Alberta Health

Notifiable Sexually Transmitted Infections & Human Immunodeficiency Virus

2013 Annual Report

Surveillance and Assessment Branch

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For more information contact:

Surveillance and Assessment Branch
Health System Accountability and Performance
Alberta Health
PO Box 1360 Stn Main
Edmonton, AB T5J 2N3

Email: Health.Surveillance@gov.ab.ca
Website: www.health.alberta.ca

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Executive Summary

This report presents rates of sexually transmitted infections (STIs) and human immunodeficiency virus (HIV) in Alberta based on cases of disease reported to Alberta Health. These are an approximation of the incidence of disease.

The rates of STIs continue to increase in Alberta. Rates of chlamydia have increased each year. Despite the decrease in gonorrhea rates in 2010, they have rebounded. The rates of infectious syphilis have decreased from 4.8 cases per 100,000 to 3.0 cases per 100,000 since 2010. Geographic distribution of sexually transmitted cases was not consistent among health zones. With the exception of infectious syphilis, the infection rates for STIs were highest in the Northern Zone and Edmonton Zone.

For chlamydia, the rate of infection was consistently higher among females and was highest among those 20 to 24 years of age. For gonorrhea, the rate of infection was slightly higher among males. The age-specific rates of gonorrhea were high among younger females, but for all ages over 24, the rate was higher among males. Infectious syphilis rates were consistently higher among males for each age group. The rate was highest among males 20 to 24 years old.

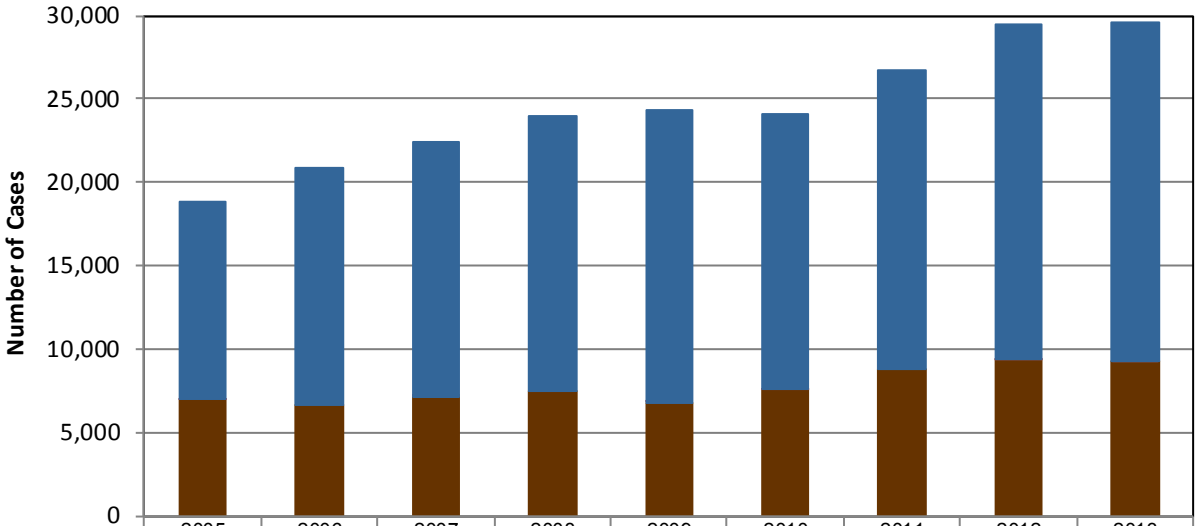
Rates of newly reported HIV have been increasing each year in Alberta. The rate of newly reported HIV cases was higher among males. The rate of HIV increased in the North and Edmonton Zones. The most common risk exposure for newly reported male HIV cases was men who have sex with men (MSM), while heterosexual contact was the common risk exposure among newly reported female cases.

There was an increase in HIV positive patients receiving a chlamydia, gonorrhea or syphilis diagnosis *after* their HIV diagnosis. This suggests that unsafe sexual practices may be increasing in certain HIV positive populations.

Introduction

More than 100 communicable diseases in Alberta are notifiable to public health officials and these include human immunodeficiency virus (HIV) and seven sexually transmitted infections (STIs). STIs are by far the most commonly reported notifiable diseases in Alberta. In 2013, STIs represented 69 per cent of the total notifiable diseases reported (20,346/29,559 cases).

Figure 1: Number of Notifiable STIs and Other Notifiable Diseases reported in Alberta, 2005 to 2013



	2005 (n=18,825)	2006 (n=20,867)	2007 (n=22,365)	2008 (n=23,936)	2009 (n=24,296)	2010 (n=24,147)	2011 (n=26,775)	2012 (n=29,427)	2013 (n=29,559)
STI	11,860	14,190	15,208	16,488	17,500	16,569	17,941	20,053	20,346
STI %	63%	68%	68%	69%	72%	69%	67%	68%	69%
Other ND %	37%	32%	32%	31%	28%	31%	33%	32%	31%
Other ND	6,965	6,677	7,157	7,448	6,796	7,578	8,834	9,374	9,213

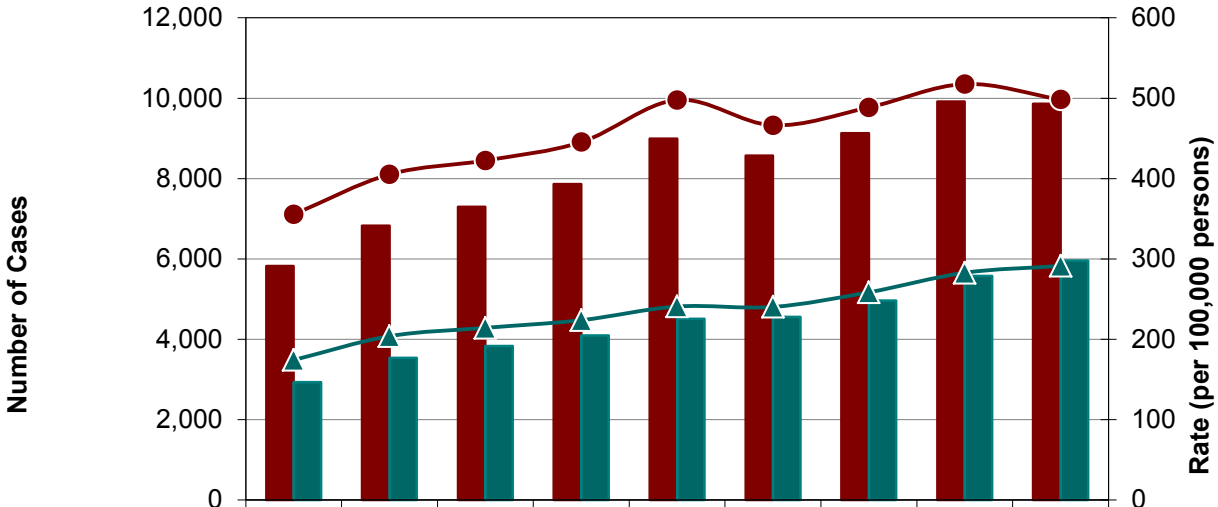
Most STIs, including chlamydia, gonorrhea, chancroid, lymphogranuloma venereum, and syphilis (staged as congenital, infectious, and non-infectious) are laboratory-reportable. Mucopurulent cervicitis (MPC) and non-gonococcal urethritis (NGU) are syndromic illnesses and are diagnosed and reported based on clinical criteria when laboratory tests are negative for chlamydia and gonorrhea if testing is not performed. Congenital syphilis may also be reported based on clinical criteria without a positive laboratory test result.

Human immunodeficiency virus (HIV) became a notifiable disease in Alberta in 1998 and is reportable by physicians and laboratories when there is a positive HIV test. HIV can be transmitted through exposure to blood and/or body fluids from an HIV-infected person.

Chlamydia

Chlamydia is the most commonly reported notifiable disease in Alberta. It is a bacterial infection that is transmitted through sexual contact or from mother to child during delivery. Chlamydia is easily treatable with antibiotics, however, because it is often asymptomatic it may go untreated, allowing complications to develop. Complications for females include pelvic inflammatory disease, ectopic pregnancy, infertility, pelvic pain, and reactive arthritis. For males, complications of untreated chlamydia include infertility, reactive arthritis, and infection of the epididymis and testes.

Figure 1.1: Number of Chlamydia Cases and Crude Rate (per 100,000) in Alberta by Gender, 2005 to 2013



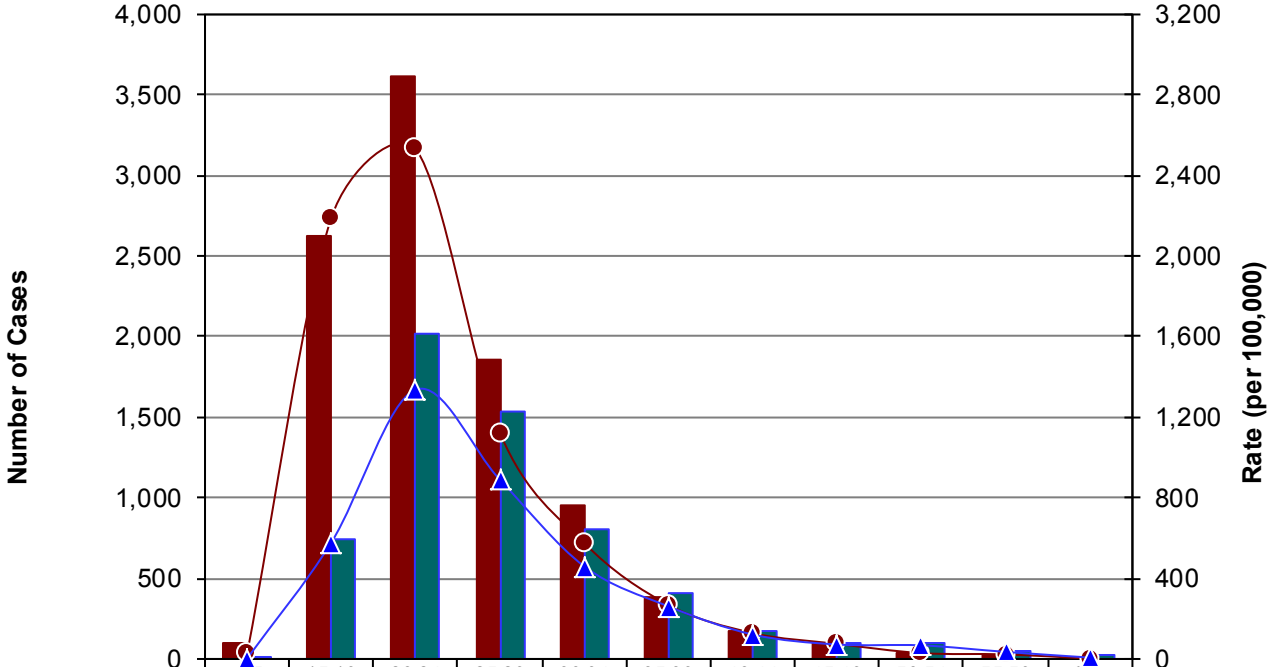
	2005	2006	2007	2008	2009	2010	2011	2012	2013
Female Cases	5,826	6,827	7,297	7,865	8,996	8,568	9,131	9,920	9,865
Male Cases	2,933	3,542	3,830	4,096	4,509	4,555	4,967	5,579	5,959
Female Rate	355.5	405.3	422.6	445.4	497.8	466.3	488.5	517.7	498.3
Male Rate	174.3	203.9	214.3	223.8	240.9	240.3	258.5	282.9	291.3

In 2013, there were 15,825 reported cases of chlamydia in Alberta. The number of cases has risen annually since 2000. The overall provincial rate for both sexes slightly decreased from 398.6 cases per 100,000 persons in 2012 to 393.2 cases per 100,000 persons in 2013.

Females historically report higher rates of chlamydia than males and this trend continued in 2013. The female rate in 2013 was almost twice as high as the male rate (498 cases per 100,000 vs. 291 cases per 100,000 persons, respectively) and represented 62 per cent of all chlamydia cases.

The number and rate of cases for both males and females were slightly changed in 2013 comparing to the previous year. The rate of chlamydia in females decreased to 498 cases per 100,000 females in 2013 from 518 cases per 100,000 in 2012. For males, the rate in 2013 was 291 cases per 100, 000 males compared to 283 cases per 100,000 in 2012.

