Health Status Report

2010 - 2015

Communicable Diseases

NORTHERN INTER-TRIBAL HEALTH AUTHORITY

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Chapter 5
Communicable Diseases

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Key Findings

- Between 2010 and 2015, chlamydia and gonorrhea infection were the most commonly reported notifiable disease (66%) followed by methicillin resistance staphylococcus aureus (MRSA) (23%) in NITHA.
- The rates of newly reported **HIV** for NITHA population increased by 71% from 28.5 cases per 100,000 population in 2010 to 48.7 per 100,000 population in 2015.
- The reported **HCV** incidence rates increased by 31% from 98.2 cases per 100,000 population in 2010 to 129 per 100,000 population in 2015. By comparison the NITHA reported HCV incidence rates was 2 times higher than the Saskatchewan rate and 4.2 times higher than the national rate in 2015.
- Age-specific incidence rates in NITHA for both **chlamydia and gonorrhea** were higher in the 20-29year age groups.
- The reported rates of active **TB** decreased by 30% from 120 cases per 100,000 population in 2010 to 83.1 per 100,000 population in 2015.
- The reported **enteric diseases** incidence rates increased from 50.7 per 100,000 population in 2010 to 68.8 per 100,000 population in 2015.
- Between 2010 and 2015, there were 94 newly **vaccine- preventable diseases** cases in NITHA. The most reported vaccine-preventable disease was pertussis (94%).
- **Dog bites** account for 92.10% of all animal bites in the NITHA partnership. These bites most often involved males (58%) under the age of 14 years. The number of reported bites has increased over the time period of 2010-2015 by 50.5 %.

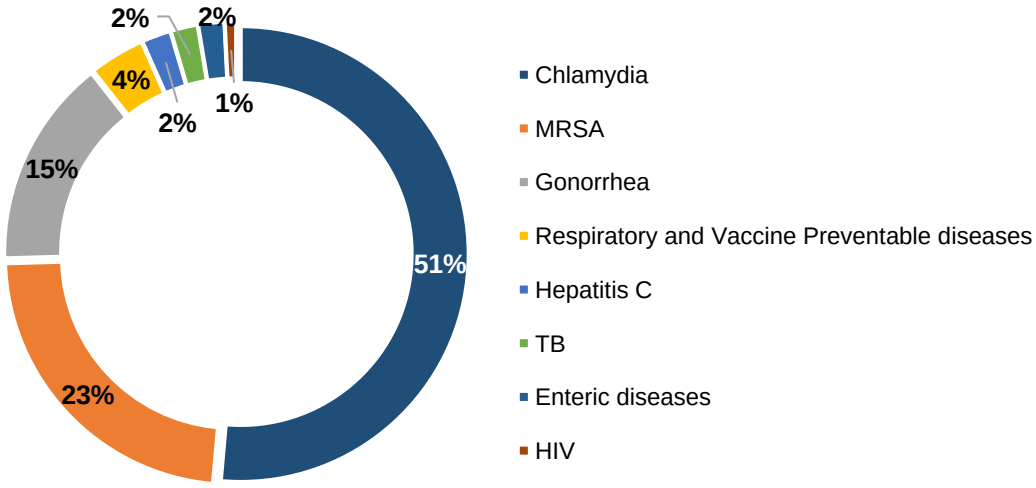
Communicable (Notifiable) Diseases

The Communicable Disease chapter examines the reported rates of sexually transmitted infections (STI), bloodborne pathogens (BBP), tuberculosis (TB), and other notifiable diseases such as methicillin-resistant staphylococcus aureus (MRSA), enteric diseases, vaccine-preventable diseases, disease transmitted by respiratory routes and animal bites for registered First Nations population living on-reserve within Northern Inter Tribal Health Authority (NITHA) jurisdiction for the time period 2010 to 2015.

The goal of this chapter is to highlight the epidemiology and burden of reportable diseases in NITHA communities. This would enable decision makers and program planners to develop programs and policy to reduce diseases and identify areas where more resources and support are needed.

Between 2010 and 2015, chlamydia was the most common reported notifiable diseases (51%) in NITHA followed by MRSA (23%) (Figure 5.1). More information on specific disease is found in the following sections.

Figure 5.1: Proportion of reported notifiable diseases, NITHA, 2010-2015



Bloodborne Pathogens

Human Immunodeficiency Virus

The human immunodeficiency virus (HIV) is an infection of the immune system that results in a chronic illness and makes an individual more susceptible to other infections and cancers. If untreated, it can develop to acquire immunodeficiency syndrome (AIDS) over time. AIDS is a condition in humans in which progressive failure of the immune system allows life-threatening opportunistic infections and cancers to thrive[1].

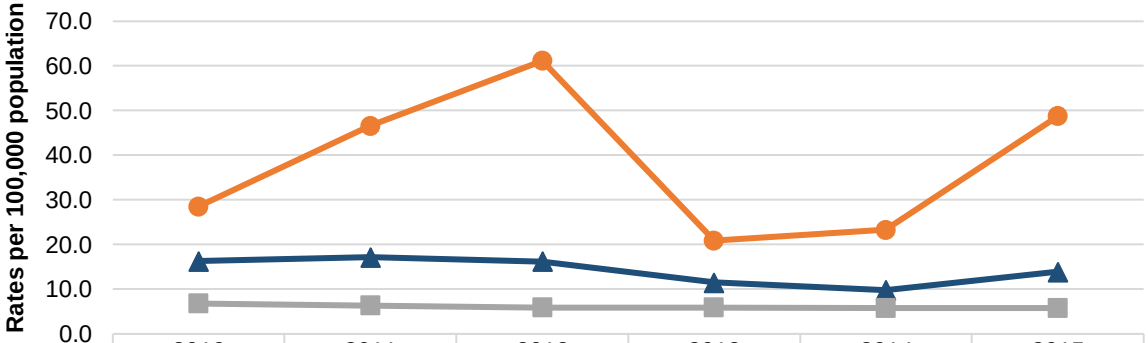
HIV is transmitted primarily via unprotected sexual intercourse, contaminated blood transfusions, hypodermic needles, or from mother to child during pregnancy, delivery, or breastfeeding[1].

[1] Public Agency pf Canada (2017).Human Immunodeficiency Virus Infections - Section 5 - Management and Treatment of Specific Infections - Canadian Guidelines on Sexually Transmitted Infections.Phac-aspc.gc.ca. Retrieved 10 July 2017, from http://www.phac-aspc.gc.ca/std-mts/sti-its/cgsti-ldcits/section-5-8-eng.php

Between 2010 and 2015, the newly diagnosed HIV cases in NITHA population were 76 cases (39% were females and 61% were males). The reported HIV incidence rates for NITHA population increased from 28.5 cases per 100,000 population in 2010 to 61.1 per 100,000 population in 2012. The rate fell dramatically to 23.3 per 100, 000 population in 2014 and increased again to 48.7 cases per 100,000 population in 2015 (Figure 5.2).

Despite a decrease in the rate of HIV in NITHA, it is still higher than that of Saskatchewan and Canada. By comparison, the NITHA HIV rates remained approximately 3.5 times higher than the provincial and 8.4 times higher than the national rates in 2015 (Figure 5.2).

Figure 5.2: HIV incidence rates, NITHA, Saskatchewan and Canada, by year, 2010 - 2015

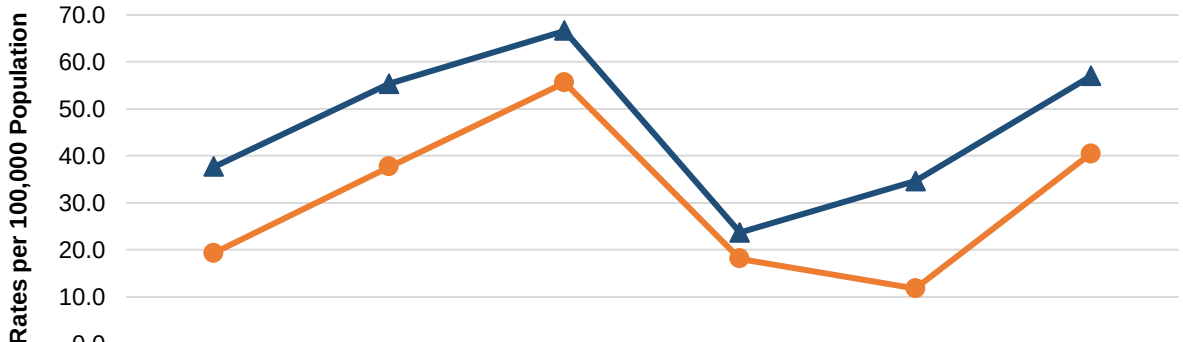


	2010	2011	2012	2013	2014	2015
NITHA	28.5	46.6	61.1	20.9	23.3	48.7
SK	16.3	17.2	16.2	11.5	9.8	13.9
Canada	6.8	6.4	5.9	5.9	5.8	5.8

Reported Year

Between 2010 and 2015, the reported HIV incidence rate for males and females show similar trends (Figure 5.3). All through the period, males had higher incidence rates than females (Figure 5.3).

Figure 5.3: HIV incidence rates by gender, NITHA, 2010 - 2015

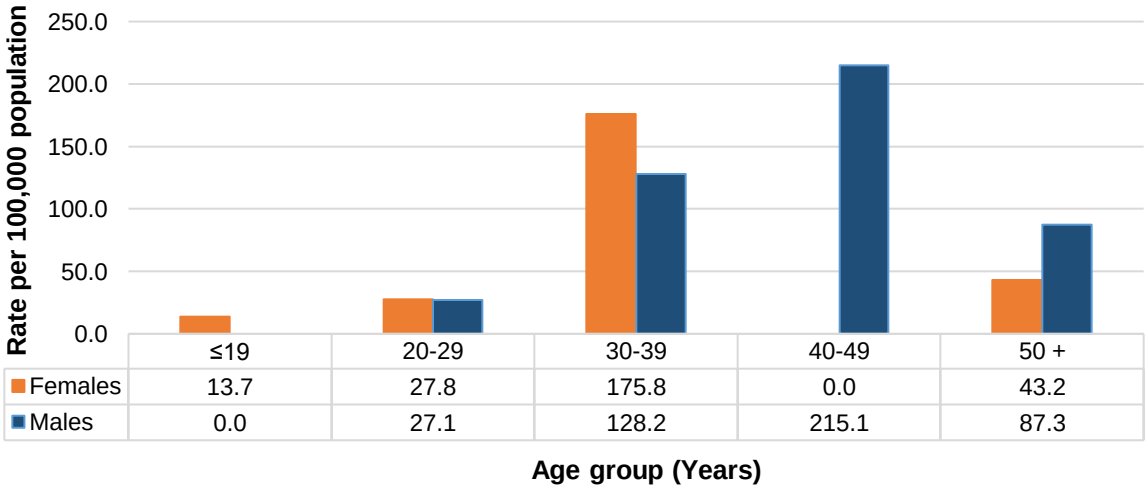


	2010	2011	2012	2013	2014	2015
Female	19.2	37.7	55.6	18.1	11.7	40.4
Male	37.6	55.3	66.6	23.7	34.6	56.9

Reported Year

In 2015, males aged 40-49 years represented the highest reported rates of HIV (215.1 per 100,000 population). Among females, those in the 30-39 years old age group had the highest rates of newly diagnosed HIV infection (175.8 per 100,000 population) (Figure 5.4).

