

Ontario Annual Infectious Diseases Epidemiology Report, 2008

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Ministry of Health and Long-Term Care

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About this Report

The Ontario Annual Infectious Diseases Epidemiology Report (2008) is a publication of the Public Health Protection and Prevention Branch, Public Health Division of the Ontario Ministry of Health and Long-Term Care (MOHLTC). It is the second annual report on infectious diseases since the 2005 implementation of the integrated Public Health Information System (iPHIS). The report is an important component of the provincial infectious diseases surveillance system. It serves as one of the primary outlets for the public dissemination of information on infectious disease trends in Ontario. The report provides a descriptive analysis of 10 year trends in infectious diseases in Ontario and identifies diseases or disease-specific areas where public health responses are needed to anticipate and counter emerging trends. The epidemiological analyses will be a key resource for setting priorities for health practitioners and researchers involved in the planning, implementation and evaluation of public health policy and practice in Ontario. We anticipate that the general public will also find the report informative.

The scope of the report is limited to infectious diseases that are designated as reportable under the [Ontario Health Protection and Promotion Act, R.S.O. 1990, c. H.7](#) with a focus on diseases reported in 2008. The core of the report is a brief epidemiological analysis of these diseases, complete with interpretations of trends and contextual data to assist in drawing accurate conclusions. The report relies primarily on data extracted from the provincial infectious diseases surveillance system, iPHIS, except where noted. Comparative data at the national level are provided where available.

The data in this report are presented in five sections that align with either a specific mode of disease transmission or a recognized measure of prevention:

- Chapter 1: Enteric – Foodborne and Waterborne Diseases
- Chapter 2: Vaccine Preventable Diseases
- Chapter 3: Sexually Transmitted and Bloodborne Infections
- Chapter 4: Diseases Transmitted by Direct Contact and Respiratory Routes
- Chapter 5: Vectorborne Diseases

Within these sections, individual diseases are presented as chapters where sufficient data as reported in 2008 are available to enable meaningful analyses. The ten year trend is presented for all diseases, including diseases that are infrequently reported, in order to assess the relative burden (incidence and incidence rate) of reportable infectious diseases in Ontario.

Each disease chapter is presented alphabetically and is comprised of bulleted highlights and summary tables, maps and figures. The tables, maps and figures summarize the following data:

- Baseline trends over the previous 10 years in Ontario and Canada
- In-focus analysis of 2008 surveillance data including:
 - Distribution of reported cases per month (seasonality)

- Age and sex-specific incidence
- Disease incidence by etiologic agent, where applicable
- Geographic distribution of reported cases
- Frequency distribution of risk factors, risk settings and exposure sources, where applicable, and
- Other relevant disease-specific data where applicable

It should be noted that there are some inherent limitations of the data and any interpretation or extrapolation should be made with caution. However, from the available data, it is possible to elucidate trends and estimate where the main burden of infectious diseases in Ontario lies. Data limitations specific to this report are laid out in the *Technical Notes* found at the end of this report.

The Ontario Annual Infectious Diseases Epidemiology Report is new and the format and content will undergo revisions from year to year. Comments on the format or content of the report are most welcome and can be sent by email to iPHISSupport@ontario.ca.

The 2008 report and earlier reports can be found online at the MOHLTC's website <http://www.health.gov.on.ca/>. The suggested citation for this report is:

Ministry of Health and Long-Term Care, Public Health Division. Ontario Annual Infectious Diseases Epidemiology Report, 2008. Toronto, ON: Queen's Printer for Ontario; 2011.

Report Highlights

- In 2008, the Ontario Ministry of Health and Long-Term Care (MOHLTC) monitored over 70 reportable infectious diseases.
- Infectious diseases continue to be an important public health concern in Ontario with close to 60,000 confirmed infections reported province-wide in 2008, affecting 450 out of every 100,000 Ontarians.
- Sexually transmitted and bloodborne infections accounted for more than 60% of new infections reported in Ontario in 2008 and affected 282 Ontarians out of every 100,000 population. Chlamydia was the most commonly reported sexually transmitted infection with over 26,000 reported cases in 2008.
- Simultaneous infections or co-infections were reported for several diseases in 2008. Forty-one percent of syphilis cases had HIV, 5% of chlamydia cases had gonorrhea and 5% of tuberculosis cases were co-infected with HIV.
- Enteric disease was the second most common category of infectious disease in Ontario in 2008. Diseases in this category accounted for 17% of infectious diseases reported in Ontario in 2008, and affected 78 out of every 100,000 Ontarians.
- The 2008 incidence rates for more than half of all enteric diseases declined by 10% to 160% from their respective rates in 1999. These declines occurred among enteric diseases considered endemic in Ontario. Hepatitis A, yersiniosis, *E. coli*, giardiasis, shigellosis and campylobacteriosis experienced the largest declines, while amebiasis and salmonellosis experienced modest declines. The incidence of botulism remained low and unchanged over this period.
- With the exception of cholera which remained unchanged, the 2008 incidence rates for all non-endemic enteric diseases (cyclosporiasis, paratyphoid fever and typhoid fever) increased by at least 75% over their respective rates in 1999. Listeriosis, due to a large-scale outbreak, and cryptosporidiosis were the only endemic enteric diseases that experienced increases in 2008.
- Diseases transmitted by direct contact or by respiratory routes ranked as the third most common cause of infectious diseases in Ontario in 2008, affecting 73 out of every 100,000 Ontarians. Most of these infections were due to influenza, which affected 64 out of every 100,000 Ontarians. Tuberculosis was also significant, affecting five out of every 100,000 Ontarians.
- Since 1999, the proportion of foreign born tuberculosis cases has remained relatively stable ranging from 81% to 89%. Overall, 86% of tuberculosis cases reported in Ontario between

1999 and 2008 were born outside Canada, 11% were born in Canada and 3% had an unknown country of origin.

- From 2005 to 2008, the proportion of TB cases reporting resistance to one or more drugs decreased from 11% to 8%.
- Diseases routinely prevented by vaccine during childhood and vectorborne diseases made relatively smaller contributions to the overall incidence of infectious diseases in the Ontario in 2008. With approximately 2,300 reported cases in 2008, vaccine preventable diseases affected 18 out of every 100,000 Ontarians in 2008. Vectorborne diseases accounted for less than 1% of infectious diseases reported in Ontario in 2008 and affected two out of every 100,000 Ontarians.
- The relatively low incidence of vaccine preventable diseases in Ontario is indicative of the successful implementation of routine childhood and other immunization programs for these diseases. Notwithstanding, the number of reported cases and outbreaks provides opportunities to identify sub-populations with lower levels of immunity and improve vaccine uptake in these populations.
- Despite low overall incidence, the incidence of several diseases routinely prevented by vaccination during childhood in 2008 was at their highest since 1999. Included in this category are measles, mumps and *Streptococcus pneumoniae*.
- Lyme disease is the most frequently reported endemic vectorborne disease in Ontario. Between 1999 and 2008, the incidence of Lyme disease increased steadily with the incidence of local acquisition doubling in 2008 compared to 2005.
- West Nile Virus illness has declined sharply in Ontario since first being reported in 2002. The incidence of WNV was approximately one-hundred times lower in 2008 compared to 2002.
- Travel to, or recent immigration from malaria endemic countries accounted for 100% of malaria cases reported in Ontario in 2008.

Chapter 1: ENTERIC DISEASES

- The top five causes of enteric illness in Ontario in 2008 were campylobacteriosis (3,786 cases), salmonellosis (2,373 cases), giardiasis (1,599 cases), amebiasis (764 cases) and cryptosporidiosis (334 cases). These diseases represented 88% of all cases of enteric illnesses reported in Ontario in 2008.
- Incidence rates for most enteric diseases declined during the period 1999-2008 with declines occurring primarily among enteric diseases considered endemic in Ontario. Hepatitis A (56%), yersiniosis (30%) and *E. coli* (26%) experienced the largest declines, while giardiasis (20%), shigellosis (13%) and campylobacteriosis (10%) experienced modest declines.
- The incidence of cyclosporiasis (395%), paratyphoid fever (241%), listeriosis (206%), typhoid fever (126%) and cryptosporidiosis (59%) increased over the same ten year period. The incidence of cholera, amebiasis and salmonellosis remained unchanged over this period.
- In general, males experienced higher incidence rates for most enteric diseases reported in 2008 with the only exceptions being listeriosis and *E. coli*.
- Enteric diseases occur throughout the year. In 2008, the warmer months of May to October accounted for 60% of reported cases.
- Perth District (campylobacteriosis), Haldimand-Norfolk (salmonellosis), Timiskaming (giardiasis), Toronto Public Health (amebiasis) and Huron County (cryptosporidiosis) reported the highest incidence rates of the top five enteric diseases in Ontario in 2008.
- In 2008, travel was the most common exposure setting for typhoid fever (92%), paratyphoid fever (84%), cyclosporiasis (61%), Hepatitis A (48%), and shigellosis (45%). It accounted for 3-5% of listeriosis and VTEC cases reported in 2008.

Table 1.1.0: Incidence of Enteric and Zoonotic Diseases: Ontario, 1999-2008

Enteric and Zoonotic Diseases ^{2,3}	1999		2000		2001		2002		2003		2004		2005		2006		2007		2008	
	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹
Enteric Diseases																				
Amebiasis	769	6.7	925	7.9	851	7.2	825	6.8	771	6.3	678	5.5	772	6.1	659	5.2	815	6.4	764	5.9
Campylobacteriosis	4192	36.4	5061	43.3	5033	42.3	4612	38.1	4127	33.7	3991	32.1	3796	30.2	3870	30.5	3873	30.2	3786	29.3
Cryptosporidiosis	210	1.8	235	2.0	250	2.1	231	1.9	277	2.3	303	2.4	266	2.1	402	3.2	405	3.2	334	2.6
Cyclosporiasis	21	0.2	9	0.1	23	0.2	52	0.4	39	0.3	95	0.8	132	1.1	92	0.7	94	0.7	104	0.8
Giardiasis	1990	17.3	2007	17.2	2060	17.3	1921	15.9	1633	13.3	1592	12.8	1626	12.9	1582	12.5	1623	12.7	1599	12.4
Hepatitis A	261	2.3	157	1.3	175	1.5	151	1.2	143	1.2	185	1.5	150	1.2	206	1.6	121	0.9	114	0.9
Listeriosis	31	0.3	37	0.3	37	0.3	43	0.4	43	0.4	42	0.3	37	0.3	42	0.3	40	0.3	95	0.7
Paratyphoid Fever	17	0.1	12	0.1	12	0.1	27	0.2	21	0.2	47	0.4	55	0.4	51	0.4	47	0.4	58	0.4
Salmonellosis	2351	20.4	2389	20.4	2564	21.6	2476	20.5	2008	16.4	2119	17.1	2956	23.5	2395	18.9	2820	22.0	2373	18.4
Shigellosis	274	2.4	288	2.5	234	2.0	847	7.0	283	2.3	286	2.3	337	2.7	206	1.6	232	1.8	239	1.8
Typhoid Fever	42	0.4	53	0.5	62	0.5	60	0.5	50	0.4	69	0.6	68	0.5	92	0.7	86	0.7	95	0.7
<i>E. coli</i> , verotoxin producing	379	3.3	1746	14.7	358	3.0	394	3.3	462	3.8	318	2.6	259	2.1	343	2.7	365	2.9	279	2.2
Yersiniosis	370	3.2	338	2.9	314	2.6	383	3.2	329	2.7	297	2.4	354	2.8	364	2.9	269	2.1	260	2.0
Botulism	1	0.0	0	0.0	0	0.0	1	0.0	2	0.0	2	0.0	1	0.0	5	0.0	4	0.0	2	0.0
Cholera	0	0	0	0	3	0.0	1	0.0	2	0.0	0	0	1	0.0	1	0.0	1	0.0	3	0.0
Zoonotic Diseases																				
Brucellosis	2	0.2	2	0.1	3	0.1	5	0.1	4	0.0	3	0.1	6	0.0	2	0.0	5	0.0	5	0.0
Psittacosis/Ornithosis	0	0	2	0.0	0	0	2	0.0	1	0.0	0	0.0	0	0	0	0.0	0	0.0	0	0.0
Q-fever	19	0.2	12	0.1	12	0.1	1	0.1	8	0.0	6	0.1	2	0.0	4	0.0	3	0.0	4	0.0
Trichinosis	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0
Tularemia	0	0.0	1	0.0	0	0.0	0	0.0	2	0.0	2	0.0	1	0.0	0	0.0	0	0.0	1	0.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note 1: Incidence rate per 100,000 population.

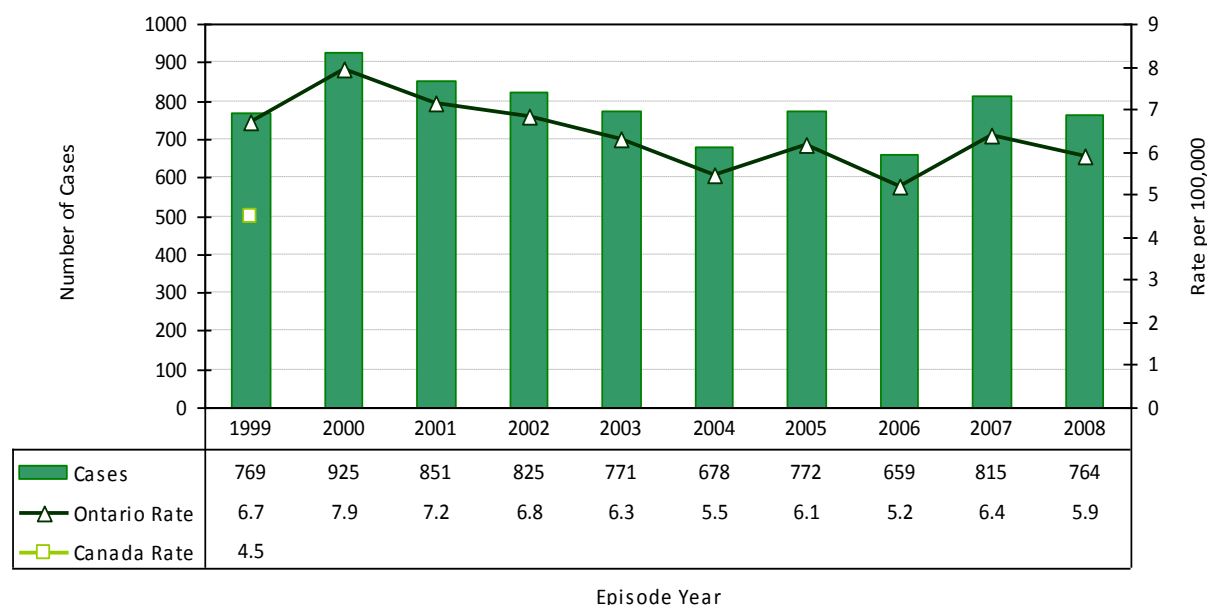
Note 2: No cases were reported for the following enteric and zoonotic diseases in Ontario during the period 1998-2007: anthrax, plague, rabies and Hantavirus pulmonary disease.

Note 3: Enteric diseases caused by etiologic agents other than those specified in table 1.1 are reported as food poisoning incidents; these incidents are not included in this report.

1.1 AMEBIASIS

- Amebiasis was the fourth leading cause of enteric diseases in Ontario in 2008, accounting for 7.6% of all enteric and zoonotic diseases reported that year (Table 1.1).
- In 2008, Ontario reported 764 confirmed cases of amebiasis, which represents an incidence rate of 5.9 cases per 100,000 population. (Table 1.1).
- During the period 1999 to 2008, an average of 780 cases of amebiasis was reported in Ontario per year. Between 2007 and 2008, the incidence of amebiasis decreased by 6% (51 cases) from the 2007 total of 815 cases.
- Amebiasis has not been nationally reportable since 1999, but data for 1999 show that the incidence rate of amebiasis was lower for Canada (4.9 cases per 100,000) in that year compared to Ontario (6.7 cases per 100,000) (Figure 1.1.1).
- Unlike most enteric diseases, amebiasis did not demonstrate a clear seasonal summer peak in the number of reported cases in 2008 (Figure 1.1.2).
- In 2008, the overall incidence rate of amebiasis among males (8.3 cases per 100,000 population) in Ontario was 2.3 (3.6 cases per 100,000 population) times that of their female counterparts (Figure 1.1.3, Table 1.1.1).
- The incidence rates of amebiasis in 2008 were higher for males compared to females in most age groups with incidence peaking at 15.4 cases per 100,000 population for males aged 40-49 years and 6.3 cases per 100,000 population for females aged 30-39 years (Figure 1.1.3, Table 1.1.1).
- Toronto reported the highest incidence rate of amebiasis in 2008 with 15.2 cases per 100,000 population, followed by Ottawa with 12.1 cases per 100,000 (Map 1.1.1, Table 1.1.2).
- In 2008, travel outside of Ontario accounted for approximately one-quarter (26%) of amebiasis cases who reported an exposure (Figure 1.1.4).

Figure 1.1.1: Incidence of Amebiasis in Ontario and Canada: 1999-2008



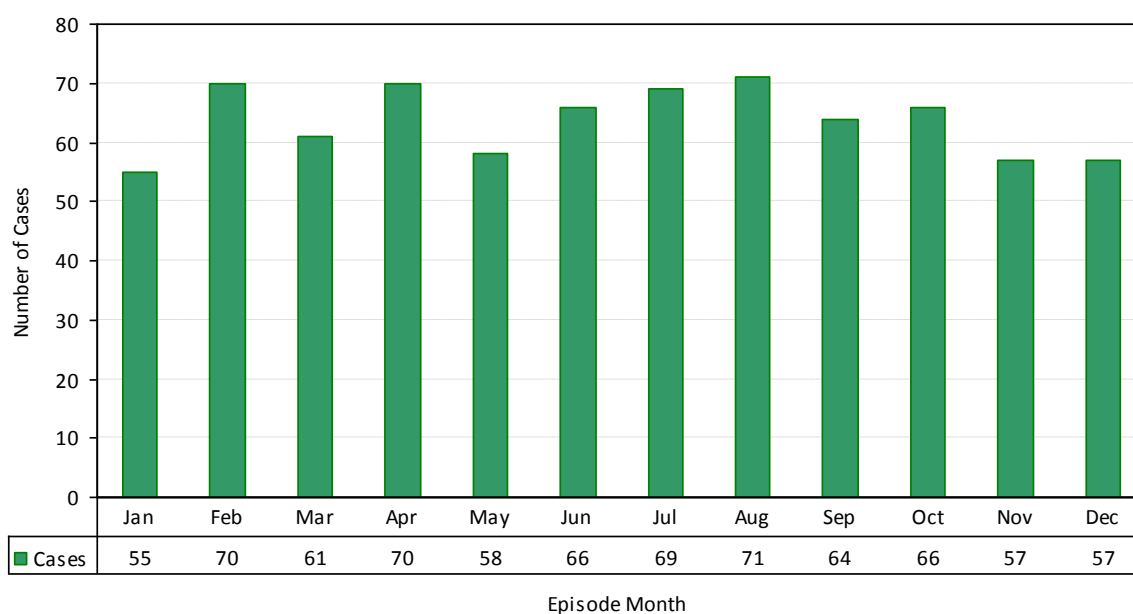
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded [08/13/2010]: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Amebiasis was removed from the national notifiable diseases list in 1999.

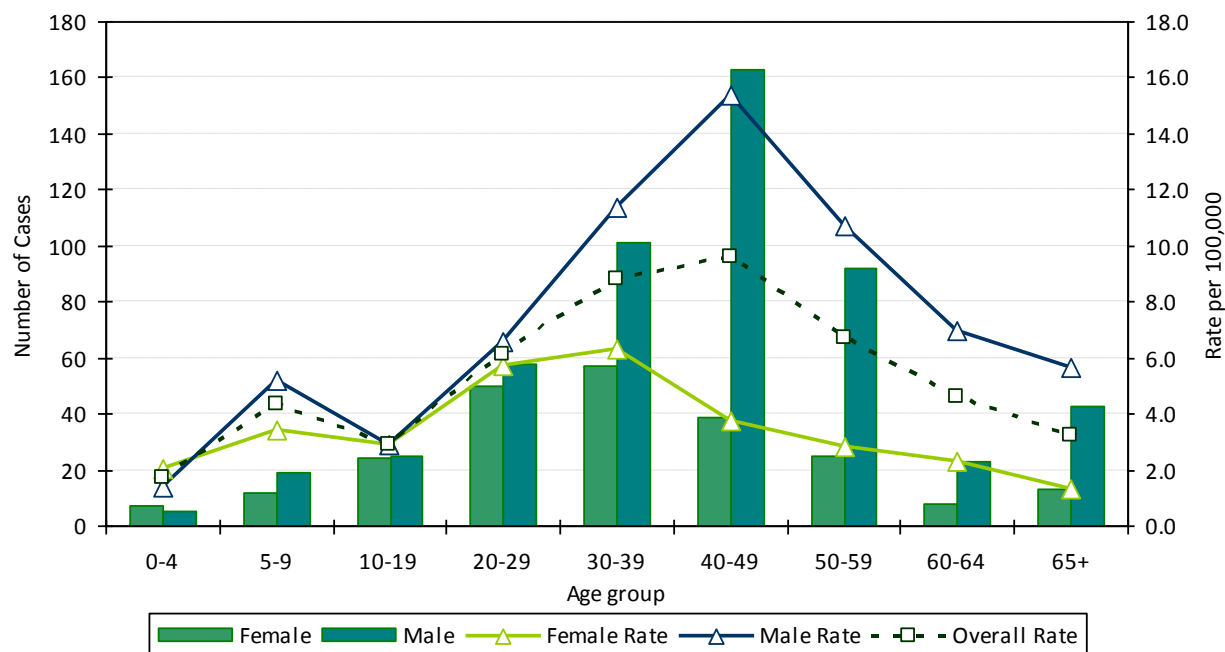
Figure 1.1.2: Incidence of Amebiasis by Episode Month: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.1.3: Incidence of Amebiasis by Age and Sex: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009].

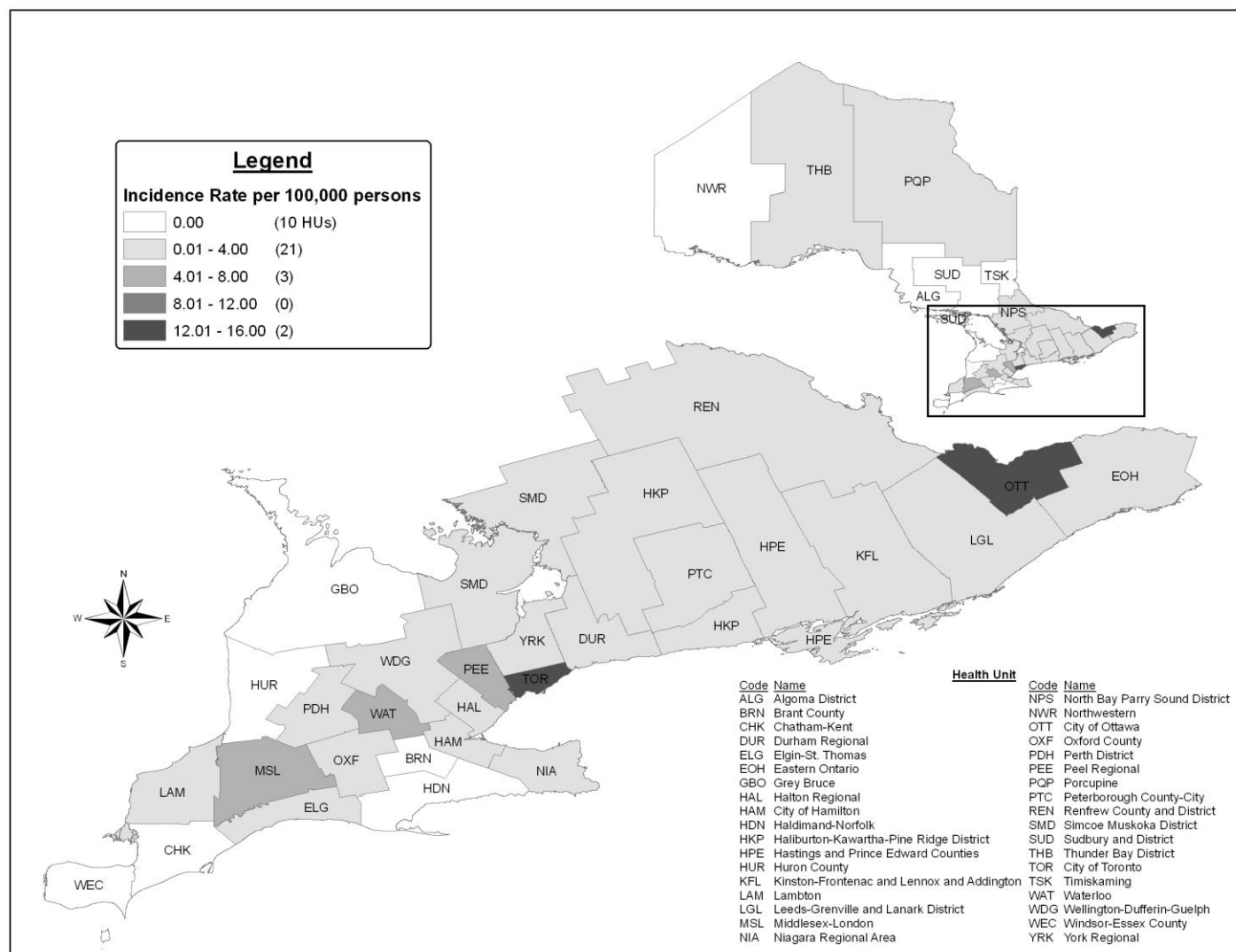
Table 1.1.1: Incidence of Amebiasis by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	7	2.1	5	1.4	12	1.7
5-9	12	3.4	19	5.2	31	4.3
10-19	24	2.9	25	2.9	49	2.9
20-29	50	5.7	58	6.5	108	6.1
30-39	57	6.3	101	11.4	158	8.8
40-49	39	3.7	163	15.4	202	9.6
50-59	25	2.8	92	10.7	117	6.7
60-64	8	2.3	23	7.0	31	4.6
65+	13	1.3	43	5.6	56	3.2
Total	235	3.6	529	8.3	764	5.9

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009].

Map 1.1.1: Incidence Rates of Amebiasis by Public Health Unit: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.1.2: Incidence of Amebiasis by Public Health Unit: Ontario, 2008

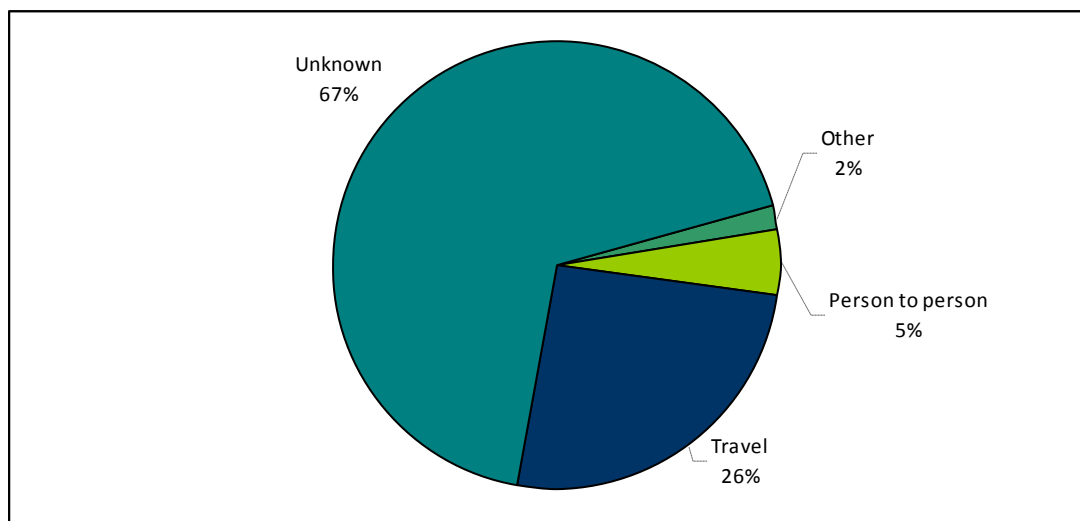
Public Health Unit	Number of cases	Rate/100,000 population
Toronto	402	15.2
Ottawa	105	12.1
Peel Region	88	6.8
Waterloo Region	33	6.5
Middlesex-London	19	4.2
Halton Region	19	4.0
Kingston, Frontenac, Lennox & Addington	6	3.1
Niagara Region	13	2.9
York Region	28	2.8
Perth District	2	2.6
Simcoe Muskoka District	11	2.2
Eastern Ontario	4	2.0
Leeds, Grenville and Lanark District	3	1.8
North Bay Parry Sound District	2	1.6
Durham Region	9	1.5
Peterborough County-City	2	1.5
Thunder Bay District	2	1.3
Elgin-St. Thomas	1	1.1
Haliburton, Kawartha, Pine Ridge	2	1.1
Hamilton	6	1.1
Porcupine	1	1.1
Renfrew County and District	1	1.0
Oxford County	1	0.9
Lambton County	1	0.8
Wellington-Dufferin-Guelph	2	0.7
Hastings & Prince Edward Counties	1	0.6
Algoma District	0	0
Brant County	0	0
Chatham-Kent	0	0
Grey Bruce	0	0
Haldimand-Norfolk	0	0
Huron County	0	0
Northwestern	0	0
Sudbury and District	0	0
Timiskaming	0	0
Windsor-Essex County	0	0
Ontario	764	5.9

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 1.1.4: Most Likely Exposures for Amebiasis Cases: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010]

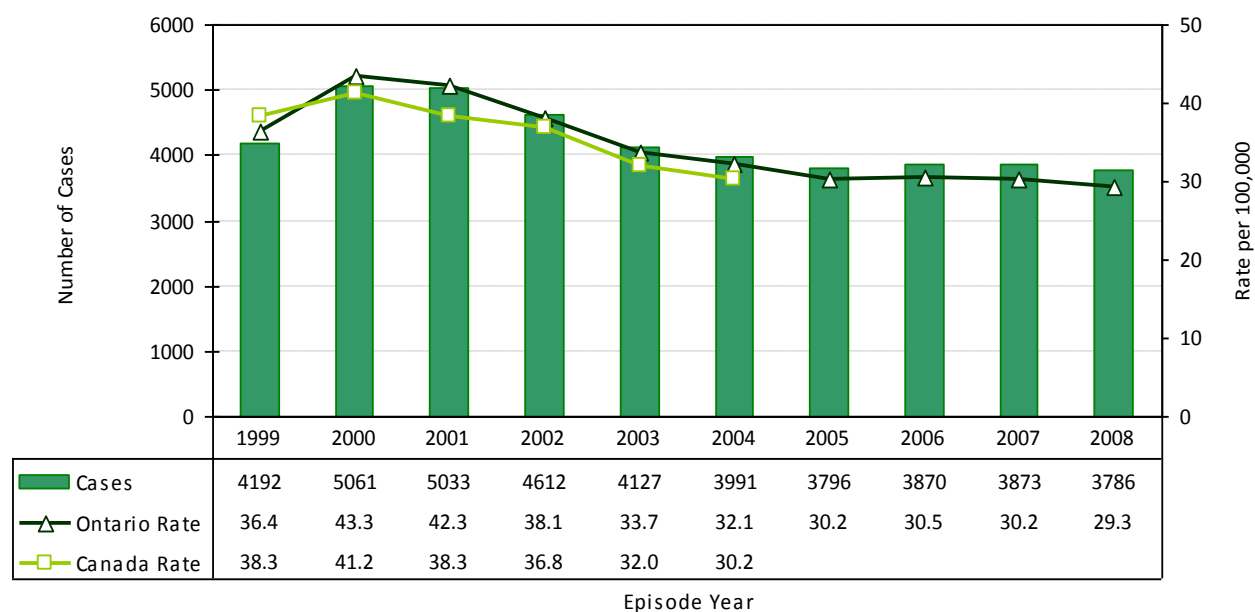
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 21% of cases; these cases were excluded

1.2 CAMPYLOBACTERIOSIS

- Campylobacteriosis was the leading cause of enteric disease in Ontario in 2008, accounting for 38% of enteric diseases reported in that year (Table 1.1).
- In 2008, Ontario reported 3,786 confirmed cases of campylobacteriosis, which represents an incidence rate of 29 cases per 100,000 (Table 1.2.1).
- Since 2005, the incidence rate of campylobacteriosis has remained stable at approximately 30 cases per 100,000 population (Figure 1.2.1).
- Confirmed cases of campylobacteriosis in 2008 demonstrated a seasonal peak that occurred in the warmer months from June to August. The total number of cases reported during this period accounted for 39% of campylobacteriosis cases reported in 2008 (Figure 1.2.2).
- In 2008, the incidence rate of campylobacteriosis was 27% higher for males at 33 cases per 100,000 population compared to females at 26 cases per 100,000 population (Figure 1.2.3, Table 1.2.1).
- The incidence rate of campylobacteriosis was highest among the 0-4 age group at 49 cases per 100,000 population. Sex-specific incidence rates for this age group were also the highest at 38 and 58 cases per 100,000 population for females and males, respectively. (Figure 1.2.3, Table 1.2.1).
- Perth District (48 cases per 100,000 population), Grey-Bruce (47 cases per 100,000 population) and Huron County (46 cases per 100,000 population) reported the highest incidence rates of campylobacteriosis in 2008. Timiskaming Health Unit reported the lowest incidence rate at 2.9 cases per 100,000 population (Map 1.2.1, Table 1.2.2).
- Of campylobacteriosis cases reporting exposures in 2008, 62% reported exposures in unknown settings, 17% reported travel outside of Ontario, 9% reported exposures within their homes, 7% reported exposures at food premises and 5% reported exposures in other settings (Figure 1.2.4).

Figure 1.2.1: Incidence of Campylobacteriosis in Ontario and Canada: 1999-2008



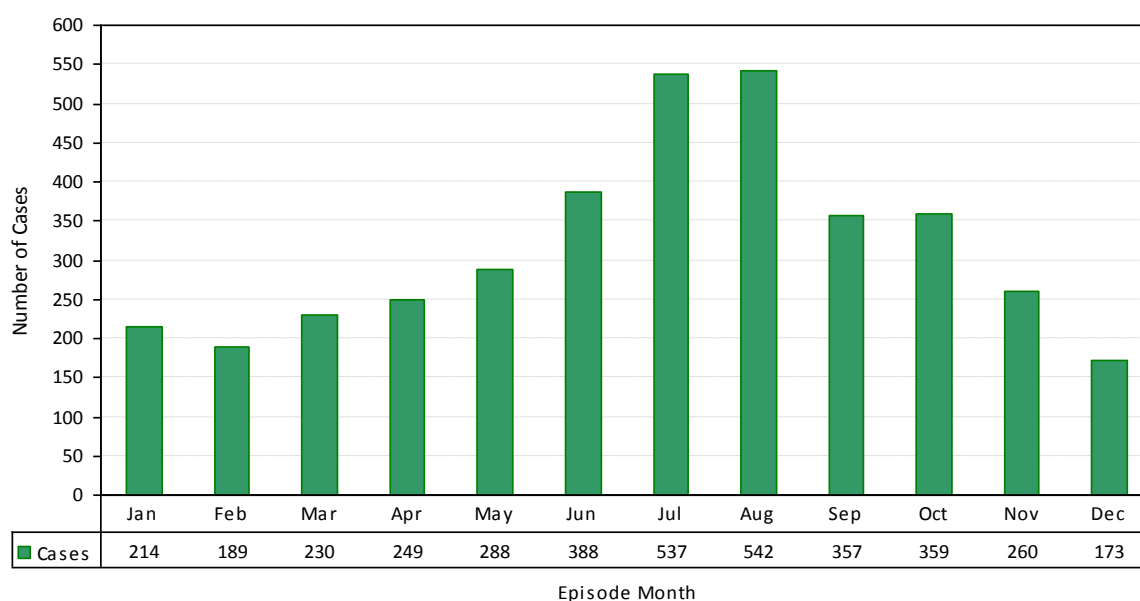
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010, 2009: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Canadian statistics available up to 2004.

