

# When the Unthinkable Happens: Post-exposure Prophylaxis of HIV-Contaminated Percutaneous Injuries

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Health Canada's Laboratory Centre for Disease Control (LCDC), in cooperation with the U.S. Centers for Disease Control and Prevention (CDC), issues recommendations on a variety of health concerns for the general population and for health care settings. These recommendations typically relate in only a general way to dental offices, but some may be very pertinent to dental procedures. One such recommendation, which has been modified relatively recently, is the protocol for post-exposure prophylaxis (PEP) of percutaneous injury with *known* HIV-contaminated blood.<sup>1</sup> This change has been supported by the Canadian Medical Association and other agencies concerned with infection control and aseptic procedures in health care settings. The PEP protocol is altered from time to time following review of prospective, case-controlled studies of HIV seroconversion in health care workers after percutaneous exposure to HIV-contaminated blood. These studies are commonly known as the CDC Needlestick Study.<sup>2,3</sup>

The staff in dental offices that treat patients known to be living with HIV should be aware of this protocol, and the office policies should reflect these recommendations. Unfortunately, dental office staff tend to under-report when percutaneous injuries occur, particularly when there is potential contamination with HIV.<sup>4</sup> Although the possibility of seroconversion following an HIV-contaminated percutaneous injury in a dental setting appears to be extremely unlikely,<sup>5</sup> contaminated percutaneous injuries in dentistry do, unfortunately, occur. Most dental care workers appear to be very careful and focused during intraoral procedures, but it is during extraoral procedures, such as laboratory work, operatory clean-up and instrument preparation for sterilization, that most percutaneous injuries contaminated with the patient's blood or saliva occur.<sup>6</sup>

Cumulative data from Canada and the United States have shown that the average risk of acquiring an HIV infection after percutaneous exposure is only 0.3%.<sup>3</sup> Although this number is

extremely low compared with other known risks in our modern life (such as driving a car), seroconversion in health care workers, including dental personnel, does still occur. Following the previous PEP recommendations, which used a single anti-retroviral agent, zidovudine (AZT; Retrovir), reduced this risk by as much as 79.0%.<sup>7</sup>

More current recommendations from CDC were introduced late in 1996 and are the basis for the Canadian Medical Association's recommendations.<sup>8</sup> The current recommendations take into account the potential for greater protection through a combined drug protocol using anti-retroviral protease inhibitors, namely 3TC (lamivudine). Although the drug IDV (indinavir) is also part of the revised recommendations, its potential toxicity has limited recommendations for its use to massive blood exposures — for example, transfusion with HIV-contaminated blood. Thus, the use of and familiarity with this drug is not necessary in most dental settings.

The recommended protocol for percutaneous injury with *known* HIV contaminated blood is as follows:

Immediately following an exposure injury, induce bleeding from the wound by squeezing the injury site and holding it under warm, running water. Thoroughly wash the wound several times with an appropriate anti-microbial handwash solution (see the Canadian Dental Association's *Workbook on Infection Control*<sup>9</sup> for more information). Primary closure of the wound, if necessary, should be performed.

Take the injured person immediately to an appropriate medical facility for post-exposure assessment. This assessment takes into account the nature of the exposure, the likelihood of HIV infection in the source patient and, in cases of known infection, the HIV titre and likelihood of drug resistance (if known). Appropriate counselling by trained medical personnel familiar with dealing with HIV exposure is vital.

Expediency in administering the anti-retroviral medications is crucial to success in preventing HIV seroconversion.

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The risk of infection should be weighed against the potential toxicity of the anti-retroviral drugs, but when appropriate, chemoprophylaxis must be started **within one to two hours** after the exposure and should continue for four weeks.

The recommended chemoprophylaxis is AZT 200 mg three times daily for four weeks and 3TC 150 mg twice daily for four weeks. These drugs may cause gastrointestinal symptoms (nausea, vomiting, diarrhea), fatigue, peripheral neuropathy, anemia and headache. Some of these side-effects may become debilitating while the drugs are being taken. The safety of 3TC during pregnancy has not been established.