Figure 5.4: HIV incidence rates by selected age group and gender, NITHA, 2015



	≤19	20-29	30-39	40-49	50 +
Females	13.7	27.8	175.8	0.0	43.2
Males	0.0	27.1	128.2	215.1	87.3

Hepatitis C Virus

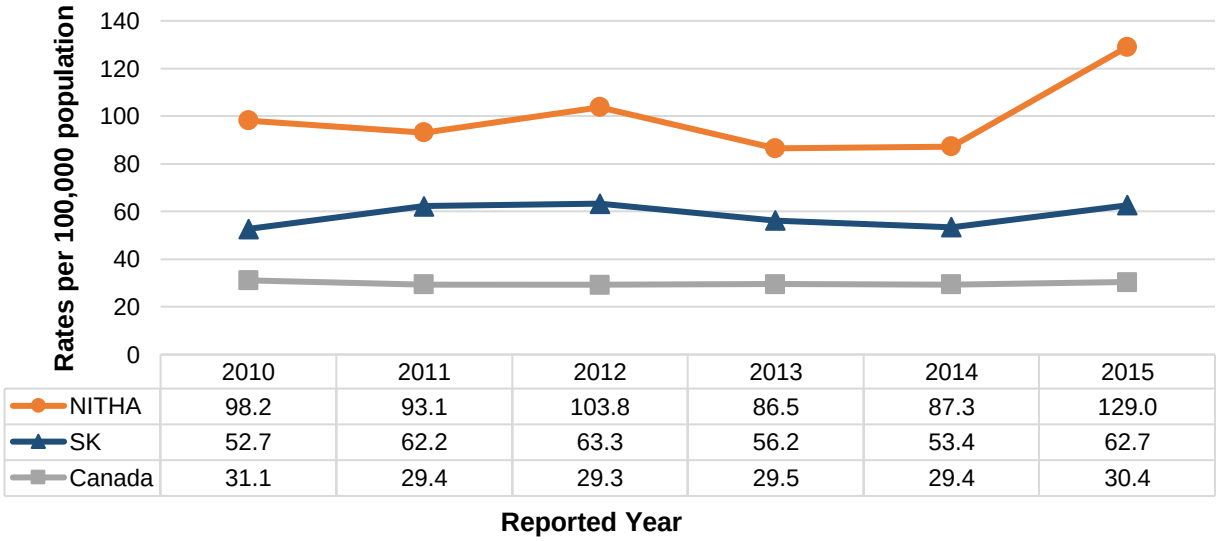
Hepatitis C Virus (HCV) is a viral infection carried in the blood that can be spread through exposure to blood or blood products infected with HCV such as, sharing needles and other injection drug use, poorly sterilized medical equipment, sexual behavior and transfusion of blood and blood products[2].

Between 2010 and 2015, there were 198 newly diagnosed HCV cases reported in NITHA (46% were females and 54% were males). For NITHA, the reported HCV incidence rates were slightly decreased from 98.2 cases per 100,000 population in 2010 to 87.3 per population in 2014 (Figure 5.5). In 2015, the reported HCV rates increased sharply to 129 per 100,000 population (Figure 5.5).

Between 2012 and 2015, the reported HCV incidence rates in NITHA were higher than that in both Saskatchewan and Canada (Figure 5.5). By comparison the NITHA reported HCV incidence rates was 2 times higher than the Saskatchewan rate and 4.2 times higher than the national rate in 2015 (Figure 5.5).

[2] Public Health Agency of Canada (2012). Hepatitis C fact sheet. Retrieved from : http://www.phac-aspc.gc.ca/hcai-iamss/bbp-pts/hepatitis/hep_c-eng.php

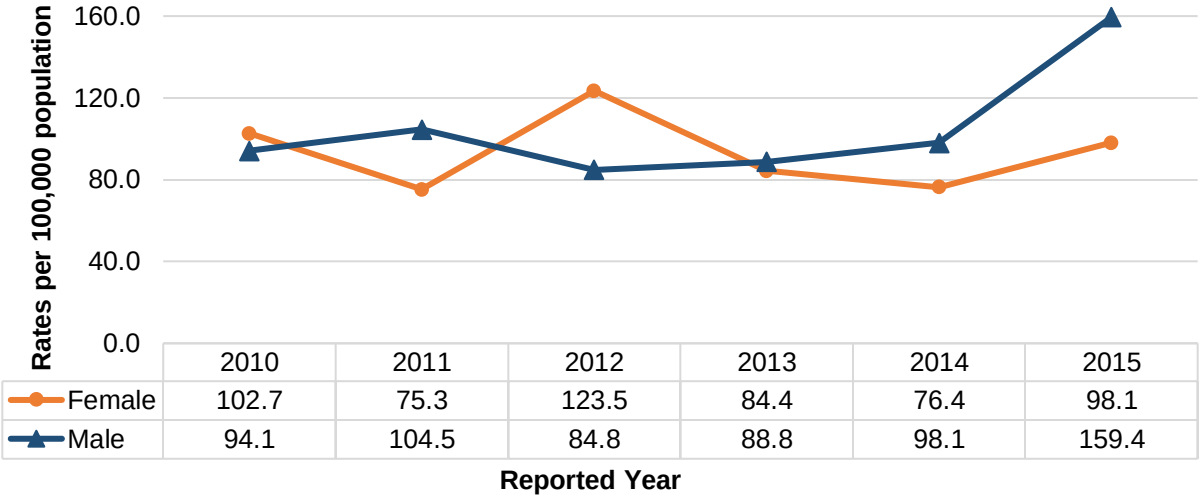
Figure 5.5: Hepatitis C incidence rates by year, NITHA, Saskatchewan and Canada, 2010-2015



	2010	2011	2012	2013	2014	2015
NITHA	98.2	93.1	103.8	86.5	87.3	129.0
SK	52.7	62.2	63.3	56.2	53.4	62.7
Canada	31.1	29.4	29.3	29.5	29.4	30.4

Between 2010 and 2015, the reported HCV incidence rates for males increased from 94.1 cases per 100,000 population in 2010 to 159.4 per 100,000 population in 2015 (Figure 5.6). The reported HCV rates for females decreased slightly from 102.7 per 100,000 population in 2010 to 98.1 per 100,000 in 2015 (Figure 5.6).

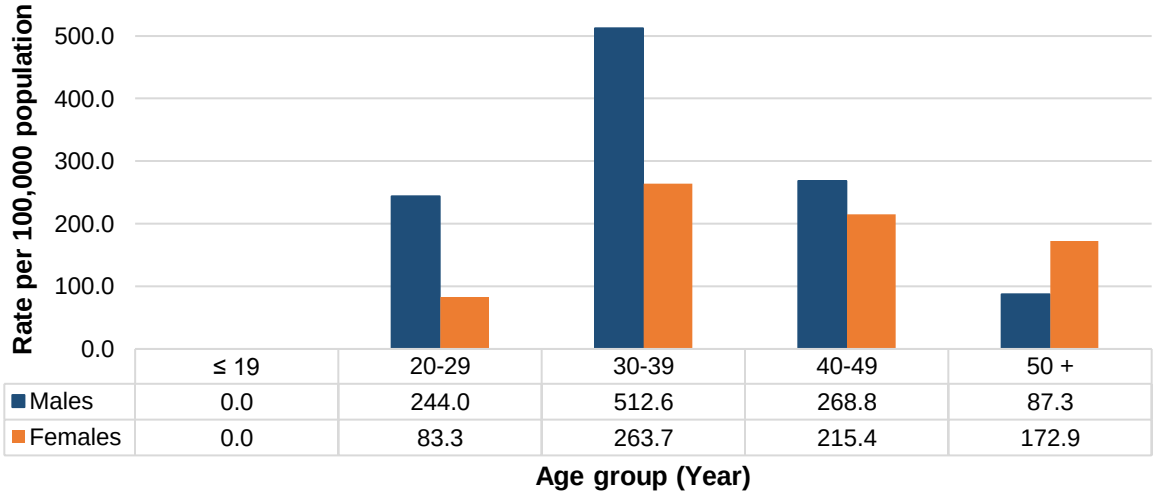
Figure 5.6: Hepatitis C incidence rates by gender and year, NITHA, 2010 - 2015



	2010	2011	2012	2013	2014	2015
Female	102.7	75.3	123.5	84.4	76.4	98.1
Male	94.1	104.5	84.8	88.8	98.1	159.4

In 2015, the reported HCV incidence rates for males in all age group (except over 50 years old age group) were higher compared to females. In 2015, for both females and males, the highest reported HCV rates were in 30-39 years age group (512 per 100,000 population for males and 263 per 100,000 population for females) (Figure 5.7).

