Overview:

In providing health care, many health care workers face the challenge of providing optimum care and respect for patients while minimizing health and safety risks for themselves and others. In the case of caring for patients living with HIV, this can be a challenge fraught with questions and concerns. This briefing document will address many commonly asked questions about HIV transmission, occupational risk, universal precautions and post-exposure guidelines for health professionals caring for patients living with HIV.

HIV Transmission Equation:

Body Fluid with HIV:		**Activity:**		**Direct access for the virus to enter the bloodstream:**		**Risk of HIV Transmission**
Blood (including menstrual blood), semen, pre-cum, vaginal fluids, or breast milk	**+**	Unprotected sex (vaginal, anal, oral) and shared sex toys, sharing needles/ needlestick injury, or mother-to-child	**+**	Vagina, anus, urethra in the penis, open cuts and sores, injection, mucous membranes (e.g. mouth, eyes)	**=**	

Risk of HIV Transmission:[1]

The risk of HIV transmission is much lower than people often assume. Many people believe that if they come into contact with HIV infected blood, HIV transmission will be automatic. However, the actual risk levels when an individual comes into contact with a body fluid capable of transmitting the virus (e.g. HIV infected blood) are as follows:

- Contact with tissue under the skin (e.g. needle stick or cut) = approx. 0.3% (1 in 300)
- Contact with mucous membranes (e.g. splash to the eyes, nose or mouth) = approx. 0.1% (1 in 1000)
- Contact with intact skin (e.g. splash on forearm) = less than 0.1% (less and 1 in 1000). A small amount of blood on intact skin probably poses no risk at all; there have been no documented cases of HIV transmission this way. Risk may be higher if skin is damaged (e.g. recent cut), if the contact involves a large area of skin, or if the contact is prolonged.

As other body fluids, such as saliva, urine and feces do not contain significant amounts of the HIV virus, HIV transmission through contact with these fluids would be virtually impossible unless they were intermixed with HIV infected blood. Additionally, when exposed to the environment, the HIV virus dies very quickly, so contact with a body fluid which has been exposed to air poses little to no possibility of HIV transmission.[2]

Standard or Universal Precautions:

Standard or universal precautions are the mainstay of any office health and safety strategy. The foundational principles of universal precautions recognize that:

- Standardized protocols provide Occupational Health and Safety guidelines to keep workers safe and prevent exposure.
- Assuming that everyone is living with a communicable disease and treating all blood and body fluids as being potentially infectious are the best ways of reducing risk of exposure.
- Using the same precautions whenever you come into contact with body fluids or fecal matter, regardless of the source of the fluids, reduces the risk of exposure to HIV, Hepatitis C and a host of other infectious organisms.
- If you use standard precautions, then you are always protecting yourself as much as possible and you do not need to know a person's health status.

This last point is important, because in Canada an estimated 60,019 people are living with HIV/AIDS, yet approximately 27% of people living with HIV do not know their status.[3] As many people living with HIV are unaware of their status, they are unable to disclose that information to health providers. Additionally, many people exercise their legal right to privacy and choose not to disclose their HIV status to health providers because they fear they may be refused services or treated badly.

Strategies for Exposure Prevention:[4]

- **Standard Precautions:** consistent use of personal protective equipment like gloves, masks, protective eyewear or face shields and protective clothing. Covering of all cuts and abrasions.
- **Engineering controls:** technology-based safer designs for equipment like needle guards, self-sheathing needles
- **Workplace practice controls:** avoid handling, using, assembling or cleaning contaminated sharp instruments and equipment and use sharps containers
- **Workplace Policies:** have an office/ medical facility infection prevention and control program (including a manual with polices and procedures)
- **Workplace Champions:** identify an Infection Prevention and Control Officer to lead, coordinate and evaluate program.

Address Post-exposure Prophylaxis in Workplace Plan: Talk to your medical facility to ensure personnel will be attended to immediately and appropriate post-exposure medications (e.g. AZT 200 mg and 3TC 150 mg) are kept on site.

Did you know?