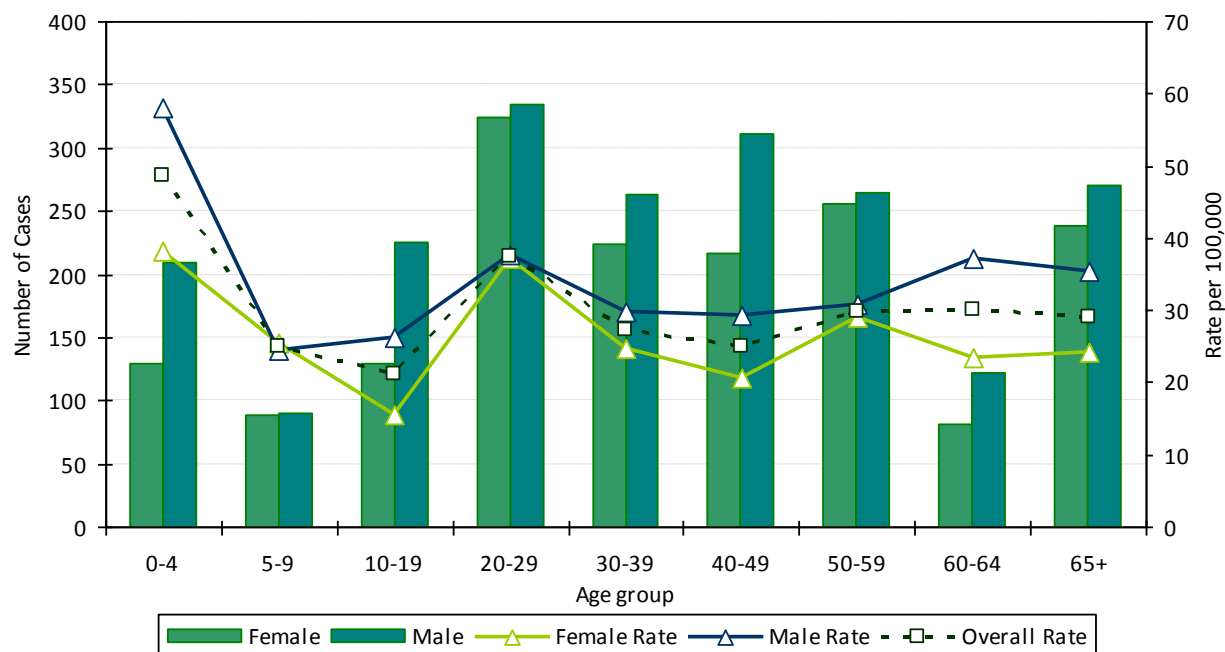
Figure 1.2.2: Incidence of Campylobacteriosis by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.2.3: Incidence of Campylobacteriosis by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Total does not include 5 cases for which age and/or sex were unknown

Table 1.2.1: Incidence of Campylobacteriosis by Age and Sex: Ontario, 2008

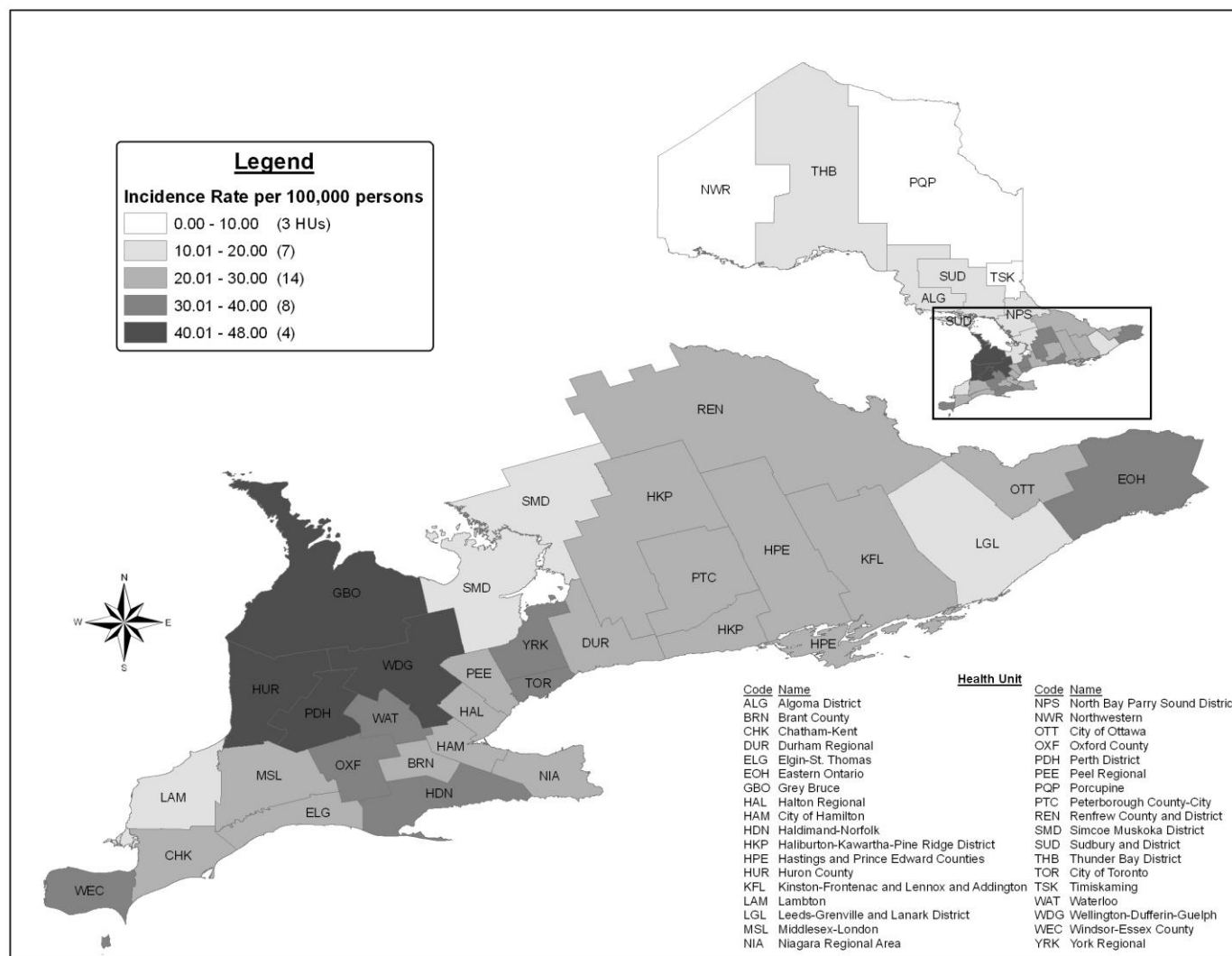
Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	130	38.3	209	58.1	339	48.5
5-9	89	25.5	90	24.4	179	24.9
10-19	129	15.6	226	26.2	355	21.0
20-29	325	37.1	335	37.8	660	37.5
30-39	224	24.8	264	29.7	488	27.2
40-49	217	20.7	311	29.4	528	25.1
50-59	256	29.0	265	30.8	521	29.9
60-64	81	23.5	122	37.1	203	30.2
65+	238	24.3	270	35.4	508	29.1
Total	1,689	25.8	2,092	32.8	3,781	29.3

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Total count does not include 5 cases for which age and/or sex were unknown

Map 1.2.1: Incidence Rates of Campylobacteriosis by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.2.2: Incidence of Campylobacteriosis by Public Health Unit: Ontario, 2008

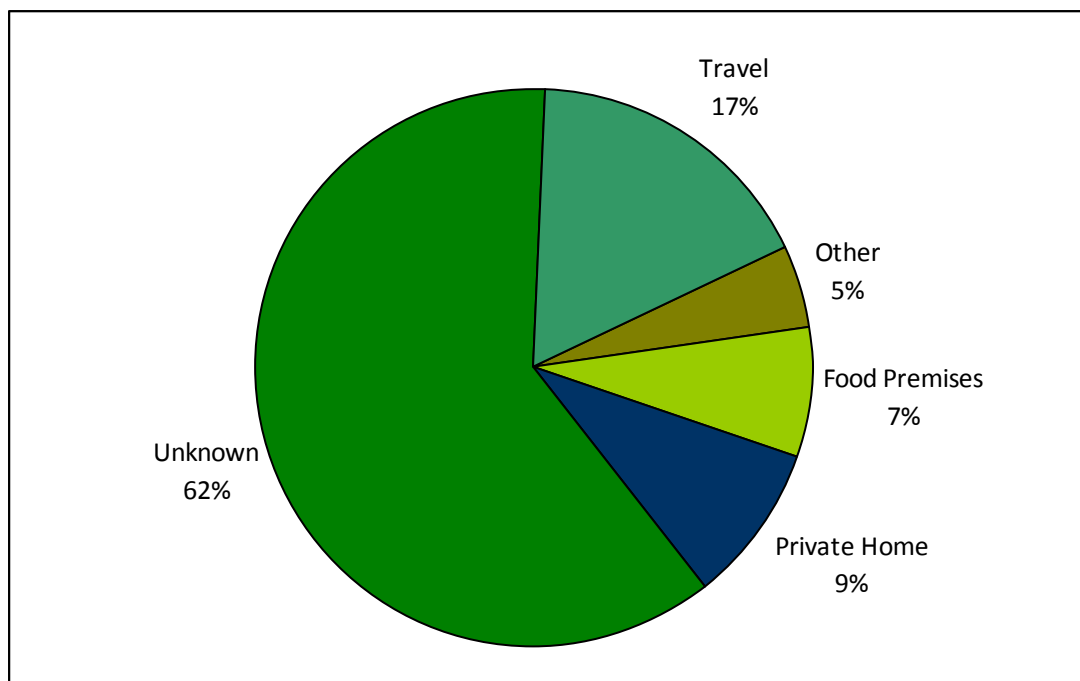
Public Health Unit	Number of cases	Rate/100,000 population
Perth District	37	48.0
Grey-Bruce	77	47.2
Huron County	28	46.1
Wellington-Dufferin-Guelph	111	41.2
Toronto	991	37.4
Haldimand-Norfolk	40	36.2
Eastern Ontario	70	35.2
Waterloo Region	177	34.7
York Region	326	32.9
Windsor-Essex County	132	32.5
Oxford County	32	30.2
Niagara Region	130	29.4
Haliburton-Kawartha-Pine Ridge District	51	28.9
Halton Region	138	28.8
Middlesex-London	128	28.6
Peel Region	352	27.4
Ottawa, City of	233	26.8
Durham Region	155	25.6
Hamilton, City of	128	24.3
Kingston-Frontenac and Lennox and Addington	46	24.0
Chatham-Kent	26	23.4
Brant County	32	23.2
Hastings Prince Edward Counties	37	22.6
Peterborough County	31	22.5
Elgin-St. Thomas	20	22.2
Renfrew County and District	21	20.4
Lambton County	23	17.4
Simcoe Muskoka District	88	17.3
Thunder Bay District	27	17.3
Algoma District	19	15.9
Leeds-Grenville and Lanark District	26	15.4
North Bay Parry Sound District	18	14.2
Sudbury and District	23	11.5
Northwestern	7	8.6
Porcupine	5	5.7
Timiskaming	1	2.9
Ontario	3,786	29.3

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 1.2.4: Most Likely Exposure for Campylobacteriosis Cases: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

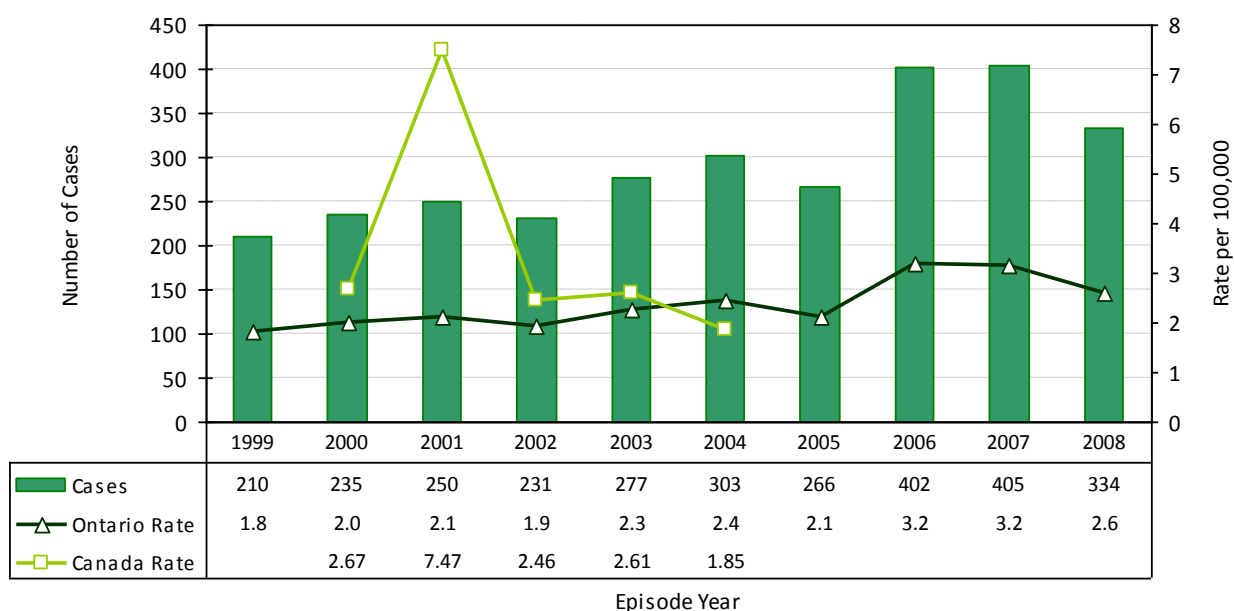
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 20% of cases; these cases were excluded

1.3 CRYPTOSPORIDIOSIS

- Cryptosporidiosis was the fifth leading cause of enteric diseases in Ontario in 2008 with a total of 334 confirmed cases, which represents an incidence rate of 2.6 cases per 100,000 population (Table 1.1).
- During the period 1999-2008, the incidence rate for cryptosporidiosis in Ontario increased by 44% from 1.8 cases per 100,000 population in 1999 to 2.6 cases per 100,000 population in 2008. The number of cryptosporidiosis cases peaked in 2006 and 2007 at 402 and 405 cases, respectively (Figure 1.3.1).
- From 2000 to 2003, the annual incidence rates for cryptosporidiosis in Ontario were lower than the national rates. The national incidence rate for 2001 was significantly higher than that of Ontario, likely due to a large waterborne outbreak of cryptosporidiosis in the Battlefords area of Saskatchewan (Figure 1.3.1).
- Similar to other years, Cryptosporidiosis cases demonstrated a seasonal trend in 2008, with the majority (51%) of cases occurring during the months of July (44), August (85) and September (45) (Figure 1.3.2).
- In 2008, males accounted for 50% (167) of cryptosporidiosis cases and had a corresponding incidence rate of 2.6 cases per 100,000 population. Females accounted for the same proportion of cases (50%; 166 cases) and had a corresponding incidence rate of 2.5 cases per 100,000 population (Figure 1.3.3, Table 1.3.1).
- The incidence rate for cryptosporidiosis decreased with increasing age and was highest for cases in the 0-4 and 5-9 years age groups (Figure 1.3.3, Table 1.3.1). Overall, approximately 90% of cases occurred among persons under the age of 40 years.
- Huron County (13.2 cases per 100,000 population), Renfrew County and District (10.7 cases per 100,000 population) and Grey Bruce (9.2 cases per 100,000 population) reported the highest incidence rates of cryptosporidiosis in 2008 (Map 1.3.1, Table 1.3.2).
- Travel outside of Ontario (35%) and on-farm exposures (10%) were the two most common exposures for cryptosporidiosis cases who reported an exposure in 2008. Exposures within private residences were the third most common exposures at 5% (Figures 1.3.4).
- Animal-to-person transmission (19%), recreational water contact (8%) and foodborne and waterborne transmission (6%) were the most likely transmission modes for 33% of non-travel related cryptosporidiosis cases that reported an exposure in 2008 (Figure 1.3.5).

Figure 1.3.1: Incidence of Cryptosporidiosis in Ontario and Canada: 1999-2008



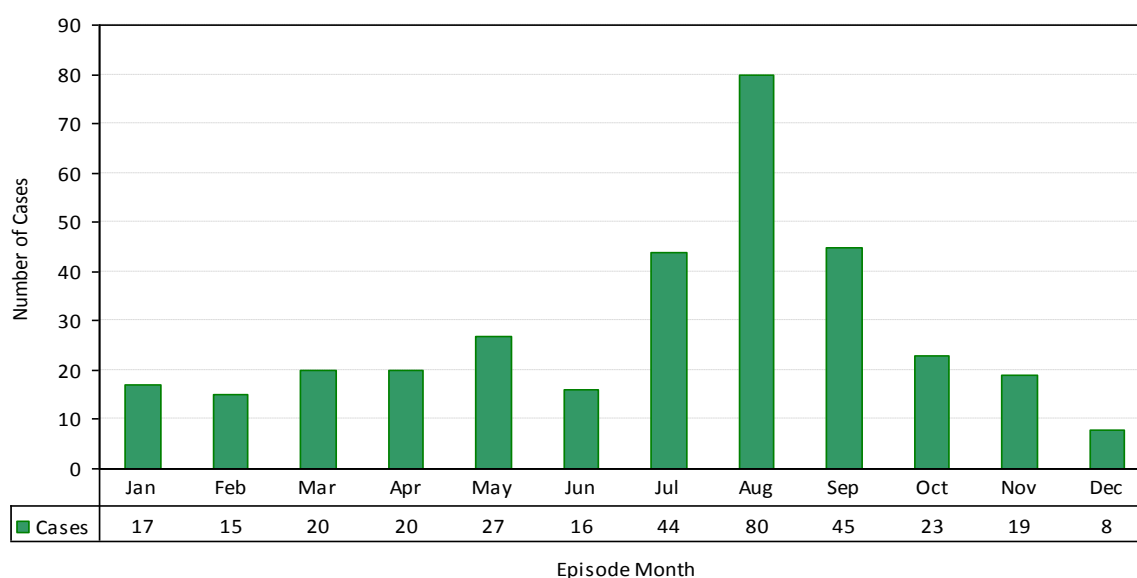
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canada rates): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Cryptosporidiosis became nationally reportable in 2000; Canadian statistics available up to 2004.

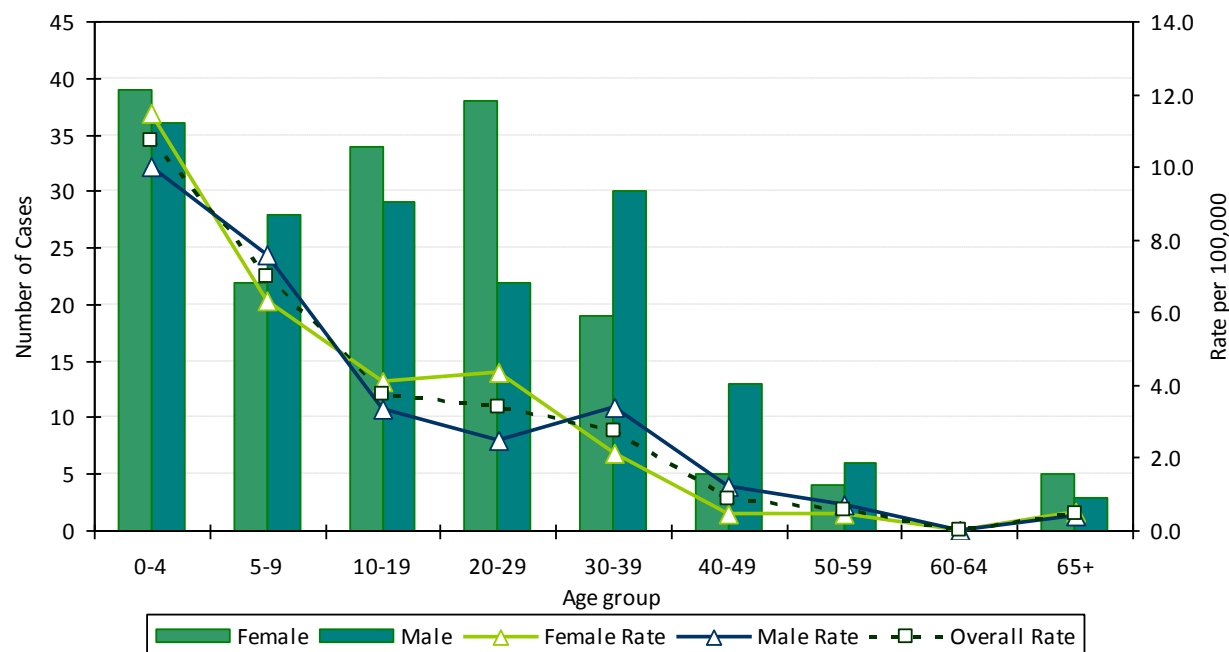
Figure 1.3.2: Incidence of Cryptosporidiosis by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.3.3: Incidence of Cryptosporidiosis by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Does not include 1 case for which sex and/or age was unknown

Table 1.3.1: Incidence of Cryptosporidiosis by Age and Sex: Ontario, 2008

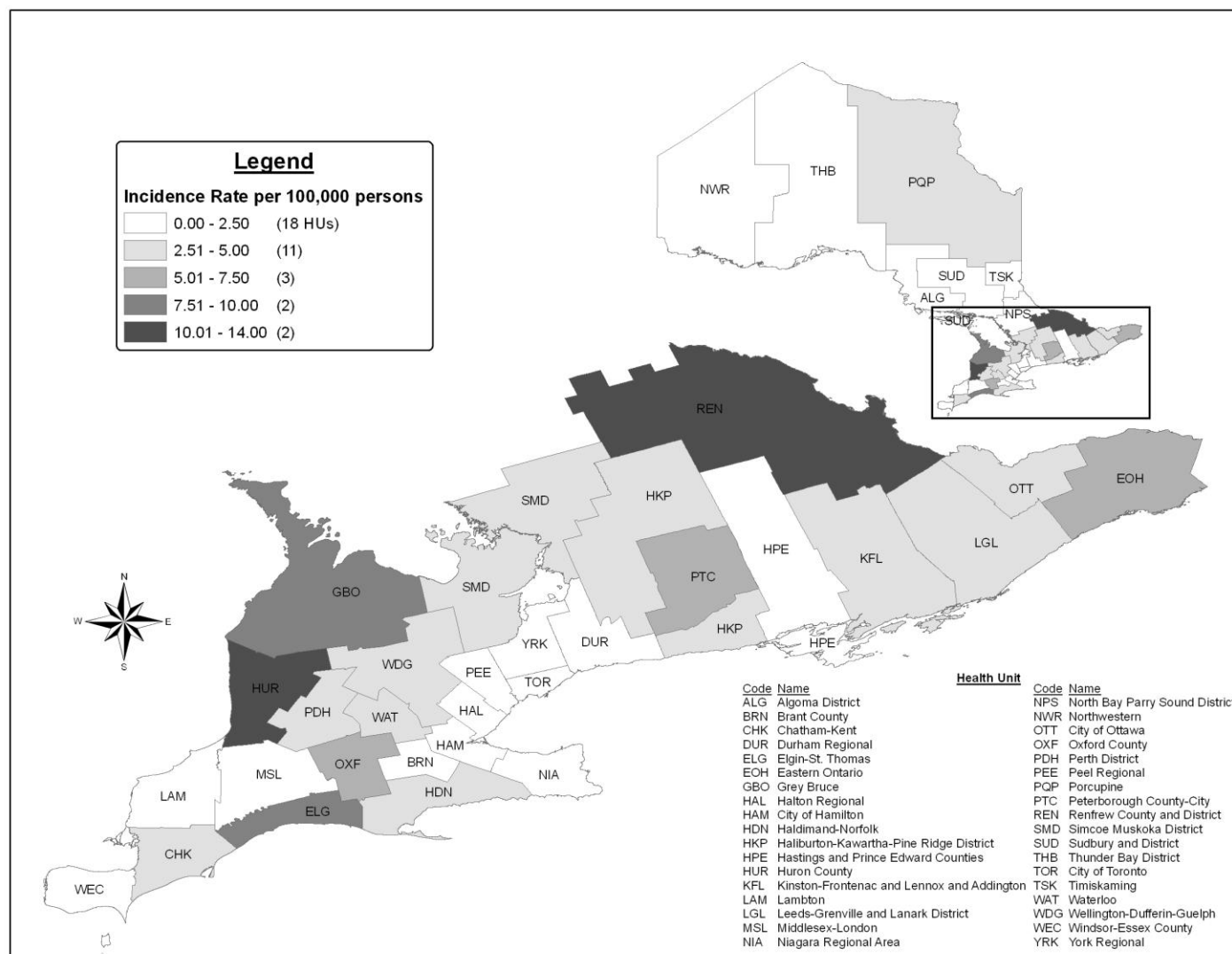
Age group (years)	Female		Male		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	39	11.5	36	10.0	75	10.7
5-9	22	6.3	28	7.6	50	7.0
10-19	34	4.1	29	3.4	63	3.7
20-29	38	4.3	22	2.5	60	3.4
30-39	19	2.1	30	3.4	49	2.7
40-49	5	0.5	13	1.2	18	0.9
50-59	4	0.5	6	0.7	10	0.6
60-64	0	0.0	0	0.0	0	0.0
65+	5	0.5	3	0.4	8	0.5
Total	166	2.5	167	2.6	333	2.6

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Does not include 1 case for which sex and/or age was unknown

Map 1.3.1: Incidence Rates of Cryptosporidiosis by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.3.2: Incidence of Cryptosporidiosis by Public Health Unit: Ontario, 2008

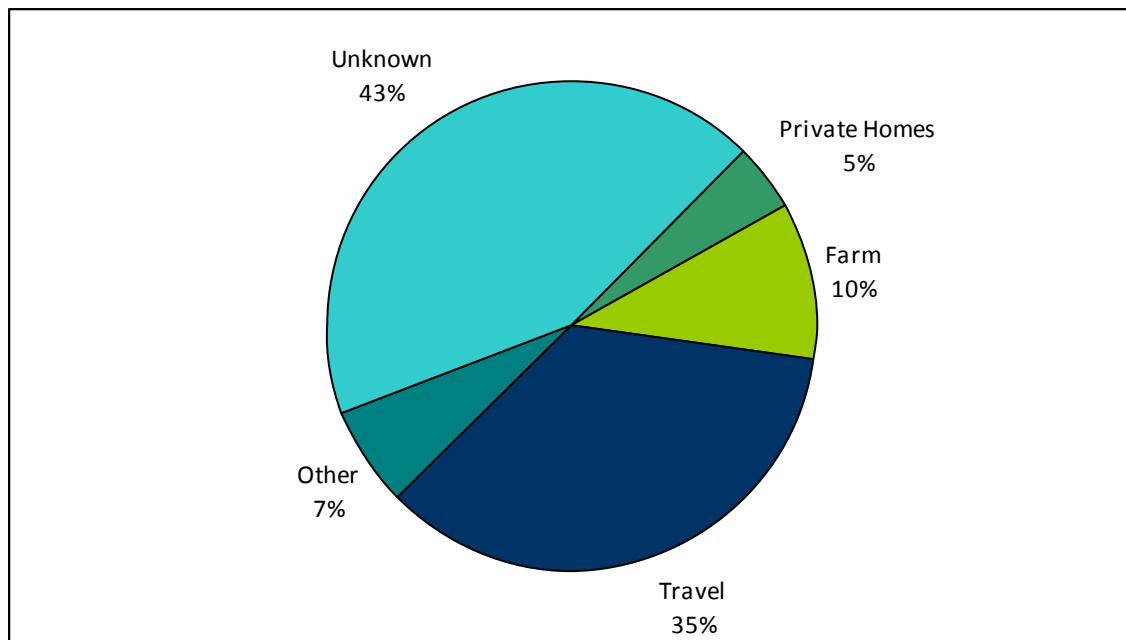
Public Health Unit	Number of cases	Rate/100,000 population
Huron County	8	13.2
Renfrew County and District	11	10.7
Grey Bruce	15	9.2
Elgin-St. Thomas	7	7.8
Oxford County	7	6.6
Peterborough County-City	9	6.5
Eastern Ontario	12	6.0
Wellington-Dufferin-Guelph	13	4.8
Leeds, Grenville and Lanark District	7	4.1
Haliburton, Kawartha, Pine Ridge	7	4.0
Perth District	3	3.9
Haldimand-Norfolk	4	3.6
Chatham-Kent	4	3.6
Porcupine	3	3.4
Waterloo Region	17	3.3
Ottawa	23	2.6
Kingston, Frontenac, Lennox & Addington	5	2.6
Simcoe Muskoka District	13	2.6
Peel Region	32	2.5
Northwestern	2	2.4
Niagara Region	10	2.3
Toronto	55	2.1
Middlesex-London	9	2.0
Thunder Bay District	3	1.9
Hastings & Prince Edward Counties	3	1.8
York Region	17	1.7
Algoma District	2	1.7
Halton Region	8	1.7
Lambton County	2	1.5
Brant County	2	1.4
Durham Region	8	1.3
Hamilton	6	1.1
Sudbury and District	2	1.0
Windsor-Essex County	4	1.0
North Bay Parry Sound District	1	0.8
Timiskaming	0	0.0
Ontario	334	2.6

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 1.3.4: Most Likely Exposure Settings for Cryptosporidiosis Cases: Ontario, 2008

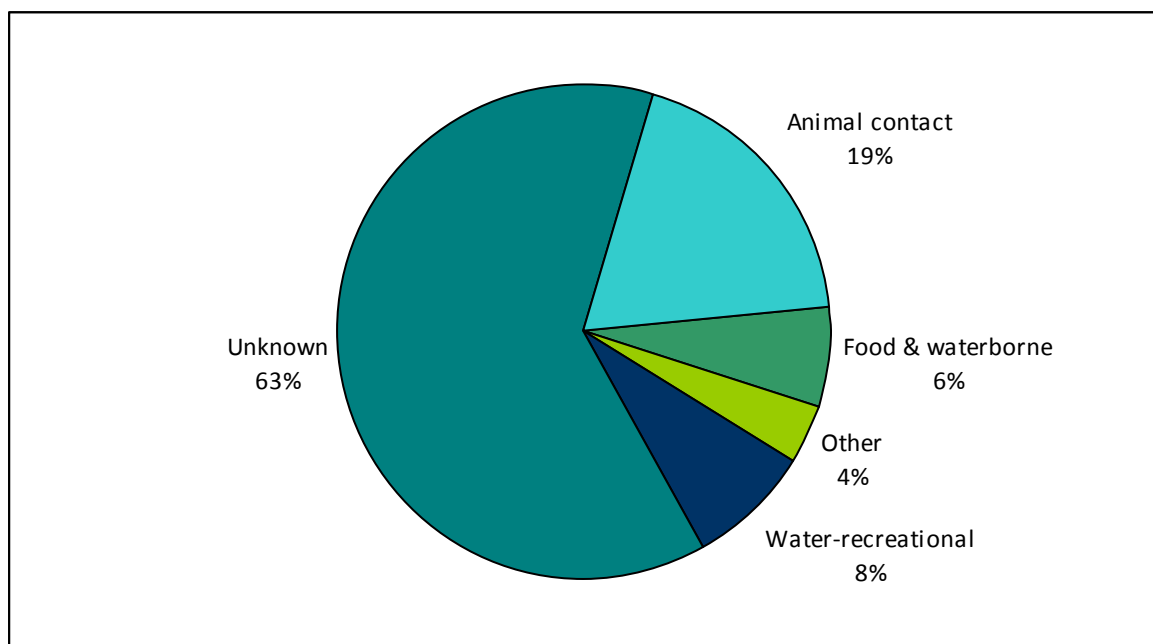


Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 19% of cases; these cases were excluded

Figure 1.3.5: Most Likely Modes of Transmission for Cryptosporidiosis Cases: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

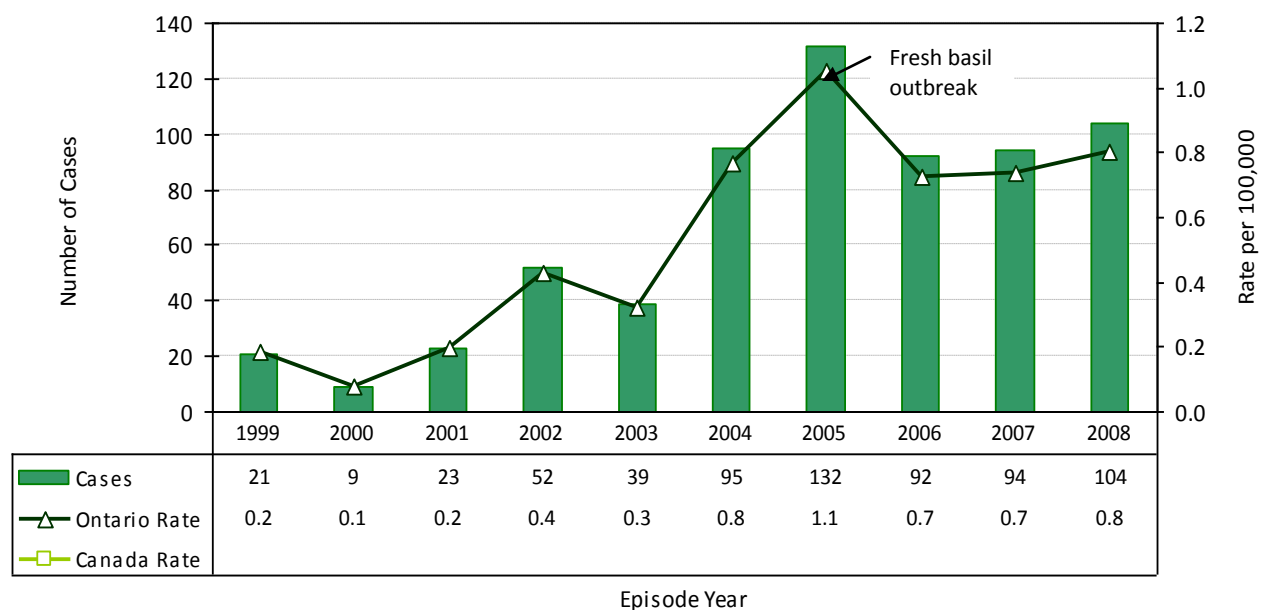
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 19% of cases; these cases were excluded. Excludes travel-related cases

1.4 CYCLOSPORIASIS

- In 2008, Ontario reported 104 cases of cyclosporiasis, representing an incidence rate of 0.8 cases per 100,000 population (Table 1.1).
- During the period 1999 to 2008, the incidence of cyclosporiasis in Ontario fluctuated. Since 2004, reports of cyclosporiasis have remained relatively stable with the exception of a marked increase in 2005 attributed to an outbreak linked to the consumption of fresh basil (Figure 1.4.1).
- Confirmed cases of cyclosporiasis in 2008 demonstrated two distinct seasonal peaks; the larger peak occurred from April to July (62% of cases) and the smaller peak from October to December (19% of cases) (Figure 1.4.2).
- In 2008, the incidence rate of cyclosporiasis was 22% lower for females at 0.7 cases per 100,000 population compared to males at 0.9 cases per 100,000 population (Figure 1.4.3, Table 1.4.1).
- The incidence of cyclosporiasis was highest in the 50-59 (1.6 cases per 100,000 population) and 30-39 age groups (1.1 cases per 100,000 population) (Figure 1.4.3, Table 1.4.1).
- Eight of 36 health units (Kingston- Frontenac- Lennox and Addington, Toronto, York, Wellington-Dufferin-Guelph, Oxford County, Peel, Niagara and Middlesex-London) reported incidence rates for cyclosporiasis that were higher than the provincial rate of 0.8 cases per 100,000 population; sixteen health units reported no cases of cyclosporiasis in 2008 (Map 1.4.1, Table 1.4.2).
- Sixty-one percent of cyclosporiasis cases who reported an exposure in 2008, reported travel as their most likely exposure, 8% reported settings not related to travel and 31% reported unknown exposures (Figure 1.4.4).

Figure 1.4.1: Incidence of Cyclosporiasis in Ontario: 1999-2008

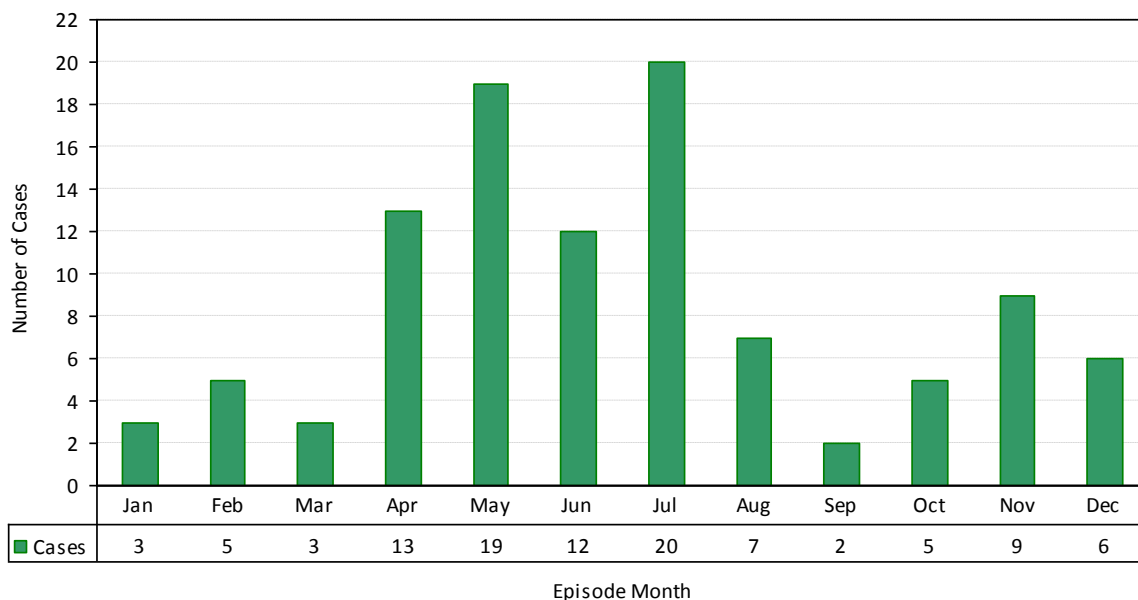


Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Cyclosporiasis has been a nationally notifiable disease since 2000; Canadian statistics not available on Notifiable Diseases On-line.

