BC Centre for Disease Control
AN AGENCY OF THE PROVINCIAL HEALTH SERVICES AUTHORITY

HIV

Annual Report 2011

Contact Information

BC Centre for Disease Control
Clinical Prevention Services
655 West 12th Avenue
Vancouver BC V5Z 4R4
Phone: 604-707-5621
Fax: 606-707-5604
Email: stdinfo@bccdc.ca

Date of publication: October 9, 2012
Report is available at www.bccdc.ca

Suggested citation:
BC Centre for Disease Control. (2012). HIV in British Columbia: Annual Surveillance Report 2011.
Retrieved from http://www.bccdc.ca/util/about/annreport/default.htm

Table of Contents

Preface 4

Summary of Trends 6

HIV 7
Notes Regarding the Interpretation of HIV Data 7
HIV by Region, Gender and Age 8
HIV by Ethnicity 13
New HIV Diagnoses among Aboriginal People 15
HIV by Exposure Category 16
New HIV Diagnoses among Men who have Sex with Men 19
New HIV Diagnoses among People who Use Injection Drugs 21
New HIV Diagnoses among People who acquire HIV through Heterosexual Contact 23
HIV in Pregnancy 25
Prenatal HIV Testing 26
Provincial Surveillance Data Collated by the Oak Tree Clinic 27
Stage of Infection at Time of HIV Diagnosis 28
Immigration of Individuals with HIV 29
Estimates of HIV Incidence and Prevalence 30

AIDS 31
AIDS by Region, Gender and Age 31
AIDS by Ethnicity 36
AIDS Case Reports among Aboriginal People 37

Endnotes 39

Contributors 40

Technical Appendix 41
Data Limitations 41
Case Definitions 42
Data Sources 43
Additional Notes 44

Preface

Globally, it is an exciting time for HIV prevention as new innovations across a spectrum of interventions hold promise for an HIV free generation. In British Columbia, years of effort and collaboration by public health, clinical and community partners are now leading to sustained declines in the number of new HIV diagnoses. In BC, the 289 cases diagnosed in 2011 are the lowest number on record, and overall the most recent estimates from the Public Health Agency of Canada suggest that the provincial number of incident HIV infections in BC is decreasing. A major influence on these recent trends has been the dramatic decrease in the number of new diagnoses in people who use injection drugs since 2008. Similar decreases in this population have not been seen in many other jurisdictions, which speaks to the successes achieved to date in BC including prevention through innovative provincial harm reduction programs and increasing uptake of highly active antiretroviral therapy (HAART), among other programs.

The investment of the provincial government in HIV prevention in 2010 set out to build and improve upon this trend through the launch of the provincial STOP HIV/AIDS Pilot Project, which aimed to increasing the uptake of HIV testing and diagnosis, and improve the connection to HIV care and treatment.[1] The potential for greater use of HAART at a population level to reduce HIV incidence, the basis for the provincial STOP HIV/AIDS Pilot Project, was underscored by the findings from the HPTN 052 efficacy trial released in 2011. This trial demonstrated that HAART use in serodiscordant heterosexual couples reduced HIV transmission by 96%.[2] Gains from the STOP HIV/AIDS initiative on increased testing are reflected in trends in new HIV diagnoses, and the ongoing evaluation will provide important guidance on the effectiveness of these efforts in practice and among different populations in BC.

There is clearly still room for improvement, and the solutions aren't easy. HIV in BC predominantly affects communities, groups and individuals who face varying degrees of marginalization and social and structural barriers to health and full participation in society, including among gay, bisexual and other men who have sex with men (MSM), people who use injection drugs, and Aboriginal people. As in many other jurisdictions in North America, the greatest number of new diagnoses every year are among MSM where new approaches to prevention are needed, particularly for young MSM where trends in new diagnoses are concerning. While biomedical approaches to prevention hold great potential, strategies to reduce the burden of HIV in these populations need to be comprehensive and include sustaining and expanding harm reduction and primary prevention initiatives, and must address issues including mental health, stigma, discrimination, poverty, and access to appropriate health care. Furthermore, populations which have high rates of HIV also have high rates of co-infection, including sexually transmitted infections, tuberculosis, and hepatitis B and C, many of which have synergistic effects and increase the likelihood of acquisition or transmission of HIV, or indicate risks for HIV in the future.

To greater align clinical and prevention services for these infections and the populations they impact, a new service line was created in 2011 at BCCDC, the Clinical Prevention Services Division (merging the former STI/HIV Prevention and Control, Tuberculosis Control, and Hepatitis Services divisions). This new service line has a focus on integrating clinical and public health expertise in diseases of public health importance, and offering provincial leadership in best practices, surveillance, education, research and service in these areas. For example, our Division at BCCDC with the Public Health Microbiology Reference Laboratory has collaborated on a CIHR funded research study where pooled nucleic acid amplification testing (which detects early or acute HIV infections within 10-12 days after infection) has been implemented at clinics accessed by MSM in

[1] http://www.stophivaids.ca/

[2] Cohen M, Chen Y, McCauley M, Gamble T, Hosseinipour MC, Kumarasamy N et al. Prevention of HIV-1 infection with early antiretroviral therapy. *New England Journal of Medicine*, August 2011; 365(6), 493-505.

Vancouver. This program identifies individuals who are part of active sexual networks and who are at their most infectious, thus providing both an individual and population health benefit. In three years of operation, the program resulted in an 11.5% increase in new HIV diagnoses and diagnosed HIV in 25 men who otherwise would have had a negative HIV test; as a result we are currently looking at how this technology can be implemented in other settings in BC. Our Division is also developing online health applications for internet-based testing for HIV and STI, and in working with the BC Women's Hospital & Health Centre has applied lessons learned from Africa in mobile health (mHealth) to support engagement in HIV treatment and care for HIV positive women.

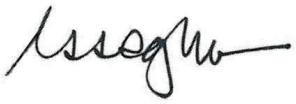
Monitoring provincial HIV trends is critical to identify changes among populations in BC and to evaluate the impact of all our efforts to prevent new infections. To this end, we are pleased to release this Annual Surveillance Report on HIV. In order to facilitate more timely release of information and to have more in-depth analysis, this report has an exclusive focus on HIV and AIDS, with a separate report currently in preparation which will describe trends in sexually transmitted infections for BC. In comparison to previous surveillance reports, this report also provides a greater description of trends by exposure category and ethnicity, and aims to provide the key context which is important to consider when reviewing the trends – so as to understand not just what the trends are, but why they are occurring.

In closing, our hope is that the information in this report is helpful to the public and for persons working in the field of HIV in BC, and that we continue to progress towards our collective goal of decreasing the incidence of HIV in BC.

Sincerely,

Dr. Richard Lester, Medical Head, STI/HIV Control

Dr. Mark Gilbert, Epidemiology and Surveillance



Dr. Gina Ogilvie, Medical Director

Clinical Prevention Services, BCCDC

Summary of Trends

HIV

In 2011, the rate of new HIV diagnoses decreased to its lowest point ever in BC, at 6.3 per 100,000 population (289 cases).

- The highest rates of new HIV diagnoses were in Vancouver Coastal and Northern Health Authorities, influenced by the efforts to increase HIV testing through the provincial STOP HIV/AIDS Pilot Project launched in 2010.
- Males continue to have higher rates and an older age distribution of new HIV diagnoses than females.
- Trends by ethnicity have shifted over the past ten years, with a greater percentage of new diagnoses among ethnicities other than Caucasian. In 2011, 51.9% of cases were Caucasian, 14.9% were Aboriginal, and 11.4% Asian. Over this time period, Aboriginal people have been disproportionately represented in BC's HIV epidemic, consistently comprising approximately 15% of all new HIV diagnoses while comprising approximately 5% of the total provincial population.
- The majority of new HIV diagnoses among Aboriginal people are in those who identify as First Nations. The number and rate of new HIV diagnoses among First Nations people have decreased over time, and rates in males are comparable to rates in females.
- Gay, bisexual and other men who have sex with men (MSM) continue to comprise the greatest number of new HIV diagnoses in BC (57.8% of all new HIV diagnoses in 2011). Trends are elevated but stable, with the greatest increase in new HIV diagnoses among MSM born after 1980. Over time the proportion of new HIV diagnoses in MSM from ethnicities other than Caucasian has increased (38.9% in 2011).
- The number of new HIV diagnoses in people who use injection drugs (IDU) continued to decrease (12.1% of all new HIV diagnoses in 2011), for both males and females and in all age groups. The decrease in new diagnoses among IDU since 2008 is the main driver of the overall provincial decrease in new HIV diagnoses.
- Trends in new HIV diagnoses among people who acquire HIV through heterosexual contact are stable overall (24.6% of all new HIV diagnoses in 2011), for both males and females and by age group. In 2011, 57.7% of people in this category had an identified risk factor for HIV (e.g., partner known to be HIV positive or at higher risk, born/residing in an HIV endemic country).
- No women were newly diagnosed as HIV positive through prenatal screening in 2011. In 2011, 30 HIV positive women having live births accessed care at the Oak Tree Clinic, of which all were diagnosed before delivery and received antenatal HAART. In 2011, no infants were diagnosed with perinatally acquired HIV infection in BC.
- The proportion of new diagnoses with acute HIV infection increased since 2010 (11.1% in 2011), while the proportion of new diagnoses with advanced HIV disease has remained stable.
- In 2011, 36 HIV positive immigrants arrived in BC (38.9% from countries where HIV is considered to be endemic).
- According to estimates from the Public Health Agency of Canada, in 2011 there were 11,700 (range 9,400 to 14,000) people living with HIV in BC, and 380 (range 260 to 500) incident infections, a decrease from 2008 (408 incident infections, range 280 to 540).

AIDS

In 2010, the rate of AIDS case reports continued to decrease to 1.6 per 100,000 population (72 cases).

- The rate of AIDS cases in males is decreasing, for all ages. Females have a lower rate of AIDS cases than males, and overall trends are stable.
- As with new HIV diagnoses, Aboriginal people continue to be disproportionately represented among AIDS cases in BC, comprising 18% of new AIDS cases.

Notes Regarding the Interpretation of HIV Data

The number of new HIV diagnoses[1] does not reflect the number of new HIV infections per year, or HIV incidence, as individuals may be diagnosed with HIV years after their initial infection with HIV.

HIV became a reportable disease in BC in 2003 accompanied by more complete follow-up of new HIV diagnoses by designated nurses. This change improved the quality of surveillance data through:

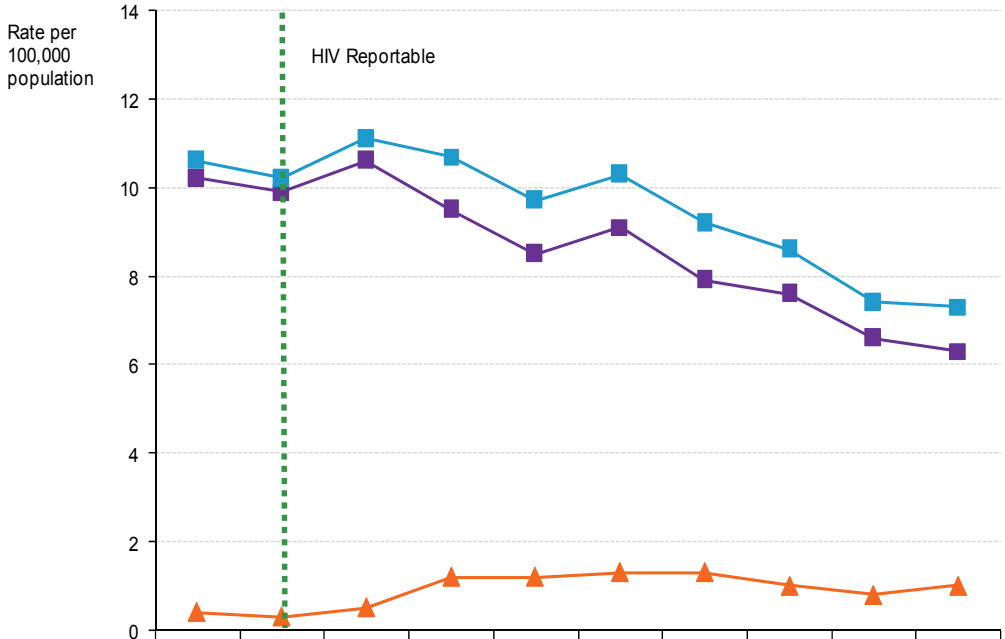
- Improved identification and exclusion from surveillance reports of individuals having a first HIV diagnosis in BC who were found to have a previous HIV diagnosis outside BC, contributing to the observed decline in new HIV diagnoses observed in BC since 2004 (Figure 1).

- Improved documentation of exposure category and ethnicity, resulting in a decrease in the proportion of new HIV diagnoses where exposure or ethnicity is unknown.

These data quality issues should be considered when comparing trends before and after 2003. In this report, we have added a line indicating when HIV became reportable to each figure to serve as a visual reminder of this influence on observed trends.

The ethnicity and exposure category data presented in this report for 2011 are not final. There is an expected delay in collection of this information for individuals having a new HIV diagnosis. The proportion of individuals having unknown ethnicity or exposure category will have decreased by the time of next year's report.

1. HIV diagnosis rates* in BC, 2002 to 2011



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Rate - New (+) in BC	10.2	9.9	10.6	9.5	8.5	9.1	7.9	7.6	6.6	6.3
Rate - 1st (+) in BC, Prev (+) outside BC	0.4	0.3	0.5	1.2	1.2	1.3	1.3	1.0	0.8	1.0
Rate - Total (+) in BC	10.6	10.2	11.1	10.7	9.7	10.3	9.2	8.6	7.4	7.3

* Caution is advised in interpreting historic trends of rates of new HIV diagnoses

HIV by Region, Gender and Age

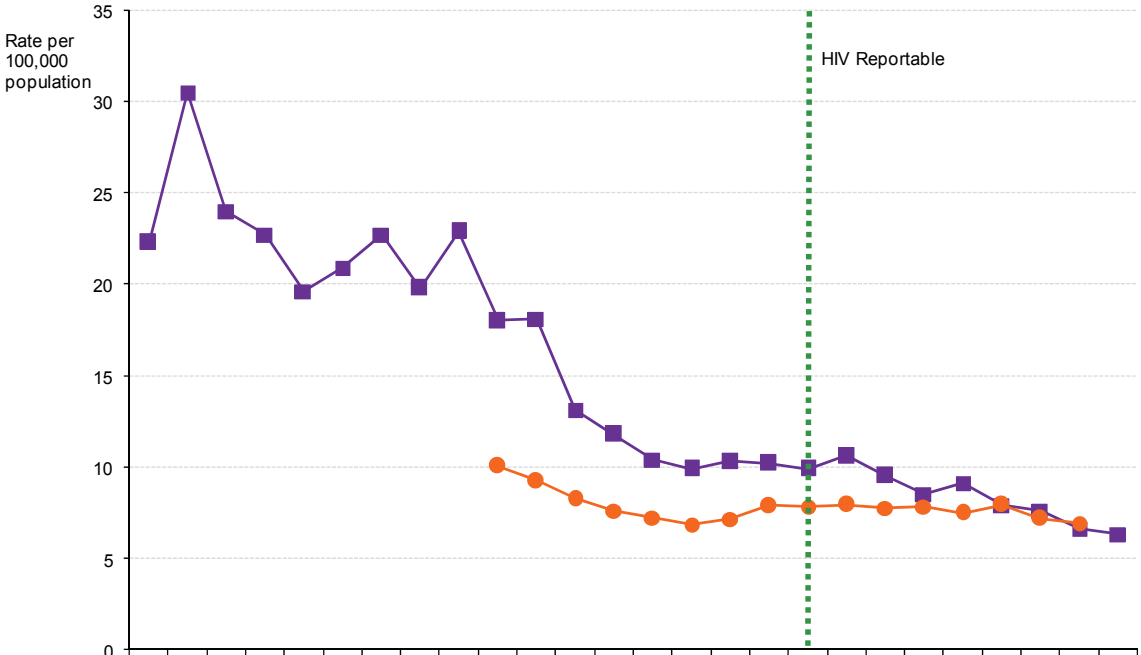
In 2011, the rate of new HIV diagnoses in BC decreased to its lowest point since the start of the epidemic to 6.3 (289 cases) from 6.6 (300 cases) per 100,000 population in 2010 (Figure 2).

The highest rates of new HIV diagnoses were in the Vancouver Coastal and Northern Heath Authorities (Figure 4). More specifically, Vancouver, Northwest and Northern Interior Health Service Delivery Areas (HSDA) had the highest rates of new HIV diagnoses in 2011 (Figure 3). Recent trends in these regions have been influenced by increased testing efforts related to the provincial Seek and Treat for Optimal Prevention of HIV/AIDS (STOP HIV/AIDS) Pilot Project launched in 2010.[2]

While the rate of new HIV diagnoses among males increased slightly in 2011 to 10.8 (245 cases) from 10.6 (238 cases) per 100,000 population in 2010, rates among both males and females showed a general decreasing trend over the past ten years (Figure 5). The rate among females decreased in 2011 to 1.9 (43 cases) from 2.7 (62 cases) per 100,000 population in 2010.

The rate of new HIV diagnoses continues to be higher among males than females. In 2011, the highest rates among males were in those 30-39 year old (81 cases, 27.3 per 100,000 population) and among females in those 25-29 year old (7 cases, 4.3 per 100,000 population) (Figure 6).

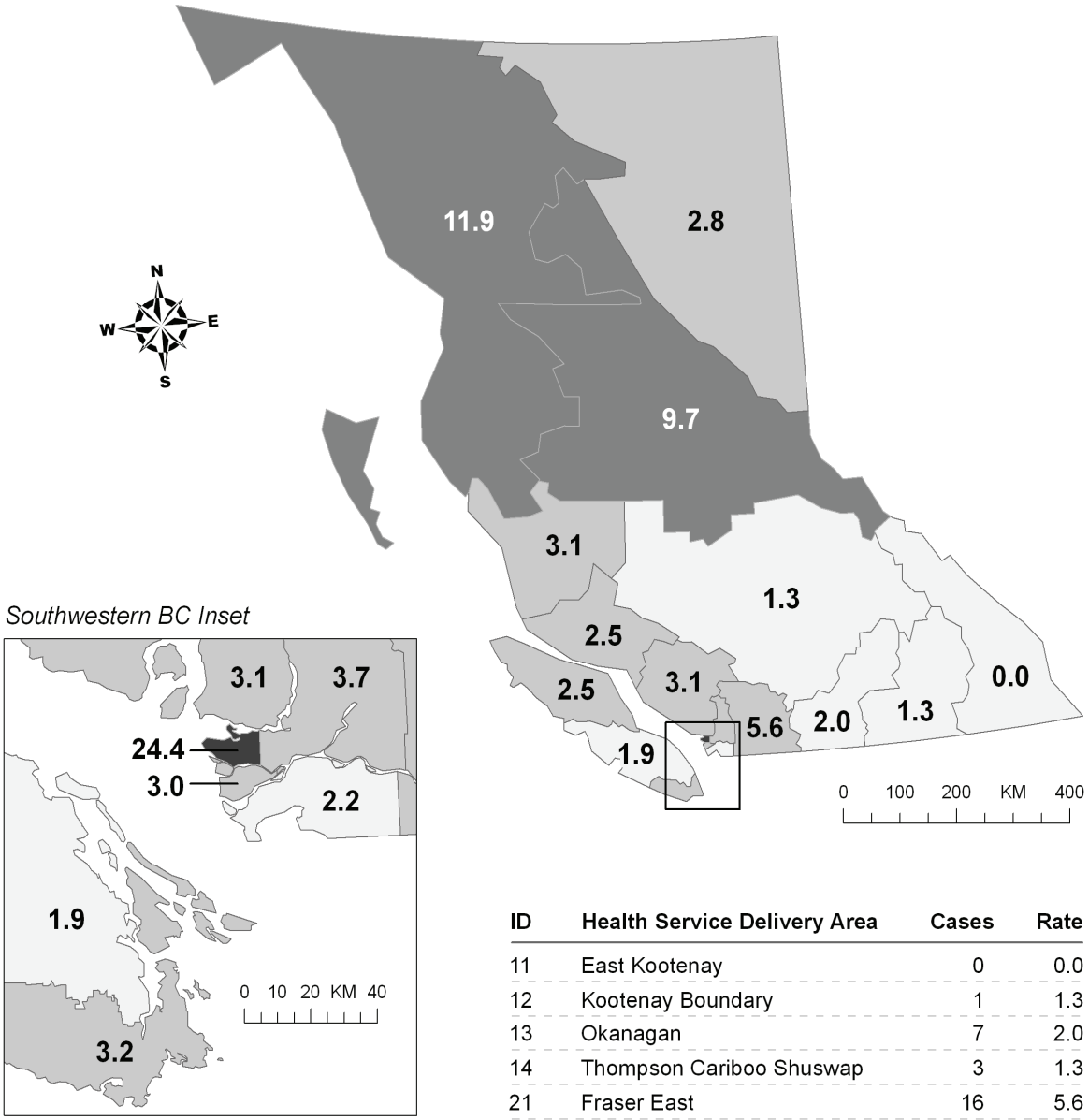
2. New HIV diagnoses in BC and Canada by historical trend, 1986 to 2011



	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*
BC Diagnoses	670	929	746	726	645	704	788	706	840	681	702	519	471	416	400	420	418	408	442	400	361	391	345	337	300	289
BC Rate	22.3	30.5	24.0	22.7	19.6	20.9	22.7	19.8	22.9	18.0	18.1	13.1	11.8	10.4	9.9	10.3	10.2	9.9	10.6	9.5	8.5	9.1	7.9	7.6	6.6	6.3
Canadian Rate										10.1	9.2	8.3	7.6	7.2	6.8	7.1	7.9	7.8	7.9	7.7	7.8	7.5	7.9	7.2	6.9	

