UCSF Center for AIDS Prevention Studies
AIDS Research Institute

what is post-exposure prevention (PEP)?

why PEP now?

There is still no cure for AIDS. Prevention remains the most effective way to halt the epidemic. The best way to avoid HIV infection is to avoid exposure in the first place through sexual abstinence, having only uninfected sex partners, consistent condom use, injection drug use abstinence, and consistent use of sterile injection equipment.[1]

However, recently we have learned a lot about treating HIV and understanding the progression of HIV disease. Protease inhibitors used in combination with other HIV drugs have been extremely effective in reducing the levels of HIV in the blood and restoring health to many patients.[2] For HIV-uninfected persons who are exposed to HIV, there may be a window of opportunity in the first few hours or days after exposure in which these highly active drugs may prevent HIV infection.

A study of health care workers showed that treatment with AZT after needlestick exposure to HIV-infected blood reduced the odds of HIV infection by 81%.[3,4] The study was not designed to test the efficacy of AZT for post-exposure treatment and has some limitations. Following consultations, the findings from this study and other data led the Centers for Disease Control and Prevention (CDC) to recommend post-exposure prevention (more commonly known as post-exposure treatment, post-exposure prophylaxis or PEP) for some health care workers who are accidentally exposed to HIV-infected body fluids. Since PEP is recommended for health care workers, it is only logical that PEP be considered for people exposed to HIV through sex or injection drug use, especially since these are more common sources of HIV infection.

what are components of PEP?

There are no federal recommendations governing PEP for sexual or injection drug use exposure although the CDC is currently studying the matter. Many physicians and clinics across the country currently offer PEP in widely varying forms.[5] Most forms of PEP involve providing one or several anti-HIV drugs within 72 hours of possible exposure. These drugs are then taken for a 4-6-week period.

Before PEP is implemented, a thorough risk assessment should be conducted to determine a patient's level and frequency of risk-taking, as well as the HIV status of the patient's partner. Patients should be informed of the potential side effects and difficulty taking the drugs and should be assisted to develop strategies to successfully take the drugs as prescribed. Partner notification and counseling can be part of a PEP program.

One of the potential advantages of PEP is the opportunity to reach and counsel people at high risk for HIV. PEP programs should include a behavioral counseling component to help patients develop skills for avoiding future exposure to HIV and to deal with the fear of becoming infected. Referrals to HIV prevention, substance abuse, medical, mental health and housing programs should also be included to help patients address important risk factors.[6]

Unprotected sexual intercourse can result not only in HIV infection, but in other sexually transmitted diseases (STDs) and unintended pregnancy. PEP programs should offer testing and treatment for other STDs and testing for pregnancy. STD infection has been shown to increase the risk of HIV transmission 2- to 5-fold, and treating STDs is an effective HIV prevention intervention.[7]

does PEP work?

No one knows for sure. The idea of providing potent anti-HIV drugs to prevent infection makes sense biologically, but some people believe the study of health care workers and AZT is not definitive, and there have been no studies on PEP for sexual or injection exposure. The potency of the new anti-HIV drugs, however, is a compelling, if unproven, reason to offer PEP treatment after exposure to a life threatening disease.[8]

Says who?

1. Centers for Disease Control and Prevention. Backgrounder: CDC-sponsored external consultants meeting on post-exposure therapy (PET) for non-occupational exposures to HIV. Fact sheet prepared by the CDC. July 1997.

2. Deeks SG, Smith M, Holodniy M, et al. HIV-1 protease inhibitors: a review for clinicians. *Journal of the American Medical Association.* 1997;277:145-153.

3. Centers for Disease Control and Prevention. Case-control study of HIV seroconversion in health-care workers after percutaneous exposures to HIV-infected blood—France, United Kingdom, and United States, January 1988-August 1994. *Morbidity and Mortality Weekly Report.* 1995;44:929-933.

4. Cardo DM, Culver DH, Ciesielski CA, et al. A case-control study of HIV seroconversion in health care workers after percutaneous exposure. *New England Journal of Medicine.* 1997;337:1485-1490.

