

BC Centre for Disease Control PROVINCIAL HEALTH SERVICES AUTHORITY



Annual Report 2017

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2017

Table of Contents

Summary of Trends

HIV HIV by Region, Gender, and Age HIV by Ethnicity New HIV Diagnoses among Indigenous Peoples HIV by Exposure Category New HIV Diagnoses among Gay, Bisexual, and other Men who have Sex with Men New HIV Diagnoses among People who Inject Drugs New HIV Diagnoses among People who acquire HIV through Heterosexual Contact HIV in Pregnancy Prenatal HIV Testing	5 10 11 13 15 20 22 23
Provincial Surveillance Data Collated by the Oak Tree Clinic Perinatally-acquired HIV Stage of Infection at Time of HIV Diagnosis	23 24 24
Inter-Test Intervals and Proportion of Known Previous Negative HIV Tests at Time of Diagnosis Immigration of Individuals Living with HIV Estimates of HIV Incidence and Prevalence	24 26 28 28
AIDS AIDS by Region, Gender, and Age AIDS by Ethnicity AIDS Case Reports among Indigenous Peoples	30 30 35 36
Endnotes	37
Contributors	40
Technical Appendix Data Limitations Case Definitions Data Sources Additional Notes	41 41 42 43 44

2017 Table of Contents

4

Summary of Trends

HIV

In 2017, the rate of new HIV diagnoses in BC decreased to its lowest point ever to 3.8 (182 cases) from 5.1 (241 cases) per 100,000 population in 2016.

- The highest rates of new HIV diagnoses were in Vancouver Coastal and Island Health Authorities.
- Males continued to have higher rates of new HIV diagnoses than females.
- Trends by ethnicity have shifted over the past ten years with the percentage of new diagnoses among Caucasian people gradually decreasing while the percentage of new diagnoses among Asian people increasing and most other ethnicities remaining stable. In 2017, 43% of cases were Caucasian, 13% were Asian, and 10% were Indigenous peoples.
- The majority of new HIV diagnoses among Indigenous peoples are in those who identify as First Nations. The number and rate of new HIV diagnoses among First Nations people have decreased over time.
- Gay, bisexual, and other men who have sex with men (gbMSM) continued to comprise the greatest number of new HIV diagnoses in BC (70% of all new HIV diagnoses in 2017). Trends were elevated but stable with the greatest increase in new HIV diagnoses among gbMSM born after 1980. Over time, the proportion of new HIV diagnoses among Caucasian gbMSM is gradually decreasing.
- The number of new HIV diagnoses in people who inject drugs (PWID) continued to decrease (10% of all new HIV diagnoses in 2017) for both males and females. The decrease in new diagnoses among PWID since 2008 is the main driver of the overall provincial decrease in new HIV diagnoses.
- Overall, there was a decrease in new HIV diagnoses among people who acquire HIV through heterosexual contact (15% of all new HIV diagnoses in 2017). Within this category, 36% had an identified risk factor for HIV (e.g., partner known to be living with HIV or at higher risk, or born/residing in an HIV endemic country).
- Two females were newly diagnosed with HIV through prenatal screening in 2017. In 2017, 23 women living with HIV who had live births accessed care at the Oak Tree Clinic, of which all were diagnosed before delivery and received antenatal ART. In 2017, no infants acquired HIV from prenatal exposure in BC.
- Late stage HIV infection decreased to 18% of new HIV diagnoses in 2017 from 20% in 2016.
- New HIV diagnoses in Vancouver Coastal and Fraser Health Authorities had the lowest median inter-test interval (i.e., the time between the first positive HIV test and the most recent negative HIV test) for all health authorities at 0.8 and 0.4 years respectively in 2017.
- A total of 46 immigrants living with HIV arrived in BC in 2017; 33% were from countries where HIV is considered to be endemic.

AIDS

In 2017, the rate of AIDS case reports continued to decrease to 0.9 (45 cases) per 100,000 population.

- The rate of AIDS cases among males has generally been higher than the rate among females.
- The majority of AIDS case reports among Indigenous peoples are in those who identify as First Nations. The rate of AIDS case reports among First Nations people has decreased since 2008.

HIV by Region, Gender, and Age

In 2017, the rate of new HIV diagnoses¹ in BC decreased to its lowest point since 2003, when HIV became reportable, to 3.8 (182 cases) from 5.1 (241 cases) per 100,000 population in 2016 (Figure 1). An investigation was undertaken and found that the decrease in new HIV diagnoses in 2017 was unlikely due to artifact or issues in reporting positive HIV tests by the laboratory to public health.

The highest rates of new HIV diagnoses were in the Vancouver Coastal and Island Heath Authorities (Figure 3). More specifically, Vancouver, South Vancouver Island, and Fraser North Health Service Delivery Areas (HSDAs) had the highest rates of new HIV diagnoses in 2017 (Figure 2).

Rates of new HIV diagnoses among both males and females show a general decreasing trend over the past ten years (Figure 4). In 2017, the rate among males decreased to 6.9 (165 cases) in 2017 from 8.6 (204 cases) per 100,000 population in 2016. Similarly, the rate among females decreased to 0.6 (15 cases) in 2017 from 1.5 (37 cases) per 100,000 population in 2016.

The rate of new HIV diagnoses continues to be higher among males than females. In 2017, the highest rates among both males and females were in those 25-29 years old (Figure 5).



1. New HIV diagnoses in BC and Canada, 1986 to 2017

117

2. New HIV diagnoses in BC by health service delivery area, 2017



HIV in British Columbia: Annual Surveillance Report



3. New HIV diagnoses in BC by health authority, 2008 to 2017

4. New HIV diagnoses in BC by gender, 2008 to 2017



7

* Other - transgender and gender unknown

2017



5. New HIV diagnoses in BC by age group and gender, 2017

* Other - transgender and gender unknown



8

6. New HIV diagnoses in BC by age group - total, 2008 to 2017



7. New HIV diagnoses in BC by age group - female, 2008 to 2017

8. New HIV diagnoses in BC by age group - male, 2008 to 2017



9

HIV by Ethnicity

Over the past ten years, the proportion of reported ethnicities among people newly diagnosed with HIV in BC has shifted. The percentage of new diagnoses among Caucasian people has gradually decreased while the percentage of diagnoses among Asian people has increased with the proportion of most other ethnicities remaining relatively stable.

Similar to previous years, in 2017 most new HIV diagnoses were among people of self-reported Caucasian ethnicity (78 cases, 42.9%) followed by Asian (24 cases, 13.2%) and peoples of Indigenous (19 cases, 10.4%) ethnicity (Table 9). Over the past ten years, Indigenous peoples have been disproportionately represented in BC's HIV epidemic, consistently comprising approximately 8-17% of new HIV diagnoses while representing only about 6% of the total provincial population.² This disparity is particularly pronounced for Indigenous women who comprised 33.3% (5 cases) of new HIV diagnoses among females in 2017 (Table 10).

Over the past ten years, the proportion of new HIV diagnoses among individuals with unknown ethnicity has been increasing. At the time of this report, the ethnicity of 40 (22.0%) individuals newly diagnosed with HIV in 2017 was unknown. Reasons for this increase in the proportion of unknown ethnicity need to be investigated.

