PORCUPINE HEALTH UNIT
INFECTIOUS DISEASES STATUS REPORT
2009 – 2014

Porcupine
Health Unit • Bureau de santé

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EXECUTIVE SUMMARY

Infectious diseases, also known as transmissible or communicable diseases, are illnesses caused by a specific infectious agent such as a virus or bacteria, or its toxic products. Public health units across Ontario monitor these diseases since they have the potential to cause serious illness and can be transmitted to large numbers of individuals. As such, under provincial law, all cases of reportable diseases designated in Ontario's *Health Protection and Promotion Act (HPPA)* (1), must be reported to local public health authorities (see Appendix B).

This is the second in a series of infectious disease reports for the Porcupine Health Unit (PHU). The report presents rates of reportable diseases between 2009 and 2014 for the Porcupine Health Unit area, provides a provincial comparison of rates, and includes a brief interpretation of the disease trends. The PHU uses this information to guide disease prevention and control efforts as well as health promotion, resource allocation and policy decisions.

Diseases are categorized by mode of disease transmission. Disease summaries are organized in alphabetical order following a standard format. Data was summarized for diseases with six or more reported cases cumulatively during the six-year study period. Diseases for which there were fewer than six reported cases in the PHU area during the study period are listed in the Rare Diseases Table of Appendix A.

KEY FINDINGS

Between 2009 and 2014, there were a total of 3,914 reported cases of infectious disease in the PHU area – or an average of 652.3 cases per year. This is higher than the average of 537.3 cases per year in the previous report (2006 to 2012). From 2009 to 2014, the local number of infectious disease cases decreased by 7.9% (rate of disease decreased by 6.1%) while provincially, cases increased by 27.2% (rate of disease increased by 21.5%).

The top three diseases — chlamydia, influenza, and gonorrhea — accounted for 87.1% of all cases. Chlamydia, by far, accounted for the largest proportion of cases (66.4%), followed by influenza at 12.7% of cases, and gonorrhea at 8.0% of cases.

Table 1 on the next page lists the number and proportion of all reportable diseases in the PHU area for which there were one or more cases during the six-year study period of 2009 to 2014.

Table 1. Number and proportion of all reportable diseases (with one or more cases), by rank, Porcupine Health Unit, 2009-2014 combined

Rank	Disease	# of Cases	Proportion (%) of Cases
1	Chlamydia	2,600	66.4
2	Influenza*	498	12.7
3	Gonorrhea	315	8.0
4	Hepatitis C	172	4.4
5	Salmonellosis	99	2.5
6	Campylobacteriosis	49	1.3
7	Invasive Pneumococcal Disease (IPD)	36	0.9
8	Invasive, Group A Streptococcal Disease (iGAS)	30	0.8
9	Pertussis	17	0.4
10	Giardiasis	15	0.4
11	Tuberculosis	11	0.3
12	Cryptosporidiosis	10	0.3
13	Amebiasis	8	0.2
14	Hepatitis B	6	0.2
15	Cyclosporiasis	5	0.1
15	Human Immunodeficiency Virus (HIV)	5	0.1
15	Syphilis^	5	0.1
15	Verotoxin producing *E. coli* (VTEC)	5	0.1
16	Encephalitis/meningitis	4	0.1
16	Legionellosis	4	0.1
16	Malaria	4	0.1
17	Hepatitis A	3	0.1
17	Listeriosis	3	0.1
17	Mumps	3	0.1
18	Invasive Meningococcal Disease (IMD)	2	0.1
19	Cytomegalovirus, congenital	1	<0.1
19	Herpes, neonatal	1	<0.1
19	Lyme disease	1	<0.1
19	Shigellosis	1	<0.1
19	Yersiniosis	1	<0.1
	Total	**3,914**	**100.0**

** Influenza data is seasonal from 2009-10 to 2014-15*

^Syphilis includes infectious, non-infectious and unspecified cases

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015

FOOD, WATER-BORNE AND PARASITIC DISEASES

A total of 199 enteric illnesses (5.1% of all cases) were reported in the PHU area between 2009 and 2014. Salmonellosis, campylobacteriosis, and giardiasis accounted for 81.8% of these cases. This is similar to the ranking and proportion of enteric illnesses provincially. There were less than six reported cases cumulatively of each of cyclosporiasis, hepatitis A, shigellosis, verotoxin producing *E. coli*, yersiniosis, listeriosis, and typhoid/paratyphoid fever between 2009 and 2014.

For all enteric illnesses considered in this report, average local rates of disease were lower than average provincial rates of disease over the six-year study period. Females accounted for slightly more than half of cases locally.

Between 2009 and 2014, there were 46 enteric outbreaks (average of 7.7 per year) reported in the PHU area. This includes an outbreak of 13 cases of Clostridium Difficile Infection (CDI), which is rare, but occurred in a local hospital in 2009. Outbreaks occurred seasonally, peaking at an average of 1.8 outbreaks in March. The majority of these outbreaks occurred in long-term care homes and hospitals. Community outbreaks (8.7% of all enteric outbreaks) are likely underestimated since reporting of them to public health authorities is not required.

VECTOR-BORNE AND ZOONOTIC DISEASES

Between 2009 and 2014 in the PHU area, there were 5 reported cases of vector-borne and zoonotic diseases (0.1% of all cases). Four of these cases were of malaria and one of Lyme disease. Zero cases of rabies or West Nile Virus were reported. Provincially, malaria also represented the majority of reported cases.

SEXUALLY TRANSMITTED AND BLOOD-BORNE DISEASES

Locally, there were 3,103 reported cases of sexually transmitted and blood-borne infections (79.3% of all cases) in the PHU area between 2009 and 2014. Chlamydia, gonorrhea, and hepatitis C accounted for 99.5% of all cases locally. Provincially, the ranking and proportion of these diseases were similar.

Local average incidence rates for chlamydia and gonorrhea were greater than the provincial average rates over the six-year study period. For hepatitis B and C, local average rates were similar to provincial average rates of disease. Finally, local average rates for HIV and syphilis (both infectious and non-infectious) were lower than provincial average rates. There were no cases of AIDS reported in the PHU area during the study period.

Males and females 15 to 24 years of age accounted for the largest proportion of these cases. Within this age group, females accounted for the majority of cases with rates two to three times the male rates.

VACCINE PREVENTABLE DISEASES

Between 2009 and 2014 in the PHU area, there were 556 reported cases of vaccine preventable disease (14.2% of all cases). Influenza, invasive pneumococcal disease, and pertussis accounted for almost all of the cases both locally and provincially. Of these, influenza accounted for 89.6% of cases locally. There were no locally reported cases of measles and less than six cases each of invasive meningococcal disease and mumps during the study period.

While average local incidence rates for influenza and pertussis were higher than average provincial rates during the study period, local average rates for invasive pneumococcal disease were lower than average provincial rates.

Females accounted for slightly more than half of the vaccine preventable disease cases locally. By age group, adults over the age of 65 and children less than 5 years of age accounted for the greatest number of cases. These two populations are at higher risk for complications related to influenza and, therefore, may be tested more often, leading to higher reported rates.

During the six-year study period, there were 72 respiratory outbreaks in the PHU area. Twenty-five of these (34.7%) were influenza-related. These outbreaks were seasonal in nature, peaking in January. The vast majority of respiratory outbreaks occurred in long-term care homes, followed by hospitals and retirement homes.

OTHER INFECTIOUS DISEASES

Locally, there were 49 reported cases of “other” infectious diseases (1.3% of all cases) in the PHU area between 2009 and 2014. The top two diseases locally and provincially were invasive Group A streptococcal disease and tuberculosis. During the study period, there were less than six reported cases each of encephalitis/meningitis, legionellosis, and group B streptococcal disease (neonatal) in the PHU area.

The local average incidence rate for invasive Group A streptococcal disease was higher than the provincial average rate during the study period, while the local average rate for tuberculosis was lower than the provincial average rate. Males and adults 65 years of age and older accounted for the majority of cases locally, by sex and age group.

CONCLUSION

The *Porcupine Health Unit Infectious Disease Status Report: 2009-2014* helps to fulfill the Porcupine Health Unit’s mandate under the Ontario Public Health Standards (2), to conduct disease surveillance and publicly report on findings. This is the second in a series of reports to the public on the local status of infectious disease. The PHU will use the findings from this report to inform public health programming. It is also hoped that this report will be useful for community agencies in the work that they do to support and enhance community health.

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ABBREVIATIONS

ACRONYM	NAME
AIDS	Acquired immunodeficiency syndrome
Flu	Influenza
iGAS	Invasive, Group A Streptococcus
HiB	Haemophilus influenzae b
HIV	Human Immunodeficiency Virus
HPPA	Health Protection and Promotion Act
IMD	Invasive Meningococcal Disease
IPD	Invasive Pneumococcal Disease
iPHIS	integrated Public Health Information System
MOHLTC	Ministry of Health and Long-Term Care
OPHS	Ontario Public Health Standards
PHO	Public Health Ontario
PHU	Porcupine Health Unit
STI	Sexually Transmitted Infection
TB	Tuberculosis
VTEC	Verotoxin producing *Escherichia coli*
WNV	West Nile Virus

INTRODUCTION

Infectious diseases are reportable to public health authorities under the Ontario *Health Protection and Promotion Act (HPPA)* since they have the potential to cause serious illness and can be transmitted to large numbers of individuals (see Appendix B).

The *Porcupine Health Unit Infectious Disease Status Report: 2009-2014* is the second in a series of reports that describes infectious disease trends over a six-year period. It presents data on infectious diseases reportable under the *HPPA*. Cases of disease are included in this report for individuals who resided within the Porcupine Health Unit area at the time of their illness.

The report is organized into the following six sections:

- Food-borne, water-borne and parasitic diseases
- Vector-borne and zoonotic diseases
- Sexually transmitted and blood-borne infections
- Vaccine preventable diseases
- Other infectious diseases
- Outbreaks

Disease summaries are organized in alphabetical order within each section of the report and follow a standard format. Data was summarized for diseases that had six or more reported cases cumulatively during the six-year study period from 2009 to 2014. Diseases with fewer than six reported cases in the PHU area during the study period are listed in the Rare Diseases Table of Appendix A.

Further, in-depth analysis was conducted for chlamydia, gonorrhea, and hepatitis C. These diseases were highlighted for a variety of reasons including: local rates were significantly different than provincial rates, there are emerging issues related to the disease either locally or provincially, or because the PHU has taken or may take measures for the prevention or containment of the disease.

FOOD, WATER-BORNE AND PARASITIC DISEASES

The following food, water-borne and parasitic diseases, also known as enteric illnesses, are included in this report:

- Amebiasis
- Campylobacteriosis
- Cryptosporidiosis
- Cyclosporiasis
- Giardiasis
- Hepatitis A
- Listeriosis
- Salmonellosis
- Shigellosis
- Typhoid/Paratyphoid fever
- Verotoxin producing *E. coli* (VTEC)
- Yersiniosis

Since there were less than six cases each of cyclosporiasis, VTEC, hepatitis A, listeriosis, shigellosis, yersiniosis, and typhoid/paratyphoid fever cumulatively between 2009 and 2014, these diseases are listed in the Rare Diseases Table of Appendix A.

KEY MESSAGES

Table 2. Number and proportion of enteric cases, Porcupine Health Unit & Ontario, 2009-2014 combined

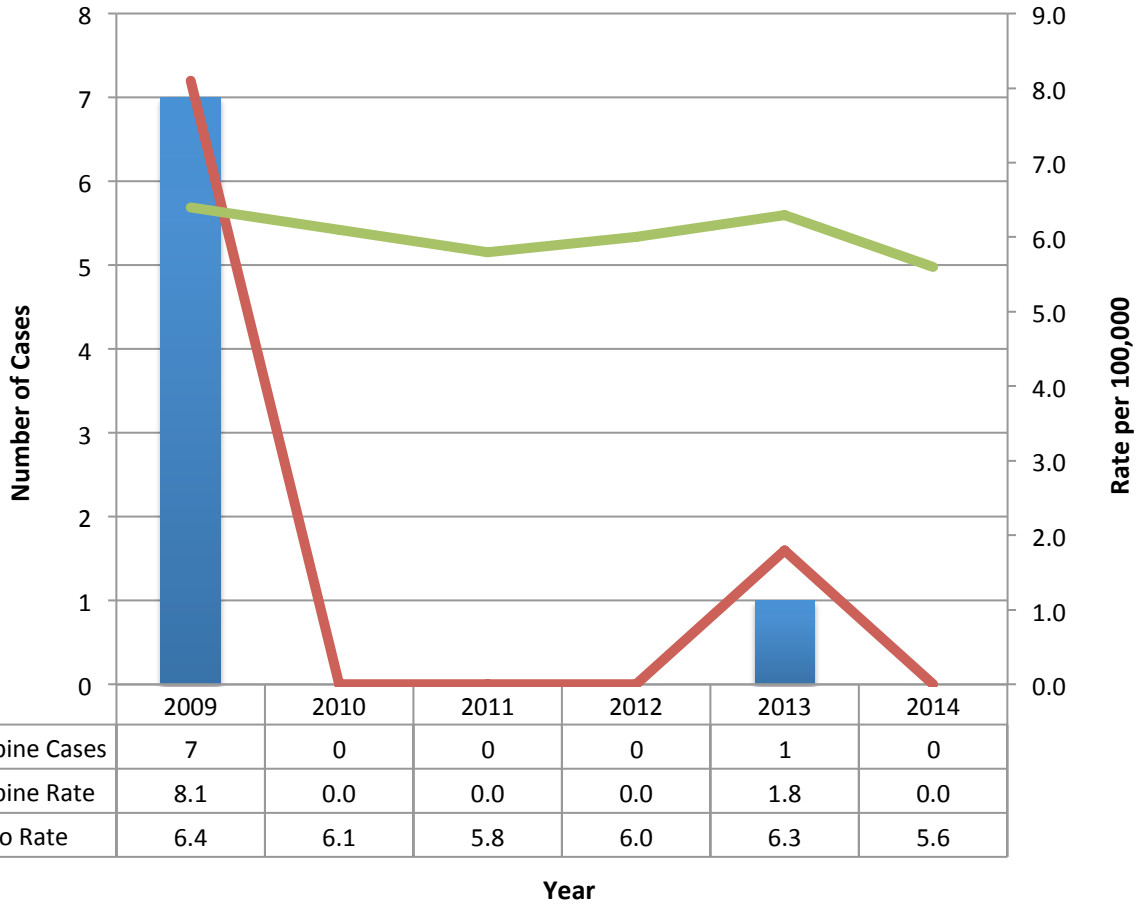
Porcupine Health Unit				Ontario		
Proportion (%) of cases	# of cases	Disease	Rank	Disease	# of cases	Proportion (%) of cases
49.7	99	Salmonellosis	1	Campylobacteriosis	21,771	36.9
24.6	49	Campylobacteriosis	2	Salmonellosis	16,157	27.4
7.5	15	Giardiasis	3	Giardiasis	8,210	13.9
5.0	10	Cryptosporidiosis	4	Amebiasis	4,779	8.1
4.0	8	Amebiasis	5	Cryptosporidiosis	1,906	3.2
2.5	5	Cyclosporiasis	6	Shigellosis	1,609	2.7
2.5	5	VTEC	7	Yersiniosis	1,143	1.9
1.5	3	Hepatitis A	8	VTEC	1,031	1.7
1.5	3	Listeriosis	9	Typhoid/paratyphoid fever	751	1.3
0.5	1	Shigellosis	10	Cyclosporiasis	708	1.2
0.5	1	Yersiniosis	11	Hepatitis A	672	1.1
0.0	0	Typhoid/Paratyphoid fever	12	Listeriosis	310	0.5
100.0	**199**		**Total**		**59,047**	**100.0**

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015

- Locally, there were 199 reported cases of enteric illness in the PHU area from 2009 through 2014.
- The top three diseases — salmonellosis, campylobacteriosis, and giardiasis — accounted for 81.8% of cases locally and 78.2% provincially.
- Females (53.8%) and those 60 years of age and older (30.2%) had the greatest proportion of cases by sex and age group.

AMEBIASIS

Figure 1. Age-standardized Amebiasis incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014



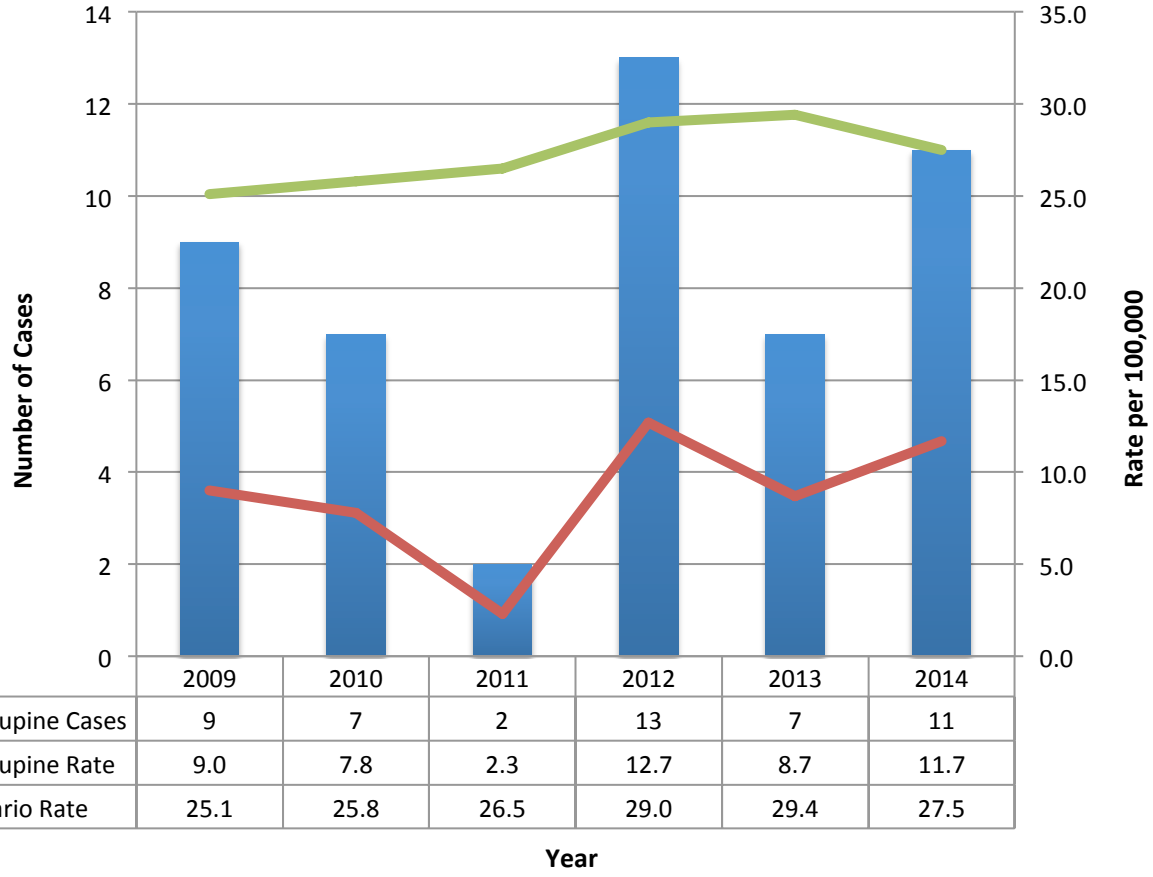
	2009	2010	2011	2012	2013	2014
Porcupine Cases	7	0	0	0	1	0
Porcupine Rate	8.1	0.0	0.0	0.0	1.8	0.0
Ontario Rate	6.4	6.1	5.8	6.0	6.3	5.6

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Between 2009 and 2014, there were a total of 8 reported cases of amebiasis in the Porcupine Health Unit (PHU) area (average rate of 1.7 cases per 100,000 population per year).
- The majority of these cases (87.5%) occurred in 2009. Three of these cases were among one family; the others were unrelated.
- Except in 2009, the amebiasis rate in the PHU area has remained below the average provincial rate of 6.0 cases per 100,000.
- Due to the small number of local cases and resulting instability in rates, caution should be used in interpreting this data.