5. Zuger A. 'Morning after' treatment for AIDS. *The New York Times.* June 10, 1997.

6. Katz MH, Gerberding JL. Postexposure treatment of people exposed to the human immunodeficiency virus through sexual contact or injection-drug use. *New England Journal of Medicine.* 1997;336:1097-1100.

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what are disadvantages of PEP?

One of the biggest fears about PEP is that people will return to unsafe sexual and drug using practices if they believe that PEP will prevent them from becoming infected. There is some evidence that treatment advances, including PEP, may be leading to increasing incidence of unsafe sex in the US.[9] For example, rates of gonorrhea among men who have sex with men have recently increased for the first time since the early 1980s.[10]

Another fear is that misuse of PEP drug therapies may cause a person to develop a resistant strain of HIV. If PEP drug therapy is unsuccessful and a person does develop a drug-resistant virus, the new anti-HIV drugs may not be as effective for treating that person. This can occur not only with PEP, but with any combination therapy treatment.

PEP regimens can be both complicated and prohibitively expensive to follow. PEP drugs need to be taken at specific times of the day on a regular schedule. About one-third of the health care workers who received PEP never finished the regimen because of difficulty taking the drugs.[6] Side effects of the drugs can be severe and debilitating, and long-term effects are still unknown. A typical dosage for four weeks can cost $600-1,000 including the medicine, blood tests and clinic visits.

Prescribing PEP can be a complicated decision for clinicians, and should be done on an individual basis. Many believe that a person with single case of unprotected sexual- or needle-related exposure to an HIV+ partner would be a good candidate for PEP. However, many people worry that providing PEP repeatedly to a person with ongoing high-risk behavior may cause disinhibition for unsafe sex and could also be toxic.

what programs exist?

San Francisco, CA has recently implemented a project to determine the safety and feasibility of PEP. The study offers intensive behavioral counseling, HIV testing and anti-HIV medication to persons who have been exposed within the last 72 hours. The project will *not* look at the effectiveness of PEP; rather it will look at whether participants comply with treatments, if there are significant side effects, and if clients change their risk behavior following the exposure.[11]

Internationally, many countries are moving ahead with PEP. In France, the Secretary of State for Health announced in August that PEP would be made available to all accidental exposures to HIV, whether occupational, sexual or injection. In London, England, PEP is available through clinics and private physicians. In British Columbia, Canada, PEP is available in emergency rooms for patients with possible exposure.

how can PEP help?

PEP can help strengthen HIV prevention strategies by serving as a bridge between prevention and treatment, similar to STD prevention. Traditional STD prevention includes education, testing, early treatment, counseling, partner notification and follow-up. In San Francisco, one PEP program is located in an STD clinic. Many people have advocated the integration of HIV and STD strategies. PEP is a step in that direction.

No one expects PEP to be 100% effective. No prevention tool is 100% effective for any medical condition, whether it be HIV, unwanted pregnancy or cancer. The best prevention effort requires a "myriad of imperfect, cumulatively effective"[12] interventions. A comprehensive HIV prevention strategy uses many elements to protect as many people at risk for HIV as possible. PEP offers the opportunity to expand the range of prevention activities, thereby expanding the possibility of saving lives.

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7. Wasserheit JN. Epidemiological synergy. Interrelationships between human immunodeficiency virus infection and other sexually transmitted diseases. *Sexually Transmitted Diseases.* 1992;19:61-77.

8. Henderson DK. Postexposure treatment of HIV—taking some risks for safety's sake. *New England Journals of Medicine.* 1997;337:1542.

9. Dilley JW, Woods WJ, McFarland W. Are advances in treatment changing views about high-risk sex? (letter). *New England Journal of Medicine.* 1997;337:501-502.

10. Centers for Disease Control and Prevention. Gonorrhea among men who have sex with men-selected sexually transmitted diseases clinics, 1993-1996. *Morbidity and Mortality Weekly Report.* 1997;46:889-892.

11. Perlman D. Morning-after HIV experiment starts in SF. *San Francisco Chronicle.* October 14, 1997.

12. Cates W. Contraception, unintended pregnancies, and sexually transmitted diseases: why isn't a simple solution possible? *American Journal of Epidemiology.* 1996;143:311-318.