An unfortunate reality of health care restructuring in Canada is that delays in emergency care may occur. Such delays may occur even in emergency rooms in major trauma centres where sensitization to dealing with such a health care crisis should exist. Staff from the author's dental clinic who have received known HIV-contaminated injuries have encountered delays of several hours in getting appropriate counselling and chemoprophylaxis in the emergency department of the dental clinic's own hospital, despite the author's impassioned demands for care.

Dental offices should check with their local health units or hospitals to ensure that injured personnel will be attended to **immediately** upon presentation and that the appropriate chemoprophylactic drugs are on hand for immediate administration, should they be necessary. Dental offices that treat several patients known to be living with HIV may wish to consider having at least one or two doses of these medications in their emergency drug kit, so that delays in medical attention are not a factor.

Percutaneous exposure to blood-borne pathogens such as HIV is a hazard every clinical practitioner in dentistry faces. By being properly forearmed with the necessary knowledge and protocol, practitioners can reduce the risk of seroconversion for themselves and their staff to as low as reasonably possible. Practitioners have a demanding enough practice without having to worry about the "terror factor"<sup>10</sup> of what to do if and whenever this unfortunate event occurs. ♦

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*The views expressed are those of the author and do not necessarily reflect the opinion or official policies of the Canadian Dental Association.*

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## References

1. Patrick DM. HIV post-exposure prophylaxis: new recommendations. *Can Med Assoc J* 1997; 156:233-4.
2. Marcus R. Surveillance of health care workers exposed to blood from patients infected with the human immunodeficiency virus. *N Engl J Med* 1988; 319:1118-23.
3. Tokars JI, Marcus R, Culver DH, Schable CA, McKibben PS, Banda CI, Bell DM. Surveillance of HIV infection and zidovudine use among health care workers after occupational exposure to HIV-infected blood. The CDC Cooperative Needlestick Surveillance Group. *Ann Intern Med* 1993; 118:913-9.
4. Ramos-Gomez F, Ellison J, Greenspan D, Bird W, Lowe S, Gerberding JL. Accidental exposures to blood and body fluids among health care workers in dental teaching clinics: a prospective study. *JADA* 1997; 128:1253-61.
5. Gooch BF, Cardo DM, Marcus R, McKibben PS, Cleveland JL, Srivastava PU, and others. Percutaneous exposures to HIV-infected blood among dental workers enrolled in the CDC Needlestick Study. *JADA* 1995; 126:1237-42.
6. Cleveland JL, Lockwood SA, Gooch BF, Mendelson MH, Chamberland ME, Valauri DV, and others. Percutaneous injuries in dentistry: an observational study. *JADA* 1995; 126:745-51.
7. Case-control study of HIV seroconversion in health-care workers after percutaneous exposure to HIV-infected blood — France, United Kingdom, and United States, January 1988 - August 1994. *MMWR* 1995; 44:929-33.
8. Update: provisional public health service recommendations for chemoprophylaxis after occupational exposure to HIV. *MMWR* 1996; 45:468-72.
9. Committee on Community and Institutional Dentistry. CDA workbook on infection control: a companion to the CDA guidelines on infection control. August 1997; IC-05-01.
10. David HT and David YM. Living with needlestick injuries. *J Can Dent Assoc* 1997; 63:283-6.

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*E-mail — 20 Reasons Why You Should Have it in Your Dental Office  
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## E-mail Is Here to Stay

E-mail is fast becoming an indispensable communication tool in both the business world and the home setting. In the not-too-distant future, not having an e-mail account will be like not having a telephone. E-mail's simplicity and widespread use are just two of the reasons why you should have it in your dental office. If you have any questions about e-mail, you are likely to catch me at [maclean@ns.sympatico.ca](mailto:maclean@ns.sympatico.ca).

## Recommendations

- Start a database with a list of your patients who have e-mail.
- Ask if your dental software will have e-mail capability soon.
- Find out more about e-mail by visiting <http://203.12.60.74/internet/email.htm#What>.
- Choose a user name that is simple and easy to remember.
- Get connected to the Internet and let the fun begin! ♦

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