Figure 1.2: Number of Chlamydia Cases and Age-Specific Rate (per 100,000) by Gender in Alberta, 2013 (n=15,825)



	<15	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
Female Cases	93	2,621	3,609	1,851	952	387	175	101	42	29	5
Male Cases	8	739	2,012	1,540	800	404	178	105	104	48	21
Female Rate	26.0	2,190.1	2,531.1	1,121.6	575.8	268.2	128.6	74.9	29.2	22.7	1.5
Male Rate	2.1	578.5	1,336.5	889.3	459.9	260.9	121.3	71.9	67.6	35.1	6.9

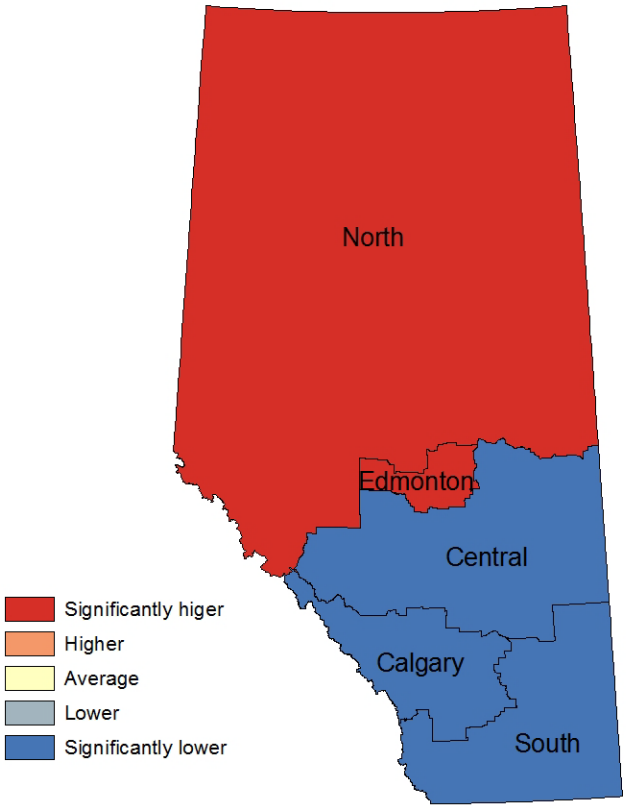
Chlamydia cases are concentrated among the young adult population. In 2013, 82 per cent of female cases and 72 per cent of male cases were between the ages of 15 to 29 years. The highest rates for both males and females were seen in the 20-24 year old age group. The rate of chlamydia for 15 to 19 year olds was almost four times higher in females than males (2,190 cases per 100,000 females vs. 579 cases per 100,000 males).

Figure 1.3: Chlamydia Crude Rate (per 100,000) by Alberta Health Zone, 2013

Chlamydia rates differ within the province by health zone, and appear to increase from south to north.

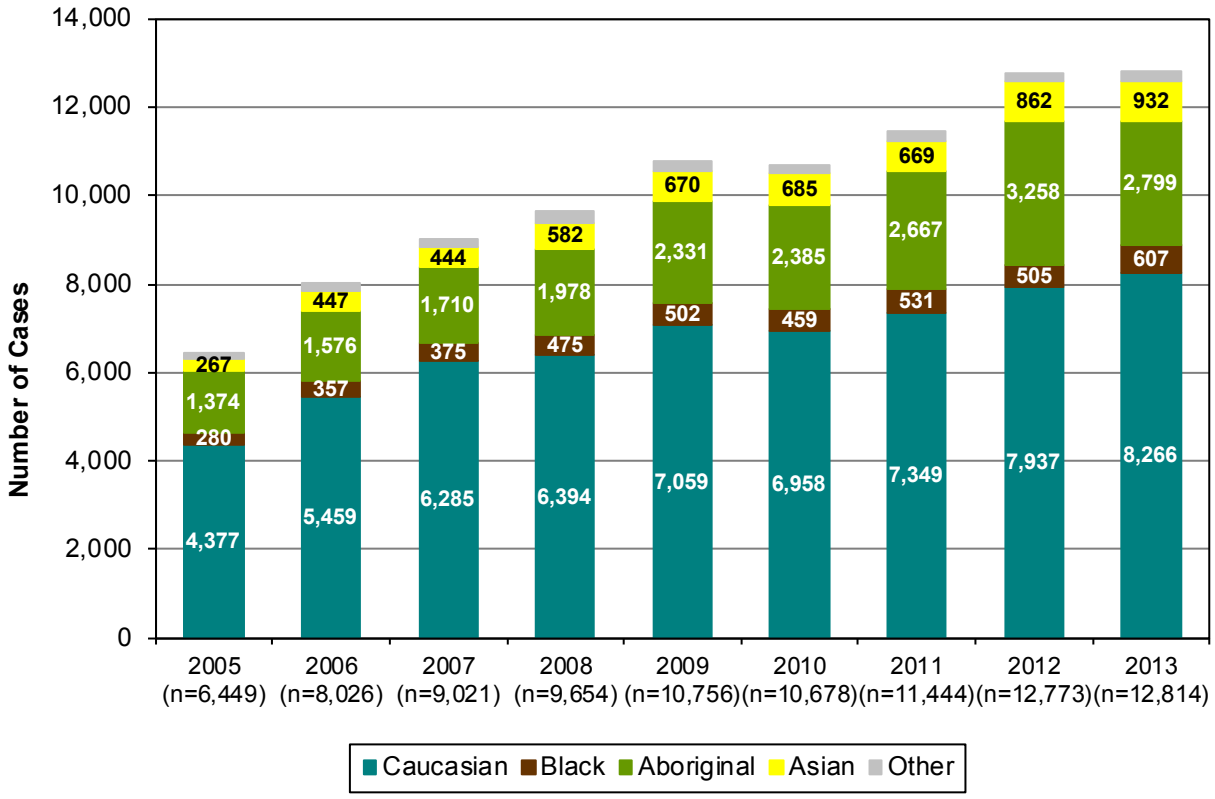
In 2013, the highest rate of chlamydia was in the North Zone and the lowest rate was in the South Zone (589 cases vs. 317 cases per 100,000 persons, respectively). Edmonton had the second highest rate while Calgary had the second lowest rate (421 cases and 339 cases per 100,000, respectively).

Chlamydia rates increased in all provincial zones from 2010 to 2012. In 2013, the rates decreased slightly in North, Edmonton, and Central Zones and the rates increased slightly in Calgary and South Zone.



Health Zone	2010		2011		2012		2013	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
North	1,943	441.2	2,319	517.9	2,802	610.3	2,795	589.4
Edmonton	4,585	391.6	4,899	412.1	5,320	435.2	5,339	420.5
Central	1,645	366.4	1,579	349.5	1,673	364.8	1,610	343.9
Calgary	4,220	304.7	4,390	310.8	4,787	328.8	5,140	339.1
South	730	254.1	911	314.9	917	313.5	941	316.9
ALBERTA	**13,123**	**351.6**	**14,098**	**372.0**	**15,499**	**398.6**	**15,825**	**393.2**

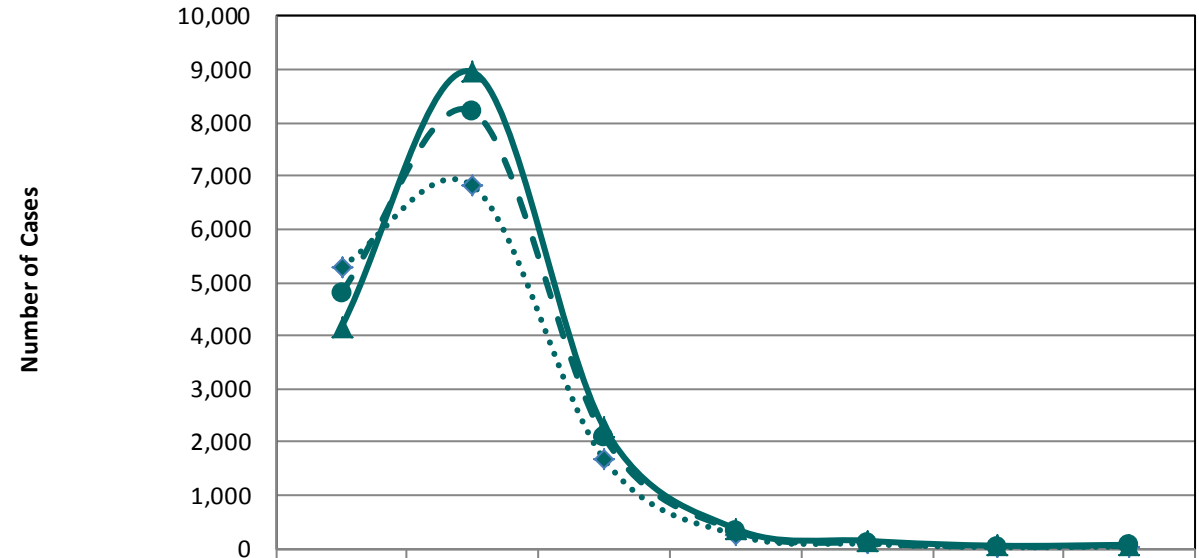
Figure 1.4: Number of Chlamydia Cases in Alberta by Ethnicity (Self-defined), 2005 to 2013



Note: This excludes "unknown"

Over recent years, the proportion of chlamydia cases of both known and unknown ethnicity has remained consistent. As in previous years, the majority of chlamydia cases in 2013 were among Caucasians (65%) followed by Aboriginals (22%). There were 3,011 cases of chlamydia with unknown ethnicity in 2013.

Figure 1.5: Number of Sexual Partners Identified by Newly Diagnosed Chlamydia Cases in Alberta, 2011 to 2013



	0	1	2	3	4	5	> 5
2011 (N=14,196)	5,297	6,806	1,676	260	88	29	40
2012 (N=15,637)	4,811	8,206	2,092	337	102	38	51
2013 (N=16,041)	4,169	8,948	2,268	375	150	57	74

Note: Zero partners refer to cases where no information was obtained on sexual partners, i.e., client refused to provide information, health provider did not collect information, client had no identifying information for partner, etc.

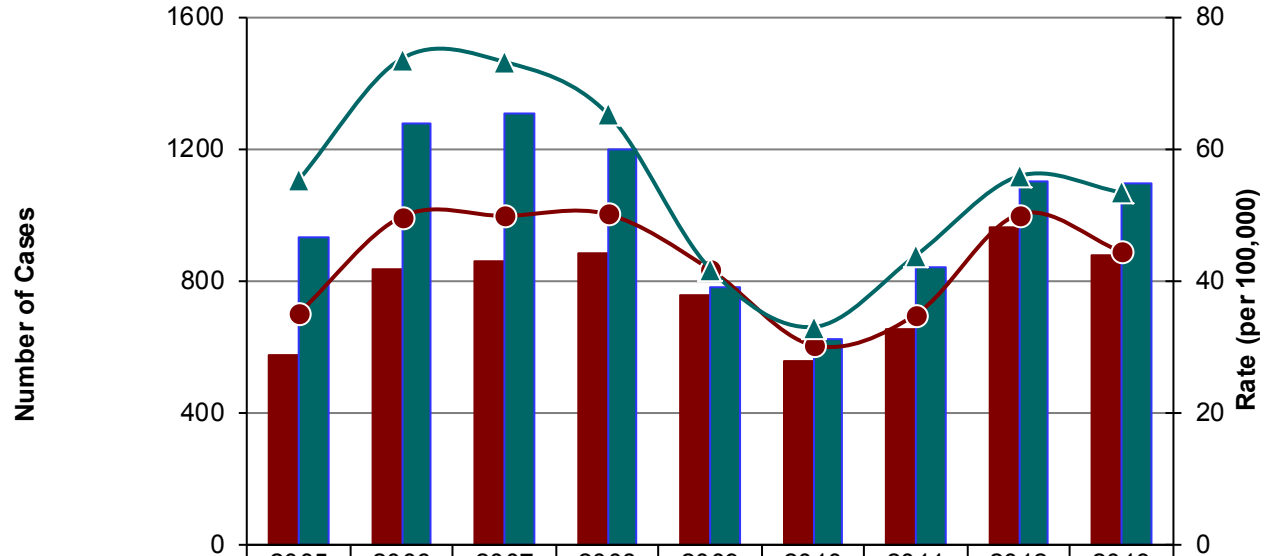
A key public health intervention for mitigating the spread of sexually transmitted infections is to offer testing and treatment to those who have been exposed to a reported case. Information on sexual partners is obtained by the testing and/or treating by the health care provider and follow up of exposed partners is completed by the health care provider or partner notification nurses across the province.

