Occupational exposure guidelines

Please also refer to your institution's occupational exposure guidelines, if they are available

Health care workers are at risk for HIV transmission by percutaneous and mucous membrane exposures. In the United States, the risk of HIV transmission via percutaneous exposure to HIV-infected blood is 0.3% (95% CI = 0.2%-0.5%), and risk is increased with direct insertion into vein/artery, deep injury, or if the source was suffering from terminal illness. The risk of transmission with HIV-infected fluids via mucous membrane exposure is 0.09% (CI 0.006%-0.5%). In areas where the prevalence of HIV is higher, the risk of transmission also increases.

Prior to departure, meet with a travel specialist to obtain the following pertaining to occupational exposures: Before purchasing medications, please note that your program may already have developed a protocol and have supplies available for HIV post-exposure prophylaxis for an established partner site.

- 4 week supply of HIV post-exposure prophylaxis (speak with your travel specialist about whether you should obtain a basic 2-drug or expanded 3-drug regimen, based on the prevalence of HIV at your global health elective site).
    - Example of 2-drug regimen: Combivir or Truvada
    - Example of 3-drug regimen: Combivir (or Truvada) + Kaletra
- Hepatitis B serologies to ensure pre-departure immunity (if not previously documented)
- Consider obtaining Hepatitis C and HIV serologies (to document pre-departure status in the event of an exposure)
- PPD (if not done within the year prior to travel) or Quantiferon

IN THE EVENT OF AN EXPOSURE, TAKE THE FOLLOWING STEPS

1. **Irrigate and cleanse the wound**
2. **Was the source potentially infectious? If yes, proceed to step 3**

   Potentially infectious fluids: blood, CSF, synovial fluid, pleural fluid, pericardial fluid, amniotic fluid

   NOT potentially infectious unless containing blood: feces, nasal secretions, saliva, sputum, sweat, tears, urine, vomitus
3. **Evaluate the source**
    a. If HIV positive: proceed to step 4
    B. If HIV status unknown: Have someone coordinate testing of the source (HIV rapid testing AND HIV PCR*) and proceed to step 4 **WITH THE ASSUMPTION THAT THE PATIENT IS HIV POSITIVE UNTIL THE PCR TESTING RETURNS**
4. **Determine medication regimen based on exposure and assumed HIV-positive source** (MMWR Table 1 for percutaneous injuries, Table 2 for mucous membrane and skin exposure)

TABLE 1. Recommended HIV postexposure prophylaxis (PEP) for percutaneous injuries

Exposure type	Infection status of source: HIV-positive, class 1*	HIV-positive, class 2*	Source of unknown HIV status†	Unknown source§	HIV-negative
Less severe¶	Recommend basic 2-drug PEP	Recommend expanded ≥3-drug PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP** for source with HIV risk factors††	Generally, no PEP warranted; however, consider basic 2-drug PEP** in settings in which exposure to HIV-infected persons is likely	No PEP warranted
More severe§§	Recommend expanded 3-drug PEP	Recommend expanded ≥3-drug PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP** for source with HIV risk factors††	Generally, no PEP warranted; however, consider basic 2-drug PEP** in settings in which exposure to HIV-infected persons is likely	No PEP warranted

* HIV-positive, class 1 — asymptomatic HIV infection or known low viral load (e.g., <1,500 ribonucleic acid copies/mL). HIV-positive, class 2 — symptomatic HIV infection, acquired immunodeficiency syndrome, acute seroconversion, or known high viral load. If drug resistance is a concern, obtain expert consultation. Initiation of PEP should not be delayed pending expert consultation, and, because expert consultation alone cannot substitute for face-to-face counseling, resources should be available to provide immediate evaluation and follow-up care for all exposures.

† For example, deceased source person with no samples available for HIV testing.

§ For example, a needle from a sharps disposal container.

¶ For example, solid needle or superficial injury.

** The recommendation "consider PEP" indicates that PEP is optional; a decision to initiate PEP should be based on a discussion between the exposed person and the treating clinician regarding the risks versus benefits of PEP.

†† If PEP is offered and administered and the source is later determined to be HIV-negative, PEP should be discontinued.

§§ For example, large-bore hollow needle, deep puncture, visible blood on device, or needle used in patient's artery or vein.

TABLE 2. Recommended HIV postexposure prophylaxis (PEP) for mucous membrane exposures and nonintact skin* exposures

Exposure type	Infection status of source: HIV-positive, class 1†	HIV-positive, class 2†	Source of unknown HIV status§	Unknown source¶	HIV-negative
Small volume**	Consider basic 2-drug PEP††	Recommend basic 2-drug PEP	Generally, no PEP warranted§§	Generally, no PEP warranted	No PEP warranted
Large volume¶¶	Recommend basic 2-drug PEP	Recommend expanded ≥3-drug PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP†† for source with HIV risk factors§§	Generally, no PEP warranted; however, consider basic 2-drug PEP†† in settings in which exposure to HIV-infected persons is likely	No PEP warranted

* For skin exposures, follow-up is indicated only if evidence exists of compromised skin integrity (e.g., dermatitis, abrasion, or open wound).

