

Post-HIV Exposure Treatment among Health Workers

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ABSTRACT

HIV exposure among health workers is still quite rare, including in Indonesia. Nevertheless, with the increase in new HIV cases due to intravenous drug abuse, there should be more health workers caring for HIV cases. To avoid exposure, universal precaution has to be implemented. If exposure occurs, the HIV state of the patient, as the source of body fluid should be determined, while the exposed health care worker needs to undergo counseling. Antiretroviral agents should be administered prior to 36 hours following exposure. Sero-conversion monitoring must be performed during exposure, also 3 months, 6 months, and 12 months following exposure. There have been 9 cases of HIV exposure due to accidents among health workers reported to the Working Group on AIDS (Kelompok Studi Khusus – Pokdisus AIDS) Faculty of Medicine of the University of Indonesia – Cipto Mangunkusumo General Central National Hospital. Six of them received AZT prophylactic treatment, while the remaining 3 chose not to use any prophylactic treatment. After six months following exposure, all anti HIV test were negative.

The number of HIV cases in the last two years has shown a tremendous increase. At the end of February 2002, the Department of Health recorded 2150 cases of HIV/AIDS in Indonesia.¹ As new cases increase among intravenous drug abusers, the number of HIV cases is estimated to increase further in the future, bearing in mind that experts have estimated that number of drug abusers in Indonesia have reached 2 million people. Those infected with HIV, especially those already in the AIDS stage, often require hospitalization for treatment of opportunistic infections. Thus, health workers have to prepare themselves to face the increasing problem of HIV infection.

To avoid contagion of HIV, Hepatitis B, and Hepatitis C that may reside in the patient's body fluids to another person, the Center for Disease Control (CDC) recommends universal precaution.² This guideline from CDC should be con-

tinuously distributed to allow health workers to continue to work with a feeling of security.

Nevertheless, there is still the possibility of accidents among health workers at work in the form of needle prick or direct exposure to body fluids from an HIV-infected individual.

RISK OF EXPOSURE IN HEALTH WORKERS

Until June of 1997, CDC has reported 52 cases of health workers infected by HIV at the work place. Another 114 health workers are also suspected to have been infected at the work place, but the incident was not completely recorded. These health workers did not have history of risk of exposure by other means. Fifty two workers were exposed through a prick or wound from an HIV-contaminated sharp object. Three were directly exposed with the virus in the laboratory, while another had no obvious mode of exposure. Fifty-five individuals were exposed through prick or wound due to a sharp object, five exposed to body fluids squirted to mucous membrane, and another was exposed to needle prick and splashes of body fluid.³

The risk of HIV contagion from needle pricks or splashing of body fluid is actually quite low. A prospective study found the risk of exposure from skin wound (needle prick or wound from HIV-contaminated sharp objects) is only 0.3%, while the risk of contagion due to splashes of HIV-contaminated body fluid on mucous membrane is estimated to be 0.09%. The risk of contagion due to exposure to contaminated fluids on skin that is no longer intact is considered to be less than that of mucous membrane.⁴ Different body fluids pose different risks of contagion, as described in Table 1.⁵

Research on animals demonstrates increased risk if the exposure involves a large volume of blood and a deep wound. The risk is also increased if the source of contagion is in an advanced stage of AIDS or has a high viral load. Such condition could increase the risk beyond 0.3%. On the other hand, the state of immunity of the health worker involved in the accident also plays a role. Exposed health workers who were not suffering from any

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Tabel 1. Risks HIV Contagion from Body Fluids³

High Risk	Undetermined Risk	Low Risk if Uncontaminated by Blood
Blood, serum Semen Sputum	Amniotic fluid Cerebrospinal fluid Pleural fluid	Cervix mucosa Vomit Feces
Vaginal Secretion	Peritoneal fluid Perikardial fluid Synovial fluid	Saliva Sweat Tears Urine

and water. Pressing the site to dispose blood does not reduce the risk of contagion. Mucous membrane exposed should be flushed with clean water. The application of bleach to skin or mucous surface is not recommended³

2. Evaluation of the source patient

If the HIV state of the patient who is the source of body fluid is unknown, the patient should be tested for HIV. To achieve rapid results, the rapid method for HIV testing (spot test) can be performed. If the results of the HIV test cannot be determined in 72 hours, and the source is considered infected with HIV, or in the case of unknown source, the body fluid should be considered as HIV positive for the time being.

3. Counseling of the health workers

The health worker should receive complete and accurate information on the risk of HIV exposure, the effectiveness and toxicity of antiretroviral drugs used for prophylaxis. Information on avoiding exposure to the sexual partner should also be conveyed. After the health worker has received complete information, he or she may choose whether or not he or she would like to receive antiretroviral agents.

4. Post-exposure prophylaxis

Administration of a combination of antiretroviral drugs is expected to prevent HIV contagion. However, due to the rarity of the drug in Indonesia, administration of a single drug, 500 mg of AZT daily for 4 to 6 weeks is recommended.