Ethnicity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. Diagnoses	347	337	300	288	237	265	261	241	241	182
Caucasian	55.3	53.1	59.7	53.1	57.4	58.1	45.6	45.6	46.1	42.9
Indigenous	13.5	16.9	13.0	15.3	12.7	11.3	13.8	8.3	9.1	10.4
Asian	8.9	7.7	9.7	11.5	12.7	10.2	10.3	10.4	9.5	13.2
South Asian	2.3	2.1	2.7	5.2	3.4	3.4	8.4	2.5	3.3	3.3
Hispanic	6.6	6.5	3.3	4.2	4.2	4.2	5.0	2.1	4.1	4.4
Black	4.9	6.8	5.3	4.5	3.0	2.6	3.8	5.4	3.3	3.3
Other *	2.6	2.1	2.3	1.4	2.5	0.8	1.1	2.5	3.3	0.5
Unknown	5.8	4.7	4.0	4.9	4.2	9.4	11.9	23.2	21.2	22.0

9. Percentage of new HIV diagnoses in BC by ethnicity - total, 2008 to 2017

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

10. Percentage of new HIV diagnoses in BC by ethnicity - female, 2008 to 2017

Ethnicity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. Diagnoses	60	71	62	43	29	31	44	37	37	15
Caucasian	41.7	43.7	37.1	32.6	34.5	38.7	27.3	27.0	29.7	20.0
Indigenous	35.0	23.9	33.9	37.2	37.9	38.7	36.4	27.0	29.7	33.3
Asian	3.3	2.8	6.5	4.7	6.9	9.7	4.5	10.8	8.1	0.0
South Asian	1.7	1.4	3.2	4.7	0.0	6.5	13.6	2.7	2.7	6.7
Hispanic	0.0	0.0	1.6	2.3	3.4	0.0	0.0	0.0	0.0	0.0
Black	13.3	15.5	9.7	11.6	13.8	3.2	6.8	10.8	8.1	13.3
Other *	1.7	1.4	3.2	2.3	3.4	0.0	0.0	0.0	5.4	0.0
Unknown	3.3	11.3	4.8	4.7	0.0	3.2	11.4	21.6	16.2	26.7

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

11.	Percentage of new HIV	diagnoses in BC by	y ethnicity - male, 2008	3 to 2017
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Ethnicity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. Diagnoses	287	266	238	245	208	234	215	204	204	165
Caucasian	58.2	55.6	65.5	56.7	60.6	60.7	48.8	49.0	49.0	44.2
Indigenous	9.1	15.0	7.6	11.4	9.1	7.7	9.3	4.9	5.4	8.5
Asian	10.1	9.0	10.5	12.7	13.5	10.3	11.6	10.3	9.8	14.5
South Asian	2.4	2.3	2.5	5.3	3.8	3.0	7.4	2.5	3.4	3.0
Hispanic	8.0	8.3	3.8	4.5	4.3	4.7	6.0	2.5	4.9	4.8
Black	3.1	4.5	4.2	3.3	1.4	2.6	3.3	4.4	2.5	2.4
Other *	2.8	2.3	2.1	1.2	2.4	0.9	1.4	2.9	2.9	0.6
Unknown	6.3	3.0	3.8	4.9	4.8	10.3	12.1	23.5	22.1	21.8

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

New HIV Diagnoses among Indigenous Peoples

Among the 270,000 Indigenous persons living in BC, representing about 6% of the general BC population, approximately 65% are First Nations, 33% are Métis, and fewer than 1% are Inuit or of other Indigenous identity.³ The new HIV diagnoses among Indigenous peoples in this report include only those who have been tested and only those who self-identify as Indigenous. Because of the small population and small number of diagnoses among Métis and Inuit people and the availability of population estimates for status First Nations people (needed for rate calculations), the majority of this section focuses on new HIV diagnoses among people who identify as First Nations.

Statistics can help us understand the impact of HIV among Indigenous peoples in BC but they tell only part of the story. Behind each individual with HIV counted in this report is a family, a community, and a broader social and economic context.

Indigenous peoples face widespread inequities in health as a result of systemic and structural factors: colonization, loss of language and culture, Indian Residential Schools, intergenerational trauma, and ongoing discrimination.⁴ Indigenous peoples, especially those living in rural and remote communities, face additional barriers to HIV testing and care, such as concerns about confidentiality, access to testing, and the fear of being judged by health care providers.^{5, 6} Colonization has had particular impacts on Indigenous women: imposition of the Indian Act which removed the status or membership of many First Nations women; erosion of the strong and central role of women in Indigenous societies; and resultant experiences of sexual, physical and emotional abuse.^{7, 8} Despite these systemic and structural factors, Indigenous peoples and communities hold much strength and resiliency against HIV/AIDS.^{9, 10}

12. New HIV diagnoses among First Nations people in BC by gender, 2008 to 2017



* Other - transgender and gender unknown

Rates based on First Nations population estimates from the former Aboriginal Affairs and Northern Development Canada now known as Indigenous Services Canada

Between 2008 and 2017, there were 15-52 new HIV diagnoses reported each year among First Nations people (15 cases in 2017). During the same time period, five or fewer new HIV diagnoses were reported each year among Métis and Inuit people in BC. The number and rate of new HIV diagnoses among First Nations people have decreased over the past 10 years (Figure 12). In 2017, the rate of new HIV diagnoses among First Nations people was 10.2 (15 cases) per 100,000 population. Rates in both First Nations women and men exceed the provincial rates among women and men (5.4 versus 0.6 per 100,000 population for women and 15.2 versus 6.9 per 100,000 population for men in 2017).

First Nations women continue to bear a disproportionate burden of new HIV diagnoses; approximately one-third of new HIV diagnoses in all women are among First Nations women. This proportion has remained consistent over the past ten years while the proportion of new HIV diagnoses among Caucasian women has decreased considerably. Nonetheless, the absolute number of new HIV diagnoses among First Nations women has seen a decrease, which speaks to the strength and resilience of First Nations women despite the impacts of colonization.

Among First Nations people, the rate of new HIV diagnoses in women is comparable to the rate in men (Figure 12). This contrasts with gender-stratified rates among the general BC population in which rates are three-to-eight fold higher among men (Figure 4). Most new HIV diagnoses among First Nations people are among people who inject drugs (PWID) and heterosexual (HET) exposure categories. Most new HIV diagnoses among the total BC population are attributed to the gay, bisexual, and other men who have sex with men (gbMSM) exposure category.

HIV by Exposure Category

Gay, bisexual, and other men who have sex with men (gbMSM) continue to comprise the greatest number of new HIV diagnoses in BC. The overall trend in new HIV diagnoses among gbMSM is elevated compared with other exposure categories but has been decreasing slightly over the past 10 years. The number of new HIV diagnoses among gbMSM decreased to 127 cases (69.8%) in 2017 from 146 cases (60.6%) in 2016. The number of new HIV diagnoses in BC among people who inject drugs (PWID) remained similar in both 2017 (18 cases, 9.9%) and 2016 (16 cases, 6.6%). The number of new HIV diagnoses due to heterosexual contact observed a decrease to 28 cases (15.4%) in 2017 from 59 cases (24.5%) in 2016 (Figure 14). Trends in these three main exposure categories in BC are explored in more detail in the following sections.