Figure 5.7: Hepatitis C incidence rates by age group and gender, NITHA, 2015



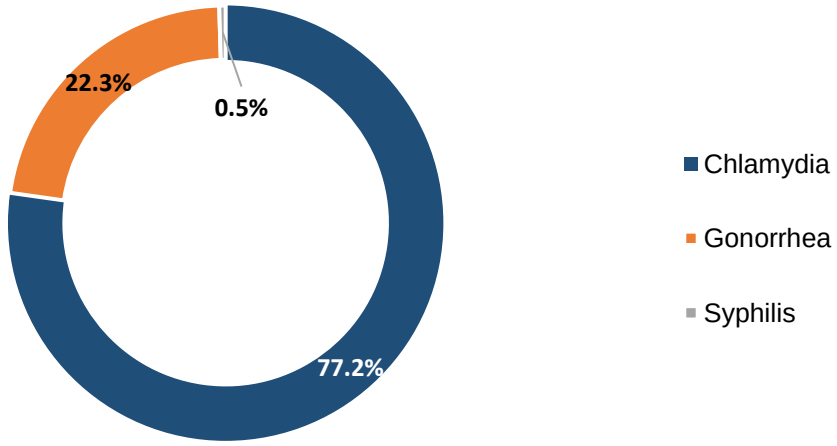
	≤ 19	20-29	30-39	40-49	50 +
Males	0.0	244.0	512.6	268.8	87.3
Females	0.0	83.3	263.7	215.4	172.9

Sexually Transmitted Infections

Sexually transmitted infections (STI) are preventable but continue to be a significant public health issue across Canada. Reported rates of chlamydia, gonorrhea and infectious syphilis have been rising since 1990 across Canada[3].

STIs are one of the important health issues for NITHA population as they are accounted for 68% of reported communicable diseases for the period under review (Figure 5.1). Between 2010 and 2015, there were 6340 reported STI cases in NITHA population. The most commonly reported STI was chlamydia (77.2%) followed by gonorrhea (22.3%) and syphilis (0.5%) (Figure 5.8).

Figure 5.8: Percentage of sexually transmitted infections, NITHA, 2010-2015



[3] Public Health Agency of Canada (2013). The Chief Public Health Officer's Report on the State of Public Health in Canada, Infectious Disease—the Never-ending Threat. Retrieved from: http://www.phac-aspc.gc.ca/cphorsphc-respcacsp/2013/sti-its-eng.php

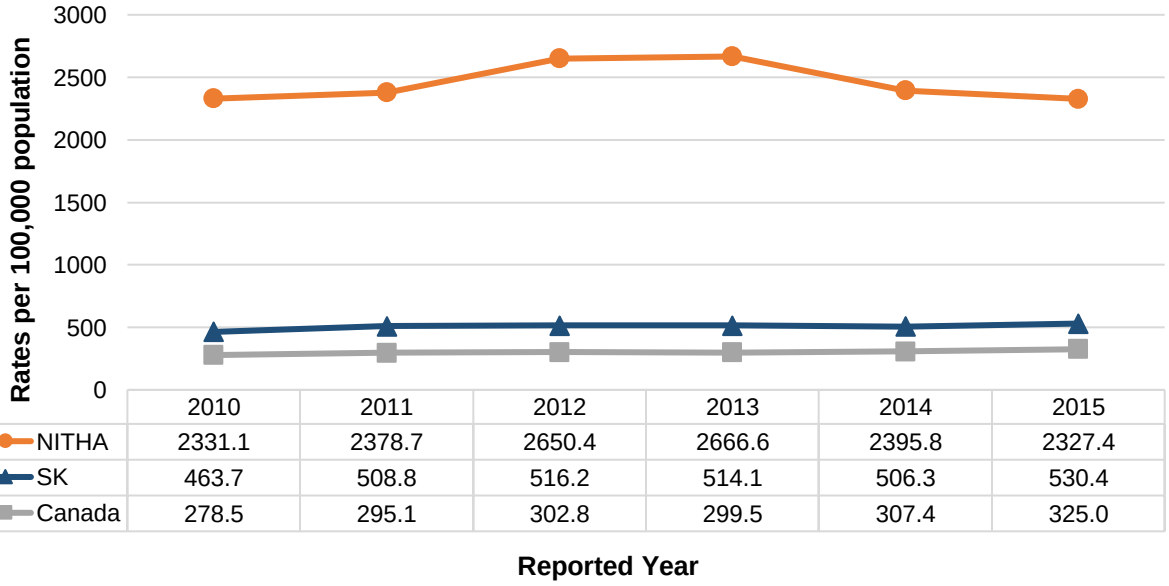
Chlamydia

Chlamydia is the most commonly reported bacterial STI in both men and women in Canada[3]. Chlamydia can be transmitted through sexual contact with an infected individual or through vertical transmission from infected mothers to their newborns. Infection with chlamydia is frequently asymptomatic, which can increase the risk of transmission and lead to delay in timely diagnosis and treatment. Untreated Chlamydia can cause serious and permanent health problems, including pelvic inflammatory disease and infertility in women[3].

Between 2010 and 2015, there were 4896 newly reported chlamydia cases in NITHA (70% females and 30 % males). It is important to note that females are more frequently screened for chlamydia through prenatal care or contraception services which may result in a higher number of reported cases compared to males.

The incidence rates of chlamydia in NITHA steadily increased from 2331.1 cases per 100,000 population in 2010 to 2666.6 per 100,000 population in 2013 (Figure 5.9). In 2015 the rate decreased to 2327.4 per 100,000 population (Figure 5.9). By comparison the NITHA reported chlamydia incidence rates was 4.4 times higher than the Saskatchewan rates and 7 times higher than the national rates in 2015 (Figure 5.9).

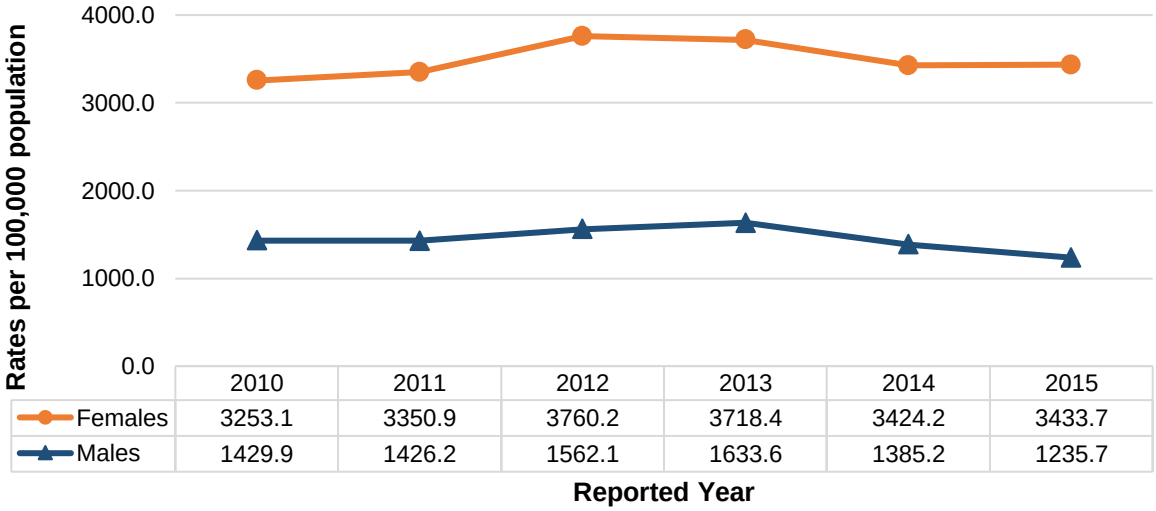
Figure 5.9: Chlamydia incidence rates by year, NITHA, Saskatchewan, Canada, 2010 – 2015



	2010	2011	2012	2013	2014	2015
NITHA	2331.1	2378.7	2650.4	2666.6	2395.8	2327.4
SK	463.7	508.8	516.2	514.1	506.3	530.4
Canada	278.5	295.1	302.8	299.5	307.4	325.0

Between 2010 and 2015, the reported chlamydia incidence rates for both females and males had a similar pattern with females' rate being consistently 2 times higher than those in males (Figure 5.10).

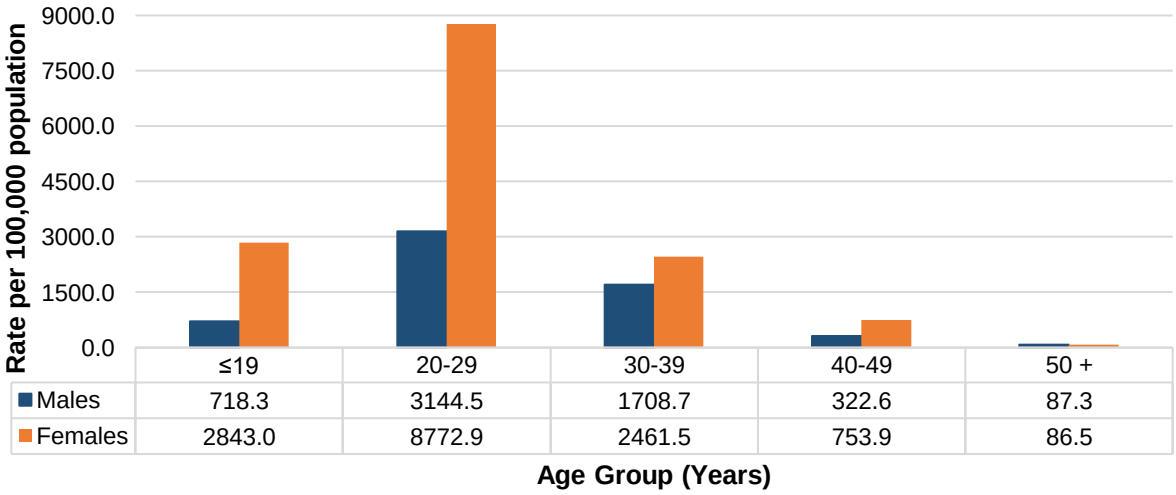
Figure 5.10: Chlamydia incidence rates by gender and year, NITHA, 2010 – 2015



	2010	2011	2012	2013	2014	2015
Females	3253.1	3350.9	3760.2	3718.4	3424.2	3433.7
Males	1429.9	1426.2	1562.1	1633.6	1385.2	1235.7

In 2015, females aged 20-29 years represented 39% of total reported chlamydia cases in NITHA – a rate of 8772.9 per 100,000 population (Figure 5.11). Males aged 20-29 years represented 14% of all reported chlamydia cases – a rate of 3144.5 per 100,000 population in 2015 (Figure 5.11).