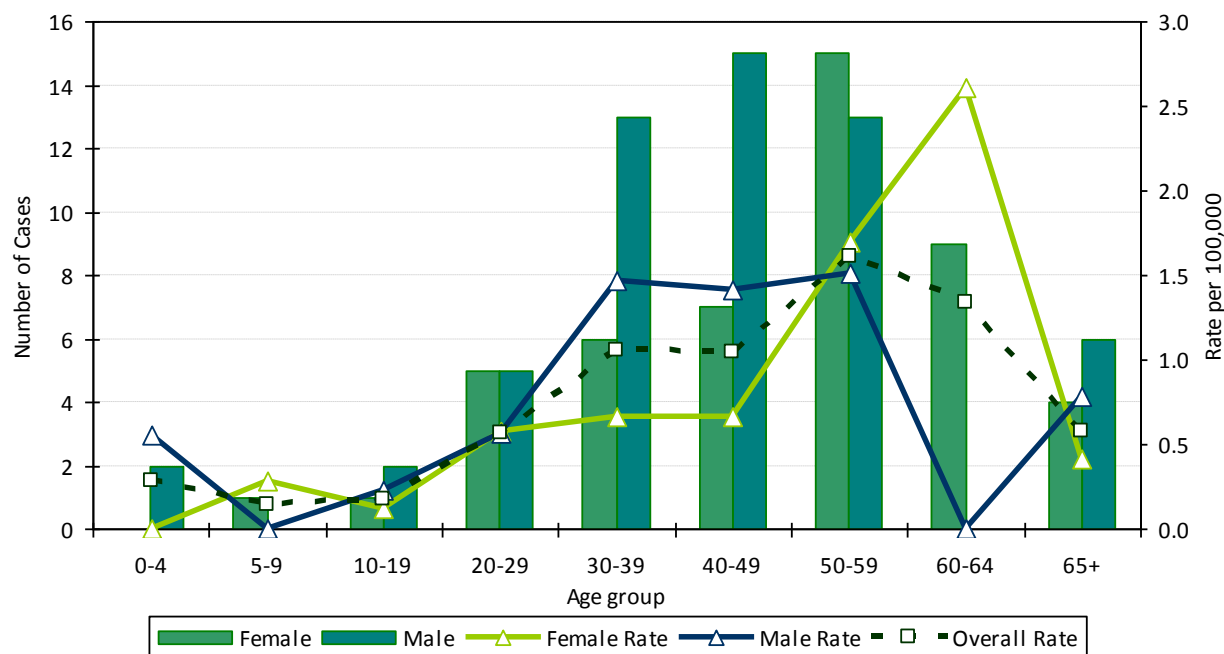
Figure 1.4.2: Incidence of Cyclosporiasis by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.4.3: Incidence of Cyclosporiasis by Age and Sex: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

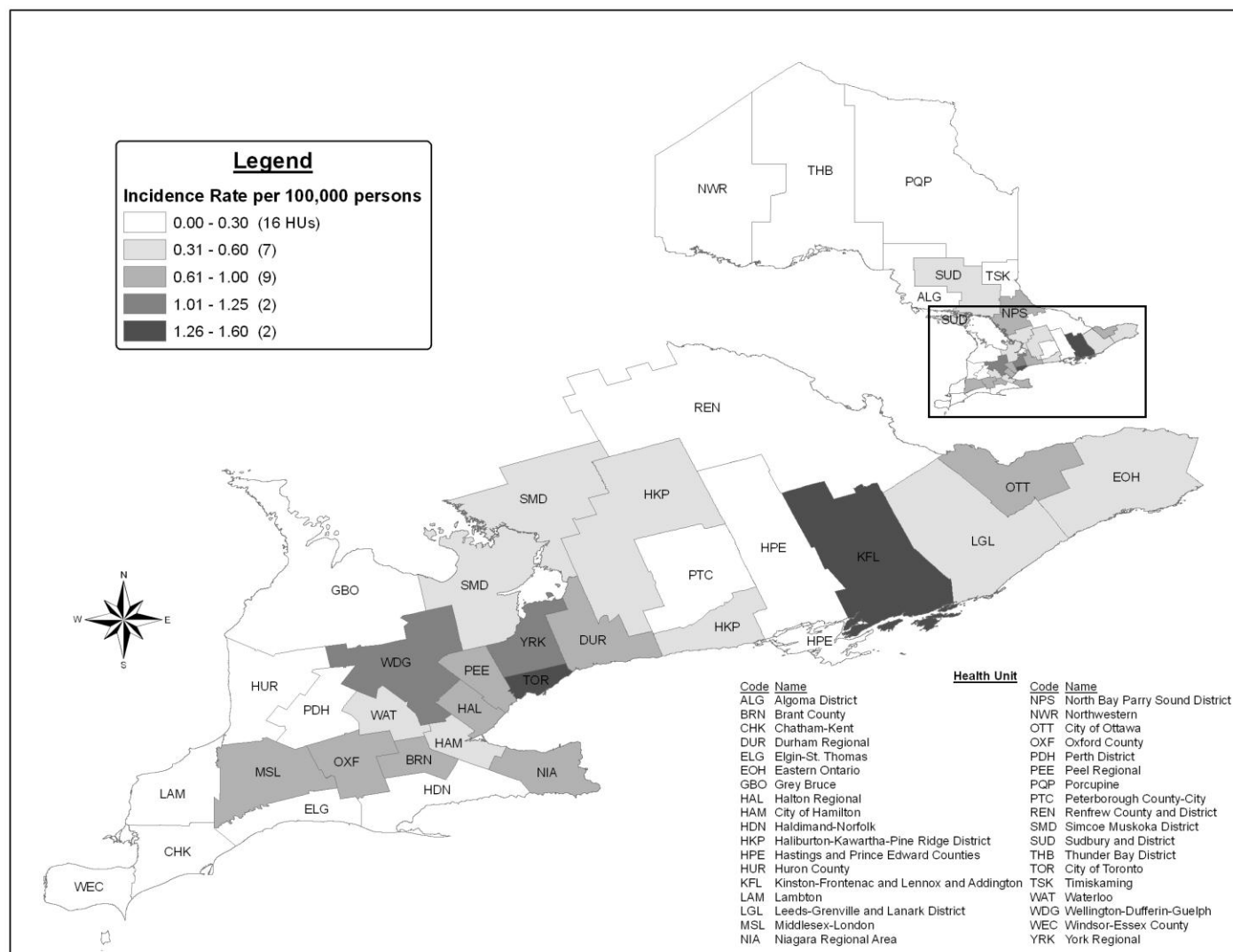
Table 1.4.1: Incidence of Cyclosporiasis by Age and Sex: Ontario, 2008

Age group (years)	Female		Male		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	0	0.0	2	0.6	2	0.3
5-9	1	0.3	0	0.0	1	0.1
10-19	1	0.1	2	0.2	3	0.2
20-29	5	0.6	5	0.6	10	0.6
30-39	6	0.7	13	1.5	19	1.1
40-49	7	0.7	15	1.4	22	1.0
50-59	15	1.7	13	1.5	28	1.6
60-64	9	2.6	0	0.0	9	1.3
65+	4	0.4	6	0.8	10	0.6
Total	48	0.7	56	0.9	104	0.8

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Map 1.4.1: Incidence Rates of Cyclosporiasis by Public Health Unit: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.4.2: Incidence of Cyclosporiasis by Public Health Unit: Ontario, 2008

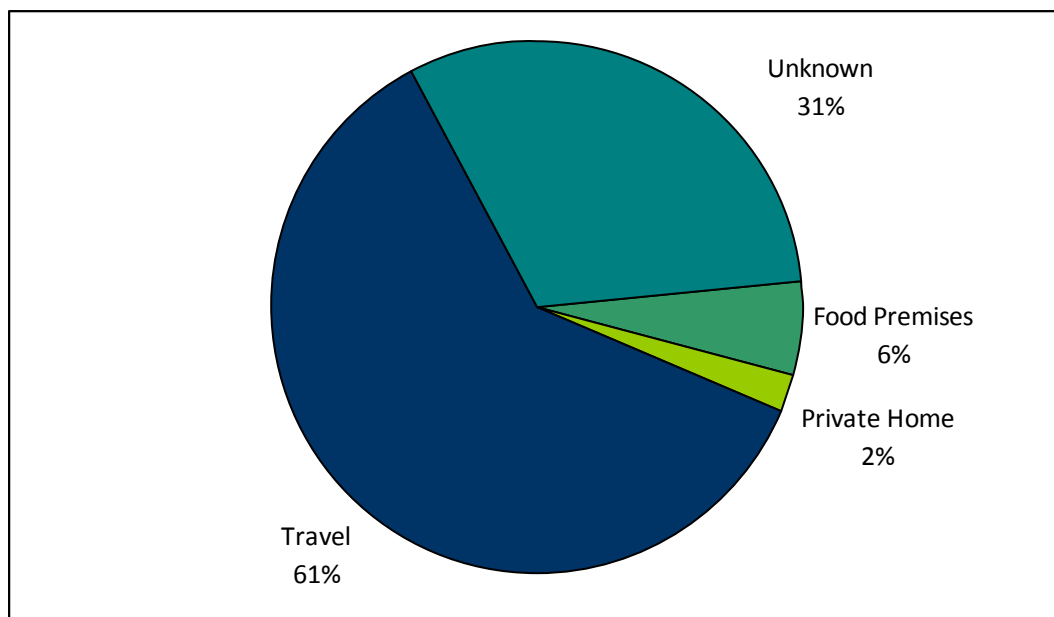
Public Health Unit	Number of cases	Rate/100,000 population
Kingston, Frontenac, Lennox & Addington	3	1.6
Toronto	34	1.3
York Region	12	1.2
Wellington-Dufferin-Guelph	3	1.1
Oxford County	1	0.9
Peel Region	12	0.9
Niagara Region	4	0.9
Middlesex-London	4	0.9
Halton Region	4	0.8
Durham Region	5	0.8
Ottawa	7	0.8
North Bay Parry Sound District	1	0.8
Brant County	1	0.7
Leeds, Grenville and Lanark District	1	0.6
Simcoe Muskoka District	3	0.6
Waterloo Region	3	0.6
Hamilton	3	0.6
Haliburton, Kawartha, Pine Ridge	1	0.6
Eastern Ontario	1	0.5
Sudbury and District	1	0.5
Algoma District	0	0.0
Chatham-Kent	0	0.0
Elgin-St. Thomas	0	0.0
Grey Bruce	0	0.0
Haldimand-Norfolk	0	0.0
Hastings & Prince Edward Counties	0	0.0
Huron County	0	0.0
Lambton County	0	0.0
Northwestern	0	0.0
Perth District	0	0.0
Peterborough County-City	0	0.0
Porcupine	0	0.0
Renfrew County and District	0	0.0
Thunder Bay District	0	0.0
Timiskaming	0	0.0
Windsor-Essex County	0	0.0
Ontario	104	0.8

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 1.4.4: Most Likely Exposure Settings for Cyclosporiasis Cases: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

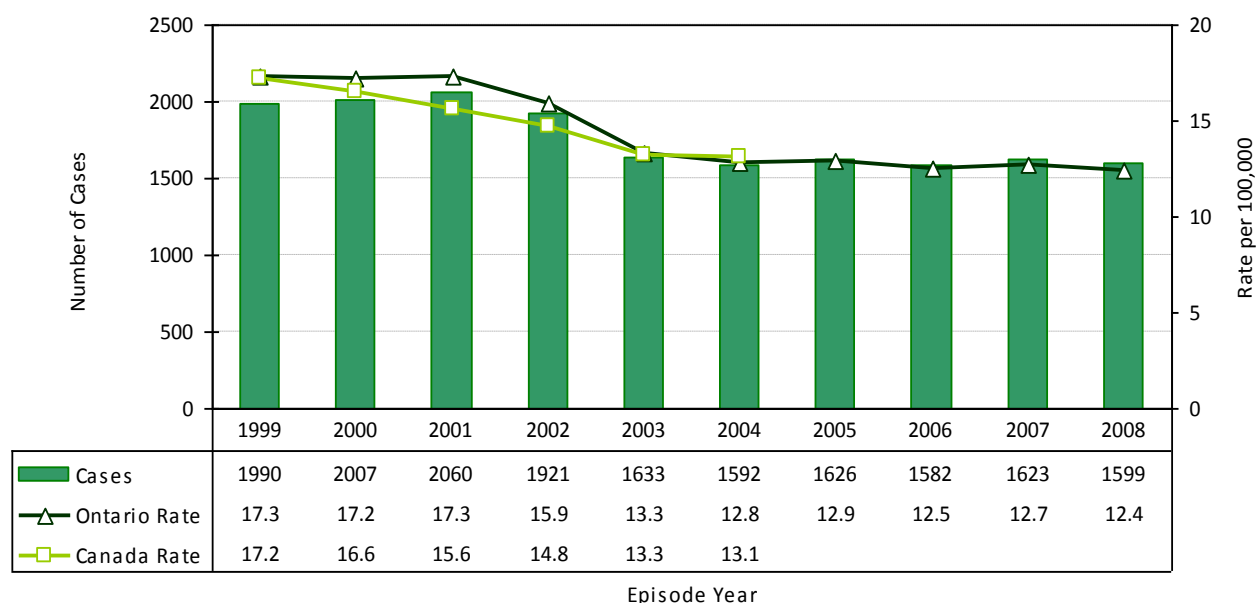
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 14% of cases; these cases were excluded

1.5 GIARDIASIS

- Giardiasis is the third leading cause of enteric disease in Ontario in 2008, accounting for 16% of all enteric diseases reported (Table 1.1).
- Ontario reported a total of 1,599 confirmed cases of giardiasis in 2008, which represents an incidence rate of 12 cases per 100,000 population (Table 1.1).
- During the period 1999 to 2008, the incidence rate of giardiasis in Ontario declined by 29% from 17 cases per 100,000 population in 1999 to 12 cases per 100,000 population in 2008. Since 2003, the incidence rate of giardiasis has remained stable at approximately 13 cases per 100,000 population (Figure 1.5.1).
- Cases of giardiasis occur throughout the year but tend to be more frequently reported towards the end of summer and early fall. In 2008, July (153) August (175 cases) and September (180 cases) accounted for the highest number of cases (Figure 1.5.2).
- In 2008, males accounted for 57% of confirmed cases of giardiasis reported in Ontario with an incidence rate of 14 cases per 100,000 population. Females accounted for the remaining 43% of cases with a corresponding incidence rate of 10 cases per 100,000 population (Figure 1.5.3, Table 1.5.1).
- Similar to 2007, the incidence rate of giardiasis was highest among persons in the 0-4 age group. In 2008, the 0-4 age group had an incidence rate of 30.6 cases per 100,000 population compared to 30.8 cases per 100,000 population in 2007. (Figure 1.5.3, Table 1.5.1).
- In 2008, eight Ontario health units (22%) reported incidence rates for giardiasis that exceeded the provincial incidence rate of 12.4 cases per 100,000 population. Timiskaming reported the highest incidence rate at 23 cases per 100,000 population (Map 1.5.1, Table 1.5.2).
- Of giardiasis cases reporting an exposure setting in 2008, travel outside of Ontario accounted for the largest proportion of giardiasis cases at 32% (Fig 1.5.4).

Figure 1.5.1: Incidence of Giardiasis in Ontario and Canada: 1999-2008



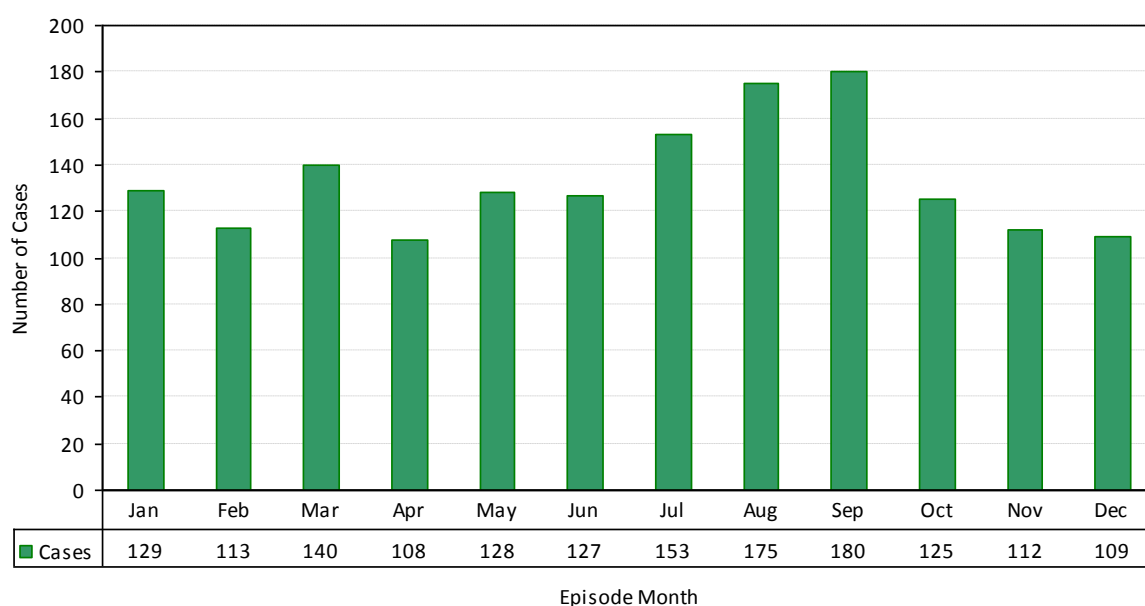
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Canadian statistics available up to 2004.

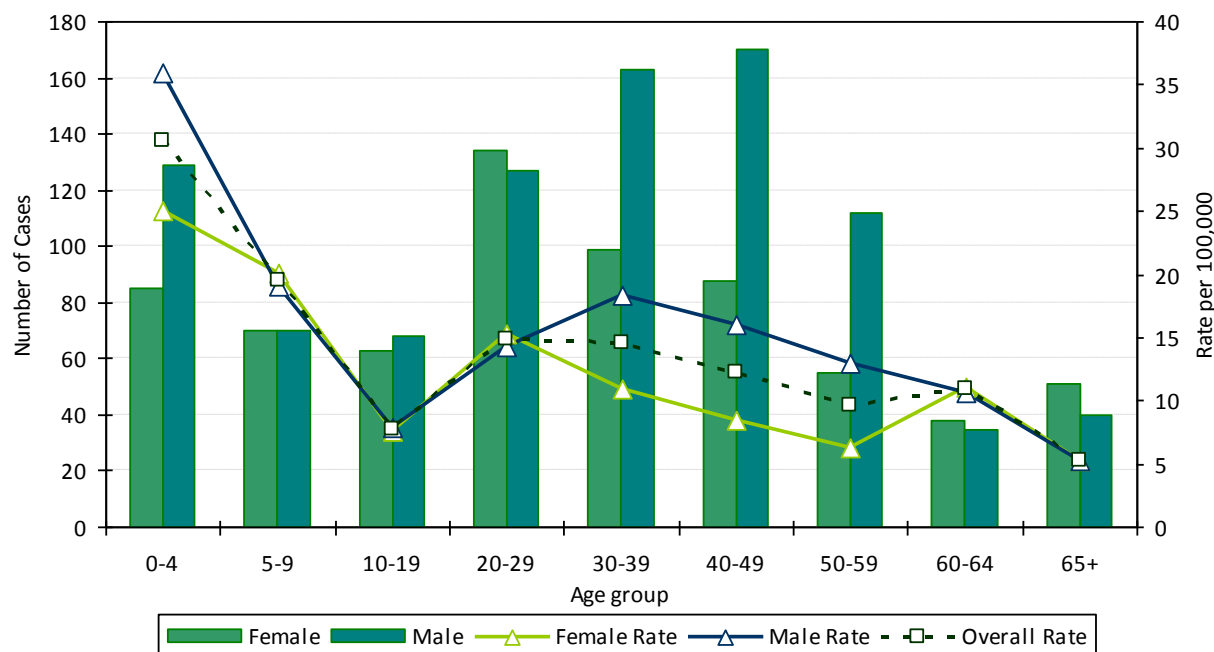
Figure 1.5.2: Incidence of Giardiasis by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.5.3: Incidence of Giardiasis by Age and Sex: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Does not include 2 cases for which age and/or was unknown

Table 1.5.1: Incidence of Giardiasis by Age and Sex: Ontario, 2008

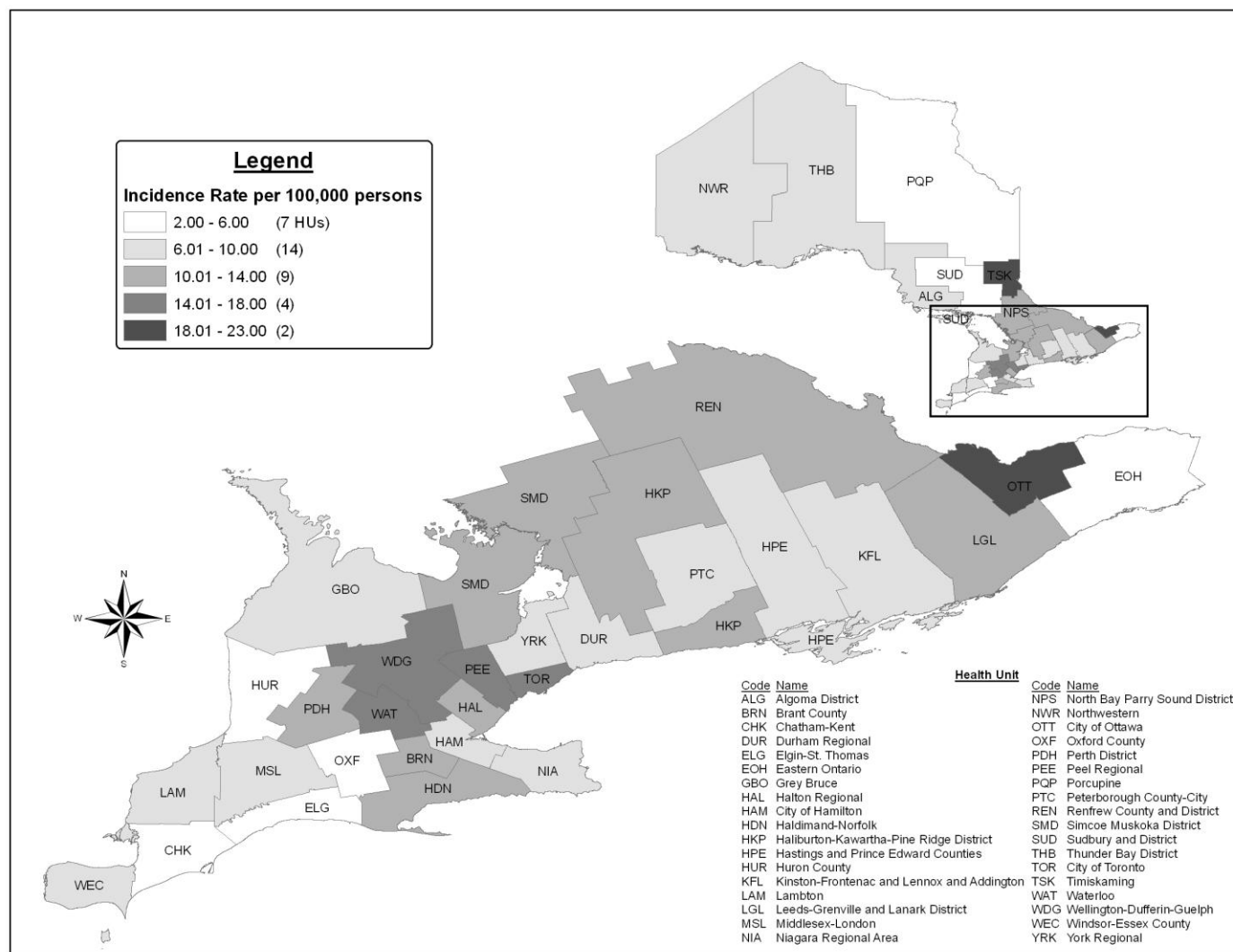
Age group (years)	Female		Male		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	85	25.0	129	35.9	214	30.6
5-9	70	20.0	70	19.0	140	19.5
10-19	63	7.6	68	7.9	131	7.8
20-29	134	15.3	127	14.3	261	14.8
30-39	99	11.0	163	18.3	262	14.6
40-49	88	8.4	170	16.1	258	12.2
50-59	55	6.2	112	13.0	167	9.6
60-64	38	11.0	35	10.6	73	10.8
65+	51	5.2	40	5.2	91	5.2
Total	683	10.4	914	14.3	1,597	12.4

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Does not include 2 cases for which age and/or was unknown

Map 1.5.1: Incidence Rates of Giardiasis by Public Health Unit: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.5.2: Incidence of Giardiasis by Public Health Unit: Ontario, 2008

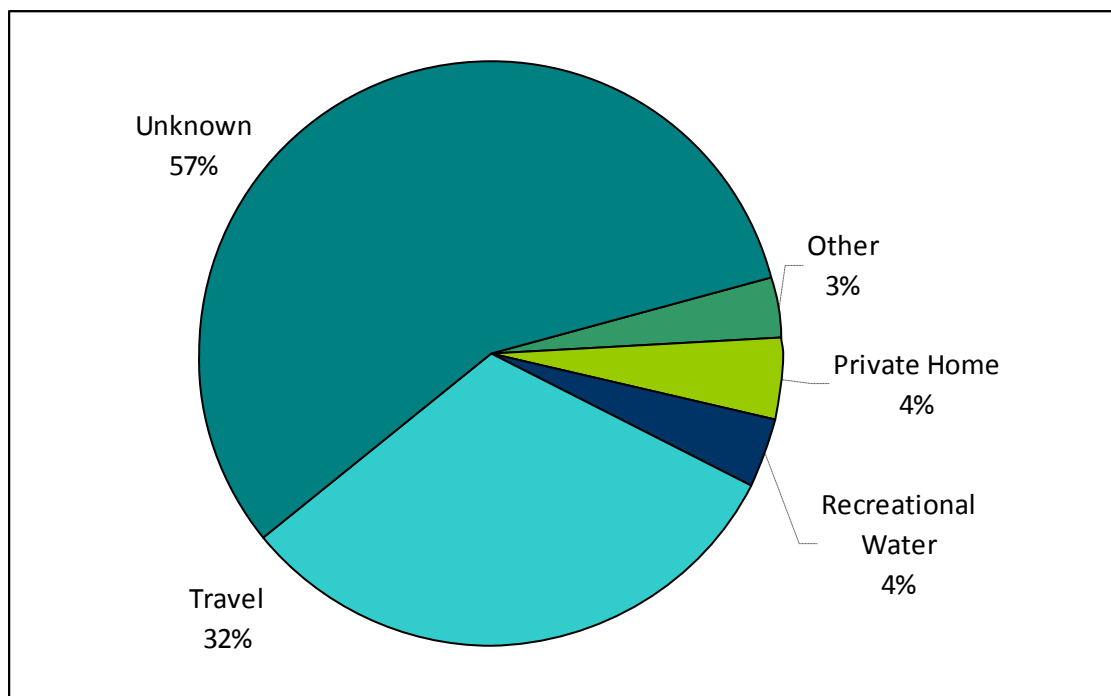
Public Health Unit	Number of cases	Rate/100,000 population
Timiskaming	8	22.8
Ottawa	186	21.4
Toronto	467	17.6
Wellington-Dufferin-Guelph	46	17.1
Waterloo Region	80	15.7
Peel Region	191	14.9
Haliburton, Kawartha, Pine Ridge	23	13.0
Perth District	10	13.0
Simcoe Muskoka District	61	12.0
Renfrew County and District	12	11.6
Brant County	15	10.9
Haldimand-Norfolk	12	10.9
Leeds, Grenville and Lanark District	18	10.7
North Bay Parry Sound District	13	10.3
Halton Region	49	10.2
Thunder Bay District	15	9.6
Peterborough County-City	13	9.4
Durham Region	56	9.3
Algoma District	11	9.2
Lambton County	12	9.1
Hamilton	47	8.9
Kingston, Frontenac, Lennox & Addington	17	8.9
Windsor-Essex County	34	8.4
Niagara Region	35	7.9
Grey Bruce	12	7.4
Hastings & Prince Edward Counties	12	7.3
York Region	71	7.2
Middlesex-London	30	6.7
Northwestern	5	6.1
Eastern Ontario	12	6.0
Porcupine	5	5.7
Huron County	3	4.9
Sudbury and District	8	4.0
Chatham-Kent	4	3.6
Elgin-St. Thomas	3	3.3
Oxford County	3	2.8
Ontario	1,599	12.4

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 1.5.4: Most Likely Exposure Settings for Giardiasis Cases: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

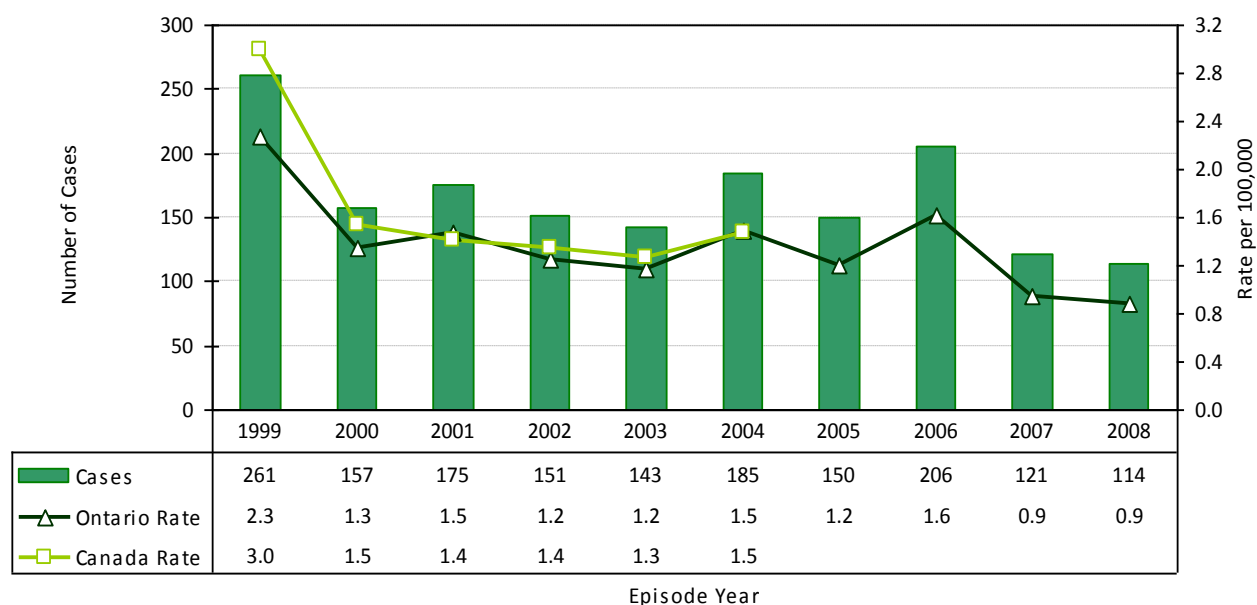
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 25% of cases; these cases were excluded

1.6 HEPATITIS A

- In 2008, Ontario reported 114 confirmed cases of Hepatitis A, which represents an incidence rate of 0.9 cases per 100,000 population (Table 1.1). There was no change in the incidence rate of Hepatitis A in 2008 compared to 2007.
- The incidence rate of Hepatitis A in Ontario declined by 61% from 2.3 cases per 100,000 population in 1999 to 0.9 cases per 100,000 population in 2008.
- From 2000 to 2004, the incidence rate of Hepatitis A in Ontario was comparable to the national rate at roughly 1.3 to 1.4 cases per 100,000 population (Figure 1.6.1).
- The incidence of Hepatitis A in Ontario in 2008 did not follow a typical seasonal distribution like most enteric diseases. August accounted for the highest monthly case count with 18 cases (Figure 1.6.2).
- In 2008, males accounted for over half (54%) of reported cases of Hepatitis A in Ontario and had an incidence rate that was 25% higher than females (Figure 1.6.3, Table 1.6.1).
- Overall incidence rates of Hepatitis A in 2008 were highest in the 5-9 age group at 2.1 cases per 100,000 population. Males aged 5-9 years and females aged 0-4 years reported the highest sex-specific incidence rates of Hepatitis A at 2.2 and 2.4 cases per 100,000 population, respectively (Figure 1.6.3, Table 1.6.1).
- Toronto Public Health reported the highest number of confirmed Hepatitis A cases in Ontario in 2008 (52 cases), whereas Huron County and Elgin St. Thomas reported the highest incidence rates at 3.3 and 2.2 cases per 100,000 population, respectively (Map 1.6.1, Table 1.6.2).
- Among Hepatitis A cases in 2008 reporting an exposure, travel outside of Ontario accounted for the largest proportion of cases at 48%.

Figure 1.6.1: Incidence of Hepatitis A in Ontario and Canada: 1999-2008



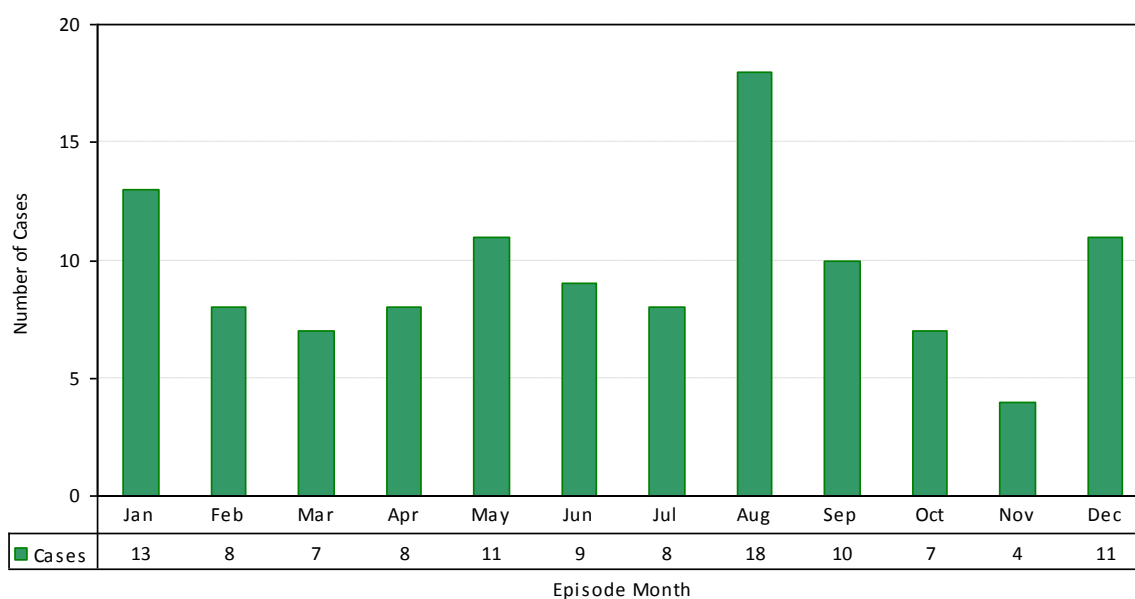
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010 : http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Canadian statistics available up to 2004.