The proportion of cases where zero sexual partners were reported decreased from 37.3 per cent (5,297 cases/114,196 total cases) in 2011 to 26.0 per cent (4,169 cases/16,041 total cases) in 2013. The majority of chlamydia cases reported one sexual partner, 52.5 per cent (8,206 cases/15,637 cases) in 2012 and 55.8 per cent (8,948 cases /16,041 cases) in 2013. The proportion of cases with two partners slightly increased from 11.8 per cent in 2011 to 14.1 per cent in 2013. The proportion of cases who reported three or more partners was 2.9 per cent in 2011, 3.4 percent in 2012, and 4.1 per cent in 2013.

Gonorrhea

Gonorrhea is the second most commonly reported sexually transmitted infection in Alberta, and is caused by the bacterium *Neisseria gonorrhea*. Many gonorrheal infections are asymptomatic, particularly in women. Common symptoms in males are painful urination and urethral discharge; in females symptoms may include endocervical discharge and cervical friability (prone to bleeding). Untreated gonorrhea can spread through the body affecting joints and in rare cases the heart valves. Resistance to the antibiotics traditionally used to treat gonorrhea is developing, thus prevention of infection is important.

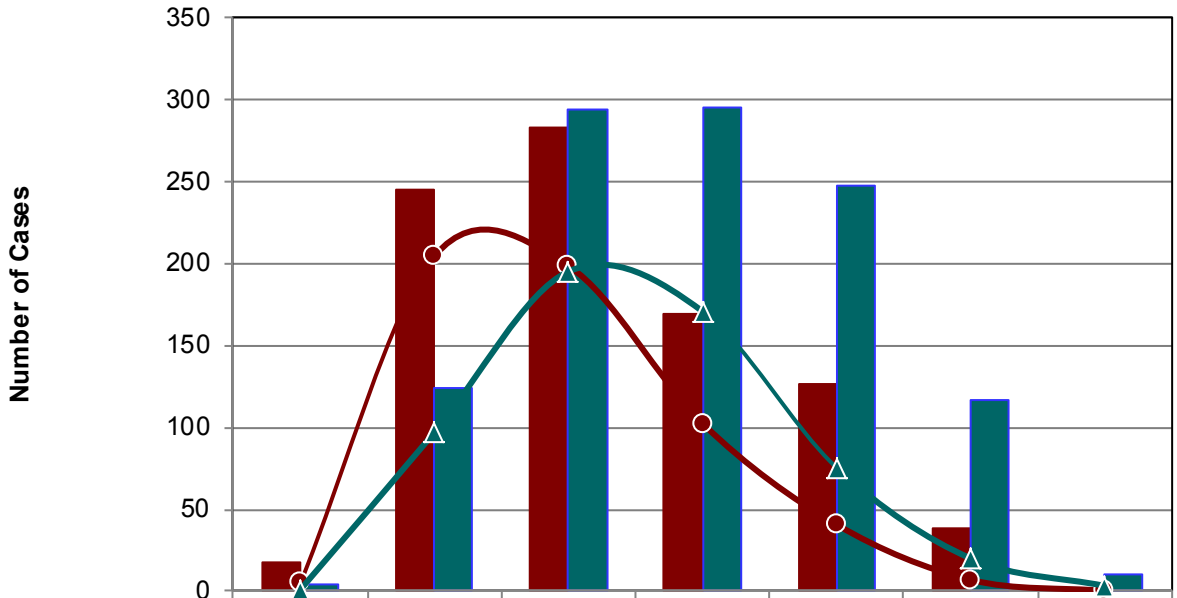
Figure 2.1: Number of Gonorrhea Cases and Crude Rate (per 100,000) in Alberta by Gender, 2005 to 2013



	2005	2006	2007	2008	2009	2010	2011	2012	2013
Female Cases	576	838	861	885	754	556	653	960	880
Male Cases	932	1,280	1,308	1,196	783	626	843	1,102	1,093
Female Rate	35.1	49.7	49.9	50.1	41.7	30.3	34.9	50.1	44.5
Male Rate	55.4	73.7	73.2	65.4	41.8	33.0	43.9	55.9	53.4

In total there were 1,973 cases of gonorrhea in Alberta in 2013. Both 2012 and 2013 have seen increases in rates for both males and females. As seen in previous years, males had overall higher rates of gonorrhea than females in 2013 (53.4 cases per 100,000 males vs. 44.5 cases per 100,000 females).

Figure 2.2: Number of Gonorrhea Cases and Age-Specific Rate (per 100,000) by Gender in Alberta, 2013 (n=1,973)



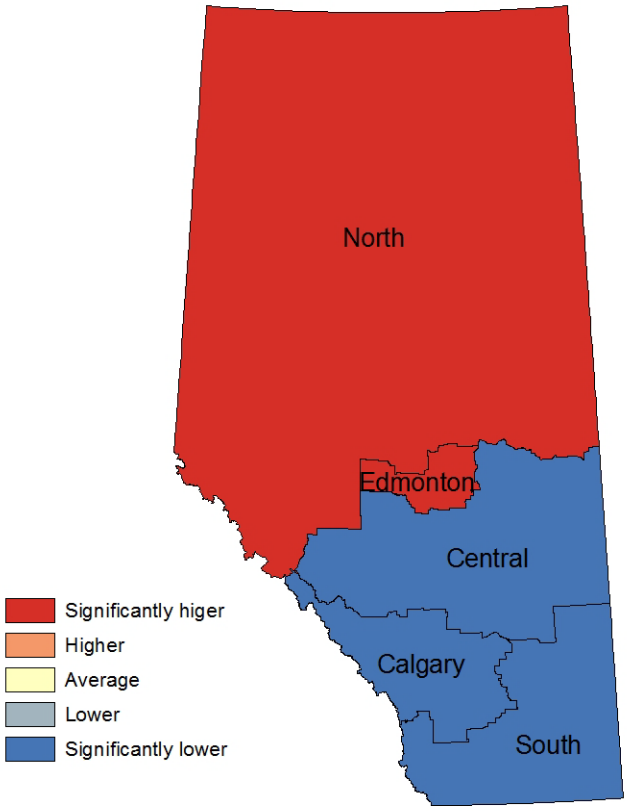
	<15	15-19	20-24	25-29	30-39	40-59	60+
Female Cases	18	245	283	169	126	38	1
Male Cases	4	124	294	296	248	117	10
Female Rate	5.0	204.7	198.5	102.4	40.7	7.0	0.3
Male Rate	1.1	97.1	195.3	170.9	75.4	20.1	3.3

When analyzed by age groups, the highest reported rate of gonorrhea was in 15 to 19 year-old females (205 cases per 100,000 females). Male rates peaked in the 20 to 24 years age group (195 cases per 100,000 males). Males had higher rates than females in the 25 years and older age groups.

Figure 2.3: Gonorrhea Crude Rate (per 100,000) by Alberta Health Zone, 2013

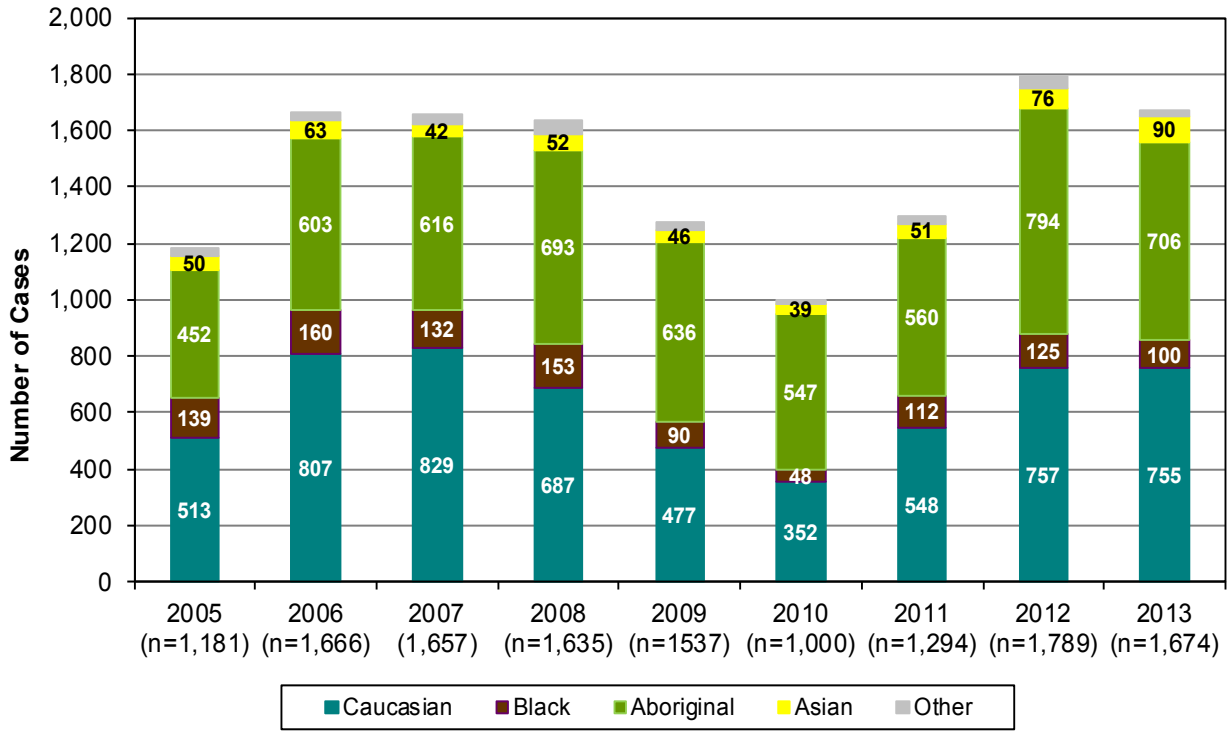
Gonorrhea rates differ within the province by health zone, and appear to increase from south to north. In 2013, the gonorrhea rate in the North Zone was 108.4 cases per 100,000, while the rate in the South Zone was 9.8 cases per 100,000 persons.

In 2013, the gonorrhea rate in the Edmonton Zone was twice higher than the rate in the Calgary Zone (64.0 cases per 100,000 vs. 32.3 cases per 100,000, respectively). The Edmonton Zone and the North Zone had higher rates of gonorrhea than the provincial rate of 49.0 cases per 100,000 persons.