Figure 5.11: Chlamydia incidence rates by age group and gender, NITHA, 2015



	≤19	20-29	30-39	40-49	50 +
Males	718.3	3144.5	1708.7	322.6	87.3
Females	2843.0	8772.9	2461.5	753.9	86.5

Gonorrhea

Gonorrhea is the second most commonly reported STI in Canada. Like Chlamydia, gonorrhea is a STI that can be transmitted through sexual contact with an infected individual or from an infected mother to her newborn[4]. Symptoms of gonorrhea are common in men, while in women it is often

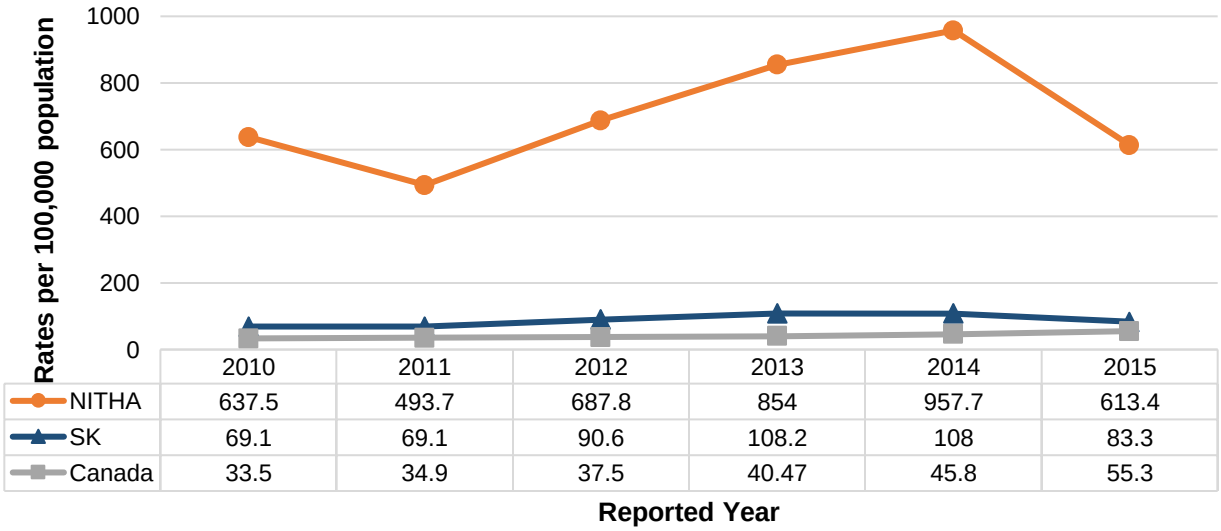
[4] Health Canada, (2015). First Nations Health Status report 2012, Saskatchewan regions. Retrieved from: http://publications.gc.ca/collections/collection_2015/sc-hc/H34-293-2015-eng.pdf

asymptomatic. If left untreated, gonorrhea infection can cause serious and permanent health problems such pelvic inflammatory disease, infertility and ectopic pregnancy[3].

Between 2010 and 2015, there were 1414 newly reported gonorrhea cases in NITHA (61 % females and 39% males). The reported gonorrhea incidence rates in NITHA increased from 637.5 cases per 100,000 population in 2010 to 957.7 per 100,000 population in 2014 (Figure 5.12). The rate decreased to 613.4 per 100,000 population in 2015 (Figure 5.12).

In 2015, the rates of reported gonorrhea for NITHA was 7.4 times higher than the Saskatchewan rate and 11 times higher than the national rate (Figure 5.12).

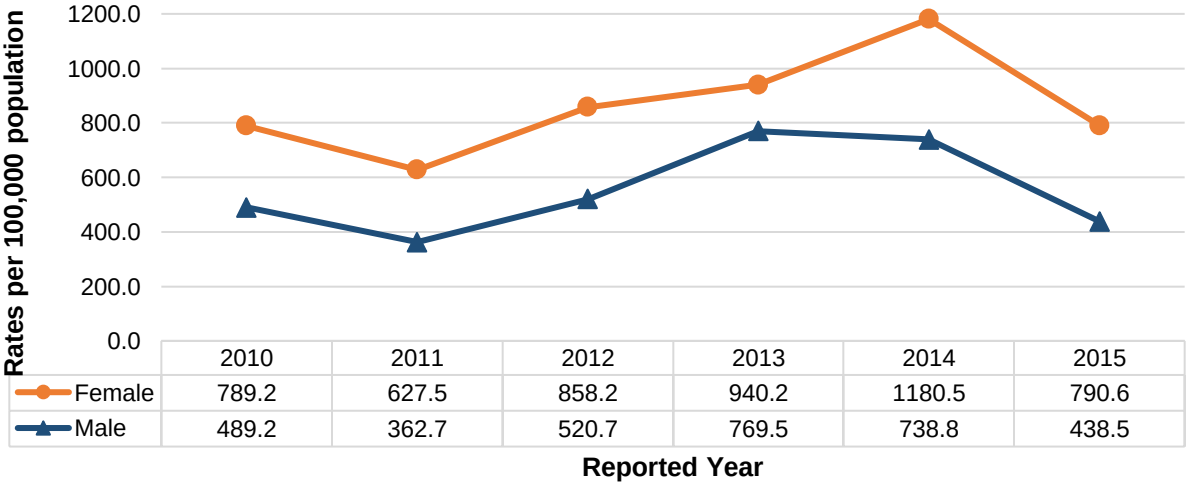
Figure 5.12: Gonorrhea incidence rates by years, NITHA, Saskatchewan, Canada, 2010 – 2015



	2010	2011	2012	2013	2014	2015
NITHA	637.5	493.7	687.8	854	957.7	613.4
SK	69.1	69.1	90.6	108.2	108	83.3
Canada	33.5	34.9	37.5	40.47	45.8	55.3

Between 2010 and 2015, the reported gonorrhea incidence rates for females and males had a similar patterns with females' rate being around 1.5 times higher than those in males (Figure 5.13).

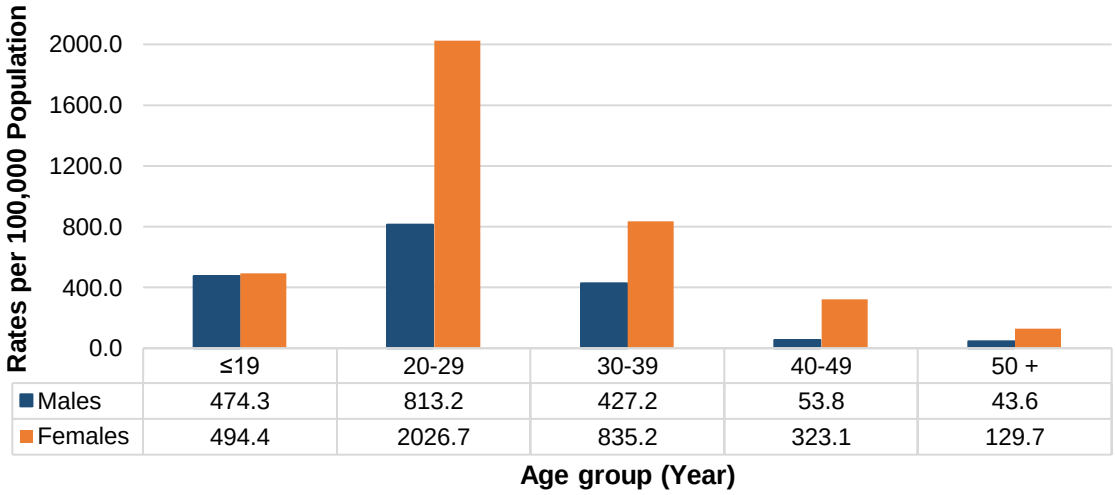
Figure 5.13: Gonorrhea incidence rates by gender and year, NITHA, 2010 – 2015



	2010	2011	2012	2013	2014	2015
Female	789.2	627.5	858.2	940.2	1180.5	790.6
Male	489.2	362.7	520.7	769.5	738.8	438.5

In 2015, females aged 20-29 years represented 34% of total reported chlamydia cases in NITHA – a rate of 2026.7 per 100,000 population (Figure 5.14). Males aged 20-29 years old represented 14% of all reported chlamydia cases – a rate of 813.2 per 100,000 population in 2015 (Figure 5.14).

Figure 5.14: Gonorrhea incidence rates by age group and gender, NITHA, 2015



	≤19	20-29	30-39	40-49	50 +
Males	474.3	813.2	427.2	53.8	43.6
Females	494.4	2026.7	835.2	323.1	129.7

Syphilis

Syphilis is an STI that is usually infectious for the first year, during primary, secondary and early latent stages. Untreated syphilis may progress to late latent or tertiary stage of the infections that may lead to serious health complications such damage to central nervous system, cardiovascular system, eyes, and internal organs. Syphilis primarily spread through vaginal, anal or oral sexual contact with someone with an active infection[5].

Between 2010 and 2015, there were 30 newly reported cases of syphilis in NITHA, with more females cases (63%) compared to males (37%). This trend is different from that of overall Saskatchewan and Canada, where there is a higher rate of syphilis in males than females[4].

Tuberculosis

Tuberculosis (TB) is an airborne, bacterial infectious disease causes by *Mycobacterium tuberculosis* that can spread from person to person when an infected individual is coughing or sneezing[6]. Infected people may develop active TB that requires 6 to 9 months of treatment[6]. People who inhale the bacteria may develop latent infection, which is asymptomatic but can become active later in life[6].