CAMPYLOBACTERIOSIS

Figure 2. Age-standardized Campylobacteriosis incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014



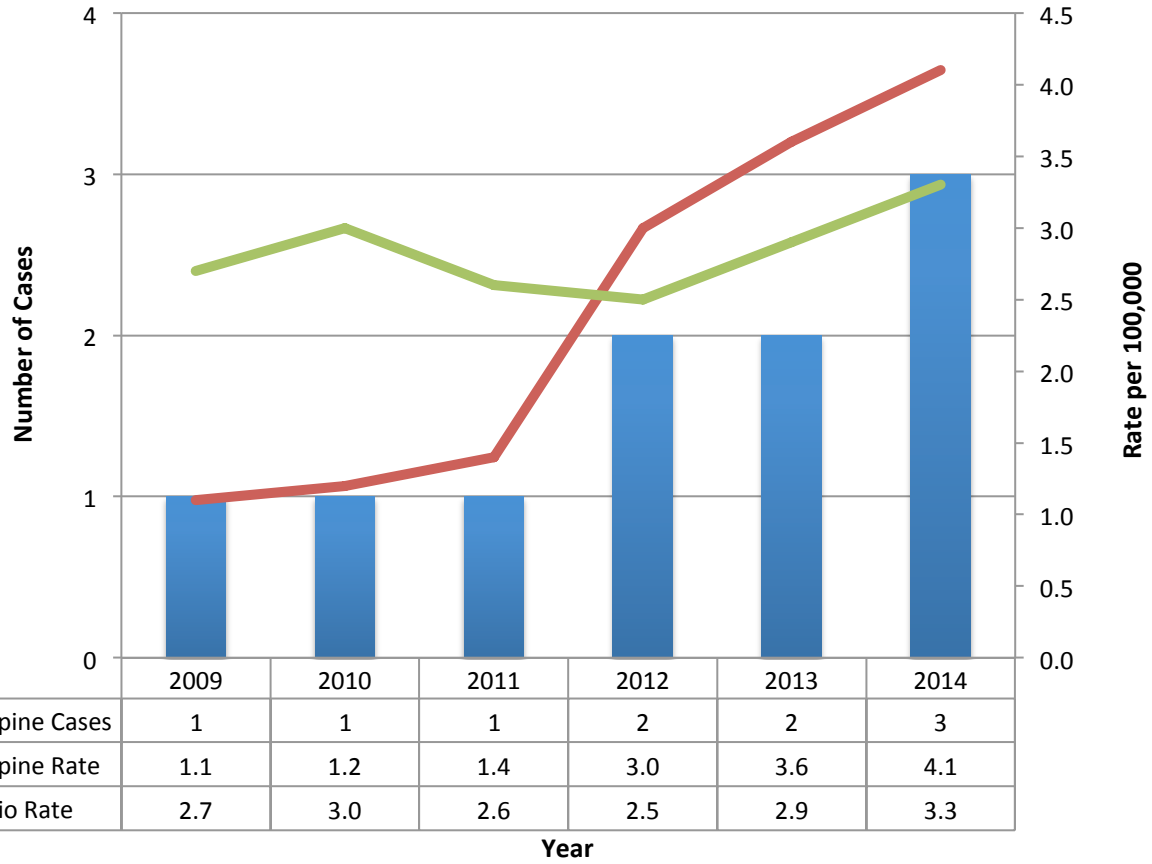
	2009	2010	2011	2012	2013	2014
Porcupine Cases	9	7	2	13	7	11
Porcupine Rate	9.0	7.8	2.3	12.7	8.7	11.7
Ontario Rate	25.1	25.8	26.5	29.0	29.4	27.5

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Between 2009 and 2014, there were a total of 49 cases of campylobacteriosis in the PHU area (average rate of 8.7 cases per 100,000 per year).
- The local rate of disease has fluctuated between a low of 2.3 cases per 100,000 in 2011 to a high of 12.7 cases per 100,000 in 2012. In the most recent year of the study, the rate was 11.7 cases per 100,000.
- In every year of the study, the local rate has been lower than the provincial rate, which averaged 27.2 cases per 100,000.
- Local rates were highest amongst those 50 to 54 and 65 years of age and older (15.6 cases per 100,000) and lowest amongst those 5 to 14 years of age (data not shown).

CRYPTOSPORIDIOSIS

Figure 3. Age-standardized Cryptosporidiosis incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014



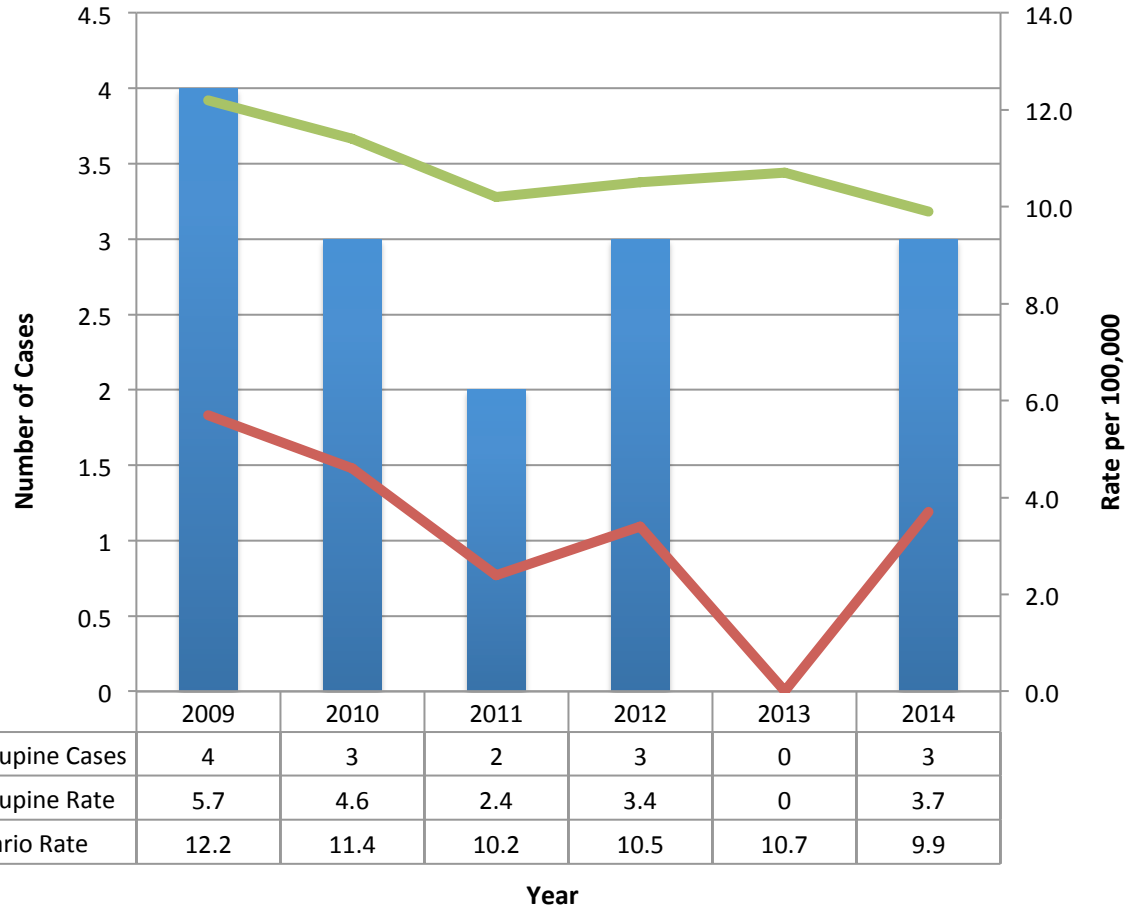
	2009	2010	2011	2012	2013	2014
Porcupine Cases	1	1	1	2	2	3
Porcupine Rate	1.1	1.2	1.4	3.0	3.6	4.1
Ontario Rate	2.7	3.0	2.6	2.5	2.9	3.3

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- There were a total of 10 cases of cryptosporidiosis in the PHU area between 2009 and 2014 (average rate of 2.4 cases per 100,000).
- The local rate fluctuated between 1.1 and 4.1 cases per 100,000.
- The average local rate of 2.4 cases per 100,000 was slightly lower than the average provincial rate of 2.8 cases per 100,000 over the study period.
- Due to the small number of local cases and resulting instability in rates, caution should be used in interpreting this data.

GIARDIASIS

Figure 4. Age-standardized Giardiasis incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014



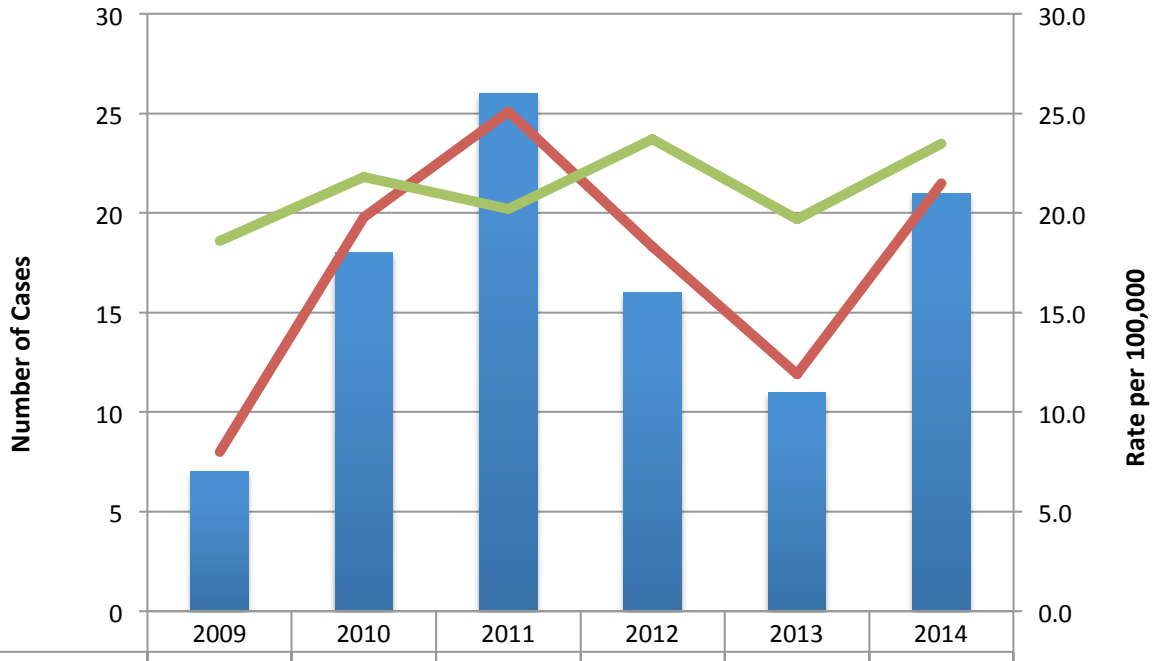
	2009	2010	2011	2012	2013	2014
Porcupine Cases	4	3	2	3	0	3
Porcupine Rate	5.7	4.6	2.4	3.4	0	3.7
Ontario Rate	12.2	11.4	10.2	10.5	10.7	9.9

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Between 2009 and 2014, there were a total of 15 cases of giardiasis in the PHU area (average rate of 3.3 cases per 100,000).
- The local rate has steadily decreased from a high of 5.7 cases per 100,000 in 2009 to 3.7 cases per 100,000 in 2014.
- In each year of the study, the local rate has remained below the provincial rate, which averaged 10.8 cases per 100,000.
- The majority of local cases were amongst males (60%) and the highest rates of disease were amongst children 5 to 19 years of age (data not shown).

SALMONELLOSIS

Figure 5. Age-standardized Salmonellosis incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014



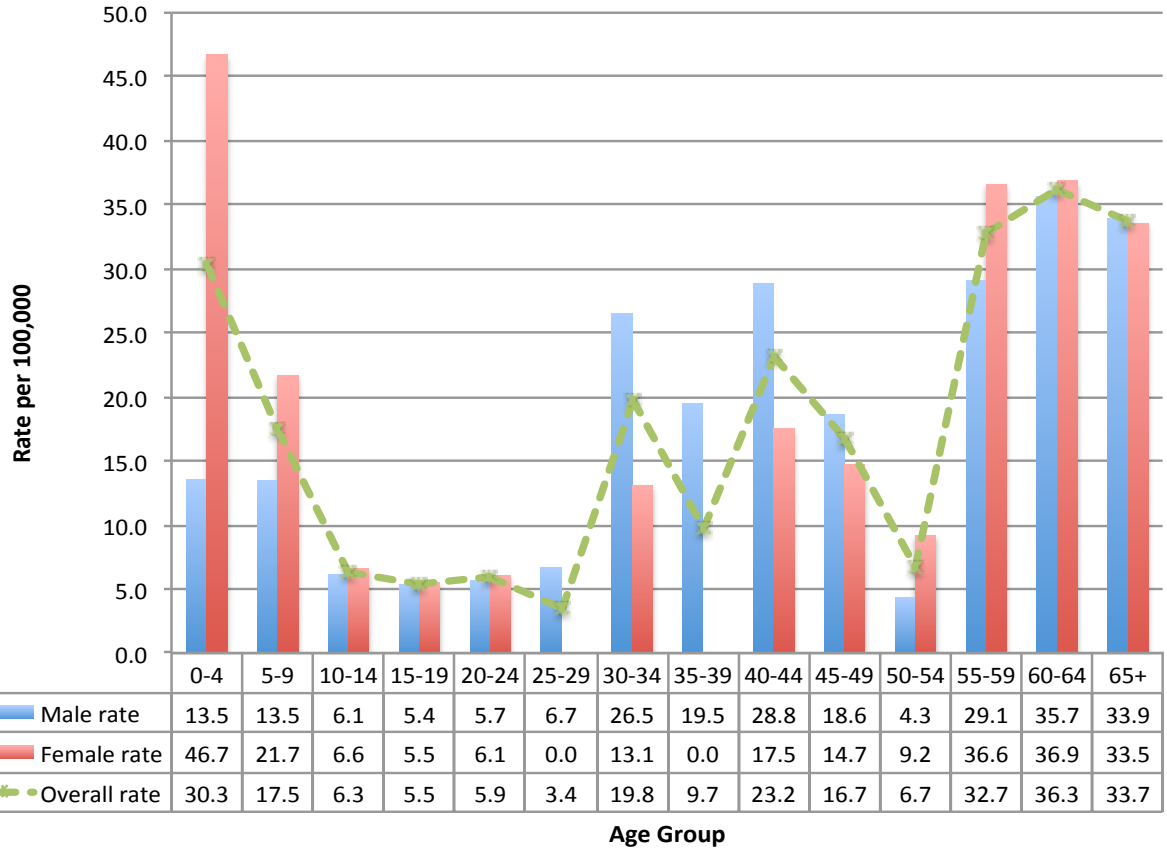
	2009	2010	2011	2012	2013	2014
Porcupine Cases	7	18	26	16	11	21
Porcupine Rate	8.0	19.8	25.1	18.3	11.9	21.5
Ontario Rate	18.6	21.8	20.2	23.7	19.7	23.5

Year

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- There were a total of 99 cases of salmonellosis in the PHU area between 2009 and 2014 (average rate of 17.4 cases per 100,000).
- The local rate fluctuated between a low of 8.0 cases per 100,000 in 2009 to a high of 25.1 cases per 100,000 in 2011.
- In 2010, a notable increase of Salmonella was identified in the PHU area within a short period of time. Between August and October, 8 cases of Salmonella were reported, of which 7 resided in one community and the eighth had a history of travel through the community prior to illness. In 2011, 13 cases of Salmonella Heidelberg were identified as part of a community outbreak.
- Except for 2011, the local rate remained lower than the provincial rate, which averaged 21.3 cases per 100,000 over the study period.

Figure 6. Salmonellosis incidence rates, by age group and sex, Porcupine Health Unit, 2009-2014 combined



	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Male rate	13.5	13.5	6.1	5.4	5.7	6.7	26.5	19.5	28.8	18.6	4.3	29.1	35.7	33.9
Female rate	46.7	21.7	6.6	5.5	6.1	0.0	13.1	0.0	17.5	14.7	9.2	36.6	36.9	33.5
Overall rate	30.3	17.5	6.3	5.5	5.9	3.4	19.8	9.7	23.2	16.7	6.7	32.7	36.3	33.7

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Males and females accounted for an equal proportion of cases.
- The highest rates were amongst adults 55 years of age and older, although cases occurred amongst all age groups.

