



HIV/AIDS *EPI UPDATE*

Centre for Infectious Disease Prevention and Control

HIV in Canada Among Persons from Countries where HIV is Endemic

At a Glance

- ◆ **Persons from countries where HIV is endemic are over-represented in the HIV/AIDS epidemic in Canada. In 2001, approximately 1.5% of the Canadian population was born in a country where HIV is endemic, yet heterosexually-exposed persons from countries where HIV is endemic accounted for an estimated 7–10% of prevalent HIV infections and 6–12% of all new infections in 2002.**
- ◆ **Persons belonging to the HIV-endemic exposure subcategory are diagnosed with HIV at a younger age than other heterosexual exposure subcategories. Eighty per cent of positive HIV test reports occur in individuals under the age of 40.**
- ◆ **HIV/AIDS has a significant impact on women from countries where HIV is endemic. Women represented 52% of positive HIV test reports attributed to the HIV-endemic exposure category between 1998 and 2004 and 42% of AIDS cases during the same time period.**

Introduction

Reports by the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) estimated that at the end of 2004, the total number of people living with HIV/AIDS was 39.4 million (35.9–44.3 million) worldwide, which corresponds to an HIV prevalence of 1% among adults aged 15–49 years.¹ Some countries are more affected by HIV and AIDS than others. Most countries with high rates of HIV/AIDS are experiencing generalized epidemics, meaning that HIV is spreading throughout the general population rather than being confined to specific populations at higher risk (such as men who have sex with men and injecting drug users).² In countries experiencing these generalized epidemics, HIV is mainly spread through heterosexual contact.

The Centre for Infectious Disease Prevention and Control (CIDPC) maintains a list of countries that are experiencing generalized epidemics and refers to these countries as 'HIV-endemic countries' for the purpose of surveillance. 'HIV-endemic countries' are generally defined as those that have an adult prevalence (ages 15–49) of HIV that is 1.0% or greater and one of the following:

- ◆ 50% or more of HIV cases are attributed to heterosexual transmission;
- ◆ Male to female ratio of 2:1 or less; or
- ◆ HIV prevalence greater than or equal to 2% among women receiving prenatal care.

Examples of regions where HIV prevalence in adults is greater than one per cent include sub-Saharan Africa (7.4%, or 25.4 million people), and the Caribbean (2.3%, or 444,000 people).² A comprehensive list of HIV-endemic countries appears in Appendix A of this *Epi-Update*. This list is currently being updated to include other countries that meet the above criteria.

This *Epi Update* provides the most current information on the status of the HIV/AIDS epidemic in Canada among persons from countries where HIV is endemic, and is the product of collaboration between the Surveillance and Risk Assessment Division (SRAD) of CIDPC, Public Health Agency of Canada (PHAC), and the HIV-Endemic Working Group.* The data in this report are drawn from voluntarily submitted provincial and territorial surveillance data on positive HIV test reports and diagnosed AIDS cases from 1998 to the end of 2004.

Background

People from countries where HIV is endemic

In Canada, the proportion of the population born in a country where HIV is endemic is 1.5%, according to the 2001 Census.³ Relative to other provinces, Ontario and Quebec have a larger proportion of individuals born in countries where HIV is endemic, representing 2.6% and 1.3% of the provincial populations, respectively.³ Within these provinces, there are concentrations of individuals born in countries where HIV is endemic in such urban centres as Toronto (4.9%), Ottawa (2.9%) and Montreal (2.4%). The community of persons from countries where HIV is endemic is actually larger than what is captured by Census data, particularly when Canadian-born descendants of persons born in countries where HIV is endemic are considered.

The communities of people from countries where HIV is endemic are diverse, reflecting variations in historical backgrounds, language and cultural traditions. Unfortunately, these communities are disproportionately affected by many social, economic, and behavioural factors that not only increase their vulnerability to HIV infection, but also act as barriers to accessing prevention, screening and treatment programs. Two community surveys^{4,5} conducted among African and Caribbean communities and service providers found that such factors as racism, homelessness, transience, poverty, under-employment, settlement and status concerns presented barriers to program access. Other barriers identified by the surveys included: fear and stigma; denial as a coping mechanism; social isolation; lack of social support; job loss; fear of deportation; discrimination; power relations; and cultural attitudes and sensitivities about HIV/AIDS transmission, homosexuality, status of women, and sex/sexuality.^{4,5,6,7,8} In addition to these barriers, the surveys also found that there is a lack of culturally competent and accessible services due to location of services, language barriers, and the fact that health care may not be free depending on immigration status. Stigma, the isolation of HIV-positive individuals, and cultural and linguistic barriers to treatment were also identified as particularly critical issues by members of five East African communities in Toronto.^{9,10,11}

HIV and AIDS Surveillance

The ability to adequately monitor the HIV/AIDS epidemic among persons from countries where HIV is endemic requires accurate and complete access to key data elements, specifically country of birth and ethnicity. These data elements are collated at the national level, and provide information on ethnic categories (for example: White, Black, North American Indian) and country of birth. Country of birth information can be cate-

* The HIV-endemic Working Group is comprised of representatives from community groups (specifically: The African and Caribbean Council on HIV and AIDS in Ontario, and GAP-Vies in Montreal), public health departments, academia, and CIDPC. Members of the working group were from the following geographic areas: British Columbia, Ontario (Toronto and Ottawa), Quebec (Montreal), and Nova Scotia. Working group members helped to select the content of this publication and were an integral part of the review process.

gorized according to the 'HIV-endemic' country list that appears in Appendix A. Unfortunately, the completeness of these data elements across Canada is variable.