* 2011 Canadian rate is not available

3. New HIV diagnoses in BC by health service delivery area, 2011



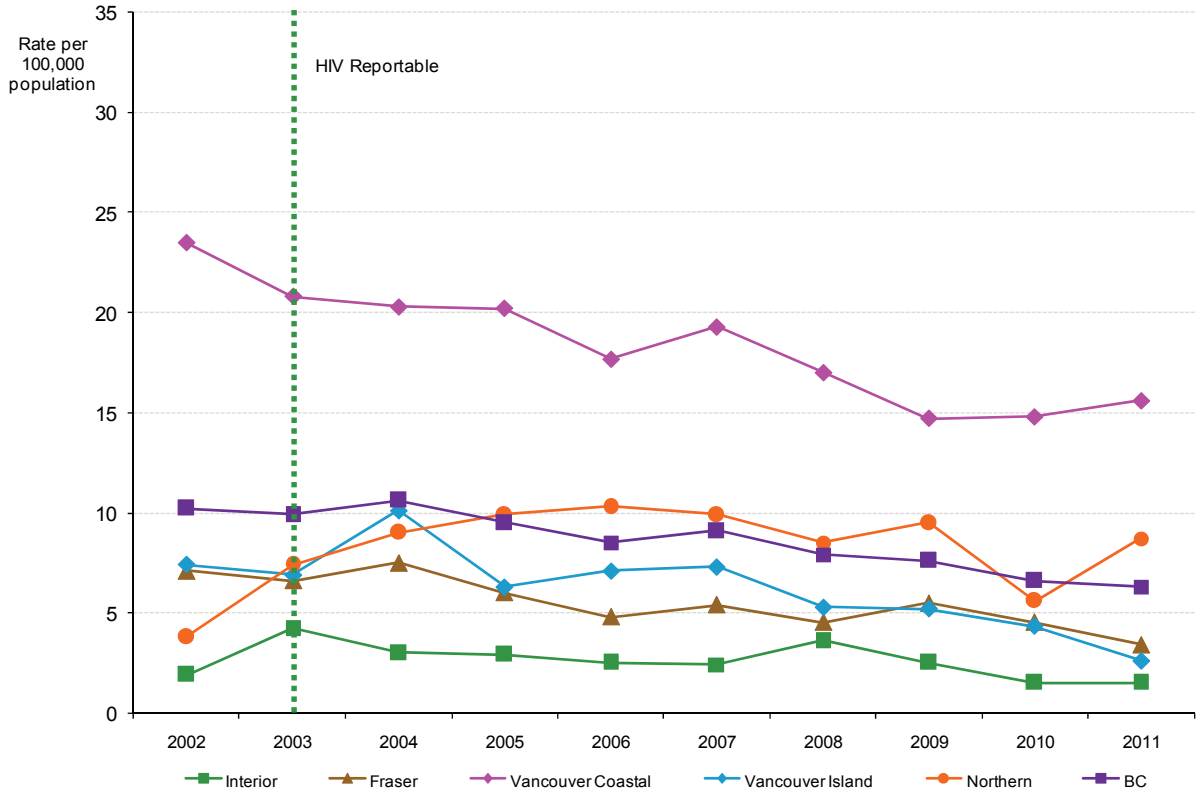
Rate per 100,000 population by HSDA

- 0.0 - 2.2
- 2.3 - 5.6
- 5.7 - 11.9
- 12.0 - 24.4

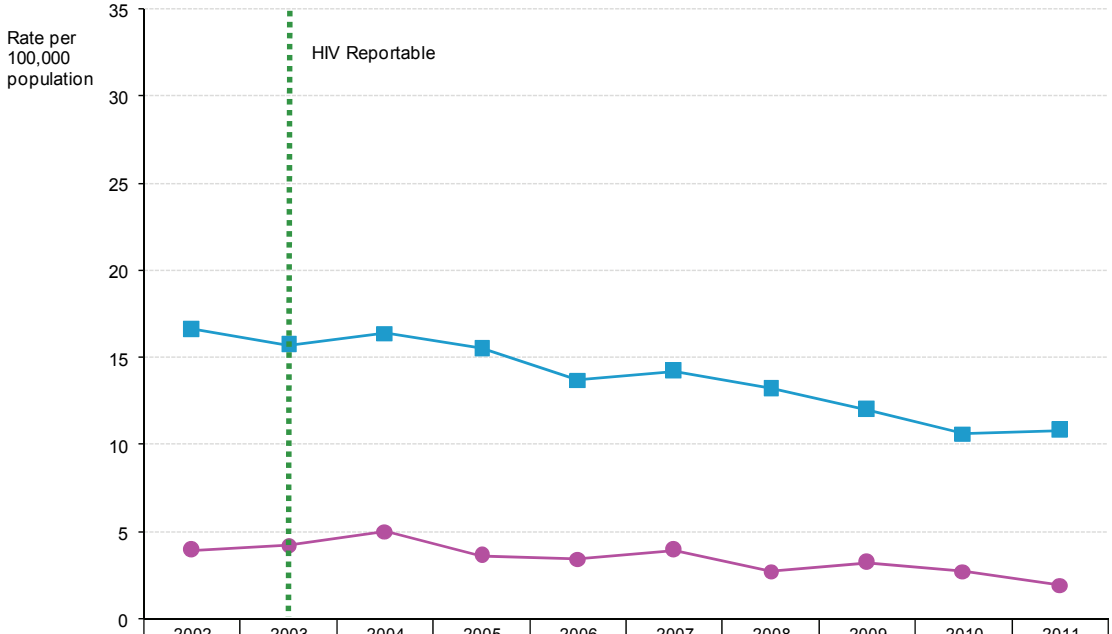
ID	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	1	1.3
13	Okanagan	7	2.0
14	Thompson Cariboo Shuswap	3	1.3
21	Fraser East	16	5.6
22	Fraser North	23	3.7
23	Fraser South	16	2.2
31	Richmond	6	3.0
32	Vancouver	163	24.4
33	North Shore/Coast Garibaldi	9	3.1
41	South Vancouver Island	12	3.2
42	Central Vancouver Island	5	1.9
43	North Vancouver Island	3	2.5
51	Northwest	9	11.9
52	Northern Interior	14	9.7
53	Northeast	2	2.8

Rates calculated with population estimates released by BC Stats

4. New HIV diagnoses in BC by health authority, 2002 to 2011



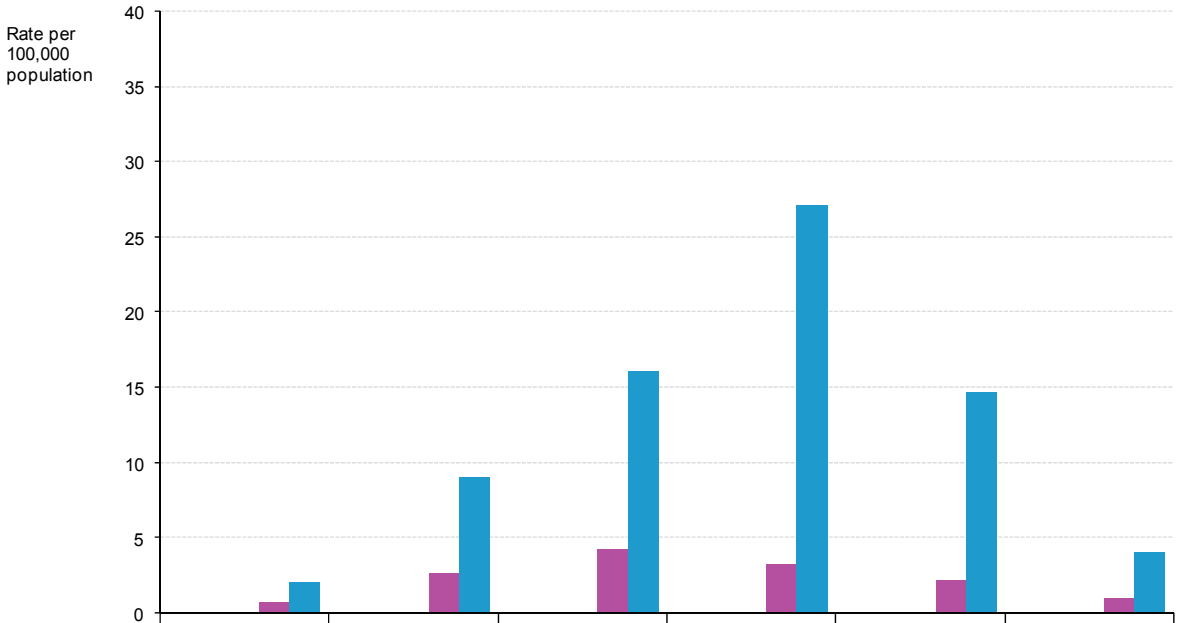
5. New HIV diagnoses in BC by gender, 2002 to 2011



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Diagnoses - Female	80	87	105	77	72	85	59	71	62	43
Diagnoses - Male	338	320	337	322	289	303	286	266	238	245
Diagnoses - Other *	0	1	0	1	0	3	0	0	0	1
Rate - Female	3.9	4.2	5.0	3.6	3.4	3.9	2.7	3.2	2.7	1.9
Rate - Male	16.6	15.7	16.4	15.5	13.7	14.2	13.2	12.0	10.6	10.8

* Other - transgender and gender unknown

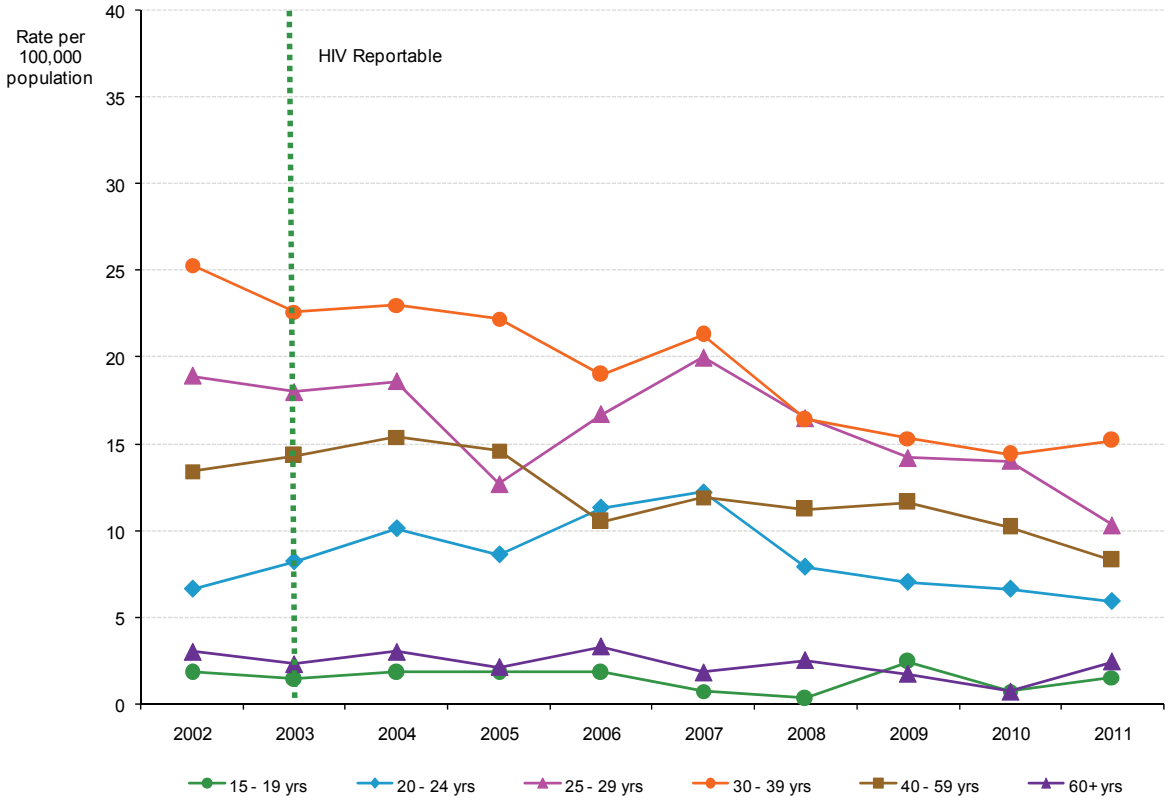
6. New HIV diagnoses in BC by age group and gender, 2011



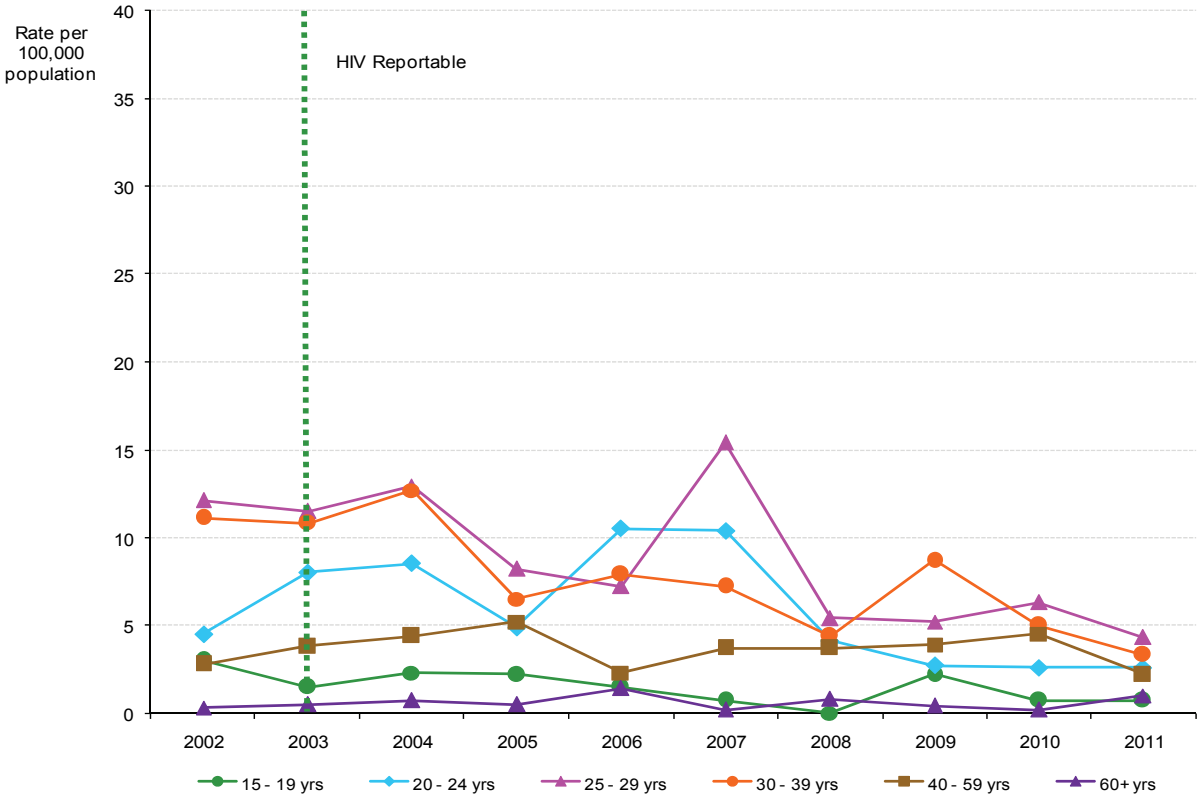
	15 - 19 yrs	20 - 24 yrs	25 - 29 yrs	30 - 39 yrs	40 - 59 yrs	60+ yrs
Diagnoses - Female	1	4	7	10	15	5
Diagnoses - Male	3	15	27	81	100	19
Diagnoses - Other *	0	0	0	1	0	0
Rate - Female	0.7	2.6	4.3	3.3	2.2	1.0
Rate - Male	2.1	9.0	16.1	27.1	14.7	4.1

* Other - transgender and gender unknown

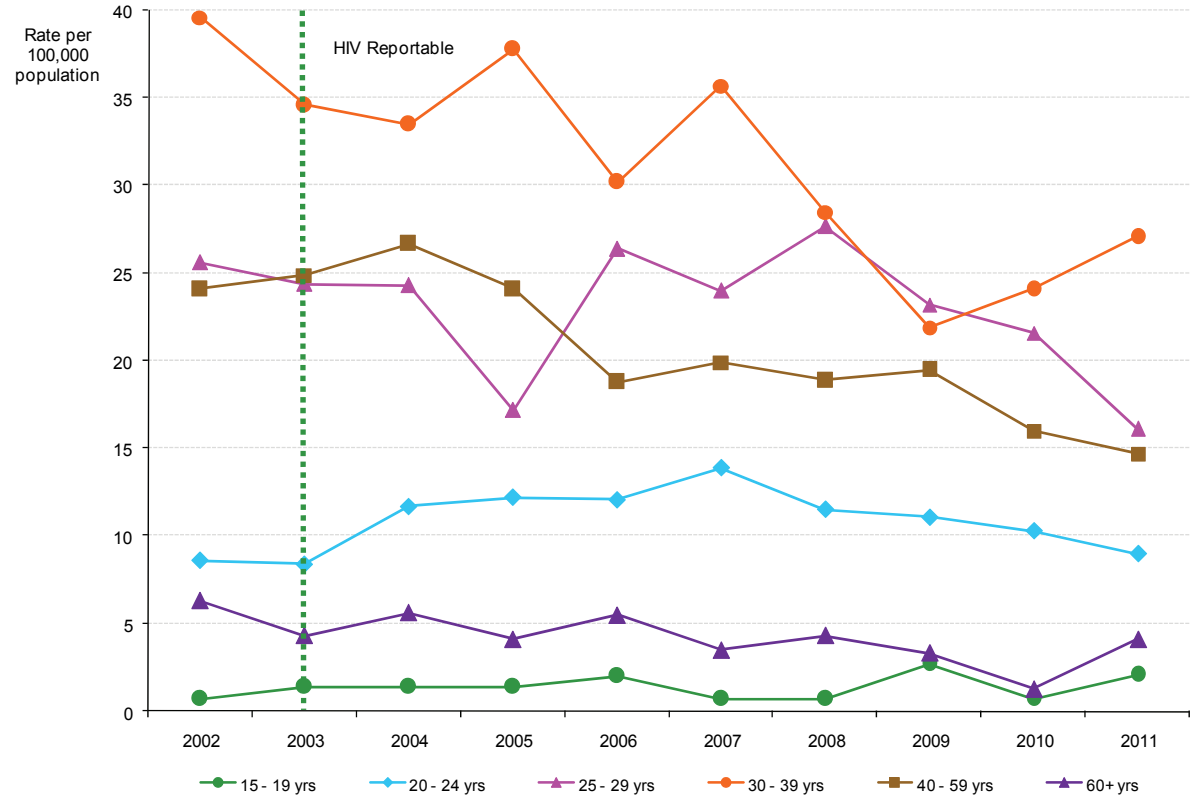
7. New HIV diagnoses in BC by age group - total, 2002 to 2011