Health Zone	2010		2011		2012		2013	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
North	283	64.3	316	70.6	512	111.5	514	108.4
Edmonton	484	41.3	691	58.1	860	70.4	813	64.0
Central	106	23.6	119	26.3	142	31.0	127	27.1
Calgary	279	20.1	345	24.4	506	34.8	490	32.3
South	30	10.4	25	8.6	42	14.4	29	9.8
ALBERTA	**1,182**	**31.7**	**1,496**	**39.5**	**2,062**	**53.0**	**1,973**	**49.0**

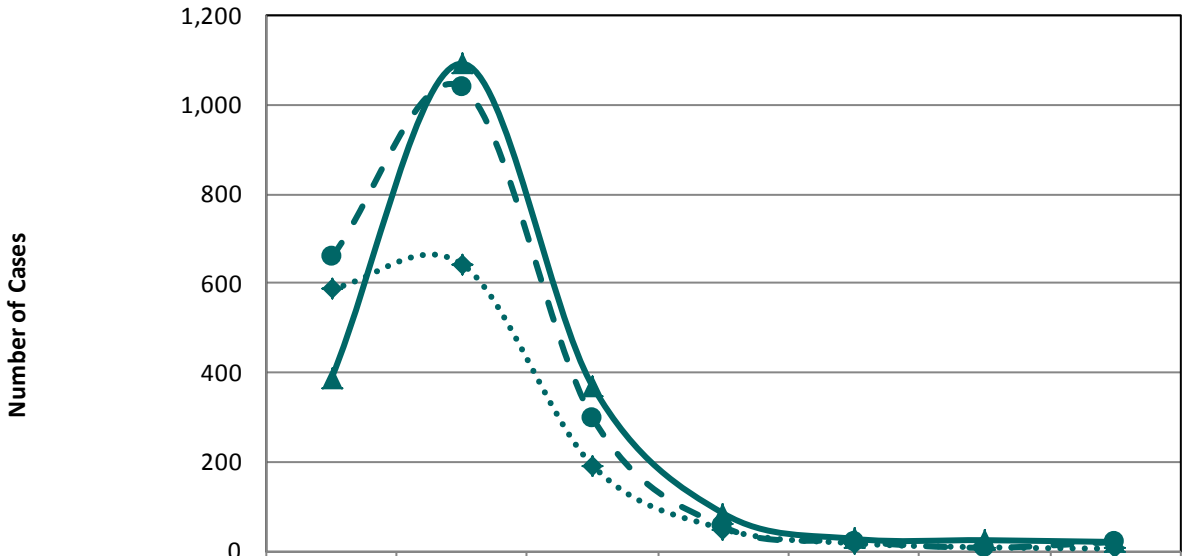
Figure 2.4: Number of Gonorrhea Cases in Alberta by Ethnicity (Self-defined), 2005 to 2013



Note: This excludes 'unknown'

As in previous years, the highest proportions of gonorrhea cases were seen among Caucasians and Aboriginals. In 2013, Caucasians represented 45.1 per cent of cases with reported ethnicity and Aboriginals represented 42.2 per cent. In 2013 there were 299 unknown ethnicity cases reported.

Figure 2.5: Number of Sexual Partners Identified by Newly Diagnosed Gonorrhea Cases in Alberta, 2011 to 2013



	0	1	2	3	4	5	> 5
2011 (N=1,501)	588	643	191	49	17	8	5
2012 (N=2,098)	658	1,040	298	54	21	7	20
2013 (N=2,004)	387	1,093	369	84	27	24	20

Note: Zero partners refer to cases where no information was obtained on sexual partners, i.e., client refused to provide information, health provider did not collect information, client had no identifying information for partner, etc.

The proportion of cases where zero sexual partners was reported decreased from 39 per cent (588/1,501 cases) in 2011 to 19 per cent (387/2,004 cases) in 2013. Correspondingly, the proportion of cases with one sexual partner increased from 43 per cent (643/1,501 cases) in 2011 to 55 per cent (1,093/2,004 cases) in 2013.

The proportion of cases with two sexual partners also increased from 13 per cent (191/1,501 cases) in 2011 to 18 per cent (369/2,004 cases) in 2013. The proportion of cases with greater than two sexual partners was approximately five per cent in 2011 and 2012, then increased to almost eight percent in 2013.

Infectious Syphilis

One of the oldest sexually transmitted infections recorded is syphilis. Syphilis is caused by the bacterium *Treponema pallidum*. Undiagnosed or untreated syphilis progresses through several stages: primary, secondary, latent and tertiary. This section will only deal with infectious syphilis, which includes the primary, secondary and early latent stages.

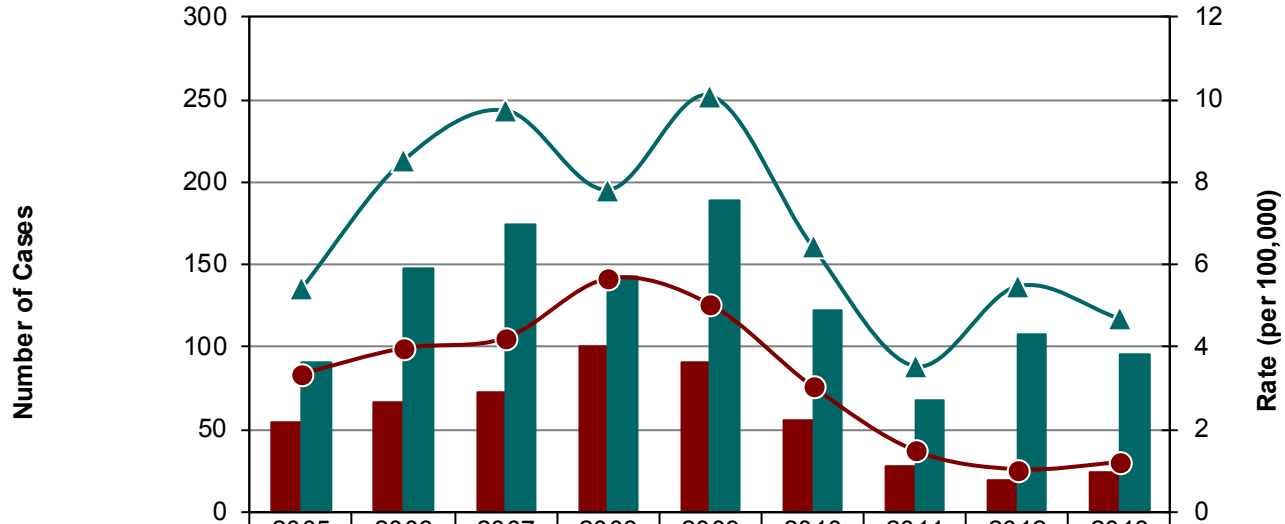
Untreated syphilis can lead to destruction of soft tissues and bone, blindness and heart failure. A pregnant woman with untreated syphilis can transmit the infection to her unborn child, which can lead to death or lifelong deficits for the child.

Starting in 2003, the number of infectious syphilis cases dramatically increased in the province and a syphilis outbreak was declared in Alberta in 2007. The rates of syphilis began to decrease over the last few years. Table 3.0 shows the breakdown of infectious syphilis cases by stage of infection for 2005 to 2013.

Table 3: Number of Infectious Syphilis Cases by Stage in Alberta, 2005 to 2013

Stage of Infectious Syphilis	2005	2006	2007	2008	2009	2010	2011	2012	2013
Early Latent	18	50	84	77	111	92	40	49	53
Late Latent	0	0	0	0	0	1	0	0	0
Primary	96	97	92	113	111	40	34	50	46
Secondary	25	59	63	41	47	32	12	25	16
Symptomatic CNS (Central Nervous System)	4	5	3	2	1	4	7	2	2
Symptomatic CNS Ocular	0	2	4	1	3	7	2	0	1
Asymptomatic CNS	0	0	0	1	2	1	1	2	2
Unknown	3	2	1	8	5	1	0	0	0
Total	**146**	**215**	**247**	**243**	**280**	**178**	**96**	**128**	**120**

Figure 3.1: Number of Reported Infectious Syphilis Cases and Crude Rate (per 100,000) in Alberta by Gender, 2005 to 2013

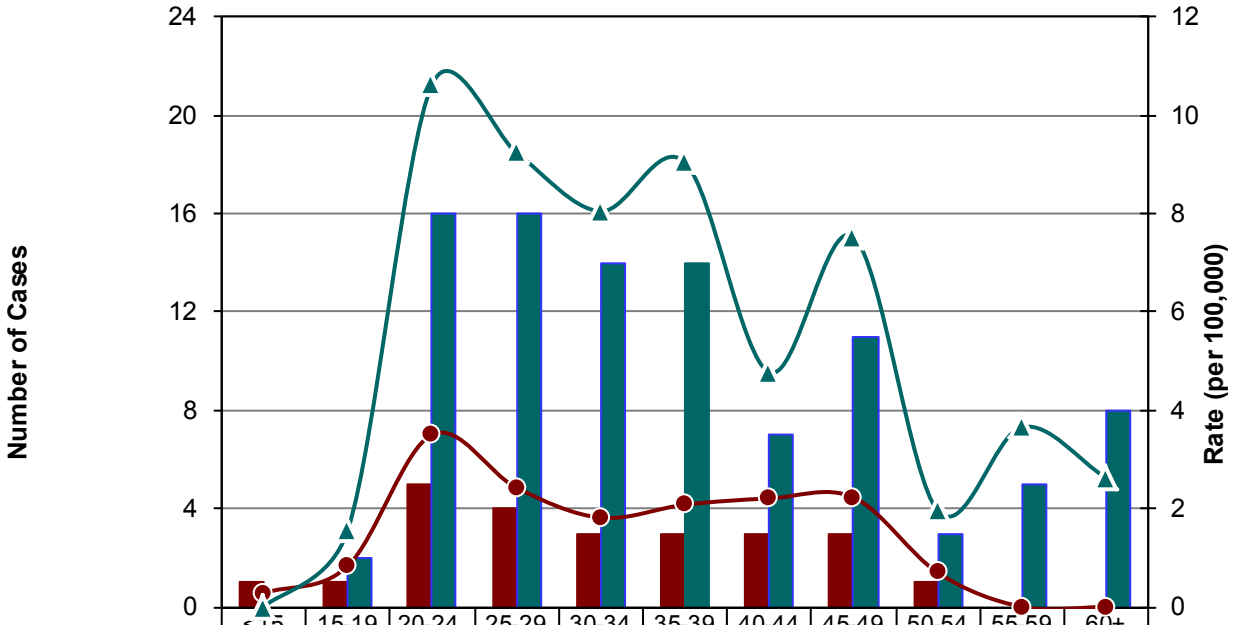


	2005	2006	2007	2008	2009	2010	2011	2012	2013
Female Cases	55	67	73	100	91	56	28	20	24
Male Cses	91	148	174	143	189	122	68	108	96
Female Rate	3.4	4.0	4.2	5.7	5.0	3.0	1.5	1.0	1.2
Male Rate	5.4	8.5	9.7	7.8	10.1	6.4	3.5	5.5	4.7

In 2013, 120 cases were reported in Alberta. Overall, the rates of infectious syphilis in Alberta dropped from 4.8 cases per 100,000 persons in 2010 to 2.5 cases per 100,000 in 2011, but increased to 3.3 cases per 100,000 persons in 2012, then decreased to 3.0 cases per 100,000 in 2013. The overall provincial rate in 2010 was almost twice that of 2011 (4.8 cases per 100,000 vs. 2.5 cases per 100,000 persons). There were no congenital syphilis cases in Alberta in 2013.

The number of female cases reported in 2013 was higher than that reported in 2012 (24 cases vs. 20 cases, respectively), however, the reported male cases decreased from 108 in 2012 to 96 in 2013. This was the second decrease in the male infectious syphilis rate since 2009. In 2013, the male rate was almost four times higher than the female rate (4.7 cases per 100,000 males vs. 1.2 cases per 100,000 females).

Figure 3.2: Number of Infectious Syphilis Cases and Age-Specific Rate (per 100,000) by Gender in Alberta, 2013 (n=120)



	<15	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
Female Cases	1	1	5	4	3	3	3	3	1	0	0
Male Cases	0	2	16	16	14	14	7	11	3	5	8
Female Rate	0.3	0.8	3.5	2.4	1.8	2.1	2.2	2.2	0.7	0.0	0.0
Male Rate	0.0	1.6	10.6	9.2	8.0	9.0	4.8	7.5	2.0	3.7	2.6

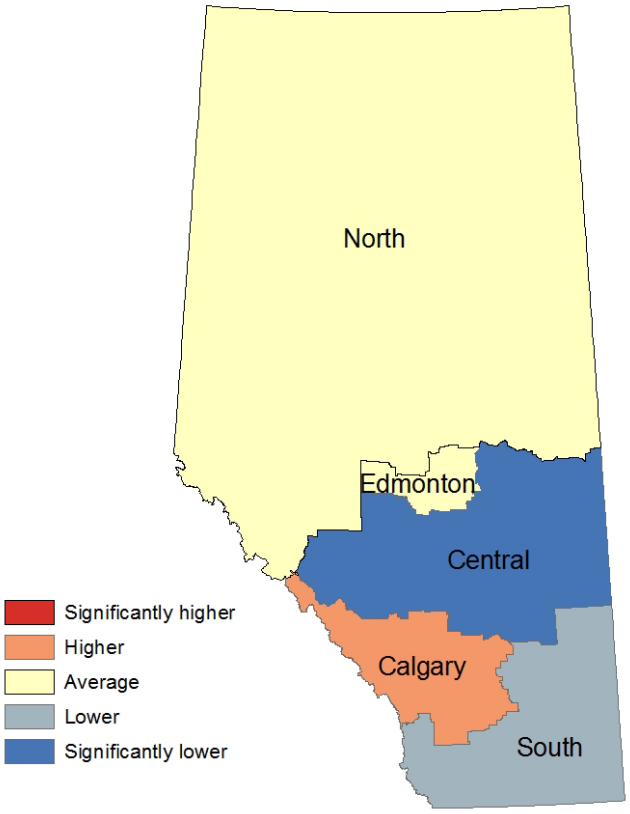
As seen in previous years, infectious syphilis cases were consistently reported more often for males than females in 2013. The highest infectious syphilis rate for males was in the 20 to 24 years age group (10.6 cases per 100,000 males) followed closely by the 25 to 29 years age group (9.0 cases per 100,000 males).