In Canada, the rate of TB is generally low, but there are sub populations, including on-reserve First Nations, that show higher rates of the disease compared to the general population[6]. Generally, TB is considered a disease of poverty which spread is strongly influenced by the social

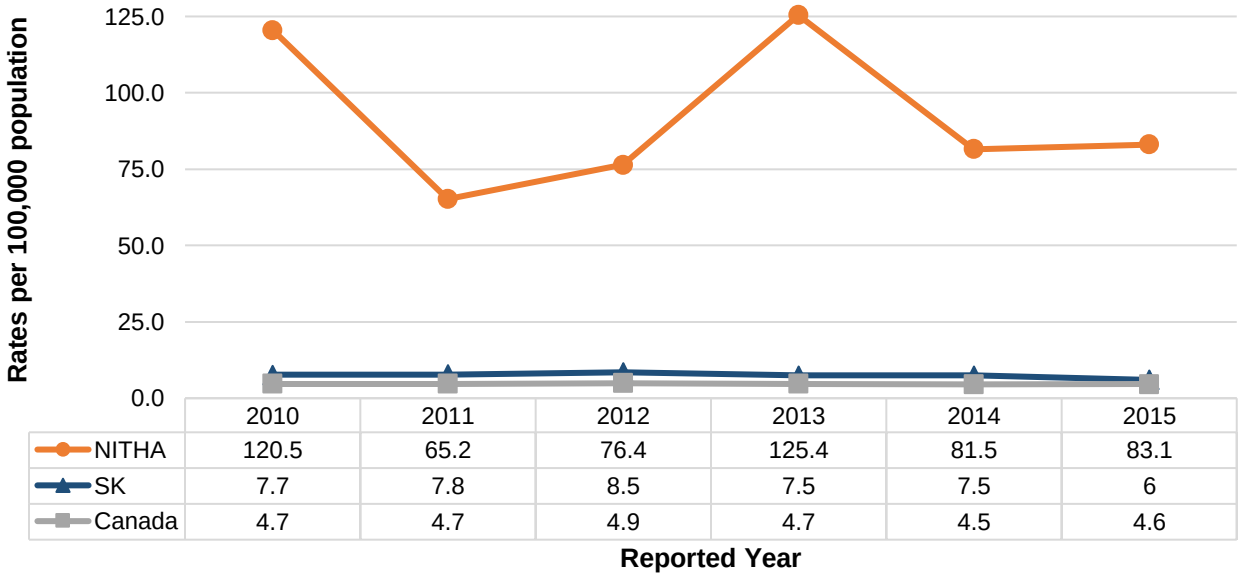
[5] Public Health Agency of Canada (2015). Syphilis among gay, bisexual, two-spirit and other men who have sex with men: A resource for population-specific prevention. Retrieved from : http://www.phac-aspc.gc.ca/std-mts/syphilis-population-specific-eng.php#intro

[6] Health Canada. (2015). Health Canada's monitoring and performance framework for Tuberculosis programs for First Nations on-reserve. Ottawa, ON.

determinants of health[7]. Factors such as geographical isolation, legacy of Indian residential schools, poor housing and overcrowding, high prevalence of other chronic diseases such as diabetes, mental health issues, and addiction combined with high cost of healthy food, exacerbate the incidence of TB in First Nation on-reserve in Saskatchewan [7].

From 2010 to 2012, the reported rates of active TB decreased from 120 cases per 100,000 population in 2010 to 76.4 per 100,000 in 2012 (Figure 5.15). The reported active TB rates sharply increased by 64 % in 2013 to 125.4 per 100,000 population. In 2015 the rate again decreased to 83.1 per 100,000 population (Figure 5.15). Between 2010 and 2015, the rate of reported active TB for NITHA population was on average 12.5 times higher than the Saskatchewan rate and 16 times higher than the national rate (Figure 5.15). Please note that the TB numbers represent new and relapsed TB cases.

Figure 5.15: Active TB incidence rates by year, NITHA, Saskatchewan, Canada, 2010-2015

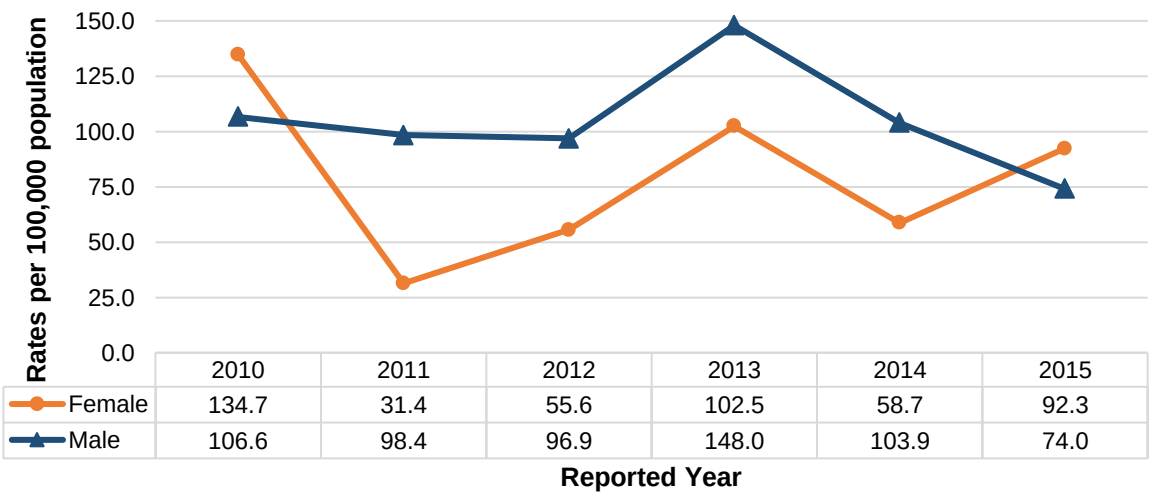


	2010	2011	2012	2013	2014	2015
NITHA	120.5	65.2	76.4	125.4	81.5	83.1
SK	7.7	7.8	8.5	7.5	7.5	6
Canada	4.7	4.7	4.9	4.7	4.5	4.6

Between 2010 and 2015, the reported rates of active TB for males were higher than those for females except in 2010 and 2015, where females' rate were slightly higher than males' (Figure 5.16).

[7] TB High Incidence Strategy Working Group. (2012). Strategy for Tuberculosis management in high incidence communities

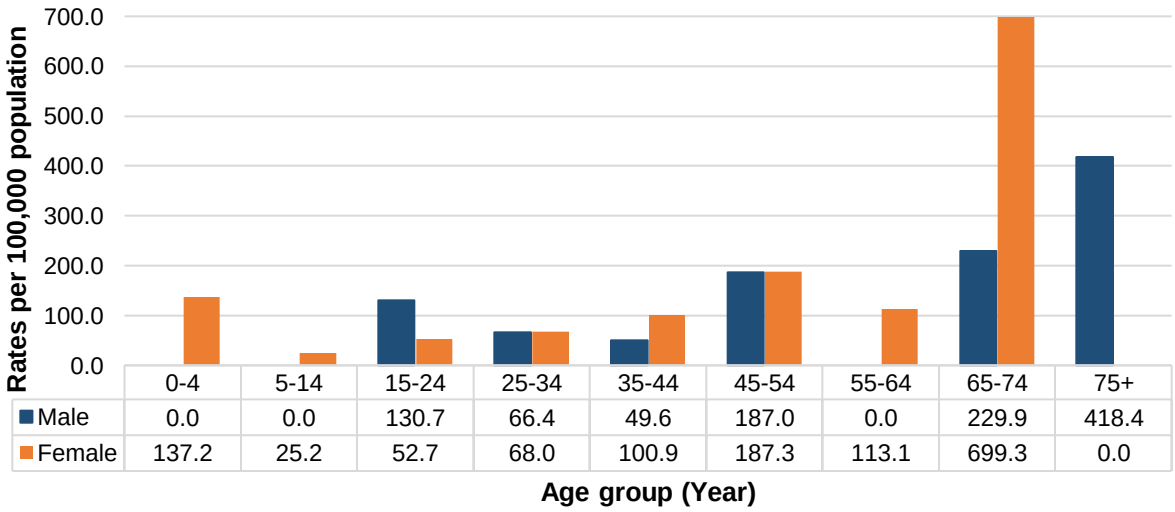
Figure 5.16: Active tuberculosis incidence rates by gender and year, NITHA, 2010 - 2015



	2010	2011	2012	2013	2014	2015
Female	134.7	31.4	55.6	102.5	58.7	92.3
Male	106.6	98.4	96.9	148.0	103.9	74.0

In 2015, the highest reported TB incidence rates for females was in 65 - 74 years age group (699.3 cases per 100,000 population) and for males was in 75 years and over age group (Figure 5.17).

Figure 5.17: Active tuberculosis incidence rates by gender and age group, NITHA, 2015



	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75+
Male	0.0	0.0	130.7	66.4	49.6	187.0	0.0	229.9	418.4
Female	137.2	25.2	52.7	68.0	100.9	187.3	113.1	699.3	0.0

Other Notifiable Diseases

Methicillin-Resistant Staphylococcus aureus

Staphylococcus aureus (Staph) is a type of bacteria that is commonly existed on the skin, in the noses and at the groin of heathy people. Heathy people can carry the bacteria and not develop illness. Some Staph bacteria are easily treatable. Those bacteria resistant to the antibiotic methicillin are referred to as methicillin-resistant Staphylococcus aureus (MRSA)[8].

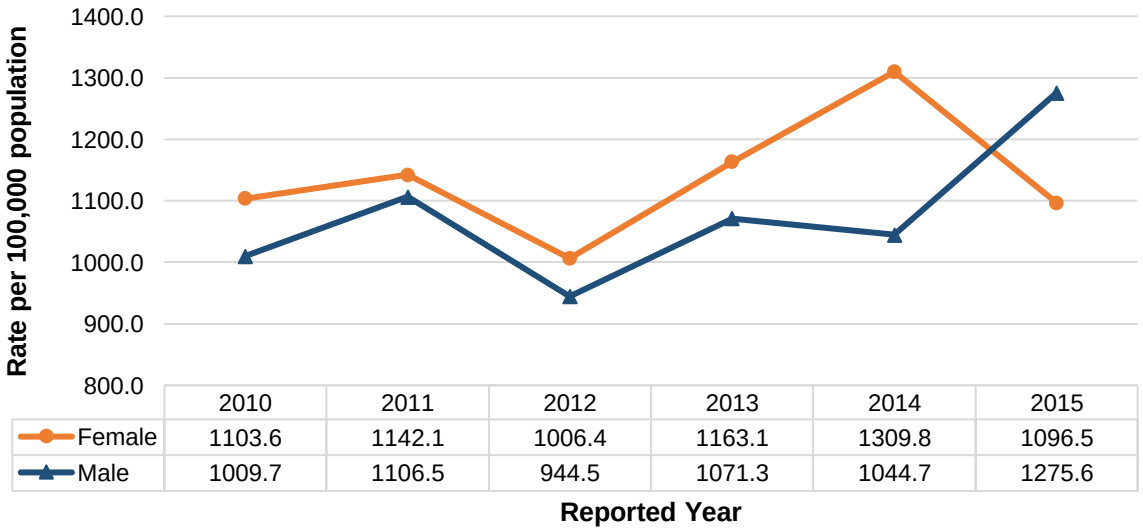
[8] Public Health Agency of Canada (2008). Fact sheet: Community acquired methicillin-resistant staphylococcus aureus. Available from: http://www.phac-aspc.gc.ca/id-mi/camrsa-eng.php

MRSA is spread through skin to skin contact or through contact with objects contaminated with infected body fluids. Those with weakened immune systems and chronic diseases are more susceptible to acquiring MRSA. If left untreated, MRSA infections may develop into serious life-threatening complication[1.] Because of its resistance, MRSA infections may be more difficult to treat.