For HIV surveillance data, there are a limited number of cases with complete data on country of birth and ethnicity: less than 10% of records are submitted with country of birth data, and ethnicity data accompanies approximately one third (29.4%) of positive HIV test reports. Two of Canada's largest provinces, Ontario and Quebec, do not routinely collect and/or report country of birth data or ethnic information on their positive HIV tests. This is a limitation for conducting surveillance as these two provinces together account for over two-thirds of all positive HIV test reports. These provinces also include two large urban centers (specifically, Toronto and Montréal) that are ethnically diverse. The lack of country of birth and ethnicity data impairs the ability to accurately describe the HIV/AIDS epidemic among ethnic sub-groups. Reported AIDS cases are more complete for both fields. Data on country of birth are available for half of all cases, and ethnicity data for 87.6% reported AIDS cases. For more information on ethnicity, refer to the *Epi Update* entitled: "Ethnicity Reporting for AIDS and HIV in Canada: Aboriginal and Black Communities Demand Attention".¹²

Due to the limited coverage of these two data elements, CIDPC also uses exposure category information to monitor the HIV/AIDS epidemic within this population. The term "exposure category" refers to the most likely way a person became infected with the HIV virus, and is assigned according to a hierarchy of exposure categories.** The first four exposure categories are men who have sex with men (MSM), injecting drug use (IDU), recipient of blood/blood products (before 1985), and 'Heterosexual Contact'. These first three exposure categories are

generally accepted to be higher risk activities than heterosexual activity; if these activities are present, they are assumed to be the likely route of HIV acquisition.

The category most relevant to this discussion is the 'HIV-endemic' subcategory of the broader 'Heterosexual Contact' exposure category. The HIV-endemic exposure subcategory was first reported to CIDPC as its own category in 1998. In addition to the HIV-endemic subcategory, other subcategories within the Heterosexual Contact exposure category include 'Sexual contact with a person at risk' (such as an injecting drug user or a bisexual male) and 'No Identified Risk – Heterosexual' (NIR-HET) (cases where no HIV risks were reported except for a history of heterosexual sex). When using exposure categories to monitor the HIV/AIDS epidemic in this population, it is important to consider that it only captures those individuals from HIV-endemic countries who have been exposed to HIV/AIDS through heterosexual contact and excludes those who may have been exposed through other risks such as MSM and IDU. While much of the transmission within this population is through heterosexual contact, Remis & Merid¹³ provide evidence that a non-negligible proportion of HIV-infected men in Ontario from regions where HIV is endemic reported having had sex with other men (refer to the section entitled: 'HIV/AIDS Incidence and Prevalence Estimates Among Persons from Countries where HIV is Endemic', later in this document).

Although exposure category data are more complete than country of birth or ethnicity data, they are nonetheless incomplete. Exposure category information accompanies only 50% of positive HIV test reports at the national level, but is more complete for AIDS cases with 93% of cases containing these data. Because of the large amount of missing data, and the fact that the HIV-endemic

** Even though all risk factors associated with a positive HIV test report are reported to CIDPC, only one exposure category is assigned for national HIV/AIDS surveillance reporting. A person reporting more than one HIV-related risk factor will be placed in the exposure category corresponding to the activity or situation that is considered to have the highest risk of HIV transmission. The exposure category hierarchy appears in Appendix B.

exposure category is not inclusive of all persons from countries where HIV is endemic, the surveillance data presented in this report cannot provide a representative national picture of the HIV/AIDS epidemic among persons from countries where HIV is endemic. Caution should be used when making conclusions based on the percentages and frequencies in this document, as many estimates are based on small numbers.

HIV and AIDS Surveillance Data

The proportion of HIV test reports attributed to the HIV-endemic exposure category is on the rise

From 1998 to 2004, 15,876 positive HIV test reports and 2,989 AIDS cases among persons age 15 years and over were reported to CIDPC. Table 1 summarizes HIV and AIDS surveillance data for the Heterosexual Contact exposure category for positive HIV test reports and AIDS cases with exposure category information during the years 1998–2004. Of these reports, the HIV-endemic exposure subcategory amounted to 467 positive HIV test reports and 340 AIDS cases, accounting for 5.6% and 12.7% of reports with exposure category information, respectively.

For HIV surveillance data, the absolute number of positive test reports in the HIV-endemic exposure subcategory increased from 34 positive test reports in 1998 to 98 in 2004 (Figure 1). The proportion of overall

positive test reports attributed to the HIV-endemic category increased from 2.8% in 1998 to 7.8% in 2004.

Although the absolute number of AIDS cases attributed to the HIV-endemic exposure category has decreased over time (from 58 in 1998 to 30 in 2004), the proportion of overall AIDS cases attributed to the HIV-endemic exposure category has increased from 9.6% in 1998 to 15.9% in 2004 (Figure 2).

The increases in positive HIV test reports observed within the HIV-endemic exposure category could be due to a true increase in new infections among individuals born in HIV-endemic countries, better reporting for the HIV-endemic exposure category by the provinces and territories, or increased HIV testing in this population. Increased testing is at least partly responsible for this increase due to the recent policy of Citizenship and Immigration Canada (CIC) whereby immigrants and refugees are tested for HIV for purposes of counselling (refer to the section entitled: 'Immigration and HIV/AIDS Surveillance'). In fact, similar trends have been observed in other countries with large numbers of immigrants born in countries where HIV is endemic (such as the United Kingdom).¹⁴ Data from 12 countries in the European HIV surveillance network suggest that between 1997 and 2002 there was an increase in the number of cases diagnosed in people originating in countries with generalized HIV epidemics, (an increase of 179% from 1382 to 3861 diagnosed cases).¹⁵ The trends were largely driven by

Table 1. Proportion and Number of Cases from the Heterosexual Exposure Category from 1998 to 2004

Exposure Category	Positive HIV Test Reports (n= 8,324*)		AIDS Cases (n= 2,669*)	
	Percent	(Number)	Percent	(Number)
Heterosexual Contact	29.7%	(2,468)	29.1%	(776)
HIV-endemic	5.6%	(467)	12.7%	(340)
HET-RISK	14.1%	(1,176)	7.2%	(191)
NIR-HET	9.9%	(825)	9.2%	(245)

* n = number of cases with available information on exposure categories

Figure 1. Number of Positive HIV Test Reports Attributed to the HIV-endemic Exposure Subcategory and Proportion of all HIV Positive Test Reports by Year (1998-2004)