The highest infectious syphilis rate for females was in the 20 to 24 years age groups at 3.5 cases per 100,000 females.

Figure 3.3: Infectious Syphilis Crude Rate (per 100,000) by Alberta Health Zone, 2013

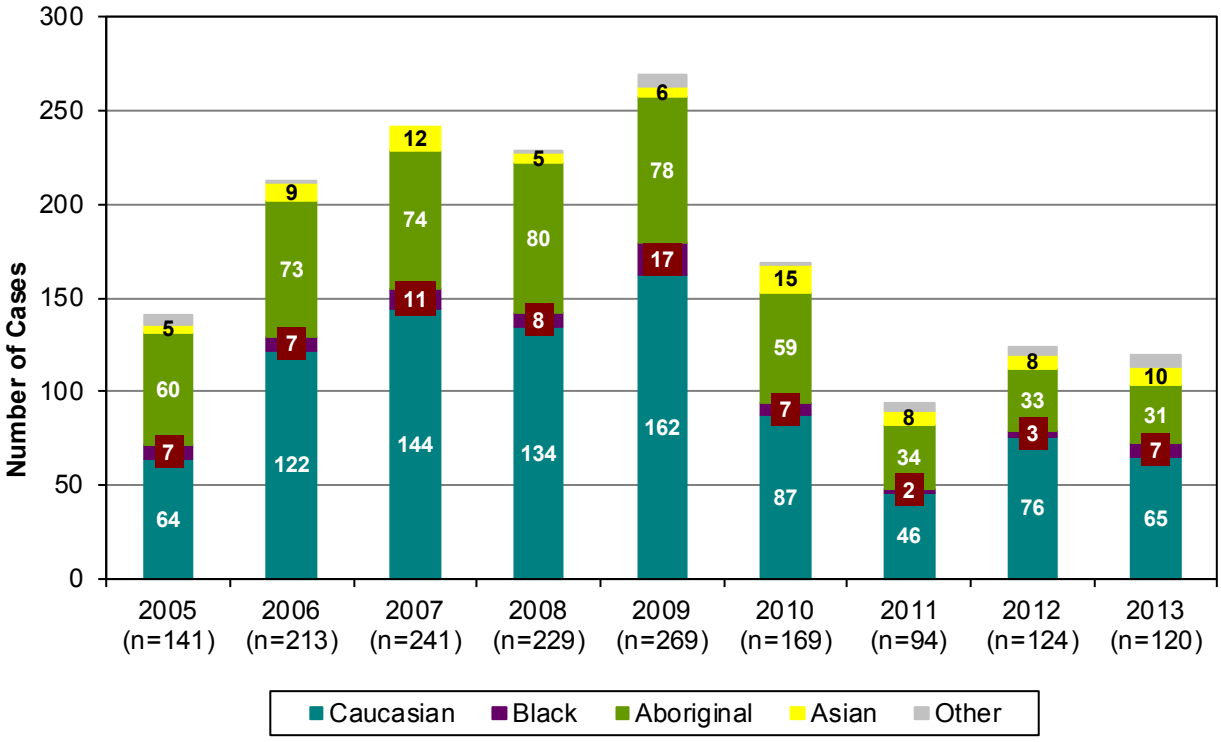
In 2013, the highest rate of disease was in Calgary Zones (3.8 cases per 100,000 persons); the lowest rate was in the Central Zone with 0.9 cases per 100,000.

The rates in 2013 for four zones (North, Central, Calgary, and South) were lower than those in 2012. The rate for the South Zone strongly decreased from 4.4 cases per 100,000 in 2012 to 1.7 cases per 100,000 in 2013. The rates of infectious syphilis in all five zones dropped from 2010 to 2011. The provincial infectious syphilis in 2013 was lower than that in 2012 (3.0 cases per 100,000 vs, 3.3 cases per 100,000 cases, respectively).



Health Zone	2010		2011		2012		2013	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
North	16	3.6	9	2.0	12	2.6	11	2.3
Edmonton	42	3.6	32	2.7	36	2.9	42	3.3
Central	16	3.6	0	0.0	6	1.3	4	0.9
Calgary	85	6.1	39	2.8	61	4.2	58	3.8
South	19	6.6	16	5.5	13	4.4	5	1.7
ALBERTA	**178**	**4.8**	**96**	**2.5**	**128**	**3.3**	**120**	**3.0**

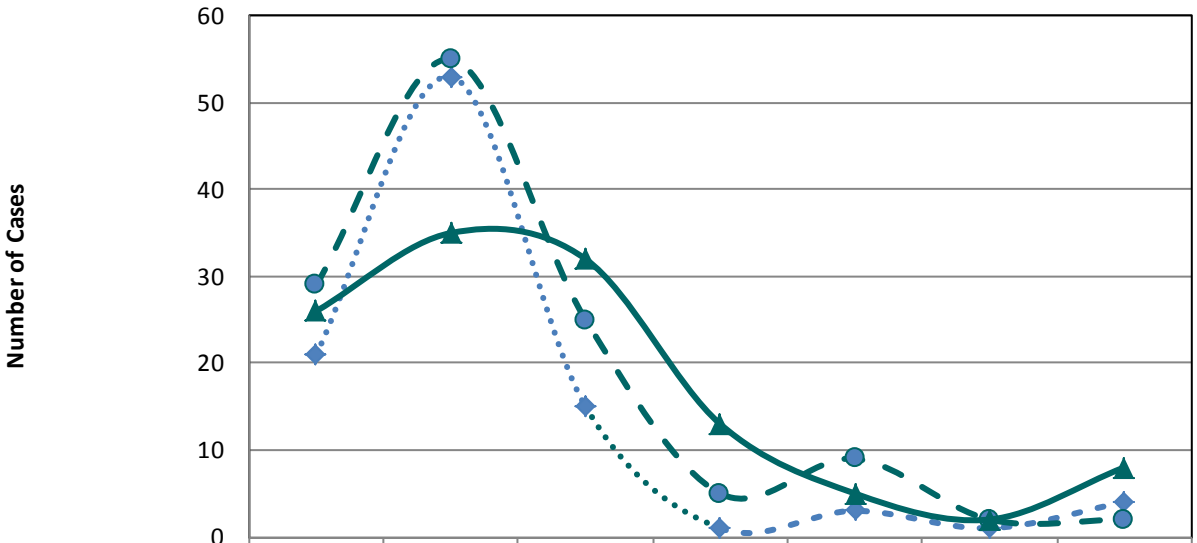
Figure 3.4: Number of Infectious Syphilis Cases in Alberta by Ethnicity (Self- defined), 2005 to 2013



Note: This excludes 'unknown'

In 2013, as in previous years, the largest proportion of infectious syphilis cases by known ethnicity was among Caucasians at 54 per cent (65/120 total cases). The proportion of Caucasian who infected with infectious syphilis in 2013 was lower than that in 2012 (54.2 percent vs 61.3 percent, respectively). Aboriginals represented the second highest proportion of cases. In 2013, the proportion of infectious syphilis cases reported as Aboriginal slightly dropped to 26 per cent (31/120 total) from 27 per cent in 2012 (33/124 total cases).

Figure 3.5: Number of Sexual Partners Identified by Newly Diagnosed Infectious Syphilis Cases in Alberta, 2011 and 2013



	0	1	2	3	4	5	> 5
2011 (N=98)	21	53	15	1	3	1	4
2012 (N=127)	29	55	25	5	9	2	2
2012 (N=121)	26	35	32	13	5	2	8

Note: Zero partners refer to cases where no information was obtained on sexual partners, i.e., client refused to provide information, health provider did not collect information, client had no identifying information for partner, etc.

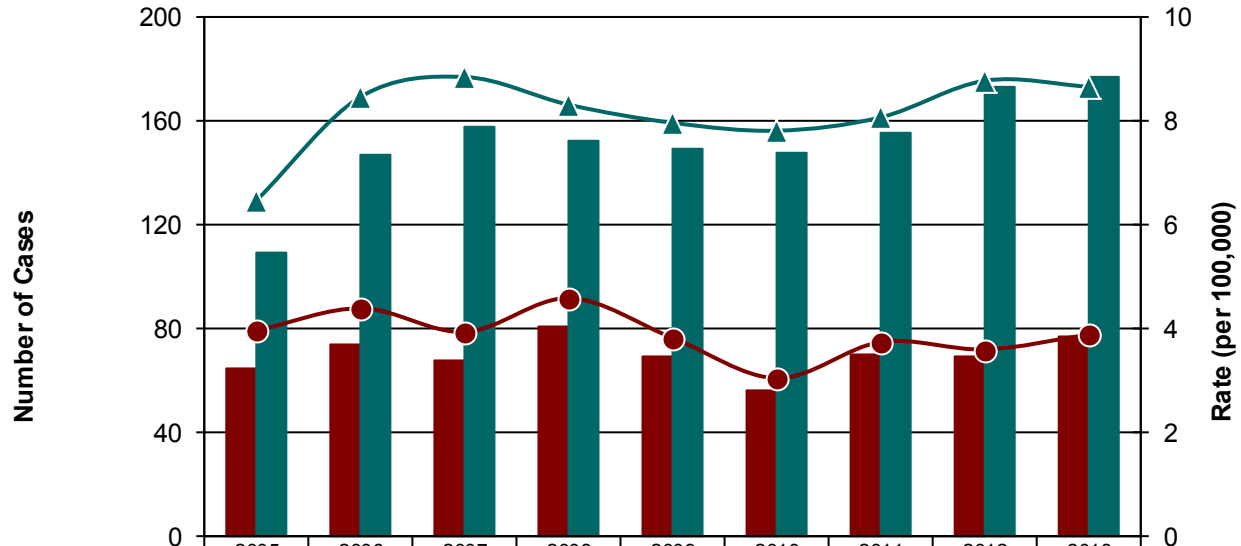
The proportion of cases where zero sexual partners were reported has remained consistent over the two reporting years; 21 per cent (21/98 cases) in 2011, 23 per cent (29/127 cases) in 2012, and 21 percent (26/121 cases) in 2013. The number of sexual partners per case decreased in 2013. In 2011, 54 per cent of syphilis cases (53/98 cases) reported one sexual partner, this deceased to 29 per cent (35/121 cases) in 2013. In 2013, the number of cases reporting two sexual partners increased to 26 per cent (32/121 cases) from 20 per cent (25/127 cases) in 2012. The proportion of cases who reported greater than two partners increased from nine per cent (9/98 cases) in 2011 to 14 per cent (18/127 cases) in 2012, then to 23 percent (28/121 cases) in 2013.

HIV

Human immunodeficiency virus (HIV), the cause of AIDS (Acquired Immunodeficiency Syndrome), was first recognized three years after AIDS was clinically observed in 1981. AIDS became reportable in Alberta 1983 and HIV reportable in 1998.

HIV is often associated with high-risk sexual and drug use behaviours. Immigration patterns to Alberta also affect the number of new cases found in the province. Immigrants, foreign workers, and refugees from HIV endemic countries (where a disease is present on a continuous basis) can increase the number of newly reported cases in Alberta.