Although it was first identified as a problem in hospital patients, it has become increasingly recognized in community settings including Aboriginal communities in Canada and other countries[9].

Between 2010 and 2013, the reported incidence rates of MRSA had similar trends for females and males, with females' rates slightly higher than those for males (Figure 5.18). From 2013 to 2014, the MRSA incidence rates for females increased sharply from 1163.1 cases per 100,000 population in 2013 to 1309.8 cases per 100,000 population in 2014. While the MRSA incidence rates for males decreased slightly in the same time period (from 1071.3 cases per 100,000 population in 2013 to 1044.7 cases per 100,000 population in 2014) (Figure 5.18). In 2015, the MRSA incidence rate for males increased sharply to 1275.6 cases per 100,000 population; while the trend was reverse for females. In 2015, the MRSA incidence rates for females decreased by 16% (from 1309.8 cases per 100,000 population in 2014 to 1095.5 cases per 100,000 population in) (Figure 5.18)

Figure 5.18: MRSA incidence rates by gender, NITHA, 2010-2015

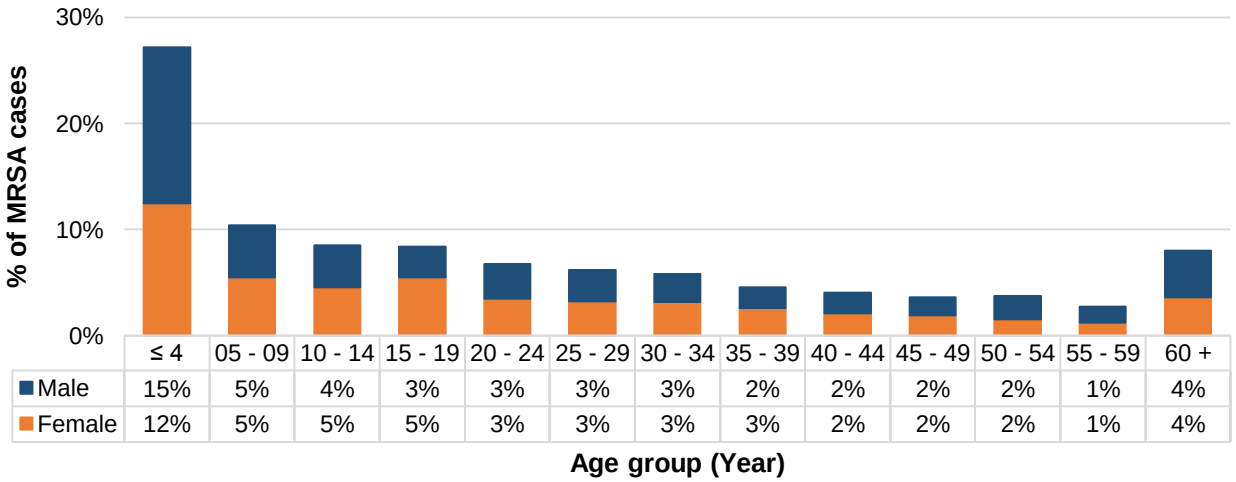


	2010	2011	2012	2013	2014	2015
Female	1103.6	1142.1	1006.4	1163.1	1309.8	1096.5
Male	1009.7	1106.5	944.5	1071.3	1044.7	1275.6

Between 2010 and 2015, out of 2206 newly reported MRSA cases, 37% were in children age 0-9 years old age (Figure 5.19). This is concerning because this age group may be at higher risk of developing serious infections.

[9] Health Protection Report to December 31, 2007. Communicable Disease Control and Environmental Public Health Programs First Nations and Inuit Health, Saskatchewan March 2010. Health Canada

Figure 5.19: Proportion of total MRSA cases by age group and gender, NITHA, 2010-2015 (N=2206)



	≤ 4	05 - 09	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 +
Male	15%	5%	4%	3%	3%	3%	3%	2%	2%	2%	2%	1%	4%
Female	12%	5%	5%	5%	3%	3%	3%	3%	2%	2%	2%	1%	4%

Enteric (Diarrheal) Diseases

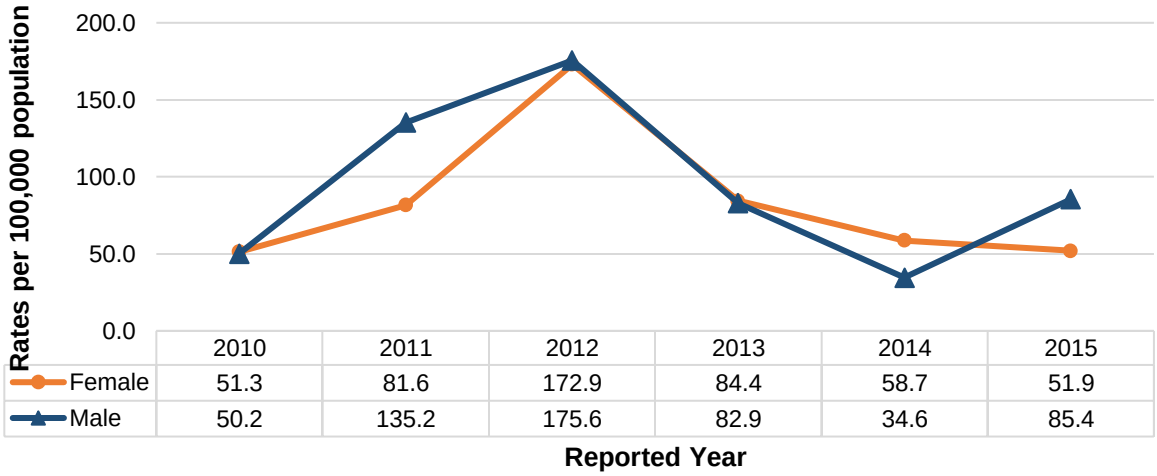
Enteric diseases can be caused by viral, bacterial, and parasitic that affect the intestines with symptoms ranging from nausea and diarrhea to serious chronic conditions and death. The majority of enteric diseases are mild; however, some cases are severe and result in hospitalization[10].

Enteric diseases are caused by eating contaminated food and drinking unclean water or by transmitting directly from person to person. Environmental conditions such as, crowded housing and unclean water supply can affect hygiene practices and contribute to the risk of enteric diseases[11].

From 2010 to 2015, there were 176 newly reported cases of enteric diseases in NITHA (47% females and 53% males). Between 2010 and 2015, the reported rates of enteric diseases had a similar trends for females and males (Figure 5.20). From 2010 to 2012, on average the rates of reported enteric diseases (for both females and males) increased from 50.8 per 100,000 population in 2010 to 174.2 per 100,000 population in 2012 (Figure 5. 20). In 2014, the reported rates decreased for both females and males; while, in 2015, the reported rates only increased for males (Figure 5. 20).

[10] Public Health Agency of Canada. Enteric disease: A major health concern in Canada [Internet]. 2010 Aug 31 [cited 2011 July 28]. Available from: http://www.phac-aspc.gc.ca/c-enterinet/edme-eng.php#a1
[11] Centers for Disease Control and Prevention. Enteric Diseases Epidemiology Branch [Internet]. 2011 Apr 20 [cited 2011 July 28]. Available from http://www.cdc.gov/ncezid/dfwed/edeb/Index.html

Figure 5.20: Enteric diseases incidence rates by gender and year, NITHA, 2010-2015

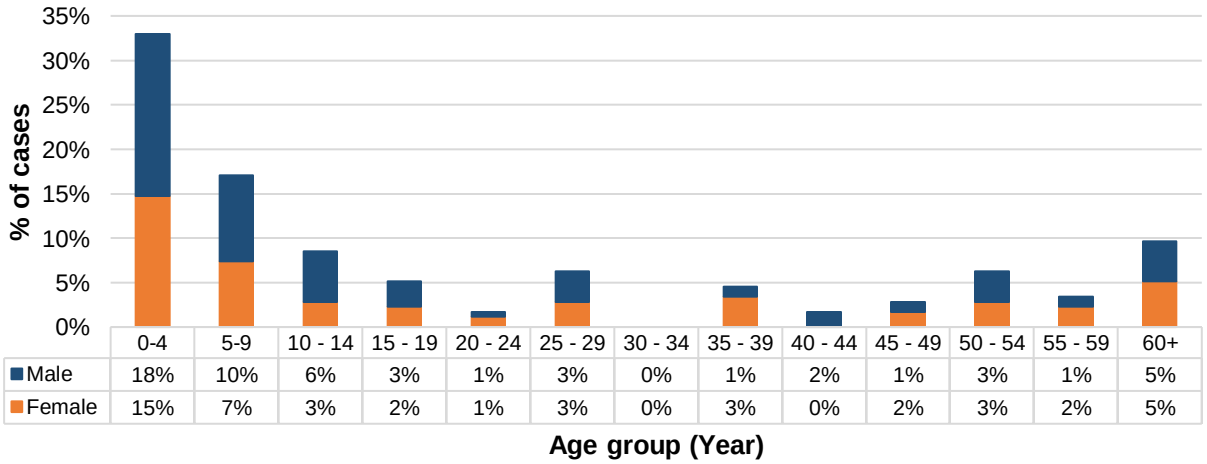


	2010	2011	2012	2013	2014	2015
Female	51.3	81.6	172.9	84.4	58.7	51.9
Male	50.2	135.2	175.6	82.9	34.6	85.4

Between 2010 and 2015, out of 176 reported cases of enteric diseases, 50% of cases were in children less than 9 years old (Figure 5.21). Young children are at higher risk for enteric diseases as they frequently put their hands and other objects in their mouths.

The second age group with high proportion of reported enteric diseases (10%) is in elderly (60 years old and above) (Figure 5. 21). This age group are at higher risk for enteric disease infections and the disease can be more severe in elderly population; therefore, they are more likely to be diagnosed and reported.