8. New HIV diagnoses in BC by age group - female, 2002 to 2011



9. New HIV diagnoses in BC by age group - male, 2002 to 2011

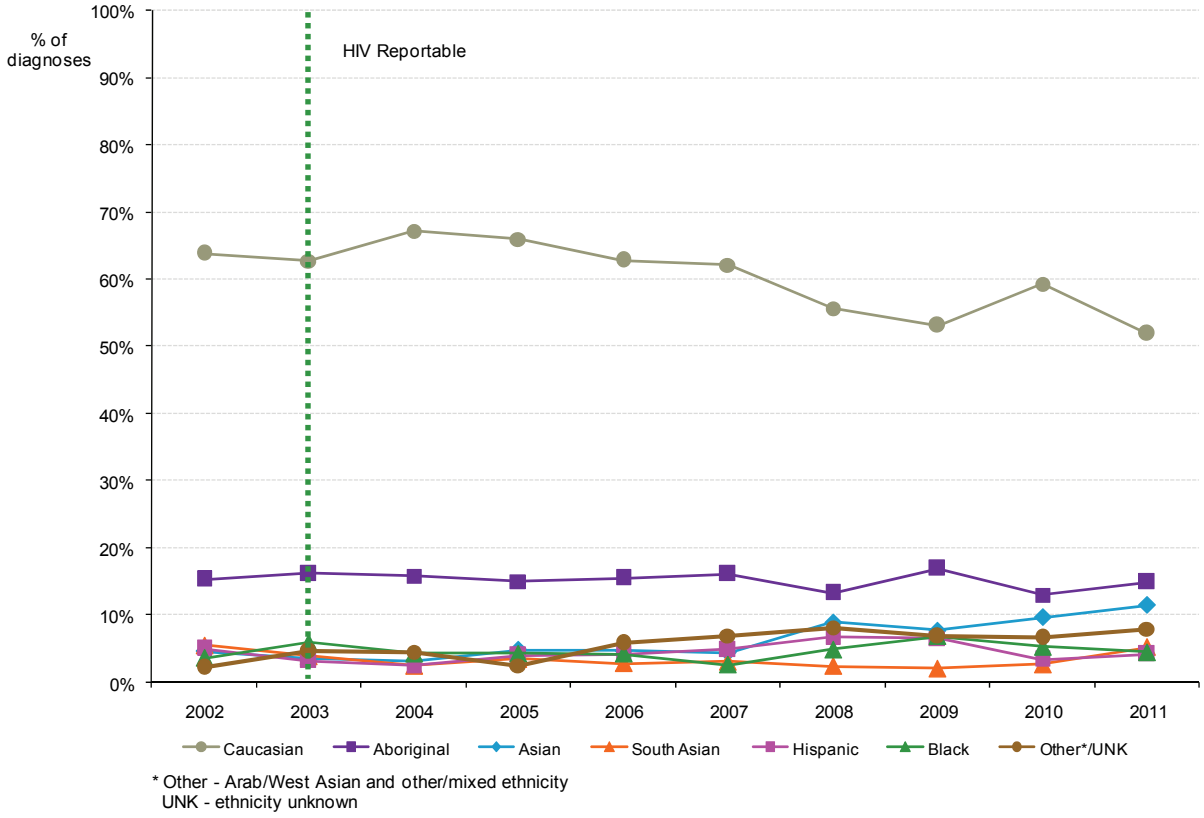


HIV by Ethnicity

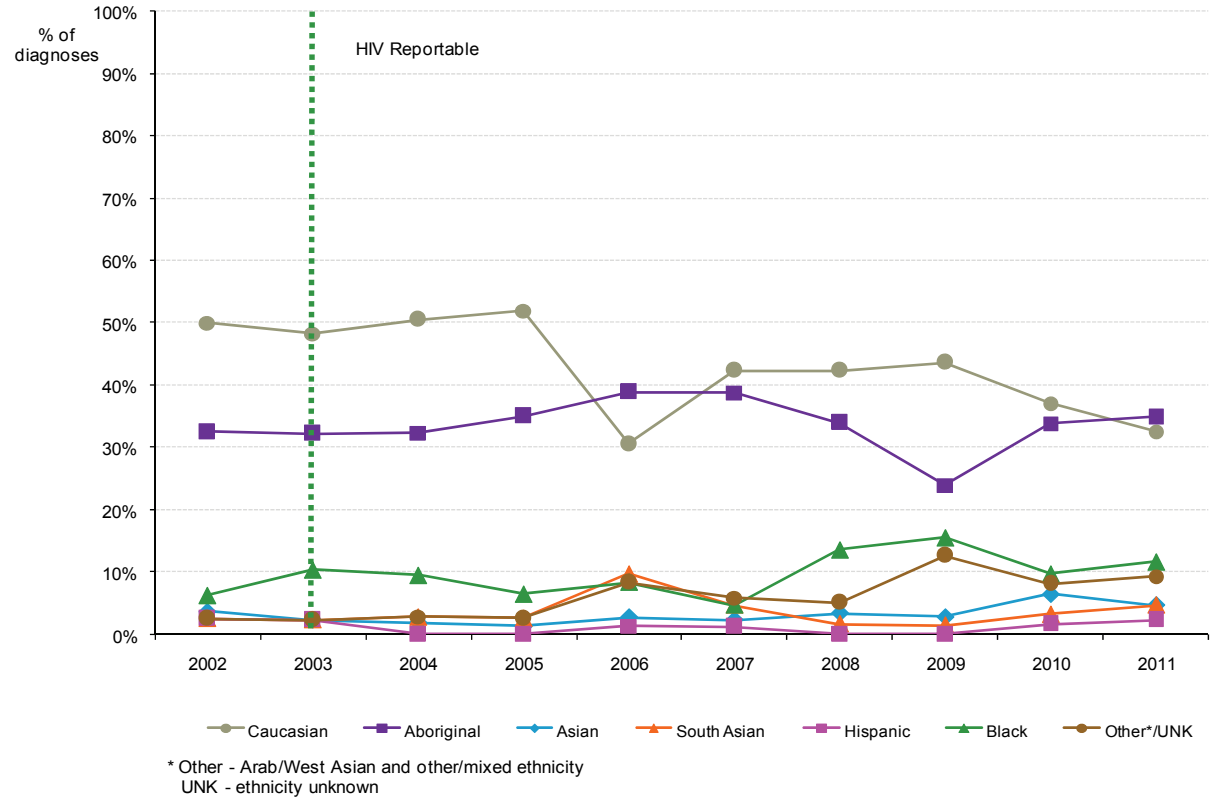
Over the past ten years, the proportion of reported ethnicities among people newly diagnosed with HIV in BC has shifted slightly. The percentage of new diagnoses among Caucasian people has gradually decreased while the percentage of diagnoses among people of other ethnicities, notably Asian, has increased (Figure 10).

At the time of this report, the ethnicity of 20 (6.9%) individuals newly diagnosed with HIV in 2011 is unknown. Similar to previous years, in 2011 most new HIV diagnoses are among people of Caucasian ethnicity (150 cases, 51.9%) followed by people of Aboriginal (43 cases, 14.9%) and Asian (33 cases, 11.4%) ethnicity. Over this time period, Aboriginal people have been disproportionately represented in BC's HIV epidemic, consistently comprising approximately 15% of new HIV diagnoses while comprising approximately 5% of the total provincial population.[3] This disparity is particularly pronounced for Aboriginal women, who comprise more than 30% of new HIV diagnoses among females (Figure 11).

10. New HIV diagnoses in BC by ethnicity - total, 2002 to 2011

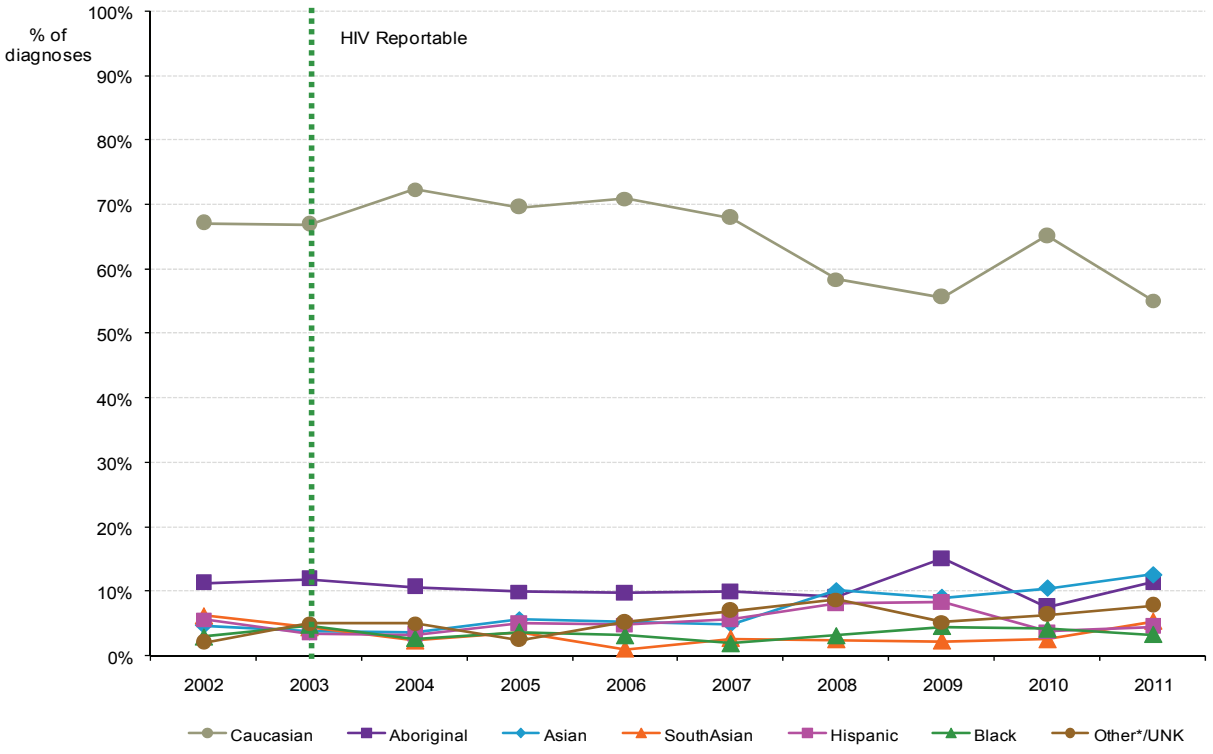


11. New HIV diagnoses in BC by ethnicity - female, 2002 to 2011



* Other - Arab/West Asian and other/mixed ethnicity
UNK - ethnicity unknown

12. New HIV diagnoses in BC by ethnicity - male, 2002 to 2011



* Other - Arab/West Asian and other/mixed ethnicity
UNK - ethnicity unknown

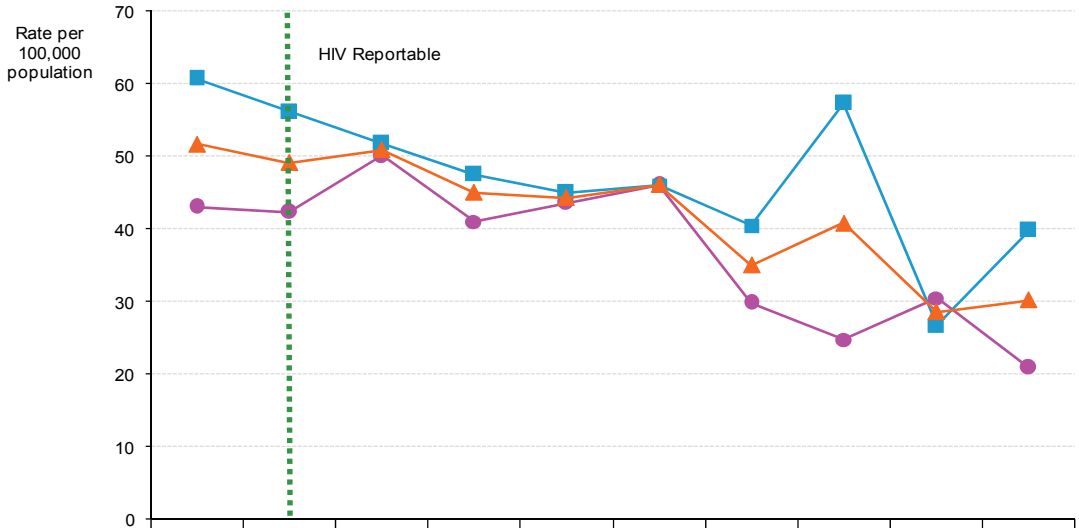
New HIV Diagnoses among Aboriginal People

Statistics can help us better understand the impact of HIV among Aboriginal people in BC, but they tell only part of the story. A new HIV diagnosis represents only one moment in a person's life. Behind each statistic is a family, a community, and a broader social context to that particular person, place and time. The new HIV diagnoses among Aboriginal people in this report include only those who have been tested - as with all HIV cases in this report - and only those who self-identify as Aboriginal.

HIV data with a focus on Aboriginal people is presented here as it is felt to be important to recognize the disproportionate burden of HIV and AIDS in Aboriginal communities. This does not mean that an Aboriginal person is at greater risk for HIV by virtue of being Aboriginal. There are multiple historic factors - such as colonization, discrimination, the experience of residential schools - which have contributed to inequities in the social determinants of health among Aboriginal people, and which we are unable to fully describe in this surveillance report.[4] As we acknowledge these factors, we also remember that Aboriginal communities and individuals hold many strengths to draw on to address HIV prevention, care, treatment, and support.[5]

In BC, the majority of new HIV diagnoses among Aboriginal people are in those who identify as First Nations (40 cases in 2011). Ten or fewer new HIV diagnoses were reported per year among Métis and Inuit people between 2002 and 2011. Among the nearly 200,000 Aboriginal persons living in BC, approximately 66% are First Nations, 30% are Métis, and fewer than 5% are Inuit or of other Aboriginal identity.[6] Because of the small number of diagnoses among Métis and Inuit people and the availability of population estimates of registered First Nations people for calculation of rates, the remainder of this section focuses on new HIV diagnoses among people who identify as First Nations.

13. New HIV diagnoses among First Nations people in BC by gender, 2002 to 2011



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Diagnoses - Female	25	25	30	25	27	29	19	16	20	14
Diagnoses - Male	34	32	30	28	27	28	25	36	17	26
Diagnoses - Other *	0	0	0	1	0	0	0	0	0	0
Diagnoses - Total	59	57	60	54	54	57	44	52	37	40
Rate - Female	43.0	42.3	50.0	41.0	43.5	46.0	29.7	24.7	30.4	20.8
Rate - Male	60.7	56.1	51.7	47.4	45.0	45.9	40.4	57.3	26.6	39.8
Rate - Total	51.7	49.1	50.9	45.0	44.2	46.0	35.0	40.7	28.5	30.1

* Other - transgender and gender unknown
Rates based on First Nations population estimates from Aboriginal Affairs and Northern Development Canada (AANDC)

The number and rate of new HIV diagnoses among First Nations people have decreased over the past 10 years (Figure 13). This is consistent with the decrease in new HIV diagnoses among people of all ethnicities.

In 2011, as in previous years, the majority of new HIV diagnoses among First Nations people were in Vancouver Coastal Health Authority (21 cases, 52.5%) and Northern Health Authority (13 cases, 32.5%). Two new HIV diagnoses were reported in First Nations people in each of Fraser Health Authority, Interior Health Authority, and Vancouver Island Health Authority (5.0% each).

The rate of new HIV diagnoses in First Nations men is comparable to the rate in women (Figure 13); this contrasts with gender-stratified rates among people of all ethnicities, in which rates are five-to-ten fold higher among men (Figure 5). This difference could reflect the fact that most new HIV diagnoses among First Nations people are attributed to injection drug use (IDU) and heterosexual exposure categories, which include more women, whereas most new HIV diagnoses among the total population are attributed to the men who have sex with men (MSM) exposure category. Rates in both First Nations women and men exceed those in women and men of all ethnicities (20.8 versus 1.9 per 100,000 population for women, and 39.8 versus 10.8 per 100,000 population for men, in 2011).

In 2011, there were no HIV cases diagnosed in First Nations people under 20 years of age. The highest rate for men was in the 30-39 year age group (157.6 per 100,000 population). The highest rate of new HIV diagnoses for women was in the 25-29 year age group (75.1 per 100,000 population).

HIV by Exposure Category

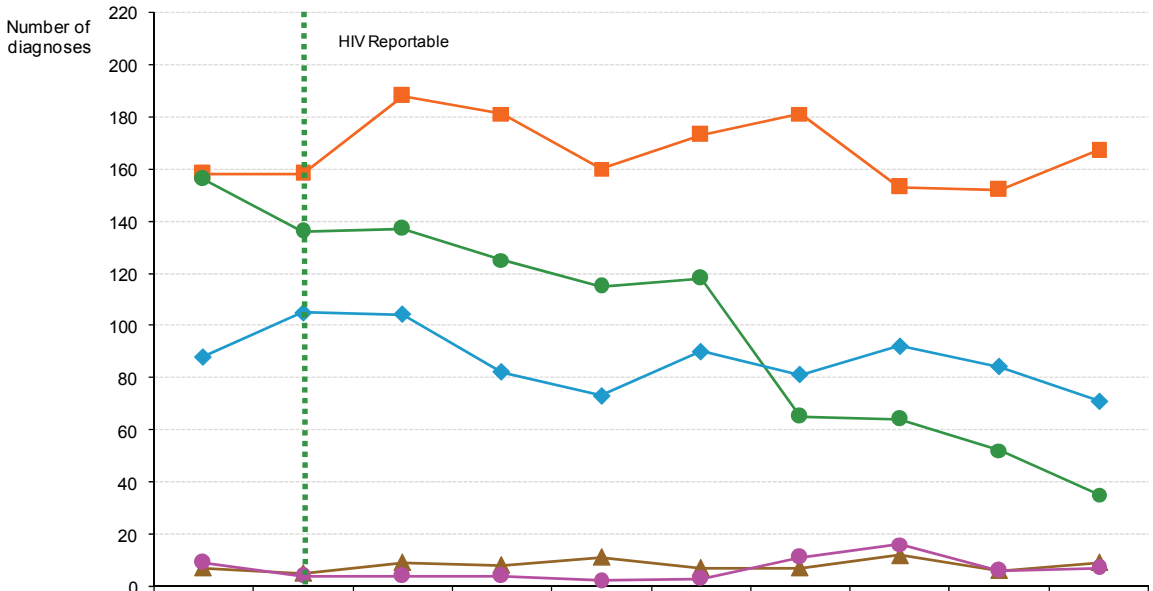
Gay, bisexual and other men who have sex with men (MSM) continue to comprise the greatest number of new HIV diagnoses in BC. While general trends in this exposure category remain stable, the number of new HIV diagnoses among MSM increased from 152 cases (50.7%) in 2010 to 167 cases (57.8%) in 2011 (Figure 15). In 2011, the number of new HIV diagnoses in BC among people who use injection drugs (IDU) continued to decrease, to 35 cases (12.1% of all new diagnoses) from 52 cases (17.3%) in 2010. The number of new HIV diagnoses due to heterosexual contact has remained relatively stable in recent years, with a slight decrease from 84 (28.0%) in 2010 to 71 cases (24.6%) in 2011. Trends in these three main exposure categories in BC are explored in more detail in the following sections.

At the time of this report, the exposure category of 7 (2.4%) individuals newly diagnosed with HIV in 2011 is not identified or is unknown. The final number of individuals in each exposure category for 2011 may change slightly if further information on these 7 individuals is received.

14. New HIV diagnoses in BC by exposure category and health authority, 2002 to 2011

Health Authority	Exposure Category	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Interior	MSM	6	12	5	7	8	4	10	4	4	3
	IDU	5	8	8	5	7	9	6	1	2	1
	HET	2	7	6	8	1	4	9	11	5	5
	Other	0	0	1	0	1	0	1	2	0	1
	NIR/UNK	0	1	0	0	0	0	0	0	0	1
Fraser	MSM	20	27	43	26	26	30	30	27	21	24
	IDU	42	25	32	34	20	16	8	18	11	7
	HET	33	40	32	23	24	33	26	35	31	20
	Other	4	1	1	4	2	1	3	4	4	4
	NIR/UNK	2	2	1	1	0	1	2	3	5	0
Vancouver Coastal	MSM	122	110	119	135	114	128	121	104	112	131
	IDU	71	57	45	47	39	41	27	20	21	13
	HET	40	44	42	27	31	39	29	29	33	31
	Other	3	4	5	3	3	1	2	5	1	2
	NIR/UNK	6	1	1	1	1	0	7	6	0	1
Vancouver Island	MSM	10	7	16	11	8	9	18	16	13	6
	IDU	29	31	35	20	32	30	11	10	9	3
	HET	11	10	20	14	7	10	9	8	10	7
	Other	0	0	0	0	3	4	0	1	1	2
	NIR/UNK	1	0	0	0	1	0	1	4	0	2
Northern	MSM	0	2	4	1	3	0	2	1	1	3
	IDU	9	15	17	19	15	22	12	15	9	11
	HET	2	4	3	7	9	4	8	9	5	8
	Other	0	0	2	0	2	1	1	0	0	0
	NIR/UNK	0	0	0	1	0	1	1	2	1	3

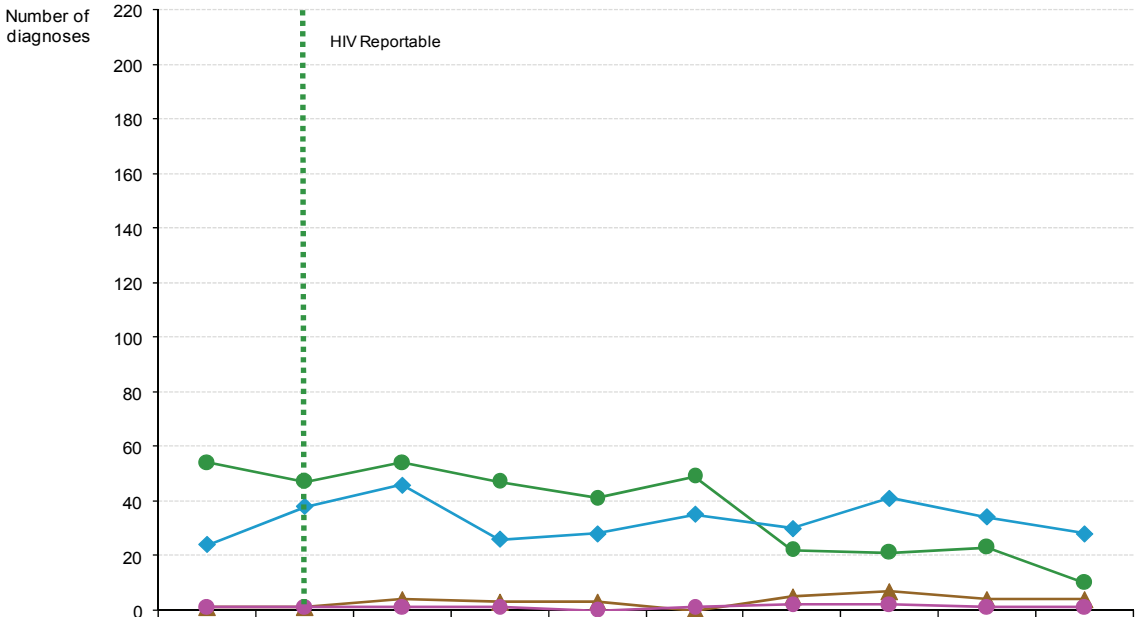
15. New HIV diagnoses in BC by exposure category - total, 2002 to 2011



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
MSM	158	158	188	181	160	173	181	153	152	167
IDU	156	136	137	125	115	118	65	64	52	35
HET	88	105	104	82	73	90	81	92	84	71
Other	7	5	9	8	11	7	7	12	6	9
NIR/UNK	9	4	4	4	2	3	11	16	6	7

MSM - men who have sex with men IDU - injection drug use HET - heterosexual contact NIR - no identified risk
UNK - exposure unknown Other - blood/blood products, occupational, perinatal, and other exposures

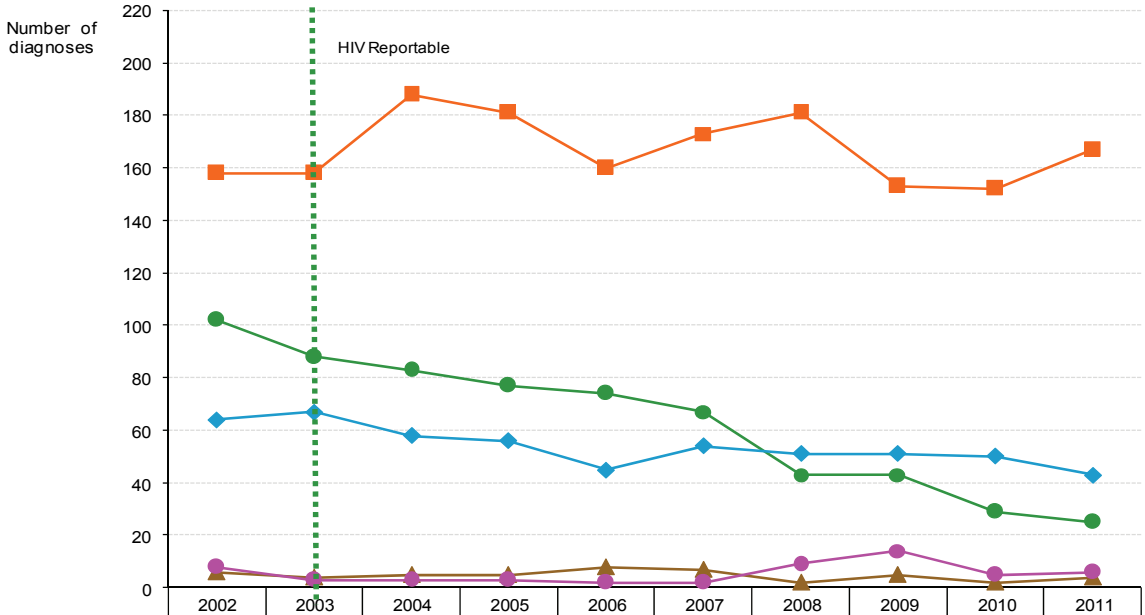
16. New HIV diagnoses in BC by exposure category - female, 2002 to 2011



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
IDU	54	47	54	47	41	49	22	21	23	10
HET	24	38	46	26	28	35	30	41	34	28
Other	1	1	4	3	3	0	5	7	4	4
NIR/UNK	1	1	1	1	0	1	2	2	1	1

IDU - injection drug use HET - heterosexual contact NIR - no identified risk UNK - exposure unknown
Other - blood/blood products, occupational, perinatal, and other exposures

17. New HIV diagnoses in BC by exposure category - male, 2002 to 2011



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
MSM	158	158	188	181	160	173	181	153	152	167
IDU	102	88	83	77	74	67	43	43	29	25
HET	64	67	58	56	45	54	51	51	50	43
Other	6	4	5	5	8	7	2	5	2	4
NIR/UNK	8	3	3	3	2	2	9	14	5	6

MSM - men who have sex with men IDU - injection drug use HET - heterosexual contact NIR - no identified risk
UNK - exposure unknown
Other - blood/blood products, occupational, perinatal, and other exposures

New HIV Diagnoses among Men who have Sex with Men

Gay, bisexual and other men who have sex with men (MSM) were the population first affected by HIV in BC and remain the population most affected by HIV in BC, as in many other regions of North America. The Public Health Agency of Canada estimated that in 2011, 45% of the 11,700 people with prevalent HIV infections in BC (i.e., living with HIV) were MSM, as were 57% of the people with incident (new) HIV infections (see page 30). Around the same time, a community survey of MSM in Vancouver venues found that 18% of MSM were HIV positive.[7] While there are no accurate estimates of the size of the MSM population in BC, it is clear that MSM are disproportionately represented among new HIV diagnoses in BC compared to other males.