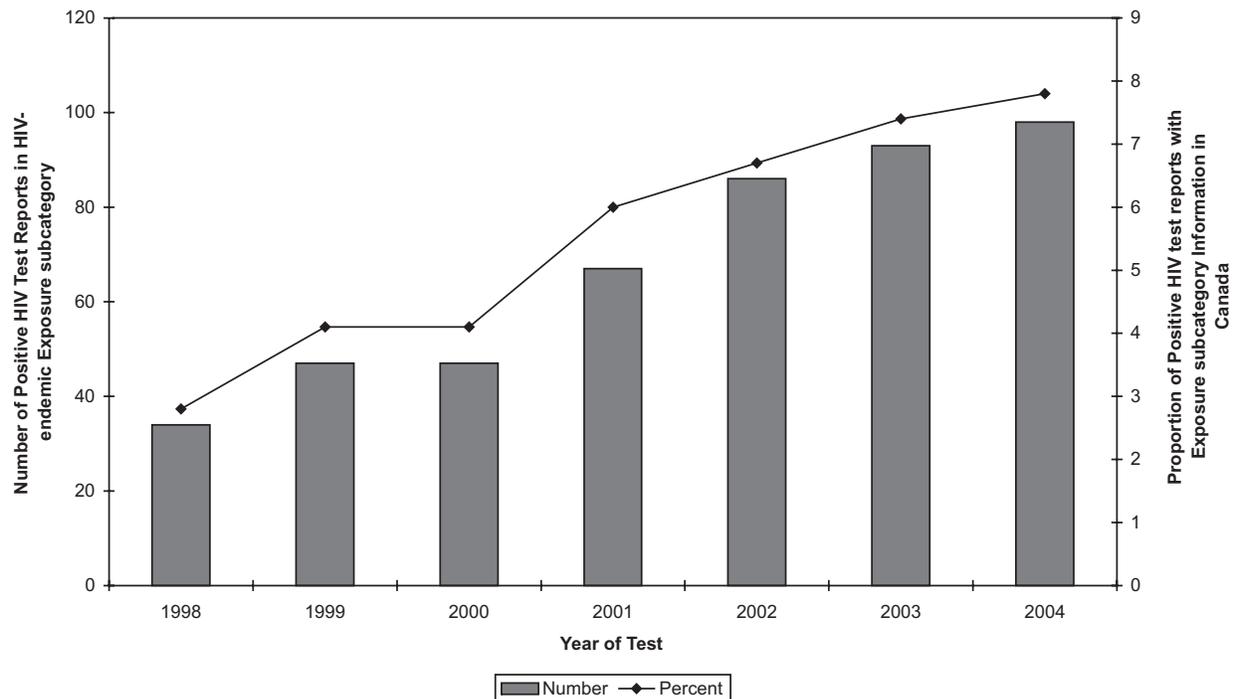
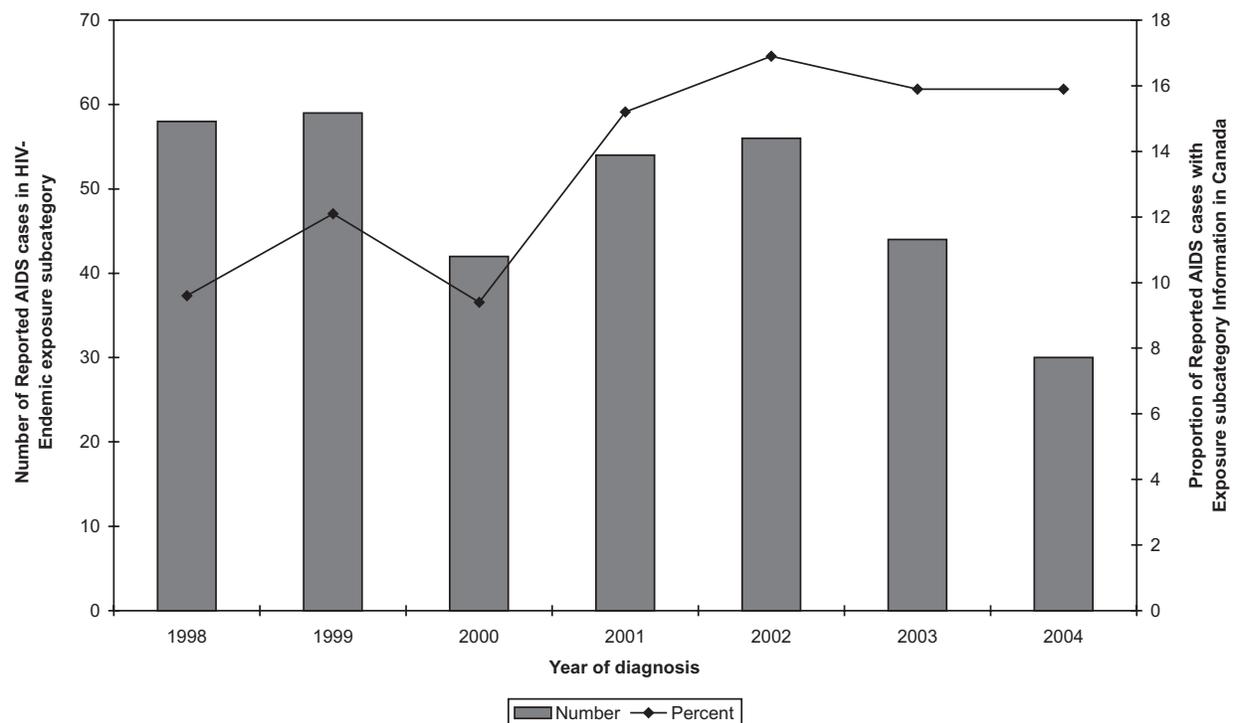


Figure 2. Number of Reported AIDS Cases Attributed to the HIV-endemic Exposure Subcategory and Proportion of all AIDS Cases by Year (1998-2004)



the UK, which accounted for 30% of the population and about 40% of the HIV diagnosis reported in the 12 countries in that time period. It is not a surprise that the UK accounts for a large proportion of HIV diagnosis since that country has a large population born in HIV-endemic countries.^{14,16,17}

A substantial proportion of positive HIV test reports and AIDS cases in the HIV-endemic exposure category occur in younger age groups

When the HIV-endemic exposure subcategory is broken down by age, some important findings emerge. Among positive HIV test reports attributed to this subcategory, 80% of reports occurred in those aged less than 40 years (34.2% among those < 30 years and 45.8% among those aged 30–39). For AIDS cases attributed to the HIV-endemic exposure subcategory, almost half of the cases (45.9%) were between the ages of 30 and 39. Another 14.4% were attributed to persons under the age of 30. Together, these two age groups account for

two thirds (60.3%) of AIDS cases within the HIV-endemic exposure category.