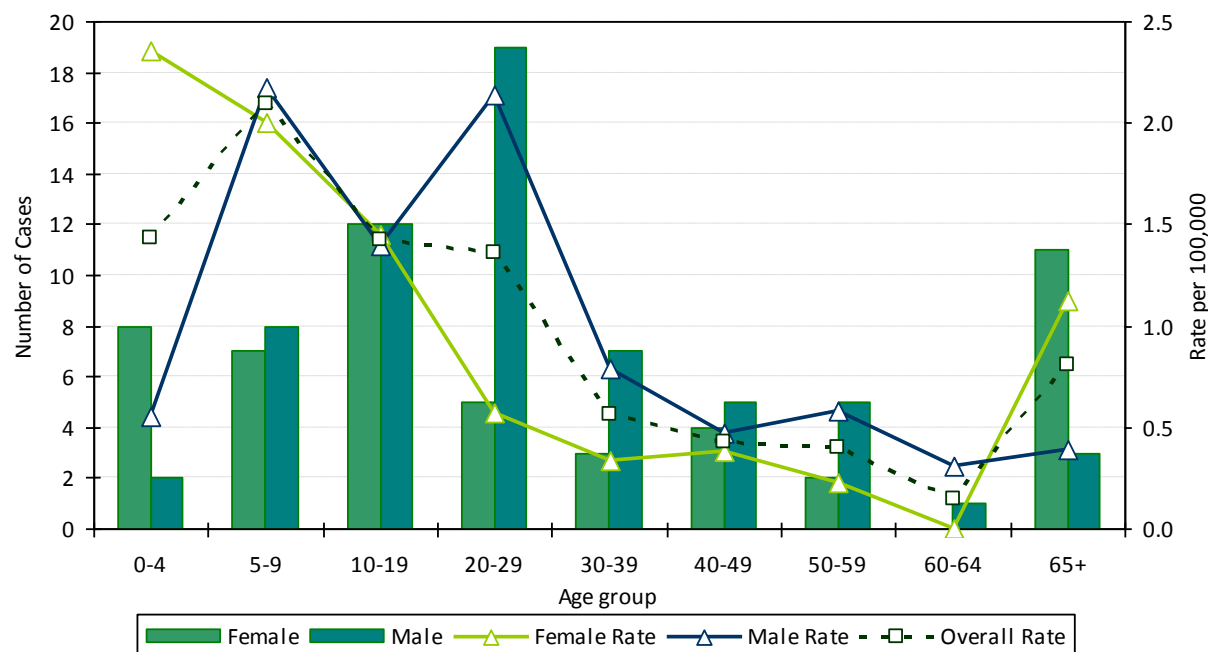
Figure 1.6.2: Incidence of Hepatitis A by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.6.3: Incidence of Hepatitis A by Age and Sex: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

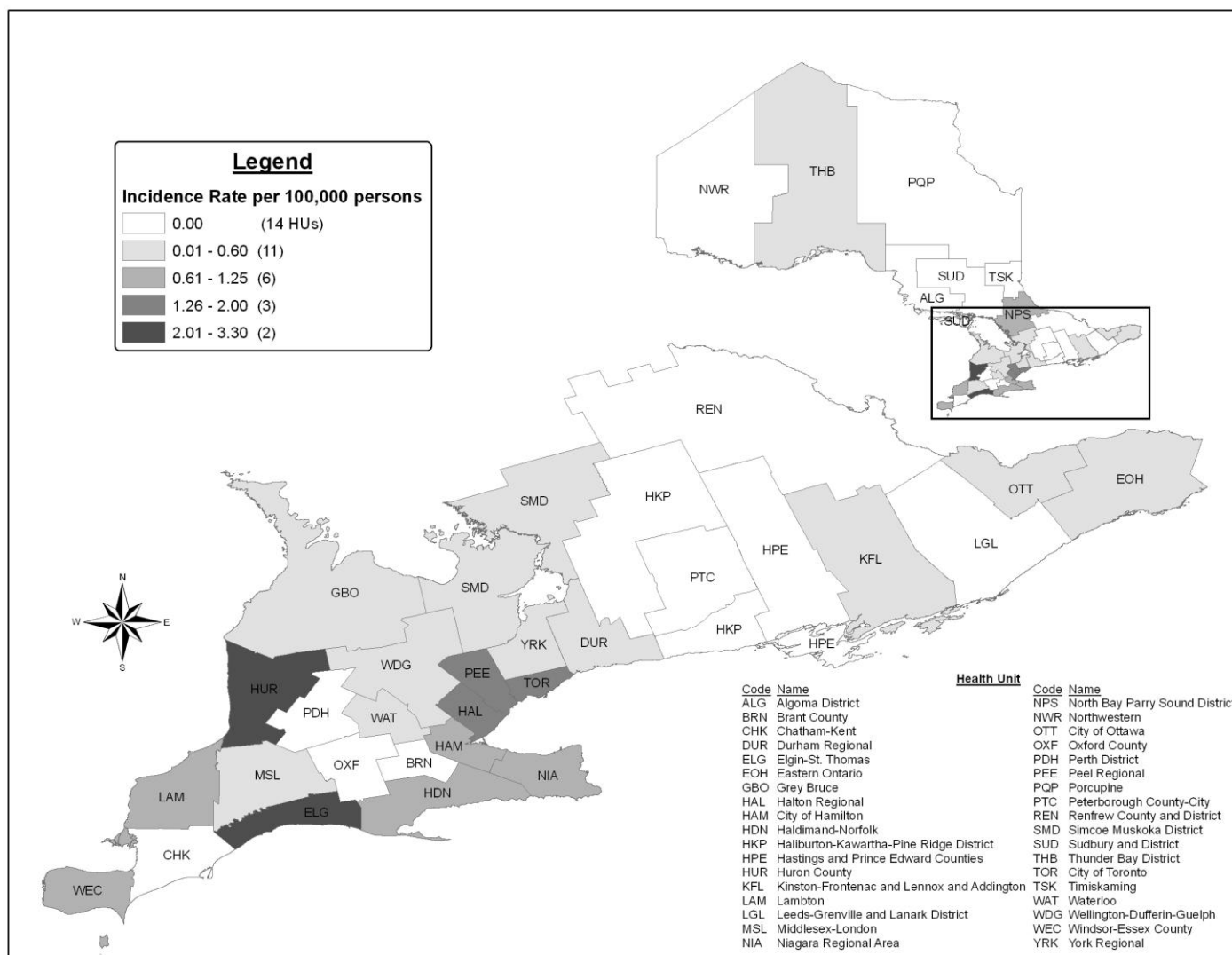
Table 1.6.1: Incidence of Hepatitis A by Age and Sex: Ontario, 2008

Age group (years)	Female		Male		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	8	2.4	2	0.6	10	1.4
5-9	7	2.0	8	2.2	15	2.1
10-19	12	1.5	12	1.4	24	1.4
20-29	5	0.6	19	2.1	24	1.4
30-39	3	0.3	7	0.8	10	0.6
40-49	4	0.4	5	0.5	9	0.4
50-59	2	0.2	5	0.6	7	0.4
60-64	0	0.0	1	0.3	1	0.1
65+	11	1.1	3	0.4	14	0.8
Total	52	0.8	62	1.0	114	0.9

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Map 1.6.1: Incidence Rates of Hepatitis A by Public Health Unit: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.6.2: Incidence of Hepatitis A by Public Health Unit: Ontario, 2008

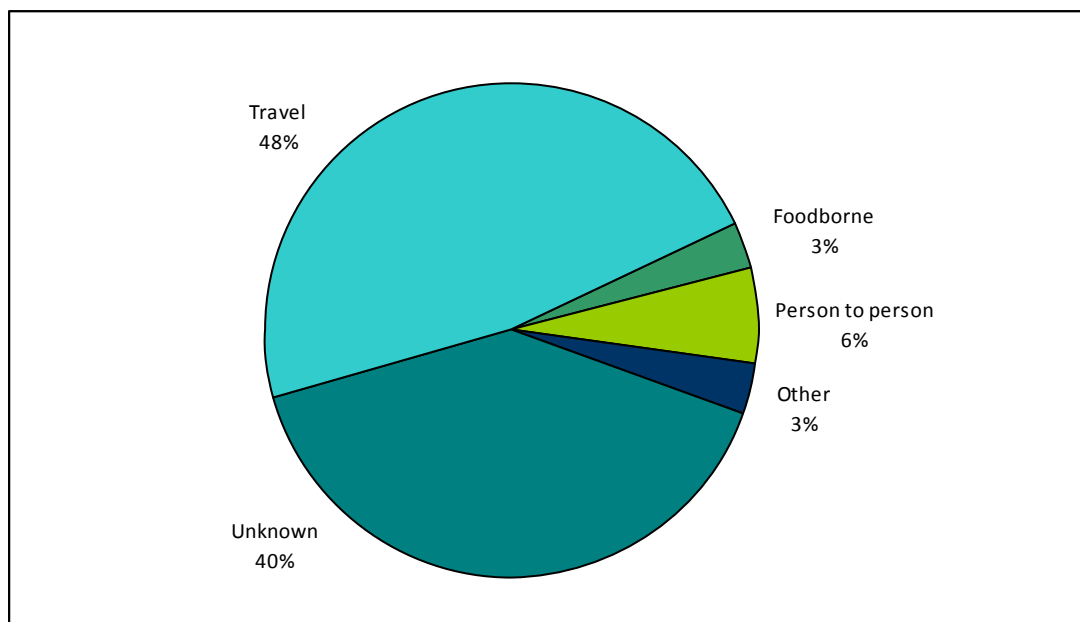
Public Health Unit	Number of cases	Rate/100,000 population
Huron County	2	3.3
Elgin-St. Thomas	2	2.2
Toronto	52	2.0
Peel Region	21	1.6
Halton Region	6	1.3
Hamilton	5	0.9
Haldimand-Norfolk	1	0.9
North Bay Parry Sound District	1	0.8
Lambton County	1	0.8
Windsor-Essex County	3	0.7
Niagara Region	3	0.7
Thunder Bay District	1	0.6
Grey Bruce	1	0.6
Kingston, Frontenac, Lennox & Addington	1	0.5
York Region	5	0.5
Eastern Ontario	1	0.5
Waterloo Region	2	0.4
Wellington-Dufferin-Guelph	1	0.4
Durham Region	2	0.3
Middlesex-London	1	0.2
Simcoe Muskoka District	1	0.2
Ottawa	1	0.1
Algoma District	0	0.0
Brant County	0	0.0
Chatham-Kent	0	0.0
Haliburton, Kawartha, Pine Ridge	0	0.0
Hastings & Prince Edward Counties	0	0.0
Leeds, Grenville and Lanark District	0	0.0
Northwestern	0	0.0
Oxford County	0	0.0
Perth District	0	0.0
Peterborough County-City	0	0.0
Porcupine	0	0.0
Renfrew County and District	0	0.0
Sudbury and District	0	0.0
Timiskaming	0	0.0
Ontario	114	0.9

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 1.6.4: Most Likely Exposure Settings for Hepatitis A Cases: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

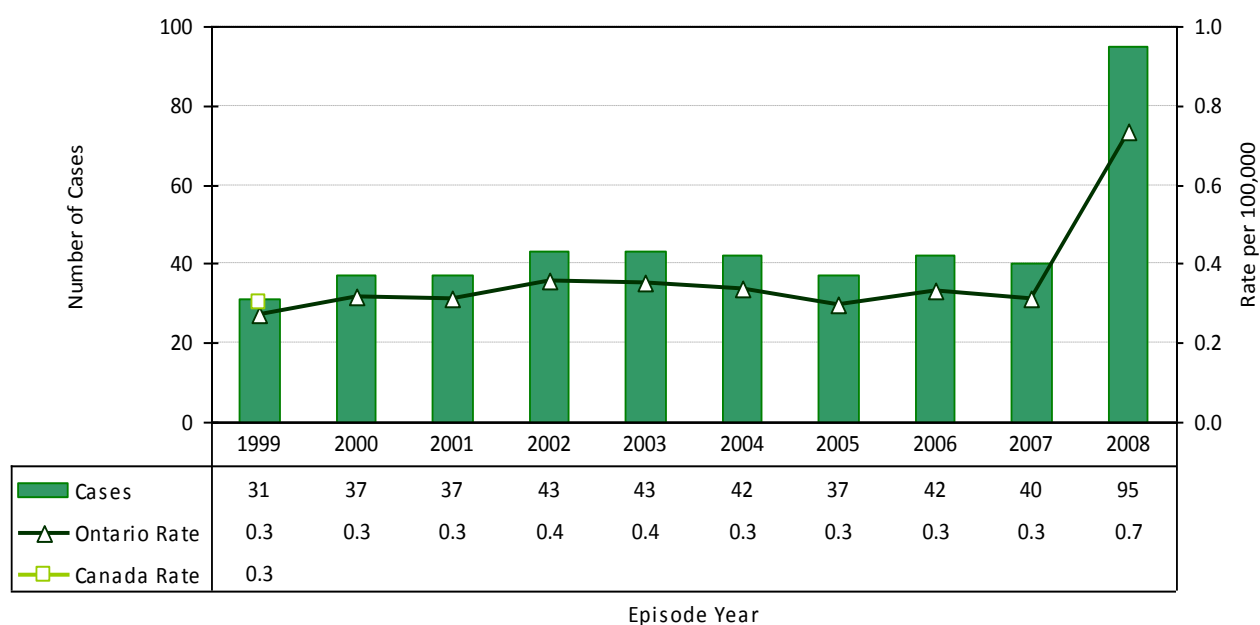
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 15% of cases; these cases were excluded

1.7 LISTERIOSIS

- In 2008, Ontario reported 95 cases of listeriosis, representing an incidence rate of 0.7 cases per 100,000 population (Table 1.7.1).
- With the exception of 2008, the incidence of listeriosis has remained fairly stable with an average of 40 reported cases (0.3 cases per 100,000 population) per year since 1999 (Figure 1.7.1). In 2008, the incidence of listeriosis more than doubled with the increase attributed to a large-scale outbreak of 42 cases in which ready-to-eat meats were implicated.
- In 2008, 78% of listeriosis cases were reported in the months of June through to September, which coincided with the duration of the 2008 listeriosis outbreak. (Figure 1.7.2).
- Males and females aged 65 years and older accounted for 71% of confirmed cases of listeriosis and reported incidence rates that were 4-6 times higher than the provincial incidence rate (Figure 1.7.3, Table 1.7.1). This age distribution is typical for listeriosis and was also similar to that of cases linked to the 2008 listeriosis outbreak.
- One third (12) of Ontario health units did not report any cases of listeriosis in 2008. Thunder Bay District and Peterborough County-City reported the highest incidence rates at 2.6 and 2.2 cases per 100,000 population, respectively, while Toronto reported the highest number of cases at 25 (Map 1.7.1, Table 1.7.2).
- Compared to other enteric diseases reported in Ontario in 2008, listeriosis cases were less likely to have acquired their illness while travelling outside of the province. Of cases reporting exposures, 42% occurred in institutional settings, 10% in private residences, 9% in food premises, and 1% on farms (Figure 1.7.4). Travel accounted for only 3% of exposures and the remaining 35% of exposures occurred in Ontario but of unknown source.

Figure 1.7.1: Incidence of Listeriosis in Ontario and Canada: 1999-2008



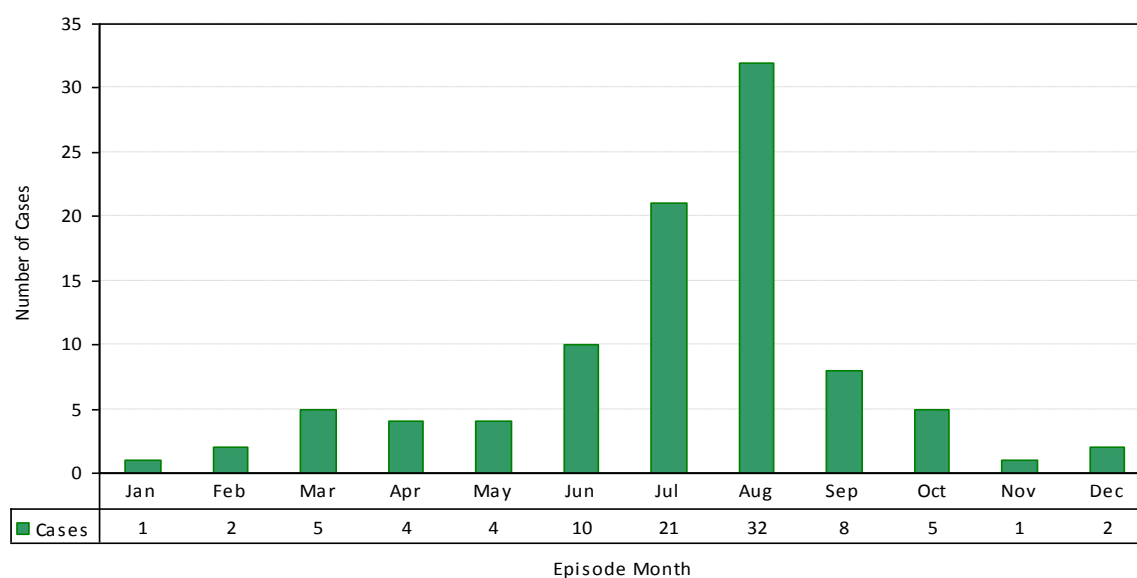
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, data from 1999- extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Canadian statistics not available after 1999.

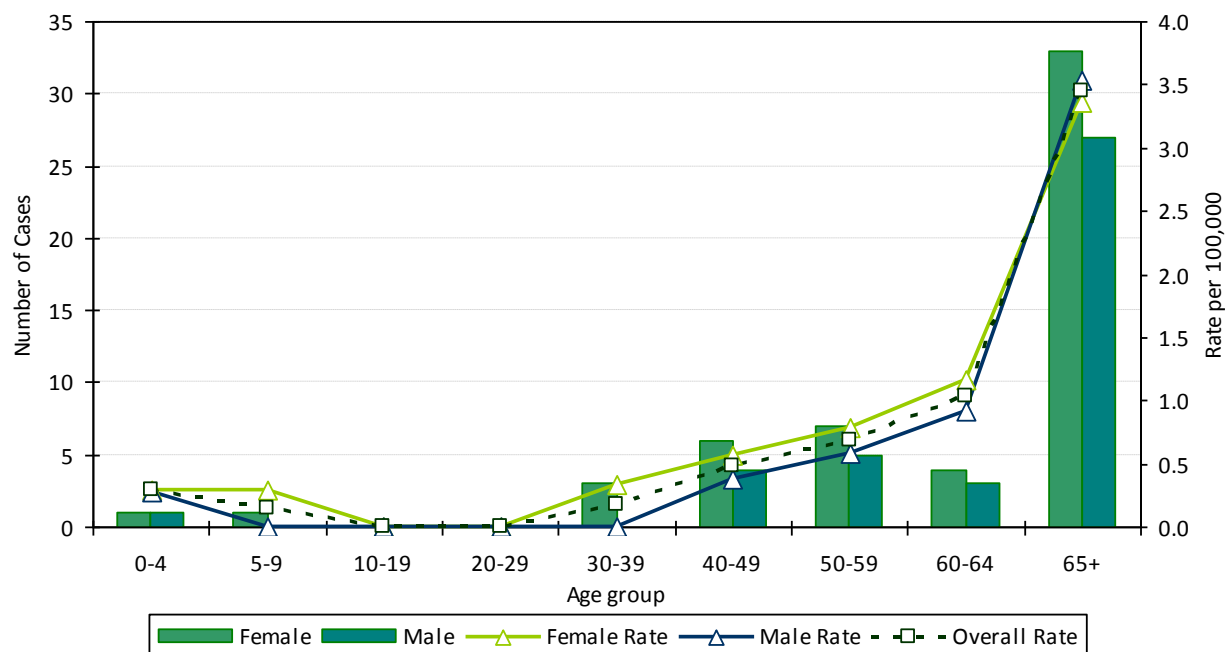
Figure 1.7.2: Incidence of Listeriosis by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.7.3: Incidence of Listeriosis by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

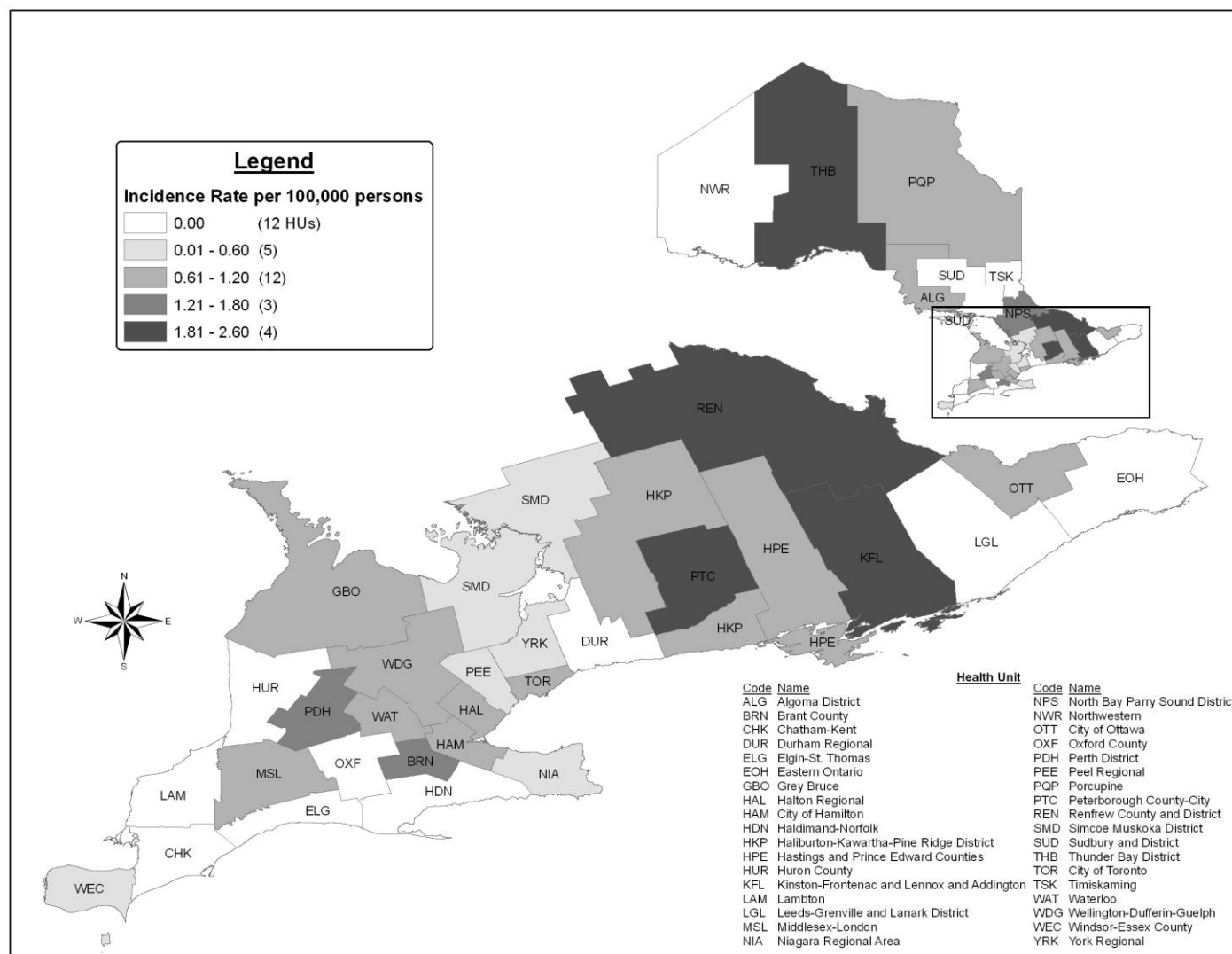
Table 1.7.1: Incidence of Listeriosis by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	1	0.3	1	0.3	2	0.3
5-9	1	0.3	0	0.0	1	0.1
10-19	0	0.0	0	0.0	0	0.0
20-29	0	0.0	0	0.0	0	0.0
30-39	3	0.3	0	0.0	3	0.2
40-49	6	0.6	4	0.4	10	0.5
50-59	7	0.8	5	0.6	12	0.7
60-64	4	1.2	3	0.9	7	1.0
65+	33	3.4	27	3.5	60	3.4
Total	55	0.8	40	0.6	95	0.7

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Map 1.7.1: Incidence Rates of Listeriosis by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.7.2: Incidence of Listeriosis by Public Health Unit: Ontario, 2008

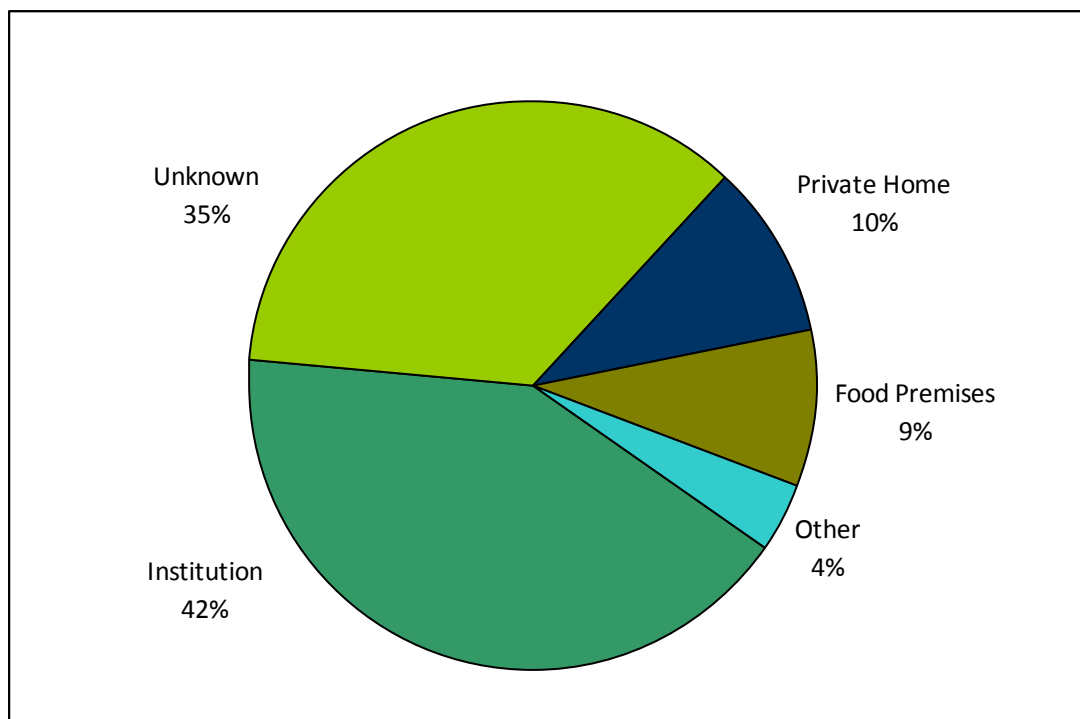
Public Health Unit	Number of cases	Rate/100,000 population
Thunder Bay District	4	2.6
Peterborough County-City	3	2.2
Kingston, Frontenac, Lennox & Addington	4	2.1
Renfrew County and District	2	1.9
North Bay Parry Sound District	2	1.6
Brant County	2	1.4
Perth District	1	1.3
Grey Bruce	2	1.2
Hastings & Prince Edward Counties	2	1.2
Hamilton	6	1.1
Haliburton, Kawartha, Pine Ridge	2	1.1
Porcupine	1	1.1
Middlesex-London	5	1.1
Wellington-Dufferin-Guelph	3	1.1
Waterloo Region	5	1.0
Toronto	25	0.9
Algoma District	1	0.8
Halton Region	4	0.8
Ottawa	6	0.7
York Region	5	0.5
Windsor-Essex County	2	0.5
Niagara Region	2	0.5
Peel Region	5	0.4
Simcoe Muskoka District	1	0.2
Chatham-Kent	0	0.0
Durham Region	0	0.0
Eastern Ontario	0	0.0
Elgin-St. Thomas	0	0.0
Haldimand-Norfolk	0	0.0
Huron County	0	0.0
Lambton County	0	0.0
Leeds, Grenville and Lanark District	0	0.0
Northwestern	0	0.0
Oxford County	0	0.0
Sudbury and District	0	0.0
Timiskaming	0	0.0
Ontario	95	0.7

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 1.7.4: Most Likely Exposure Settings for Listeriosis Cases: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

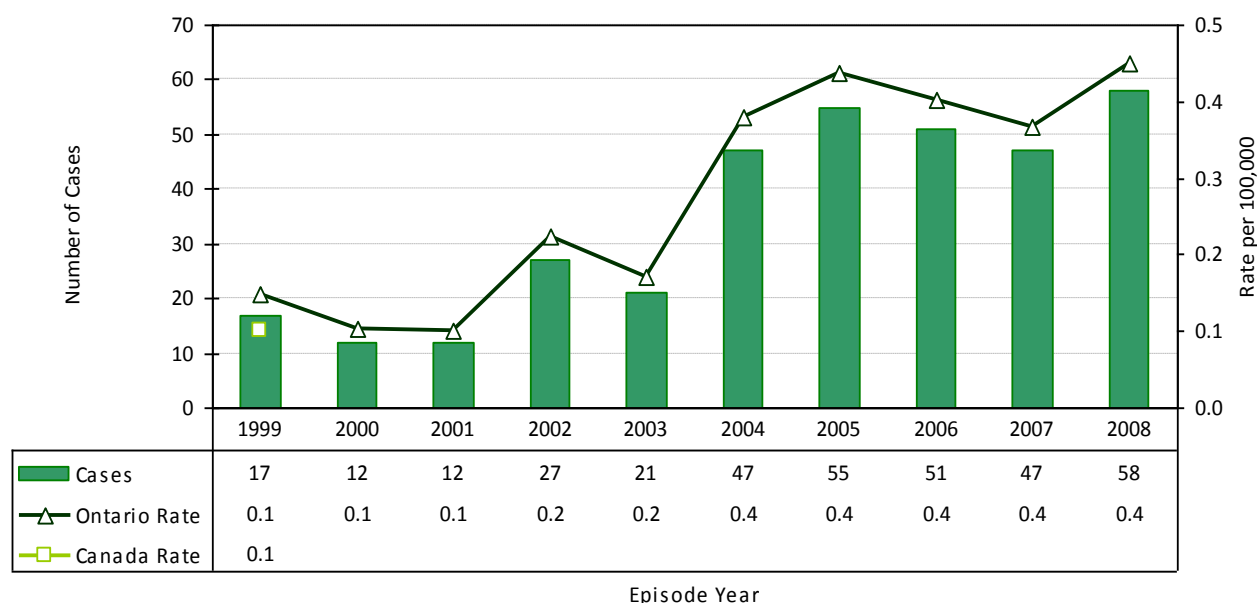
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 17% of cases; these cases were excluded

1.8 PARATYPHOID FEVER

- In 2008, Ontario reported 58 confirmed cases of paratyphoid fever, representing an incidence rate of 0.4 cases per 100,000 population (Table 1.1)
- During the period 1999-2008, the number of confirmed cases of paratyphoid fever increased 240 percent from 17 cases in 1999 (0.1 cases per 100,000 population) to 58 cases in 2008 (0.4 cases per 100,000 population).
- Between 1999 and 2003, the number of confirmed paratyphoid fever cases remained relatively stable with an average of approximately 18 cases per year. Since 2004, the incidence of paratyphoid fever has increased sharply with an average of 52 reported cases per year or 0.4 cases per 100,000 population (Figure 1.8.1).
- There is no clear seasonal trend in the incidence of paratyphoid fever in Ontario because the disease is not endemic in Canada. In 2008, February (7 cases), March (10 cases) and April (7 cases) accounted for the highest number of cases of paratyphoid fever (Figure 1.8.2).
- Males accounted for slightly more than half (30 cases or 0.5 cases per 100,000 population) of paratyphoid fever cases reported in Ontario in 2008 while females accounted for the remaining cases at 0.4 cases per 100,000 population. The age-specific incidence was highest among the 20-29 age group, with 16 cases, and an incidence rate of 0.9 cases per 100,000 population (Figure 1.8.3, Table 1.8.1).
- Peel Region accounted for 43% of paratyphoid fever cases in Ontario in 2008, with 25 cases or 1.9 cases per 100,000 population. Windsor-Essex County reported the second highest incidence rate at 1.5 cases per 100,000 population (6 cases) (Map 1.8.1, Table 1.8.2).
- Of paratyphoid fever cases reporting an exposure setting in 2008, 84% reported traveling outside of Ontario; exposures were unknown for the remaining 16% of cases (Figure 1.8.4).

Figure 1.8.1: Incidence of Paratyphoid Fever in Ontario and Canada: 1999-2008



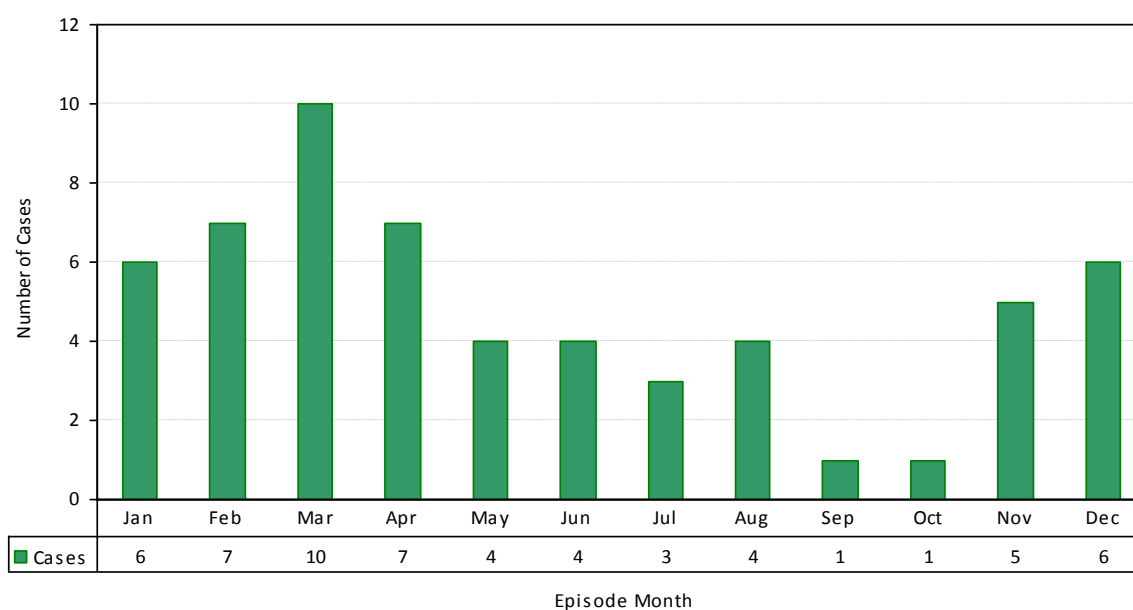
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Paratyphoid fever was removed from the national notifiable diseases list in 1999.

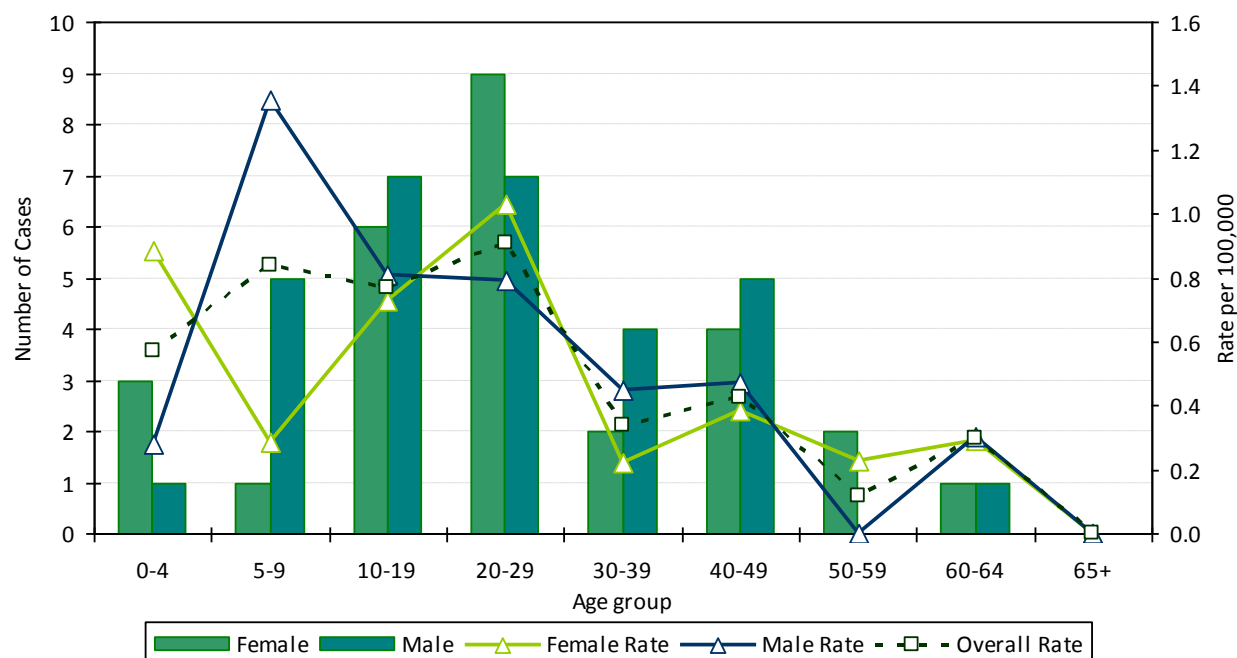
Figure 1.8.2: Incidence of Paratyphoid Fever by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.8.3: Incidence of Paratyphoid Fever by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

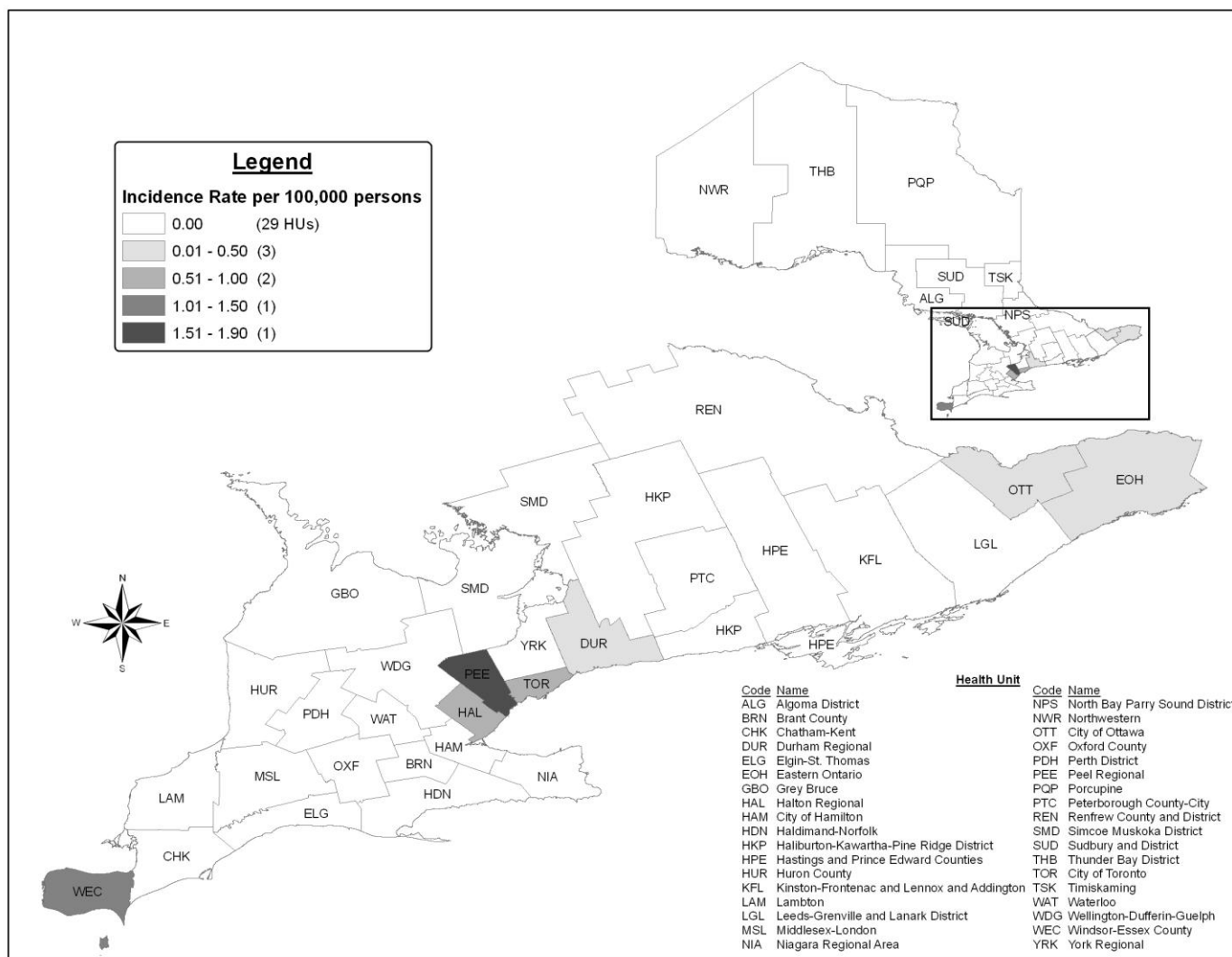
Table 1.8.1: Incidence of Paratyphoid Fever by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	3	0.9	1	0.3	4	0.6
5-9	1	0.3	5	1.4	6	0.8
10-19	6	0.7	7	0.8	13	0.8
20-29	9	1.0	7	0.8	16	0.9
30-39	2	0.2	4	0.4	6	0.3
40-49	4	0.4	5	0.5	9	0.4
50-59	2	0.2	0	0.0	2	0.1
60-64	1	0.3	1	0.3	2	0.3
65+	0	0.0	0	0.0	0	0.0
Total	28	0.4	30	0.5	58	0.4