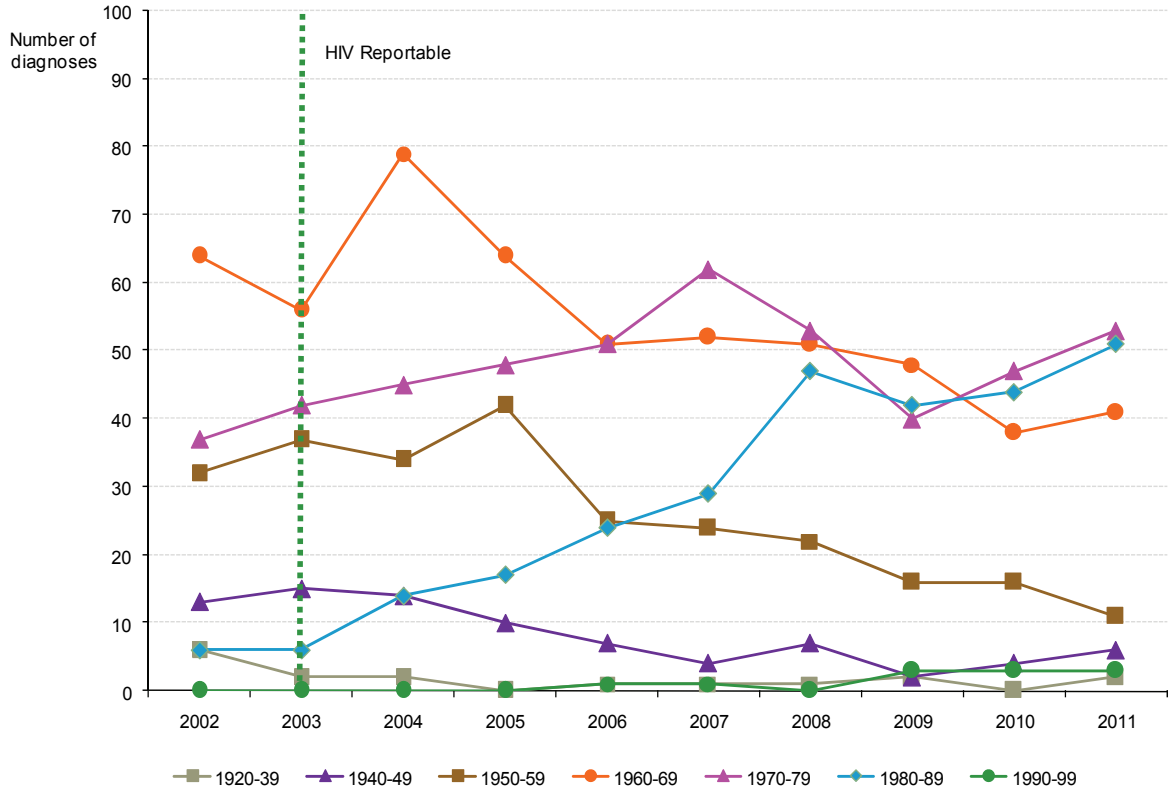
There are many factors that have led to the current epidemic of HIV among MSM in BC, ranging from social factors (such as stigma and discrimination related to sexual orientation), to community factors (such as access to appropriate, safe, health services), to individual factors (such as changes in uptake of HIV medications, sexual behaviours, and use of prevention measures including condoms). The recognition of the complexity of the epidemic among MSM has led internationally to an increased emphasis on renewing of the public health response to HIV in MSM, by adopting broader approaches to HIV prevention including sexual health and determinants-based approaches.[8]

Overall, new HIV diagnoses among MSM are relatively stable in BC. In 2011, 57.8% (167 cases) of all new HIV diagnoses were among MSM and 7.2% (12 cases) of these MSM were identified as having used injection drugs (MSM/IDU), which is consistent with historic trends.

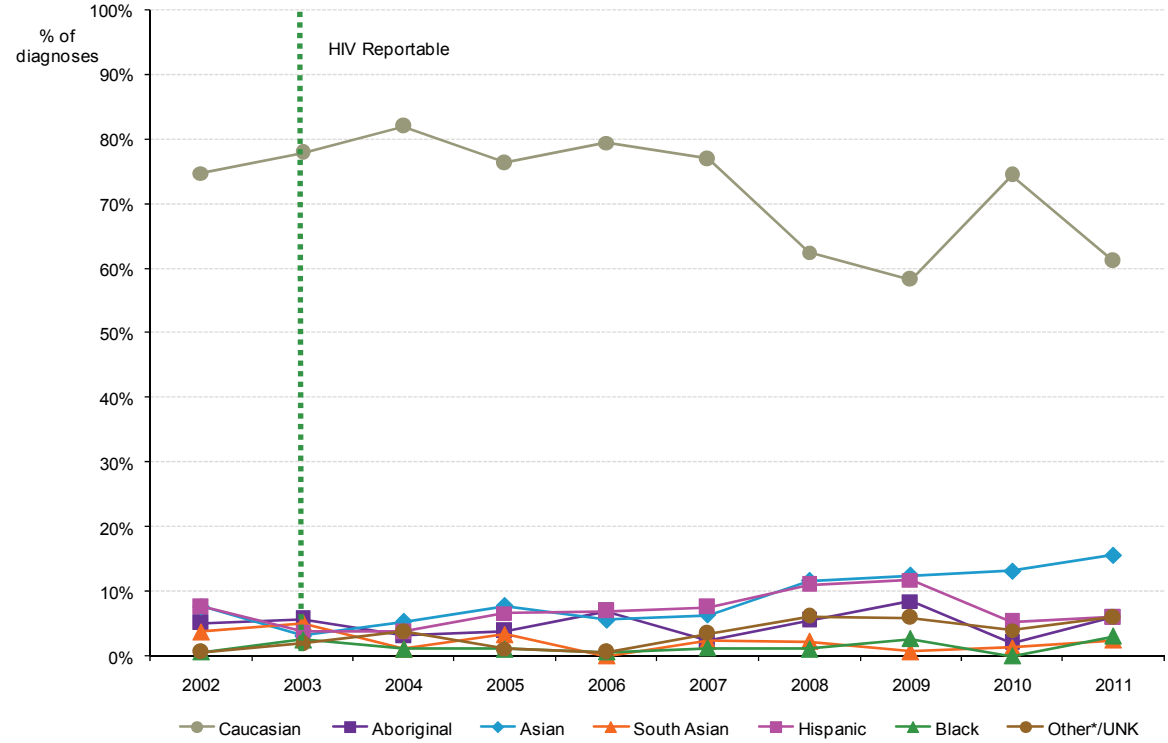
Of the 167 new HIV diagnoses among MSM in 2011, 22.2% (37 cases) were under the age of 30 years, 36.5% (61 cases) were aged 30-39 years, 26.9% (45 cases) were aged 40-49 years, and 14.4% (24 cases) were aged 50 years or older. Different generations of MSM in Vancouver have different experiences of the HIV epidemic, due in part to the achievement of milestones such as the development of HIV treatment (highly active antiretroviral therapy or HAART), shifting community norms among gay/bisexual men, and broader socio-cultural and political factors which have affected the stigma attached to being gay and to living with HIV. Since 2004, new HIV diagnoses have increased among MSM born between 1980-89 and decreased or remained stable in older cohorts born before 1980. These changes in new diagnoses among birth cohorts of MSM may reflect population dynamics (e.g., ages of peak sexual activity). Notably, the cohort of men born between 1980-89 constitutes the first to enter adolesence/adulthood in the post-HAART era and hence the first to not witness first-hand the high burden of AIDS – and its related mortality – experienced by the gay community in the 1980s and early 1990s (Figure 18).

There is some indication that the profile of MSM by ethnicity is also shifting, with more ethnic minorities represented in recent cases. In 2011, 61.1% (102 cases) of MSM newly diagnosed with HIV were Caucasian, 15.6% (26 cases) were Asian, 6.0% (10 cases) were Aboriginal people, and 6.0% (10 cases) were Hispanic. Over the past years, the proportion of new HIV diagnoses in MSM from ethnic groups other than Caucasian has increased from 18.1% (34 cases) in 2004 to 38.9% (65 cases) in 2011 (Figure 19).

18. New HIV diagnoses among MSM in BC by birth cohort, 2002 to 2011



19. New HIV diagnoses among MSM in BC by ethnicity, 2002 to 2011



* Other - Arab/West Asian and other/mixed ethnicity
UNK - ethnicity unknown

New HIV Diagnoses among People who Use Injection Drugs

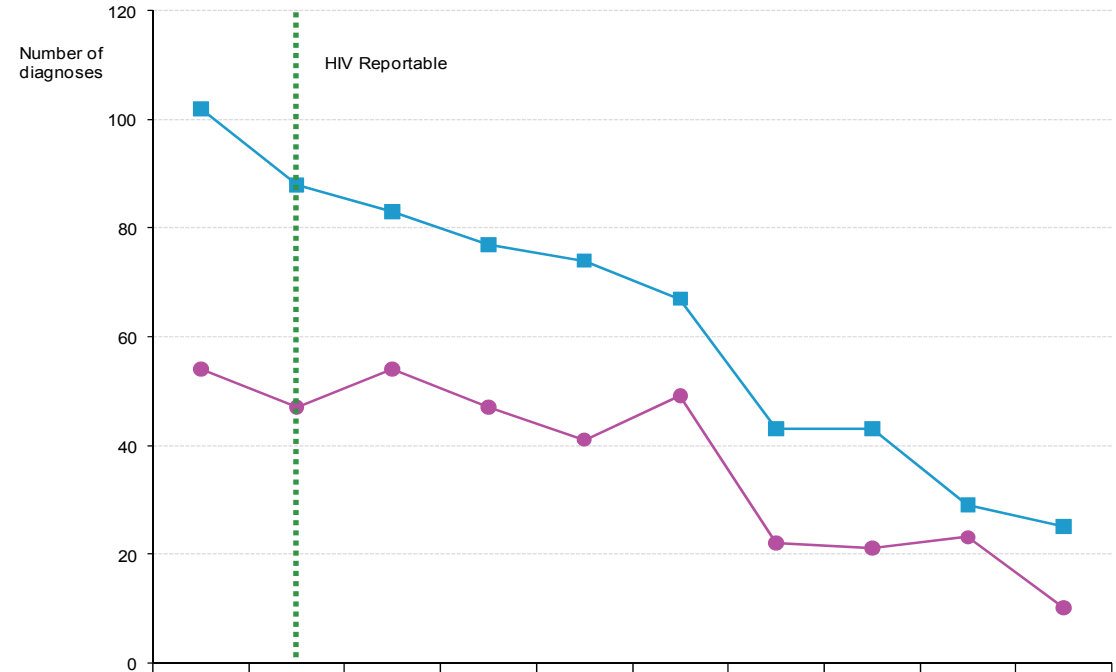
The overall decrease in HIV diagnoses in BC can largely be explained by the dramatic decrease in the number of new HIV diagnoses among people who use injection drugs (IDU) in BC, starting in 2008 (Figure 15). In the years prior to the decrease, IDU comprised approximately 30% of all new HIV diagnoses in the province. In 2011, 12.1% (35 cases) of all new HIV diagnoses were among IDU.

There are several possible explanations for this decrease, which are likely acting in concert to result in a net overall decrease in new diagnoses among IDU. There is evidence that the reduction in community viral load among IDU due to the increasing uptake and duration of highly active antiretroviral therapy (HAART) is influencing these trends, and the impact of provincial harm reduction programs (such as needle distribution programs, supervised injection sites, and other prevention programs) is also contributing to the decline. Survey data among drug users in Vancouver and Victoria also demonstrated shifts in drug using behaviour during this period, from injection drug use to smoking drugs which has also likely been a significant factor. This is an encouraging trend, and efforts to maintain and enhance current prevention programs for IDU are needed.[9]

The continued decrease of new HIV diagnoses among IDU is observed in both males and females and across all age groups. In 2011, the majority of new HIV diagnoses among IDU continue to be male (25 cases,71.4%) (Figure 20), while the greatest number of new HIV diagnoses are between 30 and 59 years of age (29 cases, 82.8%) (Figure 21).

The majority of new HIV diagnoses among IDU continue to be among Caucasian (16 cases, 45.7%) and Aboriginal (15 cases, 42.8%) people. Over the past 10 years, the percentage of new HIV diagnoses among Caucasian people has decreased while the percentage among Aboriginal people has increased (Figure 22).

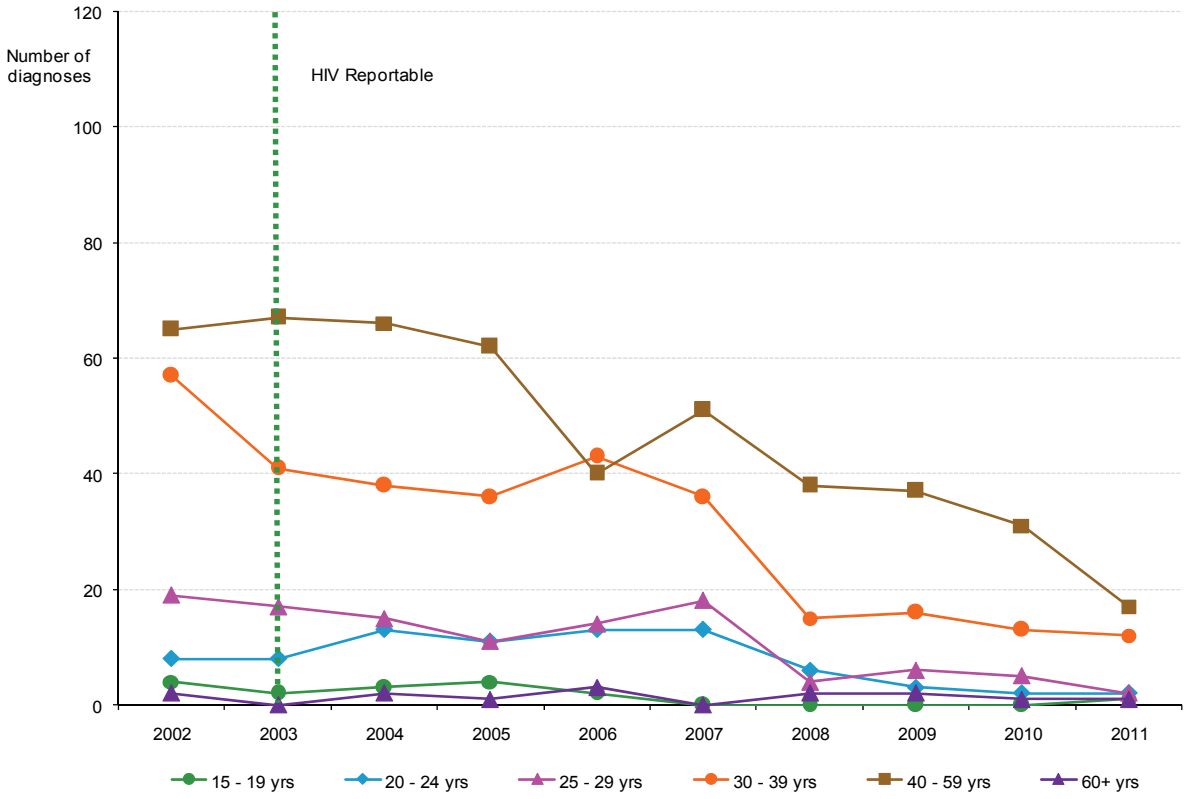
20. New HIV diagnoses among IDU in BC by gender, 2002 to 2011



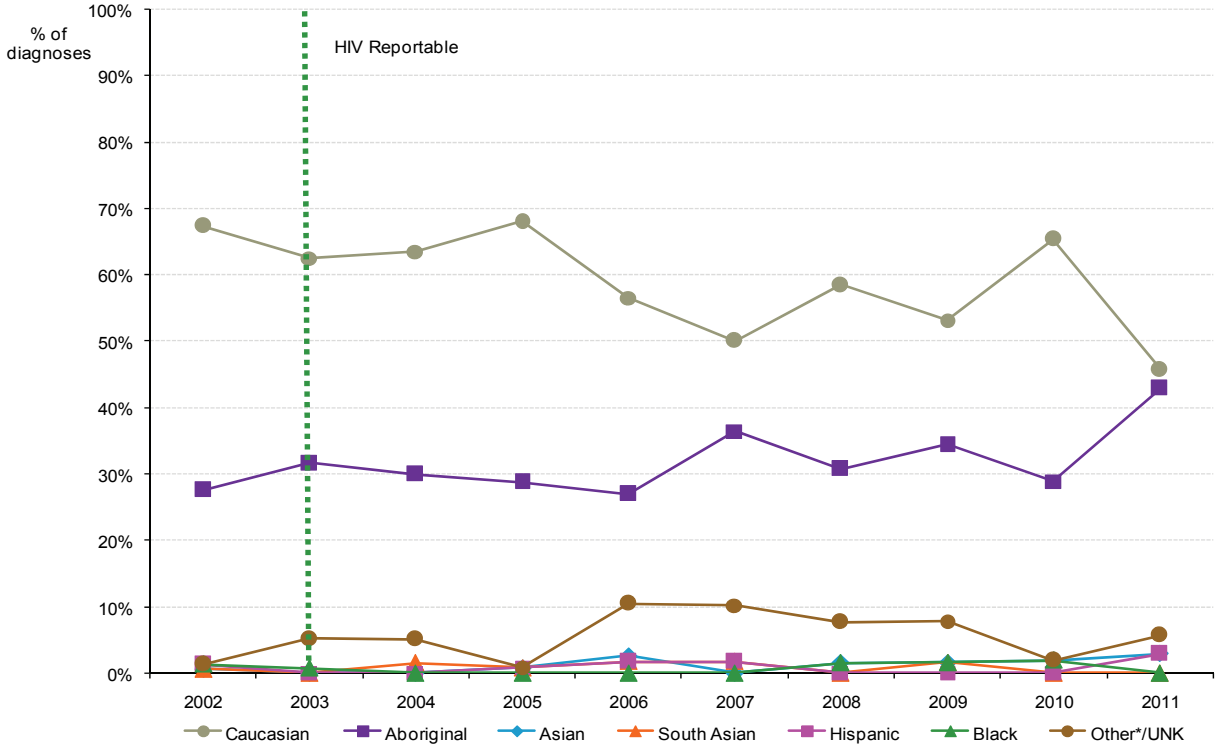
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Diagnoses - Female	54	47	54	47	41	49	22	21	23	10
Diagnoses - Male	102	88	83	77	74	67	43	43	29	25
Diagnoses - Other *	0	1	0	1	0	2	0	0	0	0

* Other - transgender and gender unknown

21. New HIV diagnoses among IDU in BC by age group, 2002 to 2011



22. New HIV diagnoses among IDU in BC by ethnicity, 2002 to 2011



* Other - Arab/West Asian and other/mixed ethnicity
UNK - ethnicity unknown

New HIV Diagnoses among People who acquire HIV through Heterosexual Contact

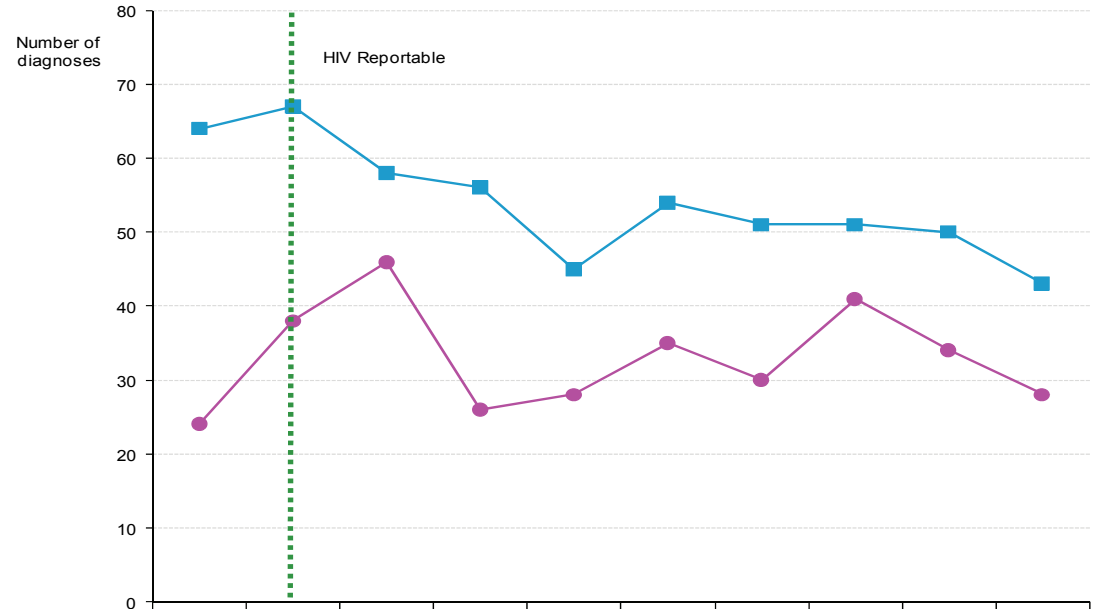
With the decrease in new HIV diagnoses among IDU, people who have acquired HIV through heterosexual contact (HET) represent the exposure category with the second greatest number of new HIV diagnoses in BC in 2011 (71 cases, 24.6%) (Figure 15). This population is heterogeneous, including for example immigrants from HIV endemic countries with a new HIV diagnosis in BC, or individuals who are sexual partners of persons with HIV acquired through other routes of exposure. It is also possible that this population includes individuals where risk factors for acquisition of HIV through other routes of exposure exists but was not identified during follow-up.

