

# **SUMMARY: ESTIMATES OF HIV PREVALENCE AND INCIDENCE IN CANADA, 2008**

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## **Background**

The Public Health Agency of Canada's (PHAC) Centre for Communicable Disease and Infection Control (CCDIC) produces national HIV and AIDS surveillance reports semi-annually. However, HIV and AIDS surveillance data do not include individuals who are untested and undiagnosed. Since surveillance data only describe the diagnosed portion of the epidemic, modelling and additional sources of information are required to produce the estimates that describe the epidemic among all Canadians living with HIV, both diagnosed and undiagnosed.

Estimating the number of people living with HIV is a task undertaken around the world to monitor the HIV epidemic, to guide planning for disease prevention and to help assess the effectiveness of prevention programs. PHAC/CCDIC produces two types of estimates as part of its mandate to monitor HIV/AIDS trends in Canada: prevalence, the number of people living with HIV (including AIDS), and incidence, the number of new infections in a one-year period. These estimates guide the work done by PHAC and other federal departments under the Federal Initiative to Address HIV/AIDS in Canada.

Estimates published in this report for years before 2008 replace all previous estimates that we have published concerning HIV prevalence and incidence in Canada because new data and methods have allowed an improved analysis of the epidemic and more reliable estimates.

## **Estimates of the number of people living with HIV at the end of 2008 and of the number of new HIV infections during 2008**

HIV/AIDS remains an issue of concern for Canada. The number of people living with HIV (including AIDS) continues to rise, from an estimated 57,000 in 2005 to 65,000 in 2008 (a 14% increase) (Table 1). The increase in the number of people living with HIV is due to two factors: new treatments have improved survival of HIV-infected persons and new infections continue to occur.

Although estimates of the number of new HIV infections are quite uncertain, it appears that the number of new infections in 2008 (estimated range between 2,300 and 4,300) was about the same as or slightly greater than the estimated range in 2005 (2,200 to 4,200) (Table 2). In terms of exposure category, men who have sex with men (MSM) continued to comprise the greatest proportion (44%) of new infections in 2008, which was only slightly lower than the estimated 45% they comprised in 2005. In 2008, the proportion of new infections among persons who inject drugs (IDU) was slightly higher than in 2005 (17% compared to 16%). The proportions of new infections were unchanged from 2005 in both heterosexual/non-endemic (20%) and heterosexual/endemic (16%) exposure categories.

Persons from HIV-endemic countries continue to be over-represented in Canada's HIV epidemic. New infections attributed to the heterosexual/endemic exposure category were in a range of 370 to 690 (16%) in 2008, yet according to the 2006 Census, approximately 2.2% of the Canadian population were born in an HIV-endemic country. Therefore, the estimated new infection rate among individuals from HIV-endemic countries is about 8.5 times higher than among other Canadians.

Aboriginal persons also continue to be over-represented in the HIV epidemic in Canada. An estimated 4,300 to 6,100 Aboriginal persons were living with HIV (including AIDS) in Canada in 2008 (8.0% of all prevalent HIV infections) which represents an increase of 24% from the 2005 estimate of 3,500 to

4,900 (7.4% of all prevalent infections in 2005). An estimated 300 to 520 new HIV infections occurred in Aboriginal persons in 2008 (12.5% of all new infections), higher than the corresponding figure for 2005 of 240 to 430 (10.5% of all new infections in 2005). These proportions for 2008 are much higher than the proportion of Aboriginal persons in the general Canadian population, which is 3.8% according to the 2006 Census. Therefore, the overall new infection rate among Aboriginal persons is about 3.6 times higher than among non-Aboriginal persons in 2008. The distribution of newly infected Aboriginal persons among exposure categories in 2008 was 66% IDU, 23% heterosexual, 9% MSM and 2% MSM-IDU. This compares to the following distribution for 2005: 63% IDU, 24% heterosexual, 11% MSM and 2% MSM-IDU.

At the end of 2008, there were an estimated 14,300 (12,200-16,400) women living with HIV (including AIDS) in Canada, accounting for about 22% of the national total. This compares to an estimated 12,200 (10,400-14,000) for 2005. There were an estimated 600 to 1,120 new HIV infections among women in 2008, while the corresponding figure for 2005 was 590 to 1100. The proportion of all new infections among women was unchanged from 2005 to 2008 (26%). With respect to exposure category, a slightly lower proportion of new infections was attributed to the heterosexual category in 2008 compared to 2005 (71% versus 73%), whereas a slightly higher proportion was attributed to IDU (29% in 2008 and 27% in 2005).