VECTOR-BORNE AND ZOONOTIC DISEASES

For the purposes of this report, diseases transmitted by vectors and animals include:

- Lyme Disease
- Malaria
- Rabies
- West Nile Virus

Between 2009 and 2014, there were 4 cases of malaria, 1 of Lyme disease, and zero cases each of rabies and West Nile Virus in the PHU area. As such, disease summaries are not provided in this section and these diseases are listed in the Rare Diseases Table of Appendix A. Provincial comparisons for these diseases are provided in Table 3 below.

Table 3. Number and proportion of vector-borne and zoonotic diseases, Porcupine Health Unit & Ontario, 2009-2014 combined

Porcupine Health Unit			Rank	Ontario		
Proportion (%) of cases	# of cases	Disease		Disease	# of cases	Proportion (%) of cases
80.0	4	Malaria	1	Malaria	1,299	47.4
20.0	1	Lyme disease	2	Lyme disease	1,010	36.8
0.0	0	Rabies	3	West Nile Virus	433	15.8
0.0	0	West Nile Virus	4	Rabies	1	<0.1
100.0	**5**		**Total**		**2,743**	**100.0**

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015

- There were a total of 5 reported cases of vector-borne and zoonotic diseases in the PHU area between 2009 and 2014, 60% of which were malaria cases occurring in 2011. All of the malaria cases were travel-related.
- Provincially, malaria also accounted for the greatest proportion of vector-borne and zoonotic cases (47.4%).

SEXUALLY TRANSMITTED AND BLOOD-BORNE DISEASES

In this report, sexually transmitted and blood-borne infections include:

- Chlamydia
- Gonorrhea
- Hepatitis B (acute)
- Hepatitis C
- HIV and AIDS
- Syphilis

Since there were less than six reported cases of HIV, syphilis, and AIDS between 2009 and 2014, these diseases are listed in the Rare Diseases Table of Appendix A.

KEY MESSAGES

Table 4. Number and proportion of sexually transmitted and blood-borne infections, Porcupine Health Unit & Ontario, 2009-2014 combined

Porcupine Health Unit			Rank	Ontario		
Proportion (%) of cases	# of cases	Disease		Disease	# of cases	Proportion (%) of cases
83.8	2,600	Chlamydia	1	Chlamydia	205,708	75.4
10.2	315	Gonorrhea	2	Gonorrhea	26,162	9.6
5.5	172	Hepatitis C	3	Hepatitis C	25,807	9.5
0.2	6	Hepatitis B	4	Syphilis*	9,189	3.4
0.2	5	HIV	5	HIV	4,775	1.7
0.2	5	Syphilis*	6	Hepatitis B	700	0.3
0.0	0	AIDS	7	AIDS	586	0.2
100.0	**3,103**		**Total**		**272,927**	**100.0**

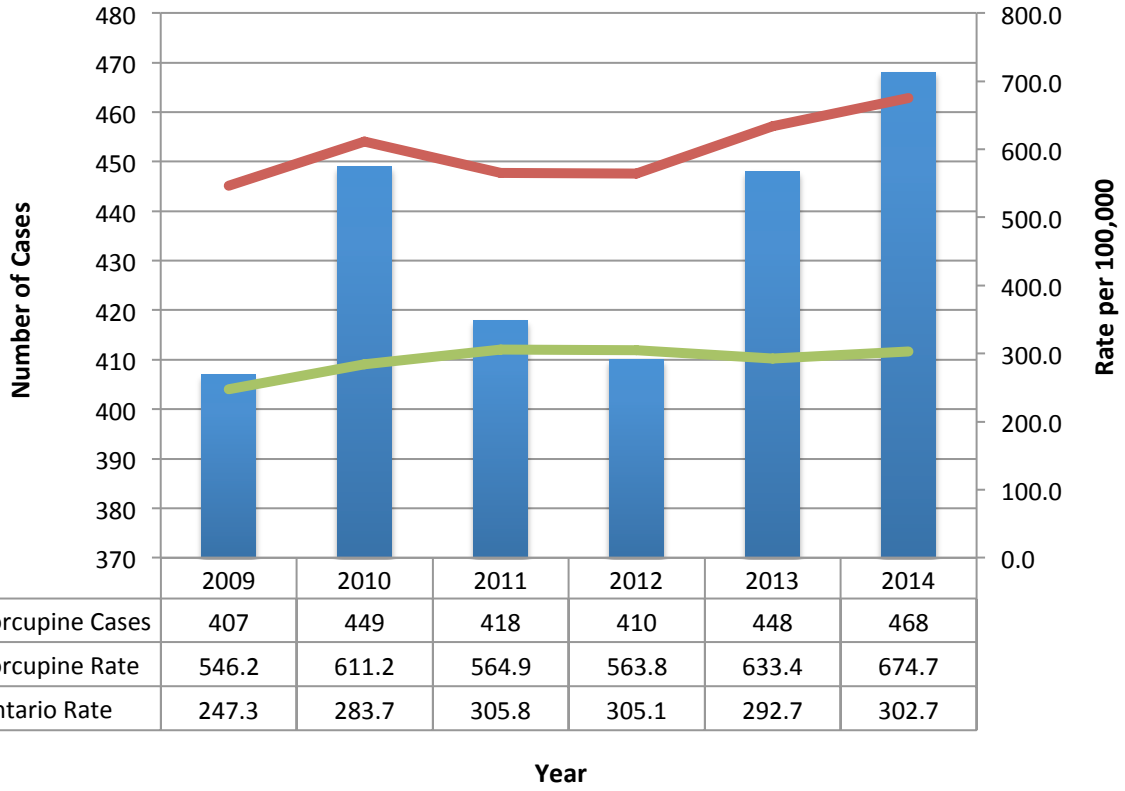
** Includes infectious, non-infectious and unspecified cases of syphilis*

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015

- Locally, there were 3,103 reported cases of sexually transmitted and blood-borne diseases between 2009 and 2014.
- Chlamydia, by far, accounted for the largest proportion of cases both locally (83.8%) and provincially (75.4%).
- The top three diseases — chlamydia, gonorrhea, and hepatitis C — accounted for 99.5% of all cases locally. Provincially, the ranking and proportion of these diseases were similar (94.5%).
- Females (66.2%) and those between 15 and 24 years of age (65.5%) each accounted for about two-thirds of all cases locally.

FOCUS ON: CHLAMYDIA

Figure 7. Age-standardized Chlamydia incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014

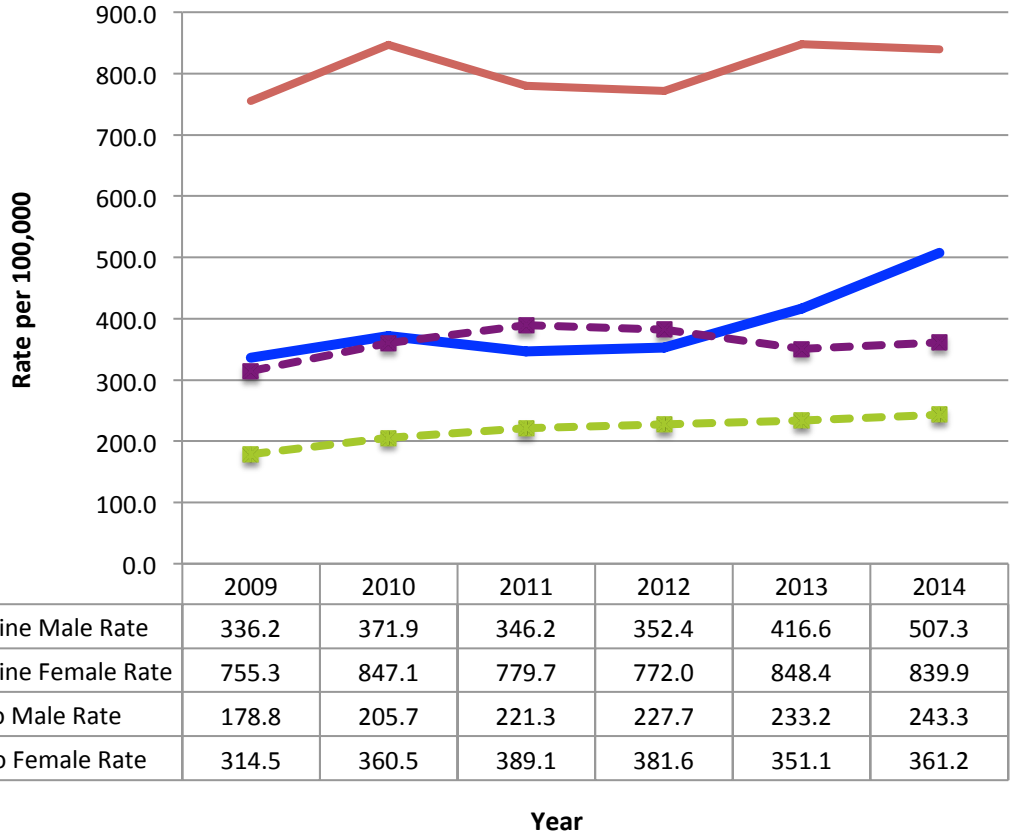


	2009	2010	2011	2012	2013	2014
Porcupine Cases	407	449	418	410	448	468
Porcupine Rate	546.2	611.2	564.9	563.8	633.4	674.7
Ontario Rate	247.3	283.7	305.8	305.1	292.7	302.7

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- There were 2,600 cases of chlamydia between 2009 and 2014 in the PHU area (average rate of 599.0 cases per 100,000).
- The local chlamydia rate increased by 23.5% between 2009 and 2014. During this time, the provincial rate increased at a similar rate, by 22.4%.
- Since 2009, local rates include cases from First Nations on reserve, while provincial rates do not. However, beginning in 2015, provincial rates will also include these cases, making local and provincial rates more comparable.

Figure 8. Age-standardized Chlamydia incidence rates, by sex and year, Porcupine Health Unit & Ontario, 2009-2014

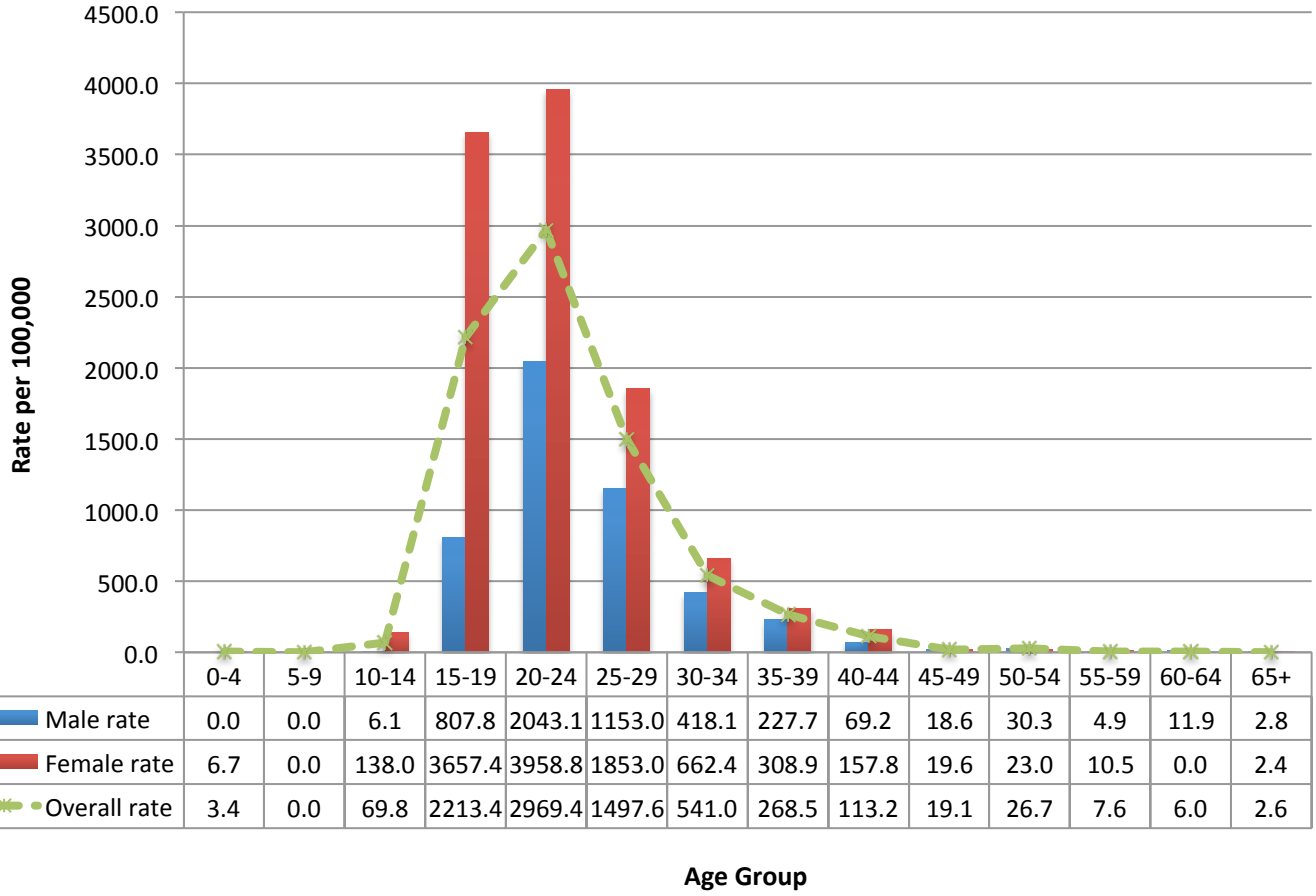


	2009	2010	2011	2012	2013	2014
Porcupine Male Rate	336.2	371.9	346.2	352.4	416.6	507.3
Porcupine Female Rate	755.3	847.1	779.7	772.0	848.4	839.9
Ontario Male Rate	178.8	205.7	221.3	227.7	233.2	243.3
Ontario Female Rate	314.5	360.5	389.1	381.6	351.1	361.2

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Females, both locally and provincially, have higher rates of chlamydia than do males.
- During the study period, the male rate has consistently been increasing locally and provincially, while the female rate is more variable.
- Locally, the female rate is about twice the male rate year-over-year. Provincially, the female rate is about 1.5 times greater than the male rate.

Figure 9. Chlamydia incidence rates, by age group and sex, Porcupine Health Unit, 2009-2014 combined



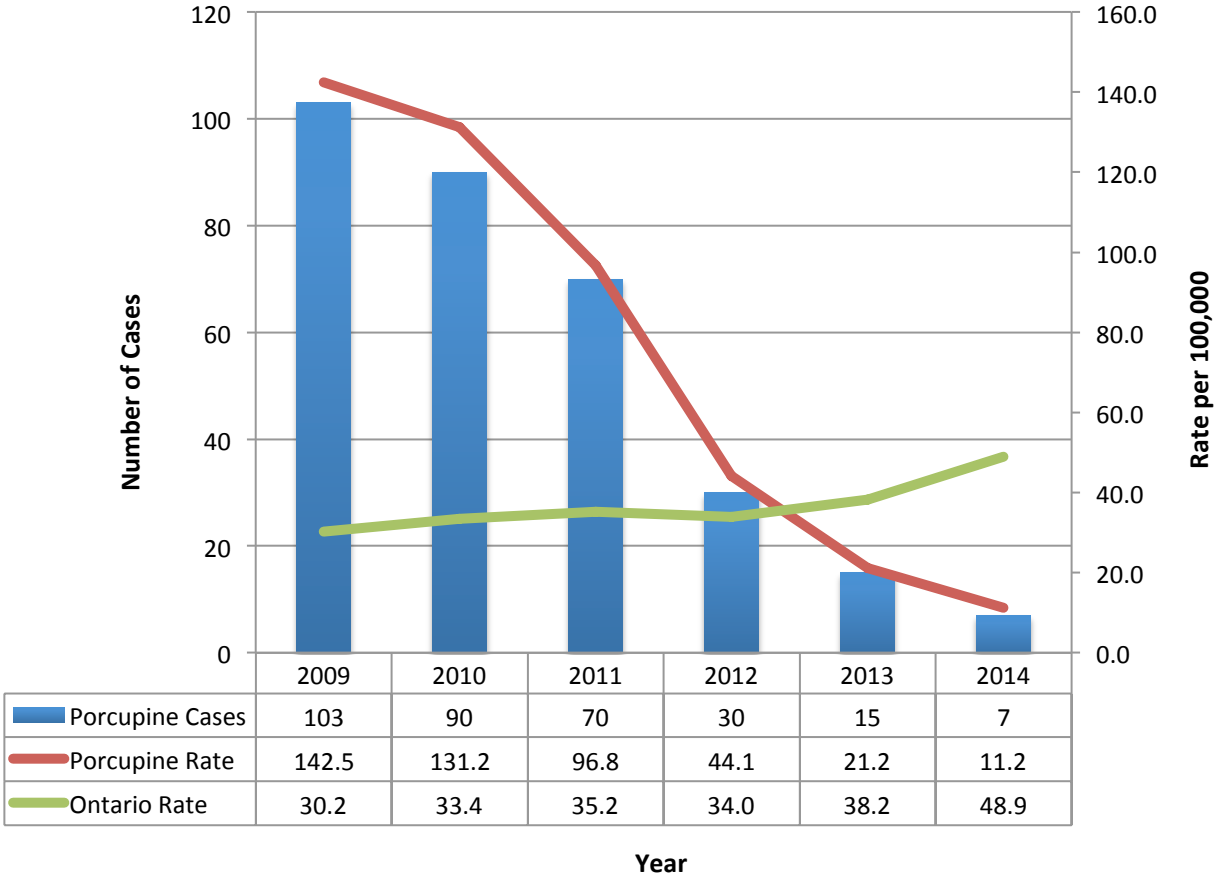
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Male rate	0.0	0.0	6.1	807.8	2043.1	1153.0	418.1	227.7	69.2	18.6	30.3	4.9	11.9	2.8
Female rate	6.7	0.0	138.0	3657.4	3958.8	1853.0	662.4	308.9	157.8	19.6	23.0	10.5	0.0	2.4
Overall rate	3.4	0.0	69.8	2213.4	2969.4	1497.6	541.0	268.5	113.2	19.1	26.7	7.6	6.0	2.6

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Males and females 15 to 24 years of age accounted for the largest proportion (70.2%) of all chlamydia cases in the PHU area over the six-year study period.
- Within this age group, females accounted for the majority of cases (72%) with a rate almost four times the male rate.
- Females 15 to 29 years of age accounted for 88.3% of all female cases of chlamydia, and 60.8% of the overall cases of chlamydia.