The number of new HIV diagnoses among people who have acquired HIV through heterosexual contact decreased in 2011 to 71 from 84 cases in 2010, although the overall trend is relatively stable as are trends by gender (Figure 23). In 2011, the majority of new HIV diagnoses among heterosexuals continue to be male (43 cases, 60.6%). The number of new diagnoses decreased among heterosexual females in 2011 to 28 from 34 cases in 2010 and among heterosexual males to 43 from 50 cases in 2010. In this population, age-related trends are variable. Since 2003, the majority of new HIV diagnoses are observed in individuals between 30 to 59 years of age (Figure 24).

Similar to previous years, in 2011, most of the new HIV diagnoses in heterosexuals continue to be among Caucasians (29 cases, 40.8%) followed by Aboriginal people (16 cases, 22.5%). The proportion of new diagnoses among South Asian people increased in 2011 to 14.1% (10 cases) from 7.1% (6 cases) in 2010 (Figure 25).

A majority of new diagnoses in this population each year are in people who on follow-up are found to have an identified risk factor (e.g., having a sexual partner who is HIV positive or at higher risk, or born/residing in an HIV endemic country). In 2011, 57.7% (41 cases) of new diagnoses among people who acquired HIV through heterosexual contact had an identified risk factor (Figure 26). This trend has been relatively stable.

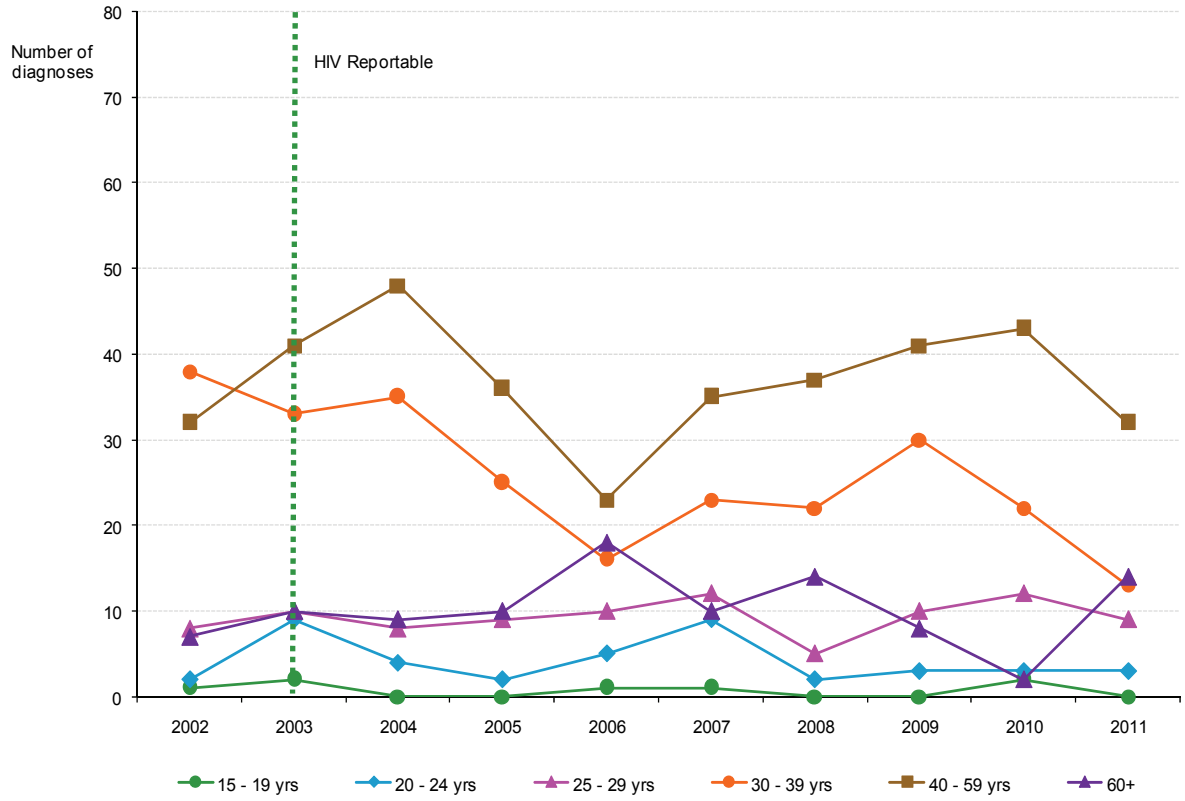
23. New HIV diagnoses among HET in BC by gender, 2002 to 2011



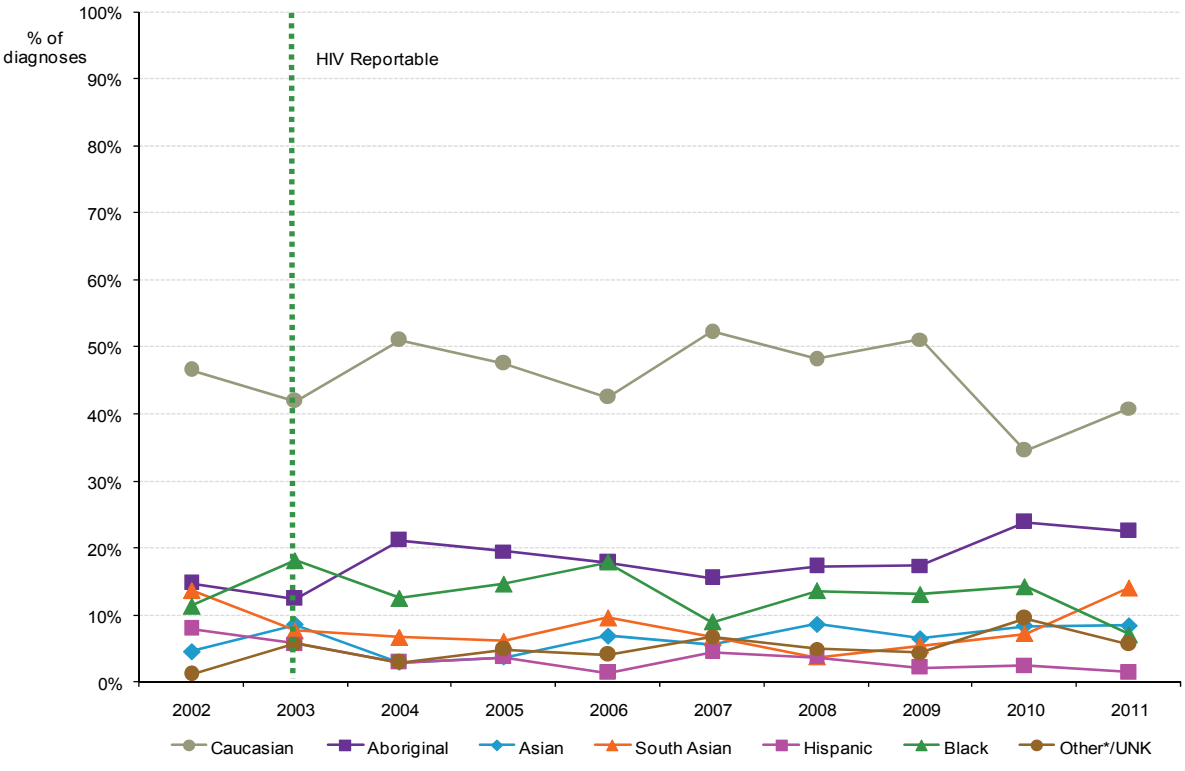
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Diagnoses - Female	24	38	46	26	28	35	30	41	34	28
Diagnoses - Male	64	67	58	56	45	54	51	51	50	43
Diagnoses - Other *	0	0	0	0	0	1	0	0	0	0

* Other - transgender and gender unknown

24. New HIV diagnoses among HET in BC by age group, 2002 to 2011

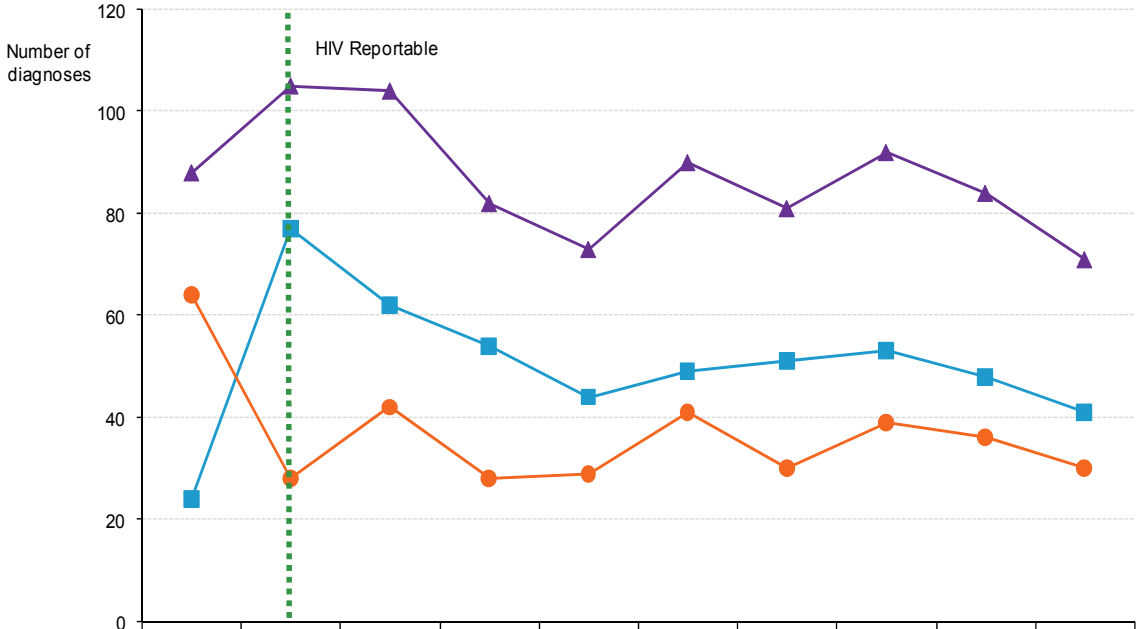


25. New HIV diagnoses among HET in BC by ethnicity, 2002 to 2011



* Other - Arab/West Asian and other/mixed ethnicity
UNK - ethnicity unknown

26. New HIV diagnoses among HET in BC by identified risk, 2002 to 2011



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
HET-IR	24	77	62	54	44	49	51	53	48	41
HET-NIR	64	28	42	28	29	41	30	39	36	30
TOTAL	88	105	104	82	73	90	81	92	84	71

HET-IR - heterosexual contact with identified risk
HET-NIR - heterosexual contact with no identified risk

HIV in Pregnancy

In this report we present data from two information sources to describe HIV infection among pregnant women in BC: data from prenatal HIV testing and data from the Oak Tree Clinic (OTC). The OTC provides antenatal care directly or indirectly for pregnant women with HIV infection in BC.

There are important differences between these two data sources that need to be understood in order to interpret the data correctly:

- Prenatal HIV tests - The number of women having at least one prenatal HIV test per year are assigned to the year in which the HIV test was performed, and this data includes all pregnant women (including women who do and do not have a live birth). This data comes from laboratory and surveillance data, which have established limitations to data quality (see Technical Appendix for details).

- Surveillance data collated by the Oak Tree Clinic - Includes pregnant women accessing care who have a live birth**.** The year assigned is based on the infant's year of birth. This data comes from clinical data abstraction for women for whom the OTC provides direct or indirect antenatal HIV care (estimated at close to complete coverage of all pregnant women with HIV infection in BC).

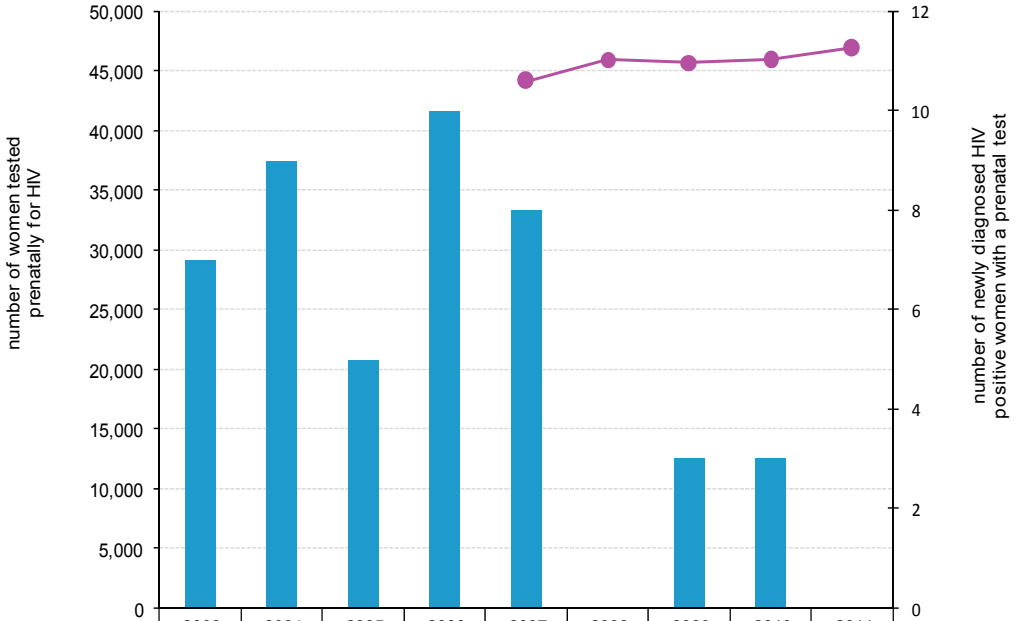
For these reasons, these two data sources are not directly comparable. However, taken together these data provide a more comprehensive overview of HIV in pregnancy in BC.

Prenatal HIV Testing

In 2011, 46,910 women were tested prenatally for HIV. Overall the number of women being tested prenatally each year in BC is relatively stable.

Between 2003 and 2011, 45 women were newly diagnosed as HIV positive through prenatal screening. The number of women diagnosed with HIV through prenatal screening decreased after 2007 and remains low (Figure 27). There were no women newly diagnosed with HIV in 2011 through prenatal screening.

27. Women newly diagnosed with HIV as part of a prenatal test panel in BC, 2003 to 2011



	2003	2004	2005	2006	2007	2008	2009	2010	2011
Newly diagnosed HIV positive women with a prenatal test	7	9	5	10	8	0	3	3	0
Total number of women tested prenatally for HIV					44,171	45,941	45,686	45,914	46,910

Information source for the number of women tested prenatally for HIV is the Public Health Microbiology and Reference Laboratory (PHMRL) located at the BC Centre for Disease Control. Data not available prior to 2007.

Provincial Surveillance Data Collated by the Oak Tree Clinic

The Oak Tree Clinic (OTC) at BC Children's and Women's Hospital directly or indirectly provides antenatal care for pregnant women with HIV infection and their children, including antenatal highly active antiretroviral therapy (HAART) for the prevention of mother to child transmission of HIV.

In the absence of antenatal HAART, the transmission rate of HIV to infants born to HIV positive women is estimated at 25%. Between 2003 and 2011, 242 HIV positive pregnant women having live births accessed care at OTC, ranging from 21 to 30 women per year.

The majority of women were diagnosed with HIV before conception or delivery (235/242, 97.1%). Of these 235 women, 225 (95.7%) received antenatal HAART prior to delivery and HIV was not diagnosed in any infants born to these women (transmission rate 0% among women accessing antenatal HAART). However, perinatally acquired HIV infection was diagnosed in two infants between 2003 and 2011 among women who did not receive antenatal HAART prior to delivery (Figure 28).

28. HIV positive pregnant women having live births and accessing care at Oak Tree Clinic, 2003 to 2011 (based on infant's year of birth)

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Diagnosed before delivery, received antenatal HAART	21	26	24	26	27	28	20	23	30
Diagnosed before delivery, did not receive antenatal HAART	2	0	3	1	2	1	1	0	0
Diagnosed at/after delivery	3	2	0	1	1	0	0	0	0
Perinatal transmission	0	0	0	1	0	1	0	0	0

Stage of Infection at Time of HIV Diagnosis

As diagnosis can occur weeks to years after infection with HIV, individuals are at different stages of HIV infection at the time of diagnosis. Understanding the trends in stage of infection at HIV diagnosis provides insights into the timeliness of engagement in and access to HIV testing following infection.

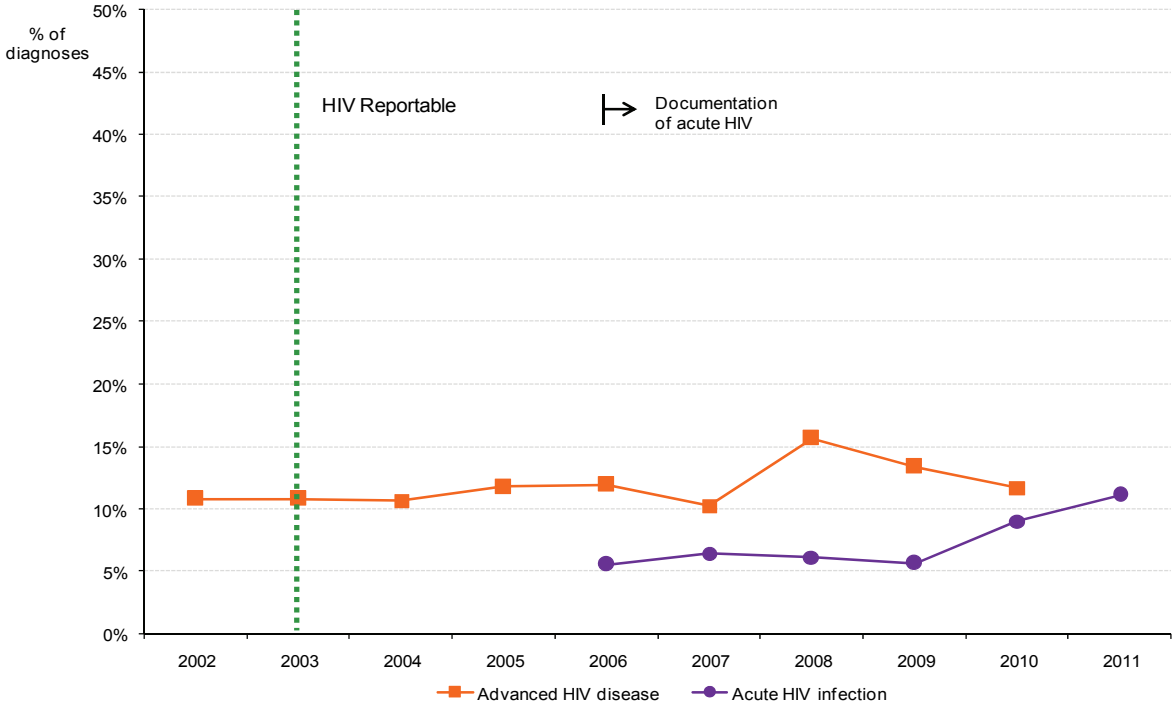
Acute HIV Infection

Individuals diagnosed with acute HIV infection have tested within the first 6 to 8 weeks after infection with HIV (detected through characteristic patterns of laboratory HIV tests). Individuals with acute HIV infection have high blood viral loads and are more likely to transmit HIV to others compared to individuals at other stages of HIV infection; in some areas it's estimated that up to 50% of all new HIV infections are related to transmission from an individual with acute infection.[10] As knowledge of one's HIV status typically results in behaviour change that reduces the risk of transmission, strategies to improve the detection of acute HIV infection are important. In 2011, 11.1% (32 cases) of new HIV diagnoses were acute (Figure 29). The increase in percent of acute HIV infections since 2010 is in part due to the implementation of pooled nucleic acid amplification testing for HIV, which is more effective at detecting acute HIV infection, at targeted clinics in Vancouver with MSM clients as part of a study led by BCCDC.[11]

Advanced HIV Disease

Individuals with advanced HIV disease at diagnosis have tested years after their initial infection with HIV. Diagnosis at an advanced stage of HIV disease is associated with both poorer individual clinical outcomes, as well as potentially reduced population benefit due to persistent undiagnosed infection. The percentage of newly diagnosed individuals with advanced HIV disease at diagnosis decreased in BC to 11.7% (35 cases) in 2010 from 13.4% (45 cases) in 2009; however, the overall trend is relatively stable. This percentage may be an underestimate due to under-reporting of AIDS cases.