When compared to other subcategories within the larger heterosexual contact exposure category, the greatest contrast in age distribution is for AIDS (Figure 3). Within the HIV-endemic exposure subcategory, those ≤ 39 years old accounted for 60.4% of cases compared to 41.9% of cases in the category of sexual contact with a person at risk and 44.5% in the NIR-HET category.

A similar trend can be seen for positive HIV test reports: a substantial number of positive HIV test reports within the HIV-endemic exposure subcategory occurred in younger age groups when compared to other subcategories within the Heterosexual Contact exposure category. Figure 4 shows that 80% of positive HIV test reports in the HIV-endemic exposure category occurred among those ≤ 39 years old. Within other exposure categories, this age group accounted for 60% of test reports among those who reported sexual contact with a

Figure 3. Age Distribution of AIDS Cases Among the Heterosexual Contact Exposure Subcategories: 1998-2004

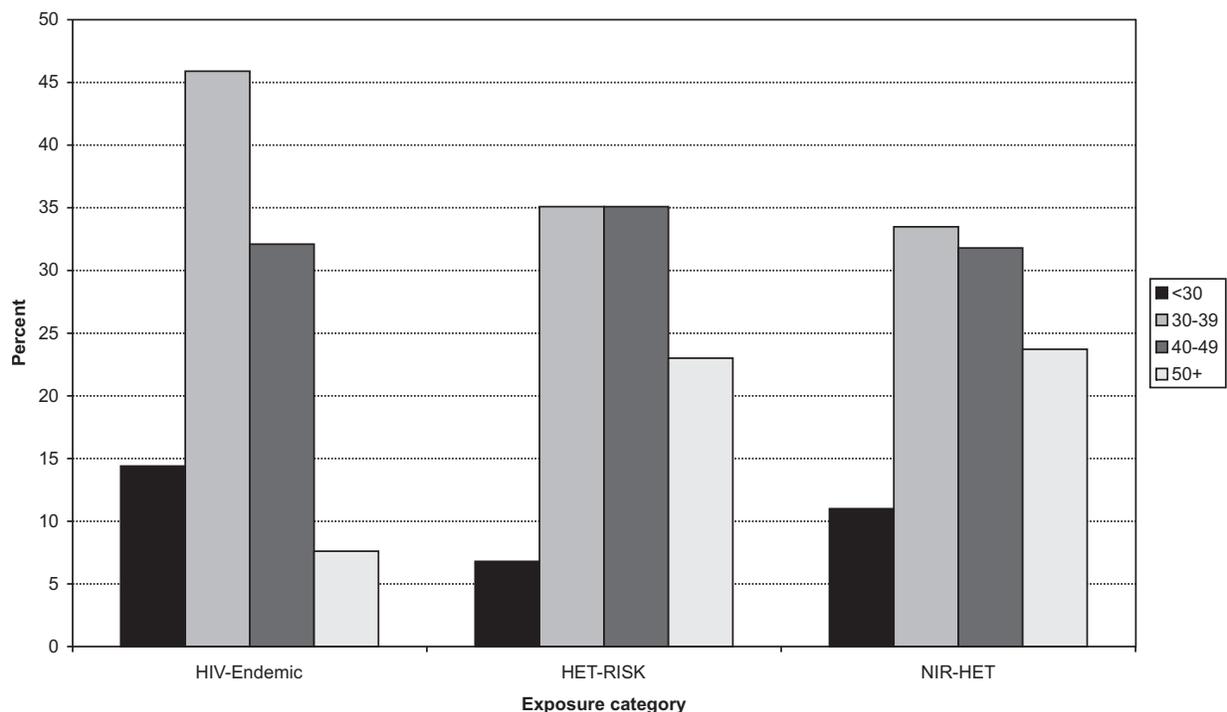
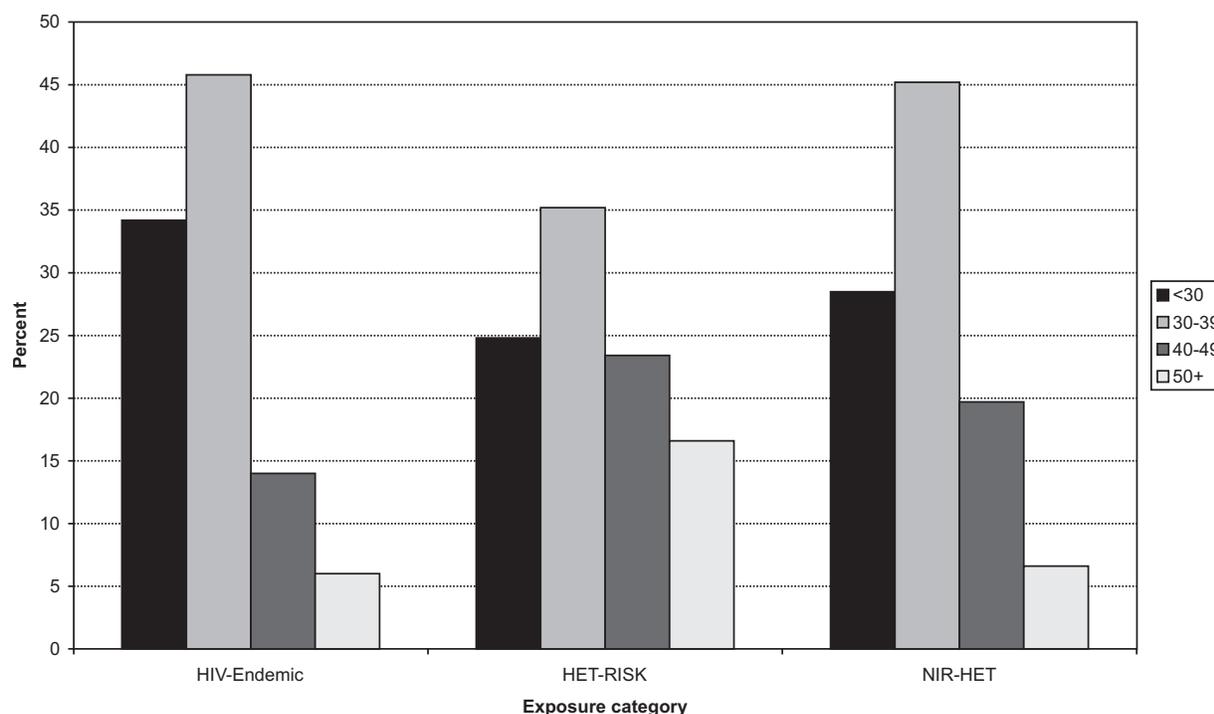