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Map 1.8.1: Incidence Rates of Paratyphoid Fever by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.8.2: Incidence of Paratyphoid Fever by Public Health Unit: Ontario, 2008

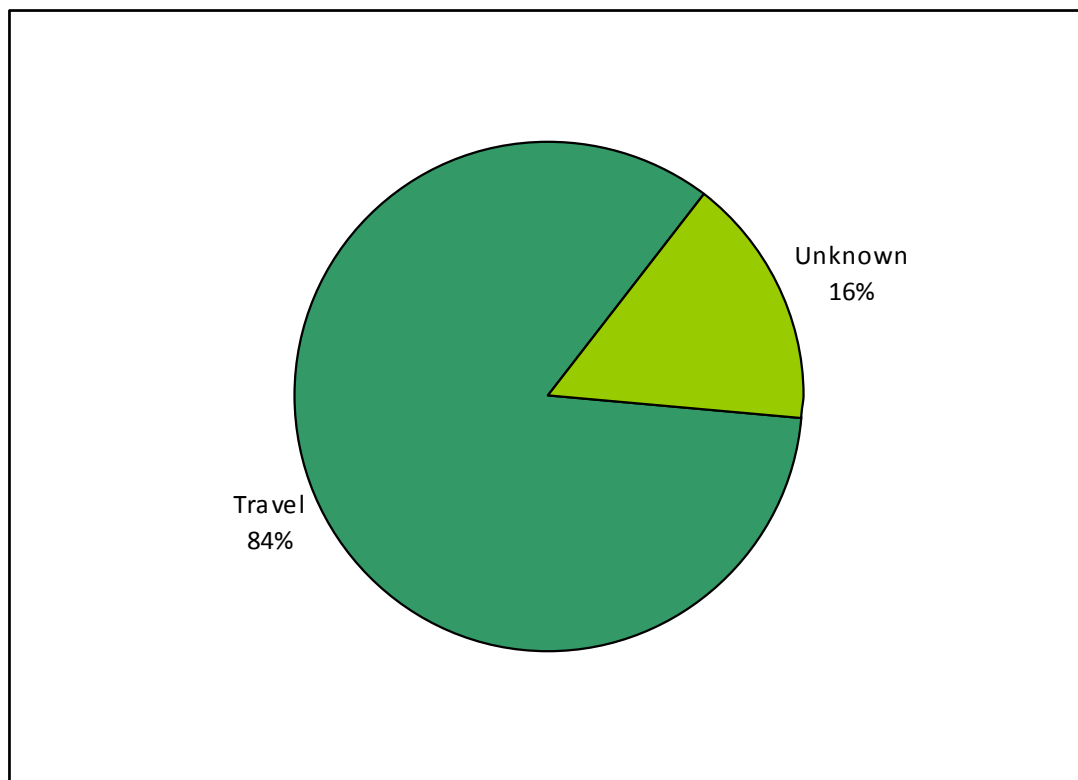
Public Health Unit	Number of cases	Rate/100,000 population
Peel Region	25	1.9
Windsor-Essex County	6	1.5
Toronto	21	0.8
Halton Region	3	0.6
Eastern Ontario	1	0.5
Durham Region	1	0.2
Ottawa	1	0.1
Algoma District	0	0.0
Brant County	0	0.0
Chatham-Kent	0	0.0
Elgin-St. Thomas	0	0.0
Grey Bruce	0	0.0
Haldimand-Norfolk	0	0.0
Haliburton, Kawartha, Pine Ridge	0	0.0
Hamilton	0	0.0
Hastings & Prince Edward Counties	0	0.0
Huron County	0	0.0
Kingston, Frontenac, Lennox & Addington	0	0.0
Lambton County	0	0.0
Leeds, Grenville and Lanark District	0	0.0
Middlesex-London	0	0.0
Niagara Region	0	0.0
North Bay Parry Sound District	0	0.0
Northwestern	0	0.0
Oxford County	0	0.0
Perth District	0	0.0
Peterborough County-City	0	0.0
Porcupine	0	0.0
Renfrew County and District	0	0.0
Simcoe Muskoka District	0	0.0
Sudbury and District	0	0.0
Thunder Bay District	0	0.0
Timiskaming	0	0.0
Waterloo Region	0	0.0
Wellington-Dufferin-Guelph	0	0.0
York Region	0	0.0
Ontario	58	0.4

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 1.8.4: Most Likely Exposures for Paratyphoid Fever: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

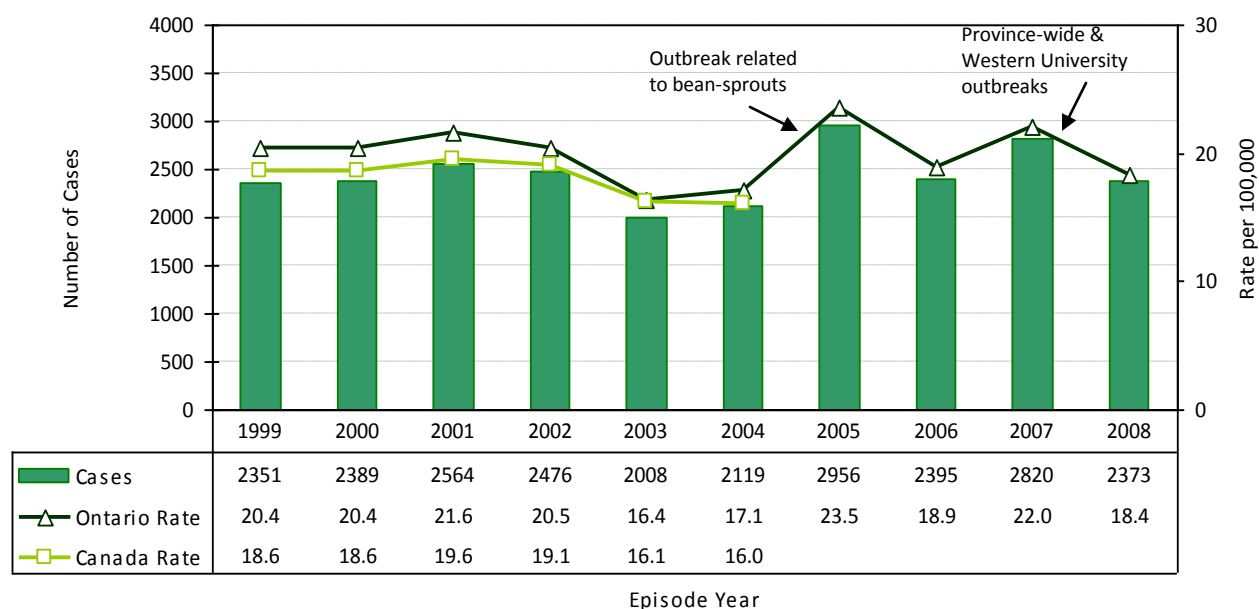
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 2% of cases; these cases were excluded

1.9 SALMONELLOSIS

- Salmonellosis is second to campylobacteriosis as a leading cause of enteric disease in Ontario, accounting for 24% of enteric diseases reported in 2008. Ontario reported 2,373 confirmed cases of salmonellosis in 2008, representing an incidence rate of 18 cases per 100,000 population (Table 1.1).
- During the period 1999-2008, the incidence rate of salmonellosis declined by 10% from 20 cases per 100,000 population in 1999 to 18 cases per 100,000 population in 2008. Despite the overall decline, 2005 and 2007 experienced increases. A provincial outbreak of *Salmonella* Enteritidis caused by mung bean sprouts contributed to the 2005 increase. The higher number of cases in 2007 was attributed to a province-wide increase in *S. Typhimurium* that culminated in a large point-source outbreak involving ninety cases at the University of Western Ontario in London, Ontario (Figure 1.9.1).
- The incidence of salmonellosis peaked in the months of July through to September and accounted for 32% of salmonellosis cases reported in 2008 (Figure 1.9.2).
- The sex-specific incidence rates of salmonellosis in 2008 were similar for males and females at 18.7 and 17.9 cases per 100,000 population, respectively. The incidence rates of salmonellosis decreased sharply with increasing age for both males and females before stabilizing to approximately 13 cases per 100,000 population after age 29 (Figure 1.9.3, Table 1.9.1).
- Haldimand-Norfolk reported the highest incidence rate of salmonellosis in Ontario in 2008, with 35.3 cases per 100,000. Toronto reported the highest number of confirmed cases (575), accounting for 24% of salmonellosis cases in 2008 (Map 1.9.1, Table 1.9.2).
- In 2008, *S. Enteritidis* (29%) emerged as the leading cause of salmonellosis in Ontario, followed by *S. Typhimurium* (17%), *S. Heidelberg* (6%) and *S. Newport* (3%). Other *Salmonella* serovars each accounted for less than 3% of reported cases (Table 1.9.3).
- Of salmonellosis cases reporting a place of exposure in 2008, 20% reported travel outside of Ontario, 12% reported exposures within their homes, 10% reported being exposed at a food premise and 3% reported exposures in other settings; 55% of cases did not know their place of exposure (Figure 1.9.4).
- Overall, 22% of salmonellosis exposures that occurred on Ontario in 2008 were related to food.

Figure 1.9.1: Incidence of Salmonellosis in Ontario and Canada: 1999-2008



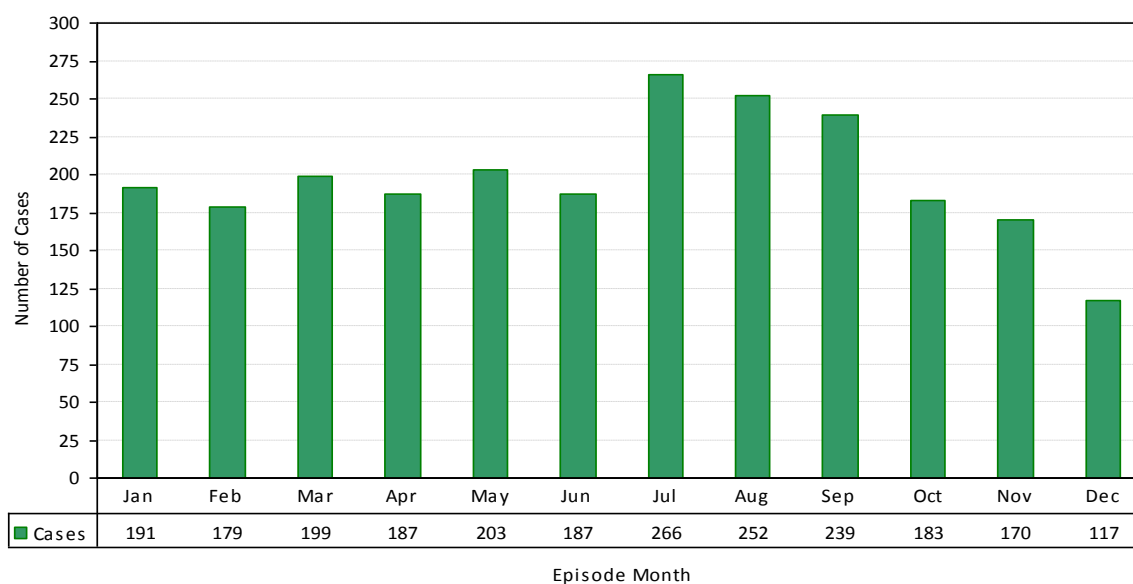
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Canadian statistics available up to 2004.

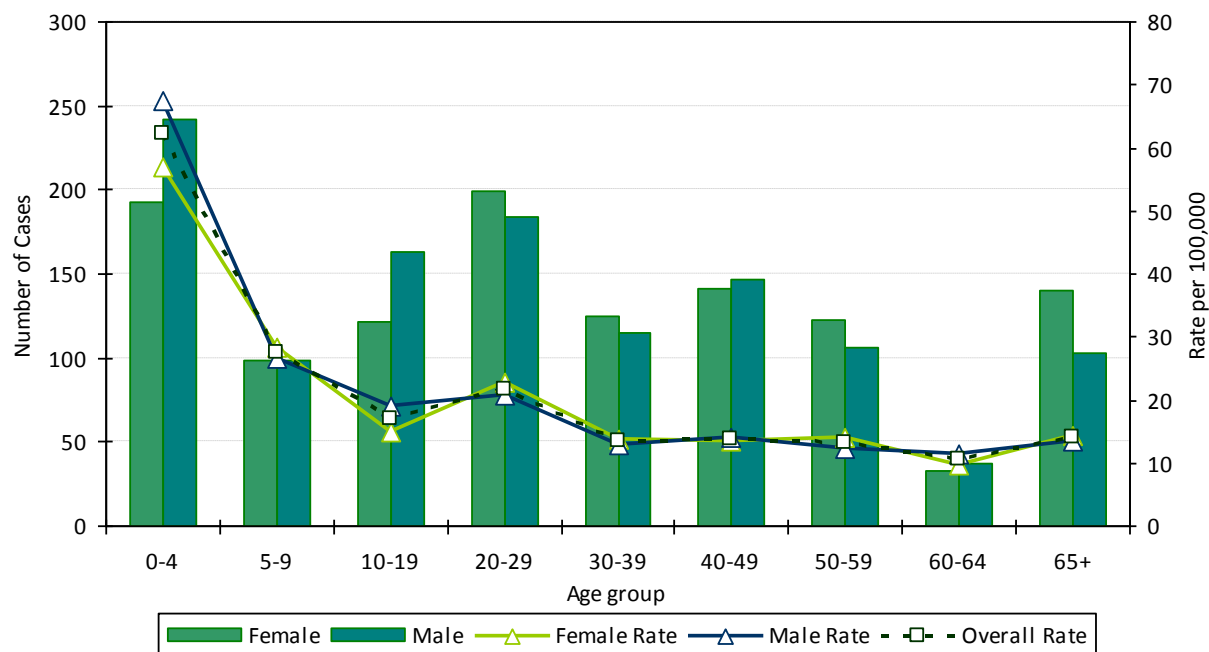
Figure 1.9.2: Incidence of Salmonellosis by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.9.3: Incidence of Salmonellosis by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Does not include 3 cases for which age and/or sex were unknown.

Table 1.9.1: Incidence of Salmonellosis by Age and Sex: Ontario, 2008

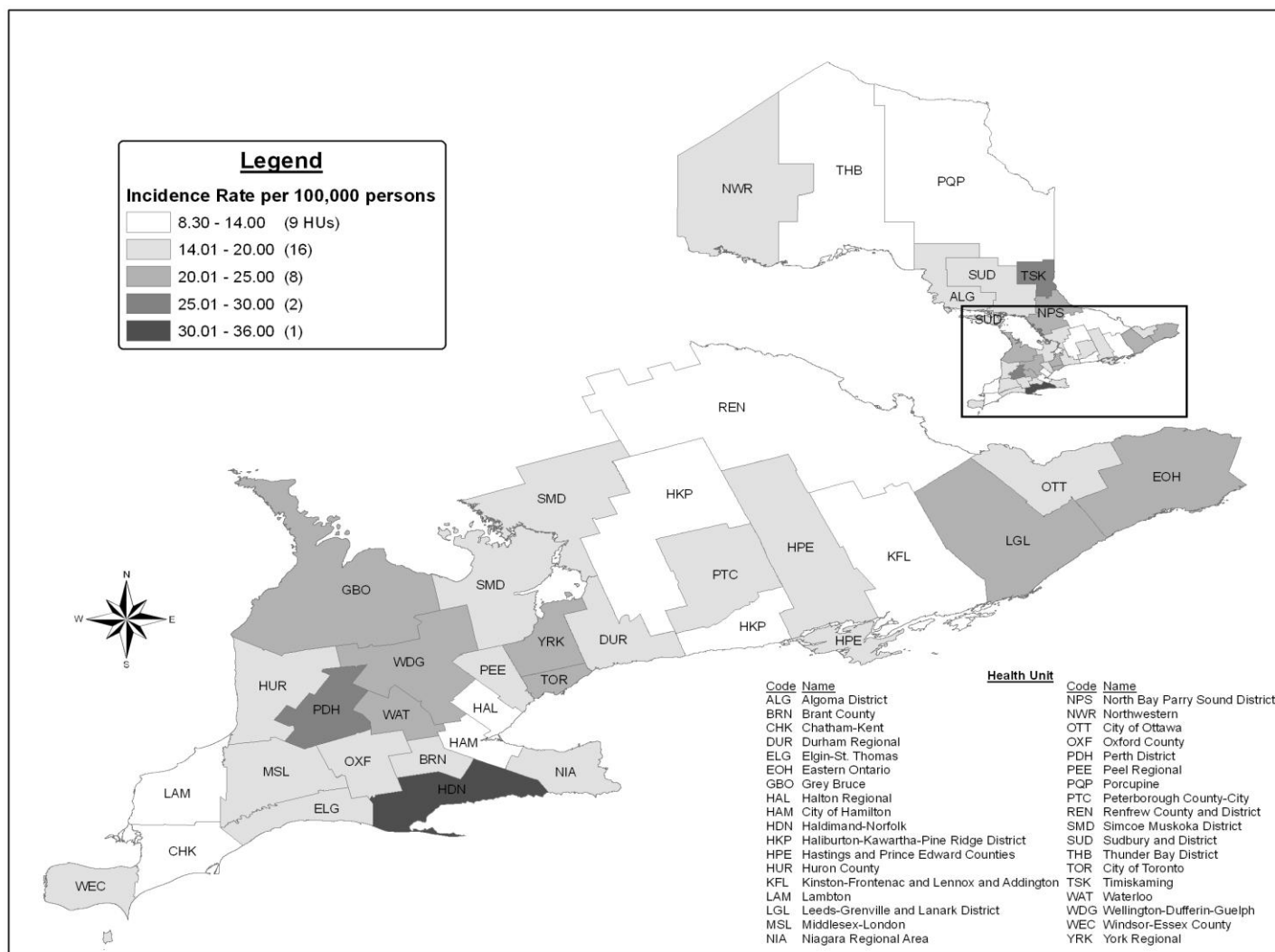
Age group (years)	Female		Male		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	193	56.9	242	67.3	435	62.2
5-9	99	28.3	98	26.6	197	27.4
10-19	122	14.8	163	18.9	285	16.9
20-29	199	22.7	184	20.7	383	21.7
30-39	125	13.8	115	12.9	240	13.4
40-49	141	13.5	147	13.9	288	13.7
50-59	123	13.9	106	12.3	229	13.1
60-64	33	9.6	37	11.2	70	10.4
65+	140	14.3	103	13.5	243	13.9
Total	1,175	17.9	1,195	18.7	2,370	18.3

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Total does not include 3 cases for which age and/or sex were unknown.

Map 1.9.1: Incidence Rates of Salmonellosis by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.9.2: Incidence of Salmonellosis by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Haldimand-Norfolk	39	35.3
Timiskaming	10	28.5
Perth District	20	25.9
Eastern Ontario	45	22.6
Toronto	575	21.7
Waterloo Region	110	21.5
Grey Bruce	35	21.5
Wellington-Dufferin-Guelph	57	21.2
North Bay Parry Sound District	26	20.6
York Region	200	20.2
Leeds, Grenville and Lanark District	34	20.2
Peel Region	248	19.3
Niagara Region	84	19.0
Northwestern	15	18.4
Durham Region	109	18.0
City of Ottawa	154	17.7
Huron County	10	16.5
Simcoe Muskoka District	83	16.3
Peterborough County-City	22	16.0
Hastings & Prince Edward Counties	26	15.9
Brant County	22	15.9
Sudbury and District	31	15.5
Middlesex-London	68	15.2
City of Hamilton	67	12.7
Elgin-St. Thomas	13	14.4
Windsor-Essex County	58	14.3
Algoma District	17	14.2
Oxford County	15	14.1
Halton Region	67	14.0
Kingston, Frontenac, Lennox & Addington	26	13.5
Renfrew County and District	13	12.6
Porcupine	11	12.4
Thunder Bay District	19	12.2
Chatham-Kent	13	11.7
Haliburton-Kawartha-Pine Ridge	20	11.3
Lambton County	11	8.3
Ontario	2,373	18.4

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.9.3: Salmonellosis Cases by Salmonella Serovars: Ontario, 2008

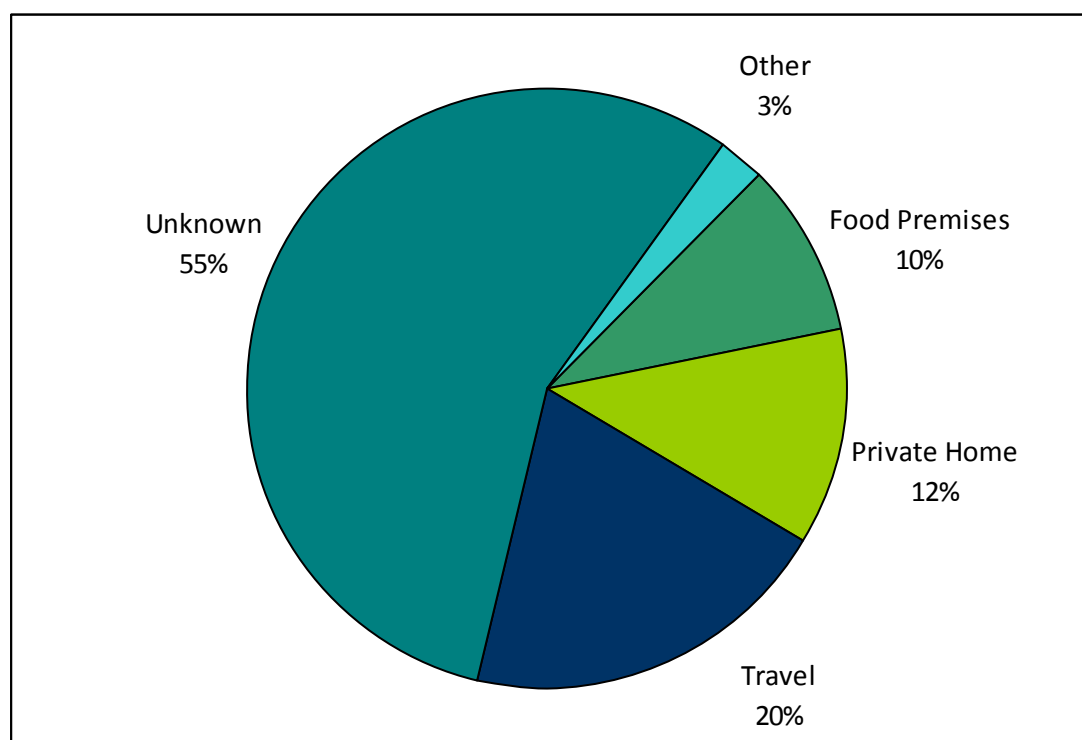
<i>Salmonella</i> Serovars	Cases	
	Number	Percent
<i>S. Enteritidis</i>	676	28.5
<i>S. Typhimurium</i>	403	17.0
<i>S. Heidelberg</i>	141	5.9
<i>S. Newport</i>	59	2.5
<i>S. Thompson</i>	55	2.3
<i>S. Infantis</i>	50	2.1
Unspecified <i>Salmonella</i> serovar ¹	340	14.3
Other <i>Salmonella</i> serovars ²	649	27.3
Total	2,373	100.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note 1: Unspecified *Salmonella* refers to Salmonellosis cases for which no serovars were reported.

Note 2: Other *Salmonella* serovars represents serovars that accounted for < 2% of 2007 salmonellosis cases. Includes non- groupable/typable *Salmonella* cases.

Figure 1.9.4: Most Likely Exposure Setting for Salmonellosis Cases: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

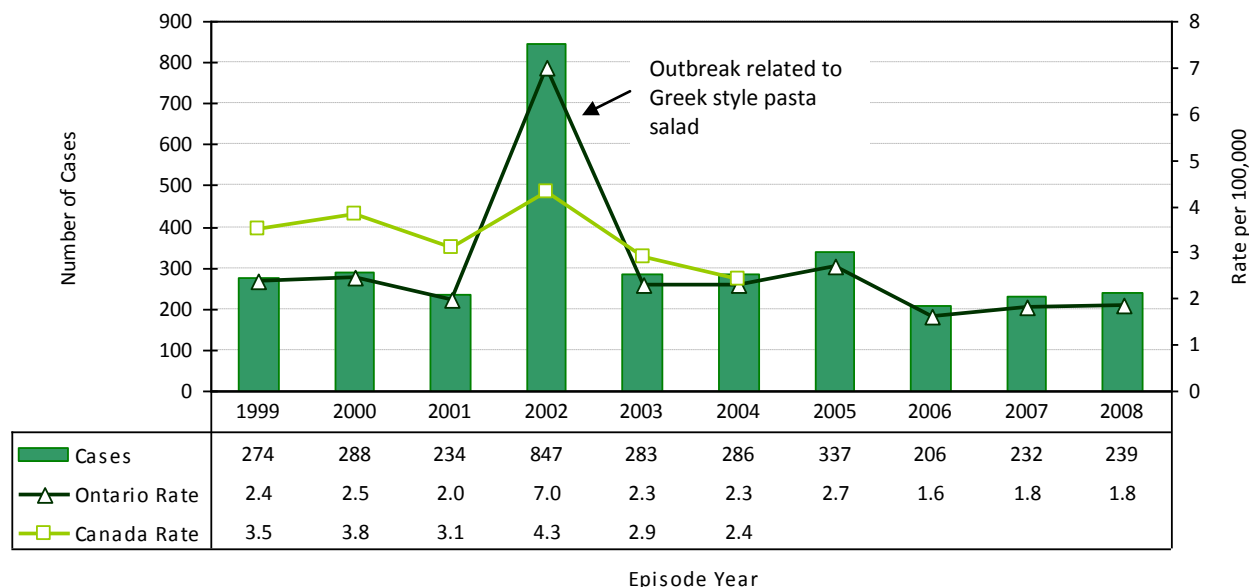
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 24% of cases; these cases were excluded

1.10 SHIGELLOSIS

- In 2008, Ontario reported 239 confirmed cases of shigellosis, representing an incidence rate of 1.8 cases per 100,000 population (Table 1.1).
- During the period 1999-2008, the incidence rate of shigellosis in Ontario decreased by 25% from 2.4 cases per 100,000 population in 1998 to 1.8 cases per 100,000 population in 2008. With the exception of 2002, Ontario's incidence rate of shigellosis remained below the Canadian rate from 1999 to 2004. The provincial increase in 2002 was attributed to the consumption of Greek pasta salad contaminated by *Shigella sonnei* bacteria (Figure 1.10.1).
- The incidence of shigellosis did not exhibit a clear seasonal pattern in 2008. January (27 cases), August (24 cases) and September (32 cases) accounted for the highest number of cases (Figure 1.10.2).
- In 2008, the incidence rate of shigellosis among males was 64% higher than that of females at 2.3 and 1.4 cases per 100,000 population, respectively (Figure 1.10.3, Table 1.10.1).
- The incidence of shigellosis was lowest among older cases and highest among children under the age of 10 years. The highest rates occurred among children ages 0-4 years (3.6 cases per 100,000 population) and 5-9 years (3.3 cases per 100,000 population) (Figure 1.10.3, Table 1.10.1).
- One third (12/36) of health units did not report any cases of shigellosis in 2008. Grey-Bruce Health Unit reported the highest incidence rate of shigellosis at 6.1 cases per 100,000 despite accounting for just 4% of reported cases. At 42%, Toronto reported the most cases of shigellosis in Ontario in 2008 (Map 1.10.1, Table 1.10.2).
- *S. sonnei* (50%), *S. flexneri* (31%) and *S. boydii* (6%) accounted for 87% of all reported cases of shigellosis in Ontario in 2008. Of the remaining cases, the serogroup was unspecified for 5% and unknown for 8%.
- Travel outside of Ontario (45%) was the primary source of shigellosis among cases that reported an exposure in 2008. This figure represents a one percent point increase over the 2007 proportion of 44%. (Figure 1.10.4).
- Person-to-person transmission (20%) was the most likely mode of transmission for shigellosis cases that reported an exposure not related to travel outside of Ontario.

Figure 1.10.1: Incidence of Shigellosis in Ontario and Canada: 1999-2008



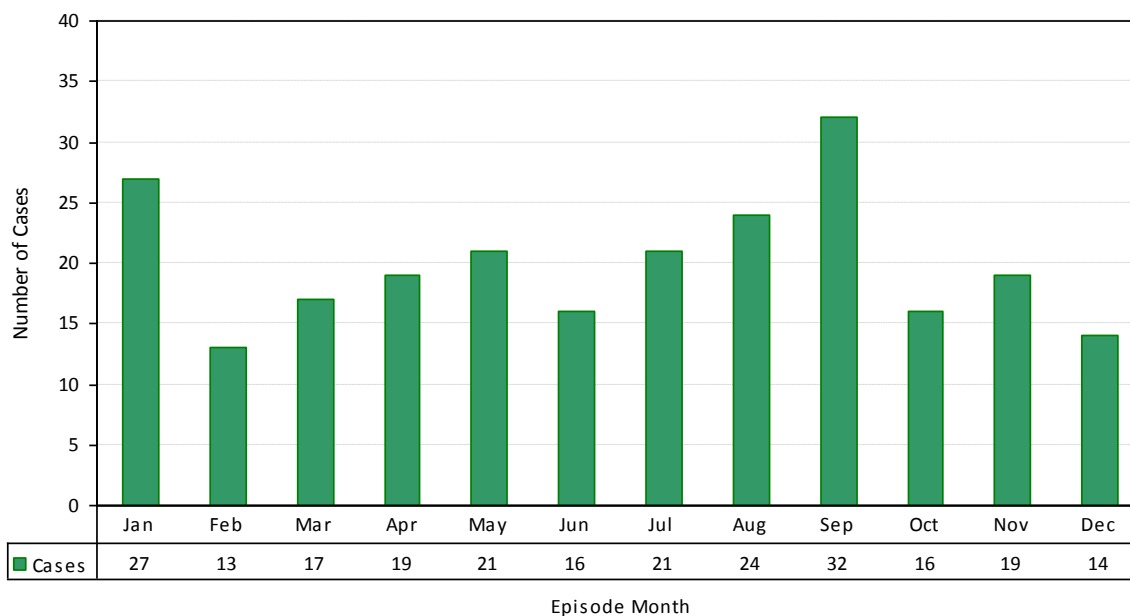
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smcd.phac-aspc.gc.ca/dsol-smcd/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Canadian statistics available up to 2004.

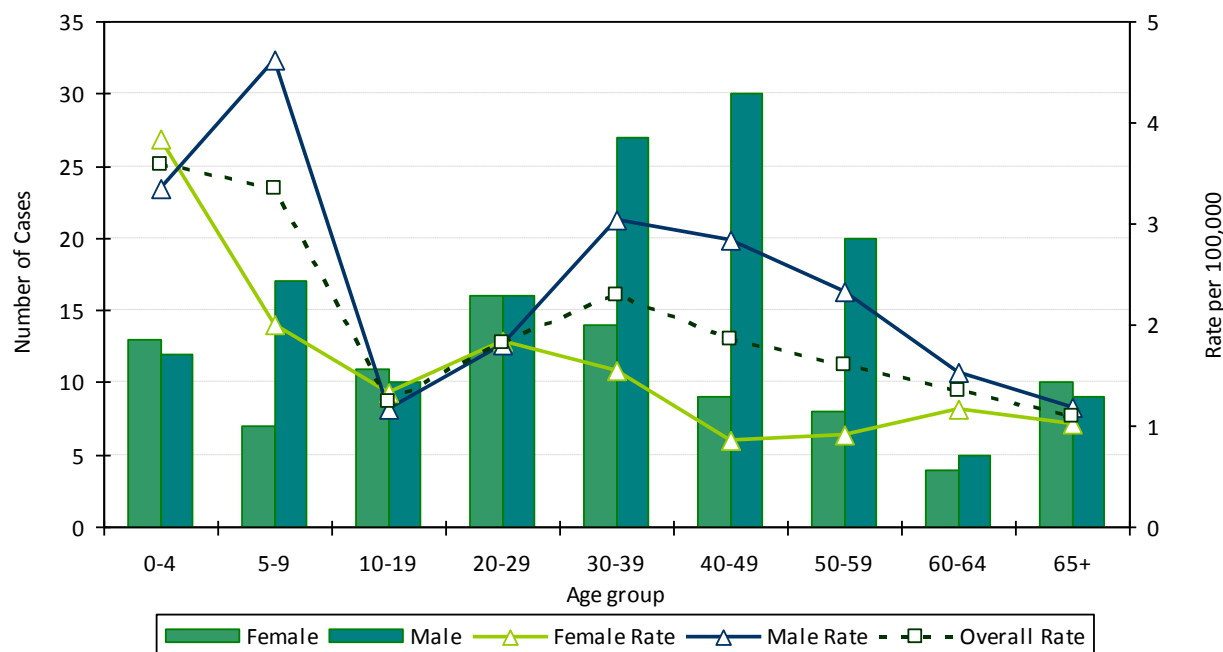
Figure 1.10.2: Incidence of Shigellosis by Episode Month: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.10.3: Incidence of Shigellosis by Age and Sex: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Does not include 1 case for which age and/or sex were unknown

Table 1.10.1: Incidence of Shigellosis by Age and Sex: Ontario, 2008

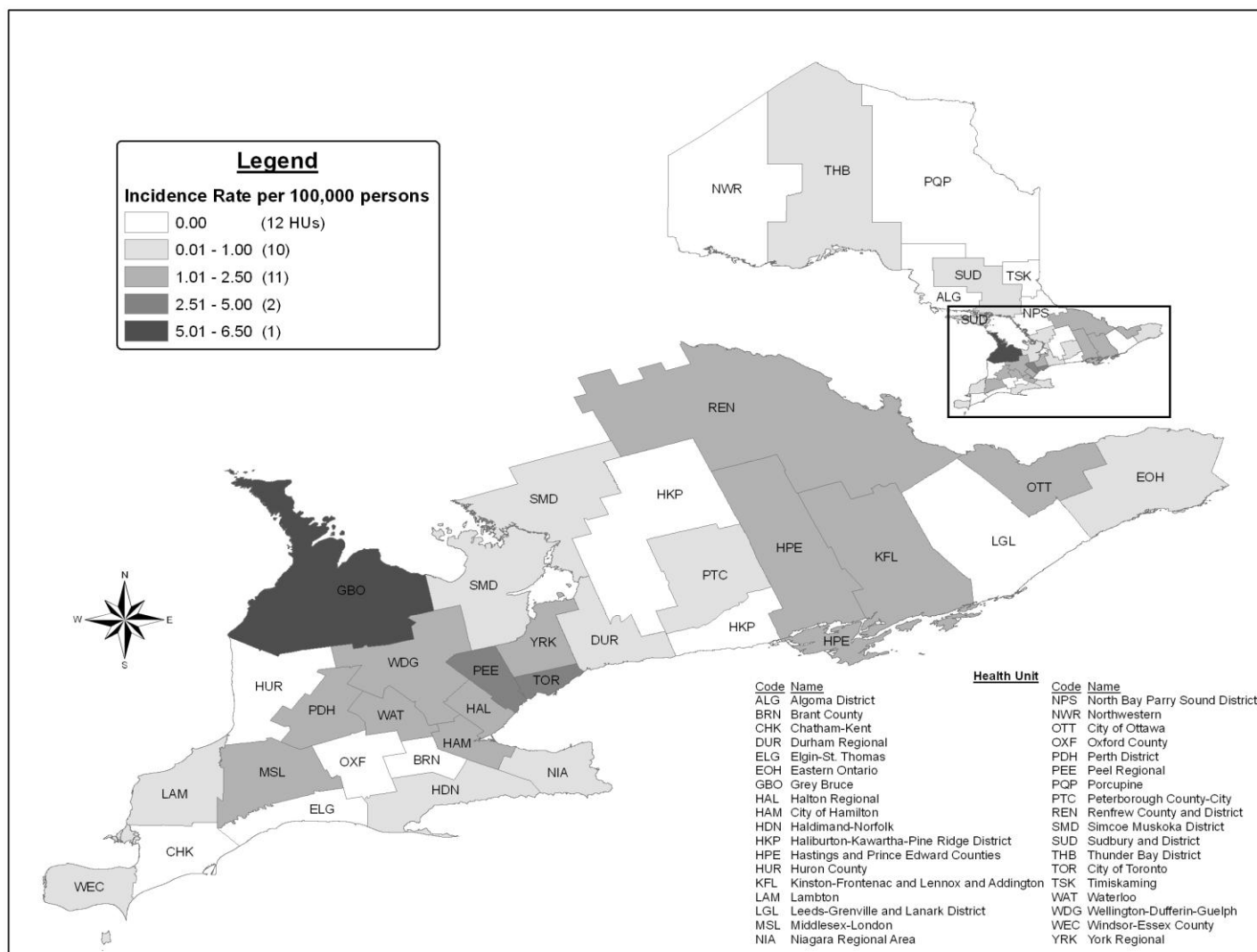
Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	13	3.8	12	3.3	25	3.6
5-9	7	2.0	17	4.6	24	3.3
10-19	11	1.3	10	1.2	21	1.2
20-29	16	1.8	16	1.8	32	1.8
30-39	14	1.5	27	3.0	41	2.3
40-49	9	0.9	30	2.8	39	1.9
50-59	8	0.9	20	2.3	28	1.6
60-64	4	1.2	5	1.5	9	1.3
65+	10	1.0	9	1.2	19	1.1
Total	92	1.4	146	2.3	238	1.8

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Total does not include 1 case for which age and/or sex were unknown