29. Stage of infection at time of HIV diagnosis, 2002 to 2011



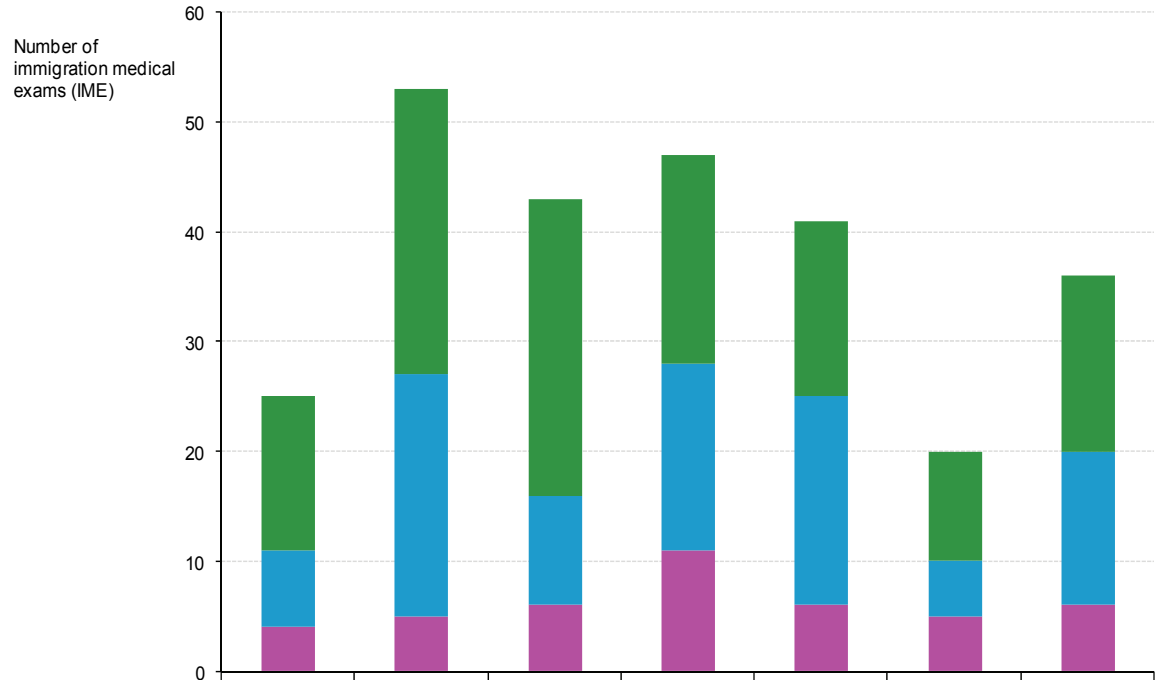
Data for acute HIV infections is available from 2006 onwards.
Data for advanced HIV disease is only presented to 2010 due to expected delays in AIDS case reports which is required to identify advanced HIV disease.

Immigration of Individuals with HIV

In 2002, Citizenship and Immigration Canada (CIC) included HIV testing as part of the immigration medical examination (IME) required for all immigration applications, Convention refugees, and refugee claimants. As of September 2004, CIC notifies Clinical Prevention Services at BCCDC of individuals who undergo an IME outside of Canada, test positive for HIV, and indicate BC as their intended province of residence. Individuals who undertake their IME within BC and test positive for HIV are reported to BCCDC through the routine surveillance system.

The number of HIV positive individuals immigrating into BC varies annually and may reflect global migration patterns. In 2011, a total of 36 HIV positive immigrants arrived in BC, 14 (38.9%) coming from countries where HIV is considered to be endemic (Figure 30).

30. Immigration-related HIV diagnoses from endemic and non-endemic countries, 2005 to 2011



	2005	2006	2007	2008	2009	2010	2011
Non-Endemic Countries	14	26	27	19	16	10	16
Endemic Countries	7	22	10	17	19	5	14
Country Unspecified	4	5	6	11	6	5	6

Estimates of HIV Incidence and Prevalence

The HIV surveillance data presented in this report is based on individuals with a new positive HIV test (or new HIV diagnosis). Individuals who have undiagnosed HIV infection and have not yet tested are not captured in the data. Furthermore, a person with a new positive test for HIV can be diagnosed months or years after the time that they became infected with HIV. For these reasons, HIV surveillance data based on new positive HIV tests does not provide accurate information on HIV incidence (i.e., the number of new infections in a one-year period, both diagnosed and undiagnosed) or prevalence (i.e., the number of people living with HIV). Knowing incidence and prevalence is important in order to monitor the HIV epidemic and to guide the development and evaluation of HIV-related prevention, treatment, care and support programs.

Based on HIV surveillance data and using multiple estimation methods, the Public Health Agency of Canada (PHAC) generates periodic national estimates of HIV incidence and prevalence. To arrive at national estimates[12], specific estimates for provinces including BC are generated.

In BC, estimates of the total number of incident or new HIV infections in 2011 was 380 (range 260 to 500 cases), a decrease from 408 (280 to 540 cases) in 2008 (Table 31). The estimate of prevalent HIV infections or the total number of people living with HIV in the province at the end of 2011 was 11,700 (range 9,400 to 14,000 cases), an increase from 11,040 (8,880 to 13,200 cases) at the end of 2008 (Table 32).

In 2011, gay, bisexual and other men who have sex with men (MSM) continued to comprise the greatest proportion of incident and prevalent HIV infections, followed by persons who use injection drugs (IDU) among people living with HIV, and heterosexual (non-endemic) persons among new HIV infections.[13]

31. Estimated number of incident HIV infections in BC by exposure category, 2008 & 2011

Exposure Category	2008			2011		
	Number	Range	% of Total	Number	Range	% of Total
MSM	195	130 - 260	48%	206	140 - 270	54%
MSM-IDU	15	10 - 20	4%	12	10 - 20	3%
IDU	105	70 - 140	26%	60	40 - 80	16%
HET (non-endemic)	83	50 - 120	20%	89	60 - 120	23%
HET (endemic)	10	< 20	2%	13	10 - 20	3%
Other		<10	---		<10	---
All	408	280 - 540		380	260 - 500	

32. Estimated number of prevalent HIV infections in BC by exposure category, 2008 & 2011

Exposure Category	2008			2011		
	Number	Range	% of Total	Number	Range	% of Total
MSM	4,540	3,580 - 5,500	41%	4,950	3,900 - 6,000	42%
MSM-IDU	350	240 - 460	3%	370	260 - 480	3%
IDU	3,640	2,780 - 4,500	33%	3,640	2,780 - 4,500	31%
HET (non-endemic)	2,035	1,570 - 2,500	18%	2,240	1,680 - 2,800	19%
HET (endemic)	345	240 - 450	3%	370	240 - 500	3%
Other	130	80 - 180	1%	130	90 - 170	1%
All	11,040	8,880 - 13,200		11,700	9,400 - 14,000	

MSM - men who have sex with men
IDU - injection drug use
HET (non-endemic) - heterosexual contact with a person who is either HIV-infected or at risk for HIV or heterosexual as the only identified risk
HET (endemic) - heterosexual contact and origin from a country where HIV is endemic
Other - recipients of blood transfusion or clotting factor, perinatal, and occupational transmission

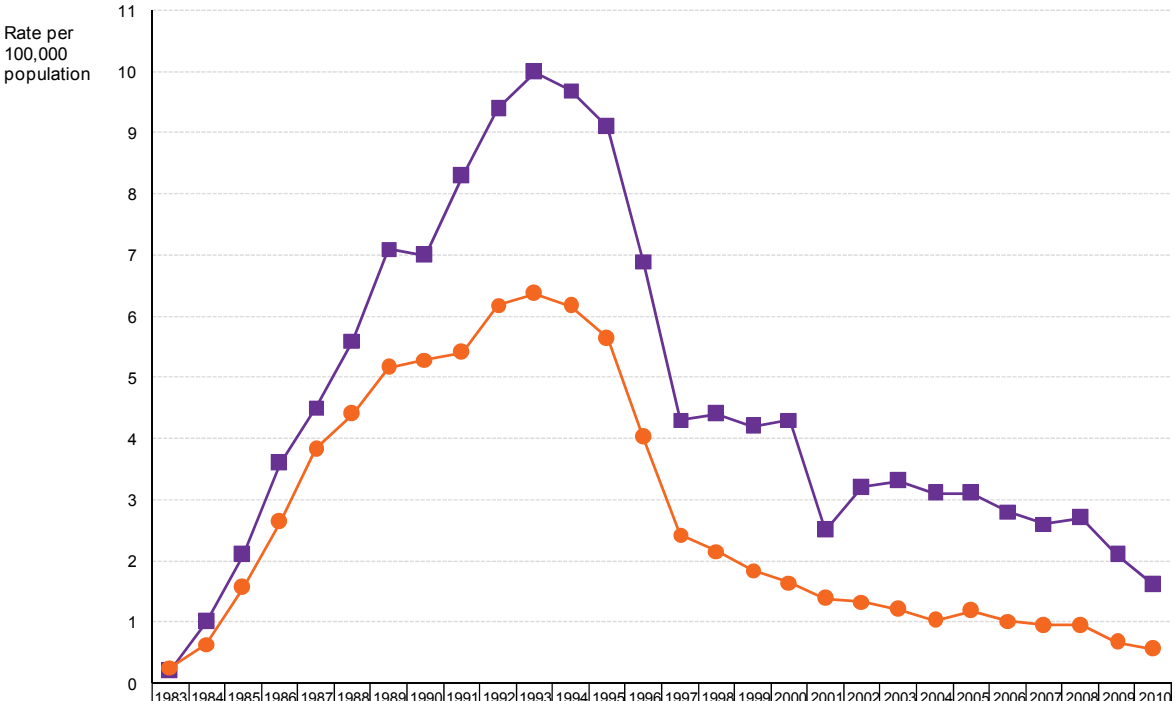
AIDS by Region, Gender and Age

As the AIDS surveillance system is a passive system and relies on clinicians reporting the case to Clinical Prevention Services at BCCDC, this report only includes cases to 2010. In BC, the majority of AIDS cases are reported through the Provincial HIV Treatment Program at the BC Centre for Excellence in HIV/AIDS, which has comprehensive clinical data on all individuals accessing highly active antiretroviral therapy (HAART) in BC.

The rate of AIDS and the number of AIDS case reports per year have decreased from a peak in 1993, due primarily to advances in HIV treatment which includes HAART. The rate of AIDS in BC continued to decrease in 2010 to 1.6 (72 cases) from 2.1 (93 cases) per 100,000 population in 2009 and remains approximately two times higher than the Canadian rate (Figure 33). This difference from the national rate may represent greater ascertainment of AIDS cases in BC due to reporting by the Provincial HIV Treatment Program. Rates are variable by Health Service Delivery Area (HSDA) per year and are influenced by the small number of cases in most regions. In 2010, the highest rate was reported in Vancouver HSDA (Figure 34).

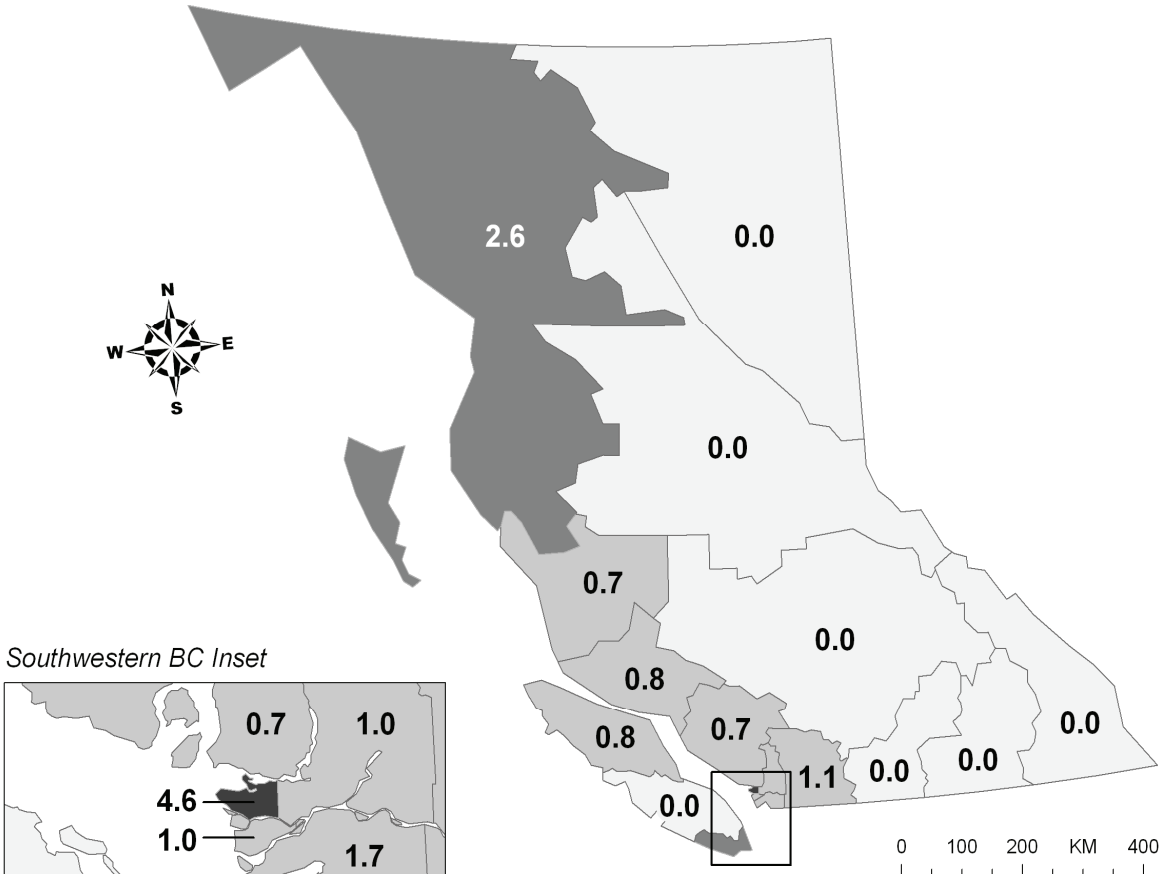
The rate of AIDS among males continues to be greater than the rate among females, which likely reflects the distribution of HIV between males and females in BC (Figure 36). Rates among males have been gradually decreasing while rates in females appear relatively stable. The majority of new AIDS case reports are in people of Caucasian ethnicity (Figure 41). As with new HIV diagnoses, Aboriginal people continue to be disproportionately represented among AIDS cases in BC, comprising 18.0% (13) of new cases in 2010 but only 5% of the total provincial population.[14]

33. AIDS case reports in BC and Canada by historical trend, 1983 to 2010



	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
BC Reports	7	29	63	107	136	174	227	232	280	327	358	358	343	269	170	177	168	172	101	131	137	130	130	117	110	118	93	72
BC Rate	0.2	1.0	2.1	3.6	4.5	5.6	7.1	7.0	8.3	9.4	10.	9.7	9.1	6.9	4.3	4.4	4.2	4.3	2.5	3.2	3.3	3.1	3.1	2.8	2.6	2.7	2.1	1.6
Canadian Rate	0.3	0.6	1.6	2.6	3.8	4.4	5.2	5.3	5.4	6.2	6.4	6.2	5.6	4.0	2.4	2.1	1.8	1.6	1.4	1.3	1.2	1.0	1.2	1.0	0.9	0.9	0.7	0.6

34. AIDS case reports in BC by health service delivery area, 2010



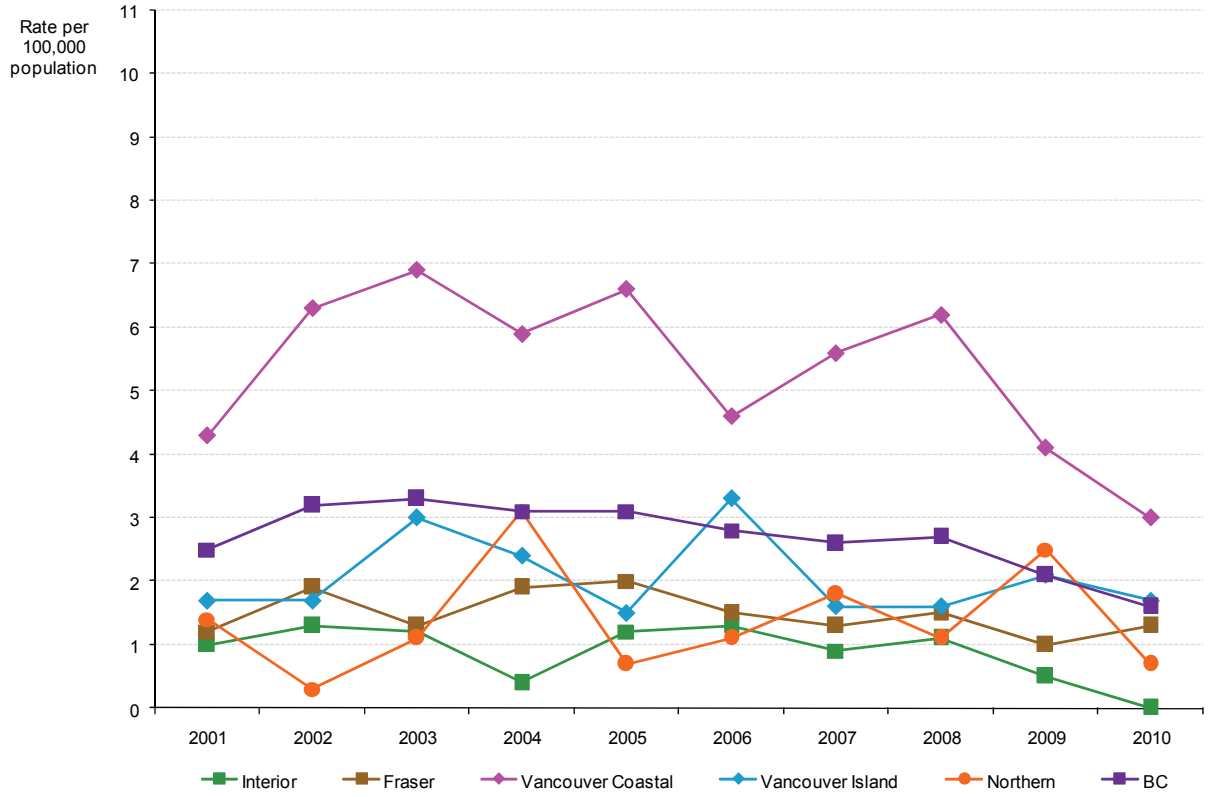
ID	Health Service Delivery Area	Cases	Rate
11	East Kootenay	0	0.0
12	Kootenay Boundary	0	0.0
13	Okanagan	0	0.0
14	Thompson Cariboo Shuswap	0	0.0
21	Fraser East	3	1.1
22	Fraser North	6	1.0
23	Fraser South	12	1.7
31	Richmond	2	1.0
32	Vancouver	30	4.6
33	North Shore/Coast Garibaldi	2	0.7
41	South Vancouver Island	12	3.2
42	Central Vancouver Island	0	0.0
43	North Vancouver Island	1	0.8
51	Northwest	2	2.6
52	Northern Interior	0	0.0
53	Northeast	0	0.0

Rate per 100,000 population by HSDA

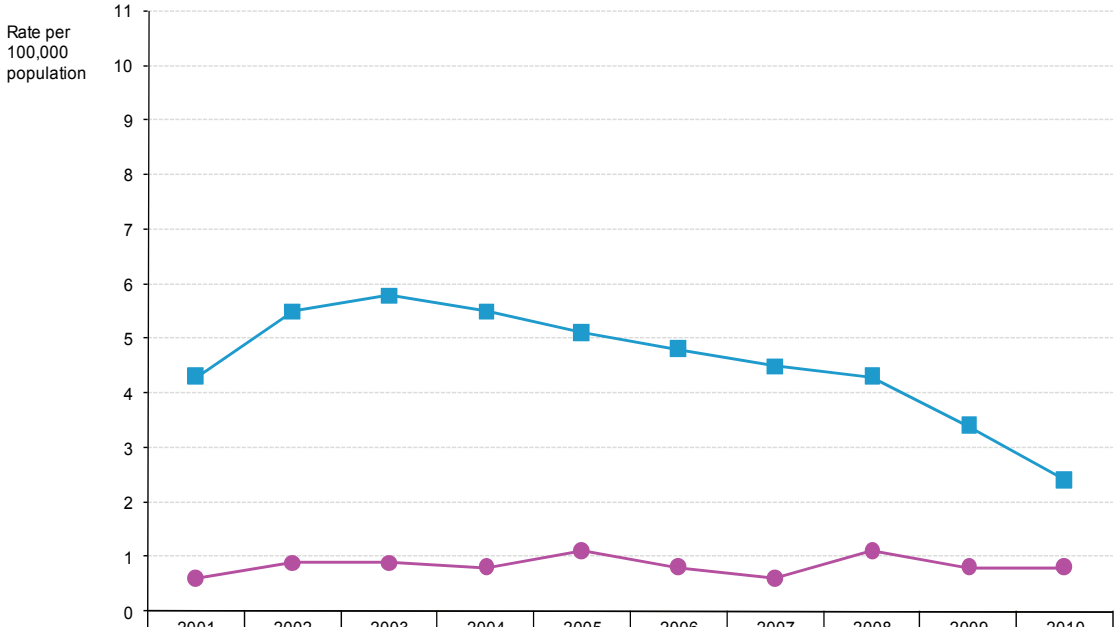
- 0.0
- 0.1 - 1.7
- 1.8 - 3.2
- 3.3 - 4.6