5. Follow-up

Clinical and laboratory follow-up to monitor the possibility of sero-conversion is performed at the time of exposure, 3 months, 6 months, and 12 months after exposure.¹⁰

6. Reporting

HIV exposure at the work place should be reported to the hospital AIDS team. If there is no hospital AIDS team, it can be reported to the Working Group on AIDS (Kelompok Studi Khusus-Pokdisus AIDS) of the Faculty of Medicine of the University of Indonesia—Dr. Cipto Mangunkusumo General Central National Hospital (telephone number 62-21-3905250 during office hours) or Yayasan Pelita Ilmu (telephone number 62-21-83795480, 24 hours). We provide consultations and AZT for no charge.

infection demonstrated a better T cytotoxic lymphocyte response.⁶

Following HIV exposure, there is a period of opportunity to prevent replication of the virus. After entering the body through a wounded skin or mucous membrane, the virus target dendritic cells. Infection of dendritic cells occurs within the initial 24 hours. Between 24 and 48 hours, the cell migrates to the regional lymph node. HIV can be detected in the body circulation on the fifth day. HIV replication inside lymphocytes occurs rapidly, where each lymphocyte cell can release 5000 virus particles. The exponential increase in the number of virus inside lymphocyte cells continues, unless if obstructed by antiretroviral agents or the body's immune system. In order for antiretroviral agents to work effectively in preventing contagion, they should be administered prior to 36 hours following exposure.⁷

A common antiretroviral agent is zidovudine/azidotimidin (AZT). Current recommendations are to use a two or three-drug regimen (with 3TC or other protease inhibitors) based on the level of HIV transmission risk and possibility of drug resistance.⁸

INCIDENTS OF ACCIDENTS WITH RISKS OF HIV EXPOSURE

In the year 2000, there were 9 accidents with risks of HIV exposure among health workers was reported to the Working Group on AIDS (Kelompok Studi Khusus-Pokdisus AIDS) of the Faculty of Medicine of the University of Indonesia—Dr. Cipto Mangunkusumo General Central National Hospital or Yayasan Pelita Ilmu. The incidents were mostly reported for consultations or requests for prophylactic treatment. The cases are described in Table 2.

Post HIV Exposure Management

1. Cleansing the site of prick or splash

The site of exposure should be washed with soap

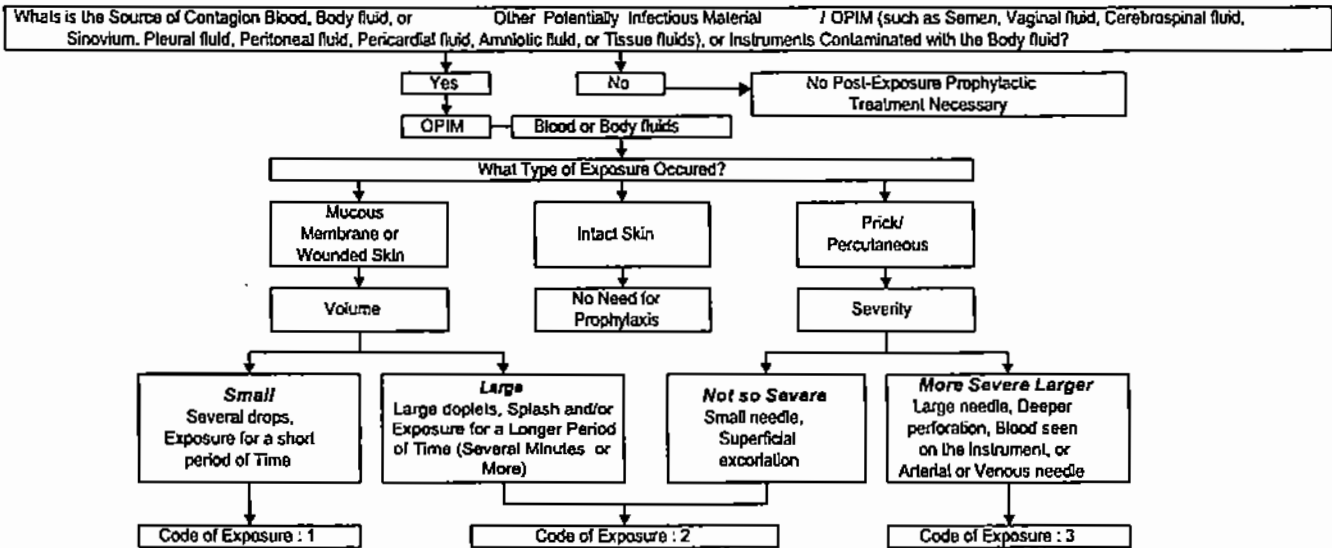
Tabel 2. Incidents of Accidents with Risk of HIV-Exposure among Health Workers Reported to the Working Group on AIDS (Kelompok Studi Khusus – Pokdisus AIDS) of the Faculty of Medicine of the University of Indonesia-Cipto Mangunkusumo Hospital in the year 2000