† HIV-positive, class 1 — asymptomatic HIV infection or known low viral load (e.g., <1,500 ribonucleic acid copies/mL). HIV-positive, class 2 — symptomatic HIV infection, AIDS, acute seroconversion, or known high viral load. If drug resistance is a concern, obtain expert consultation. Initiation of PEP should not be delayed pending expert consultation, and, because expert consultation alone cannot substitute for face-to-face counseling, resources should be available to provide immediate evaluation and follow-up care for all exposures.

§ For example, deceased source person with no samples available for HIV testing.

¶ For example, splash from inappropriately disposed blood.

** For example, a few drops.

†† The recommendation "consider PEP" indicates that PEP is optional; a decision to initiate PEP should be based on a discussion between the exposed person and the treating clinician regarding the risks versus benefits of PEP.

§§ If PEP is offered and administered and the source is later determined to be HIV-negative, PEP should be discontinued.

¶¶ For example, a major blood splash.

5. **Contact the PEPline 888-448-4911 to discuss medication planning**
6. **Initiate medication regimen <u>AS SOON AS POSSIBLE (within 1-2 hours of the exposure) FOR A DURATION OF 4 WEEKS</u>** (You can discontinue the regimen if BOTH the rapid HIV testing and the HIV PCR are negative for the source patient)
7. **Contact your home institution's faculty mentor (or emergency line for trainees, if available)** to discuss the extent of the exposure and determine whether you should return early from the elective
8. **Laboratory monitoring after exposure** (initiate at your elective site and continue with occupational health upon return)

Time after exposure	Taking PEP	Not taking PEP
Day 0	Rapid HIV test, Urine HCG, ALT, AST, FBC. Consider utility of sending Hep B Sab	Rapid HIV test, ALT, AST, Urine HCG. Consider utility of sending Hep B SAb

2 weeks	Rapid HIV test, Urine HCG, ALT, AST, FBC	
6 weeks	Rapid HIV test, Urine HCG, ALT, AST, FBC	Rapid HIV, Urine HCG if at risk for pregnancy
12 weeks	Rapid HIV test, Urine HCG, ALT, AST, FBC	
6 months	Rapid HIV test, ALT, AST, FBC, Hep C, Hep B SAg, Hep B CAb, Hep B Sab	Rapid HIV, Hep C, Hep B SAg, Hep B CAb, Hep B SAb

Table adapted with permission from the University of Wisconsin-Madison, with additional acknowledgment of Dr. Brian Jack & colleagues at Boston University

Follow up with occupational health upon return, and submit an incident report regarding the exposure

9. **Special conditions**
    a. Source with known antiretroviral resistance: PEP should be tailored depending on resistance patterns, if known
    b. Pregnancy: Refer to medication side effect profiles
    c. Breastfeeding: You will need to discontinue breastfeeding if initiating PEP after an exposure
10. **Medication side effects**: A substantial proportion of health care personnel do not complete the recommended 4 week course of post-exposure prophylaxis due to side effects, which most commonly include nausea, diarrhea, malaise and fatigue. **PLEASE TRY TO ADHERE TO THE RECOMMENDED REGIMEN**.
11. **Other risks associated with blood-borne exposures**:
    a. Hepatitis B: Minimal risk if you are vaccinated and serology-proven immune, but risk of seroconversion is 10-30% if you are not immune. If you have not been vaccinated prior to travel, obtain the Hepatitis B vaccination and consider traveling to an area where you can receive Hepatitis B immune globulin.
        i. Hepatitis C: 1.8% (range 0-7%) risk of seroconversion after percutaneous exposure from infected source. There is no available postexposure prophylaxis. Obtain postexposure serology testing as detailed under laboratory monitoring section
12. **Emergency contacts**
    a. National HIV/AIDS Clinicians' Consultation Center (PEPline): http://www.nccc.ucsf.edu/hiv_clinical_resources/pepline_guidances_for_occupational_exposures/; **888-448-4911**
    b. HIV/AIDS Treatment Information Service: http://aidsinfo.nih.gov
    c. HIV Antiretroviral Pregnancy Registry: http://www.apregistry.com/index.htm; 800-258-4263
    d. Inquire with your home institution prior to departure to determine if there is an emergency contact number for traveling trainees

Occupational exposure supplemental readings

1. CDC. Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Postexposure Prophylaxis. MMWR 2005; 54 (No. RR-9): 1-17.
2. Mohan S, Sarfaty S, Hamer DH. Human immunodeficiency virus postexposure prophylaxis for medical trainees on international rotations. J Travel Med. 2010 Jul-Aug;17(4):264-8.