Rates calculated with population estimates released by BC Stats

35. AIDS case reports in BC by health authority, 2001 to 2010



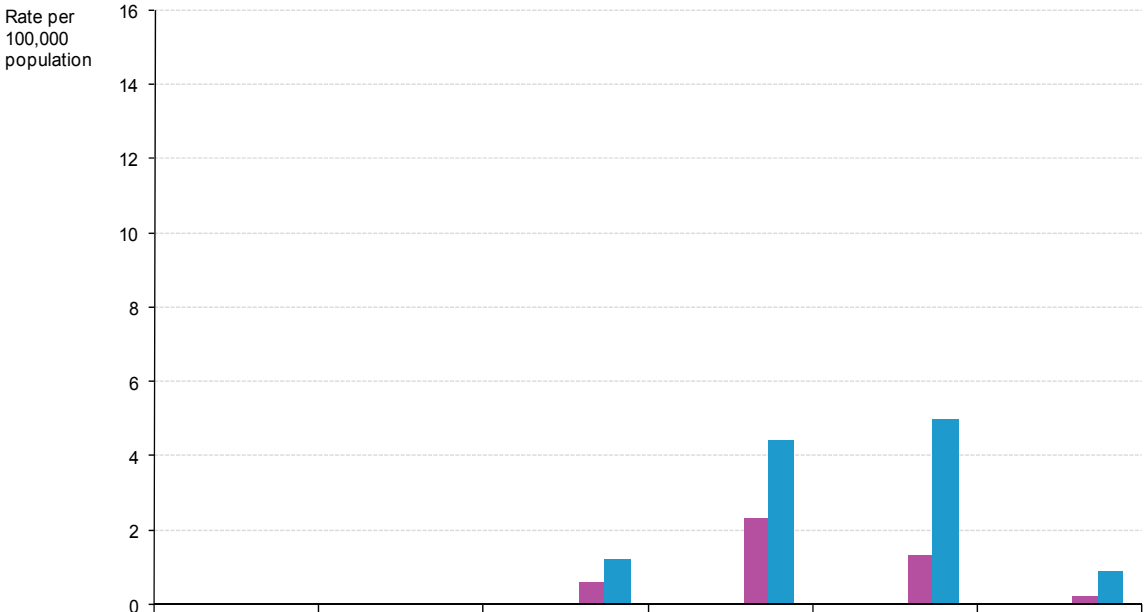
36. AIDS case reports in BC by gender, 2001 to 2010



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Reports - Female	13	19	19	17	23	17	13	24	17	19
Reports - Male	88	112	118	113	107	100	97	94	76	53
Reports - Other *	0	0	0	0	0	0	0	0	0	0
Rate - Female	0.6	0.9	0.9	0.8	1.1	0.8	0.6	1.1	0.8	0.8
Rate - Male	4.3	5.5	5.8	5.5	5.1	4.8	4.5	4.3	3.4	2.4

* Other - transgender and gender unknown

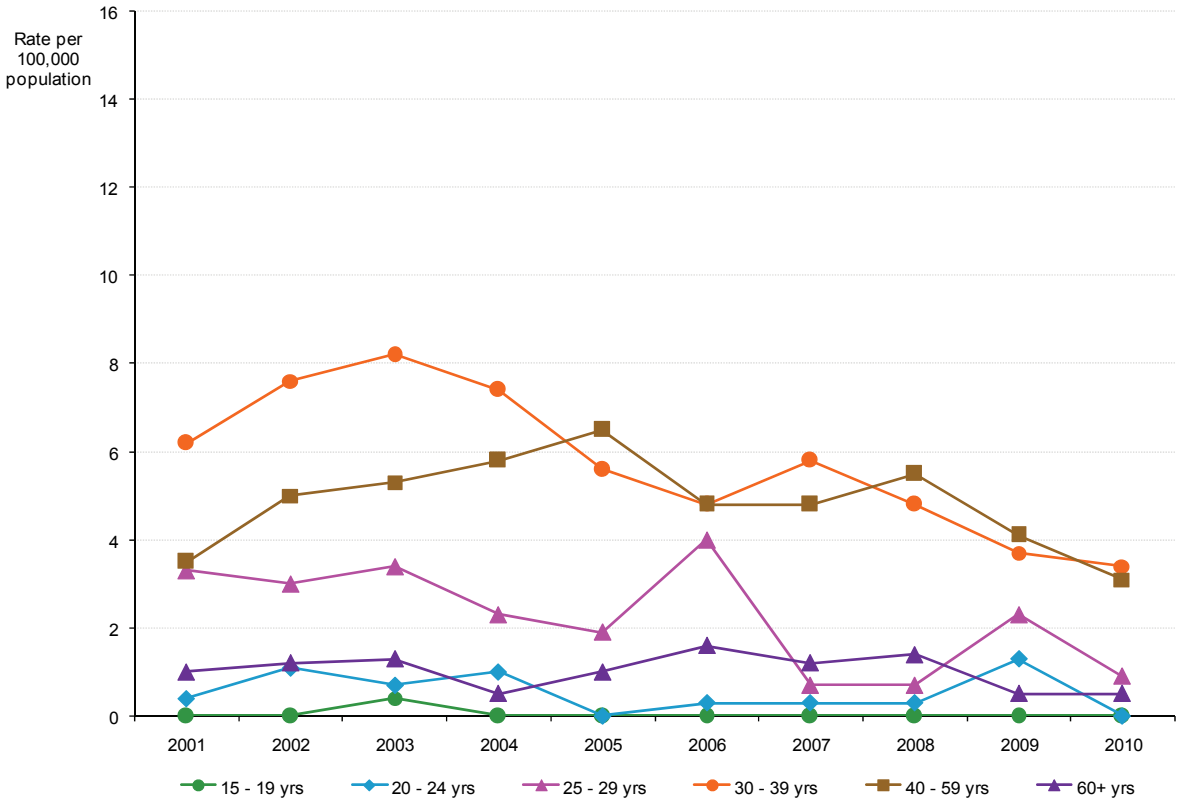
37. AIDS case reports in BC by age group and gender, 2010



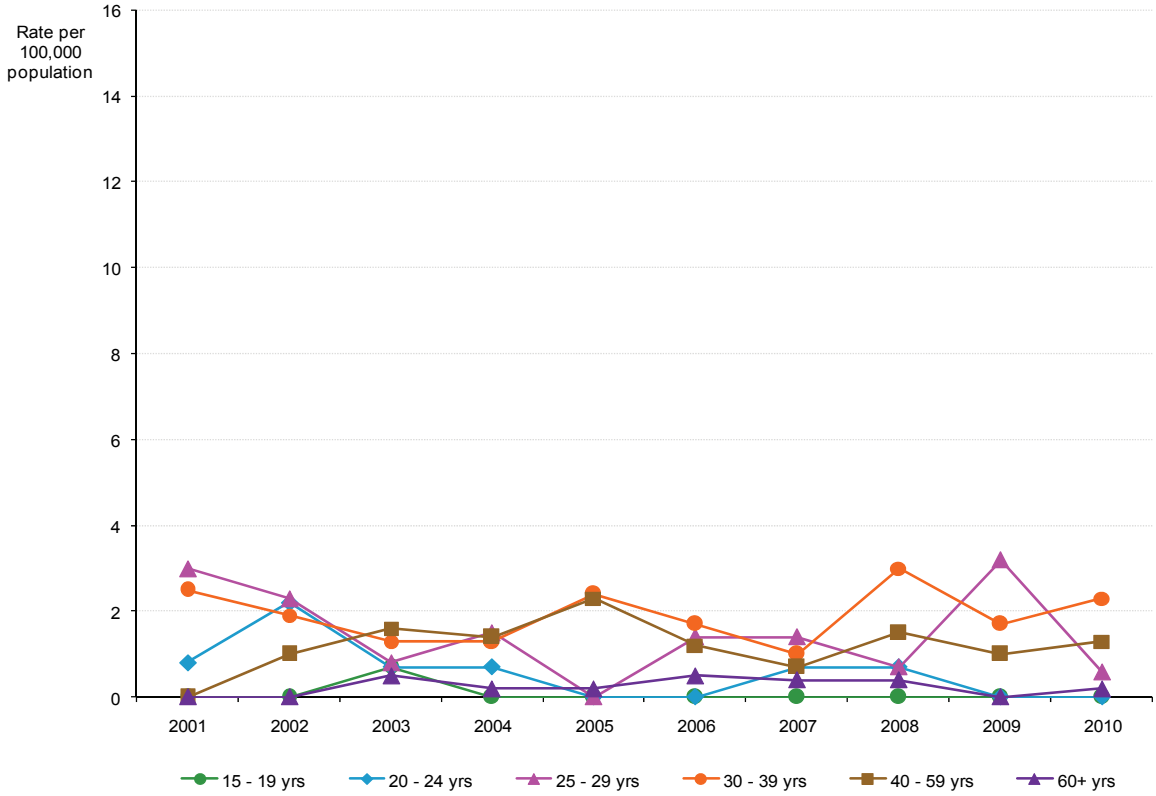
	15 - 19 yrs	20 - 24 yrs	25 - 29 yrs	30 - 39 yrs	40 - 59 yrs	60+ yrs
Reports - Female	0	0	1	7	9	1
Reports - Male	0	0	2	13	34	4
Reports - Other *	0	0	0	0	0	0
Rate - Female	0.0	0.0	0.6	2.3	1.3	0.2
Rate - Male	0.0	0.0	1.2	4.4	5.0	0.9

* Other - transgender and gender unknown

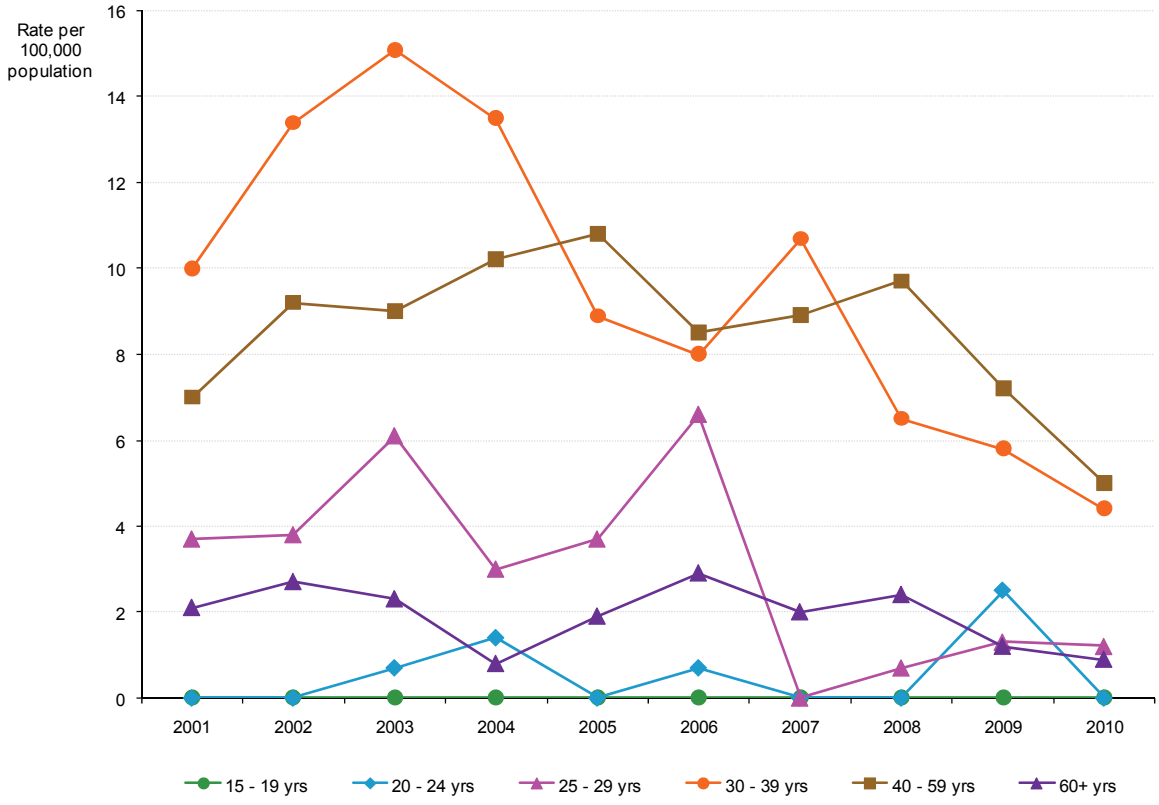
38. AIDS case reports in BC by age group - total, 2001 to 2010



39. AIDS case reports in BC by age group - female, 2001 to 2010

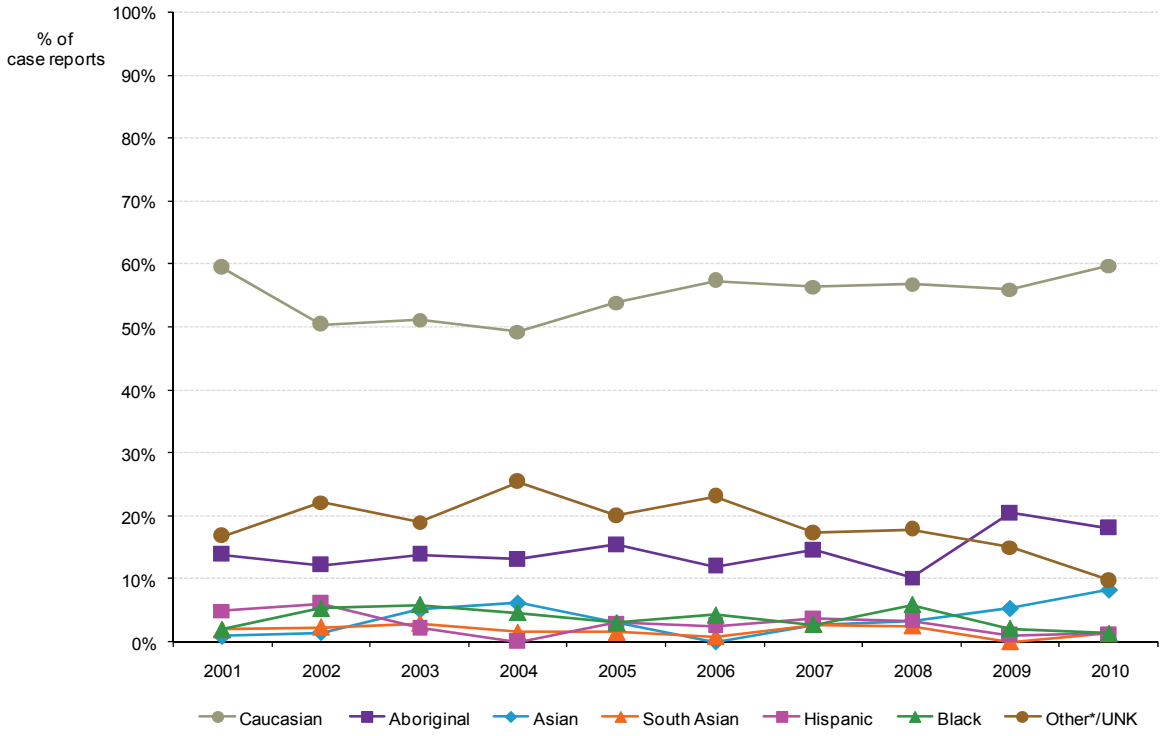


40. AIDS case reports in BC by age group - male, 2001 to 2010



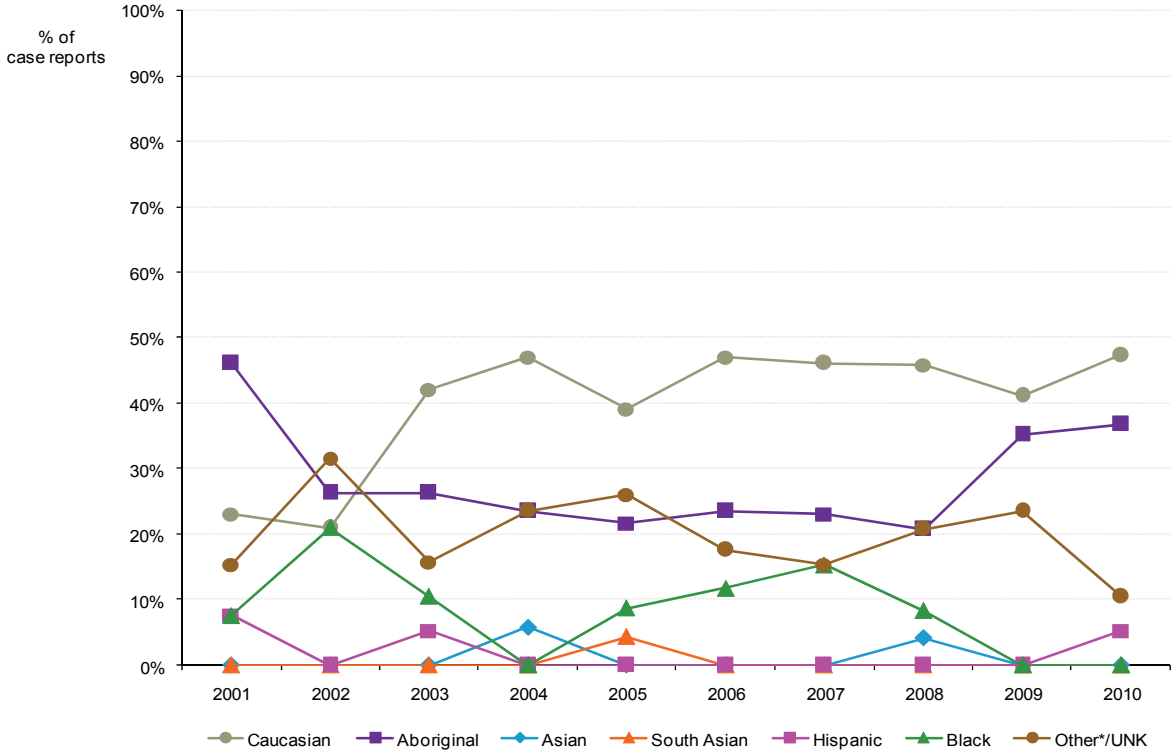
AIDS by Ethnicity

41. AIDS case reports in BC by ethnicity - total, 2001 to 2010



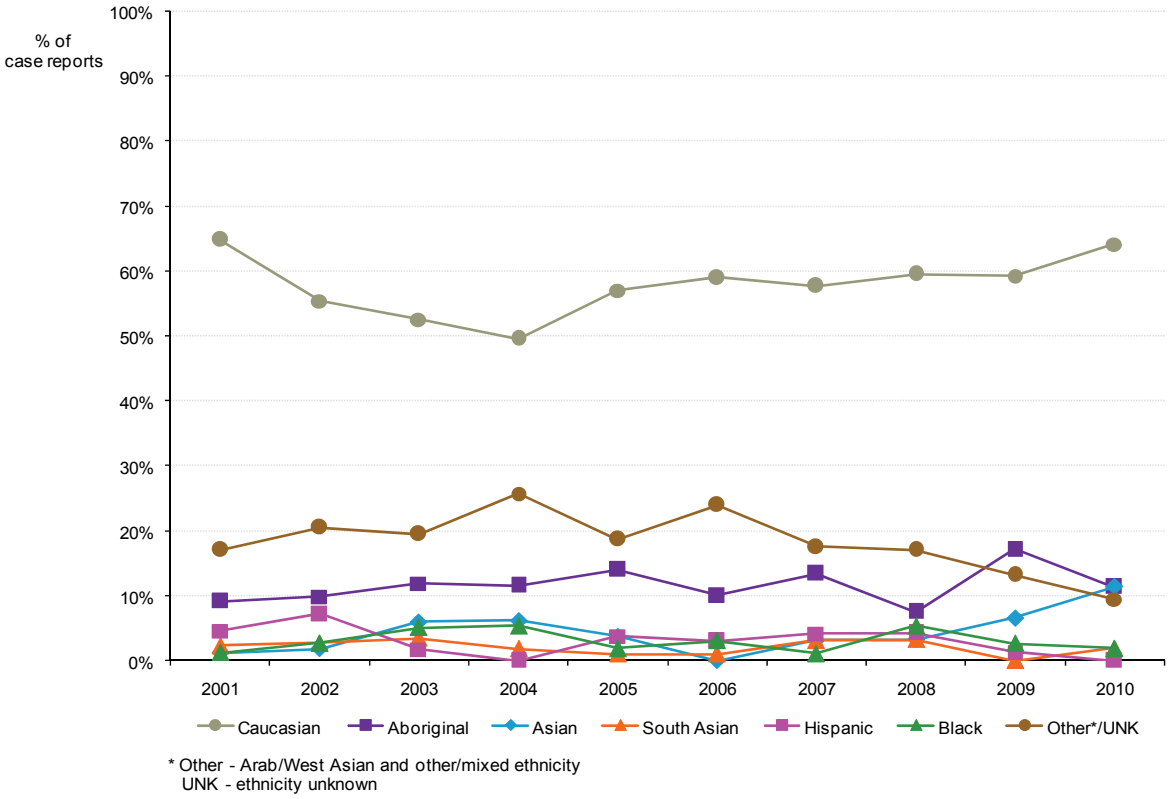
* Other - Arab/West Asian and other/mixed ethnicity
UNK - ethnicity unknown

42. AIDS case reports in BC by ethnicity - female, 2001 to 2010



* Other - Arab/West Asian and other/mixed ethnicity
UNK - ethnicity unknown

43. AIDS case reports in BC by ethnicity - male, 2001 to 2010



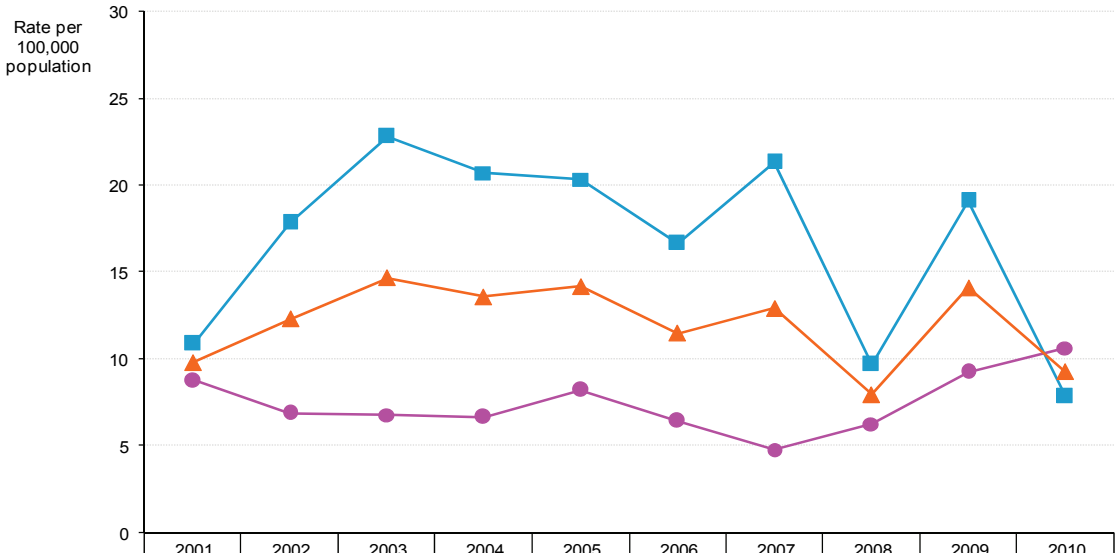
AIDS Case Reports among Aboriginal People

As with new HIV diagnoses, the majority of new AIDS case reports among Aboriginal people are in those who identify as First Nations (12 cases in 2010). Two or fewer new AIDS cases were reported per year among Métis and Inuit people between 2001 and 2010.