FOCUS ON: GONORRHEA

Figure 10. Age-standardized Gonorrhea incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014

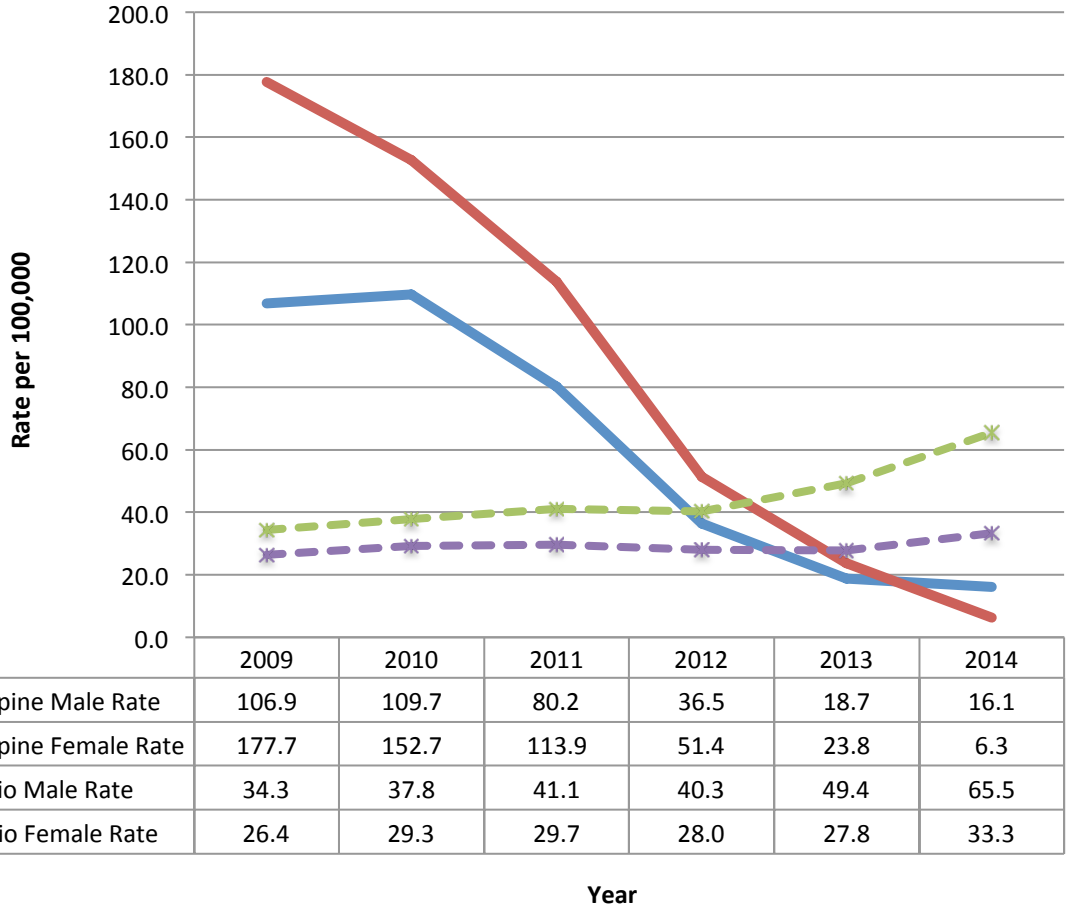


	2009	2010	2011	2012	2013	2014
Porcupine Cases	103	90	70	30	15	7
Porcupine Rate	142.5	131.2	96.8	44.1	21.2	11.2
Ontario Rate	30.2	33.4	35.2	34.0	38.2	48.9

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Locally, there were 315 reported cases of gonorrhea (average rate of 74.5 cases per 100,000) between 2009 and 2014 in the PHU area.
- The local rate decreased by 92.1% during this time period, while the Ontario rate increased by 61.9%.
- Between 2009 and 2012, the local rate was higher than the provincial rate, but since 2013, the local rate has been lower.

Figure 11. Age-standardized Gonorrhea incidence rates, by sex and year, Porcupine Health Unit & Ontario, 2009-2014

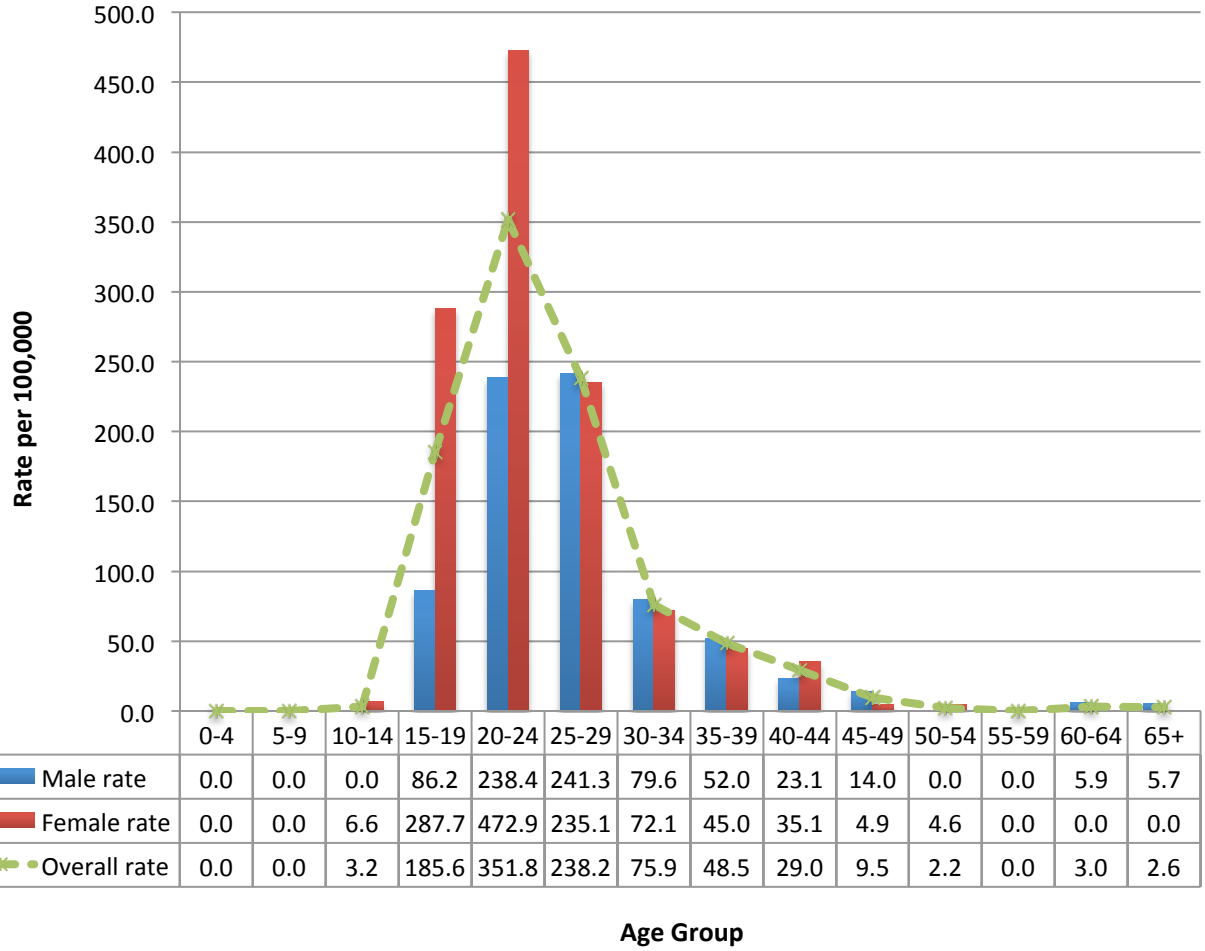


	2009	2010	2011	2012	2013	2014
Porcupine Male Rate	106.9	109.7	80.2	36.5	18.7	16.1
Porcupine Female Rate	177.7	152.7	113.9	51.4	23.8	6.3
Ontario Male Rate	34.3	37.8	41.1	40.3	49.4	65.5
Ontario Female Rate	26.4	29.3	29.7	28.0	27.8	33.3

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Locally, the gonorrhea rate for females has been higher than the rate for males, except in 2014 when it was lower. Provincially, the trend is the opposite: the male rates are consistently higher than the female rates.
- Between 2009 and 2011, local rates were significantly higher than provincial rates; however, since 2012, local rates have been similar to or lower than provincial rates.

Figure 12. Gonorrhea incidence rates, by age group and sex, Porcupine Health Unit, 2009-2014 combined



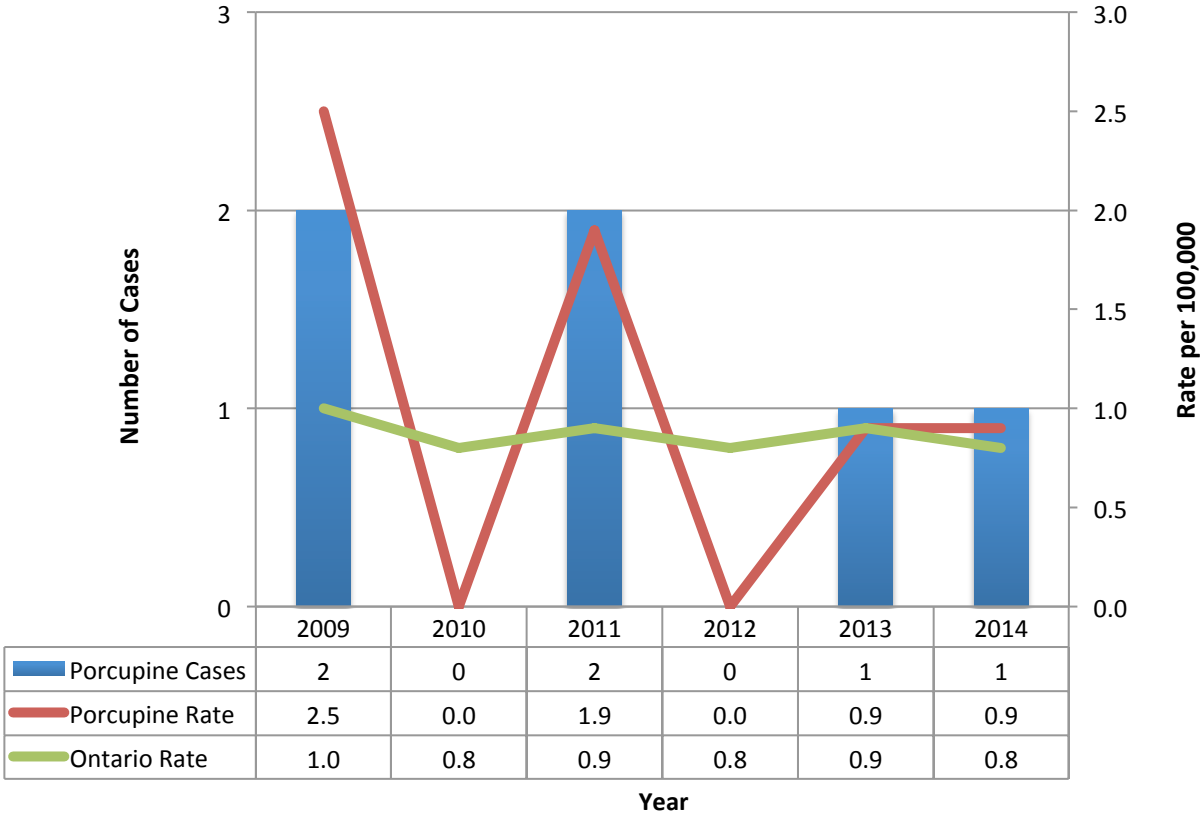
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Male rate	0.0	0.0	0.0	86.2	238.4	241.3	79.6	52.0	23.1	14.0	0.0	0.0	5.9	5.7
Female rate	0.0	0.0	6.6	287.7	472.9	235.1	72.1	45.0	35.1	4.9	4.6	0.0	0.0	0.0
Overall rate	0.0	0.0	3.2	185.6	351.8	238.2	75.9	48.5	29.0	9.5	2.2	0.0	3.0	2.6

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Males and females 20 to 29 years of age accounted for more than half of the total number of local gonorrhea cases (60.3%) over the six-year study period.
- Within this age group, females accounted for the majority of cases (58.9%), with a rate about 1.5 times the male rate.
- Females 15 to 29 years of age accounted for 85.9% of all female cases of gonorrhea, and 52.1% of the overall cases of gonorrhea.

HEPATITIS B (ACUTE)

Figure 13. Age-standardized Hepatitis B incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014



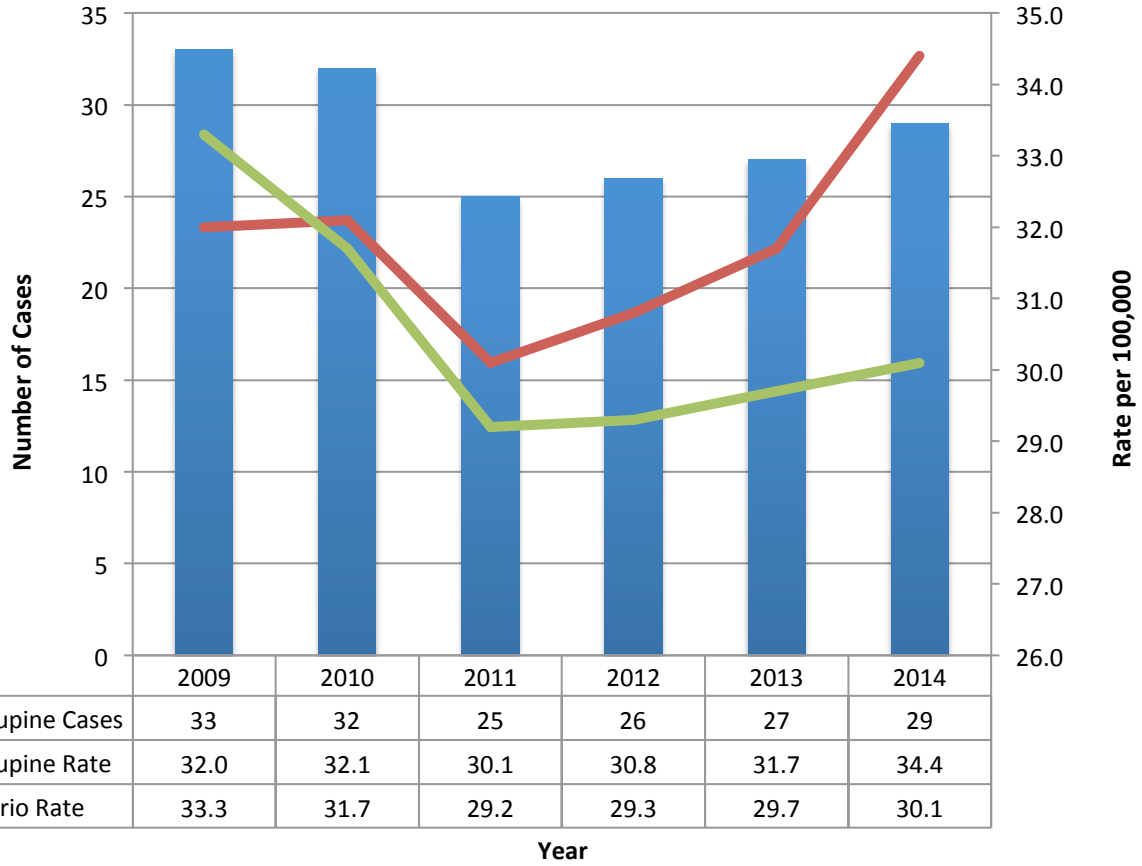
	2009	2010	2011	2012	2013	2014
Porcupine Cases	2	0	2	0	1	1
Porcupine Rate	2.5	0.0	1.9	0.0	0.9	0.9
Ontario Rate	1.0	0.8	0.9	0.8	0.9	0.8

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- There were a total of 6 cases of hepatitis B in the PHU area between 2009 and 2014 (average rate of 1.0 cases per 100,000).
- The local rate fluctuated between 0.0 cases and 2.5 cases per 100,000.
- Due to small numbers and the resulting instability in rates, caution should be used in interpreting this data.

FOCUS ON: HEPATITIS C

Figure 14. Age-standardized Hepatitis C incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014

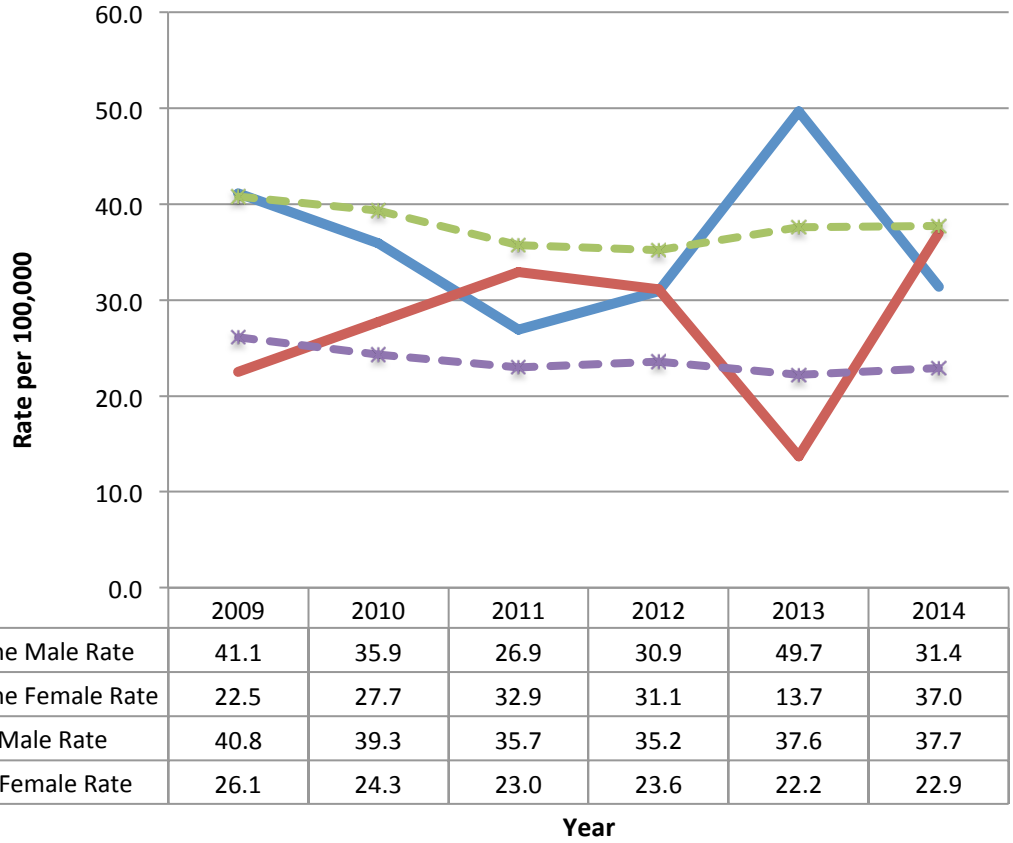


	2009	2010	2011	2012	2013	2014
Porcupine Cases	33	32	25	26	27	29
Porcupine Rate	32.0	32.1	30.1	30.8	31.7	34.4
Ontario Rate	33.3	31.7	29.2	29.3	29.7	30.1

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Between 2009 and 2014, there were a total of 172 cases of hepatitis C in the PHU area (average rate of 31.9 cases per 100,000).
- During this time, the PHU rate increased by 7.5%, while the provincial rate decreased by 9.6%.
- Since 2010, the local rate has been higher than the provincial rate and since 2011, the provincial rate has increased steadily, while the local rate has increased more dramatically.