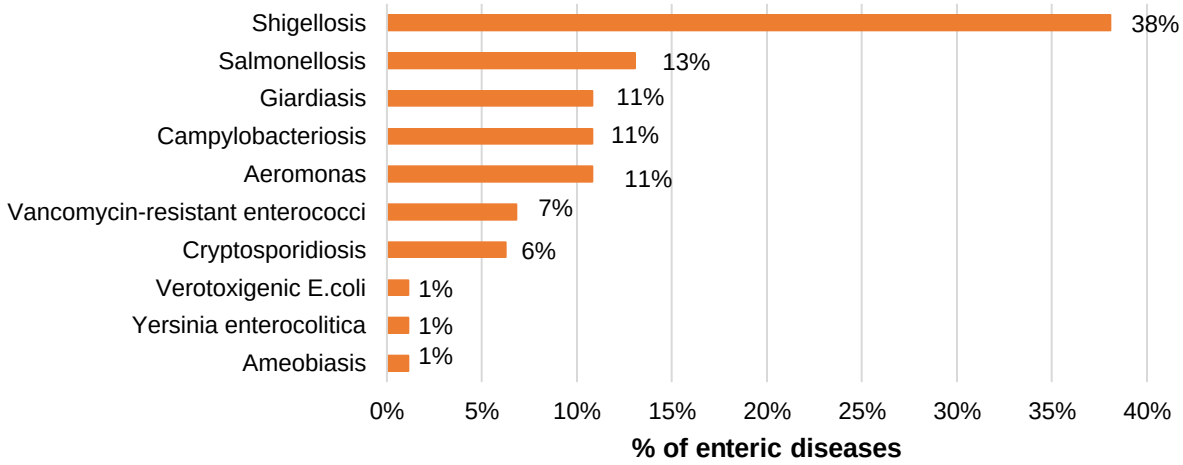
Figure 5.21: Proportion of total enteric diseases cases by gender and age group, NITHA, 2010-2015



	0-4	5-9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60+
Male	18%	10%	6%	3%	1%	3%	0%	1%	2%	1%	3%	1%	5%
Female	15%	7%	3%	2%	1%	3%	0%	3%	0%	2%	3%	2%	5%

Between 2010 and 2015, the most reported enteric diseases among NITHA population, were shigellosis (38.1%) followed by salmonellosis (13%) (Figure 5.22).

Figure 5.22: Proportion of enteric disease by type, NITHA, 2010-2015

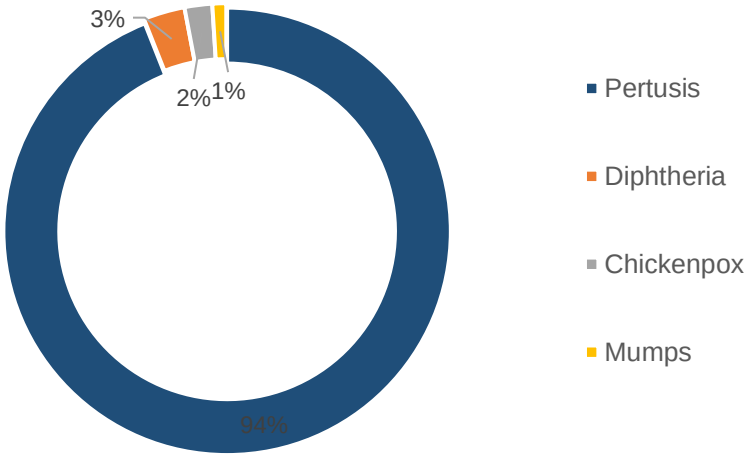


Vaccine Preventable Diseases

Vaccination is an effective public health intervention against many infectious diseases. Common infectious diseases can be prevented by immunization not only at individual level, but may also benefits others in the population[12].

Diseases that can be prevented or controlled by vaccination are referred to as vaccine – preventable diseases. Between 2010 and 2015, there were 94 newly reported cases of vaccine-preventable diseases in NITHA. The most commonly reported vaccine-preventable diseases was pertussis (94%), followed by diphtheria (3%) and chickenpox (2%) (Figure 5.23).

Figure 5.23: Percentage of vaccine-preventable diseases, NITHA, 2010-2015



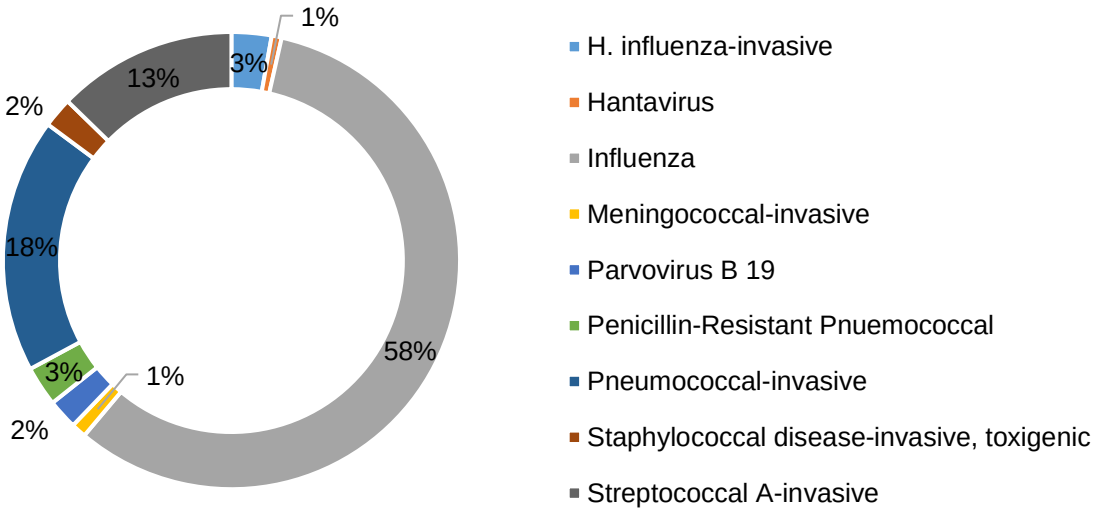
[12] Public Health Agency of Canada (2013). The Chief Public Health Officer's Report on the State of Public Health in Canada, 2013 Infectious Disease—the Never-ending Threat. Retrieved from: http://www.phac-aspc.gc.ca/cphorsphc-respcacsp/2013/imm-vac-eng.php

Diseases Transmitted by Respiratory Routes

As a group, acute respiratory diseases are one of the leading causes of death from infectious diseases[13]. Many of the organisms that causes respiratory diseases are spread via respiratory droplet generated by coughing and sneezing. The organisms can also spread through close person to person contact or through touching any material that has the organisms on it followed by touching nose or mouth[14]. Developing proper hygiene practices such as handwashing and covering nose and mouth when coughing and sneezing would significantly contribute to prevent the spread of the respiratory diseases[15].

Between 2010 and 2015, the most reported disease transmitted by respiratory routes for NITHA population were influenza (58%) followed by pneumococcal-invasive (18%) and streptococcal A-invasive (13%) (Figure 5.24).

Figure 5.24: Percentage of diseases transmitted by respiratory routes diseases, NITHA, 2010-2015



Animal Bites

Animal bites, specifically dog bites, have been on the rise in the NITHA Partnership over the last 5 years. Animal bites tend to be higher in number in remote (northern) and rural areas[15]. Indigenous communities have a unique cultural perspective on animal care and likely have barriers to accessing veterinary services[16]. Animal bites are not only painful to the human victim but can be a source of emotional trauma, wound infection or even rabies. Rabies is transferred from the animal host to the human by way of transferring the Rabies virus in its saliva typically

[13] David L. Heymann (2008). Control of communicable diseases manual. p515

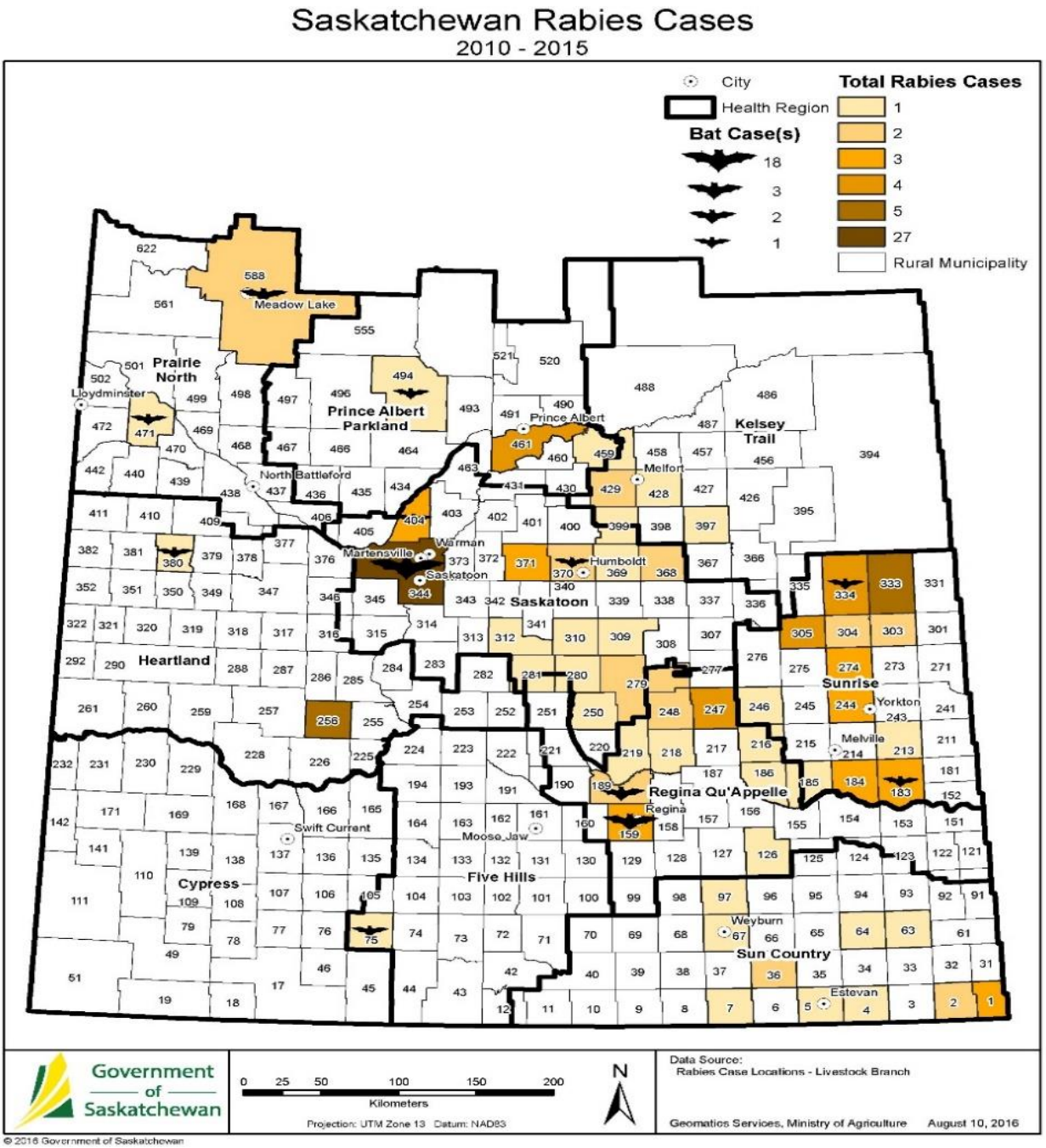
[14] Saskatchewan Ministry of Health (2010). Communicable disease control manual- respiratory and direct contact. Retrieved from: https://www.ehealthsask.ca/services/Manuals/Documents/cdc-section-2.pdf

[15] Rural and Remote Health Journal - View Article. (2016). Rrh.org.au. Retrieved 14 December 2016, from http://www.rrh.org.au/articles/subviewnew.asp?ArticleID=2846

[16] Schurer, J., Phipps, K., Okemow, C., Beatch, H., & Jenkins, E. (2014). Stabilizing dog populations and improving animal and public health through a participatory approach in indigenous communities. Zoonoses And Public Health, 62(6), 445-455. http://dx.doi.org/10.1111/zph.12173

through the wound produced by an animal bite. Rabies in either humans or animals is always fatal[17]. Rabies can be prevented after a bite if treatment is initiated promptly and prior to the onset of symptoms.