While the total provincial AIDS rate has decreased over the past 10 years (Figure 33), the rate of new AIDS case reports among First Nations people has fluctuated but remained steady (Figure 44). This highlights the importance of ensuring timely access to testing, treatment and care in order to prevent progression to advanced HIV disease and AIDS. There may be multiple barriers for First Nations people to access these health services, including stigma, geographic and social isolation, racism, and poverty.

Between 2001 and 2010, the AIDS rate in First Nations men was comparable to or higher than the rate in women. Rates in both First Nations women and men exceed those in women and men of all ethnicities (10.6 versus 0.8 per 100,000 population for women, and 7.8 versus 2.4 per 100,000 population for men, in 2010) (Figure 36).

44. AIDS case reports among First Nations people in BC by gender, 2001 to 2010



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Reports - Female	5	4	4	4	5	4	3	4	6	7
Reports - Male	6	10	13	12	12	10	13	6	12	5
Reports - Other *	0	0	0	0	0	0	0	0	0	0
Reports - Total	11	14	17	16	17	14	16	10	18	12
Rate - Female	8.7	6.9	6.8	6.7	8.2	6.4	4.8	6.3	9.3	10.6
Rate - Male	10.9	17.9	22.8	20.7	20.3	16.7	21.3	9.7	19.1	7.8
Rate - Total	9.8	12.3	14.6	13.6	14.2	11.5	12.9	7.9	14.1	9.3

* Other - transgender and gender unknown
Rates based on First Nations population estimates from Aboriginal Affairs and Northern Development Canada (AANDC)

Endnotes

[1] In this report, the term "new HIV diagnoses" is used instead of the term "persons testing newly positive for HIV" which was used in previous reports. Both terms are equivalent for surveillance purposes for describing cases.

[2] For more information about the STOP HIV/AIDS project, including reports on program indicators related to HIV diagnosis see: STOP HIV/AIDS Pilot Project website http://www.stophivaids.ca/

[3] BC Stats. Census Statistical Profiles of Aboriginal Peoples, 2006. Retrieved from http://www.bcstats.gov.bc.ca/statisticsbysubject/AboriginalPeoples/CensusProfiles.aspx

[4] For further discussion of the multiple historic factors which have contributed to inequities in the social determinants of health among Aboriginal people see: BC Provincial Health Officer. (2009). Pathways to Health and Healing: 2nd Report on the Health and Well-being of Aboriginal People in British Columbia. Provincial Health Officer's Annual Report 2007. Retrieved from http://www.health.gov.bc.ca/pho/reports/annual.html

[5] For examples of successful community approaches to address HIV prevention, care, treatment and support see: Chee Mamuk, BCCDC. (2009). A guide to Wise Practices for HIV/AIDS education and prevention programs. Retrieved from http://www.bccdc.ca/NR/rdonlyres/0DFB72E1-9AF1-43CA-BD62-CF5CC8F66305/0/CheeMamukWisePracticesGuide.pdf

[6] BC Stats. Census Statistical Profiles of Aboriginal Peoples, 2006. Retrieved from http://www.bcstats.gov.bc.ca/statisticsbysubject/AboriginalPeoples/CensusProfiles.aspx

[7] For more information about the community survey of MSM see: ManCount study website http://www.mancount.ca/

[8] References to broader approaches to HIV prevention in MSM: Wolitski R, Fenton K. (April 2011). Sexual health, HIV, and sexually transmitted infections among gay, bisexual, and other men who have sex with men in the United States. *AIDS and Behavior 15*(Suppl 1), 9-17. / Mayer KH, Bekker L-G, Stall R, Grulich AE, Colfax G, Lama, JR. (July 2012). Comprehensive clinical care for men who have sex with men: an integrated approach. *The Lancet, 380*(9839), 378-87.

[9] For more information on potential explanations for the decrease of new HIV diagnoses among people who use injections drugs in BC see: Office of the Provincial Health Officer. (2011, March). Decreasing HIV infections among people who use drugs by injection in British Columbia: Potential explanations and recommendations for further action. Retrieved from http://www.health.gov.bc.ca/library/publications/year/2011/decreasing-HIV-in-IDU-population.pdf

[10] References to individuals with acute HIV infection are more likely to transmit HIV to others compared to individuals at other stages of HIV infection: Cohen MS, Shaw GM, McMichael AJ, Haynes BF. (2011). Acute HIV-1 infection. *New England Journal of Medicine, 364*(20), 1943-54. / Brenner BG, Roger M, Routy J-P, Moisi D, Ntemgwa M, Matte C, et al. (2007). High rates of forward transmission events after acute/early HIV-1 infection. *The Journal of Infectious Diseases, 195*(7), 951-9

[11] For more information on the Study of Acute HIV Infection in Gay Men study see: Canadian Institute of Health Research (CIHR) Team website http://www.acutehivstudy.com/

[12] For further details on national estimates of HIV incidence and prevalence see: Yang Q, Boulos D, Yan P, Zhang F, Remis RS, Schanzer D, Archibald CP. (2010). Estimates of the number of prevalent and incident Human Immunodeficiency Virus (HIV) infections in Canada, 2008. *Canadian Journal of Public Health, 101*(6), 486-490 / see Public Health Agency of Canada website http://www.phac-aspc.gc.ca/aids-sida/publication/survreport/estimat08-eng.php

[13] HIV incidence and prevalence estimates from 2008 and 2011 provided courtesy of the Surveillance and Epidemiology Division, Centre for Communicable Diseases and Infection Control, Public Health Agency of Canada.

[14] BC Stats. Census Statistical Profiles of Aboriginal Peoples, 2006. Retrieved from http://www.bcstats.gov.bc.ca/statisticsbysubject/AboriginalPeoples/CensusProfiles.aspx

[15] For a list of the endemic countries maintained by the Public Health Agency of Canada see: Public Health Agency of Canada. (2010). HIV and AIDS in Canada: Surveillance report to December 31, 2009 - Appendix 4. Surveillance and Epidemiology Division, Centre for Communicable Disease and Infection Control, Public Health Agency of Canada. Retrieved from http://www.phac-aspc.gc.ca/aids-sida/publication/survreport/2009/dec/index-eng.php

Contributors

Epidemiology & Surveillance Team
Clinical Prevention Services

Dr. Mark Gilbert, Physician Epidemiologist
Chunli Gu, A/Federal Field Surveillance Officer (PHAC)
Elsie Wong, Federal Field Surveillance Officer (PHAC)
Monika Lindegger, Epidemiologist
Stanley Wong, Surveillance Analyst
Sung Jae Lee, Surveillance Analyst
Theodora Consolacion, Surveillance Analyst
Travis Salway Hottes, Epidemiologist

We would like to acknowledge the contributions of our many partners who without their support this report would not have been possible.

- Staff from the Public Health Microbiology and Reference Laboratory (PHMRL), located at BCCDC, for the collecting and compiling of HIV requisition data.
- Designated public health nurses in the Health Service Delivery Areas for data collection as part of follow-up to persons testing positive for HIV.
- Physicians, health care providers, and public health staff in BC for taking the time and effort to complete and submit case report forms.
- Chee Mamuk, First Nations Inuit Health Branch and First Nations Health Authority for providing feedback to sections pertaining to Aboriginal people.
- BC Centre for Excellence in HIV/AIDS for their continued assistance in the reporting of new AIDS cases.
- Oak Tree Clinic at BC Children's and Women's Hospital for providing provincial surveillance data on HIV positive pregnant women having live births.
- Surveillance and Epidemiology Division, Centre for Communicable Diseases and Infection Control, Public Health Agency of Canada for providing the national HIV and AIDS rates and the estimates of HIV incidence and prevalence.

Technical Appendix

Data Limitations

There are several key limitations to surveillance data which are important to understand in order to interpret surveillance data appropriately.

- The majority of surveillance data presented in this report is extracted from case report forms completed by either health care providers or public health nurses as part of the follow-up process (which includes partner notification, patient education, and referral to appropriate services). There is an expected reporting delay to receipt of these forms. For HIV data this affects the classification of cases according to exposure category and ethnicity, resulting in a number of cases for the most recent year where this information is unknown. These numbers are not considered final until the following year's annual surveillance report. For AIDS data, there is typically a one year reporting delay and data is presented for the previous year only.
- Surveillance trends can be affected by factors which do not represent a true increase or decrease in infection rates. For example, trends are influenced by patient or provider testing behaviours, which may result in changes to the number of tests performed each year (e.g., an increasing number of HIV tests are performed each year by the Provincial Public Health Microbiology and Reference Laboratory).
- Surveillance data is only reflective of the proportion of the population who test for HIV. Individuals with infections who have not tested would not be represented in surveillance data.
- Cases are classified by exposure category and ethnicity according to information elicited during follow-up from the case or their health care provider, and under-reporting of this information may lead to misclassification.
- HIV is reported as the number of new HIV diagnoses, and does not reflect the number of new HIV infections (i.e., HIV incidence) as individuals may test positive years after the time of HIV infection.
- The system of enhanced follow-up for HIV was established following the addition of HIV to the reportable diseases list in 2003 and has resulted in improved data quality in subsequent years (see Section on "Notes Regarding the Interpretation of HIV Data" for details).
- Rates of new HIV diagnoses or AIDS cases among First Nations people are calculated with the numerator comprised of individuals with HIV or AIDS who self identify as First Nations and the denominator comprised of individuals who are registered First Nations.

Case Definitions

HIV and AIDS are listed as reportable diseases in the *Communicable Disease Regulation* (Schedule A) of the *Public Health Act*.

Human Immunodeficiency Virus (HIV)

Adults, adolescents and children ≥ 18 months: Detection of HIV antibody by screening test (i.e., ELISA or Point of Care HIV test) followed by positive confirmatory test (i.e., Western blot or nucleic acid amplification test), or detection of HIV nucleic acid (RNA or DNA) or detection of p24 antigen with confirmation by neutralization assay, or isolation of HIV in culture.

Children < 18 months: Detection of HIV DNA by nucleic acid amplification testing (NAAT) on two separate samples collected at different times.

Stage of Infection at Time of HIV Diagnosis

Acute HIV Infection: Meets definition for HIV case, and has laboratory findings suggestive of acute HIV infection in the absence of confirmed detection of HIV antibody (i.e., detection of HIV DNA or RNA by NAAT, detection of p24 antigen with confirmation by neutralization assay), and is not diagnosed with AIDS before or up to 12 months after the date of first positive HIV test.

Advanced HIV Disease: Meets definition for HIV case, and is diagnosed with AIDS (based on receipt of an AIDS case report form) before or up to 12 months after the date of the first positive HIV test.

Other/Unknown Stage: Meets the definition for HIV case and does not meet the definitions for acute HIV infection or advanced HIV disease at the time of HIV diagnosis.

Acquired Immune Deficiency Syndrome (AIDS)

One or more of the specified indicator diseases, and meets the case definition for HIV infection.

Indicator diseases for adult and pediatric cases:

- Bacterial pneumonia (recurrent)*
- Candidiasis (bronchi, trachea or lungs)
- Candidiasis (esophageal)*
- Cervical cancer (invasive)
- Coccidioidomycosis (disseminated or extrapulmonary)
- Cryptococcosis (extrapulmonary)
- Cryptosporidiosis (chronic intestinal, > 1 month duration)
- Cytomegalovirus disease (other than in liver, spleen or nodes)
- Cytomegalovirus retinitis (with loss of vision)*
- Encephalopathy, HIV-related (dementia)
- Herpes simplex: chronic ulcer(s) (> 1 month duration) or bronchitis, pneumonitis or esophagitis
- Histoplasmosis (disseminated or extrapulmonary)
- Isosporiasis, chronic intestinal (> 1 month duration)
- Kaposi's sarcoma*
- Lymphoma, Burkitt's (or equivalent term)
- Lymphoma, immunoblastic (or equivalent term)
- Lymphoma (primary in brain)
- Mycobacterium avium complex or M. kansasii (disseminated or extrapulmonary)*
- Mycobacterium of other species or unidentified species*
- M. tuberculosis (disseminated or extrapulmonary)
- M. tuberculosis (pulmonary)*
- Pneumocvstis iirovecii (formerly Pneumocystis carinii) pneumonia (PCP)*
- Progressive multifocal leukoencephalopathy
- Salmonella septicemia (recurrent)
- Toxoplasmosis of brain*
- Wasting syndrome due to HIV

* These conditions may be diagnosed presumptively; otherwise, definitive diagnosis is required.

Indicator diseases that apply only to pediatric cases (< 15 years old):

- Bacterial infections, multiple or recurrent (excluding recurrent bacterial pneumonia)
- Lymphoid interstitial pneumonia and/or Pulmonary lymphoid hyperplasia*

Data Sources

HIV Data - Surveillance

All confirmatory laboratory testing for HIV antibodies is done at the Public Health Microbiology and Reference Laboratory (PHMRL) located at the BC Centre for Disease Control (BCCDC). BCCDC determines which of these individuals are testing positive for HIV for the first time then informs the appropriate designated public health nurse (PHN) about these individuals. The PHN provides follow-up for these individuals that include completing surveillance forms, which are then forwarded to BCCDC where the collected information is entered into the provincial HIV/AIDS database.

Persons testing HIV positive as part of immigration requirements are obtained through two separate sources. As of September 2004, Citizenship and Immigration Canada (CIC) notifies Clinical Prevention Services at BCCDC of individuals who undergo an immigration medical exam (IME) outside of Canada, test positive for HIV, and indicate BC as their intended province of residence. Individuals who undertake their IME within BC (as indicated by reason for testing) and test positive for HIV are reported to BCCDC by the PHMRL through routine surveillance.

HIV Data - Testing

HIV testing data presented in this report is based on HIV testing conducted by the PHMRL which is estimated to conduct >95% of all screening tests for HIV in the province. Provincial testing volumes for females undergoing HIV testing as part of prenatal care (i.e., reason for testing is prenatal screening) are available from 2007 onwards and include all prenatal HIV tests conducted by the PHMRL. For this analysis, the number of unique women having a prenatal test per year is reported (i.e., a woman has more than one prenatal test per year is counted once).

AIDS Data

Due to expected delays associated with AIDS case reports, this report only includes cases to 2010. AIDS case reports are allocated according to the year a client is diagnosed with his/her first AIDS defining illness. Prior to 1997, AIDS case reports were complied courtesy of the Vancouver Health Department. From 1997 to 2000, Clinical Prevention Services at BCCDC compiled AIDS case reports in collaboration with the Division of HIV/AIDS Surveillance, Bureau of HIV/AIDS and STD, Laboratory Centre for Disease Control, Health Protection Branch, Health Canada.

Since 2000, AIDS case reports have been compiled by Clinical Prevention Services at BCCDC in collaboration with the BC Centre for Excellence in HIV/AIDS. A twice-yearly review of clinical records maintained by the BC Centre for Excellence in HIV/AIDS is conducted to identify new diagnoses of AIDS defining illness and the information is entered into the provincial HIV/AIDS database. AIDS case report forms are also received from health care providers who have made a diagnosis of an AIDS defining illness in a person who is HIV positive, or from public health nurses if this is elicited during follow-up of a new positive HIV test (e.g., AIDS at the time of HIV diagnosis).

Please note that AIDS data presented in this report differs from previous reports, as the review of clinical reports from the BC Centre for Excellence in HIV/AIDS in 2010 included additional reports of historic AIDS cases. These cases were identified through a retrospective data linkage with the BC Cancer Agency and identification of new cancer diagnoses meeting the definition for an AIDS defining illness for HIV positive individuals registered with the provincial drug treatment program.

Population Data

Unless noted otherwise, population data and associated rates were based on the P.E.O.P.L.E. 36 Population Estimates and Projections released by BC Stats, BC Ministry of Labour and Citizens' Services (September 2011).

First Nations Population Estimates

Population rates for First Nations people are calculated using estimates from Aboriginal Affairs and Northern Development Canada (AANDC, formerly INAC: http://www.aadnc-aandc.gc.ca/).

These estimates are based on the Indian Register, which is subject to several limitations, including:

- Under-counting due to delayed reporting of infants entitled to be registered
- Over-counting due to individuals remaining on the Register after they are deceased
- Individuals are included in the BC population by whether they are a member of a BC band and not where they actually live
- Systematic biases from imbalance in the migration into and out of the British Columbia region (these are difficult to quantify)

For further details about the data source and its limitations, see the report entitled *Registered Indian Population by Sex and Residence, 2011*. Aboriginal Affairs and Northern Development Canada.

Additional Notes

Classification of Health Region

Cases are assigned to health regions (i.e., Health Authority or Health Service Delivery Area (HSDA)) by residence. If residence is unknown, the case is assigned to the health region where the individual was tested.

Classification of Ethnicity

Cases are classified by ethnicity according to information elicited from the case or health care provider during follow-up.

Ethnicity	Example
Aboriginal	First Nations, Inuit, Métis
Arab/West Asian	Aremnian, Egyptian, Iranian, Moroccan, Lebanese, Afghani
Asian	Chinese, Japanese, Vietnamese, Cambodian, Indonesian, Filipino, Korean, Laotian
Black	African, Haitian, Jamaican, Somali
Caucasian (White)	Irish, Scottish, English, Portuguese, Italian, Russian
Hispanic	Mexican, Central/South American
South Asian	East Indian, Pakistani, Sri Lankan, Punjabi, Bangladeshi
other/mixed ethnicity	ethnicity is known but is not included in one of the above categories or case has dual ethnicity
unspecified	information about ethnicity is not elicited from case or health care provider

New or Previous Positive HIV Test

If a report of a new positive HIV test is identified in an individual having a history of a previous positive test (i.e., previous positive test result identified in the PHMRL database, or elicited during case follow-up), this is considered a previous positive HIV test and excluded from surveillance reporting. If no such history is elicited, the report is considered to represent a new HIV diagnosis and included in surveillance reporting. The exception is for persons testing as part of immigration requirements in that persons who tested previously positive for non-immigration purposes are included in Figure 30 only for immigration of persons with HIV.

Exposure Group Hierarchy

Individuals having a new positive HIV test may belong to more than one exposure category (e.g., a person may have a history of using injection drugs and heterosexual contact). These individuals are assigned to the exposure category listed first (or highest) in the following hierarchy.

1. **MSM:** Male who reports having male sex partner(s), with or without female sex partners.

2. **IDU:** Person who reports current or prior history of injection drug use.

3. **Heterosexual Contact:** Male who reports having female sex partner(s) only, female who reports having male with/without female sex partner(s).

    i) Heterosexual with Identified Risk – Person who reports heterosexual contact and one or more of the following:
    - was born/resided in a country where HIV is endemic
    - sex partner is HIV positive
    - sex partner is at increased risk for acquiring HIV (e.g., uses injection drugs, male who has both male and female sex partners or from an HIV endemic country)
    - sex trade worker
    - patron of sex trade worker

    ii) Heterosexual with No Identified Risk – Person who reports heterosexual contact and no information about place of birth/residence or about sex partner(s).

4. **Blood / Blood Product Recipient:** Person who reports receipt of whole blood or blood product (e.g., packed red cells, plasma, platelets, cryoprecipitate, or pooled concentrates of clotting factor).

5. **Occupational Exposure:** Person who reports exposure to HIV contaminated blood or body fluids, or concentrated virus in an occupational setting.

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

7. **Other Risk Factor:** Likely route of exposure to HIV is known but cannot be classified into any of the major exposure categories listed here. For example, receipt of semen from an HIV positive donor, or females reporting female sex partner(s) only.

8. **No Identified Risk (NIR):** Route of exposure to HIV is not identified at the time of completion of case follow-up (e.g., route of exposure not provided by case).

9. **Unknown:** Route of exposure to HIV is unknown

Note that in this report, individuals with a new HIV diagnosis are categorized into five groups: MSM, IDU, Heterosexual, Other (i.e., blood/blood product recipient, occupational exposure, perinatal transmission, and other exposures), and no identified risk (NIR)/unknown exposure.

Endemic Country

Individuals are categorized as being from an endemic country according to the Endemic Countries List[15] maintained by the Public Health Agency of Canada.