Figure 15. Age-standardized Hepatitis C incidence rates, by sex and year, Porcupine Health Unit & Ontario, 2009-2014

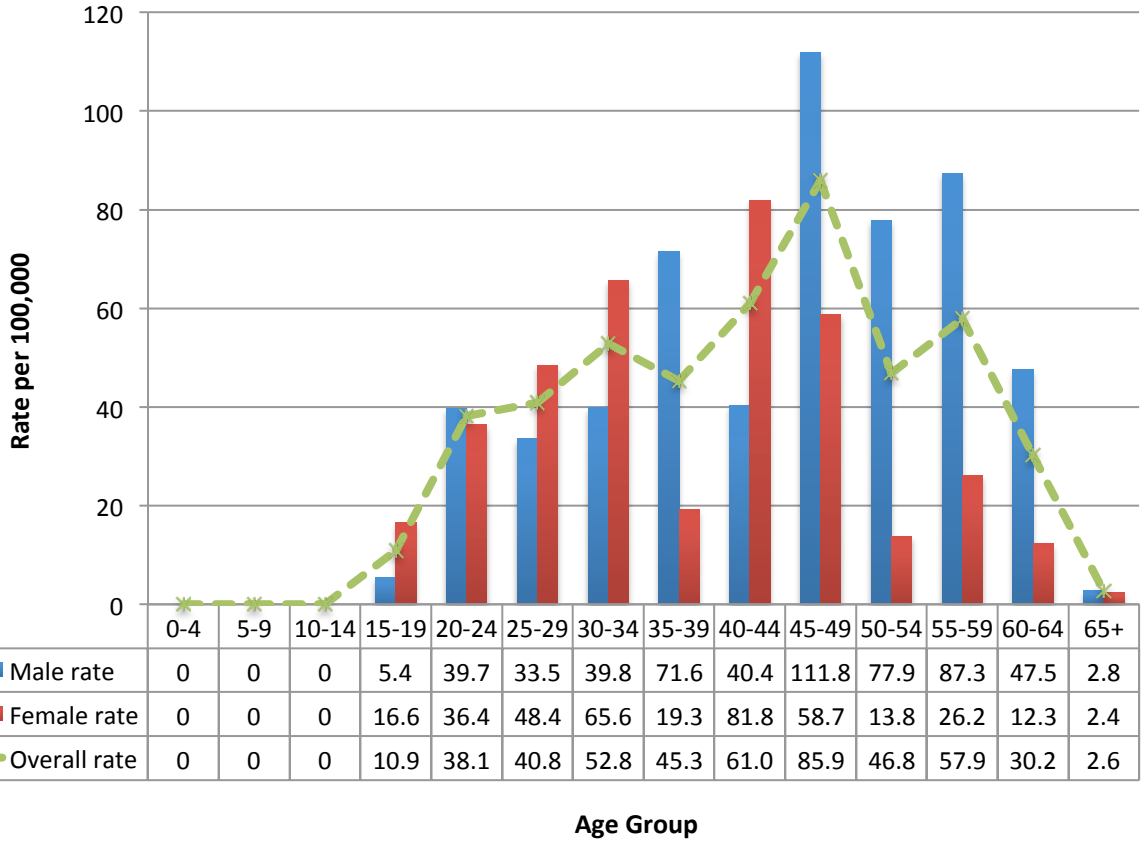


	2009	2010	2011	2012	2013	2014
Porcupine Male Rate	41.1	35.9	26.9	30.9	49.7	31.4
Porcupine Female Rate	22.5	27.7	32.9	31.1	13.7	37.0
Ontario Male Rate	40.8	39.3	35.7	35.2	37.6	37.7
Ontario Female Rate	26.1	24.3	23.0	23.6	22.2	22.9

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- In most years between 2009 and 2014, the local male rate for hepatitis C was higher than the local female rate. Similarly, the provincial male rates of disease have remained consistently higher than female rates.
- In most years of the study, the provincial male rates were higher than the local male rates. For females, local rates have been higher than provincial rates.

Figure 16. Hepatitis C incidence rates, by age group and sex, Porcupine Health Unit, 2009-2014 combined



	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Male rate	0	0	0	5.4	39.7	33.5	39.8	71.6	40.4	111.8	77.9	87.3	47.5	2.8
Female rate	0	0	0	16.6	36.4	48.4	65.6	19.3	81.8	58.7	13.8	26.2	12.3	2.4
Overall rate	0	0	0	10.9	38.1	40.8	52.8	45.3	61.0	85.9	46.8	57.9	30.2	2.6

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- The highest rates of disease were amongst males 45 to 59 years of age, with rates ranging from 77.9 to 111.8 cases per 100,000. This age group of males accounted for more than a third of the total cases (34.9%).
- Amongst females, the highest rates of disease were amongst those 40 to 44 and 30 to 34 years of age.

VACCINE PREVENTABLE DISEASES

The vaccine preventable diseases in this report include:

- Influenza
- Invasive Meningococcal Disease (IMD)
- Invasive Pneumococcal Disease (IPD)
- Measles (Red Measles)
- Mumps
- Pertussis (Whooping Cough)

There were less than six reported cases of mumps, IMD, and measles in the PHU area between 2009 and 2014. As such, these diseases are not further discussed in this section, but are presented in the Rare Diseases Table of Appendix A.

KEY MESSAGES

Table 5. Number and proportion of vaccine preventable diseases, Porcupine Health Unit & Ontario, 2009-2014 combined

Porcupine Health Unit				Ontario		
Proportion (%) of cases	# of cases	Disease	**Rank**	Disease	# of cases	Proportion (%) of cases
89.6	498	Influenza*	1	Influenza*	49,600	83.0
6.5	36	IPD	2	IPD	7,118	11.9
3.1	17	Pertussis	3	Pertussis	2,386	4.0
0.5	3	Mumps	4	Mumps	350	0.6
0.4	2	IMD	5	IMD	229	0.4
0.0	0	Measles	6	Measles	64	0.1
100.0	**556**		**Total**		**59,747**	**100.0**

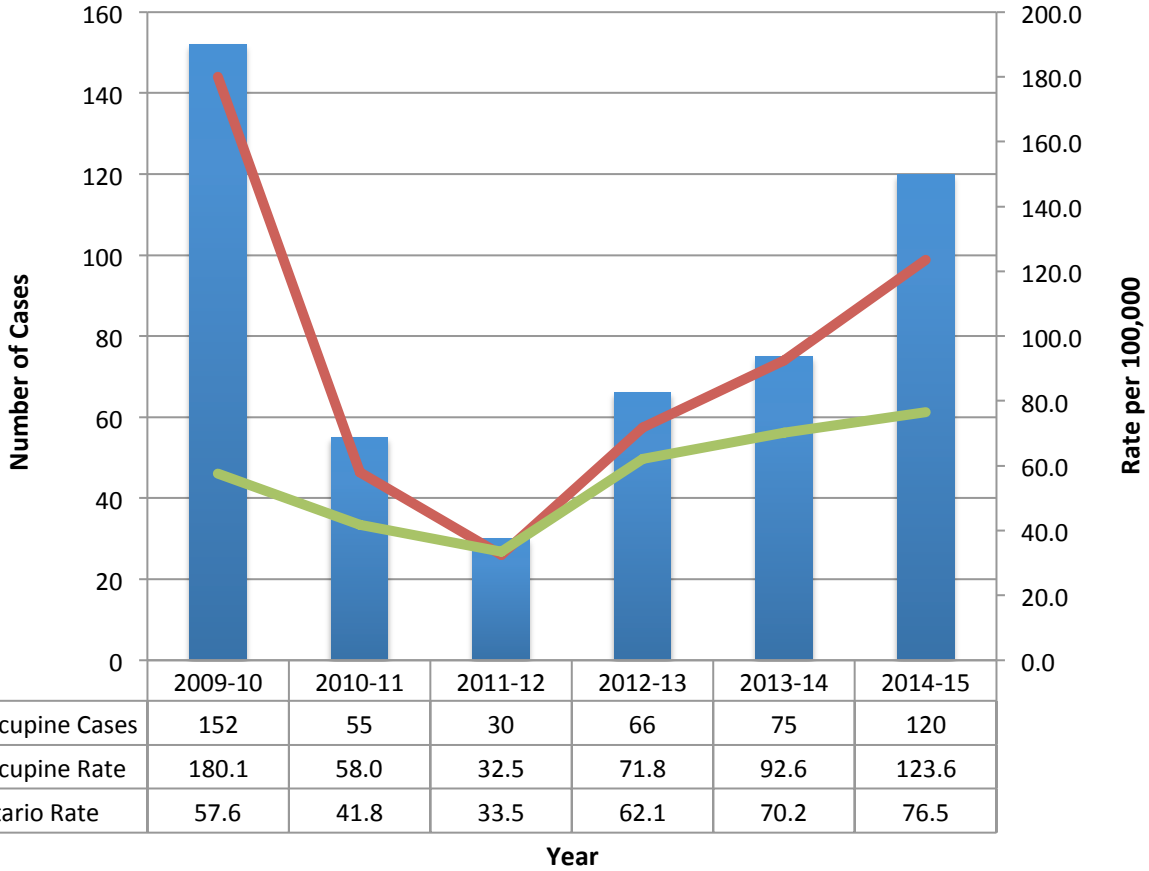
** Influenza data is by seasonal year from 2009-10 to 2014-15*

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Between 2009 and 2014, there were 556 reported cases of vaccine preventable disease in the PHU area.
- Influenza, by far, accounted for the largest proportion of cases, both locally (89.6%) and provincially (83.0%).
- The top three diseases — influenza, IPD and pertussis — accounted for 99.2% of all cases locally. Provincially, the ranking and proportion of these diseases was similar (98.9%).
- Females (56.7%), adults over the age of 65 (28.8%), and children less than 5 years of age (18%) accounted for the majority of cases.

INFLUENZA

Figure 17. Age-standardized Influenza incidence rates, by seasonal year, Porcupine Health Unit & Ontario, 2009-10 to 2014-15

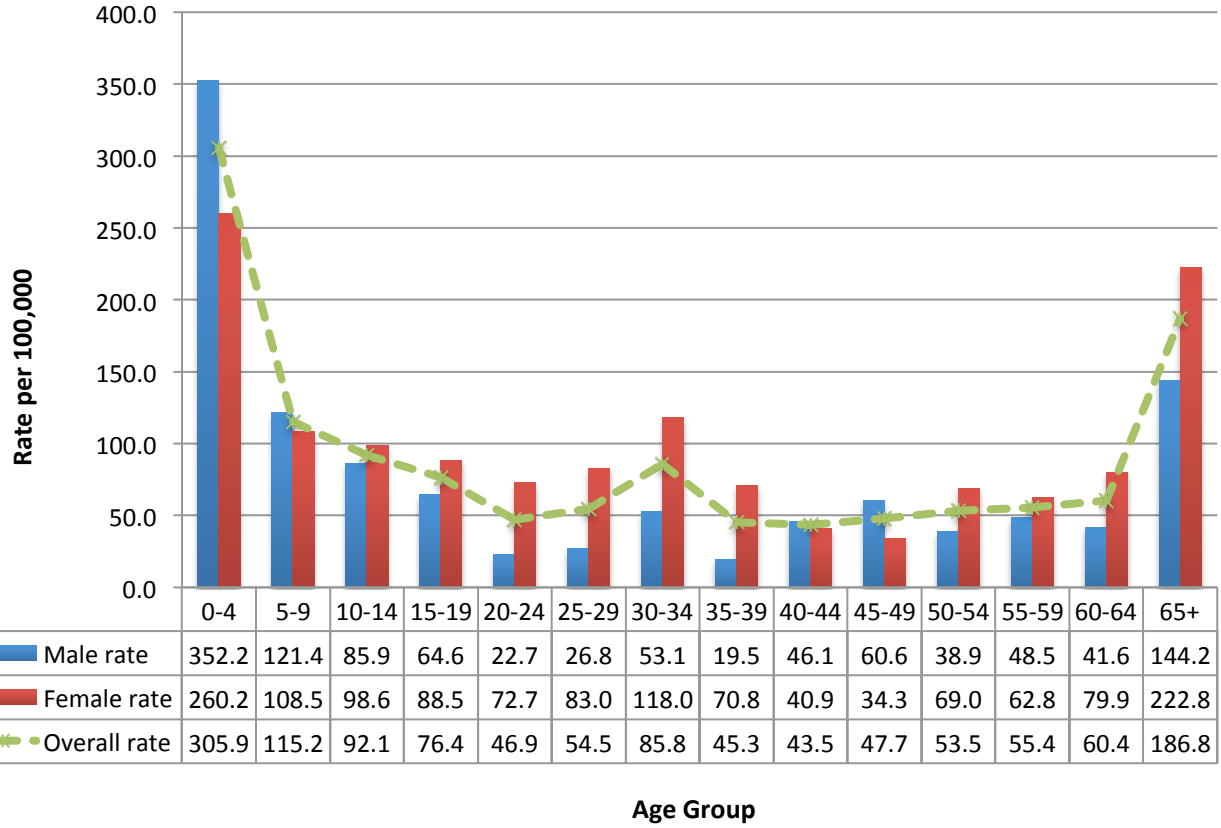


	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Porcupine Cases	152	55	30	66	75	120
Porcupine Rate	180.1	58.0	32.5	71.8	92.6	123.6
Ontario Rate	57.6	41.8	33.5	62.1	70.2	76.5

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Over the six influenza seasons, 2009-10 to 2014-15, there were 498 reported cases of influenza in the PHU area (average rate of 93.1 cases per 100,000).
- The local rate was highest during the H1N1 pandemic in the 2009-10 influenza season. The most recent increase in rate in 2014-15 is due in part to the sub-optimal match between the vaccine and the circulating virus during that season.
- In most years of the study, the local rate has been higher than the provincial rate (93.1 vs. 57.0 average cases per 100,000).

Figure 18. Influenza incidence rates, by age group and sex, Porcupine Health Unit, 2009-10 to 2014-15 combined



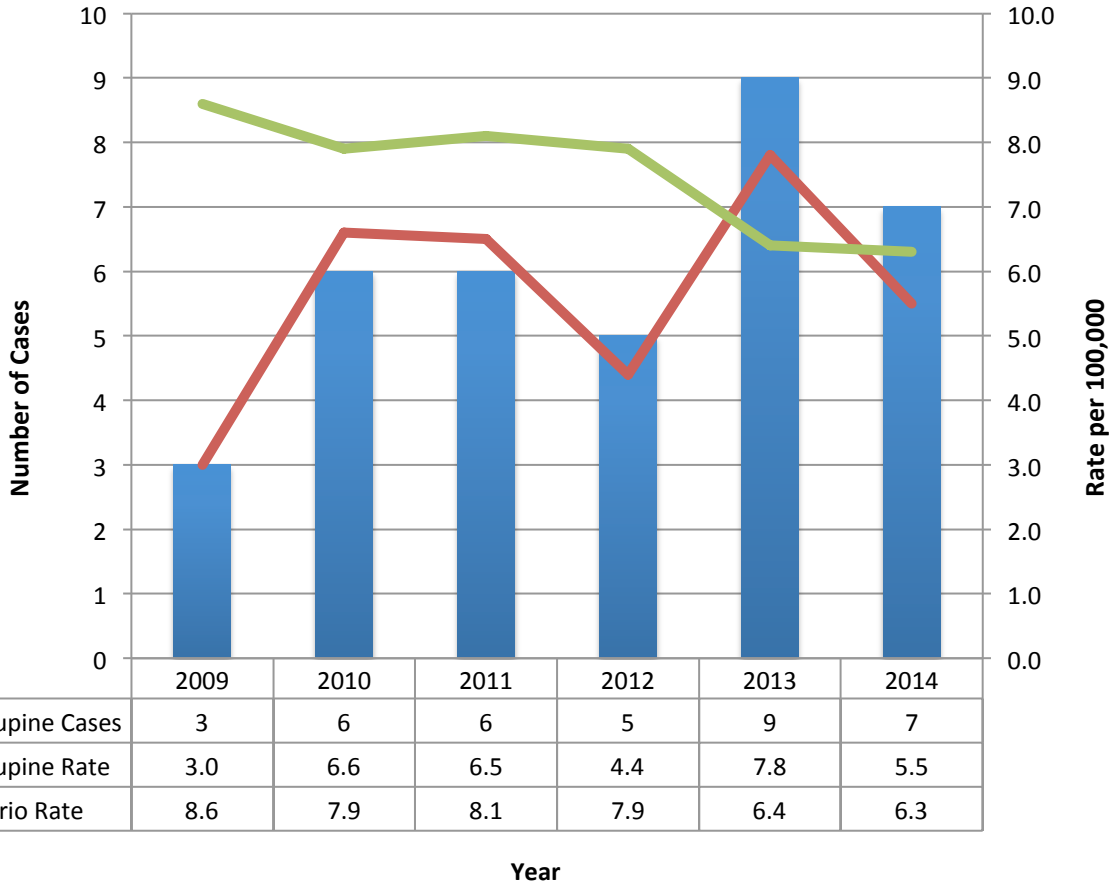
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Male rate	352.2	121.4	85.9	64.6	22.7	26.8	53.1	19.5	46.1	60.6	38.9	48.5	41.6	144.2
Female rate	260.2	108.5	98.6	88.5	72.7	83.0	118.0	70.8	40.9	34.3	69.0	62.8	79.9	222.8
Overall rate	305.9	115.2	92.1	76.4	46.9	54.5	85.8	45.3	43.5	47.7	53.5	55.4	60.4	186.8

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Females accounted for the majority of influenza cases (57.2%) locally.
- The highest rates of disease were amongst children under the age of 5 (305.9 cases per 100,000), followed by adults 65 years of age and older (186.8 cases per 100,000).