Figure 4. Age Distribution of Positive HIV Test Reports Among the Heterosexual Contact Exposure Subcategories: 1998-2004



person at risk, and 73.7% of test reports in the NIR-HET exposure category.

The large proportion of positive HIV test reports among younger age groups within the HIV-endemic exposure subcategory suggests that compared to others infected through heterosexual contact, persons in the HIV-endemic exposure category are infected at a younger age. These findings can act as early warnings for public health practice since they indicate that HIV prevention and control programs could be more effective if targeted to a younger audience.

Ethnicity within the HIV-endemic exposure subcategory

Of the 247 positive HIV test reports belonging to HIV-endemic exposure subcategory with information on ethnicity, 90.3% identified themselves as 'Black', 4.9% as 'Asian', 2.8% as 'Other', and 2% as 'White'. Among similarly defined AIDS cases, 87.4% identified themselves as 'Black', 7.1% as 'Asian', 3.4% as 'Other', and 2% as 'White'.

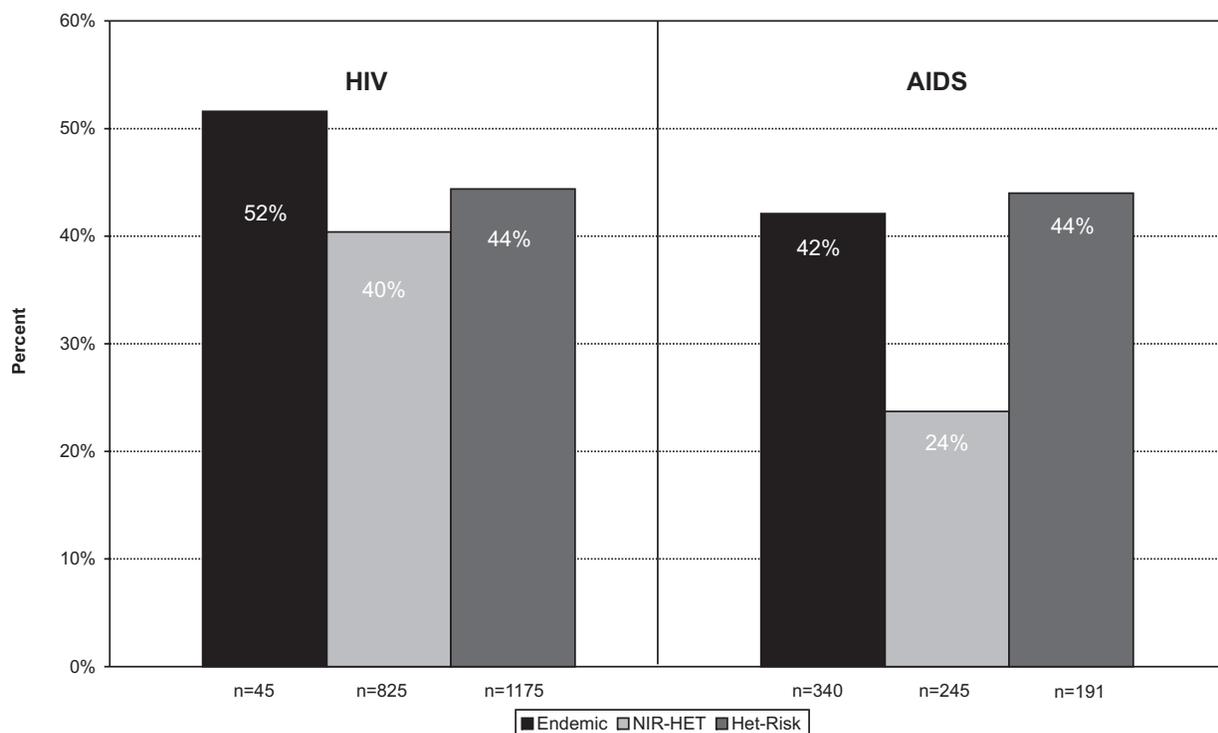
Two of Canada's largest provinces, Ontario and Quebec, do not provide ethnic information on positive HIV test reports to the national level. This is a limitation for monitoring the epidemic among persons from countries where HIV is endemic as these two provinces together account for over two-thirds of all positive HIV test reports. These two provinces also include two large urban centres, namely Toronto and Montréal, which contain large proportions of people from countries where HIV is endemic.

Women Represent Over Half of those in the HIV-endemic exposure category

Between 1998 and 2004, women accounted for 239 positive HIV test reports and 143 AIDS cases within the HIV-endemic exposure subcategory. Figure 5 demonstrates the proportion of positive HIV test reports and AIDS cases accounted for by women in the Heterosexual contact subcategories.