At the time of this report, there were 7 (3.8%) individuals newly diagnosed with HIV in 2017 whose exposure category was not identified or was unknown. The final number of individuals in each exposure category for 2017 may change slightly if further information on these individuals is received.

Health Authority	Exposure Category	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	gbMSM	10	4	4	3	4	3	9	10	11	6
	PWID	6	1	2	1	4	0	4	1	0	0
Interior	HET	9	11	5	5	4	8	4	7	3	1
	Other	1	2	0	1	0	1	0	0	0	0
	NIR/UNK	0	0	0	1	0	1	0	1	0	0
	gbMSM	30	27	23	24	22	34	27	30	36	22
	PWID	8	18	11	5	5	9	7	1	5	3
Fraser	HET	27	35	30	22	15	16	24	30	21	14
	Other	3	4	4	3	1	3	1	1	2	0
	NIR/UNK	2	3	5	0	2	2	0	1	3	2
	gbMSM	121	104	111	132	105	99	103	87	84	69
Vancouver	PWID	27	20	21	13	11	11	10	11	6	13
Coastal	HET	28	29	33	31	23	24	21	23	19	8
	Other	2	5	1	2	0	1	4	3	4	1
	NIR/UNK	8	6	0	0	2	5	7	5	5	4
	gbMSM	18	16	13	8	16	14	10	11	15	29
Vancouver	PWID	11	10	9	3	3	1	3	2	2	2
Island	HET	9	8	10	9	6	10	10	7	9	3
Island	Other	0	1	1	1	1	1	0	1	0	1
	NIR/UNK	1	4	0	0	0	3	2	3	3	1
	gbMSM	2	1	1	3	1	3	2	0	0	0
	PWID	13	15	9	12	6	4	2	2	3	0
Northern	HET	8	9	5	8	4	9	6	2	7	2
	Other	1	0	0	0	0	1	2	0	1	0
	NIR/UNK	1	2	1	1	1	0	1	2	1	0
	gbMSM	181	153	153	170	149	154	153	138	146	127
	PWID	66	64	52	34	29	25	26	17	16	18
BC I	HET	81	92	83	75	52	68	65	69	59	28
	Other	7	12	6	7	2	7	7	5	7	2
	NIR/UNK	12	16	6	2	5	11	10	12	13	7

13. New HIV diagnoses in BC by exposure category and health authority, 2008 to 2017

gbMSM - gay, bisexual, and other men who have sex with men

PWID - people who inject drugs

HET - heterosexual contact

Other - blood, occupational, perinatal, and/or other exposures

NIR/UNK - no identified risk and exposure unknown

BC is the sum of new HIV diagnoses from all health authorities, unknown health authority, and non-BC



14. New HIV diagnoses in BC by exposure category - total, 2008 to 2017

gbMSM - gay, bisexual, and other men who have sex with men PWID - people who inject drugs HET - heterosexual contact Other - blood, occupational, perinatal, and/or other exposures NIR/UNK - no identified risk and exposure unknown

15. New HIV diagnoses in BC by exposure category - female, 2008 to 2017



PWID - people who inject drugs

HET - heterosexual contact

Other - blood, occupational, perinatal, and/or other exposures



16. New HIV diagnoses in BC by exposure category - male, 2008 to 2017

gbMSM - gay, bisexual, and other men who have sex with men PWID - people who inject drugs HET - heterosexual contact

Other - blood, occupational, perinatal, and/or other exposures

NIR/UNK - no identified risk and exposure unknown

New HIV Diagnoses among Gay, Bisexual, and other Men who have Sex with Men

Gay, bisexual, and other men who have sex with men (gbMSM) 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 2016, 52% of the 11,621 people with prevalent HIV infections in BC (i.e., living with HIV) were gbMSM (Table 35) as were 63% of the estimated 232 people with incident (new) HIV infections (Table 34). Community surveys of gbMSM in venues have found an HIV prevalence of 14% in Victoria (2007)¹¹ and 23% in Vancouver (2012-2014).¹²

It is clear that gbMSM are disproportionately represented among new HIV diagnoses in BC compared to other males. Estimates to the size of the gbMSM population in BC provide context to the HIV trends observed among gbMSM. Recent work estimates the gbMSM population in BC to be $50,900.^{13,\,14}$

There are many factors that have led to the current epidemic of HIV among gbMSM in BC, ranging from social factors (such as stigma and discrimination related to sexual orientation), to community factors (such as secure access to food, access to stable housing and 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).¹⁵ The recognition of the complexity of the epidemic among gbMSM has led internationally to an increased emphasis on renewing the public health response to HIV among gbMSM by adopting broader approaches to HIV prevention, including sexual health and determinants-based approaches.^{16, 17}



17. New HIV diagnoses among gbMSM in BC by age group, 2008 to 2017

18. New HIV diagnoses among gbMSM in BC by birth cohort, 2008 to 2017



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. of gb MSM Diagnoses	181	153	153	170	149	154	153	138	146	127
gbMSM/PWID	3.3	8.5	4.6	7.1	2.7	4.5	1.3	2.9	2.7	1.6

Overall, the trend in new HIV diagnoses among gbMSM appears to be declining slightly but not to the same extent as in other exposure categories (Figure 16). Accordingly, gbMSM comprise a greater proportion of all new HIV diagnoses in BC. In 2017, 69.8% (127 cases) of all new HIV diagnoses were among gbMSM and 1.6% (2 cases) of these gbMSM were identified as having injected drugs as well (gbMSM/PWID) (Table 19).

Of the 127 new HIV diagnoses among gbMSM in 2017, 38.6% (49 cases) were under the age of 30 years, 33.1% (42 cases) were aged 30-39 years, 26.8% (34 cases) were aged 40-59 years, and 1.6% (2 cases) were aged 60 years or older. It is important to consider that different age groups of gbMSM in Vancouver have different experiences with the HIV epidemic due in part to the achievement of milestones, such as the development of HIV treatment (i.e., antiretroviral therapy or ART), shifting community norms among gay/bisexual men, and broader socio-cultural and political factors which have reduced the stigma attached to being gay and to living with HIV.

When looking at new HIV diagnoses by different birth cohorts, new HIV diagnoses have increased substantially in recent years among gbMSM born between 1990-99 (Figure 18). Notably, this birth cohort, as well as the 1980-89 birth cohort, entered adolescence/adulthood in the post-ART era and hence the first to not witness first-hand the effects of AIDS – and its related mortality – experienced by the gay community in the 1980s and early 1990s. These changes in new HIV diagnoses among generations of gbMSM probably reflect population dynamics and sexual activity, as younger men "age in" to the epidemic.

The proportion of new HIV diagnoses among gbMSM aged 20-29 years increased to 37.0% (47 cases) in 2017 from 29.5% (43 cases) in 2016 (Figure 17). Increases in new HIV infections among young gbMSM have been reported in the US,^{18, 19} and Europe.^{20, 21} One reason for this may be the greater use of technology and the Internet to facilitate sexual encounters; studies have found elevated levels of sexual risk behaviours (i.e., unprotected anal intercourse, multiple anal intercourse partners, older sexual partners, and engaging in sexual activity at sex clubs or bathhouses) among young gbMSM who seek and meet sexual partners through the Internet.^{22, 23}

There is some indication that the profile of gbMSM by ethnicity is also shifting with the percentage of new diagnoses among Caucasian gbMSM gradually decreasing. In 2017, 48.0% (61 cases) of gbMSM newly diagnosed with HIV self-reported as Caucasian, 15.0% (19 cases) were Asian, 7.9% (10 cases) were Indigenous, and 5.5% (7 cases) were Hispanic (Table 20). At the time of this report, the ethnicity of 22 (17.3%) gbMSM newly diagnosed with HIV in 2017 was unknown.