No.	Sex	Occupation	Type of Accident	Prophylactic Treatment	HIV Test Result after 3 months	HIV Test Result after 6 months
1.	Female	Nurse	Needle prick	Yes	Negative	Negative
2.	Female	Laboratory Worker	Needle prick	No	Negative	Negative
3.	Female	Nurse	Splash to the eyes	No	Negative	Negative
4.	Male	Nurse	Knife wound	Yes	Negative	Negative
5.	Female	Nurse	Needle prick	Yes	Negative	Negative
6.	Male	Physician	Needle prick	Yes	Negative	Negative
7.	Female	Nurse	Blood splash on the hands	No	Negative	Negative
8.	Male	Nurse	Needle prick	Yes	Negative	Negative
9.	Female	Nurse	Needle prick	Yes	Negative	Negative

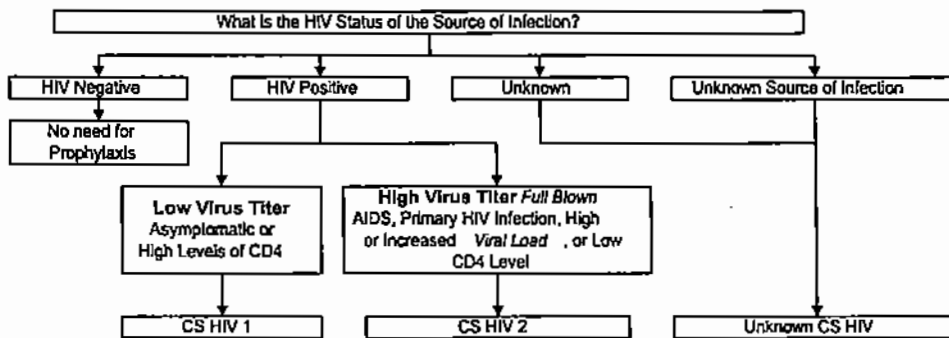
REFERENCES

1. Ditjen P2ML Departemen Kesehatan Republik Indonesia. Maj Support 2001.
2. CDC. Update universal precaution for prevention of transmission of human immunodeficiency virus, hepatitis B virus, and other bloodborne pathogens in health-care settings MMWR 1988;37:377-82.
3. Ippolito G, Puro V, De Carli G. The Italian study group on occupational risk of HIV infection. Arch Intern Med 1993;153:1451-8.
4. Fahey BJ, Koziol DE, Banks SM, Henderson DK. Frequency of non parenteral occupational exposure to blood and body fluid before and after universal precaution training. Am J Med 1991;90:145-53.
5. Lewis R. occupational exposure. In: Anderson J, editor. A guide to the clinical care of woman with HIV. Rockville: HIV/AIDS Bureau; 2000. p.377-93.
6. Cardo DM, Culver DH, Ciesielski CA et al. A case control study of HIV seroconversion in health workers after percutaneous exposure. N Engl J Med 1997;337:1485-90.
7. Hayes KA, Lafrado LJ, Erickson JG, Marr JM, Mathes LE. Prophylactic ZDV therapy prevents early viremia and lymphocyte decline but not primary infection in feline immunodeficiency virus-inoculated cats. J AIDS 1993;6:127-34.
8. CDC. Guidelines for the use of antiretroviral agents in HIV-infected adults and adolescents. MMWR 1997;46: 4382.
9. CDC. Public health service guidelines for the management of health-care worker exposures to HIV and recommendations for postexposure prophylaxis. MMWR 1998;47(RR-7):1-28.
10. Ciesielski CA, Metler RP. Duration of time between exposure and seroconversion in healthcare workers with occupationally acquired infection with human immunodeficiency virus. Am J Med 1997;102 Suppl 5B:115-6.

First Step : Determine the Code of Exposure (CE)



Second Step : Determine the Code of HIV Status of the Source of Infection (CS HIV)



Third Step : Determine the Need for Post-Exposure Prophylactic Need

Code of Exposure	CS HIV	Recommended Post-Exposure Prophylaxis
1	1	Possibly Unnecessary
1	2	Consider the Standard Regimen
2	1	Standard Regimen Recommended
2	2	Supplementary Regimen Recommended
3	1 or 2	Supplementary Regimen Recommended
Unknown	Unknown	If Code of Exposure is Suspected to be 2 or 3, the Standard Regimen Is Recommended

Standard regimen : 600 mg of Azidolimidin daily in divided doses (2 x 300 mg, or 3 x 200 mg, or 6 x 100 mg) and 2 x 150 mg Lamivudin for a course of 4 weeks.

Supplementary regimen : Standars regimen plus 3 x 800 mg of Indinavir, or 3 x 750 mg of Nelfinavir.