Among positive HIV test reports, women accounted for 51.6% of all positive tests attributed to the HIV-endemic exposure

Figure 5. Proportion of Positive HIV Tests Reports and AIDS Cases Attributed to Females for the Heterosexual Contact Exposure Subcategories: 1998-2004



category. For the other heterosexual contact subcategories, women also accounted for a substantial proportion of cases: 44.4% of the sexual contact with a person at risk subcategory and 40.4% of the NIR-HET subcategory. For AIDS surveillance data, women accounted for 41.9% of AIDS case reports within the HIV-endemic exposure subcategory, compared to 44.0% and 23.7%, respectively, of the sexual contact with person at risk and NIR-HET categories. However, these data are based on small numbers.

As discussed in the introduction, there are a number of health determinants (such as poverty) that influence vulnerability to HIV infection and access to services within the community. While women from countries where HIV is endemic are affected by many of these determinants, it has been proposed that certain subpopulations (such as women and refugees) are especially marginalized and made more affected by these barriers.¹⁸

Women of Childbearing Age and Perinatal Transmission

Since women account for a substantial number of positive HIV-test reports within the HIV-endemic exposure subcategory, and since the HIV epidemic appears to be affecting younger persons within this subcategory, it is important to consider women of childbearing age (ages 15 to 44) and the potential for perinatal HIV transmission. Each year a number of infants are perinatally exposed to HIV due to the positive HIV status of their mothers. The Canadian Perinatal HIV Surveillance Program collects data on the HIV status of such infants through a national, non-nominal confidential survey on infants known to pediatricians in tertiary care centers and HIV specialists in clinics across Canada. The Canadian Pediatric AIDS Research Group (CPARG) conducts surveillance on such exposures, access to preventive treatment, and actual infections that occur following exposure.

Figure 6 summarizes maternal country of birth data for infants in Canada who were perinatally exposed to HIV and for whom the maternal exposure category was heterosexual contact. Prior to 1998, three regions accounted for approximately 90% of exposures: North American-born mothers accounted for 31% of exposures, followed by Caribbean-born mothers at 31% and African-born mothers at 28%. By 2004, there were increases in the proportion of exposures attributed to North American and African-born mothers, accounting for 47% and 42% respectively. The proportion of exposure attributed to Caribbean-born mothers decreased to 5% of all exposures.

When interpreting these data, it is important to note the data presented in this section are based on infants born to women who were known to be HIV positive. The numbers presented do not reflect all infants perinatally exposed to HIV infection, as not all pregnant women are aware of their HIV status. Also, the region of birth data presented by CPARG

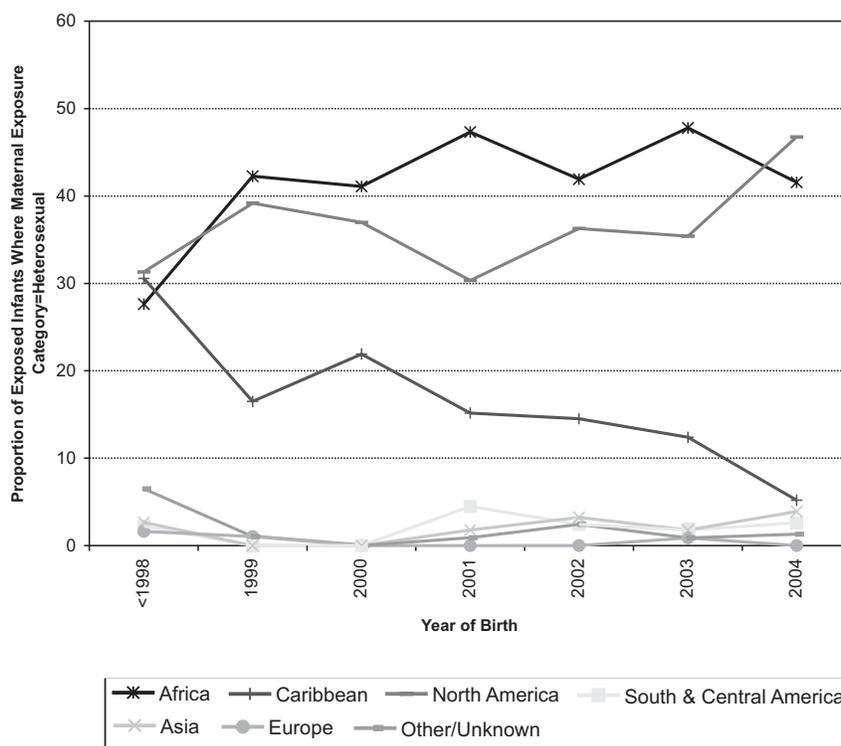
does not break out the sub-Saharan regions of Africa.

Although all provinces and territories in Canada promote voluntary HIV testing of pregnant women and women considering pregnancy, there is variation in how this policy is implemented across jurisdictions. For more information on perinatal transmission, refer to the *Epi Update* entitled "Perinatal Transmission of HIV".¹⁹

HIV-1 Strains

The Surveillance and Risk Assessment Division (SRAD) recently released a report on the distribution of HIV-1 strains based on 1,994 samples that were collected between the years 1986 and 2004.²⁰ Overall, the vast majority of positive samples were of the B group HIV-1 strain as compared with the non-B group HIV-1 strain (89% and 11% respectively). However, the HIV-endemic exposure subcategory accounted for the highest proportion of non-B group HIV-1 at 82.2% of tests in this exposure category.