Ethnicity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. of Diagnoses	181	153	153	170	149	154	153	138	146	127
Caucasian	62.4	58.2	74.5	61.2	64.4	63.6	55.6	54.3	53.4	48.0
Indigenous	5.5	8.5	2.0	5.9	3.4	3.2	4.6	1.4	2.7	7.9
Asian	11.6	12.4	13.1	15.3	18.1	11.7	11.1	10.1	10.3	15.0
South Asian	2.2	0.7	1.3	2.4	2.7	1.9	7.8	0.7	2.1	3.9
Hispanic	11.0	11.8	5.2	5.9	4.7	5.8	8.5	3.6	4.8	5.5
Black	1.1	2.6	0.0	2.9	1.3	2.6	2.0	2.2	1.4	1.6
Other *	3.3	2.6	2.6	1.2	2.7	1.3	2.0	4.3	4.1	0.8
Unknown	2.8	3.3	1.3	5.3	2.7	9.7	8.5	23.2	21.2	17.3

20. Percentage of new HIV diagnoses among gbMSM in BC by ethnicity, 2008 to 2017

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

New HIV Diagnoses among People who Inject Drugs

The overall decrease in HIV diagnoses in BC is largely due to the dramatic decrease in the number of new HIV diagnoses among people who inject drugs (PWID) in BC starting in 2008 (Figure 14). In the years prior to the decrease, PWID comprised approximately 30% of all new HIV diagnoses in the province. In 2017, 9.9% (18 cases) of all new HIV diagnoses were among PWID.

Estimates to the size of the PWID population in BC provide context to the HIV trends observed among PWID. Recent work estimates the PWID population in BC to be 42,200.^{24, 25}

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 PWID. The increasing uptake and duration of antiretroviral therapy (ART) as well as provincial harm reduction programs (such as needle distribution programs, supervised injection sites, and other prevention programs) have helped lead to declines in HIV transmission among PWID. Survey data among drug users in Vancouver and Victoria also demonstrated shifts in drug using behaviour during this period, from injecting to smoking drugs which has likely been a significant factor. The continued decline in new HIV diagnoses among PWID is encouraging, and efforts to maintain and enhance current prevention programs for PWID are needed.²⁶

New HIV diagnoses among PWID continued to decrease in both males and females. In 2017, most of the new HIV diagnoses among PWID continued to be male (12 cases, 66.7%) (Figure 21) while the greatest number of new HIV diagnoses were in those between 40-59 years of age (10 cases, 55.6%) (Figure 22).



2017 IIV

21. New HIV diagnoses among PWID in BC by gender, 2008 to 2017

* Other - transgender and gender unknown



22. New HIV diagnoses among PWID in BC by age group, 2008 to 2017

In 2017, the majority of new HIV diagnoses among PWID were among people of self-reported Caucasian ethnicity (5 cases, 27.8%) and Indigenous peoples (5 cases, 27.8%) (Table 23).

Ethnicity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. of Diagnoses	66	64	52	34	29	25	26	17	16	18
Caucasian	57.6	53.1	65.4	44.1	55.2	56.0	30.8	41.2	43.8	27.8
Indigenous	31.8	34.4	28.8	47.1	41.4	20.0	50.0	29.4	31.3	27.8
Asian	1.5	1.6	1.9	2.9	0.0	4.0	0.0	0.0	0.0	0.0
South Asian	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hispanic	0.0	0.0	0.0	2.9	0.0	4.0	0.0	0.0	0.0	0.0
Black	1.5	1.6	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other *	3.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown	4.5	7.8	0.0	2.9	3.4	16.0	19.2	29.4	25.0	44.4

23. Percentage of new HIV diagnoses among PWID in BC by ethnicity, 2008 to 2017

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

New HIV Diagnoses among People who acquire HIV through Heterosexual Contact

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 2017 (28 cases, 15.4%) (Figure 14). This population is heterogeneous. 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 2017 to 28 cases from 59 cases in 2016. In 2017, the number of new HIV diagnoses among heterosexual males decreased to 19 cases (67.9%) from 35 cases (59.3%) in 2016. Similarly, the number of new diagnoses among heterosexual females decreased to 8 cases (28.6%) in 2017 from 24 cases (40.7%) in 2016 (Figure 24). Since 2008, the majority of new HIV diagnoses are observed among individuals between 40-59 years of age (Figure 25). In 2017, new HIV diagnoses among individuals aged 40-59 years decreased to 12 cases (42.9%) from 27 cases (45.8%) in 2016. New HIV diagnoses among individuals aged 30-39 years of age also decreased to 6 cases (21.4%) in 2017 from 12 cases (20.3%) in 2016.

Among people who have acquired HIV through heterosexual contact, compared to other exposure categories, people from non Caucasian ethnicity comprised a greater proportion of new HIV diagnoses. Similar to previous years, in 2017, most of the new HIV diagnoses in heterosexuals were among Caucasians (12 cases, 42.9%) followed by Indigenous peoples (4 cases, 14.3%), Asians (4 cases, 14.3%), and Blacks (4 cases, 14.3%) (Table 26).



2017 IIV

24. New HIV diagnoses among HET in BC by gender, 2008 to 2017

* Other - transgender and gender unknown



25. New HIV diagnoses among HET in BC by age group, 2008 to 2017

26.	Percentage of new HIV	diagnoses among	g HET in BC by	y ethnicity,	2008 to 2017
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Ethnicity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. of Diagnoses	81	92	83	75	52	68	65	69	59	28
Caucasian	48.1	51.1	34.9	42.7	44.2	52.9	35.4	34.8	44.1	42.9
Indigenous	17.3	17.4	24.1	21.3	25.0	23.5	18.5	15.9	16.9	14.3
Asian	8.6	6.5	8.4	8.0	5.8	7.4	13.8	15.9	11.9	14.3
South Asian	3.7	5.4	7.2	13.3	5.8	7.4	15.4	5.8	5.1	3.6
Hispanic	3.7	2.2	2.4	1.3	5.8	0.0	0.0	0.0	5.1	0.0
Black	13.6	13.0	14.5	8.0	9.6	4.4	9.2	10.1	8.5	14.3
Other *	1.2	1.1	2.4	2.7	3.8	0.0	0.0	0.0	3.4	0.0
Unknown	3.7	3.3	6.0	2.7	0.0	4.4	7.7	17.4	5.1	10.7

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

Over the past ten years, most new diagnoses in this population each year are in people who on follow-up are found to have at least one identified risk factor (e.g., born/residing in an HIV endemic country or having a sexual partner living with HIV). In 2017, 35.7% (10 cases) of new diagnoses among people who acquired HIV through heterosexual contact had at least one identified risk factor (Figure 27).