Figure 4.1: Number and Crude Rate (per 100,000) of Newly Diagnosed HIV Cases in Alberta by Gender, 2005 to 2013

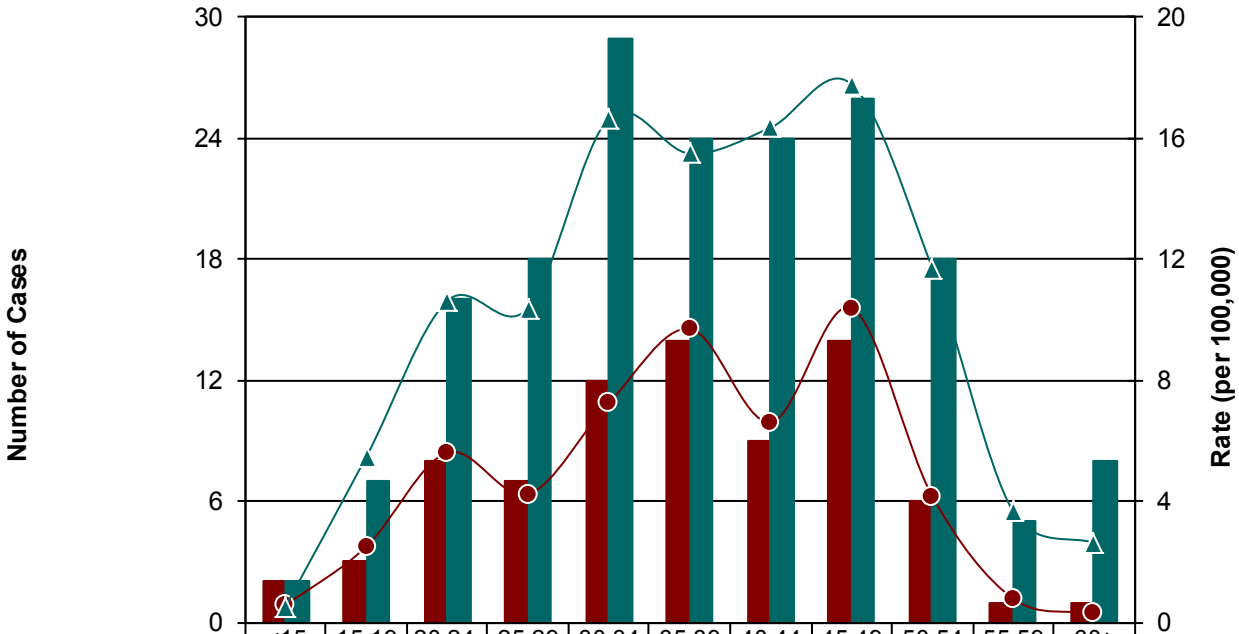


	2005 (N=174)	2006 (N=221)	2007 (N=226)	2008 (N=233)	2009 (N=218)	2010 (N=204)	2011 (N=225)	2012 (N=242)	2013 (N=255)
Female Cases	65	74	68	81	69	56	70	69	77
Male Cases	109	147	158	152	149	148	155	173	177
Female Rate	4.0	4.4	3.9	4.6	3.8	3.0	3.7	3.6	3.9
Male Rate	6.5	8.5	8.8	8.3	8.0	7.8	8.1	8.8	8.7

In 2013, there were 255 newly diagnosed cases of HIV in Alberta; the third year in a row that the number of HIV cases has increased. The provincial HIV rate was 6.3 cases per 100,000 persons in 2013, up slightly from 5.9 cases per 100,000 in 2011 and 6.2 cases per 100,000 persons in 2012.

HIV rates have historically been higher among males than females in Alberta. In 2013, the male rate was 8.7 cases per 100,000 males. The male rate and female rate have slowly increased since 2010. The female rate slightly increased from 3.6 cases per 100,000 in 2012 to 3.9 cases per 100,000 females in 2013.

Figure 4.2: Number of Newly Diagnosed HIV Cases and Age-Specific Rate (per 100,000) by Gender in Alberta, 2013 (n=255)



	<15	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
Female Cases	2	3	8	7	12	14	9	14	6	1	1
Male Cases	2	7	16	18	29	24	24	26	18	5	8
Female Rate	0.6	2.5	5.6	4.2	7.3	9.7	6.6	10.4	4.2	0.8	0.3
Male Rate	0.5	5.5	10.6	10.4	16.7	15.5	16.4	17.8	11.7	3.7	2.6

The age ranges of newly diagnosed HIV cases in 2013 were less than one to 60 years for females and from two to 64 years for males. There was 69.4 percent of cases (177/255 cases) being between 25 to 49 years. In all age groups the male rate exceeded the female rate, except for less than 15 years where the trend was reversed.

The highest HIV rates for females were among the 45 to 49 years age group with 10.4 cases per 100,000 females and the 35 to 39 years age group with 9.7 cases per 100,000 females. The highest HIV rates for males were among the 45 to 49 and 30 to 34 years age groups with 17.8 cases per 100,000 males and 16.7 cases per 100,000 males, respectively. There was also a high rate of 16.4 cases per 100,000 males among the 40 to 44 year old age group.

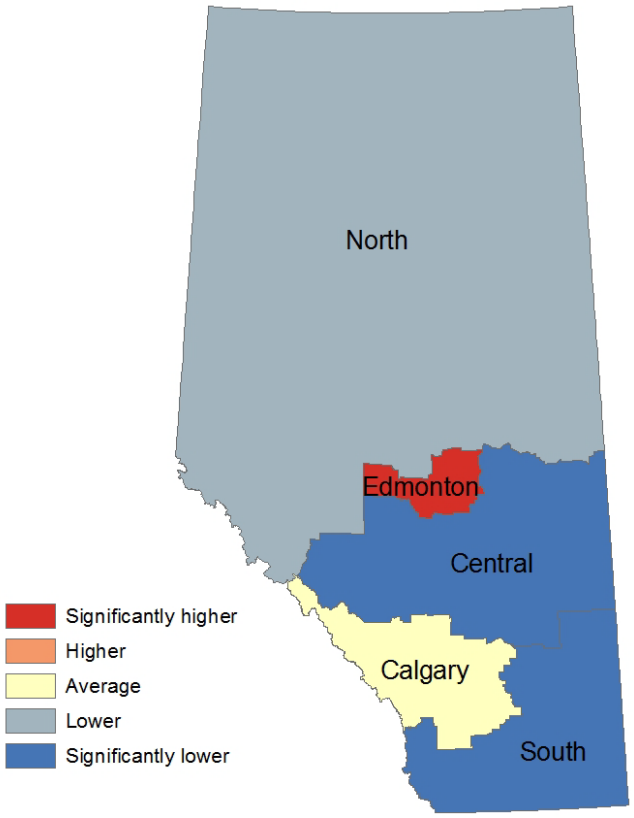
Figure 4.3: Newly Diagnosed HIV Crude Rate (per 100,000) by Alberta Health Zone, 2013

In 2013, the Edmonton Zone had the highest rate of HIV with 8.8 cases per 100,000 persons, followed by the Calgary zone with 6.3 cases per 100,000 persons and the North Zone with 5.1 cases per 100,000 persons. The lowest rate of HIV was in the Central Zone with 2.8 cases per 100,000 persons.

In previous years, the Edmonton and North zones have had the highest rates of HIV in the province. The 2013 HIV rate for most zones were similar to those in 2012, except for two health zones.

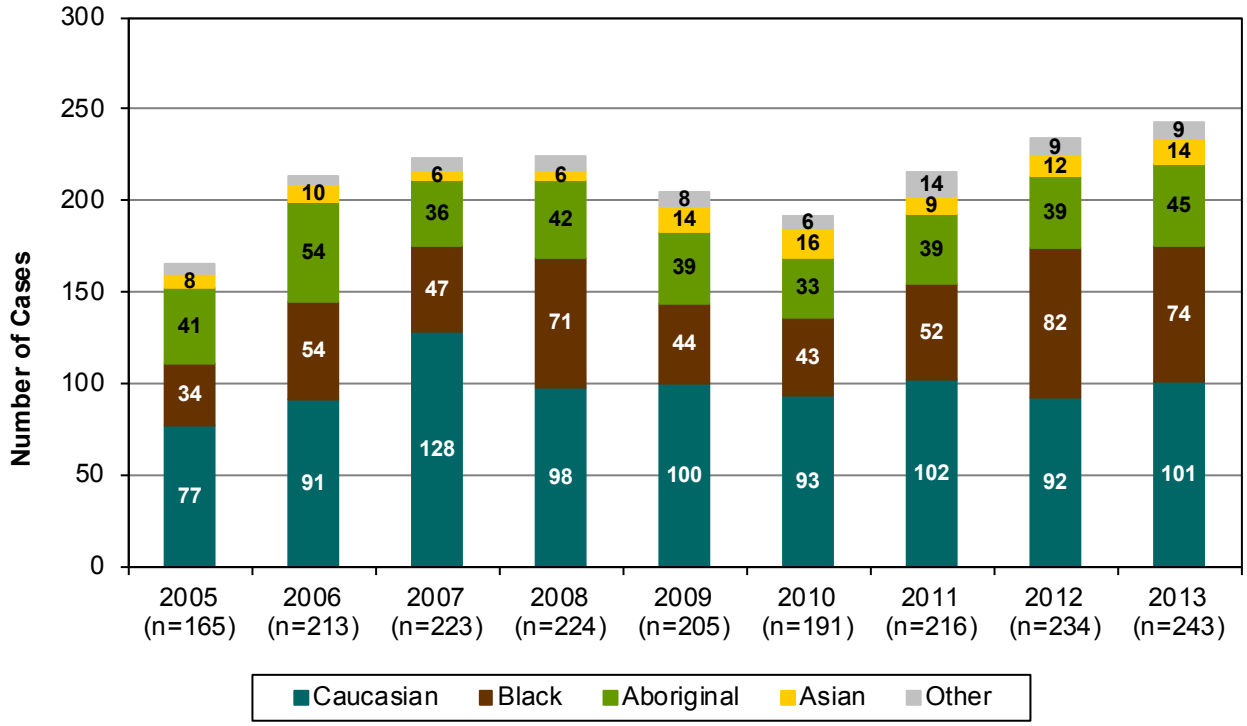
The rate for North Zone decreased from 6.5/100,000 persons to 5.1/100,000 persons in 2013 while the rate for the South Zone increased slightly to 3.7/100,000 persons from 2.7/100,000 persons in 2013. This is likely due to changing immigration patterns in Alberta.

In 2013, the Central, North, and South zones had HIV rates lower than the provincial rate of 6.3 cases per 100,000 persons.



Health Zone	2010		2011		2012		2013	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
North	17	3.9	17	3.8	30	6.5	24	5.1
Edmonton	85	7.3	98	8.2	105	8.6	112	8.8
Central	12	2.7	13	2.9	11	2.4	13	2.8
Calgary	83	6.0	86	6.1	88	6.0	95	6.3
South	7	2.4	11	3.8	8	2.7	11	3.7
ALBERTA	**204**	**5.5**	**225**	**5.9**	**242**	**6.2**	**255**	**6.3**

Figure 4.4: Number of Newly Diagnosed HIV Cases in Alberta by Ethnicity (Self-defined), 2005 to 2013



Note: This excludes 'unknown'

Figure 4.4 shows the proportion of newly diagnosed HIV cases with known ethnicity has changed over the past nine years. From 2005 to 2013, the Caucasian ethnic group has consistently represented the largest proportion of newly diagnosed HIV cases. The proportion ranged from a high of 57 per cent in 2007 (128/223 cases), to a low of 39 per cent in 2012 (92/234 cases), then increased slightly to 42 percent in 2013 (101/243 cases).