INVASIVE PNEUMOCOCCAL DISEASE (IPD)

Figure 19. Age-standardized Invasive Pneumococcal Disease incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014

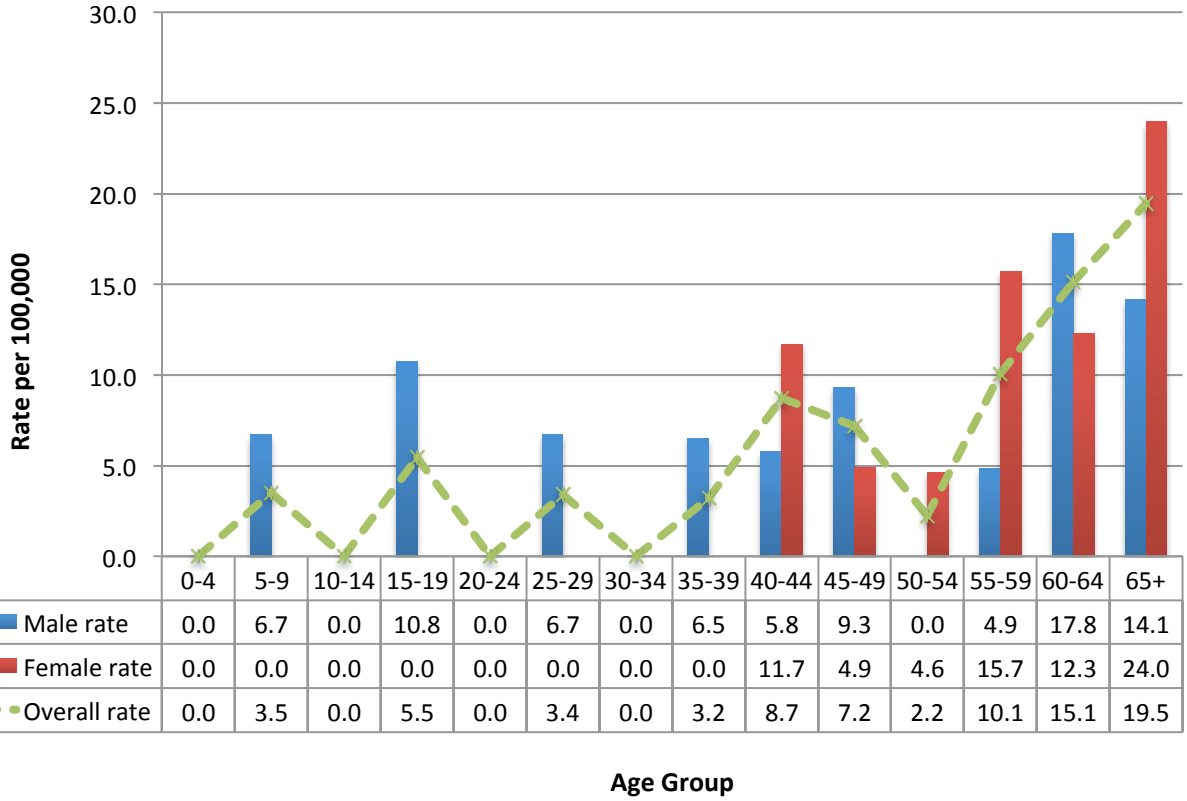


	2009	2010	2011	2012	2013	2014
Porcupine Cases	3	6	6	5	9	7
Porcupine Rate	3.0	6.6	6.5	4.4	7.8	5.5
Ontario Rate	8.6	7.9	8.1	7.9	6.4	6.3

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- There were 36 reported cases of IPD in the PHU area between 2009 and 2014 (average rate of 5.6 cases per 100,000).
- The local rate has fluctuated between a low of 3.0 cases per 100,000 in 2009 to a high of 7.8 cases per 100,000 in 2013.
- Except for 2013, the local rate has remained below the provincial rate (average of 7.5 cases per 100,000).
- Due to small numbers and the resulting instability in rates, caution should be used in interpreting the data.

Figure 20. Invasive Pneumococcal Disease incidence rates, by age group and sex, Porcupine Health Unit, 2009-2014 combined



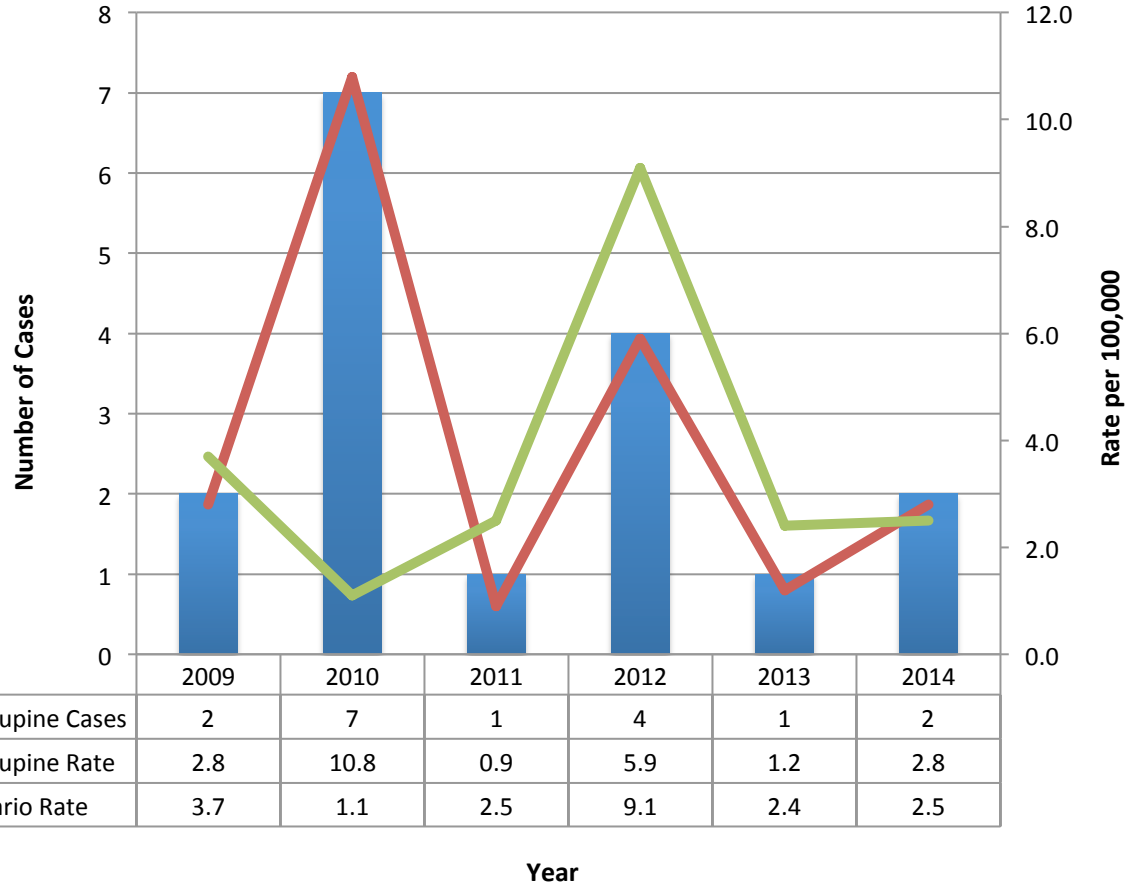
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Male rate	0.0	6.7	0.0	10.8	0.0	6.7	0.0	6.5	5.8	9.3	0.0	4.9	17.8	14.1
Female rate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.7	4.9	4.6	15.7	12.3	24.0
Overall rate	0.0	3.5	0.0	5.5	0.0	3.4	0.0	3.2	8.7	7.2	2.2	10.1	15.1	19.5

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Local cases of IPD were evenly split between males and females (52.8% females).
- Male cases occurred amongst most of the age groups, whereas female cases were only amongst those 40 years of age and older.
- Cases of IPD were reported most frequently amongst older individuals, aged 60 years of age and older (between 15.1 and 19.5 cases per 100,000).

PERTUSSIS (WHOOPING COUGH)

Figure 21. Age-standardized Pertussis incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014

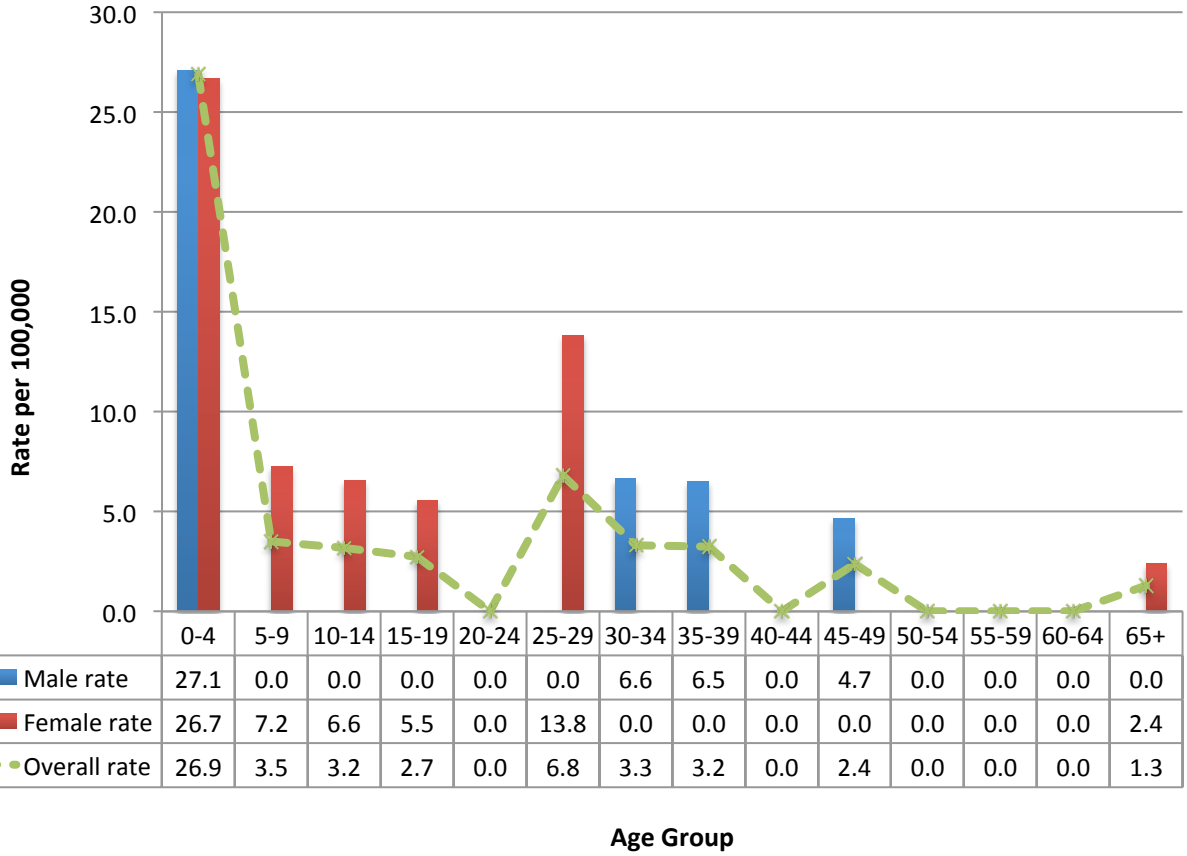


	2009	2010	2011	2012	2013	2014
Porcupine Cases	2	7	1	4	1	2
Porcupine Rate	2.8	10.8	0.9	5.9	1.2	2.8
Ontario Rate	3.7	1.1	2.5	9.1	2.4	2.5

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- There were 17 reported cases of pertussis in the PHU area (average rate of 4.1 cases per 100,000) between 2009 and 2014.
- The local rate has fluctuated significantly over this time period, with a peak rate of 10.8 cases per 100,000 in 2010. Four of the 7 cases of pertussis that year were part of a community outbreak.
- Due to small numbers and resulting instability in rates, caution should be used in interpreting this data.

Figure 22. Pertussis incidence rates, by age group and sex, Porcupine Health Unit, 2009-2014 combined



	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Male rate	27.1	0.0	0.0	0.0	0.0	0.0	6.6	6.5	0.0	4.7	0.0	0.0	0.0	0.0
Female rate	26.7	7.2	6.6	5.5	0.0	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4
Overall rate	26.9	3.5	3.2	2.7	0.0	6.8	3.3	3.2	0.0	2.4	0.0	0.0	0.0	1.3

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- Pertussis cases occurred more often amongst females (58.8%) in the PHU area.
- The highest rates of diseases were amongst children less than 5 years of age (26.9 cases per 100,000).

OTHER INFECTIOUS DISEASES

There are some reportable diseases that are not easily categorized into one of the previous sections. These include:

- Encephalitis/meningitis
- Group B Streptococcal Disease (Neonatal)
- Invasive Group A Streptococcal Disease (iGAS)
- Legionellosis
- Tuberculosis (TB)

Between 2009 and 2014, there were less than six reported cases of each of encephalitis/meningitis, legionellosis, and group B streptococcal disease (neonatal) in the PHU area. As such, these diseases are not further elaborated in this section, but are included in the Rare Diseases Table of Appendix A.

KEY MESSAGES

Table 6. Number and proportion of other infectious diseases, Porcupine Health Unit & Ontario, 2009-2014 combined

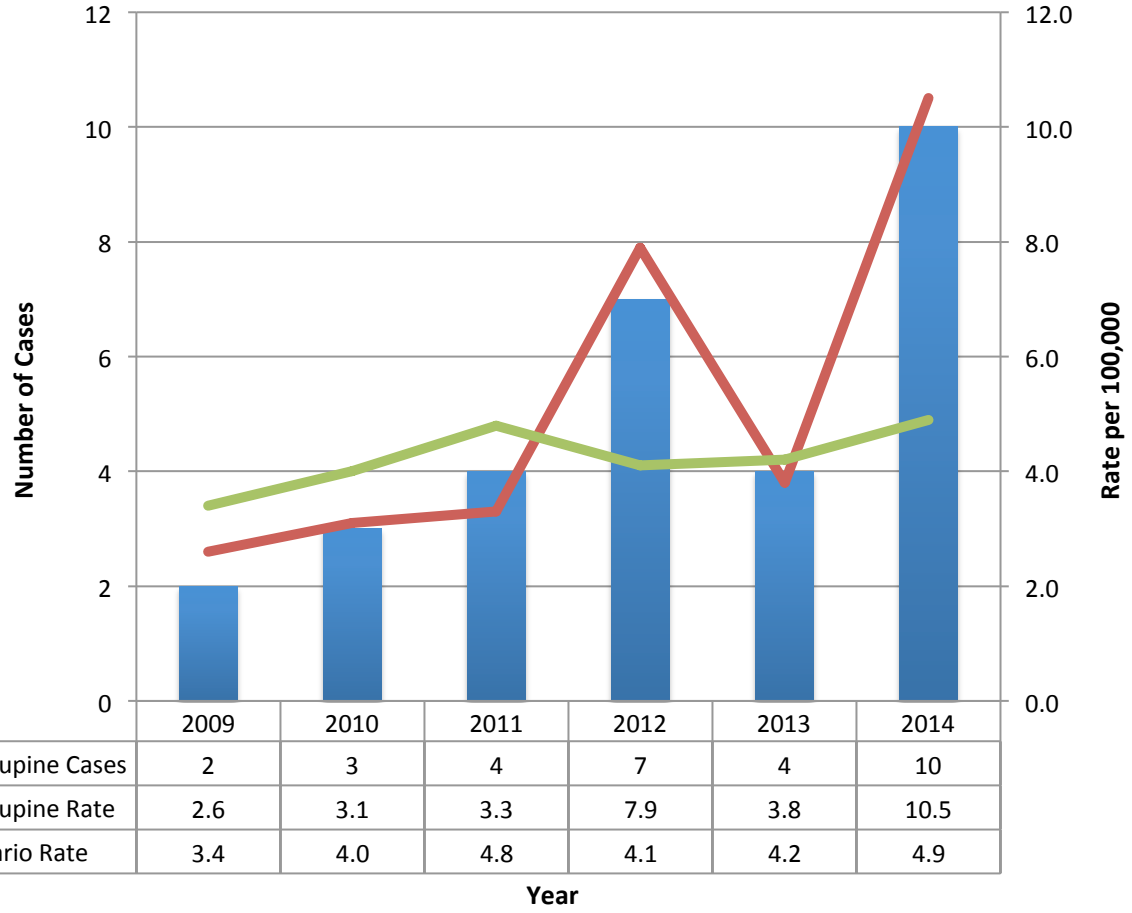
Porcupine Health Unit			Rank	Ontario		
Proportion (%) of cases	# of cases	Disease		Disease	# of cases	Proportion (%) of cases
61.2	30	iGAS	1	Tuberculosis	3,869	37.0
22.4	11	Tuberculosis	2	iGAS	3,655	35.0
8.2	4	Encephalitis/ meningitis	3	Encephalitis/ meningitis	1,657	15.9
8.2	4	Legionellosis	4	Legionellosis	938	9.0
0.0	0	Group B streptococcal disease (neonatal)	5	Group B streptococcal disease (neonatal)	335	3.2
100.0	**49**		**Total**		**10,454**	**100.0**

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, September 2015

- Locally, there were a total of 49 reported cases of 'other' infectious diseases in the PHU area between 2009 and 2014.
- The top two diseases locally, iGAS and tuberculosis, accounted for 83.6% of all cases. Provincially, these two diseases accounted for 72.0% of all cases.
- In the PHU area, males (55.1%) and adults over the age of 65 (24.5%) accounted for the majority of cases.