Map 1.10.1: Incidence Rates of Shigellosis by Public Health Unit: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.10.2: Incidence of Shigellosis by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Grey Bruce	10	6.1
Toronto	100	3.8
Peel Region	34	2.6
Hastings & Prince Edward Counties	4	2.4
Kingston, Frontenac, Lennox & Addington	4	2.1
Renfrew County and District	2	1.9
Ottawa	16	1.8
York Region	18	1.8
Halton Region	8	1.7
Wellington-Dufferin-Guelph	4	1.5
Perth District	1	1.3
Waterloo Region	6	1.2
Hamilton	6	1.1
Middlesex-London	5	1.1
Eastern Ontario	2	1.0
Sudbury and District	2	1.0
Windsor-Essex County	4	1.0
Niagara Region	4	0.9
Haldimand-Norfolk	1	0.9
Lambton County	1	0.8
Peterborough County-City	1	0.7
Thunder Bay District	1	0.6
Durham Region	3	0.5
Simcoe Muskoka District	2	0.4
Algoma District	0	0.0
Brant County	0	0.0
Chatham-Kent	0	0.0
Elgin-St. Thomas	0	0.0
Haliburton, Kawartha, Pine Ridge	0	0.0
Huron County	0	0.0
Leeds, Grenville and Lanark District	0	0.0
North Bay Parry Sound District	0	0.0
Northwestern	0	0.0
Oxford County	0	0.0
Porcupine	0	0.0
Timiskaming	0	0.0
Ontario	239	1.8

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

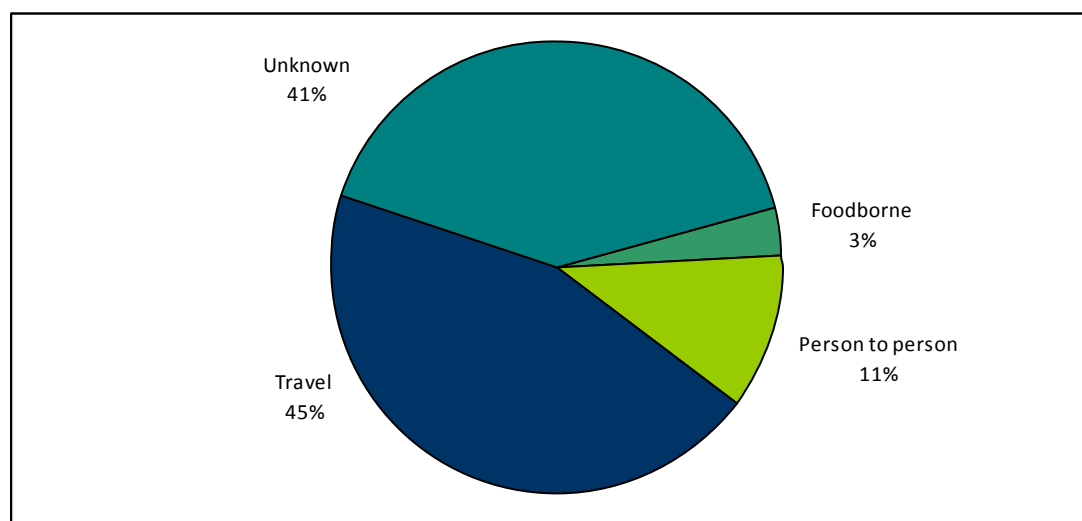
Table 1.10.3: Shigellosis Cases by Shigella Serogroup: Ontario, 2008

<i>Shigella</i> Serogroup	Cases	
	Number	Percent
<i>S. sonnei</i>	118	50
<i>S. flexneri</i>	75	31
<i>S. boydii</i>	14	6
Shigella, other	13	5
Shigella, unspecified	19	8
Total	239	100.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note 1: Unspecified *Shigella* refers to shigellosis cases for which no serogroup were reported

Figure 1.10.4: Most Likely Exposures for Shigellosis Cases: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

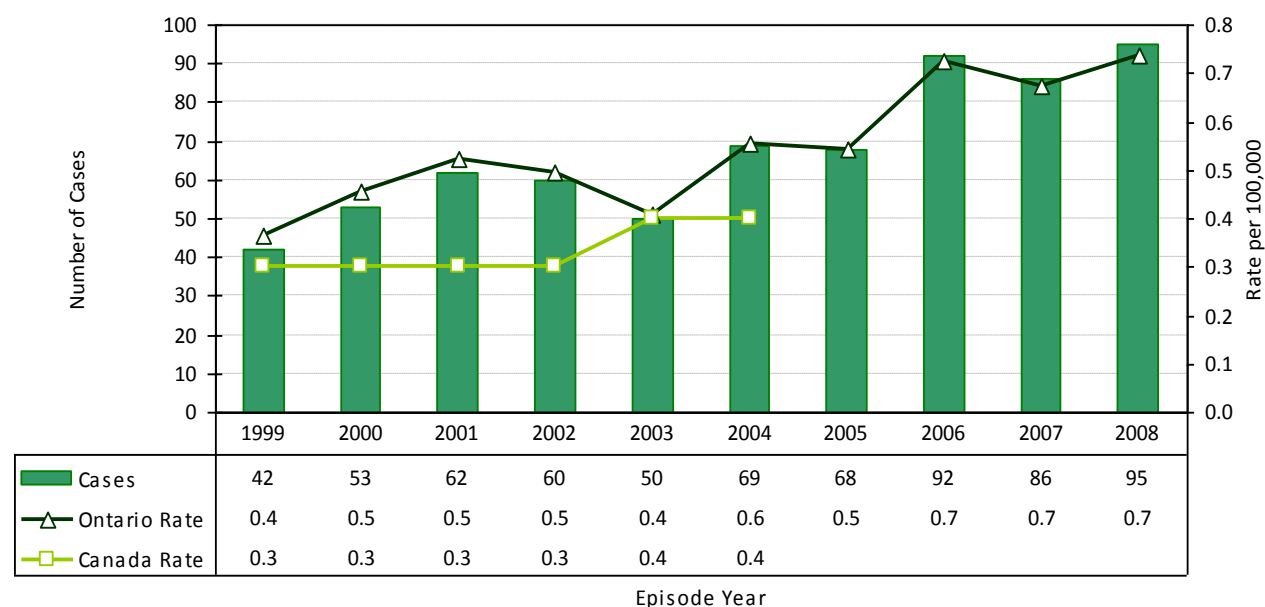
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 10% of cases; these cases were excluded

1.11 TYPHOID FEVER

- Ontario reported 95 confirmed cases of typhoid fever in 2008, representing an incidence rate of 0.7 cases per 100,000 population (Table 1.11.1).
- During the period 1999-2008, the incidence rate of typhoid fever in Ontario increased by 75% from 0.4 cases per 100,000 population in 1999 to 0.7 cases per 100,000 population in 2008.
- Between 1999 and 2004, the incidence rate of typhoid fever in Canada remained relatively stable at an average of 0.3 cases per 100,000 population compared to 0.5 cases per 100,000 population in Ontario for the same time period (Figure 1.11.1).
- There is no clear seasonal trend in the incidence of typhoid fever in Ontario because the disease is not endemic in Canada. In 2008, January (13 cases), March (16 cases), and September (15 cases) accounted for the highest number of cases (Figure 1.11.2).
- The incidence rates of typhoid fever decreased with increasing age for both males and females, with the exception of the 20-29 age category. In 2008, the sex-specific incidence rate for males was 50% higher than that of females at 0.9 cases per 100,000 population compared to 0.6 cases per 100,000 population. (Figure 1.11.3, Table 1.11.1).
- Peel reported the highest incidence rate of typhoid fever at 2.8 cases per 100,000 population, four times the provincial rate of 0.7 in 2008. Toronto reported the second highest incidence rate at 1.5 cases per 100,000 population (Map 1.11.1, Table 1.11.2).
- Among confirmed cases of typhoid fever in 2008 reporting an exposure, 92% identified travel outside of Ontario as their most likely exposure setting, 2% reported exposures in the community, while the remaining 6% was unknown (Figure 1.11.4).

Figure 1.11.1: Incidence of Typhoid Fever in Ontario and Canada: 1999-2008



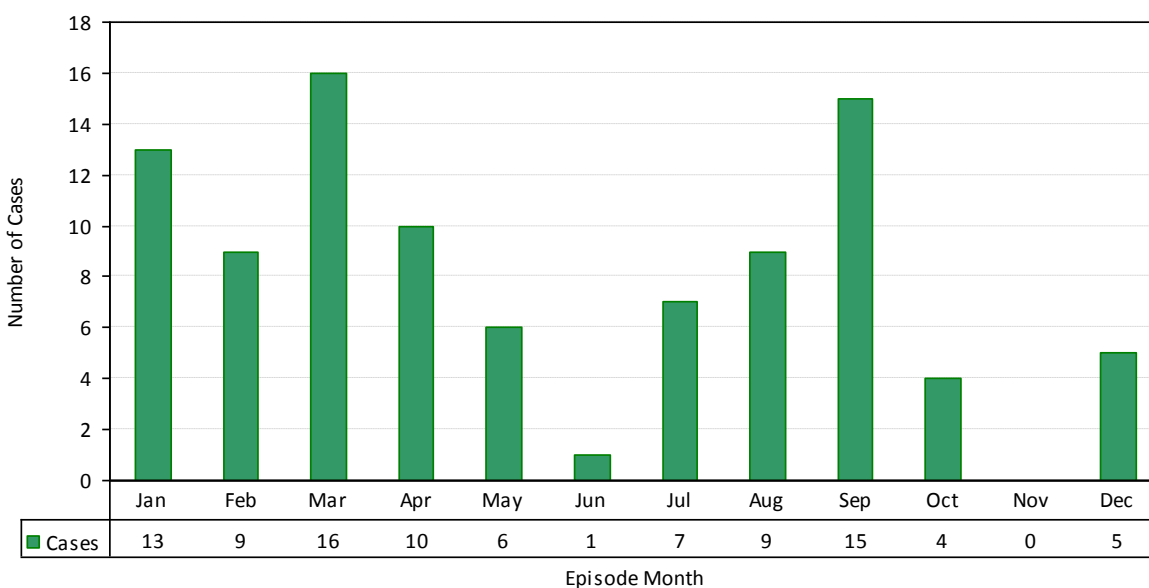
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, data from 1999-2007 extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Canadian statistics available up to 2004.

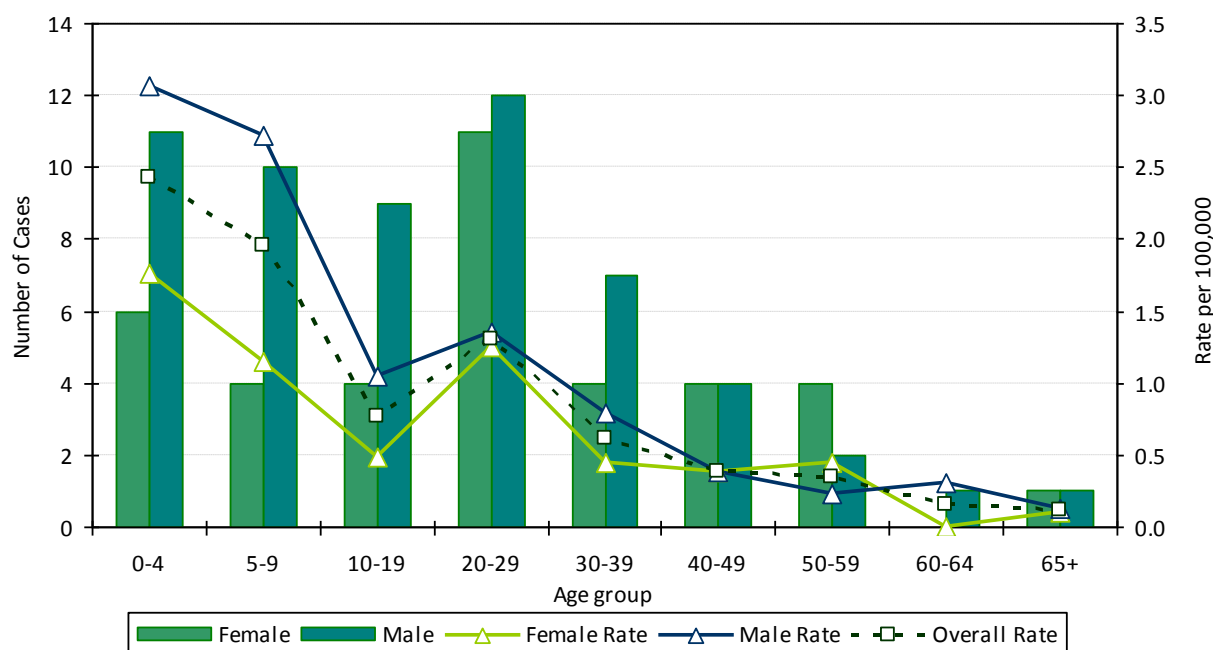
Figure 1.11.2: Incidence of Typhoid Fever by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.11.3: Incidence of Typhoid Fever by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

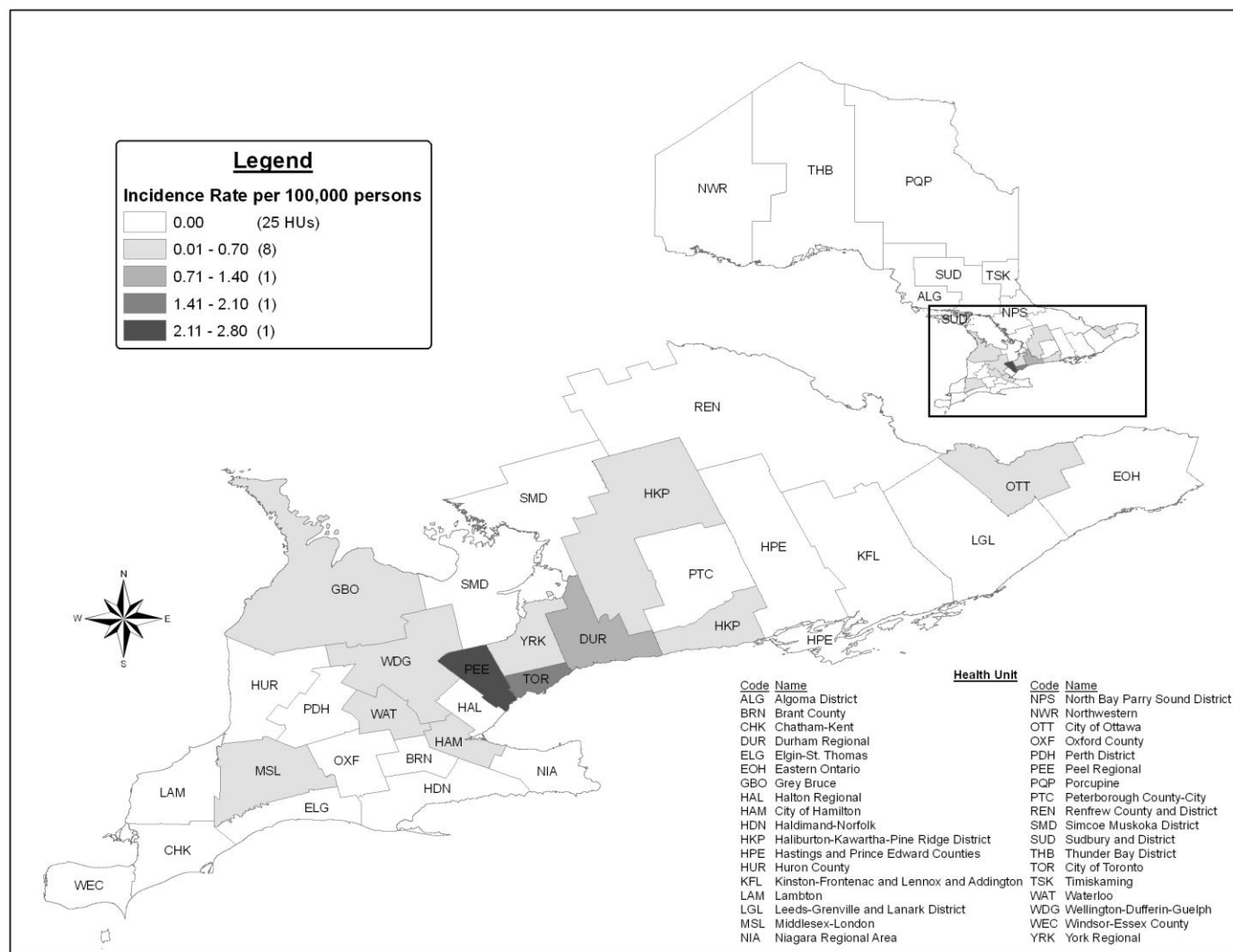
Table 1.11.1: Incidence of Typhoid Fever by Age and Sex: Ontario, 2008

Age group (years)	Female		Male		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	6	1.8	11	3.1	17	2.4
5-9	4	1.1	10	2.7	14	2.0
10-19	4	0.5	9	1.0	13	0.8
20-29	11	1.3	12	1.4	23	1.3
30-39	4	0.4	7	0.8	11	0.6
40-49	4	0.4	4	0.4	8	0.4
50-59	4	0.5	2	0.2	6	0.3
60-64	0	0.0	1	0.3	1	0.1
65+	1	0.1	1	0.1	2	0.1
Total	38	0.6	57	0.9	95	0.7

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Map 1.11.1: Incidence Rate of Typhoid Fever by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.11.2: Incidence of Typhoid Fever by Public Health Unit: Ontario, 2008

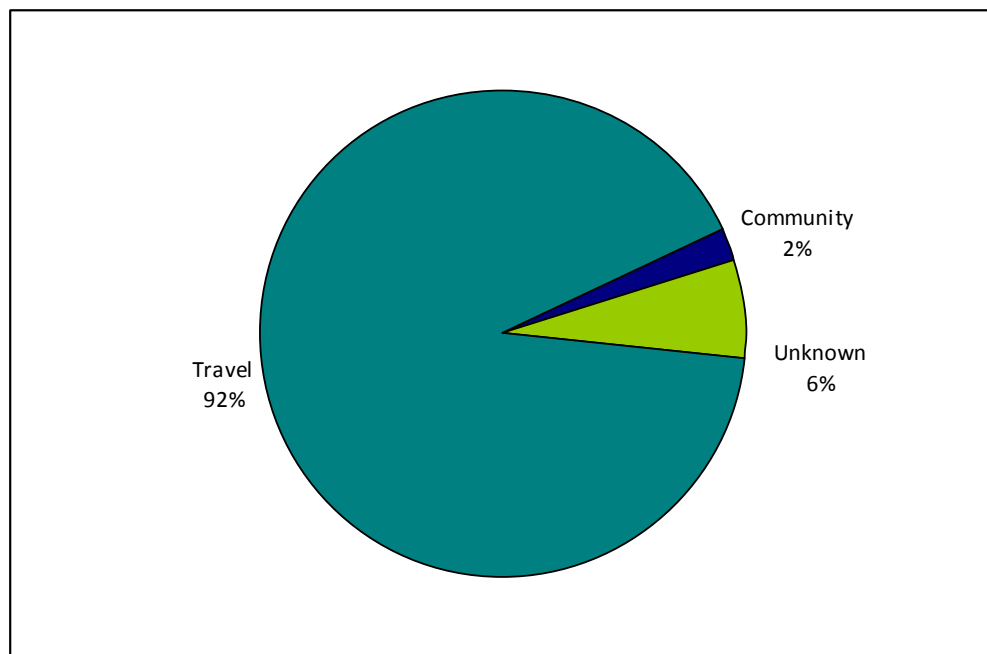
Public Health Unit	Number of cases	Rate/100,000 population
Peel Region	36	2.8
Toronto	41	1.5
Durham Region	5	0.8
Grey Bruce	1	0.6
Haliburton, Kawartha, Pine Ridge	1	0.6
York Region	5	0.5
Waterloo Region	2	0.4
Wellington-Dufferin-Guelph	1	0.4
Middlesex-London	1	0.2
Hamilton	1	0.2
Ottawa	1	0.1
Algoma District	0	0.0
Brant County	0	0.0
Chatham-Kent	0	0.0
Eastern Ontario	0	0.0
Elgin-St. Thomas	0	0.0
Haldimand-Norfolk	0	0.0
Halton Region	0	0.0
Hastings & Prince Edward Counties	0	0.0
Huron County	0	0.0
Kingston, Frontenac, Lennox & Addington	0	0.0
Lambton County	0	0.0
Leeds, Grenville and Lanark District	0	0.0
Niagara Region	0	0.0
North Bay Parry Sound District	0	0.0
Northwestern	0	0.0
Oxford County	0	0.0
Perth District	0	0.0
Peterborough County-City	0	0.0
Porcupine	0	0.0
Renfrew County and District	0	0.0
Simcoe Muskoka District	0	0.0
Sudbury and District	0	0.0
Thunder Bay District	0	0.0
Timiskaming	0	0.0
Windsor-Essex County	0	0.0
Ontario	95	0.7

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 1.11.4: Most Likely Exposure Settings for Typhoid Fever: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

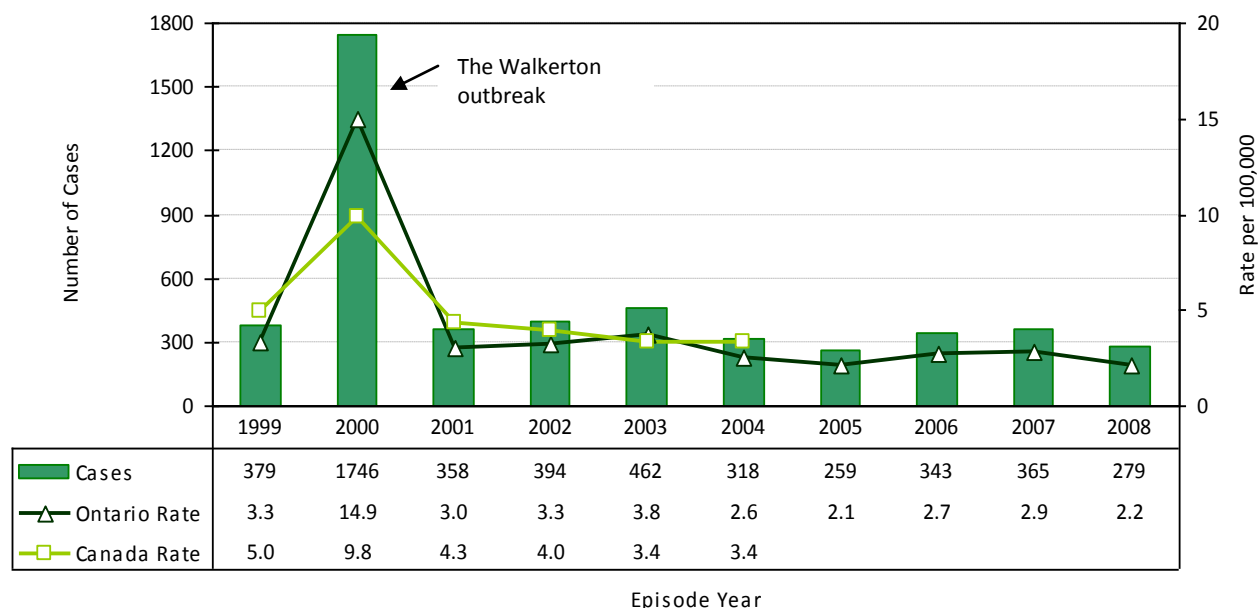
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 2% of cases; these cases were excluded

1.12 VEROTOXIN PRODUCING *E. COLI* (VTEC)

- In 2008, Ontario reported 279 cases of verotoxin producing *E. coli* (VTEC), representing an incidence of 2.2 cases per 100,000 population (Figure 1.12.1).
- During the period 1999-2008, the incidence rate of VTEC in Ontario declined by 33% from 3.3 cases per 100,000 population in 1999 to 2.2 cases per 100,000 population in 2008 (Figure 1.12.1).
- In 2000, a VTEC outbreak associated with the Walkerton municipal drinking water supply occurred. The incidence rate of VTEC in that year was 14.7 cases per 100,000 population, approximately five times higher than the provincial annual average of 2.8 cases per 100,000 population (350 cases).
- Confirmed cases of VTEC in Ontario demonstrated a seasonal peak with the warmer months accounting for a disproportionate share of cases. However, the season was atypical, with the month of October accounting for 32% (92) of cases reported in 2008, due largely to an outbreak linked to a Harvey's Restaurant in North Bay, Ontario. (Figure 1.12.2).
- In 2008, the incidence rate of VTEC was 26% higher among females at 2.4 cases per 100,000 population compared to that of males at 1.9 cases per 100,000 population (Figure 1.12.3, Table 1.12.1).
- The incidence rates of VTEC decreased with increasing age for both males and females, with children in the 0-4 (4.9 cases per 100,000 population) and the 5-9 (4.6 cases per 100,000 population) age groups reporting the highest incidence rates in 2008. (Figure 1.12.3, Table 1.12.1).
- North Bay Parry Sound District (34.0 cases per 100,000), Timiskaming (11.4 cases per 100,000 population) and Perth District (10.4 cases per 100,000 population) reported the highest incidence rates of VTEC in Ontario in 2008 (Map 1.12.1, Table 1.12.2).
- Compared to other enteric diseases, travel accounted for a smaller proportion of VTEC cases (4%) in 2008. Exposures occurring in food premises (34%) and other community settings (21%) accounted for more than half of VTEC cases who identified an exposure.
- Ground beef (26%) and other foods (19%) accounted for 45% of VTEC cases who reported an exposure in 2008. Person to person exposures, (6%), animal contact (6%), travel (4%) and other exposures (4%) accounted for 21% of exposures; the source of illness was unknown for the remaining 35% of cases (Figure 1.12.4).

Figure 1.12.1: Incidence of VTEC in Ontario and Canada: 1999-2008



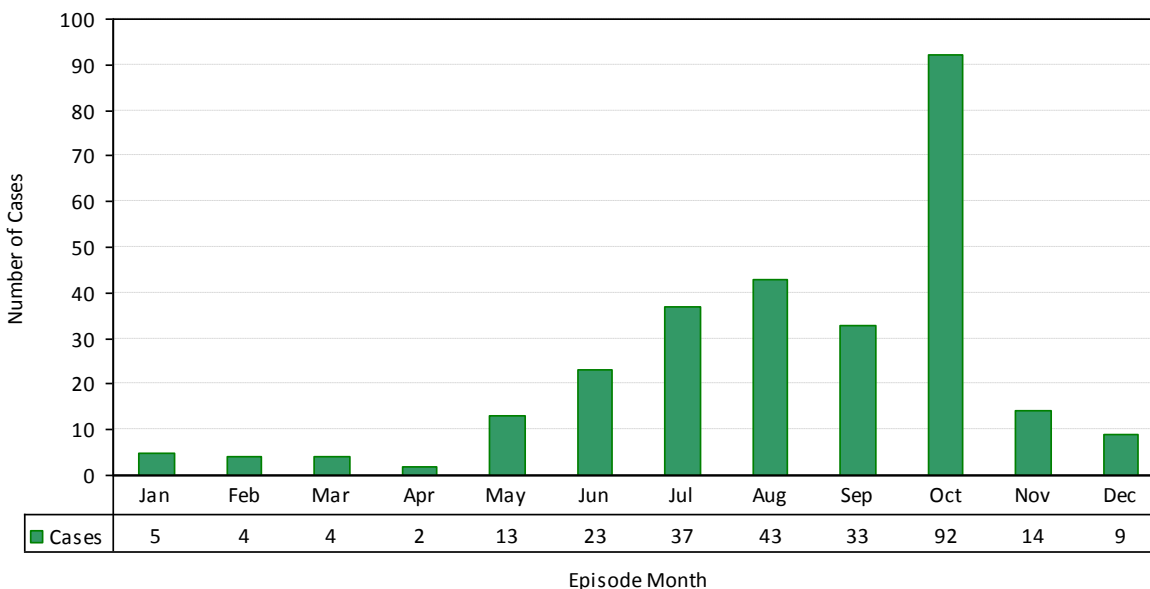
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Canadian statistics available up to 2004.

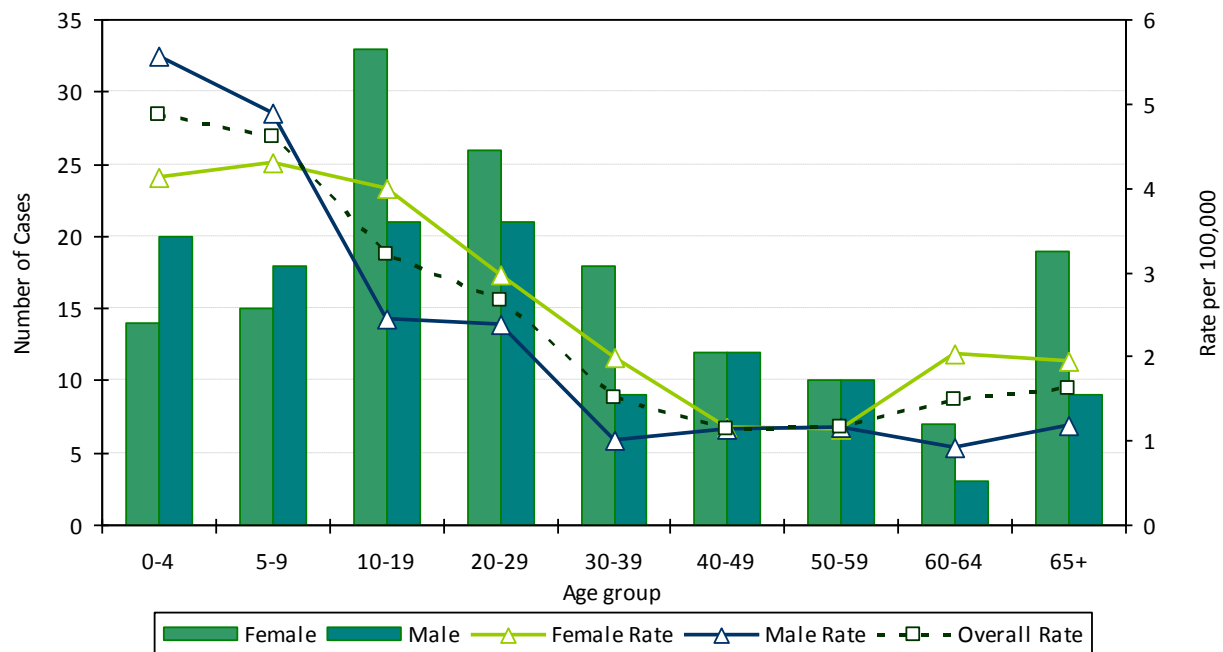
Figure 1.12.2: Incidence of VTEC by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.12.3: Incidence of VTEC by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Does not include 2 cases for which age and/or sex were unknown

Table 1.12.1: Incidence of VTEC by Age and Sex: Ontario, 2008

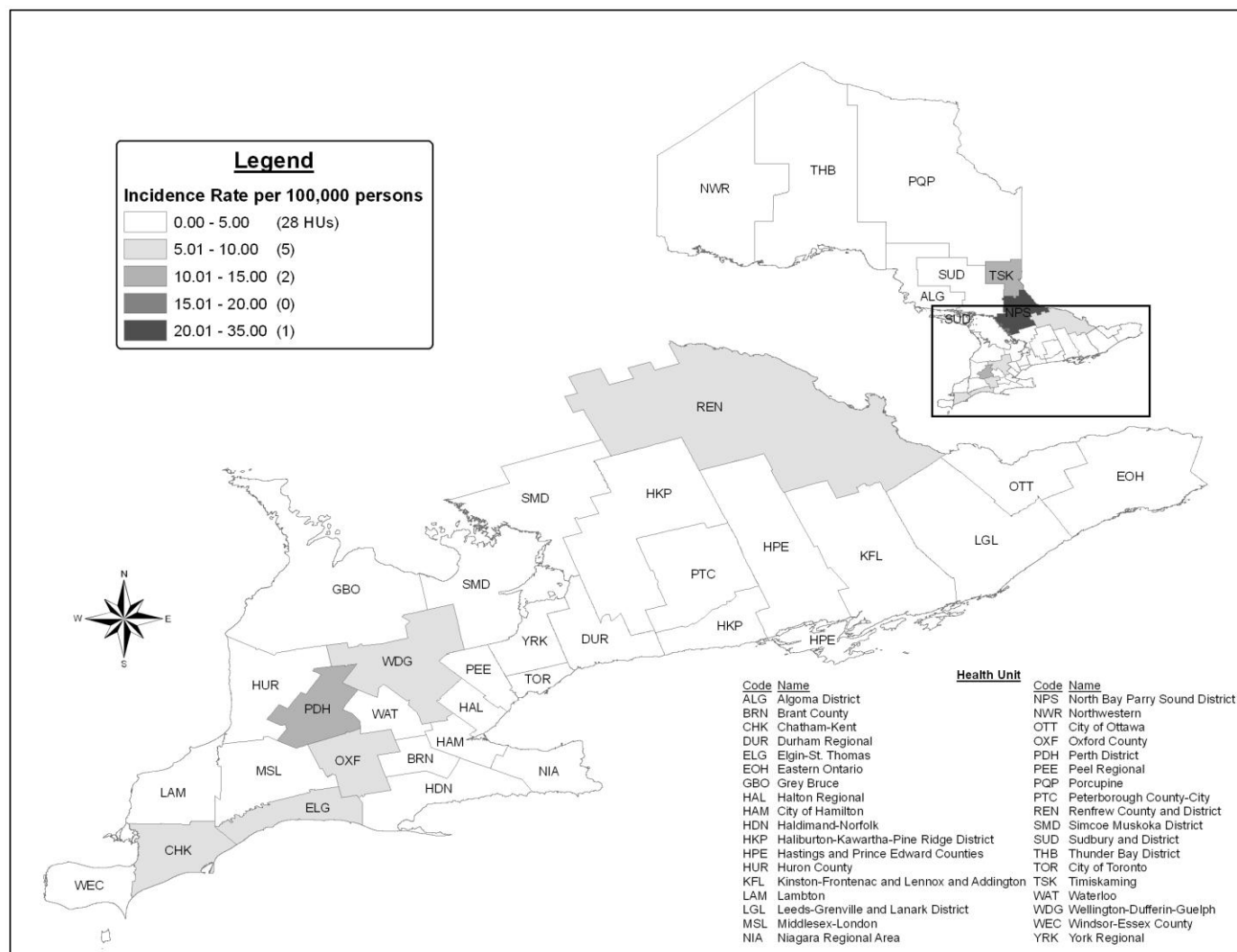
Age group (years)	Female		Male		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	14	4.1	20	5.6	34	4.9
5-9	15	4.3	18	4.9	33	4.6
10-19	33	4.0	21	2.4	54	3.2
20-29	26	3.0	21	2.4	47	2.7
30-39	18	2.0	9	1.0	27	1.5
40-49	12	1.1	12	1.1	24	1.1
50-59	10	1.1	10	1.2	20	1.1
60-64	7	2.0	3	0.9	10	1.5
65+	19	1.9	9	1.2	28	1.6
Total	154	2.4	123	1.9	277	2.1

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Does not include 2 cases for which age and/or sex were unknown

Map 1.12.1: Incidence Rate of VTEC by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.12.2: Incidence of VTEC by Public Health Unit: Ontario, 2008

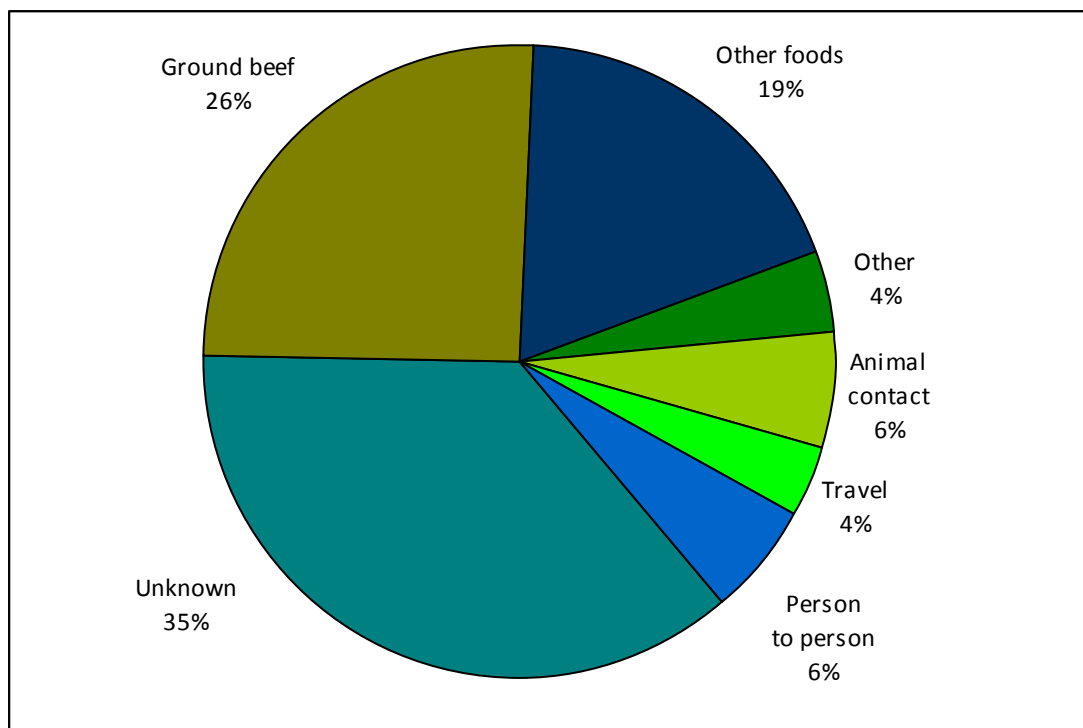
Public Health Unit	Number of cases	Rate/100,000 population
North Bay Parry Sound District	43	34.0
Timiskaming	4	11.4
Perth District	8	10.4
Oxford County	7	6.6
Wellington-Dufferin-Guelph	17	6.3
Renfrew County and District	6	5.8
Elgin-St. Thomas	5	5.6
Chatham-Kent	6	5.4
Huron County	3	4.9
Grey Bruce	6	3.7
Niagara Region	16	3.6
Sudbury and District	6	3.0
Leeds, Grenville and Lanark District	5	3.0
Waterloo Region	15	2.9
Halton Region	14	2.9
Haldimand-Norfolk	3	2.7
Thunder Bay District	4	2.6
Algoma District	3	2.5
Northwestern	2	2.4
Peterborough County-City	3	2.2
Peel Region	16	1.2
Ottawa	13	1.5
Durham Region	9	1.5
Lambton County	2	1.5
Brant County	2	1.4
York Region	12	1.2
Simcoe Muskoka District	6	1.2
Windsor-Essex County	5	1.2
Hamilton	6	1.1
Porcupine	1	1.1
Eastern Ontario	2	1.0
Toronto	23	0.9
Middlesex-London	4	0.9
Haliburton, Kawartha, Pine Ridge	1	0.6
Hastings & Prince Edward Counties	1	0.6
Kingston, Frontenac, Lennox & Addington	0	0.0
Ontario	279	2.2

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 1.12.4: Most Likely Exposure Sources for VTEC Cases: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

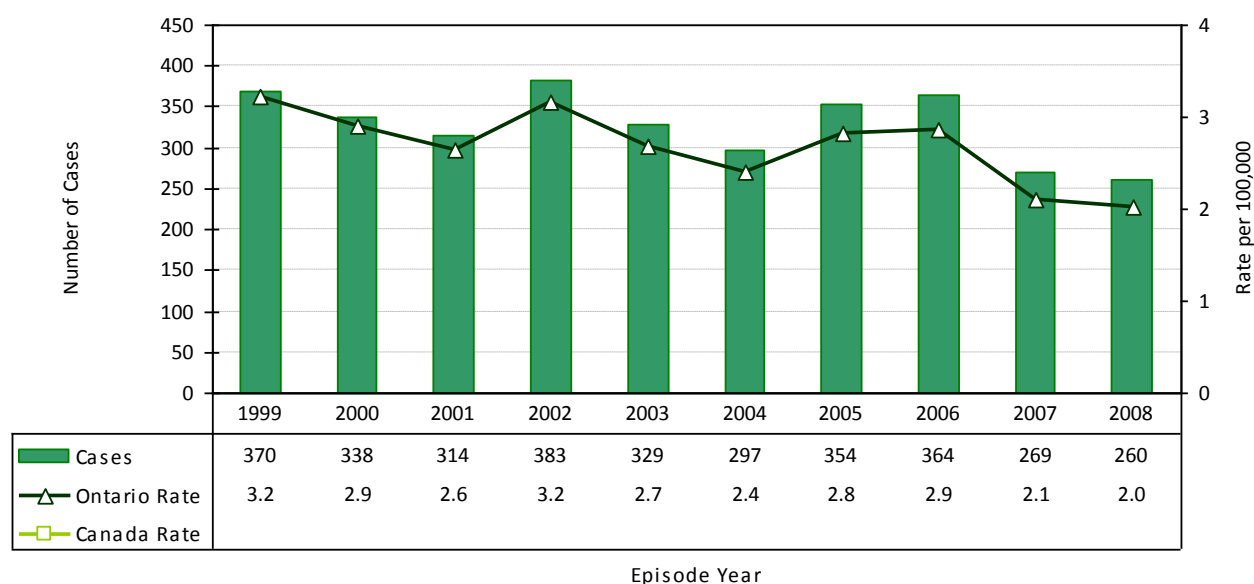
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 13% of cases; these cases were excluded

1.13 YERSINIOSIS

- In 2008, Ontario reported 260 confirmed cases of yersiniosis, representing an incidence rate of 2.0 cases per 100,000 population (Table 1.13.1).
- During the period 1999-2008, the incidence rate of yersiniosis in Ontario declined by 38% from 3.2 cases per 100,000 population in 1999 to 2.0 cases per 100,000 population in 2008 (Figure 1.13.1).
- There was no clear seasonal trend among yersiniosis cases in 2008. Thirty-two cases (12%) were reported in June, which accounted for the highest number of cases reported in a month (Figure 1.13.2).
- In 2008, males (53%) accounted for slightly more cases of yersiniosis. Males also had a 22% higher sex-specific incidence rate than females at 2.2 cases per 100,000 population compared to 1.8 cases per 100,000 population (Figure 1.13.3, Table 1.13.1).
- The incidence of yersiniosis decreased with increasing age; the highest incidence rate occurred among children aged 0-4 years (13.2 cases per 100,000 population). This rate was almost seven times higher than the provincial incidence rate of 2.0 cases per 100,000 population.
- York Region reported the highest incidence rate of yersiniosis in 2008 with 5.1 cases per 100,000 population; North Bay Parry Sound District ranked second with 4.0 cases per 100,000 population. Toronto reported the highest number of cases (n=86), representing 33% of yersiniosis cases reported in Ontario for an incidence rate of 3.2 cases per 100,000 population (Map 1.13.1, Table 1.13.2).
- Travel outside of Ontario (21%) and exposures in private homes (12%) were the most frequently reported exposure settings among cases reporting an exposure in 2008. Exposures in other settings (7%) and unknown exposures (57%) accounted for remaining cases (Figure 1.13.4).