27. New HIV diagnoses among HET in BC by identified risk factor, 2008 to 2017

 ${\sf HET-IR}$ - heterosexual contact with at least one other risk factor identified ${\sf HET-NIR}$ - heterosexual contact with no other risk factor identified

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 to essentially all pregnant women with HIV infection in BC. There are rare cases that are not reported to the OTC until after delivery and these data are included in this report.

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 these data include all pregnant women (including women who do and do not have a live birth). These data come 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. These data come from clinical data abstraction for women for whom the OTC provides direct or indirect antenatal HIV care or for those that are reported following delivery (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 2017, 49,222 women were tested prenatally for HIV. Overall the number of women being tested prenatally each year in BC is increasing slightly.

Between 2008 and 2017, 19 women were newly diagnosed with HIV through prenatal screening (Figure 28).



28. Women newly diagnosed with HIV as part of a prenatal test panel in BC, 2008 to 2017

Information source for the number of women tested prenatally for HIV is the BCCDC Public Health Laboratory

Provincial Surveillance Data Collated by the Oak Tree Clinic

Pregnant Women with HIV

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 antiretroviral therapy (ART) for the prevention of mother to child transmission of HIV.

It is important that all health care providers who care for pregnant women with HIV inform the OTC to ensure surveillance of HIV among pregnant women in BC is comprehensive.

In the absence of antenatal ART, intrapartum prophylaxis, and avoidance of breast feeding, the transmission rate of HIV to infants born to women living with HIV is approximately 25%. Between 2008 and 2017, 243 pregnant women living with HIV who had live births accessed care at OTC, ranging from 18 to 30 women per year.

All of the women were diagnosed with HIV before conception or delivery (243/243, 100.0%). Of these 243 women, 241 (99.2%) received antenatal ART prior to delivery and HIV was not diagnosed in any infants born to these women (transmission rate 0% among women accessing antenatal ART) (Table 29). Since 2010, all pregnant women living with HIV who accessed care at the OTC received comprehensive perinatal care, including antenatal ART and receiving free formula for a year for infant feeding provided they did not breast feed.

29.	Pregnant women living with HIV who had live births and accessed care at
	Oak Tree Clinic, 2008 to 2017 (based on infant's year of birth)

Time of HIV diagnosis	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
HIV+ pregnant women with live births accessed care at OTC	29	21	23	30	24	18	25	24	26	23
Diagnosed before delivery, received antenatal ART	28	20	23	30	24	18	25	24	26	23
Diagnosed before delivery, did not receive antenatal ART	1	1	0	0	0	0	0	0	0	0
Diagnosed at or after delivery	0	0	0	0	0	0	0	0	0	0

OTC - Oak Tree Clinic

ART - antiretroviral therapy

Perinatally-acquired HIV

From 2008 to 2017, perinatally-acquired HIV infection was diagnosed in one infant born in BC (2008) to a woman who did not receive antenatal ART prior to delivery.

Stage of Infection at Time of HIV Diagnosis

Since HIV is a progressive infection, individuals can be diagnosed weeks to years after infection and thus, can be at different stages of HIV infection at time of diagnosis. Understanding trends in the stage of infection at HIV diagnosis provides insights into the timeliness of engagement in and access to HIV testing following infection. One of the goals of From Hope to Health-Towards an AIDS Free Generation,²⁷ the provincial strategy released in December 2012, is to diagnose persons living with HIV earlier in their course of infection.

Individuals newly diagnosed with HIV are classified into stages of infection based on various laboratory tests for HIV, prior test history, and CD4+ cell count (see Technical Appendix for details).

Early stages of HIV infection (i.e., stages 0 and 1) increased to 61.2% (90/147 cases) of new HIV diagnoses with known stage in 2017 from 54.5% (110/202 cases) in 2016. Late stage HIV infection (i.e., stage 3) decreased to 18.4% (27 cases) of new HIV diagnoses with known stage in 2017 from 19.8% (40 cases) in 2016 (Figure 30). Note, at the time of this report, the stage of infection at the time of HIV diagnosis is not known for 35 cases (19.2%) in 2017.

In 2017, the proportion of males newly diagnosed with HIV in early stages of infection increased to 60.2% (80/133 cases) from 52.9% (92/174 cases) in 2016 whereas the proportion of females newly diagnosed with HIV in early stages of infection also increased to 75.0% (9/12 cases) in 2017 from 64.3% (18/28 cases) in 2016 (Figure 31).



30. Stage of infection at time of HIV diagnosis in BC, 2012 to 2017

Data table is comprised of case counts

* Percentage calculations do not include counts with stage unknown



31. Stage of infection at time of HIV diagnosis in BC by gender, 2012 to 2017

Data table is comprised of case counts

* Percentage calculations do not include counts with stage unknown

In 2017 compared to 2016, the proportion of new HIV diagnoses in the early stages of infection among gay, bisexual, and other men who have sex with men (gbMSM) remained similar, decreased among people who inject drugs (PWID), and increased among people who acquired HIV through heterosexual contact (HET). The proportion of new HIV diagnoses in the late stage of infection among gbMSM increased in 2017 compared to 2016 and decreased among both PWID and HET (Figure 32).



32. Stage of infection at time of HIV diagnosis in BC by exposure category, 2012 to 2017

gbMSM - gay, bisexual, and other men who have sex with men

PWID - people who inject drug

HET - heterosexual contact

Data table is comprised of case counts

* Percentage calculations do not include counts with stage unknown

Inter-Test Intervals and Proportion of Known Previous Negative HIV Tests at Time of HIV Diagnosis

Getting tested for HIV is the first step to being aware of one's HIV status and if positive, preventing transmission of infection to others. In BC, individuals aged 18-70 years are recommended to be routinely tested for HIV every five years. Individuals belonging to populations with a higher burden of HIV infection are recommended to be routinely tested for HIV every year.²⁸

Analyzing a newly HIV diagnosed individual's prior testing history can help us understand potential missed opportunities for earlier diagnosis. One way to examine prior testing history is by the inter-test interval (ITI).²⁹ ITI is the time between the first positive HIV test and the most recent negative HIV test in the past ten years. In addition, the proportion of new HIV diagnoses with at least one known previous negative HIV test within the past five years is examined (see Technical Appendix for details).

2017 IIV

Shorter inter-test intervals and larger proportions of people with known HIV negative test increase the likelihood of providing an early diagnosis and lower the number of people living with HIV who are unaware of their status.

In 2017, both females and males had a similar median ITI, 1.1 and 1.0 years respectively. Among the different age groups, the highest median ITI was among those aged 60+ years at 3.0 years and among ethnicities, the median ITI was lowest in visible minorities. Cases in the Vancouver Coastal and Fraser Health Authorities had the lowest median ITIs for all health authorities at 0.8 and 0.4 years respectively (Table 33).

For exposure categories, individuals who acquired HIV through heterosexual contact had the lowest proportion of known previous negative HIV tests (28.6%). The median ITI was 1.0 year among gay, bisexual, and other men who have sex with men (gbMSM) who comprise the greatest number of new HIV diagnoses in BC. The median ITI was low in Vancouver Coastal, the health authority with the highest number of new HIV diagnoses. This is suggestive that individuals most at risk for acquiring HIV are testing more frequently in BC.