INVASIVE GROUP A STREPTOCOCCAL DISEASE (IGAS)

Figure 23. Age-standardized Invasive Group A Streptococcal disease incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014

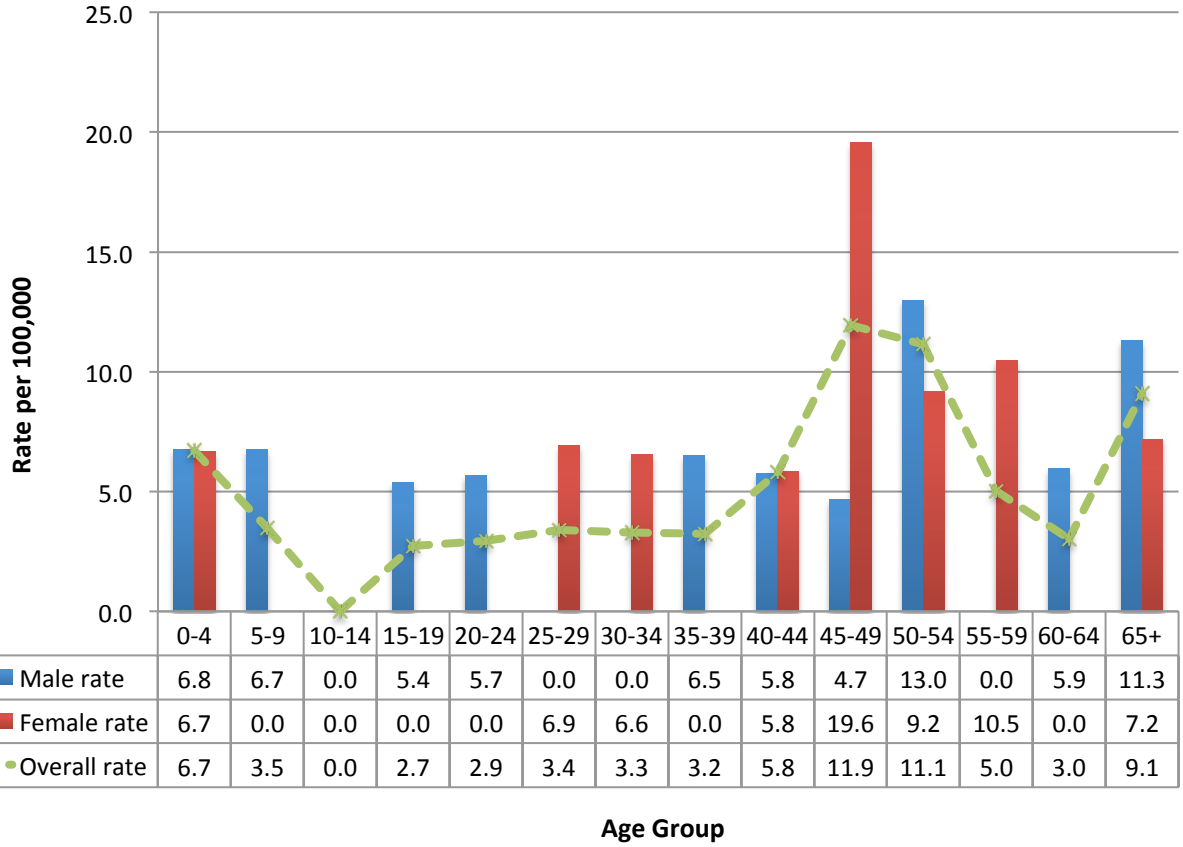


	2009	2010	2011	2012	2013	2014
Porcupine Cases	2	3	4	7	4	10
Porcupine Rate	2.6	3.1	3.3	7.9	3.8	10.5
Ontario Rate	3.4	4.0	4.8	4.1	4.2	4.9

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- There were 30 reported cases of iGAS in the PHU area (average rate of 5.2 cases per 100,000).
- The local rate fluctuated between a low of 2.6 cases per 100,000 in 2009 and a high of 10.5 cases per 100,000 in 2014.
- In most years of the study, the local rate has remained below the provincial rate (average of 4.2 cases per 100,000). Both the local and provincial rates have increased between 2009 and 2014.
- Due to small numbers and resulting instability in rates, caution should be used in interpreting the data.

Figure 24. Invasive Group A Streptococcal disease incidence rates, by age group and sex, Porcupine Health Unit, 2009-2014 combined



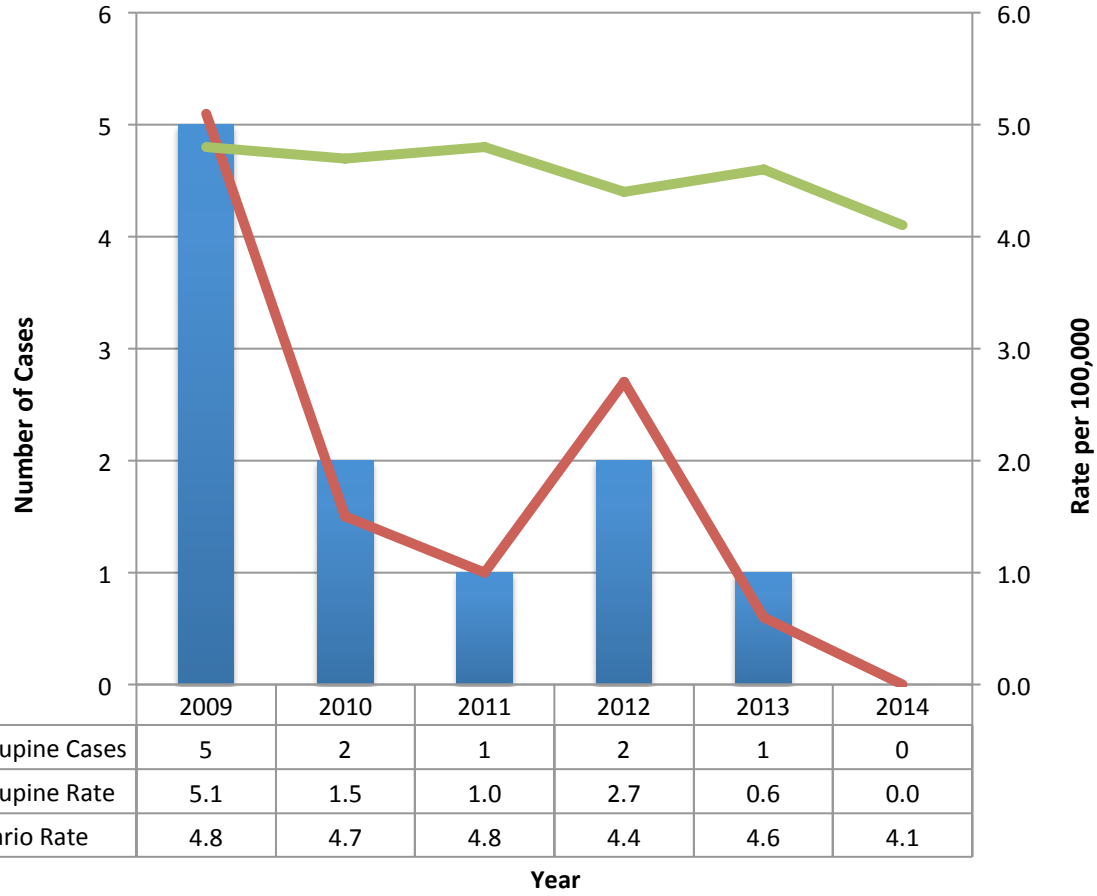
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Male rate	6.8	6.7	0.0	5.4	5.7	0.0	0.0	6.5	5.8	4.7	13.0	0.0	5.9	11.3
Female rate	6.7	0.0	0.0	0.0	0.0	6.9	6.6	0.0	5.8	19.6	9.2	10.5	0.0	7.2
Overall rate	6.7	3.5	0.0	2.7	2.9	3.4	3.3	3.2	5.8	11.9	11.1	5.0	3.0	9.1

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- The local cases of iGAS were equally distributed amongst males and females.
- The highest rates were amongst adults 45 to 54 years of age (11.1 to 11.9 cases per 100,000), while the lowest rates were amongst those 10 to 14 years of age.

TUBERCULOSIS (TB)

Figure 25. Age-standardized Tuberculosis incidence rates, by year, Porcupine Health Unit & Ontario, 2009-2014



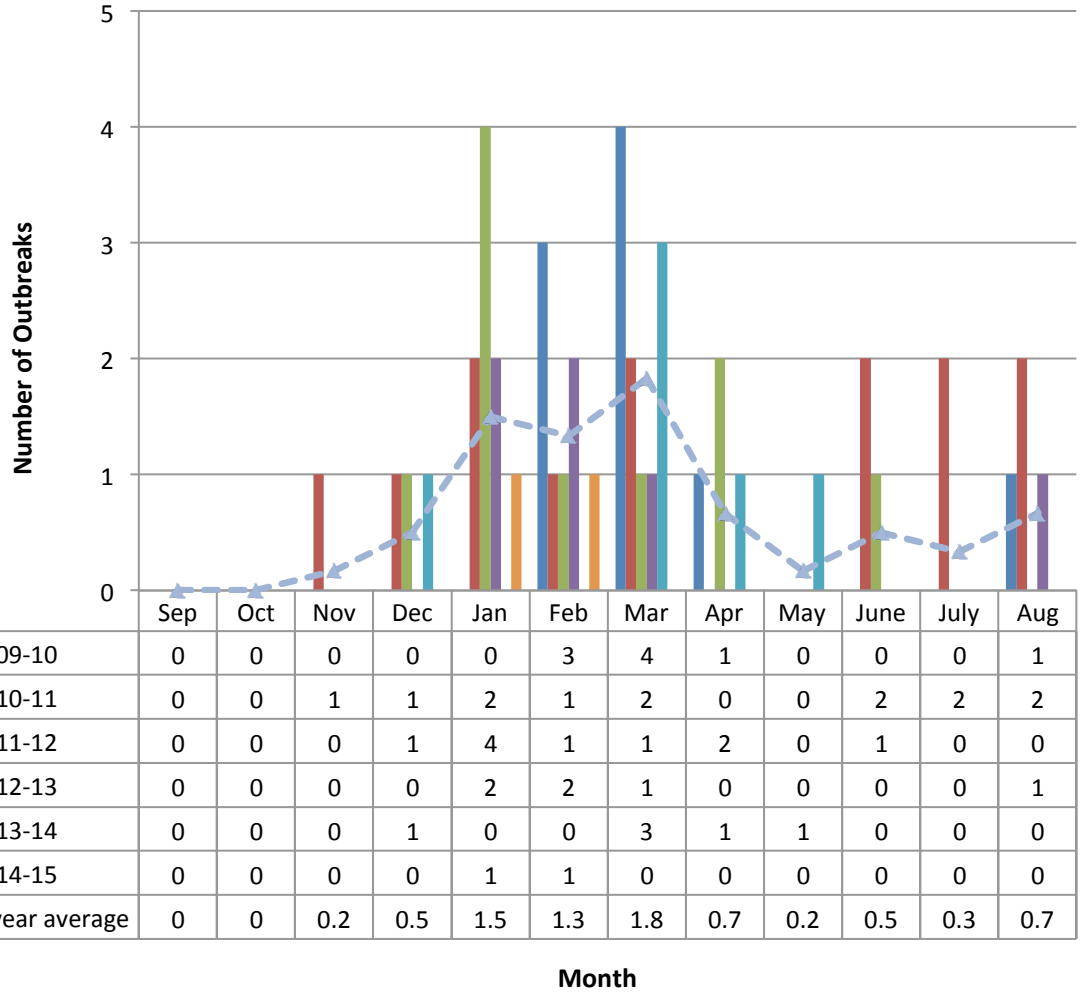
	2009	2010	2011	2012	2013	2014
Porcupine Cases	5	2	1	2	1	0
Porcupine Rate	5.1	1.5	1.0	2.7	0.6	0.0
Ontario Rate	4.8	4.7	4.8	4.4	4.6	4.1

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015; Ontario data: iPHIS 2009-2014, extracted from Query tool, PHO, July 2015; Population estimates, IntelliHealth, MOHLTC, extracted June 2015

- There were a total of 11 reported cases of tuberculosis in the PHU area between 2009 and 2014 (average rate of 1.6 cases per 100,000).
- The local rate of TB peaked in 2009 with 5.1 cases per 100,000, but has since decreased to 0.0 cases per 100,000 in 2014.
- The local rate of disease has remained below the provincial rate (average 4.8 cases per 100,000) during the study period.
- Due to small numbers and resulting instability in rates, caution should be used in interpreting this data.

OUTBREAKS

Figure 26. Number of enteric outbreaks, by month and seasonal year, Porcupine Health Unit, 2009-10 to 2014-15*



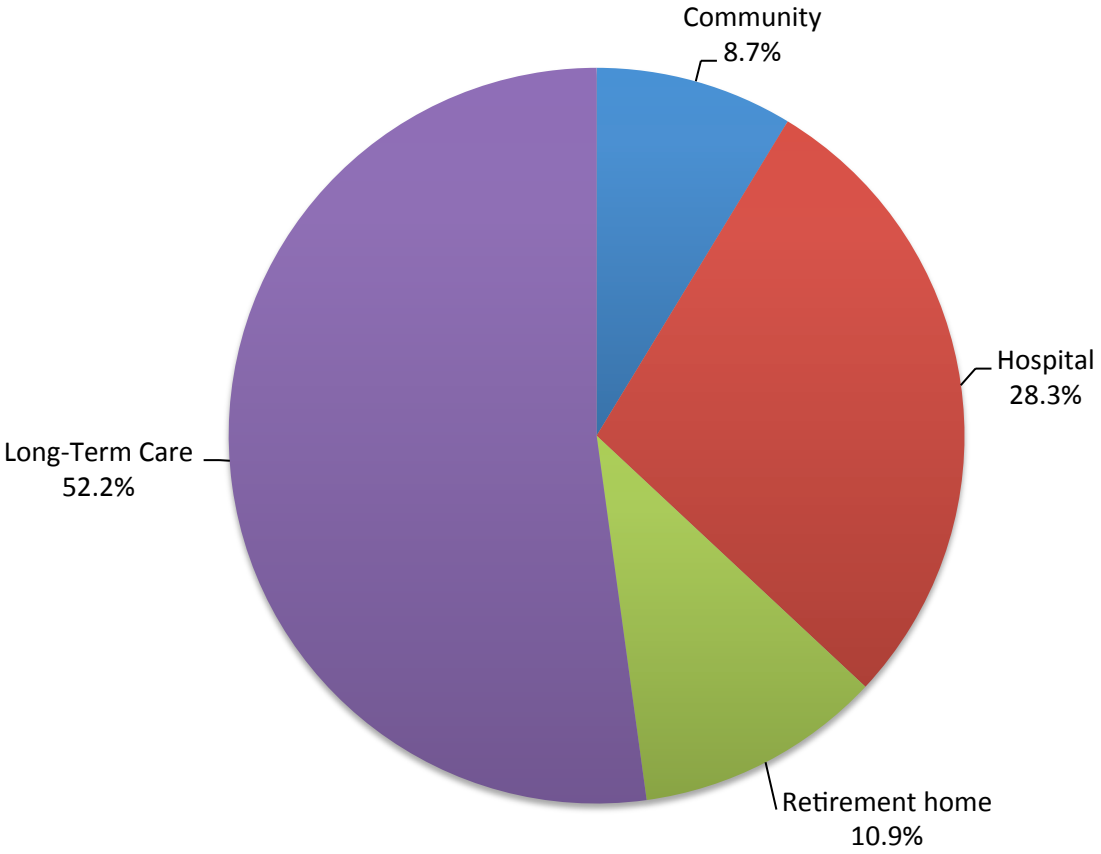
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug
2009-10	0	0	0	0	0	3	4	1	0	0	0	1
2010-11	0	0	1	1	2	1	2	0	0	2	2	2
2011-12	0	0	0	1	4	1	1	2	0	1	0	0
2012-13	0	0	0	0	2	2	1	0	0	0	0	1
2013-14	0	0	0	1	0	0	3	1	1	0	0	0
2014-15	0	0	0	0	1	1	0	0	0	0	0	0
6-year average	0	0	0.2	0.5	1.5	1.3	1.8	0.7	0.2	0.5	0.3	0.7

** Outbreaks are presented by seasonal year (September 1 to August 31 of a given year)*

Source: iPHIS 2009-2015, MOHLTC, extracted September and October, 2015

- There were a total of 46 enteric outbreaks (average of 7.7 per year) reported in the PHU area between 2009-10 and 2014-15. The annual number of outbreaks fluctuated between two outbreaks in 2014-15 to 13 outbreaks in 2010-11.
- This data includes an outbreak of 13 cases of Clostridium Difficile Infection (CDI), which is rare, but occurred in a local hospital in 2009.
- Enteric outbreaks showed a seasonal trend with the highest number occurring between January and March of any given year, peaking at an average of 1.8 outbreaks in March.