Figure 5.25: Number of positive animal cases of Rabies, Saskatchewan, 2010-2015



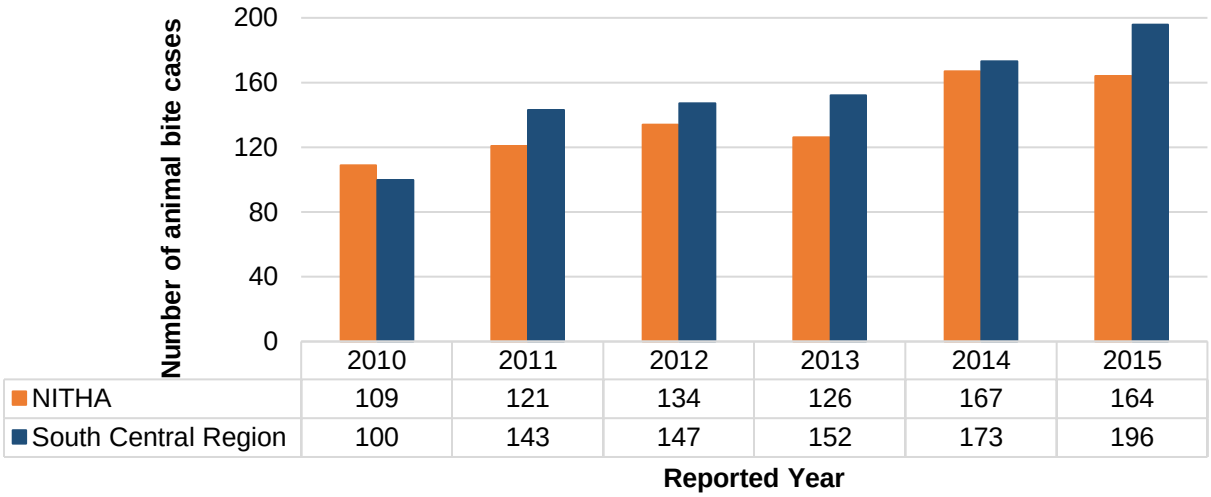
Source: Saskatchewan Agriculture, 2010-2015

[17] Government of Saskatchewan (2015). Communicable Disease Control Manual. Section 4-110: Vector-Borne and Zoonotic Diseases. Retrieved from: http://www.ehealthsask.ca/services/manuals/Documents/cdc-section-4.pdf#page=26

Between 2010 and 2015, only two positive bats have been found in NITHA communities, however, it is expected that rabies could easily transfer to four legged domestic or wild animals through natural migration (Figure 5.25). The vast majority of cases in Saskatchewan occur in Southeastern Saskatchewan but does appear to be moving north (Figure 5.25).

Dog bites account for 92.1% of all animal bites in the NITHA partnership. These bites most often involve males (58%) under the age of 14 years. The number of reported bites has increased over the time period of 2010-2015 by 50.5% (Figure 5.26). In comparison, on-reserve communities in the South-Central Region of the Province saw slightly more number of animal bites over the same period (Figure 5.26)

Figure 5.26: Number of animal bites by year, NITHA, 2010 – 2015



Of the 712 reported animal bites between the 2011 and 2015, the most common type of attack was provoked which accounted for 53.6% of incidents. Unprovoked attacks were reported for 37.4% of the cases, and in 9.0% of cases it is unknown whether the attack was provoked or unprovoked (Table 1).

Table 1: Animal bites by nature of attack, NITHA, 2011-2015 (n=712)

Nature of Attack	Count	Percent
Provoked	382	53.6%
Unprovoked	266	37.4%
Unknown	64	9.0%

From 2012-2015, only 6.1% of animals involved in bites were vaccinated against rabies, 20.1% were unvaccinated, and 72.9% were of unknown vaccination status (Table 2).

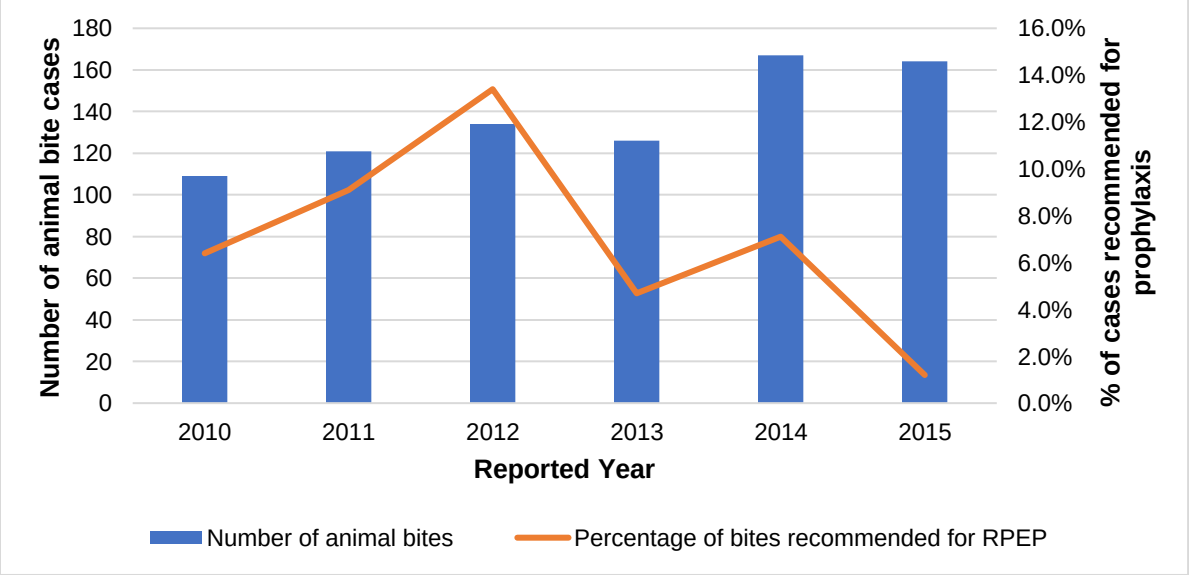
Table 2: Vaccination status of animals involved in bite incidents, NITHA, 2012-2015 (n=591)

Vaccination Status	Count	Percent
Vaccinated	36	6.1%
Unvaccinated	124	20.1%
Unknown	391	72.9%

Rabies Post Exposure Prophylaxis (RPEP)[18]

Of the total animal bite incidents between 2010 and 2015, RPEP was recommended for an average of 7 cases per year. The proportion of incidents for which RPEP were recommended had decreased over time (Figure 5.27).

Figure 5.27: Number of bite incidents by rabies post-exposure prophylaxis recommendations, NITHA, 2010-2015



[18] Armstrong, K. (2016) Animal Bites and Appropriateness of Post Exposure Prophylaxis Use in Northern Inter-Tribal Health Authority Communities

Methodology

Data source

	Data sources		
Notifiable disease	**NITHA ***	**Saskatchewan****	**Canada****
HIV	E-health Saskatchewan – Micro-strategy	Saskatchewan Ministry of Health [19]	Saskatchewan Ministry of Health [16]
HCV		Government of Saskatchewan [20]	PHAC[21]
STI			
Enteric diseases		Not applicable for this report	Not applicable for this report
Vaccine preventable diseases and respiratory diseases			
TB	NITHA TB database	TBIS[22]	PHAC[18]
Animal bites	NITHA animal bites database	NITHA animal bites database	Not applicable for this report

* For NITHA population the number of notifiable diseases were extracted from the sources as shown in the table. And the data on total number of population living on-reserve for NITHA jurisdiction was derived from INAC. The data was up to date as of December 31, 2015.
** For Saskatchewan and Canadian population, the reported incidence rate were extracted from the sources as shown in the table

Data Limitation

- Communicable disease data for NITHA First Nations living on-reserve who were diagnosed while living off-reserve is not included in this report.
- The communicable disease data for NITHA First Nations living on-reserve who were diagnosed outside of Saskatchewan is not included in this report.
- Only the proportion of the individuals who tested positive for a disease entity were included in the communicable disease data but not those individuals who were not screened or tested.
- One factor that explains the higher incidence of certain communicable disease rates for NITHA population compared to Saskatchewan and Canadian population may due to the younger population of First Nations population living on-reserve.
- Increasing incidence of certain communicable diseases may not necessarily reflect a true increase in infection rate; it may reflect increased detection of the communicable disease due to increased testing. This is apparent in women who tend to interact more regularly with the health care system.

Data calculation

Communicable incidence rate reported as crude rates that were calculated as follow:

$$\frac{Number\ of\ new\ cases\ of\ disease\ per\ year}{Total\ number\ of\ people\ (within\ that\ specific\ year)} \times 100{,}000\ population$$

[19] Saskatchewan Ministry of Health Population Health Branch (2015). HIV Prevention and Control Program Report for 2015
[20] Government of Saskatchewan (2014). Annual incidence summary report
[21] Public Health Agency of Canada (2015). Reported cases from 1924 to 2015 in Canada - Notifiable diseases on-line. Retrieved from: http://diseases.canada.ca/notifiable/charts?c=pl
[22] Tuberculosis Information System (TBIS), 2010-2015