Figure 1.13.1: Incidence of Yersiniosis in Ontario and Canada: 1999-2008



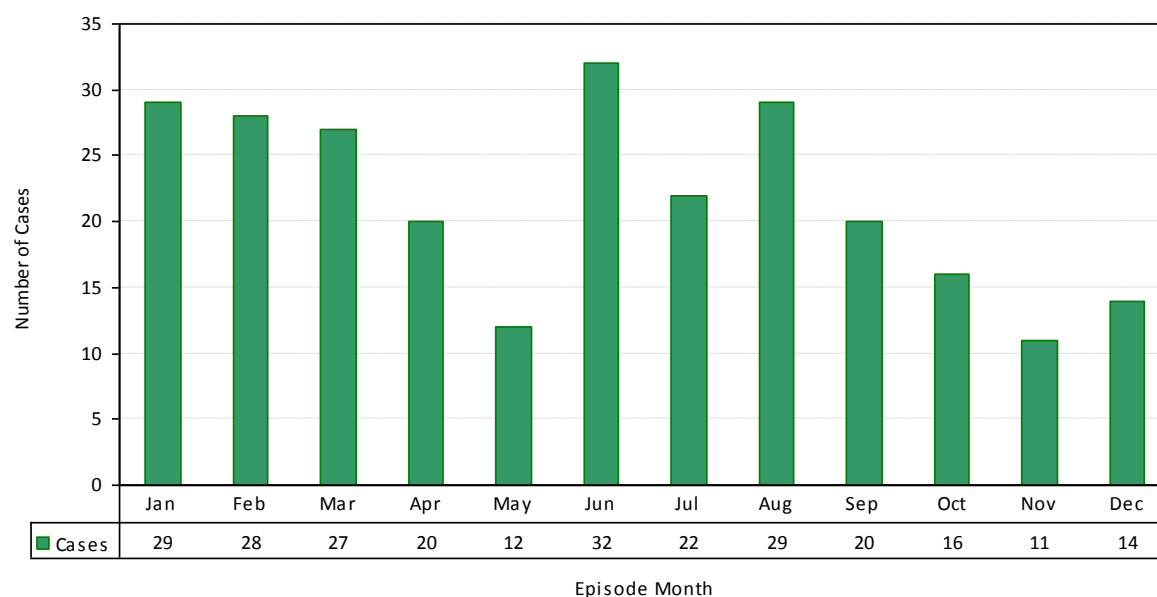
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

data from 1999-2007 extracted [01/15/2009], data for 2008 extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Yersiniosis is not nationally reportable, and therefore no Canadian rates are available.

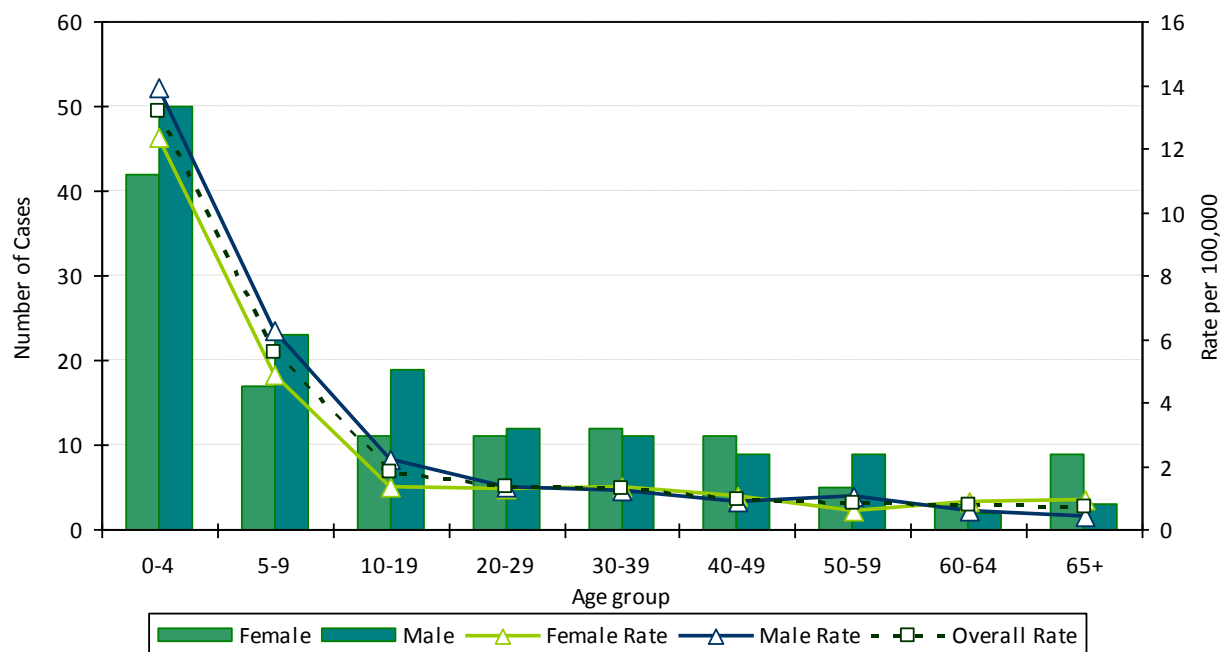
Figure 1.13.2: Incidence of Yersiniosis by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 1.13.3: Incidence of Yersiniosis by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009].

Note: Does not include 1 case for which age and/or sex were unknown

Table 1.13.1: Incidence of Yersiniosis by Age and Sex: Ontario, 2008

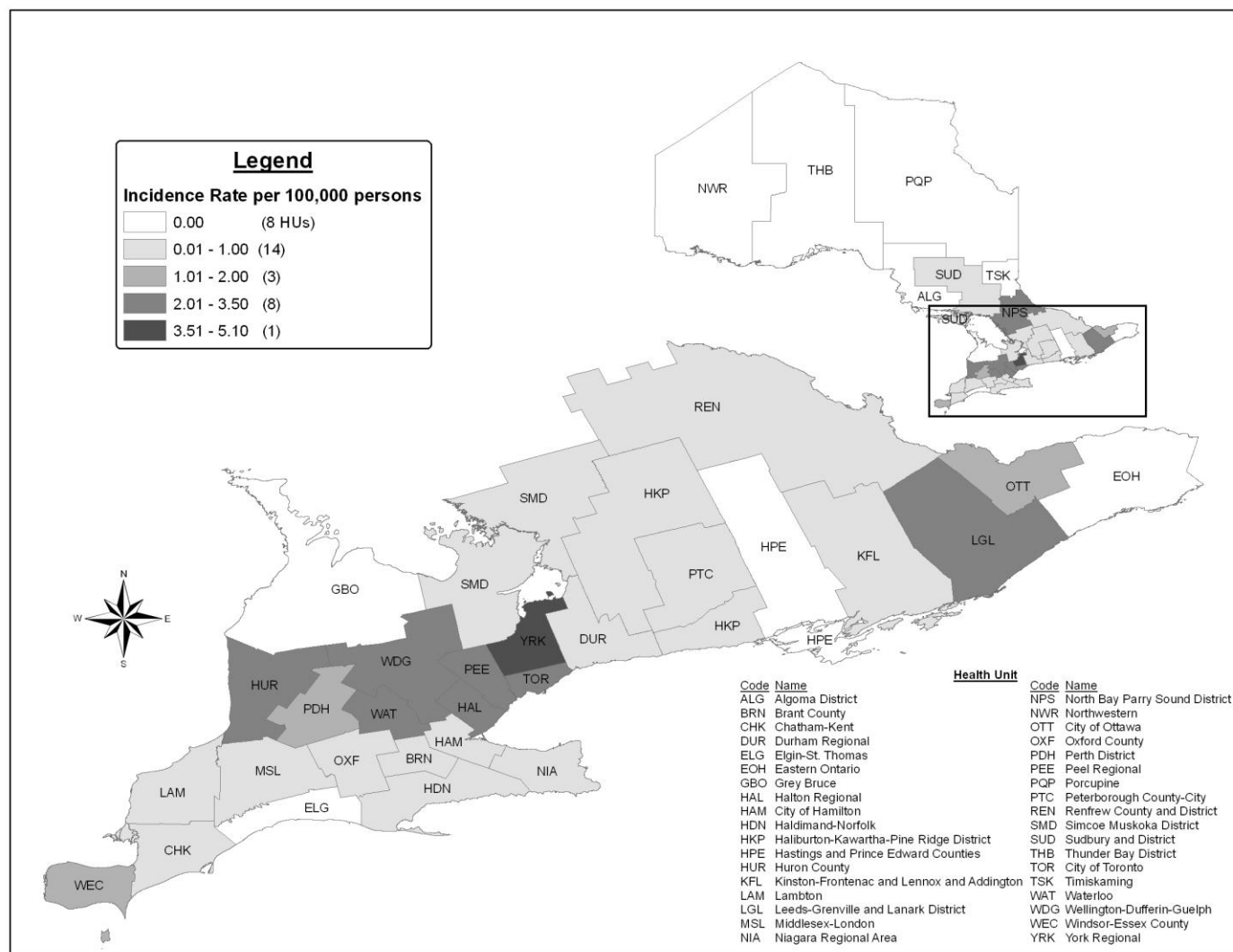
Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	42	12.4	50	13.9	92	13.2
5-9	17	4.9	23	6.2	40	5.6
10-19	11	1.3	19	2.2	30	1.8
20-29	11	1.3	12	1.4	23	1.3
30-39	12	1.3	11	1.2	23	1.3
40-49	11	1.1	9	0.8	20	0.9
50-59	5	0.6	9	1.0	14	0.8
60-64	3	0.9	2	0.6	5	0.7
65+	9	0.9	3	0.4	12	0.7
Total	121	1.8	138	2.2	259	2.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note: Does not include 1 case for which age and/or sex were unknown

Map 1.13.1: Incidence Rates of Yersiniosis by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 1.13.2: Incidence of Yersiniosis by Public Health Unit: Ontario, 2008

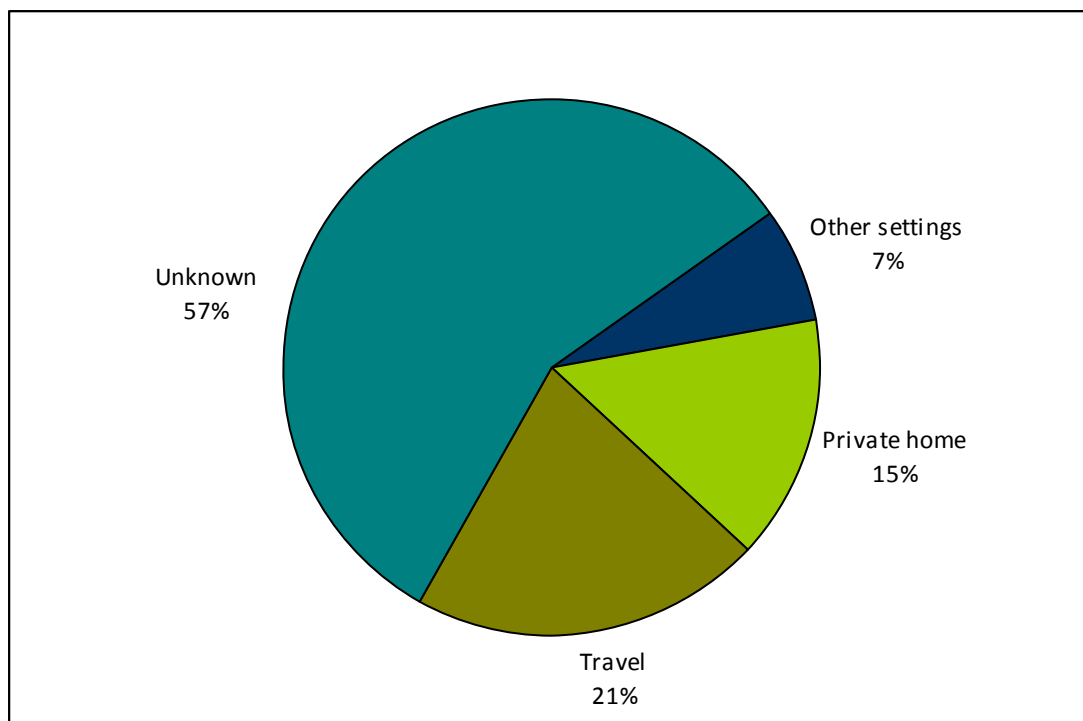
Public Health Unit	Number of cases	Rate/100,000 population
York Region	50	5.1
North Bay Parry Sound District	5	4.0
Huron County	2	3.3
Toronto	86	3.2
Peel Region	39	3.0
Halton Region	12	2.5
Leeds, Grenville and Lanark District	4	2.4
Wellington-Dufferin-Guelph	6	2.2
Waterloo Region	11	2.2
Windsor-Essex County	6	1.5
Perth District	1	1.3
Ottawa	11	1.3
Sudbury and District	2	1.0
Renfrew County and District	1	1.0
Hamilton	5	0.9
Oxford County	1	0.9
Haldimand-Norfolk	1	0.9
Chatham-Kent	1	0.9
Lambton County	1	0.8
Peterborough County-City	1	0.7
Brant County	1	0.7
Niagara Region	3	0.7
Middlesex-London	3	0.7
Haliburton, Kawartha, Pine Ridge	1	0.6
Kingston, Frontenac, Lennox & Addington	1	0.5
Durham Region	3	0.5
Simcoe Muskoka District	2	0.4
Algoma District	0	0.0
Eastern Ontario	0	0.0
Elgin-St. Thomas	0	0.0
Grey Bruce	0	0.0
Hastings & Prince Edward Counties	0	0.0
Northwestern	0	0.0
Porcupine	0	0.0
Thunder Bay District	0	0.0
Timiskaming	0	0.0
Ontario	260	2.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 1.13.4: Most Likely Exposure Settings for Yersiniosis Cases: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 16% of cases; these cases were excluded

Chapter 2: VACCINE PREVENTABLE DISEASES

- In 2008, *Streptococcus pneumoniae* (*S. pneumoniae*), pertussis, mumps and measles were the most commonly reported of the diseases routinely prevented by vaccines during childhood and early adolescence in Ontario.
- In 2008, age-specific incidence rates for invasive meningococcal disease, pertussis and measles were highest among children ages 0-4 years. For *S. Pneumoniae*, age-specific incidence rates were highest among the same age group and among adults aged 60 years and older; for mumps, the highest rates were reported in the 5-9 age category.
- Since 2002, the incidence of invasive meningococcal disease (IMD) has declined to a yearly average of 0.5 cases per 100,000 population (Figure 2.2.1). Meningococcal serogroup B accounted for more than half (53%) of all cases of invasive meningococcal disease that were reported in Ontario in 2008.
- The incidence of mumps in Ontario has generally been on a decline since 2000, although the number of reported cases spiked in 2007 due to importation of mumps from Nova Scotia and New Brunswick and in 2008 due to an outbreak in an under-unimmunised community in Oxford County. (Figure 2.3.1).
- The incidence rate of pertussis in Ontario declined by 73% from 10.6 cases per 100,000 population in 1999 to 2.9 cases per 100,000 population in 2003. In subsequent years (2004-2008), the incidence of pertussis increased, peaking at 10.0 cases per 100,000 population in 2006 (Figure 2.4.1).
- In 2008, the incidence of *S. pneumoniae* increased by 9% to a rate of 8.2 cases per 100,000 population. The increase follows a stable yearly rate from 2005-2007 of approximately 7.5 cases per 100,000 (Figure 2.5.1).

Table 2.1: Incidence of Vaccine Preventable Diseases; Ontario, 1999-2008

Vaccine Preventable Diseases ^{2, 4}	1999		2000		2001		2002		2003		2004		2005		2006		2007		2008	
	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹
Diphtheria	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Haemophilus Influenzae B	4	0.0	11	0.1	7	0.1	7	0.1	9	0.1	9	0.1	8	0.1	12	0.1	6	0.0	7	0.1
Measles	2	0.0	9	0.1	6	0.1	1	0.0	11	0.1	6	0.0	4	0.0	5	0.0	0	0.0	58	0.5
Meningococcal disease	80	0.7	82	0.7	106	0.9	59	0.5	58	0.5	55	0.4	43	0.3	67	0.5	62	0.5	48	0.4
Mumps	43	0.4	33	0.3	18	0.2	14	0.1	13	0.1	23	0.2	17	0.1	10	0.1	53	0.4	336	2.6
Pertussis	1218	10.6	716	6.1	463	3.9	532	4.4	353	2.9	633	5.1	646	5.1	1265	10.0	933	7.3	831	6.4
Rubella	4	0.0	9	0.0	17	0.0	2	0.0	9	0.0	5	0.0	313 ⁶	0.0	5	0.0	2	0.0	2	0.0
Rubella, congenital	0	0.0	1	0.0	0	0.0	1	0.0	1	0.0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0
S. pneumoniae ³	26	0.2	21	0.2	128	1.1	649	5.4	1016	8.3	1057	8.5	930	7.4	945	7.4	940	7.3	1062	8.2
Tetanus	1	0.0	1	0.0	3	0.0	2	0.0	0	0.0	0	0.0	1	0.0	1	0.0	1	0.0	0	0.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, data from 1999-2007 extracted [01/15/2009], data for 2008 extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010]

Note 1: Incidence rate per 100,000 population

Note 2: No cases were reported for the following vaccine preventable diseases in Ontario during the period 1999-2008: poliomyelitis and small pox

Note 3: Interpret S. pneumoniae trend before 2003 with caution: Invasive S. pneumoniae became reportable in Ontario in 2001. Consistency in reporting was not achieved until 2003.

Note 4: Excludes diseases for which aggregate case counts rather than individual case counts are reported to the MOHLTC

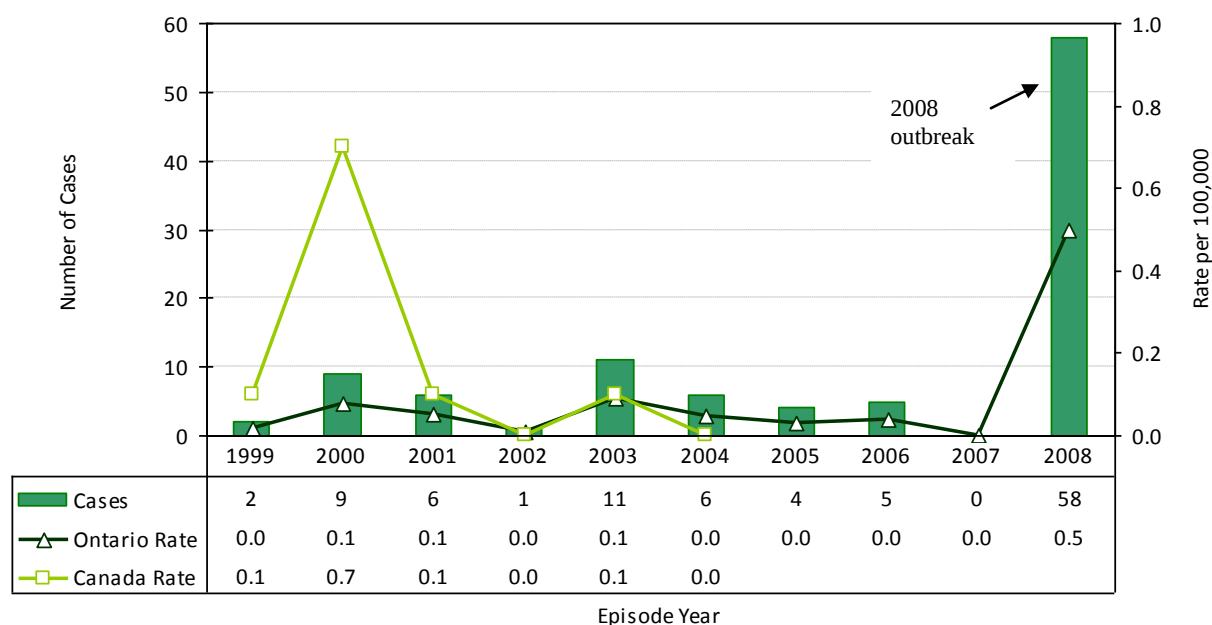
Note 5: Publicly funded Meningococcal vaccine (serogroup C) introduced in September 2004 for one year olds and in January 2005 for grade 7 students, youths aged 15 to 19 and high-risk people of all ages. Two dose schedule for measles vaccine with a catch-up program for students aged 4-18 years introduced in 1996. Publicly funded tetanus, diphtheria and acellular vaccine (Tdap) for adolescents aged 14-16 years introduced in 2003- replaced the Td-IPV adolescent booster dose. Publicly funded Pneumococcal conjugate vaccine introduced in September 2003 for high risk children under the age of 2 years. Expanded in July 2004 to include high risk children under the age of 5 years and in January 2005 to include all children under the age of 2 years

Note 6: Rubella outbreak in Oxford County in 2005

2.1. MEASLES

- In 2008, 58 confirmed cases of measles were reported in Ontario, representing an incidence rate of 0.5 cases per 100,000 population (Figure 2.1.1).
- The incidence of measles in Ontario remained relatively stable from 1999 to 2007 but increased significantly in 2008 to a 12 year high of 0.5 cases per 100,000 population. The increase in 2008 was attributed to an outbreak of 54 cases that was likely linked to an imported measles case (Figure 2.1.1).
- The overall trend in the incidence of measles in Canada from 1999 to 2004 was comparable to that of Ontario, for all years except 2000 when the national incidence rate was seven times higher than Ontario's. (Figure 2.1.1). The national increase in 2000 was attributed to importation from the Netherlands through visiting relatives to a highly susceptible sub-population.
- In 2008, confirmed cases of measles peaked from March to May and corresponded to an outbreak, which accounted for 93% (54/58) of measles cases reported that year (Figure 2.1.2).
- The incidence rate of measles in 2008 was 25% higher among males at 0.5 cases per 100,000 population compared to 0.4 cases per 100,000 population among females (Figure 2.1.3, Table 2.1.1).
- The incidence of measles declined with increasing age for both males and females, with the exception of males in the 30-39 year age group. Children in the 0-4 and 5-9 year age groups experienced the highest burden of measles, with incidence rates of 1.1 and 1.0 cases per 100,000 population, respectively (Figure 2.1.3, Table 2.1.1).
- The geographical differences in the incidence of measles reflected the distribution of outbreak related cases in 2008. The highest rates were reported by Peterborough Health Unit at 7.3 cases per 100,000 population, Wellington-Dufferin-Guelph Health Unit at 4.5 cases per 100,000 population and Toronto Public Health at 1.1 cases per 100,000 population. Exactly half of measles cases in 2008 were reported in Toronto. Twenty-eight health units did not report any cases of measles in 2008. (Map 2.1.1, Table 2.1.2).

Figure 2.1.1: Incidence of Measles in Ontario and Canada: 1999-2008



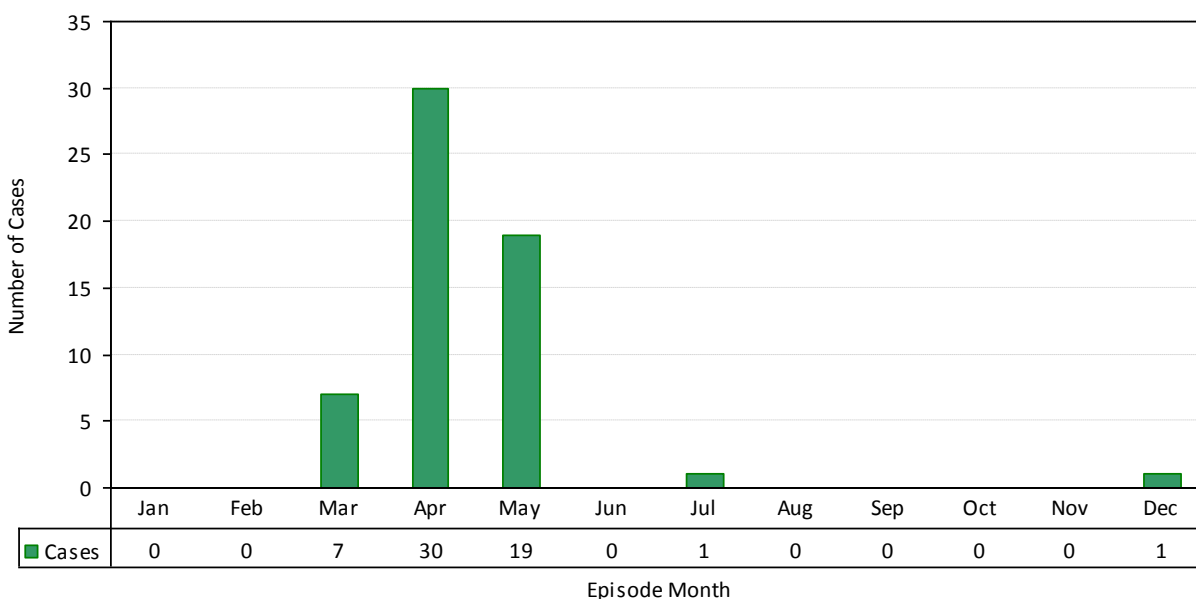
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, data from 1999-2007 extracted [01/15/2009], data for 2008 extracted [05/25/2010].

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note 1: Canadian rates available up to 2004.

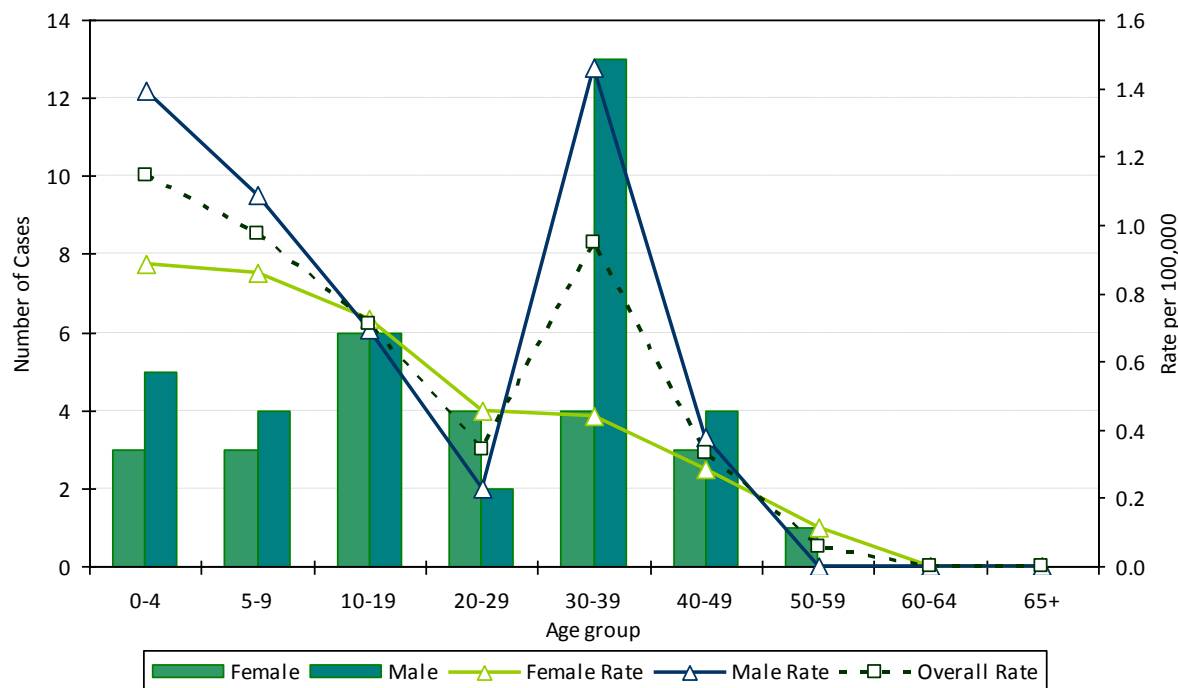
Figure 2.1.2: Incidence of Measles by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 2.1.3: Incidence of Measles by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

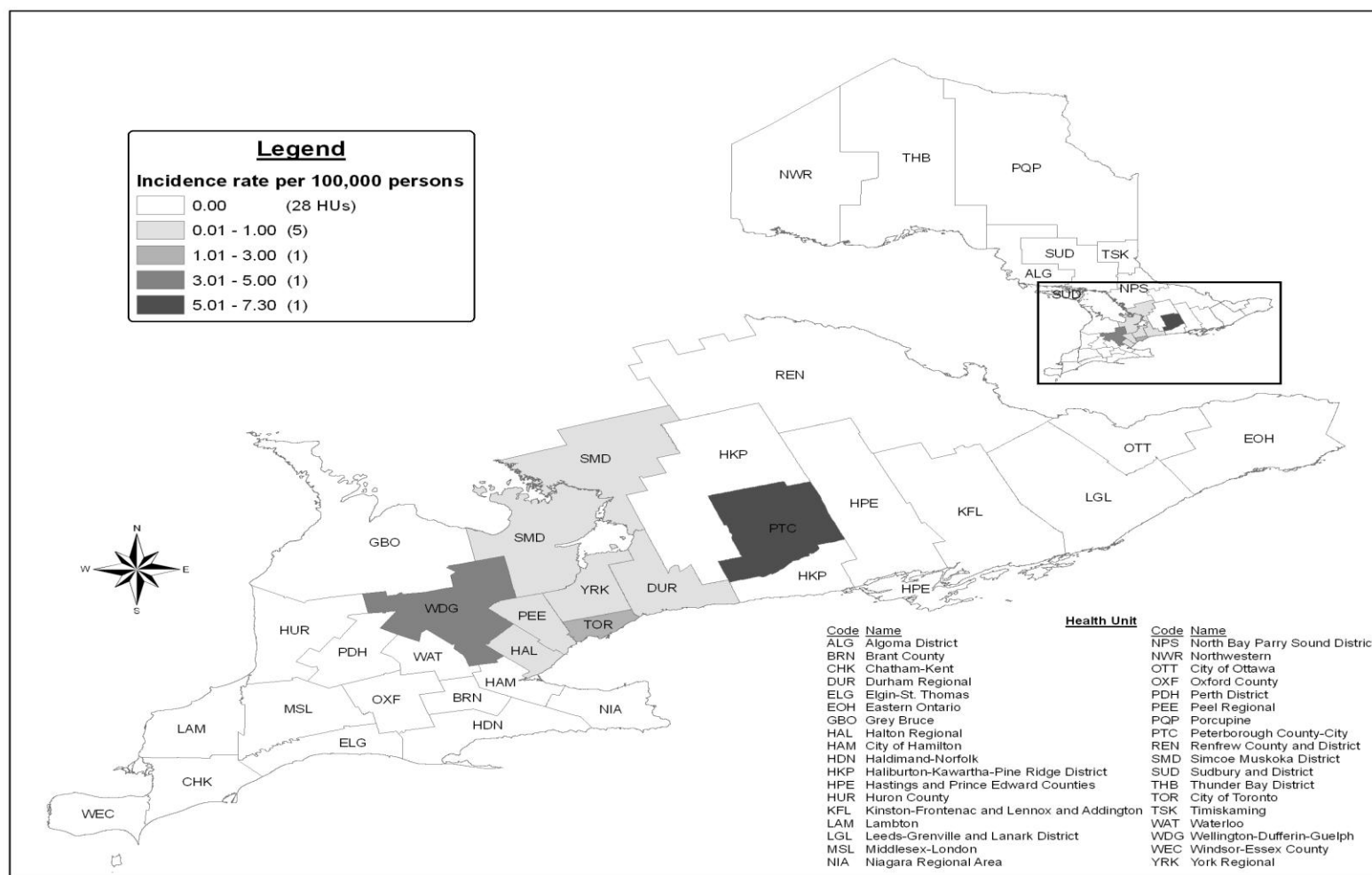
Table 2.1.1: Incidence of Measles by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	3	0.9	5	1.4	8	1.1
5-9	3	0.9	4	1.1	7	1.0
10-19	6	0.7	6	0.7	12	0.7
20-29	4	0.5	2	0.2	6	0.3
30-39	4	0.4	13	1.5	17	0.9
40-49	3	0.3	4	0.4	7	0.3
50-59	1	0.1	0	0.0	1	0.1
60-64	0	0.0	0	0.0	0	0.0
65+	0	0.0	0	0.0	0	0.0
Total	24	0.4	34	0.5	58	0.5

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Map 2.1.1: Incidence Rates of Measles by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note: Health unit refers to diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 2.1.2: Incidence of Measles by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Peterborough County	10	7.3
Wellington-Dufferin-Guelph	12	4.5
Toronto	29	1.1
Simcoe Muskoka District	2	0.4
Durham Region	2	0.3
Halton Region	1	0.2
Peel Region	1	0.1
York Region	1	0.1
Algoma District	0	0
Brant County	0	0
Chatham-Kent	0	0
Eastern Ontario	0	0
Elgin-St. Thomas	0	0
Grey-Bruce	0	0
Haldimand-Norfolk	0	0
Haliburton-Kawartha-Pine Ridge District	0	0
Hamilton, City of	0	0
Hastings Prince Edward Counties	0	0
Huron County	0	0
Kingston-Frontenac and Lennox and Addington	0	0
Lambton County	0	0
Leeds-Grenville and Lanark District	0	0
Middlesex-London	0	0
Niagara Region	0	0
North Bay Parry Sound District	0	0
Northwestern	0	0
Ottawa, City of	0	0
Oxford County	0	0
Perth District	0	0
Porcupine	0	0
Renfrew County and District	0	0
Sudbury and District	0	0
Thunder Bay District	0	0
Timiskaming	0	0
Waterloo Region	0	0
Windsor-Essex County	0	0
Ontario	58	0.5

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

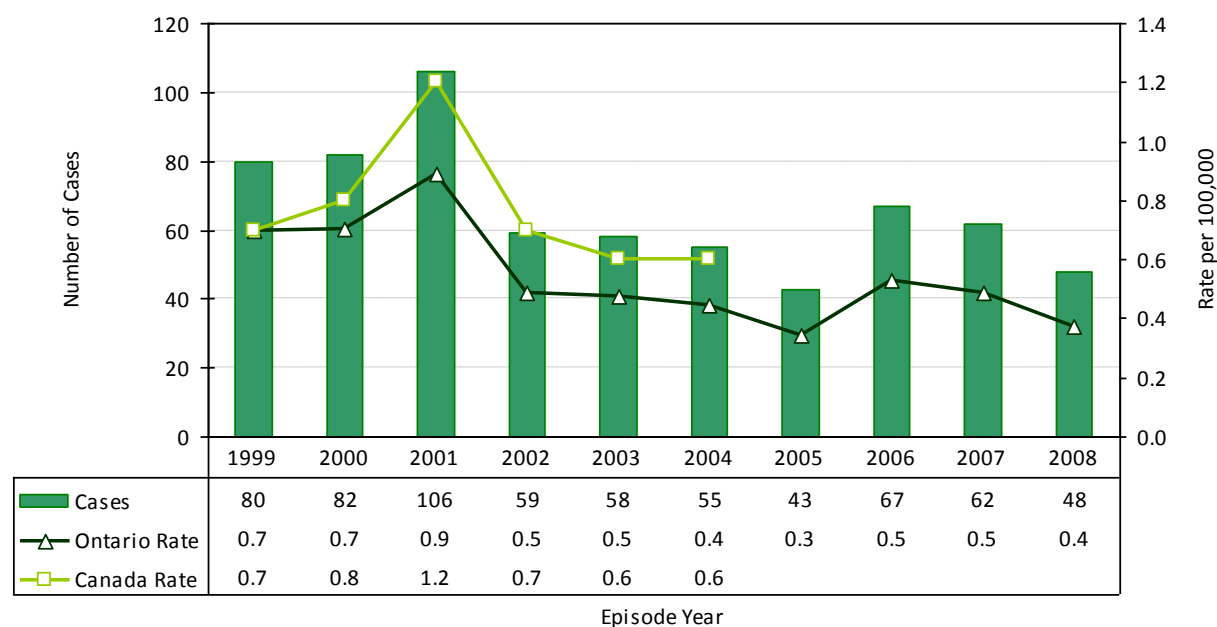
Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note: Health unit refers to diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

2.2. MENINGOCOCCAL DISEASE, INVASIVE

- In 2008, Ontario reported 48 confirmed cases of invasive meningococcal disease (IMD), representing an incidence rate of 0.4 cases per 100,000 population (Figure 2.2.1).
- The incidence of IMD in Ontario fluctuated between 1999 and 2008, with the highest incidence rate occurring in 2001 (0.9 cases per 100,000 population). The increase in 2001 was attributed to an outbreak of IMD-sero-group C. Since 2002, the incidence of IMD has declined to a yearly average of 0.4 cases per 100,000 population.
- The overall trend in the incidence of IMD in Canada from 1998 to 2004 was comparable to that of Ontario, but with higher incidence rates in most years for which national data were available (Figure 2.2.1). The largest difference in rates was observed in 2001. In that year, outbreaks of IMD were reported in Ontario, Quebec, British Columbia and Alberta.
- There was no clear seasonal trend in the distribution of IMD cases reported in 2008. The highest number of cases was reported in March (7) and April (8); no cases were reported in October (Figure 2.2.2).
- The incidence rate of IMD in 2008 was 33% higher among males at 0.4 cases per 100,000 population compared to 0.3 cases per 100,000 population among females (Figure 2.2.3, Table 2.2.1).
- Children in the 0-4 age group (1.7 cases per 100,000 population) and adults age 65 years and older (of 0.6 cases per 100,000 population) experienced the highest burdens of IMD with incidence rates that were over 50% higher than the overall rate for Ontario. (Figure 2.2.3, Table 2.2.1).
- Ten public health units reported incidence rates for IMD that were greater than the overall rate for Ontario. The highest rates were reported by Renfrew County and District (1.9 cases per 100,000 population) and Kingston, Frontenac, Lennox and Addington (1.6 cases per 100,000 population). Forty-four percent of health units reported no cases of IMD in 2008 (Map 2.2.1, Table 2.2.2).
- The most frequently identified meningococcal serogroups in 2008 were Group B (53%), Group Y (31%), Group C (8%) and Group W135 (4%); the remaining cases were un-groupable (4%) (Figure 2.2.4).