Figure 27. Proportion of enteric outbreaks, by risk setting, Porcupine Health Unit, 2009-10 to 2014-15*

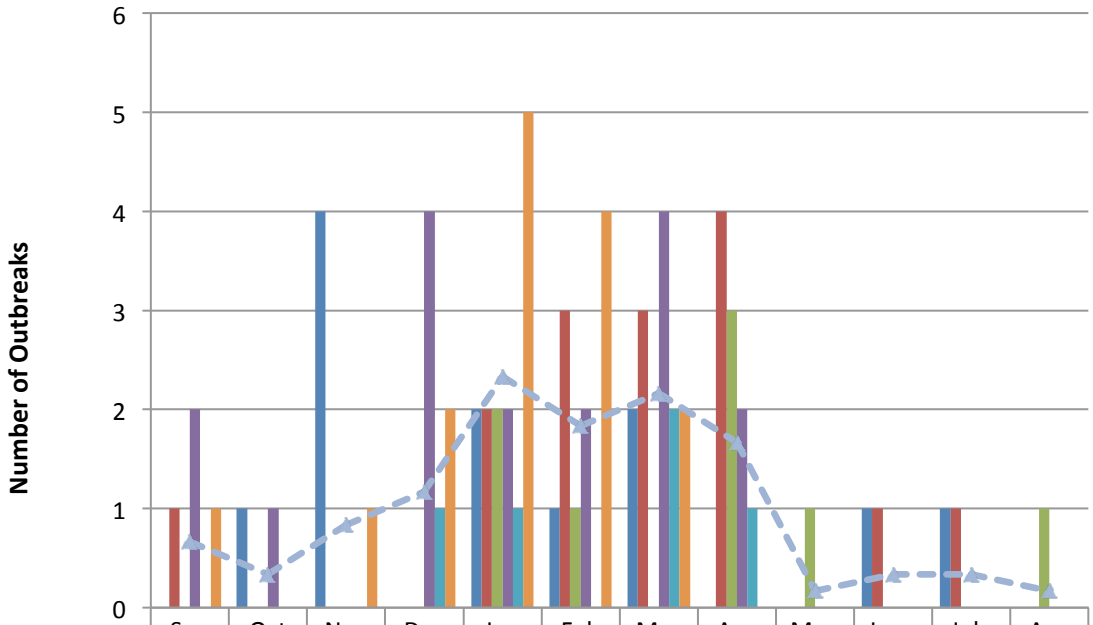


** Outbreaks are presented by seasonal year (September 1st to August 31st of a given year)*

Source: iPHIS 2009-2015, MOHLTC, extracted September and October, 2015

- The majority of outbreaks occurred in long-term care homes (52.2%), followed by hospitals (28.3%), and retirement homes (10.9%).

Figure 28. Number of respiratory outbreaks, by month and seasonal year, Porcupine Health Unit, 2009-10 to 2014-15*



	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug
2009-10	0	1	4	0	2	1	2	0	0	1	1	0
2010-11	1	0	0	0	2	3	3	4	0	1	1	0
2011-12	0	0	0	0	2	1	0	3	1	0	0	1
2012-13	2	1	0	4	2	2	4	2	0	0	0	0
2013-14	0	0	0	1	1	0	2	1	0	0	0	0
2014-15	1	0	1	2	5	4	2	0	0	0	0	0
6-year average	0.7	0.3	0.8	1.2	2.3	1.8	2.2	1.7	0.2	0.3	0.3	0.2

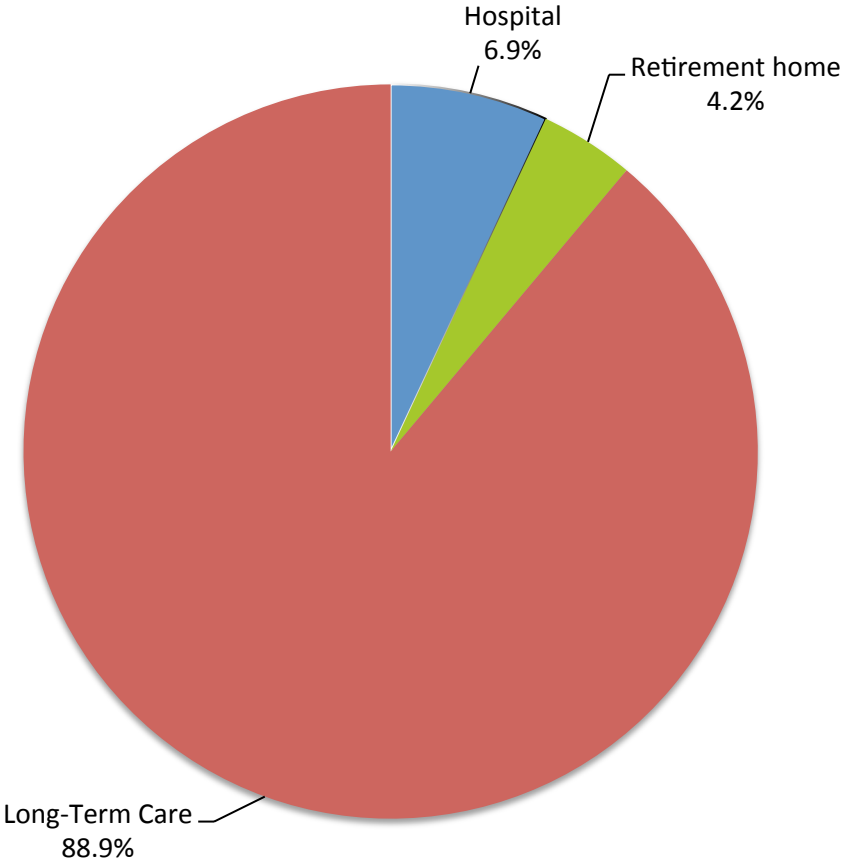
Month

** Outbreaks are presented by seasonal year (September 1 to August 31 of a given year)*

Source: iPHIS 2009-2015, MOHLTC, extracted September and October, 2015

- Between 2009 and 2014, there were 72 respiratory outbreaks in the PHU area (average of 12 per year). Twenty-five of these, or 34.7%, were influenza-related.
- Respiratory outbreaks were also seasonal in nature and had the highest rates between January and April, peaking in January at a rate of 2.3 outbreaks per month.

Figure 29. Proportion of respiratory outbreaks, by risk setting, Porcupine Health Unit, 2009-10 to 2014-15*



** Outbreaks are presented by seasonal year (September 1st to August 31st of a given year)*

Source: iPHIS 2009-2015, MOHLTC, extracted September and October, 2015

- The vast majority of respiratory outbreaks occurred in long-term care homes (88.9%), with 6.9% occurring in hospitals and 4.2% in retirement homes.

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APPENDIX A:

RARE DISEASES, PORCUPINE HEALTH UNIT, 2009-2014 COMBINED

Disease	Number of Cases	Disease	Number of Cases
Acute flaccid paralysis	0	Malaria	4
AIDS	0	Measles	0
Anthrax	0	Invasive Meningococcal Disease (IMD)	2
Botulism	0	Mumps	3
Brucellosis	0	Ophthalmia neonatorum	0
Chancroid	0	Plague	0
Cholera	0	Polio	0
Creutzfeldt-Jakob disease	0	Psittacosis/Ornithosis	0
Cyclosporiasis	5	Q fever	0
Cytomegalovirus, congenital	1	Rabies	0
Diphtheria	0	Rubella	0
Encephalitis/meningitis	4	Rubella, congenital syndrome	0
Group B streptococcal disease, neonatal	0	Severe Acute Respiratory Syndrome (SARS)	0
Haemophilus influenzae B (Hib)	0	Shigellosis	1
Hantavirus	0	Smallpox	0
Hemorrhagic fever	0	Syphilis*	5
Hepatitis A	3	Tetanus	0
Hepatitis D	0	Trichinosis	0
Herpes, neonatal	1	Tularemia	0
HIV	5	Typhoid/paratyphoid fever	0
Lassa fever	0	Viral hemorrhagic fevers	0
Legionellosis	4	Verotoxin producing *E.coli* (VTEC)	5
Leprosy	0	West Nile Virus	0
Listeriosis	3	Yellow fever	0
Lyme disease	1	Yersiniosis	1
Total		**48**	

** Syphilis includes infectious, non-infectious and unspecified cases*

Source: iPHIS 2009-2014, MOHLTC, extracted May 2015

APPENDIX B: LIST OF REPORTABLE DISEASES

REPORTABLE DISEASES

The following specified Reportable Disease, (Ontario Regulation 559/91 and amendments under the Health Protection and Promotion Act, 1990) are to be reported to the Local Medical Officer of Health.

Acquired Immunodeficiency Syndrome (AIDS)
Acute Flaccid Paralysis
Amebiasis
► Anthrax
► Botulism
► Brucellosis
Campylobacter enteritis
Chancroid
Chickenpox (Varicella)
Chlamydia trachomatis infections
Cholera
► Cryptosporidiosis
► Cyclosporiasis
► Diphtheria
► Encephalitis, including:
1. Primary, viral (including WNV)
2. Post-infectious
3. Vaccine-related
4. Subacute sclerosing panencephalitis
5. Unspecified
► Food poisoning, all causes
► Gastroenteritis, institutional outbreaks
► Giardiasis
Gonorrhea
► Group A Streptococcal Disease, invasive (iGAS)
Group B Streptococcal Disease, neonatal
► Haemophilus influenza b disease, invasive
► Hantavirus Pulmonary Syndrome
► Hemorrhagic fevers, including:
► 1. Ebola virus disease
► 2. Marburg virus disease
► 3. Other viral causes
► Hepatitis A
Hepatitis B
Hepatitis C
Influenza
► Lassa Fever
► Legionellosis
Leprosy
► Listeriosis
Lyme Disease
Malaria
► Measles
► Meningitis, acute
► 1. bacterial
2. viral
3. other
► Meningococcal disease, invasive
Mumps
Ophthalmia Neonatorum
► Paralytic Shellfish Poisoning
Paratyphoid fever
Pertussis (Whooping Cough)
► Plague
Pneumococcal Disease, invasive
► Poliomyelitis, acute
Psittacosis/Ornithosis
► Q Fever
► Rabies
► Respiratory infection, institutional outbreaks
Rubella
Rubella, congenital syndrome
Salmonellosis
► Severe Acute Respiratory Syndrome (SARS)
► Shigellosis
► Smallpox
Syphilis
Tetanus
Transmissible Spongiform Encephalopathy:
1.Creutzfeldt-Jakob Disease, all types
Trichinosis
Tuberculosis
► Tularemia
Typhoid Fever
► Verotoxin-producing E. coli infection indicator conditions including Hemolytic Uremic Syndrome(HUS)
► West Nile virus Illnesses:
1.West Nile virus Fever
2.West Nile virus Neurological Manifestations
► Yellow Fever
Yersiniosis

Note: Disease marked ► and all respiratory infection outbreaks in institutions should be reported **immediately** by telephone, to the Medical Officer of Health. Other diseases are to be reported the next working day.

To report a disease or for more information, please contact the Porcupine Health Unit at: (705) 267-1181, toll-free 1-800-461-1818 or by confidential fax at (705) 360-7324
www.porcupinehu.on.ca

Ontario Regulation 559/91 under the Health Protection and Promotion Act amended on December 2013.

APPENDIX C: GLOSSARY OF TERMS

Age Standardization: A method of adjusting rates to minimize the effects that different age compositions have on populations. This method is used when comparing two or more populations. For example, an older population would be more likely to have higher rates of chronic diseases compared to a younger population. Standardizing rates controls for these differences.

Average: The mean or average is the sum of all the individual values in a set of measurements divided by the total number of values in the set of measurements.

Case: A case is an individual with an episode of a reportable disease. For each reportable disease, there is a case definition that outlines the criteria to confirm that episode of disease. Case definitions are determined by the Ministry of Health and Long-Term Care.

Incidence Rate: The rate at which new events, or new cases, occur in a specified time in a defined population that is at risk of experiencing the condition or event.

Infectious Disease: An illness that results from the transmission of an infectious agent or its toxins from an infected person, animal, or reservoir to a susceptible host, either directly or indirectly through an intermediate plant or animal host, vector or inanimate objects.

Outbreak: When the occurrence of cases of a disease or condition is in excess of the expected number of cases in a localized area over a given period of time. There is no set number of cases required to declare an outbreak as it varies by disease and local conditions.

Proportion: A proportion is a measure of the frequency with which an event occurs in a defined population (e.g., number of Canadians with cancer divided by the total population).

Reportable Disease: A human disease that is required to be reported to public health authorities in Ontario according to Regulation 559/91 (Specification of Reportable Diseases) made under the *Health Protection and Promotion Act (HPPA)*

Under this legislation, physicians, laboratories, hospital administrators, principals of schools and superintendents of institutions must notify local health units about the occurrence or suspected occurrence of these diseases.

Sporadic: When a disease occurs infrequently and irregularly. This term is also used to refer to non-outbreak associated cases of disease.

Surveillance: The ongoing, systematic collection, collation, analysis and interpretation of data with prompt dissemination of the results to those who need to know, particularly those who are in a position to take action (often, public health officials).

Trends: Trends are changes in frequencies, proportions or rates of a disease, or an event observed over time. Trends may be irregular, flat or move in one direction. Trends can be expressed in many forms, including tables, graphs and pie charts.

Vector-borne disease: A class of miscellaneous diseases that are transmitted to humans by vectors, predominately insects (e.g., viruses or bacteria spread by mosquitoes).

APPENDIX D: DATA SOURCES AND METHODOLOGY

DATA SOURCES

All information in this report related to cases of infectious disease for Porcupine Health Unit (PHU) was collected by PHU under the authority of the *Health Protection and Promotion Act (HPPA)*. The HPPA mandates health care practitioners to notify the Medical Officer of Health (MOH) of all confirmed and, in some cases, probable cases of reportable disease. Case reports are investigated by Public Health staff as part of their routine activities and are entered into the integrated Public Health Information System (iPHIS), maintained by the Ontario Ministry of Health and Long-Term Care (MOHLTC).

Provincial data was obtained via an online portal, called Query, maintained by Public Health Ontario (PHO). Data in Query is compiled from the iPHIS database.

Population Data

Incidence rates were calculated using population estimates and projections obtained from the Ontario MOHLTC via an online portal called IntelliHealth. Public health unit population data in IntelliHealth are based on census subdivision (CSD) populations provided by Statistics Canada. Population estimates for 2009 onwards are post-censal estimates based on the 2006 census counts adjusted for net undercoverage and changes in the population between Census Day and July 1.

The population estimates in this report may differ from those presented elsewhere due to differences in methodology, or updating of population data by the MOHLTC. Population data used in this report was downloaded from IntelliHealth in June of 2015 and reflects the latest population estimates and projections at the time of this report. These data were stratified by age and sex to provide the appropriate denominators to calculate overall, age, and sex specific incidence rates.

METHODOLOGY

Sporadic Cases

Local cases of infectious disease reported to PHU with an episode accurate (onset) date between January 1, 2009, and December 31, 2014, were extracted from iPHIS in May 2015. Tuberculosis and AIDS data were extracted by diagnosis date, (date of a case's diagnosis); while, HIV data was extracted by encounter date (the date the case became known to public health). Influenza and outbreak data were analyzed by seasonal year (September 1 to August 31 of any given year) from the 2009-10 to the 2014-15 seasons. Cases that resided in the PHU area, had Porcupine Health Unit as the "Diagnosing Health Unit", and met the provincial surveillance case definition were included.

All data sets were reviewed by PHU staff to ensure that final case counts were accurate.

For most diseases, case counts included only "confirmed" case classifications. Probable or suspect cases were included, if indicated in the latest case definition as per the Ontario MOHLTC Infectious Diseases Protocol 2013 (3). For TB, only active cases and for hepatitis B, only acute cases, were included in the reporting of cases.

Provincial case summaries were extracted from the Query tool (PHO) in July of 2015 for cases with a reported date between January 1, 2009, and December 31, 2014.

Information on past episodes of disease may be added or updated to the provincial reporting system at any time. The information summarized in this report represents what was known to PHU and the PHO at the time of data extraction with the stipulation that these data are provisional and subject to change.

Analysis

For each reportable infectious disease, data on the number of cases and incidence rates were presented. Where possible, disease case counts and rates were further broken down by:

- Year (2009, 2010, 2011, 2012, 2013, and 2014)
- Sex (male and female)
- Age group (0-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64 and 65+ years)
- Seasonality (month)

As age can be a factor in whether a person acquires a disease and how the disease progresses, it is necessary to control for differences in age distribution when comparing two populations. Age-standardization is a technique that minimizes the effect of differences in age between populations so that findings can be attributed to factors other than age. For this report, when comparisons between PHU and Ontario were made, rates were directly age-standardized using the 1991 Canadian Standard population from Statistics Canada. For each disease, age-standardized incidence rates were presented for PHU and Ontario on a yearly basis and refer to the number of new cases of disease per 100,000 population.

Proportions and rates were rounded to one decimal place. As much as possible, data were presented in a consistent format with a figure highlighting the age-standardized overall rates for PHU and Ontario, allowing a provincial comparison. Select diseases were highlighted with further in-depth analysis (e.g., by age group or sex). These diseases were selected for a variety of reasons including: local rates were significantly different than provincial rates; there are emerging issues related to the disease, such as a provincial or local campaign; or because PHU has undertaken specific measures related to the prevention or containment of the disease.

Infectious diseases for which there were less than six cases cumulatively between 2009 and 2014 were considered rare and not further analyzed.

Identified differences in rates and counts from one period to another or between PHU and Ontario, are absolute and do not imply statistical significance.

DATA LIMITATIONS

The published literature reveals variation in infectious disease reporting completeness. Other studies estimate that for each reported case of enteric illness, there are at least several hundred undiagnosed or unreported cases in the community (4). Individuals that experience less severe manifestations of a disease may not experience symptoms, or only mild symptoms and may not seek medical assistance or be tested for the presence of a disease. Disease reports rely on a passive surveillance system, wherein laboratories, physicians, other health care providers and institution administrators are entrusted to know the regulations, recognize a disease that is on the reportable disease list, and inform public health.

Since iPHIS is a dynamic disease reporting system that allows ongoing updates to previously entered data, the data extracted from iPHIS represents a snapshot at the time of extraction and may differ from previous or subsequent reports. Discrepancies in the data may arise from periodic data quality assurance checks and corrections that result in the reclassification of cases. In addition, there may be a lag in reporting of some cases due to the time required to collect a specimen, carry out a diagnostic test, and inform the local public health department and Ontario MOHLTC, which could lead to future changes in the number of reported cases.

For some diseases, case definitions have changed over time. The latest case definitions from the Infectious Diseases Protocol 2013 (3) were used in this report. Case definitions are updated to reflect the changing epidemiology of infectious diseases and the use of newer laboratory technologies. These updates impact the classification of cases for diseases and, as such, may influence the incidence of some diseases.

While the provincial case summaries allowed for local data comparisons with Ontario rates, comparisons with other health units can be problematic due to inconsistencies in data collection and reporting across health units. Also, some cases may be double-counted among people who move to other health units. This double-counting is not an issue with the provincial data due to regular efforts to resolve inter-health unit duplicate records.

For diseases with small case counts, the observed variability in incidence rates should be interpreted with caution. In such cases, population-specific rates or age-standardization may not be appropriate statistical measures. Instead, either counts over the six-year time period were combined and average rates were calculated, or the diseases were presented in the Rare Diseases Table of Appendix A.

Finally, the data presented in this report relate to data collected only on cases residing in PHU area. Therefore, caution should be used when attempting to generalize these results beyond this area.

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