		Inter-Test	Intervals *	Diagnoses	Previous N	egative Test **
Characteristic	Category	Median (yrs)	IQR	N	n	%
Total number of new	HIV diagnoses in BC	1.0	0.3 - 2.2	182	105	57.7
	Interior	1.4	1.0 - 2.6	7	6	85.7
	Fraser	0.4	0.2 - 1.0	41	20	48.8
Health Authority	Vancouver Coastal	0.8	0.3 - 2.0	95	57	60.0
	Vancouver Island	1.9	1.4 - 2.5	36	20	55.6
	Northern	3.2	0.3 - 6.0	2	1	50.0
Gender	Female	1.1	0.3 - 2.6	15	7	46.7
	Male	1.0	0.3 - 2.2	165	96	58.2
	20 - 24 yrs	1.1	0.6 - 2.2	17	8	47.1
	25 - 29 yrs	0.4	0.2 - 1.3	46	34	73.9
Age Group	30 - 39 yrs	1.1	0.4 - 2.4	53	32	60.4
	40 - 59 yrs	1.4	0.3 - 2.1	58	28	48.3
	60+ yrs	3.0	0.9 - 5.6	5	3	60.0
	Caucasian	1.0	0.3 - 2.3	78	50	64.1
Ethnicity	Indigenous	0.9	0.3 - 4.1	19	10	52.6
	Visible minorities	0.6	0.2 - 1.7	45	22	48.9
	gbMSM	1.0	0.3 - 2.2	127	77	60.6
Exposure Category	PWID	1.0	0.3 - 2.0	18	15	83.3
	HET	0.7	0.2 - 2.4	28	8	28.6

33. Median years for inter-test intervals* and proportion with known previous negative HIV tests** in BC, 2017

* Time between first positive test for HIV and the most recent negative HIV test in the past 10 years

** Time between first positive test for HIV and the most recent negative HIV test in the past 5 years

IQR - interquartile range

Due to the small counts for ethnicities other than Caucasian and Indigenous peoples, these small counts were collapsed under the category "visible minorities" for this analysis

gbMSM - gay, bisexual, and other men who have sex with men

PWID - people who inject drugs

HET - heterosexual contact

Immigration of Individuals Living with HIV

In 2002, Immigration, Refugees and Citizenship Canada (IRCC) 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, IRCC 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 individuals living with HIV immigrating into BC varies annually and may reflect global migration patterns. In 2017, a total of 46 immigrants (14 females, 32 males) living with HIV arrived in BC, 15 (32.6%) coming from countries where HIV is considered to be endemic (Table 34). The median age of these immigrants was 34 years (IQR: 28-43) at the time IRCC notified BCCDC of their intent to reside in BC.

Country of Birth	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. of Immigrants	47	41	20	36	51	49	54	59	44	46
Endemic	36.2	46.3	25.0	38.9	33.3	22.4	33.3	23.7	27.3	32.6
Non-Endemic	40.4	39.0	50.0	44.4	37.3	30.6	44.4	30.5	27.3	32.6
Unspecified	23.4	14.6	25.0	16.7	29.4	46.9	22.2	45.8	45.5	34.8

34. Percentage of immigration-related HIV diagnoses from endemic countries, 2008 to 2017

Estimates of HIV Incidence and Prevalence

The HIV surveillance data presented in this report are 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 do 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,^{30, 31} specific estimates for provinces, including BC, are generated and aggregated.

In BC, estimates of the total number of incident or new HIV infections in 2016 was 232 (range 130-400 cases), a decrease from 226 (150-310 cases) in 2014 (Table 35). The estimate of prevalent HIV infections or the total number of people living with HIV in the province at the end of 2016 was 11,621 (range 10,200-13,040 cases), similar to 11,660 (range 10,250-13,070) at the end of 2014 (Table 36).

Exposure		2014			2016	
Category	Number	Range	% of Total	Number	Range	% of Total
gbMSM	137	90 - 190	61%	144	80 - 250	62%
gbMSM-PWID	4	<10	2%	3	<10	1%
PWID	23	10 - 35	10%	13	5 - 20	6%
HET (non-endemic)	53	35 - 70	23%	65	35 - 110	28%
HET (endemic)	9	< 20	4%	7	<20	3%
Other	<2	0 - 5		<2	0 - 5	
All	226	150 - 310		232	130 - 400	

35. Estimated number of incident HIV infections in BC by exposure category, 2014 & 2016

In 2016, gay, bisexual, and other men who have sex with men (gbMSM) continued to comprise the greatest proportion of incident and prevalent HIV infections, followed by people who inject drugs (PWID) among people living with HIV, and heterosexual persons (from countries where HIV is not endemic) among new HIV infections.³²

Exposure		2014		2016			
Category	Number	Range	% of Total	Number	Range	% of Total	
gbMSM	5,655	4,800 - 6,510	48%	5,720	4,860 - 6,580	49%	
gbMSM-PWID	358	280 - 440	3%	350	270 - 430	3%	
PWID	2,835	2,380 - 3,290	24%	2,720	2,280 - 3,160	23%	
HET (non-endemic)	2,267	1,900 - 2,640	19%	2,291	1,920 - 2,660	20%	
HET (endemic)	420	330 - 510	4%	420	330 - 510	4%	
Other	125	85 - 165	1%	120	80 -160	1%	
All	11,660	10,250 - 13,070		11,621	10,200 - 13,040		

36. Estimated number of prevalent HIV infections in BC by exposure category, 2014 & 2016

gbMSM - gay, bisexual, and other men who have sex with men

PWID - people who inject drugs

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, or occupational transmission

AIDS by Region, Gender, and Age

The AIDS surveillance system relies on clinicians reporting the case to Clinical Prevention Services at BCCDC. In BC, the majority of AIDS cases are reported through the Provincial HIV Drug Treatment Program at the BC Centre for Excellence in HIV/AIDS which has comprehensive clinical data on all individuals accessing antiretroviral therapy (ART) 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 ART. The rate of AIDS in BC continued to decrease in 2017 to 0.9 (45 cases) from 1.5 (70 cases) per 100,000 population in 2016 and remains higher than the Canadian rate (Figure 37). This difference from the national rate may represent greater ascertainment of AIDS cases in BC due to reporting by the Provincial HIV Drug Treatment Program. Rates of AIDS vary by Health Service Delivery Area (HSDA) per year and are influenced by the small number of cases in most regions. In 2017, the highest rates were reported in Vancouver, Northern Interior, and Kootenay Boundary HSDAs (Figure 38).

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 40). Rates among males have been gradually decreasing while rates in females overall appear relatively stable. The majority of new AIDS case reports are in people of Caucasian ethnicity. While Indigenous peoples only represent about 6% of the general BC population,³³ Indigenous peoples continue to be disproportionately represented among AIDS cases in BC, comprising 8.9% (4 cases) of new cases in 2017 (Table 45).