Figure 6. Maternal Heterosexual Exposure Category by Region of Birth for Perinatally HIV-exposed Infants Canada 1984-2004



The high concentration of non-B group HIV-1 strains in the HIV-endemic exposure sub-category has been supported by an Ontario study by Njihia²¹ and colleagues that used some of the data from the SRAD. These data were based on samples collected between October 2003 and October 2004. The HIV-endemic category had the highest proportion of non-B group strain with 77.3% of the samples (17 out of 22 samples) with this strain. The researchers also looked at the distribution of strains by region of birth and found that 91.5% of positive persons born in North America had B group HIV-1, compared with 86.7% of persons born in Sub-Saharan Africa with non-B group. Clearly, strain type is related to country of birth which in turn is related to the fact that non-B strains predominate in Africa and other regions of the world outside of North America, Europe and Australia/New Zealand.

The observed difference in strains between the HIV-endemic category and all other exposure categories has public health implications for the prevention, detection and treatment of HIV/AIDS. As the diversity of HIV-subtypes continues to shift, it will invariably create a public health challenge to ensure existing diagnostic tests detect all subtypes, including the various non-B strains. In addition, information on strain type will help direct future vaccine development and will help assess the utility of any future vaccine for the specific situation found in Canada.²²

Immigration and HIV/AIDS Surveillance

On January 15, 2002, Citizenship and Immigration Canada (CIC) initiated routine HIV testing for all applicants who require an Immigration Medical Examination (IME) and are 15 years and over, as well as for those children who have received blood or blood products, have a known HIV-positive mother or are potential adoptees. In June 2002, the *Immigration and Refugee Protection Act*

(IRPA) was implemented, requiring that applicants be assessed for inadmissibility on the basis of health care needs. Certain groups, such as refugees and family-class immigrants, are exempted from the Act. Further information on this legislation is available on the CIC Web site (www.cic.gc.ca).

Between January 15, 2002 and December 31, 2004, 1,474 applicants tested positive for HIV during their IME.^{***} Of these 1,474 applicants:

- ♦ 918 were identified via testing in Canada, and 556 were identified outside of Canada; and,
- ♦ 981 (67%) were born in Africa and the Middle East, 334 (23%) in the Americas, 109 (7%) in Asia and 50 (3%) in Europe.

For HIV screening conducted in Canada, most provinces and territories handle positive HIV test reports in the same manner as all other positive HIV tests and included them in their HIV report to CIDPC. The 918 positive HIV test reports identified in Canada represent 12% of the 7,522 positive HIV tests reported to CIDPC during the above-mentioned time period.

HIV/AIDS Incidence and Prevalence Estimates Among Persons from Countries where HIV is Endemic

National HIV surveillance data capture only those who are tested, whose HIV infection is diagnosed and whose positive test results are reported to CIDPC. As a result, surveillance data do not describe the full scope of the epidemic. Calculations using national surveillance data supplemented by other data sources and analytic methods are carried out to estimate the total number of people living with HIV (prevalence) and the number newly infected with HIV (incidence).

^{***} Correspondence with CIC, March 15 2005.

CIDPC has estimated the number of Canadians living with HIV, including those living with AIDS (prevalence), to be 56,000 (46,000–66,000) in 2002.²³ Of these, it was further estimated that there were approximately 3,700 to 5,700 prevalent HIV infections among persons from HIV-endemic countries within the heterosexual exposure category, representing 7 to 10% of all prevalent infections in Canada.

It has also been estimated that 250 to 450 of the estimated 2,800–5,200 new HIV infections diagnosed in Canada in 2002 (representing 6 to 12% of all new infections in Canada),²³ were among persons belonging to the HIV-endemic exposure subcategory. It is important to consider that these incident infections include a mix of infections that were acquired in a person's country of origin as well as infections that were acquired in Canada. Remis & Merid¹³ have undertaken a modelling exercise to try to differentiate the sources of infection in Ontario, and their results suggest that 20–60% of new infections in the HIV-endemic group in Ontario occurred after arrival in Canada. Distinguishing between HIV infections acquired abroad or within Canada is important not only for accurately measuring Canadian incidence, but also for more effectively guiding prevention and care programs, particularly when considered with demographic characteristics such as age and gender.

When these national incidence and prevalence estimates are compared to data from the 2001 Census, it is clear that persons from countries where HIV is endemic are over-represented in Canada's HIV epidemic. In 2001, approximately 1.5% of the Canadian population was born in a country where HIV is endemic,³ yet this group accounted for an estimated 7–10% of prevalent HIV infections and 6–12% of all new infections in 2002.

As previously mentioned, the estimates noted above pertain only to HIV-infected persons from countries where HIV is endemic within the Heterosexual Contact exposure

category. Persons from HIV-endemic countries in other exposure categories are not included and the number of such persons is likely not insignificant. For example, using mathematical modelling, Remis & Merid¹³ estimated that there were 2,627 persons from HIV-endemic regions (1,366 from sub-Saharan Africa and 1,261 from the Caribbean) living with HIV infection and residing in Ontario in 2002. This number comprises 11% of the estimated 23,563 HIV-infected people in Ontario, which is much higher than the 2.6% of the Ontario population that is from a country where HIV is endemic. In addition, Remis and Merid¹³ estimated that at least 400 or more of these HIV-infected 2,627 persons were from the MSM exposure category.

In 1999, Adrien et al.²⁴ estimated the prevalence of HIV infection among Montrealers of Haitian origin in a clinic-based epidemiological study of 5,039 persons aged 15 to 49 born in Haiti or with at least one parent born in Haiti. Overall, the HIV prevalence in this population was 1.3% (1.6% in men and 1.1% in women), and was lower among those born in, or who were long-term residents of, Canada. These data further illustrate the overrepresentation of persons from HIV-endemic countries in Canada's HIV epidemic.