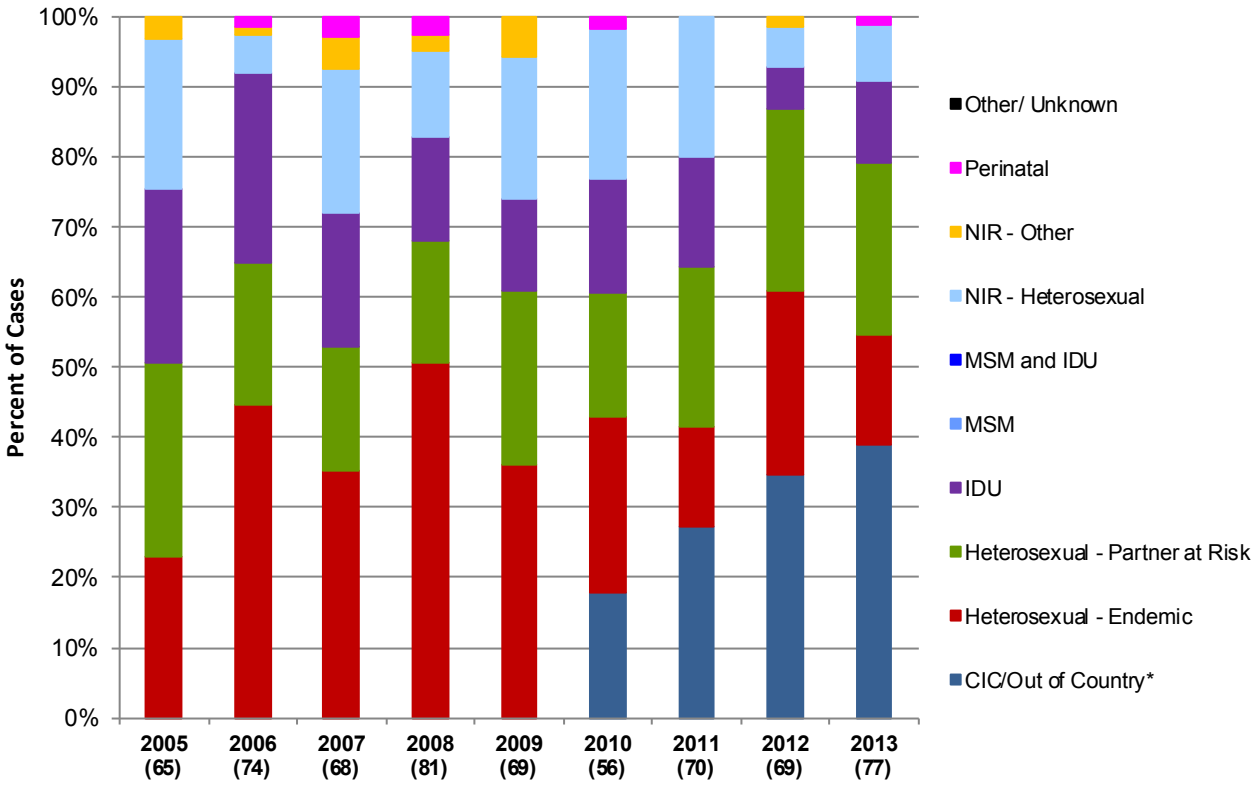
In 2005 and 2006, the second largest ethnic group of newly diagnosed HIV cases with known ethnicity was Aboriginal. Since 2007, the proportion of Aboriginals has decreased to become the third largest. In 2013, 19 per cent of newly identified HIV cases (45/243 cases) self-identified as Aboriginal.

From 2007 to 2013, the ethnic group with the second largest proportion of newly diagnosed HIV cases was Black. The proportion of newly diagnosed HIV cases in Alberta self-identified as Black decreased from 35 per cent (82/235 cases) in 2012 to 31 percent (74/243 cases) in 2013. There were twelve cases of HIV with unknown ethnicity in 2013.

HIV Risk Exposure

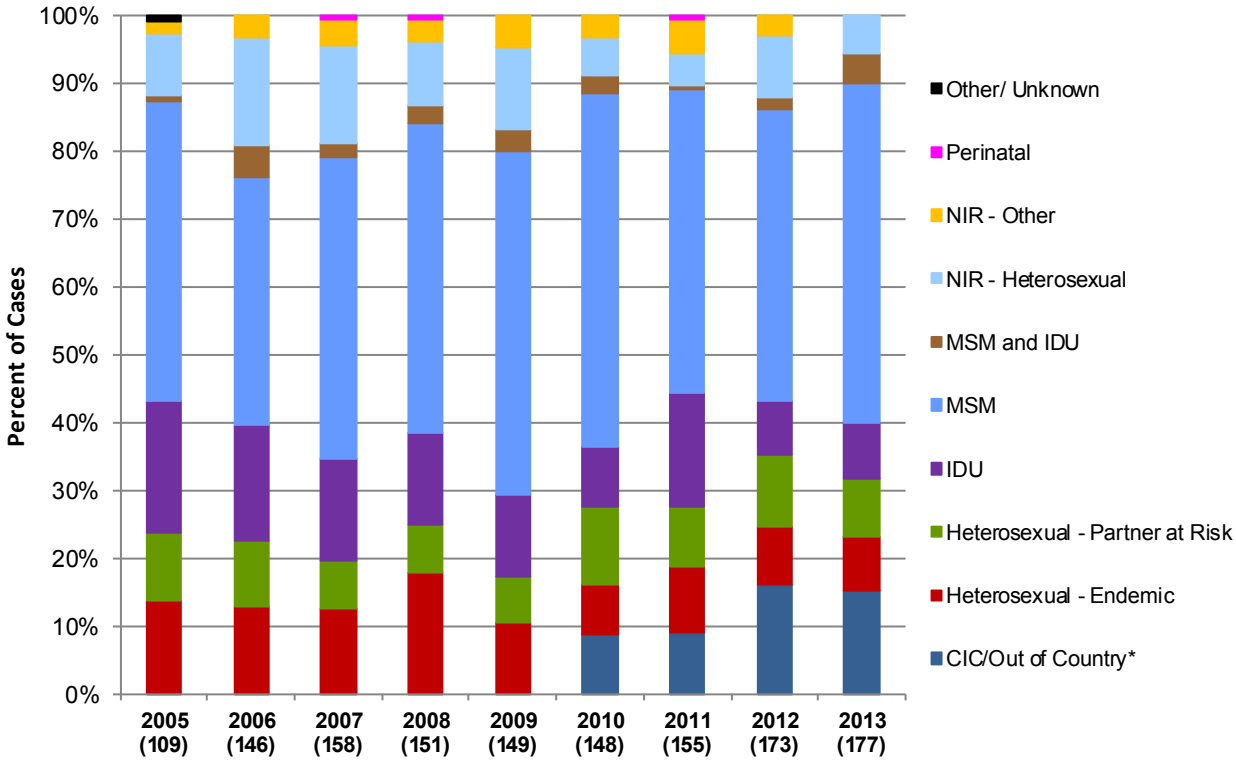
Since 2010, a new category for exposure called Citizenship and Immigration Canada/Out of Country (CIC/OOC) was added to the HIV data collection form. This represents cases that are identified upon entry to Canada and who acquired disease outside of Canada. Appendix 1 has the hierarchy of risk exposures applied to HIV cases. Figure 4.5a shows the proportion of CIC/OOC cases among females increased from 18 per cent in 2010 to 27 per cent in 2011, 35 percent in 2012, and to 39 per cent in 2013. Figure 4.5b shows that the CIC/OOC proportions for male cases were nine per cent in 2010 and 2011, 16 percent in 2012 and 15 per cent in 2013.

Figure 4.5a: Proportion of Newly Diagnosed HIV Cases in Alberta by Risk Exposure Category among Females, 2005 to 2013



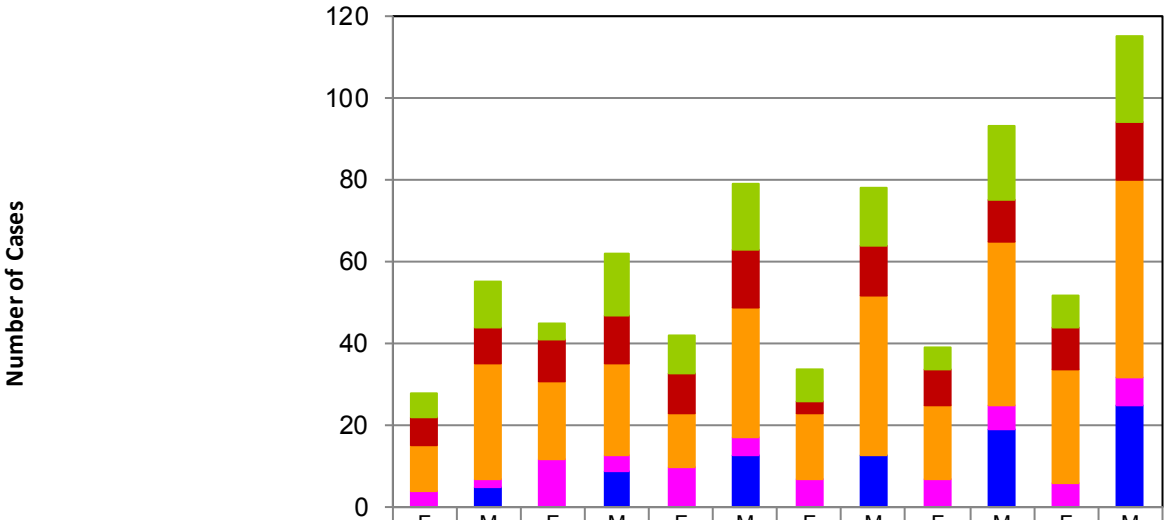
Immigration plays a large role among female HIV cases in Alberta. From 2006 to 2009, the most common risk exposure category for female cases was heterosexual endemic (i.e., individuals coming from an HIV endemic country and who are exposed to HIV via heterosexual contacts). For 2012 and 2013, the heterosexual endemic and CIC/OOC exposure groups represented 60.9 per cent and 54.6 per cent of all female cases, respectively. The proportion of female cases reporting injection drug use (IDU) behaviour decreased from 25 per cent in 2005 to six per cent in 2012, then increased to 12 percent in 2013.

Figure 4.5b: Proportion of Newly Diagnosed HIV Cases in Alberta by Risk Exposure Category among Males, 2005 to 2013



As in previous years, the most common risk exposure category for male cases was MSM. In 2013, 50 per cent of male cases reported in MSM. IDU as a risk factor among males has decreased over the years from a high of 19 per cent in 2005 to a low of nine per cent in 2013.

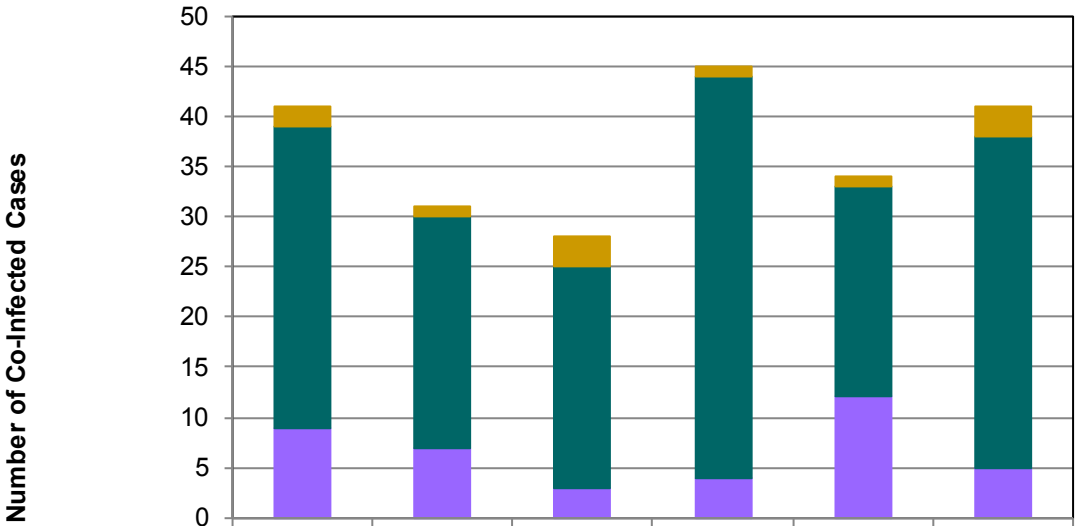
Figure 4.6: Number of Newly Diagnosed HIV Cases in Alberta by Encountered Risk Selection and Gender in Alberta, 2010 to 2013



	F 2008	M 2008	F 2009	M 2009	F 2010	M 2010	F 2011	M 2011	F 2012	M 2012	F 2013	M 2013
Sharing other drug paraphernalia	6	11	4	15	9	16	8	14	5	18	8	21
Sexual partner of intravenous drug user (IDU)	7	9	10	12	10	14	3	12	9	10	10	14
Sexual partner of a person with confirmed or suspected HIV/AIDS	11	28	19	22	13	32	16	39	18	40	28	48
Sex trade worker	4	2	12	4	10	4	7	0	7	6	6	7
Patron of sex worker	0	5	0	9	0	13	0	13	0	19	0	25

In 2013, 48 males with newly identified HIV reported having sex with a person with confirmed or suspected HIV/AIDS. This incidence has been increasing each year since 2008.

