The Third Decade of HIV/AIDS: A Brief Epidemiologic Update for Dentistry

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ABSTRACT

Dental professionals currently entering the dental workforce are witness to a significantly different set of oral health issues with HIV than those encountered when the epidemic began. Populations at risk for infection have changed over time and, in Canada, the United States, and the rest of the world, higher proportions of minorities and women have become infected. Medication regimens that help manage HIV as a more chronic disease have affected its presentation, its frequency and, perhaps, the significance of its oral manifestations. These medications may provoke comorbidities that challenge medical and dental disease management and health promotion. The dental office may become a site for rapid testing for HIV. The complexity of HIV infection and treatment behooves all health care professionals to be aware of developments in the prevention and epidemiology of HIV infection, and in oral health care for patients who are HIV-positive.

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The identification of infection with HIV that leads to AIDS in 1981 marks a historic turning point in medical and dental health.[1–3] Throughout the subsequent epidemic, the dental workforces of Canada and the United States have dealt with the impact of this virus on their personal and professional lives. Those currently entering the dental workforce will witness a significantly different disease. Medication regimens may hide traditional HIV oral manifestations and result in comorbidities that challenge medical and dental disease management and health promotion. The dental office may be a point of contact for rapid testing for HIV infection. In conjunction with other papers in this series, this paper provides a glimpse of the current epidemiology of HIV/AIDS and concentrates on the global, Canadian and US epidemics.

Although methods for collecting data differ by country, comparing global estimates for HIV infection with those for Canada and the United States provides insight into its relative impact on each country's patient population (**Table 1**). Globally, an estimated 39.5 million (range 34.1–47.1 million) people are living with HIV.[4] In 2006, the newly infected rate was over 10% of the number currently infected. The majority (63%) of people infected with HIV live in sub-Saharan Africa where 5.9% of people 15 to 49 years of age are thought to be infected. The Caribbean has the second highest rate (1.2%) of infection among adults. The rates in India, China and Russia are of increasing concern, especially the rates among young adults. The regional estimate for North America is slighlty lower than the global estimate of adult infection.

Table 1 Selected 2005–2006 statistics for HIV and AIDS around the world, and in Canada and the United States

Statistic	Global 2006	Canada 2005–2006	United States 2005–2006
Prevalence of HIV/AIDS (range of estimate)	39.5 million[4] (34.1–47.1 million)	58,000[5] (48,000–68,000)	1.2 million[4] (720,000–2 million)
Estimate (%) of adults 15–49 years of age living with HIV	1.0[4]	0.8[4]	0.8[4]
Annual incidence of HIV	4.3 million[4]	2,300–4,500[5]	NA[a]
Annual deaths from AIDS	2.9 million[4]	72[6,b]	17,011[7]
Top exposure categories	Reported regionally for leading exposure by selected regions[4]: • IDU in East Europe and Central Asia • Commercial sex workers in South and Southeast Asia (excluding India) • MSM in Western and Central Europe	For prevalent HIV[5]: 1. MSM 2. IDU 3. Heterosexual or from non-endemic country 4. Heterosexual or from endemic country 5. MSM–IDU	For AIDS diagnosis[4,7,c]: 1. MSM 2. High-risk heterosexual contact 3. IDU 4. MSM–IDU 5. Other
Other notable comments	In many areas, new HIV infections are heavily concentrated among young people 15–24 years of age[4]	Report conclusion: overall incidence is not decreasing[5]	Only 7 countries are estimated to have more people living with HIV than the United States[4]

IDU = injecting drug use; MSM = men who have sex with men; NA = not available.
[a]A number of states have confidential name-based reporting of HIV cases, but national estimates are available only for the incidence of AIDS.[7]
[b]According to the Public Health Agency of Canada, Quebec has not reported data since mid-2003, thus limiting the national data.[6]
[c]Ranking corresponds to UNAIDS 2006 reporting of exposure categories for HIV/AIDS.[4]

The leading routes of exposure for HIV infection vary by geographic region (**Table 1**). Routes of exposure in Canada and the United States seem similar. In the early years of the epidemic in the United States, for example, men who had sex with men were seen as the predominately infected population.[1] This is still the leading reported route of transmission in Canada[5] and the United States.[4,7,8] In Canada, whose system tracks incident HIV infections, the ranking for routes of incident infection is slightly different than that for prevalent infections, with injecting drug use dropping below the 2 heterosexual categories (data not shown in the Table).[5]

Globally, 17.7 million women (15.1–20.9 million) are living with HIV,[4] just under half (48%) of the estimated number of adults living with HIV. In sub-Saharan Africa, women are more likely to be infected than men, and in those 15 to 24 years of age, women represent almost 80% of those who are HIV-positive. Worldwide, the number of women and girls who are HIV-positive is increasing. In Canada, about 20% of the people living with HIV/AIDS at the end of 2005 were women, who represented 27% (620–1,240) of new infections.[5] In 2006, 26% of people 15 years of age and older living with HIV in the United States were women[4] and of those with new diagnoses of HIV or AIDS in 2004, 27% were female, as was found in Canada.