37. AIDS case reports in BC and Canada, 1983 to 2017*

38. AIDS case reports in BC by health service delivery area, 2017





39. AIDS case reports in BC by health authority, 2008 to 2017

40. AIDS case reports in BC by gender, 2008 to 2017

* Other - transgender and gender unknown

41. AIDS case reports in BC by age group and gender, 2017

* Other - transgender and gender unknown

42. AIDS case reports in BC by age group - total, 2008 to 2017

43. AIDS case reports in BC by age group - female, 2008 to 2017

44. AIDS case reports in BC by age group - male, 2008 to 2017

AIDS by Ethnicity

Ethnicity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. of Diagnoses	151	128	120	104	93	94	97	92	70	45
Caucasian	49.0	49.2	48.3	40.4	40.9	34.0	28.9	31.5	32.9	40.0
Indigenous	13.2	17.2	15.8	11.5	11.8	10.6	11.3	9.8	21.4	8.9
Asian	2.6	4.7	5.0	6.7	6.5	5.3	6.2	8.7	4.3	6.7
South Asian	2.0	0.8	0.8	4.8	3.2	1.1	2.1	3.3	4.3	0.0
Hispanic	3.3	0.8	0.8	1.0	2.2	2.1	2.1	2.2	2.9	4.4
Black	4.6	1.6	2.5	3.8	3.2	5.3	3.1	6.5	2.9	4.4
Other *	0.7	0.0	0.0	1.0	1.1	2.1	1.0	3.3	0.0	0.0
Unknown	24.5	25.8	26.7	30.8	31.2	39.4	45.4	34.8	31.4	35.6

45. Percentage of AIDS case reports in BC by ethnicity - total, 2008 to 2017

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

46. Percentage of AIDS case reports in BC by ethnicity - female, 2008 to 2017

Ethnicity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. of Diagnoses	39	25	30	15	15	20	16	17	19	10
Caucasian	35.9	44.0	40.0	40.0	20.0	35.0	12.5	23.5	31.6	30.0
Indigenous	25.6	24.0	30.0	33.3	20.0	15.0	43.8	23.5	42.1	20.0
Asian	2.6	0.0	0.0	6.7	0.0	15.0	12.5	0.0	0.0	0.0
South Asian	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9	5.3	0.0
Hispanic	0.0	0.0	3.3	0.0	6.7	0.0	0.0	0.0	0.0	0.0
Black	5.1	0.0	3.3	6.7	13.3	5.0	12.5	11.8	5.3	0.0
Other *	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown	30.8	32.0	23.3	13.3	40.0	30.0	18.8	35.3	15.8	50.0

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

47. Percentage of AIDS case reports in BC by ethnicity - male, 2008 to 2017

Ethnicity	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No. of Diagnoses	109	90	81	77	67	58	66	74	48	35
Caucasian	55.0	57.8	56.8	46.8	52.2	43.1	37.9	33.8	33.3	42.9
Indigenous	9.2	17.8	12.3	9.1	11.9	12.1	6.1	6.8	14.6	5.7
Asian	2.8	6.7	7.4	7.8	9.0	3.4	6.1	10.8	6.3	8.6
South Asian	2.8	1.1	1.2	6.5	4.5	1.7	3.0	2.7	4.2	0.0
Hispanic	4.6	1.1	0.0	1.3	1.5	3.4	3.0	2.7	4.2	5.7
Black	4.6	2.2	2.5	3.9	1.5	6.9	1.5	5.4	2.1	5.7
Other *	0.9	0.0	0.0	1.3	1.5	3.4	1.5	2.7	0.0	0.0
Unknown	20.2	13.3	19.8	23.4	17.9	25.9	40.9	35.1	35.4	31.4

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

AIDS Case Reports among Indigenous Peoples

As with new HIV diagnoses, the majority of new AIDS case reports among Indigenous peoples are in those who identify as First Nations (4 cases in 2017). Two or fewer new AIDS cases were reported per year among Métis and Inuit people between 2008 and 2017.

Mirroring the provincial AIDS rate (Figure 37), the rate of new AIDS case reports among First Nations people has decreased since 2008 (Figure 48). The recent reduction of people living with advanced HIV disease and AIDS highlights the success of improving access to HIV testing, treatment, and care.

Between 2008 and 2017, the rate of reported AIDS cases has been consistently higher among First Nations people in BC compared to the BC population overall. This may be due to systematic barriers for First Nations people to access HIV services including stigma, geographic and social isolation, racism, and poverty.³⁴

The AIDS rate in First Nations men has generally been higher than the rate in women; however in 2014 and 2016, the rate in First Nations women was higher than the rate in men (Figure 48). Rates in both First Nations women and men exceed the provincial rates among women and men (2.7 versus 0.4 per 100,000 population for women and 2.8 versus 1.5 per 100,000 population for men in 2017).

48. AIDS case reports among First Nations people in BC by gender, 2008 to 2017

* Other - transgender and gender unknown

Rates based on First Nations population estimates from the former Aboriginal Affairs and Northern Development Canada now known as Indigenous Services Canada

2017 AIDS

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 Statistics Canada. Aboriginal Peoples Highlight Tables, 2016 Census. Retrieved from https://www12.statcan.gc.ca/ census-recensement/2016/dp-pd/hlt-fst/abo-aut/Table.cfm?Lang=Eng&T=101&S=99&O=A

³ See Endnote #2

⁴ For more information about the widespread inequities in health that Indigenous peoples face: 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 https://www2.gov.bc.ca/assets/gov/government/ministries-organizations/ministries/health/office-of-indigenous-health/abohlth11-var7.pdf

⁵ Reference to the barriers Indigenous peoples face when seeking HIV testing: Ha S, Paquette D, Tarasuk J, Dodds J, Gale-Rowe M, Brooks JI et al. (January/February 2014). A systematic review of HIV testing among Canadian populations. *Canadian Journal of Public Health*, 105(1), e53-e62.

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⁷ For more information about the impact of colonization on Indigenous women: National Collaborating Centre for Aboriginal Health. (2013). Aboriginal Women in Canada: Gender, socio-economic determinants of health, and initiatives to close the wellness-gap. Retrieved from https://www.ccnsa-nccah.ca/docs/determinants/RPT-AboriginalWomenCanada-Halseth-EN.pdf

⁸ Reference to the impact of colonization on Indigenous women: Varcoe C, Dick S. (2008). The intersecting risks of violence and HIV for rural Aboriginal women in a neo-colonial Canadian context. *Journal of Aboriginal Health*, 4(1), 42-52. Retrieved from https://jps.library.utoronto.ca/index.php/ijih/article/view/28961/23982

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¹⁰ For more information about the strength and resiliency that Indigenous peoples and communities hold against HIV/AIDS: Public Health Agency of Canada. (2010). Population-Specific HIV/AIDS Status Report: Aboriginal Peoples. Retrieved from http://publications.gc.ca/collections/collection_2011/aspc-phac/HP40-43-1-2010-eng.pdf

¹¹ For more information about the community survey of gbMSM in Victoria that found an HIV prevalence of 14%: M-Track Victoria, Phase I-Final Report, May 1, 2008. Retrieved from https://www.islandhealth.ca/sites/default/files/2018-10/mtrack-report-victoria-2008.pdf

¹² Reference to the community survey of gbMSM in Vancouver that found an HIV prevalence of 23%: Moore DM, Cui Z, Lachowsky N, Raymond HF, Roth E, Rich A et al. (May 1, 2016). HIV community viral load and factors associated with elevated viremia among a community-based sample of men who have sex with men in Vancouver, Canada. *Journal of Acquired Immune Deficiency Syndromes*, 72(1), 87-95.

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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 are 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 by 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 next year's report.
- 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.
- Surveillance data are 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 (for details see "Interpretation of HIV Data" in the Additional Notes section of this Technical Appendix).
- 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 in BC.

