational exposures