Although perinatal transmission is not discussed in the *AIDS Epidemic Update* from UNAIDS (Joint United Nations Programme on HIV/AIDS), some, but not all, sub-Saharan Africa countries have experienced about a 25% decline in HIV infections in young pregnant women.[4] The Public Health Agency of Canada found that children less than 15 years of age had 1.3% of the positive HIV tests between 1985 and 2006, and that 66% of those positive cases resulted from perinatal transmission.[6] In the United States, perinatal (vertical) transmission has markedly declined with the use of antiretroviral treatment during pregnancy or delivery.[1]

Increasing rates of infection among youths and young adults are a global concern. New infections are quite concentrated among young people (15–24 years of age), with this group representing 40% of new infections among persons 15 years or older in 2006.[4] In Canada, teens 15 to 19 years of age represented a small percentage of the total of positive HIV tests (1.5%) and AIDS cases (0.4%) at the midpoint of 2006.[6] However, since 1997, the largest number of annual cases of AIDS among this age group occurred in 2005, the last full year reported. In the

United States, teens 13 to 19 years of age accounted for 0.5% of the AIDS cases in 1981–1995, 0.7% in 1996–2000, and 0.9% in 2001–2004.[9]

Populations particularly vulnerable to high rates of HIV infection and challenges obtaining care and antiviral medications vary tremendously by region globally.[4] Women are frequently disproportionately highly represented within these vulnerable populations around the world. In the HIV epidemic in Canada, Aboriginal persons are a major concern.[5] Representing about 7.5% of HIV infections and 9% of new HIV infections, Aboriginals, who comprise 3.3% of the Canadian population, have rates almost 3 times higher than those for non-Aboriginals. Recently in the United States, African Americans, who comprise 12% to 13% of the population, represented half of the HIV/AIDS cases diagnosed.[4,9] The national estimate of HIV infection in the Hispanic population, who represent 14% of the US population, is 20% of infections.[4] In 2005 Native Americans, who comprise 1% of the US population, had an adult AIDS rate of 10.0 per 100,000, the third highest rate among reported racial and ethnic groups.[7]

As recently as 2004, the Fifth World Workshop on Oral Health Disease in AIDS, a review of the interactions of HIV infection with health issues concluded that "The evidence base for specific interactions is currently weak, partly because few good-quality studies have been published, partly because of the naïveté of the instruments currently available for recording these interactions and their inherent complexity."[10] This call for more rigorous HIV/AIDS research is being answered. Publications about complex systemic health interactions with HIV/AIDS as causes of death and a factor in mortality rates,[11] cardiovascular disease,[12] non-AIDS-defining malignancies,[13] metabolic syndrome[14] and reproductive health[15] have begun to appear.

The need for constant monitoring and communication of findings to assist in the prevention of HIV and clinical care for those infected with it has led to focused meetings such as an annual conference sponsored by the Foundation for Retrovirology and Human Health, in collaboration with the US Centers for Disease Control and Prevention, for clinicians and researchers to update and critique ongoing developments related to progress against AIDS (Conference on Retroviruses and Opportunistic Infections — CROI, www.retroconference.org); and resources such as Canadian AIDS Treatment Information Exchange (www.catie.ca), Canadian HIV/AIDS Information Centre (www.aidssida.cpha.ca), AIDS training and education centres (www.aids-ed.org) and HIVdent, an oral health care resource (www.hivdent.org).

A significant challenge lies in major portions of HIV-positive populations being unaware of their infection. Global estimates were not found and are difficult to calculate. In Canada and the United Sates, 1 in 4 persons with HIV is unaware of his or her infection.[4,5] In the United States, this means an estimated 252,000 to 312,000 persons are unaware of their infection.[1]

Oral health practitioners have a role not only in diagnosing an oral manifestation of HIV, but also in recognizing the potential significance of the manifestation. They must take appropriate action to manage the lesion and test for HIV. In the near future, oral health practitioners can expect to have a role in screening for HIV infection through rapid testing in the dental office.[16]

Conclusion

The introduction to a special issue of the US Centers for Disease Control and Prevention's *Morbidity and Mortality Weekly Report* published June 2, 2006, elegantly summarizes the current status of HIV infection[1]: "HIV/AIDS remains a potentially deadly chronic disease. Prevention of HIV infection requires a continued commitment from persons at risk, persons infected, and society as a whole. Prevention efforts need to keep pace with a changing epidemic. Most importantly, younger generations, who might not remember the deadlier, early days of the epidemic, continually need to receive basic HIV-prevention messages." Dentistry must continue to be a member of the health care team seeking optimal health for everyone by keeping up with medical advances in and prevention of this infectious chronic disease, and by continuing its own research about evidence-based oral health management.

The complexity of HIV infection and its treatment behooves all health care professionals to be aware of ongoing developments about the prevention of HIV infection and the care of patients who are HIV-positive. As the epidemic progresses and further advances are made in the treatment of HIV infection and related opportunistic infections, HIV infection is becoming more manageable. Oral health practitioners will find that their role is similar to that for treating patients with other complex medical conditions.

Note: As this article was ready to go to press, WHO/UNAIDS released *AIDS Epidemic Update: December 2007* (www.unaids.org/en/HIV_data/2007EpiUpdate/default.asp). This report is notable for a 16% reduction in the global estimate of people living with HIV and the proposed reasoning for that decrease. The main focus of the reduction is on 6 countries (Angola, India, Kenya, Mozambique, Nigeria and Zimbabwe). Given that these countries are not at the centre of our *JCDA* article and that the global HIV/AIDS and North America data remain the same, we decided to keep the statistics based on the UNAIDS 2006 report. This occurrence reinforces the need for all health care workers and policy makers to be alert for updates regarding HIV/AIDS.

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