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 \geq 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), <u>or</u> detection of HIV nucleic acid (RNA or DNA; detectable viral load) <u>or</u> detection of p24 antigen with confirmation by neutralization assay, <u>or</u> 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

Earlier diagnosis and start of antiretroviral therapy are associated with a reduction in morbidity and transmission while diagnosis in late stages are associated with poorer health outcomes and are potential missed opportunities for earlier engagement into treatment and care.^{35, 36}

In this report, stage of infection has been revised to reflect a new and more accurate method for estimating stages by utilizing case surveillance data, CD4+ counts, and acute status through laboratory results and testing history. The criteria, which are based on case definitions developed by the US Centers for Disease Control, for classifying stage of infection at HIV diagnosis are described in the table below. Currently, CD4+ information is routinely obtained by public health nurses and entered into the provincial HIV/AIDS database. Regular collection of this information, however, is a fairly recent practice thus analysis of stage of infection is only possible for cases diagnosed from 2010 forward which limits annual comparisons of trends to recent years.

Stage	Definition
Stage 0	Laboratory findings suggestive of acute HIV infection (i.e., detection of HIV DNA or RNA by NAAT or detection of p24 antigen in the absence of confirmed detection of HIV antibody) <u>or</u> previous negative or indeterminate HIV test within 180 days of the first confirmed positive HIV test.
Stage 1	Not in Stage 0 <u>and</u> CD4+ ≥ 500
Stage 2a	Not in Stage 0 <u>and</u> CD4+ between 350 and 499
Stage 2b	Not in Stage 0 <u>and</u> CD4+ between 200 and 349
Stage 3	CD4+ < 200
Stage unknown	Acute status and CD4+ information are all unknown

Acquired Immune Deficiency Syndrome (AIDS)

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

Indicator diseases for adult and pediatric cases:

- Bacterial pneumonia, recurrent*
- Candidiasis of bronchi, trachea or lungs
- Candidiasis of esophagus*
- Cervical cancer, invasive
- Coccidioidomycosis, disseminated or extrapulmonary
- Cryptococcosis, extrapulmonary
- Cryptosporidiosis, chronic intestinal, (> 1 month's 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's duration) or bronchitis, pneumonitis or esophagitis

- Histoplasmosis, disseminated or extrapulmonary
- Isosporiasis, chronic intestinal (> 1 month's 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*
- Pneumocystis jirovecii pneumonia (formerly Pneumocystis carinii, PCP)*
- Progressive multifocal leukoencephalopathy
- Salmonella septicemia, recurrent
- Toxoplasmosis of brain*
- Wasting syndrome due to HIV

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*

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

Data Sources

HIV Data - Surveillance

All confirmatory laboratory testing for HIV antibodies is done at the BCCDC Public Health Laboratory (PHL). BCCDC determines which of these individuals are testing positive for HIV for the first time then informs the appropriate 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, Immigration, Refugees and Citizenship Canada (IRCC) 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 BCCDC PHL through routine surveillance.

HIV Data - Testing

HIV testing data presented in this report are based on HIV testing conducted by the BCCDC PHL which is estimated to conduct >95% of all screening tests for HIV in the province. Island Health Laboratories perform HIV screening tests which are currently not captured in this report's HIV testing data. 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 BCCDC PHL. 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

AIDS case reports are allocated according to the year a client is diagnosed with his/her first AIDS defining illness (e.g., a client is diagnosed with his/her first AIDS defining illness in 2005 and a subsequent AIDS defining illness in 2012 - this client's AIDS case report is allocated only to year 2005). Prior to 1997, AIDS case reports were compiled 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 this 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 living with HIV 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 a review of clinical reports from the BC Centre for Excellence in HIV/AIDS in 2013 included additional reports of historic AIDS cases. These cases were identified through a retrospective linkage with both historical discharge diagnoses data from the HIV/AIDS ward at St Paul's Hospital and data from the death registry at BC Vital Statistics Agency.

Population Data

Population data and associated rates were based on the Population Estimates released by BC Stats.

First Nations Population Estimates

Population rates for First Nations people are calculated using estimates from Indigenous Services Canada (formerly Aboriginal Affairs and Northern Development Canada).

These estimates are based on the Indian Registry System (IRS) which includes individuals who have registered for First Nations status under the Indian Act. The IRS is subject to several limitations, including:

- Under-counting due to delayed reporting of infants entitled to be registered, as well as other unregistered individuals who are entitled for status designation
- Over-counting due to individuals remaining on the IRS after they are deceased
- Geographic misclassification because individuals are included in the BC population according to membership of a

BC band rather than current place of residence

• Systematic biases from imbalance in the migration into and out of the BC 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, 2014.* Aboriginal Affairs and Northern Development Canada.

Additional Notes

Interpretation of HIV Data

The number of new HIV diagnoses 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 public health 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
- Improved documentation of exposure category and ethnicity resulting in a decrease in the proportion of new HIV diagnoses where exposure or ethnicity is unknown

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 BCCDC PHL 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 then considered to represent a new HIV diagnosis and included in surveillance reporting. The exception is for persons testing as part of immigration requirements – persons who tested previously positive for non-immigration purposes are classified as persons with a previous positive HIV test thus not included in surveillance reporting but included as immigration-related HIV diagnoses in Figure 34.

Classification of Health Region

Cases are assigned to health regions (i.e., Health Authority or Health Service Delivery Area) by residence. If residence is unknown, the case is then 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
Arab/West Asian	Armenian, Egyptian, Iranian, Moroccan, Lebanese, Afghani
Asian	Chinese, Japanese, Vietnamese, Cambodian, Indonesian, Filipino, Korean, Laotian
Black	African, Haitian, Jamaican, Somali
Caucasian (White)	lrish, Scottish, English, Portuguese, Italian, Russian
Hispanic	Mexican, Central/South American
Indigenous	First Nations, Inuit, Métis
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

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 injecting drugs and heterosexual contact). These individuals are assigned to the exposure category listed first (or highest) in the following hierarchy.

- 1. **gbMSM*:** Male who reports having male sex partner(s), with or without female sex partners.
- 2. **PWID:** Person who reports current or prior history of injecting drugs.
- 3. Heterosexual Contact*: Male who reports having female sex partner(s) only or female who reports having male with/without female sex partner(s).
 - i) Heterosexual with at least one Identified Risk factor – Person who reports heterosexual contact and one or more of the following:
 - was born/resided in a country where HIV is endemic
 - sexual partner is living with HIV
 - sexual partner is at increased risk for acquiring HIV (e.g., injects 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 factor – Person who reports heterosexual contact and no information about place of birth/ residence, or about sexual partner(s), or none of the above risk factors.
- 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 a mother living with HIV 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 a donor living with HIV or females reporting female sex partner(s) only.
- 8. No Identified Risk Factor (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:

- gbMSM gay, bisexual, and other men who have sex with men
- PWID people who inject drugs
- HET heterosexual contact
- Other blood, occupational, perinatal, and/or other exposures
- NIR/Unknown no identified risk and exposure unknown

* A transgender individual may be assigned to either gbMSM or Heterosexual Contact exposure category depending on how this individual describes their sexual partners.

Endemic Country

Individuals are categorized as being from an endemic country according to the Endemic Countries List³⁷ maintained by the Public Health Agency of Canada.