- Needlestick lab tests have shown that 50% of blood in hollow needles and 80% in suture needles may be removed when the needle passes through one or more layers of latex/vinyl contacting the skin.[5]
- "The risk of transmission in the dental office (from provider to patient, patient to provider or patient to patient) is so low as to be virtually undetectable"[6]
- During intraoral procedures dental care workers tend to be careful and focused; the majority of percutaneous injuries contaminated with patient's blood or saliva occur during extraoral procedures (e.g laboratory work, operatory clean up and instrument preparation for sterilization)[7]

When an Exposure Happens:[8]

While using universal precautions dramatically reduces the risk of exposure, workplace exposures do occasionally happen. If you experience an exposure, you should be aware of the following:

- Immediately induce bleeding; squeeze injury site and hold under warm running water
- Wash wound thoroughly with antimicrobial handwash solution several times
- If appropriate, seek post-exposure assessment at a medical facility
- The assessment will examine the nature of exposure, the risk level involved, the likelihood of HIV infection in source patient, and if HIV status is known, HIV titre and likelihood of drug resistance if known
- Counselling will be provided
- Risk of infection versus potential drug toxicity will be weighed (side effects include gastrointestinal symptoms, fatigue, peripheral neuropathy, anaemia and headache)
- If appropriate, post-exposure prophylaxis will be administered
- Ideally, post-exposure prophylaxis should be started 1-2 hours after exposure and continue for 4 weeks. Can be started up to 72 hours after exposure
- Undergoing post-exposure prophylaxis has been shown to reduce the risk of transmission by approximately 81%[9]

Mandatory Testing and Disclosure Act[10]

The Mandatory Testing and Disclosure Act allows "emergency responders" (e.g. police, paramedics, fire fighters and good Samaritans) who are exposed to another individual's body fluids while providing emergency assistance or while performing their duties to apply to the Provincial Court for a testing order to compel the source individual to be tested for communicable diseases (e.g. HIV, Hep B, Hep C). Applications to the Court must be made within 30 days of the exposure through completing an application for testing and having their physician complete a Physician's Report. The Physician's Report provides the court with information on 1) a risk assessment of the health risk posed to the applicant by the exposure and 2) the demonstrated need for the testing in order to manage the health of the applicant. The report assists the Court in identifying whether a testing order is appropriate and what the testing order should include. The "source individual" must be notified at least 7 days before the application is heard in court. Once an application is made, the Court considers it, and if a testing order is made, both the testing order and the Physicians Report are submitted to Alberta's Chief Medical Officer of Health who forwards these (with the

results of a database search) to the Medical Officer of Health for the health region where the individual resides. At this point, a health professional and analyst are designated to take the sample and the individual is given directions on how to comply with the order. When the testing is completed, the Medical Officer of Health provides both the applicant's physician and the individual's physician with a copy of the results.

While this Act provides emergency responders with recourse in cases of occupational exposure, the length of the process reduces its effectiveness in addressing possible HIV exposure. In many cases, individuals will voluntarily submit to testing in the case of an exposure. However, in cases where individuals do not voluntarily submit to testing, the total time required to go through this Court process would be over one week, which falls well outside of the 72 hours within which post-exposure prophylaxis must be started. Also, as HIV can take up to three months to show up in an individual's bloodstream, a single HIV test may not be definitive as the individual tested could be within this window period. Therefore, in the case of possible HIV exposure, this process provides little information relevant to the medical treatment of the individual exposed, while posing several ethical issues related to the forced testing of the source individual.

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[1] Centre for Disease Control: Bloodborne Pathogens – Occupational Exposure http://www.cdc.gov/OralHealth/infectioncontrol/faq/bloodborne_exposures.htm#3
[2] Canadian AIDS Society, HIV Transmission: Guidelines for Assessing Risk, 2005
[3] Health Canada, HIV/AIDS Surveillance Report to Dec. 31/2006; Canadian Public Health Association, 2007
[4] Infection Prevention and Control in the Dental Office: An opportunity to improve safety and compliance, Dr. Trey Petty, Canadian Dental Association, June 2006
[5] Journal of Infectious Disease 1993 168:1589-92.
[6] American Dental Association AIDS Update 2003 www.ada.org
[7] When the Unthinkable Happens, Dr. Trey Petty, *Journal of the Canadian Dental Association* 1999, Vol. 65, No.5 pg 293
[8] When the Unthinkable Happens, Dr. Trey Petty, *Journal of the Canadian Dental Association* 1999, Vol. 65, No.5 pg 293
[9] Health Protection Agency, Managing Exposures to Blood-borne Viruses, 2005. Electronic document. http://www.phoxd.org.uk/Training%20Resources/Accidental%20Occupational%20Exposure%20to%20BBVs.ppt Accessed September 27th, 2007.
[10] Alberta's Emergency Responders have new Tool to Protect Themselves and Backgrounder, Alberta Health and Wellness, September 2007 http://www2.gov.ab.ca/home/NewsFrame.cfm?ReleaseID=/acn/200709/22064FA6E538D-D568-9F18-98751C06F0DCC8C1.html ; Summary of Process under the Mandatory Testing and Disclosure Act, Alberta Health and Wellness http://www.health.gov.ab.ca/professionals/MTDA.html