Figure 4.7: Number of Newly Diagnosed HIV Cases Co-Infected With Hepatitis B and/or Hepatitis C in Alberta, 2008 to 2013



	2008 (N=233)	2009 (N=218)	2010 (N=204)	2011 (N=225)	2012 (N=242)	2013 (N=255)
Co-Infected Hep B and C	2	1	3	1	1	3
Co-Infected Hep C	30	23	22	40	21	33
Co-Infected Hep B	9	7	3	4	12	5

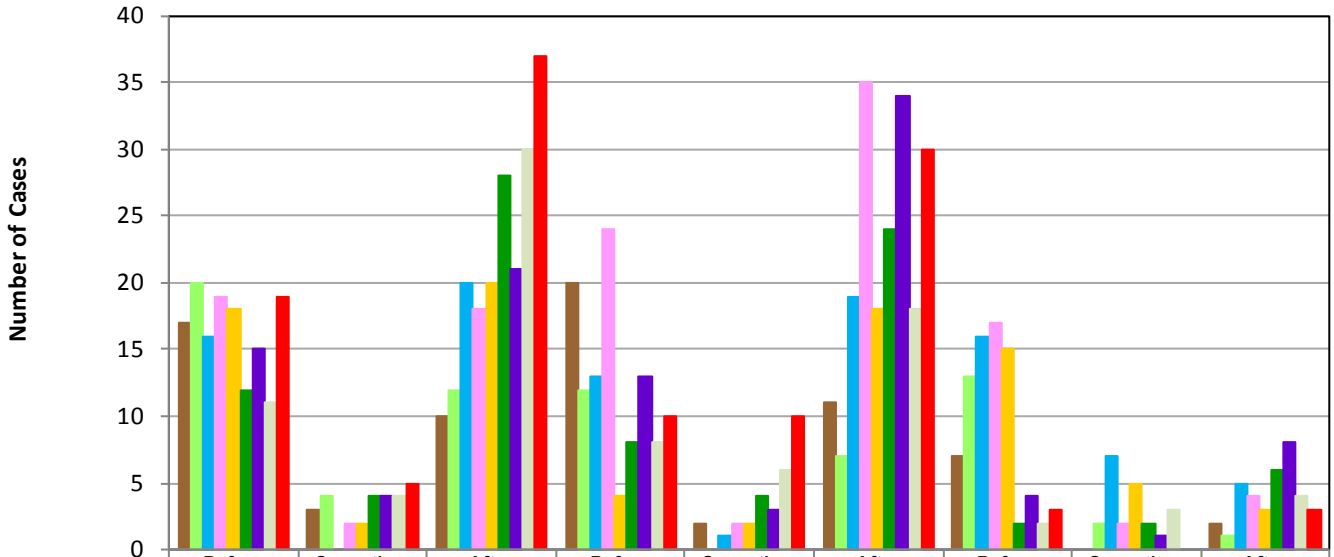
N = Total newly reported HIV cases

When examining Hepatitis B and C co-infection among newly diagnosed HIV cases, the highest proportion of co-infection occurs with the Hepatitis C virus. The proportion of HIV cases co-infected with Hepatitis C has varied over the past few years between 8.7-17.8 per cent. In 2013, 12.9 per cent of newly diagnosed HIV cases were co-infected with Hepatitis C.

The proportion of newly diagnosed HIV cases co-infected with Hepatitis B has varied between 1.5-5.0 per cent over the past few years. In 2013, two per cent of newly diagnosed HIV cases were co-infected with Hepatitis B.

Less than one per cent of cases were co-infected with both Hepatitis B and C between 2008 and 2012, except 2010 (1.5 percent). There was 1.2 percent of newly diagnosed HIV reported cases of individuals co-infected with both Hepatitis B and C in 2013.

Figure 4.8: Number of Newly Diagnosed HIV Cases Infected with and Timing of Chlamydia, Gonorrhea, or Infectious Syphilis in Alberta, 2005 to 2013



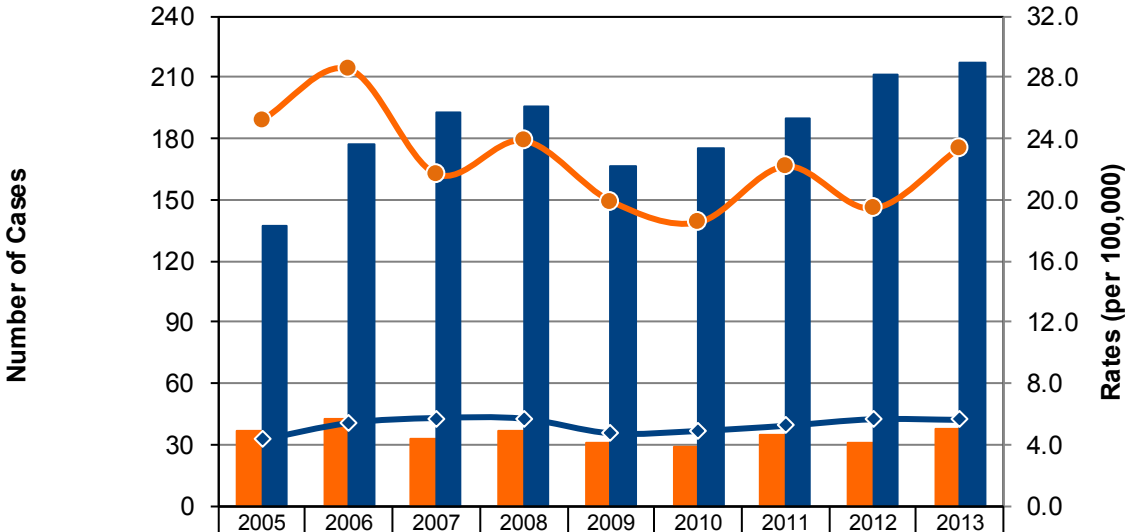
	Chlamydia			Gonorrhea			Infectious Syphilis		
	Before	Same time	After	Before	Same time	After	Before	Same time	After
2005 (N=174)	17	3	10	20	2	11	7	0	2
2006 (N=221)	20	4	12	12	0	7	13	2	1
2007 (N=226)	16	0	20	13	1	19	16	7	5
2008 (N=233)	19	2	18	24	2	35	17	2	4
2009 (N=218)	18	2	20	4	2	18	15	5	3
2010 (N=204)	12	4	28	8	4	24	2	2	6
2011 (N=225)	15	4	21	13	3	34	4	1	8
2012 (N=242)	11	4	30	8	6	18	2	3	4
2013 (N=255)	19	5	37	10	10	30	3	0	3

The number of people with HIV infected with an STI *after* their HIV diagnosis has increased, suggesting that unsafe sexual practices are occurring in some HIV positive populations. In the mid-2000s, the majority of individuals received their chlamydia, gonorrhea, or infectious syphilis diagnosis before or at the same time as their HIV diagnosis. This trend has reversed since 2007 such that individuals with dual diagnoses in 2013 were almost twice as likely to have been diagnosed with chlamydia, gonorrhea or infectious syphilis after their HIV diagnosis.

In the past nine years, the majority of newly diagnosed HIV cases infected with chlamydia or gonorrhea were infected after their HIV diagnosis. The majority of newly diagnosed HIV cases with infectious syphilis were infected with syphilis before their HIV infection. A small number of HIV cases were infected with chlamydia, gonorrhea or infectious syphilis at the same time as their HIV diagnosis.

HIV among First Nations in Alberta

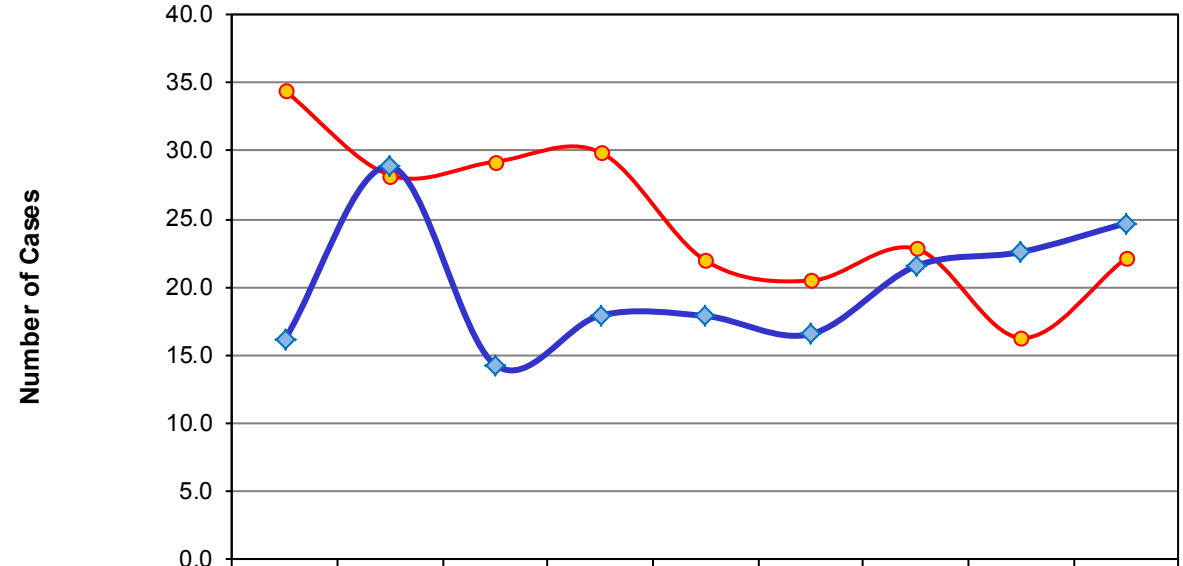
Figure 4.9: Number of Newly Diagnosed HIV Cases and Crude Rate (per 100,000) of First Nations vs. Non-First Nations in Alberta by Year of Diagnosis, 2005 to 2013



	2005	2006	2007	2008	2009	2010	2011	2012	2013
FN Cases	37	43	33	37	31	29	35	31	38
Non-FN Cases	137	177	193	196	167	175	190	211	217
FN Rate	25.2	28.5	21.7	23.9	19.9	18.5	22.2	19.4	23.4
Non-FN Rate	4.3	5.4	5.7	5.7	4.7	4.9	5.2	5.7	5.6

As in previous years, the rate of HIV has consistently been higher among First Nation populations (FN) than for Non-First Nation populations (Non-FN). In 2013, the FN rate was 23.4 per 100,000 FN persons which were 4.2 times higher than rates in Non-FN populations in 2013.

Figure 4.10: Crude Rate of Newly Diagnosed HIV Cases for First Nations (per 100,000) in Alberta by Sex and Year of Diagnosis, 2005 to 2013



	2005	2006	2007	2008	2009	2010	2011	2012	2013
FN Female Rate	34.4	28.2	29.2	29.9	22.0	20.5	22.8	16.3	22.1
FN Male Rate	16.2	28.9	14.3	17.9	17.9	16.6	21.6	22.6	24.7

The rate of HIV for FN females has decreased over the past eight years; this rate is higher than for non-First Nation females. In 2013, the rate of HIV for FN increased to 22.1 cases per 100,000 FN females from the lowest rate of 16.3 cases per 100,000 FN females in 2012. In contrast, the male HIV rate among FNs has been on an upward trend; in 2013, the rate was 24.7 cases per 100,000 FN males.

Appendix A: HIV Hierarchy

1. **CIC/Out of Country (OOC):** Cases who test positive prior to or on admission to Canada.
2. **Perinatal:** Perinatal cases (baby must be born in Canada).
3. **MSM and MSM/IDU and IDU:** Cases with either MSM or IDU identified as risk factors. If MSM and IDU then the cases is MSM/IDU.
4. **Occupational Exposure**: Occupationally exposed to HIV contaminated blood or body fluids-In Canada.
5. **Heterosexual Endemic:** Case from an endemic country and heterosexual contact with a person from an endemic country.
6. **Heterosexual Partner at Risk:** Sexual partner of an IDU, sexual partner of a confirmed/suspected HIV or AIDS positive individual, sexual assault, patron of a sex worker, sex worker and sexual partner from an endemic country.
7. **NIR-Heterosexual:** Heterosexual contact, anonymous partner.
8. **NIR-Other:** Sharing drug paraphernalia (not needles), non-medical or occupational exposure,