Comment

Limitations

This report has summarized HIV and AIDS surveillance data for persons belonging to the HIV-endemic exposure subcategory of the broader Heterosexual Category. It should be noted that due to a number of limitations as mentioned above, surveillance data underestimate the magnitude of the HIV epidemic and do not represent the actual number of people infected with HIV (prevalence) or the number of people newly infected with HIV during one year (incidence). Surveillance data do not provide information on those HIV-infected persons who remain untested and undiagnosed. CIDPC has estimated that approximately

30% of the estimated 56,000 Canadians living with HIV infection at the end of 2002 were unaware of their infection.²³ In addition, the completeness of surveillance data is affected by under-reporting, reporting delays, and incomplete information for some variables (especially ethnic status and exposure category). Reliance on the 'HIV-endemic' exposure category does not capture information on persons from countries where HIV is endemic who are assigned to an exposure category higher up in the hierarchy (such as MSM or IDU). Further limitations to the HIV/AIDS surveillance data are detailed in 'HIV and AIDS in Canada Surveillance Report to December 31, 2004'.²⁵

Interpretation

Despite the limitations associated with surveillance data, a picture emerges of the pattern of the HIV/AIDS epidemic among persons from countries where HIV is endemic. The observed trends suggest there is an increasing proportion of reported HIV and AIDS cases attributed to this group and that this group is overrepresented in the Canadian HIV epidemic. Furthermore, those particularly affected include persons under the age of 40 and women, including women of childbearing age. Most of the people associated with the HIV-endemic exposure category identify themselves as being of 'Black' ethnicity.

Public Health Implications

There is a need for improved HIV/AIDS surveillance data at the national level to permit better monitoring and characterization of trends in HIV among persons from HIV-endemic countries, which will in turn provide better data to guide prevention and care programs for this group. To accomplish this, CIDPC is strengthening its collaboration with provincial/territorial governments and community stakeholders specifically to find ways to improve the quality of exposure category and ethnicity information for the population born in countries where HIV is

endemic. It is also important that further research in this area is developed to better understand the reasons behind these observed trends and to assess the best way to address them. More complete surveillance and research information would enable policy makers, public health officials, and community members to jointly develop, implement and sustain culturally relevant prevention, education and support services for this population across Canada.

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APPENDIX A

HIV-ENDEMIC COUNTRY LIST

Caribbean:

Anguilla	Haiti
Antigua and Barbuda	Jamaica
Bahamas	Martinique
Barbados	Montserrat
Bermuda	Netherland Antilles
British Virgin Islands	Saint Lucia
Cayman Islands	St. Kitts and Nevis
Dominica	St. Vincent and the Grenadines
Dominican Republic	Trinidad and Tobago
Grenada	Turks and Caicos
Guadeloupe	U.S. Virgin Islands

South America: French Guiana

Africa:

Angola	Liberia
Benin	Madagascar
Botswana	Malawi
Burkina Faso	Mali
Burundi	Mozambique
Cameroon	Namibia
Cape Verde	Niger
Central African Republic	Nigeria
Chad	Rwanda
Congo	Senegal
Equatorial Guinea	Sierra Leone
Ethiopia	Somalia
Gabon	Sudan
Gambia	Swaziland
Ghana	Tanzania
Guinea-Bissau	Togo
Guinea	Uganda
Ivory Coast	Zaire
Kenya	Zambia
Lesotho	Zimbabwe

APPENDIX B

EXPOSURE CATEGORY HIERARCHY

Exposure Category Hierarchy

HIV and AIDS cases are assigned to a single exposure category according to a hierarchy of risk factors. If more than one risk factor is reported, a case is classified as the exposure category listed first (or highest) in the hierarchy. For example, injecting drug users (IDU) may also be at risk of HIV infection through heterosexual activity. Injecting drug use is accepted as the higher risk activity even though there may also be risk of HIV infection through sexual activity. The only exception to this is men who are reported to have had sex with men (MSM) and to have also injected drugs. Such cases are classified in the combined exposure category MSM/IDU.

Exposure Categories

The exposure categories are defined as follows:

MSM: Men who have had sex with men; this includes men who report either homosexual or bisexual contact.

MSM/IDU: Men who have had sex with men and have injected drugs.

IDU: Injecting drug users.

Blood/Blood Products:

- a) **Recipient of Blood/Clotting Factor:** Before 1998, it was not possible to separate this exposure category. However, where possible, it has been separated into subcategories b and c.
- b) **Recipient of Blood:** Received transfusion of whole blood or blood components, such as packed red cells, plasma, platelets or cryoprecipitate.

- c) **Recipient of Clotting Factor:** Received pooled concentrates of clotting factor VIII or IX for treatment of hemophilia/coagulation disorder.

Heterosexual Contact

- a) **Origin from an HIV-Endemic Country/ Sexual Contact with a Person at Risk:** Before 1998, it was not always possible to separate this exposure category. However, where possible, it has been separated into subcategories b and c.
- b) **Origin from an HIV-Endemic Country:** People who were born in a country where HIV is endemic (i.e. a country in which the predominant means of HIV transmission is heterosexual contact).
- c) **Sexual Contact with a Person at Risk:** People who report heterosexual contact with someone who is either HIV-infected or who is at increased risk for HIV infection (i.e. injecting drug user, bisexual male, or a person from an HIV-endemic country).
- d) **NIR-HET:** If heterosexual contact is the only risk factor reported and nothing is known about the HIV-related factors associated with the partner, the case would be classified as *No Identified Risk-Heterosexual* (NIR-HET).

Occupational Exposure: Exposure to HIV contaminated blood or body fluids, or concentrated virus in an occupational setting. This applies only to reported AIDS cases and not occupational positive HIV test reports, which are listed under "Other".

Perinatal Transmission: The transmission of HIV from an HIV-infected mother to her child either *in utero*, during childbirth, or through breastfeeding.

Other: Used to classify cases in which the mode of HIV transmission is known but cannot be classified into any of the major exposure categories listed here – for example, a recipient of semen from an HIV positive donor.

NIR (No Identified Risk): Where the history of exposure to HIV through any of the modes listed is unknown, or there is no reported history. This exposure category may include cases that are currently being followed up by local health department officials; people whose exposure history is incomplete because they died, declined to be interviewed or were lost to follow-up; and people who cannot identify any mode of transmission.

Exposure Category Not Reported: In certain provinces, it is not possible to report information regarding exposure category; such cases are thus classified as *Not reported*. This applies only to positive HIV test reports, and not to reported AIDS cases.

For more information, please contact:

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