There have been 67,442 positive HIV tests reported to CCDIC since testing began in November 1985 to December 31, 2008, which translates to about 70,400 after adjusting for underreporting and duplicates. Of these, we further estimated that approximately 22,300 have died. Thus, there were an estimated 48,100 (70,400 minus 22,300) Canadians living with HIV infection in 2008 who have been diagnosed with HIV (tested positive) and were therefore aware of their HIV status. Since there was an estimated total of 65,000 persons living with HIV in Canada in 2008, the remaining 16,900 (range of 12,800-21,000) persons, or 26% of prevalent cases, were unaware of their HIV infection. This figure is slightly less than the estimate of 27% who were unaware of their HIV status in 2005.

The estimated percentage of people living with HIV who are unaware of their HIV status varies by exposure category. Approximately 19% of infected persons in the MSM exposure category and 25% of infected persons in the IDU exposure category were unaware of their HIV infection, whereas there was a much higher proportion unaware (35%) in the heterosexual exposure category (endemic and non-endemic combined). These percentages correspond to an estimated 6,000 (4,500-7,500) persons infected with HIV in the MSM exposure category, 2,800 (2,000-3,600) persons infected with HIV in the IDU exposure category and 7,000 (5,200-8,800) persons infected with HIV in the combined heterosexual exposure category who were unaware of their HIV-positive status.

## Conclusion

The 2008 estimates provide new numbers to illustrate the evolving HIV/AIDS trend in Canada, and as such will be of great interest to the scientific community, the media and the general public. The estimates comprise a key part of the evidence used to monitor the epidemic in Canada and to guide prevention and care programs.

Since new HIV treatments have reduced HIV mortality and new infections continue to occur, the overall number of Canadians living with HIV infection will likely continue to increase in the years to come. This will mean increased future care requirements.

HIV incidence in Canada is not decreasing. The estimated overall number of new HIV infections in Canada in 2008 was in the range of 2,300 to 4,300, which is essentially unchanged from 2005. In terms of the distribution of new infections by exposure category, the main difference from 2005 is a slight increase in the number of new infections attributed to IDU, which is related to the recently reported increase in new HIV diagnoses among persons who inject drugs in Saskatchewan.

Aboriginal people and persons from HIV-endemic countries continue to be over-represented in Canada's HIV epidemic, highlighting the need for specific measures to address the unique aspects of certain groups. Injecting drug use is the main HIV exposure category among Aboriginal persons and this overlap group (persons who are both Aboriginal and inject drugs) accounts for the majority of the newly diagnosed HIV infections in Saskatchewan.

At the end of 2008, an estimated 26% of the 65,000 individuals living with HIV in Canada were unaware of their infection. That makes this group "hidden" to the health care and disease monitoring systems, and until these individuals are tested and diagnosed, they cannot take advantage of appropriate care and treatment services, nor can they receive counselling to prevent further spread of HIV.

**TABLE 1:** Estimated number of prevalent HIV infections in Canada and associated ranges of uncertainty at the end of 2008 and 2005 (point estimates, ranges and percentages are rounded)

	MSM	MSM-IDU	IDU	Heterosexual/ Non-endemic	Heterosexual/ Endemic	Other	Total
<b>2008</b>	31,330 (25,400-37,200)	2,030 (1,400-2,700)	11,180 (9,000-13,400)	10,710 (8,300-13,100)	9,250 (6,800-11,700)	500 (300-700)	65,000 (54,000-76,000)
<b>%</b>	48%	3%	17%	17%	14%	1%	
<b>2005</b>	27,700 (22,400-33,000)	1,820 (1,200-2,400)	10,100 (8,100-12,100)	9,050 (7,000-11,100)	7,860 (5,800-9,900)	470 (280-660)	57,000 (47,000-67,000)
<b>%</b>	48%	3%	18%	16%	14%	1%	

MSM: men who have sex with men; IDU: persons who inject drugs; Heterosexual/non-endemic: heterosexual contact with a person who is either HIV-infected or at risk for HIV or heterosexual as the only identified risk; Heterosexual/endemic: origin in a country where HIV is endemic; Other: recipients of blood transfusion or clotting factor, perinatal and occupational transmission.

**TABLE 2:** Estimated ranges of uncertainty for number of incident HIV infections in Canada in 2008 and 2005 (ranges and percentages are rounded)

	MSM	MSM-IDU	IDU	Heterosexual/ Non-endemic	Heterosexual/ Endemic	Other*	Total
<b>2008</b>	1,000-1,900	50-130	390-750	450-860	370-690	< 20	2,300-4,300
<b>%</b>	44%	3%	17%	20%	16%		
<b>2005</b>	1,000-1,900	40-130	360-680	440-820	360-670	< 20	2,200-4,200
<b>%</b>	45%	3%	16%	20%	16%		

MSM: men who have sex with men; IDU: persons who inject drugs; Heterosexual/non-endemic: heterosexual contact with a person who is either HIV-infected or at risk for HIV or heterosexual as the only identified risk; Heterosexual/endemic: origin in a country where HIV is endemic; Other: recipients of blood transfusion or clotting factor, perinatal and occupational transmission.

\*New infections in the Other category are very few, and are primarily due to perinatal transmission.