Figure 2.2.1: Incidence of Invasive Meningococcal Disease in Ontario and Canada: 1999-2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, data from 1999-2007 extracted [01/15/2009], data for 2008 extracted [05/25/2010].

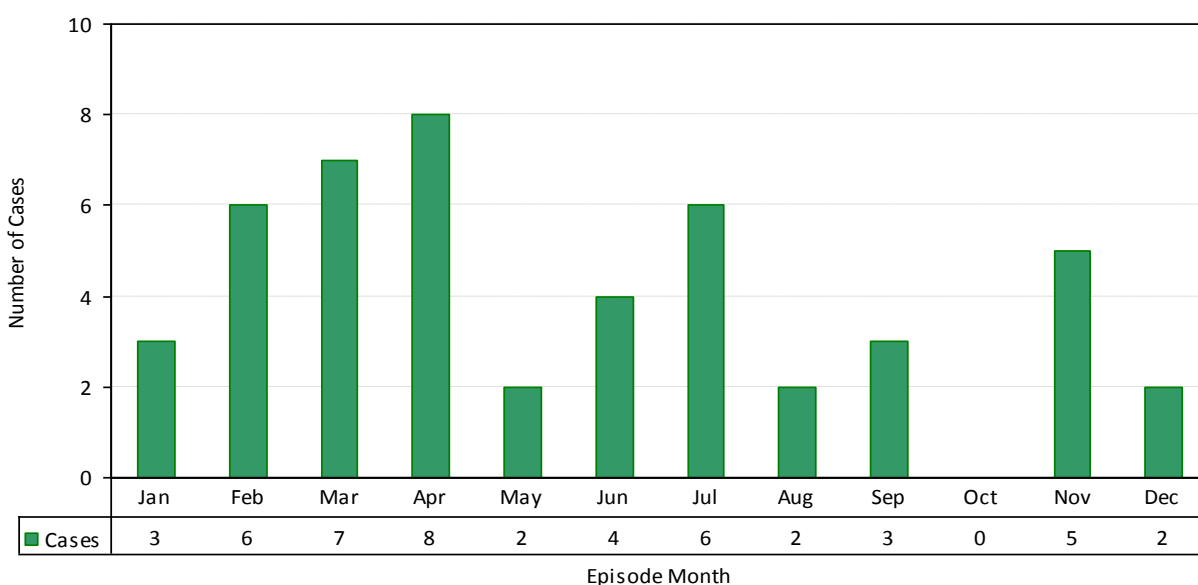
Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smcd.phac-aspc.gc.ca/dsol-smcd/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note 1: Canadian rates available up to 2004.

Note 2: Publicly funded Meningococcal vaccine (serogroup C) introduced in September 2004 for one year olds and in September 2005 for grade 7 students, youths aged 15 to 19 and high-risk Ontarians of all ages.

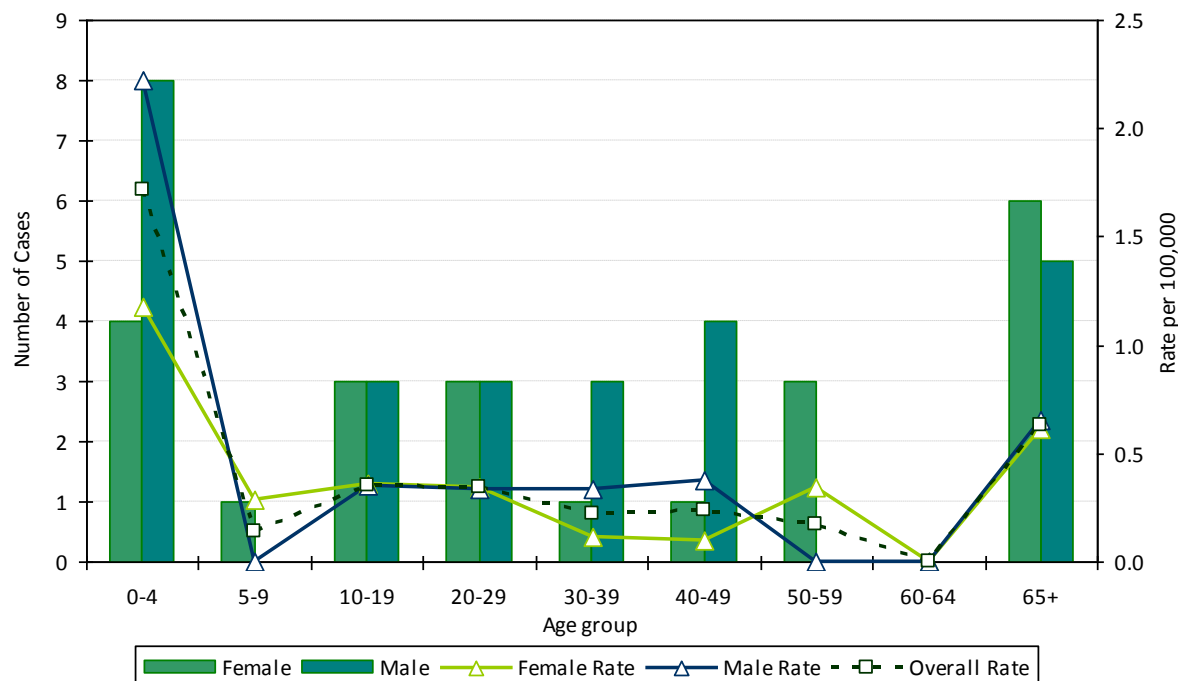
Figure 2.2.2: Incidence of Invasive Meningococcal Disease by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 2.2.3: Incidence of Invasive Meningococcal Disease by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

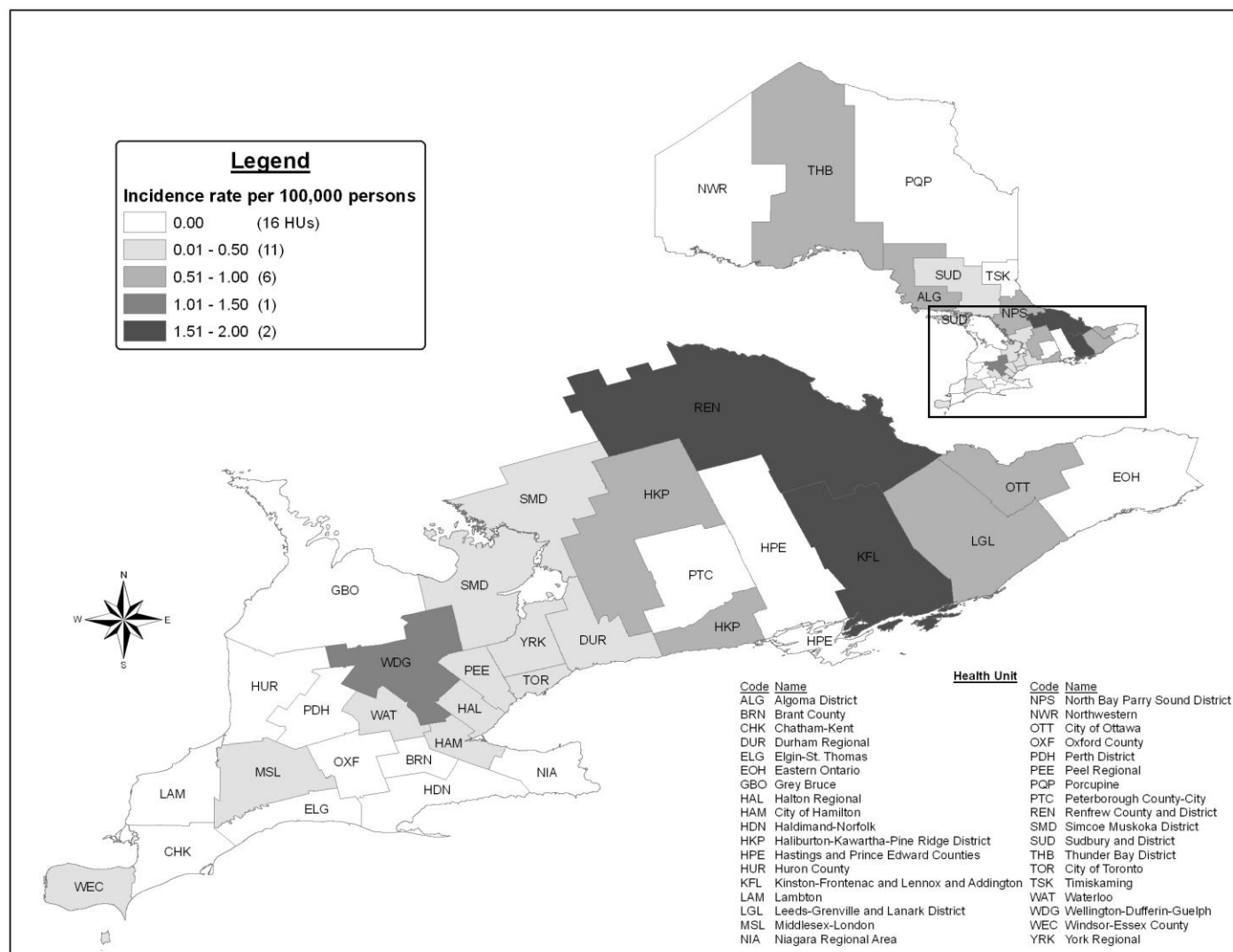
Table 2.2.1: Incidence of Invasive Meningococcal Disease by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	4	1.2	8	2.2	12	1.7
5-9	1	0.3	0	0.0	1	0.1
10-19	3	0.4	3	0.3	6	0.4
20-29	3	0.3	3	0.3	6	0.3
30-39	1	0.1	3	0.3	4	0.2
40-49	1	0.1	4	0.4	5	0.2
50-59	3	0.3	0	0.0	3	0.2
60-64	0	0.0	0	0.0	0	0.0
65+	6	0.6	5	0.7	11	0.6
Total	22	0.3	26	0.4	48	0.4

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Map 2.2.1: Incidence Rates of Invasive Meningococcal Disease by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note: Health unit refers to diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 2.2.2: Incidence of Invasive Meningococcal Disease by Public Health Unit: Ontario, 2008

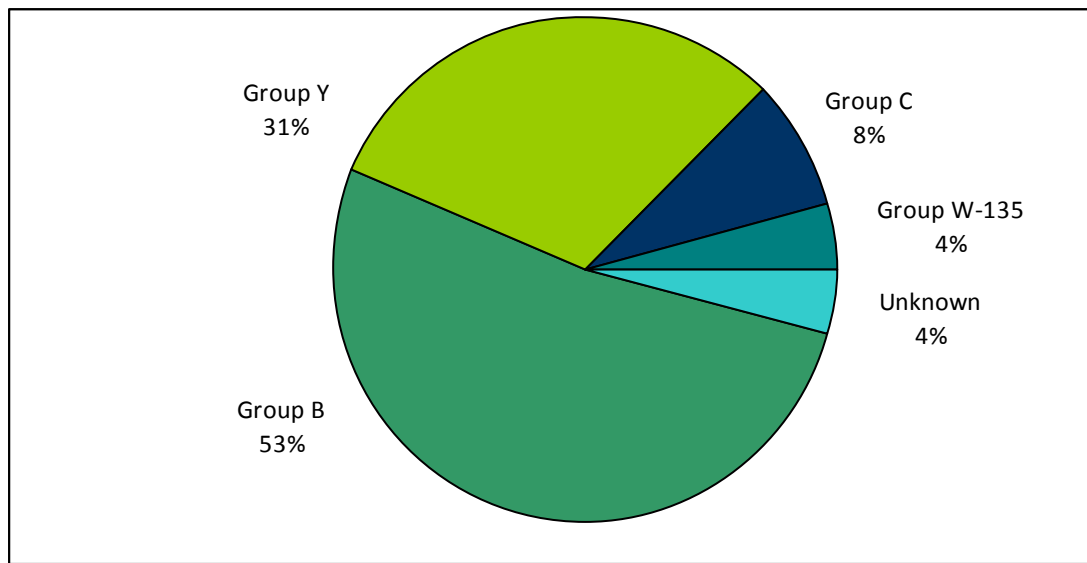
Public Health Unit	Number of cases	Rate/100,000 population
Renfrew County and District	2	1.9
Kingston, Frontenac, Lennox & Addington	3	1.6
Wellington-Dufferin-Guelph	3	1.1
Ottawa	9	1.0
Algoma District	1	0.8
North Bay Parry Sound District	1	0.8
Thunder Bay District	1	0.6
Leeds, Grenville and Lanark District	1	0.6
Haliburton, Kawartha, Pine Ridge	1	0.6
Sudbury and District	1	0.5
Halton Region	2	0.4
Waterloo Region	2	0.4
Peel Region	5	0.4
Toronto	9	0.3
Durham Region	2	0.3
Windsor-Essex County	1	0.2
Middlesex-London	1	0.2
Simcoe Muskoka District	1	0.2
Hamilton	1	0.2
York Region	1	0.1
Brant County	0	0.0
Chatham-Kent	0	0.0
Eastern Ontario	0	0.0
Elgin-St. Thomas	0	0.0
Grey Bruce	0	0.0
Haldimand-Norfolk	0	0.0
Hastings & Prince Edward Counties	0	0.0
Huron County	0	0.0
Lambton County	0	0.0
Niagara Region	0	0.0
Northwestern	0	0.0
Oxford County	0	0.0
Perth District	0	0.0
Peterborough County-City	0	0.0
Porcupine	0	0.0
Timiskaming	0	0.0
Ontario	48	0.4

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note: Health unit refers to diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Figure 2.2.4: Incidence of Invasive Meningococcal Disease by Sero-group: Ontario, 2008

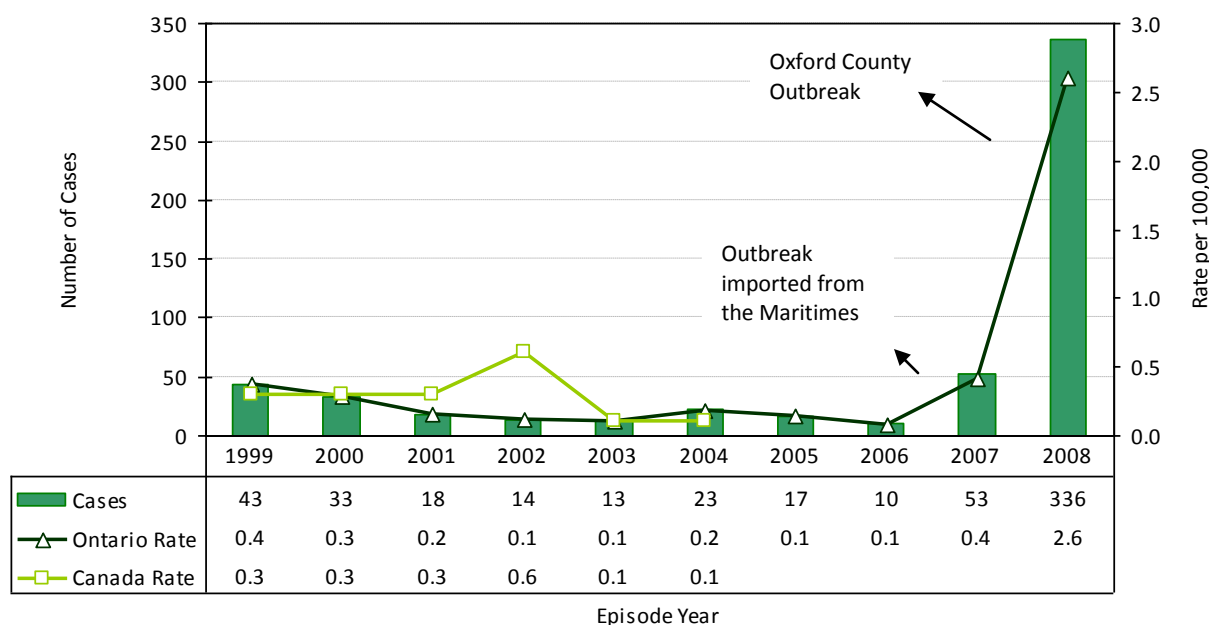


Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

2.3. MUMPS

- In 2008, Ontario reported 336 confirmed cases of mumps, which represents an incidence rate of 2.6 cases per 100,000 population (Figure 2.3.1).
- The incidence of mumps in Ontario has generally been on a decline since 2000, although the number of reported cases spiked in 2007 and 2008. The increase in 2007 was attributed to the importation of mumps from Nova Scotia and New Brunswick, and in 2008, to an outbreak in an under-unimmunized community in Oxford County.
- In Canada from 1998-2004, incidence rates have similarly declined, with the exception of 2002 where the national incidence rate peaked at 0.6 cases per 100,000 population (Figure 2.3.1). The incidence of mumps in Canada also spiked in 2007 owing to the outbreak in Atlantic Canada.
- In 2008, the months of June through to September accounted for 90% (301/336) of confirmed cases of mumps reported in Ontario and corresponded with the peak of a large outbreak in an under-unimmunised religious community in Oxford County (Figure 2.3.2).
- In 2008, mumps cases occurred in an equal number of males and females, with incidence rates of 2.6 cases per 100,000 population for both groups (Figure 2.3.3, Table 2.3.1).
- The age and gender distribution of mumps cases in Ontario in 2008 reflected the demographics of cases linked to the outbreak in Oxford County, which accounted for 97% of cases in that year. The age 5-9 and 10-19 age groups accounted for more than half (58%) of mumps cases reported in 2008 (Figure 2.3.3, Table 2.3.1).
- Accordingly, Oxford County reported the highest incidence rate and number of cases of mumps in 2008 with 291 cases per 100,000 population for a total of 309 cases. (Map 2.3.1, Table 2.3.2).

Figure 2.3.1: Incidence of Mumps in Ontario and Canada: 1999-2008



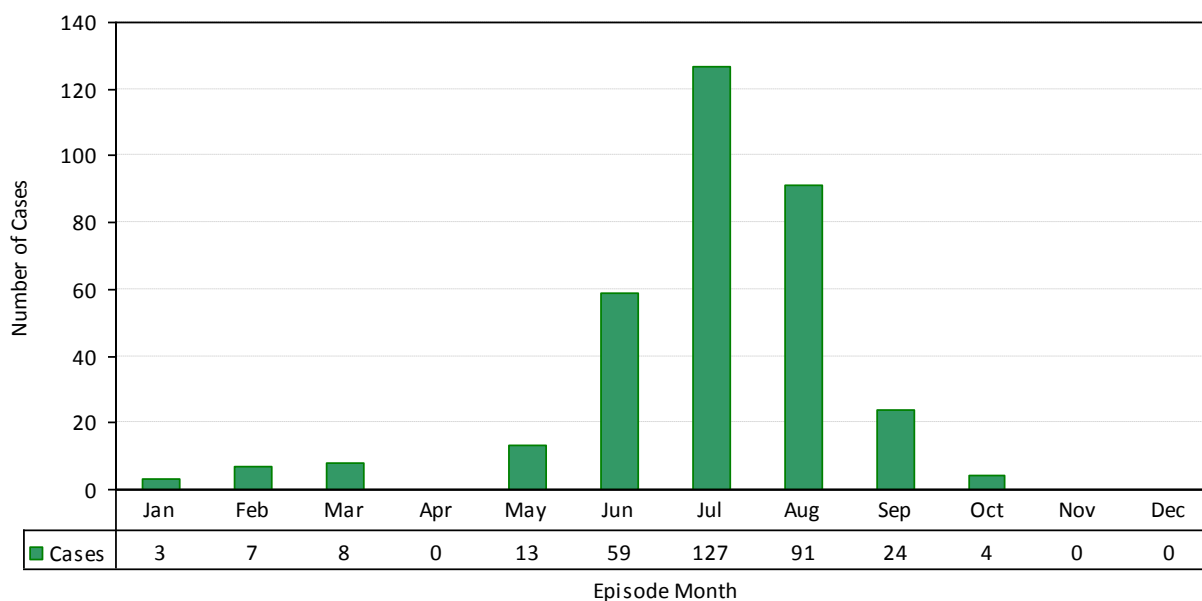
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, intelliHEALTH Ontario, extracted [05/03/2010]

Note: Canadian rates available up to 2004.

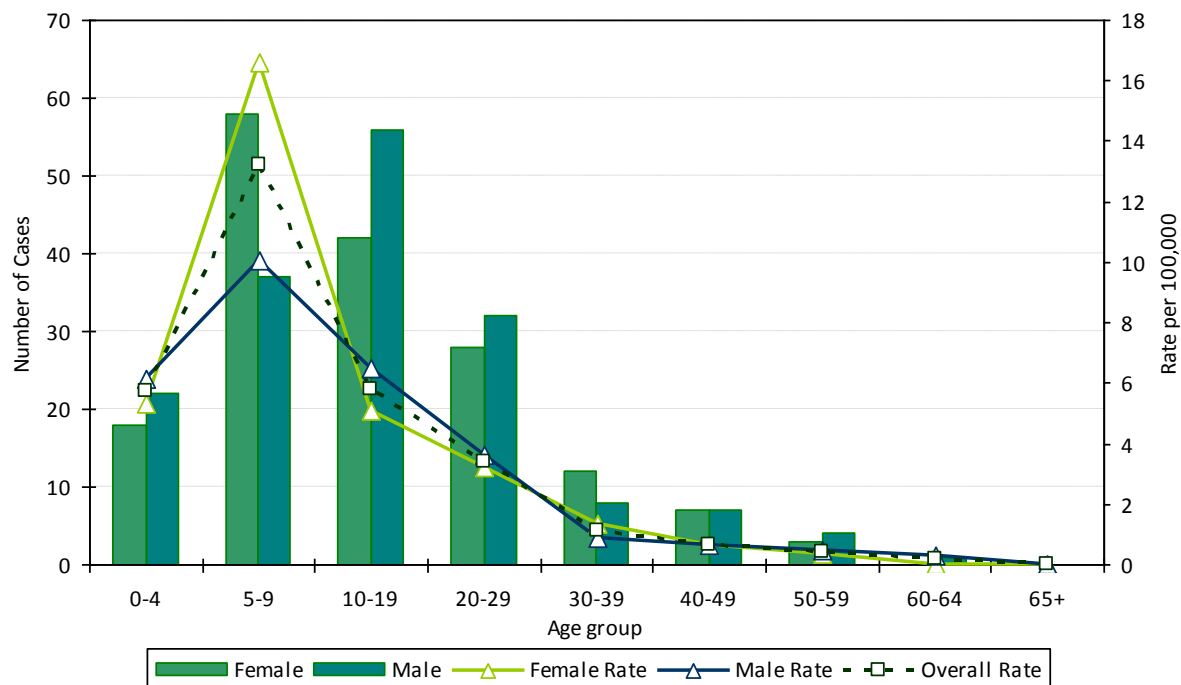
Figure 2.3.2: Incidence of Mumps by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 2.3.3: Incidence of Mumps by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note: Excludes 1 case for which sex and/or age were unknown

Table 2.3.1: Incidence of Mumps by Age and Sex: Ontario, 2008

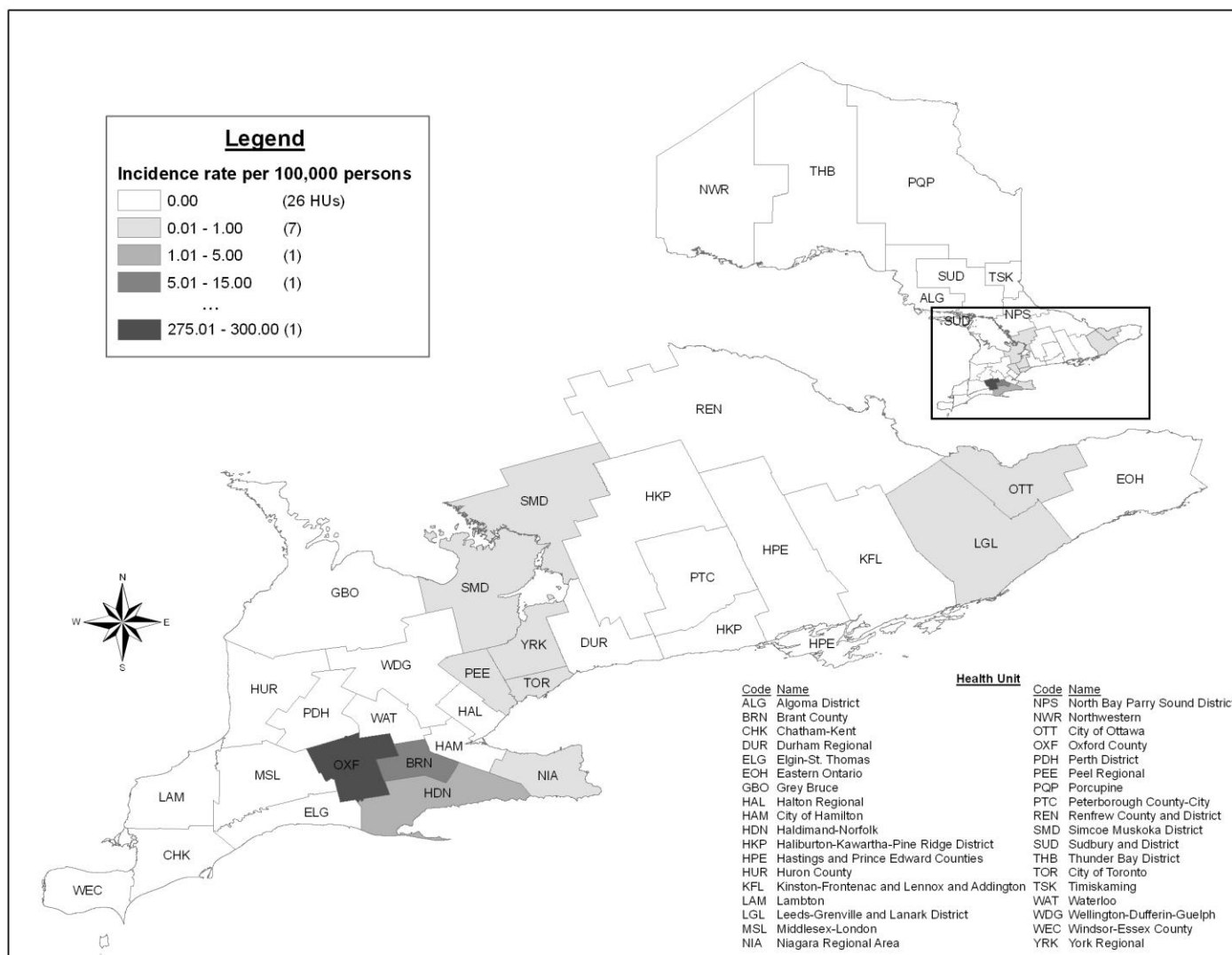
Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	18	5.3	22	6.1	40	5.7
5-9	58	16.6	37	10.0	95	13.2
10-19	42	5.1	56	6.5	98	5.8
20-29	28	3.2	32	3.6	60	3.4
30-39	12	1.3	8	0.9	20	1.1
40-49	7	0.7	7	0.7	14	0.7
50-59	3	0.3	4	0.5	7	0.4
60-64	0	0.0	1	0.3	1	0.1
65+	0	0.0	0	0.0	0	0.0
Total	168	2.6	167	2.6	335	2.6

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note: Excludes 1 case for which sex and/or age were unknown

Map 2.3.1: Incidence Rates of Mumps by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010]

Note: Health unit refers to diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 2.3.2: Incidence of Mumps by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Oxford County	309	291.3
Brant County	15	10.9
Haldimand-Norfolk	2	1.8
Leeds-Grenville and Lanark District	1	0.6
Niagara Region	2	0.5
Simcoe Muskoka District	1	0.2
York Region	2	0.2
Ottawa, City of	1	0.1
Peel Region	1	0.1
Toronto	2	0.1
Algoma District	0	0.0
Chatham-Kent	0	0.0
Durham Region	0	0.0
Eastern Ontario	0	0.0
Elgin-St. Thomas	0	0.0
Grey-Bruce	0	0.0
Haliburton-Kawartha-Pine Ridge District	0	0.0
Halton Region	0	0.0
Hamilton, City of	0	0.0
Hastings Prince Edward Counties	0	0.0
Huron County	0	0.0
Kingston-Frontenac and Lennox and Addington	0	0.0
Lambton County	0	0.0
Middlesex-London	0	0.0
North Bay Parry Sound District	0	0.0
Northwestern	0	0.0
Perth District	0	0.0
Peterborough County	0	0.0
Porcupine	0	0.0
Renfrew County and District	0	0.0
Sudbury and District	0	0.0
Thunder Bay District	0	0.0
Timiskaming	0	0.0
Waterloo Region	0	0.0
Wellington-Dufferin-Guelph	0	0.0
Windsor-Essex County	0	0.0
Ontario	336	2.6

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

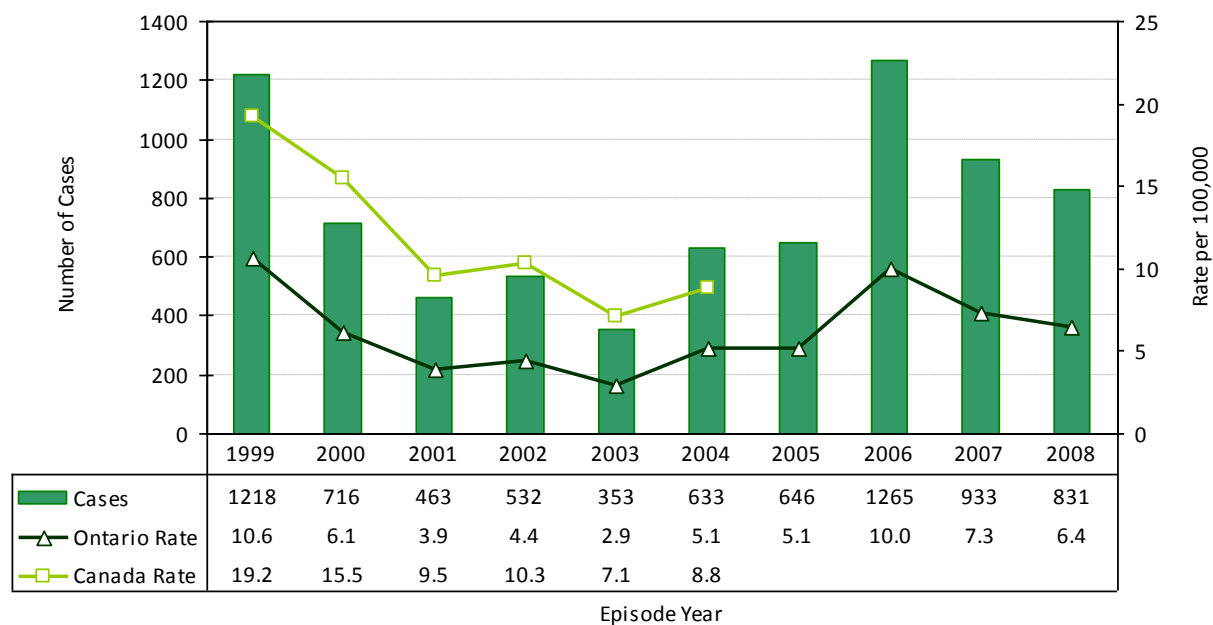
Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note: Health unit refers to diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

2.4 PERTUSSIS

- In 2008, Ontario reported 831 confirmed cases of pertussis, which represents an incidence rate of 6.4 cases per 100,000 population (Figure 2.4.1).
- The incidence rate of pertussis in Ontario declined by 73% from 10.6 cases per 100,000 population in 1999 to 2.9 cases per 100,000 population in 2003. In subsequent years (2004-2008), the incidence of pertussis increased, peaking at 10.0 cases per 100,000 population in 2006. The increase since 2004 is due in part to the change to more sensitive laboratory testing techniques in 2005 (Figure 2.4.1).
- Confirmed cases of pertussis in 2008 peaked in January and from September to December, and were lowest in the warmer months, which is indicative of a seasonal increase during the winter period (Figure 2.4.2).
- In 2008, the incidence rates for pertussis for males and females were similar, at 6.3 and 6.5 cases per 100,000 population, respectively (Figure 2.4.3, Table 2.4.1).
- The incidence of pertussis in Ontario declined with increasing age, with children under the age of 5 years accounting for more than half (54%) of all cases in 2008 (Figure 2.4.3, Table 2.4.1).
- Toronto and York Region reported the highest incidence rates of pertussis at 16.1 and 14.9 cases per 100,000 population, respectively. Eight health units reported zero cases of pertussis in 2008 (Map 2.4.1, Table 2.4.2).

Figure 2.4.1: Incidence of Pertussis in Ontario and Canada: 1999-2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

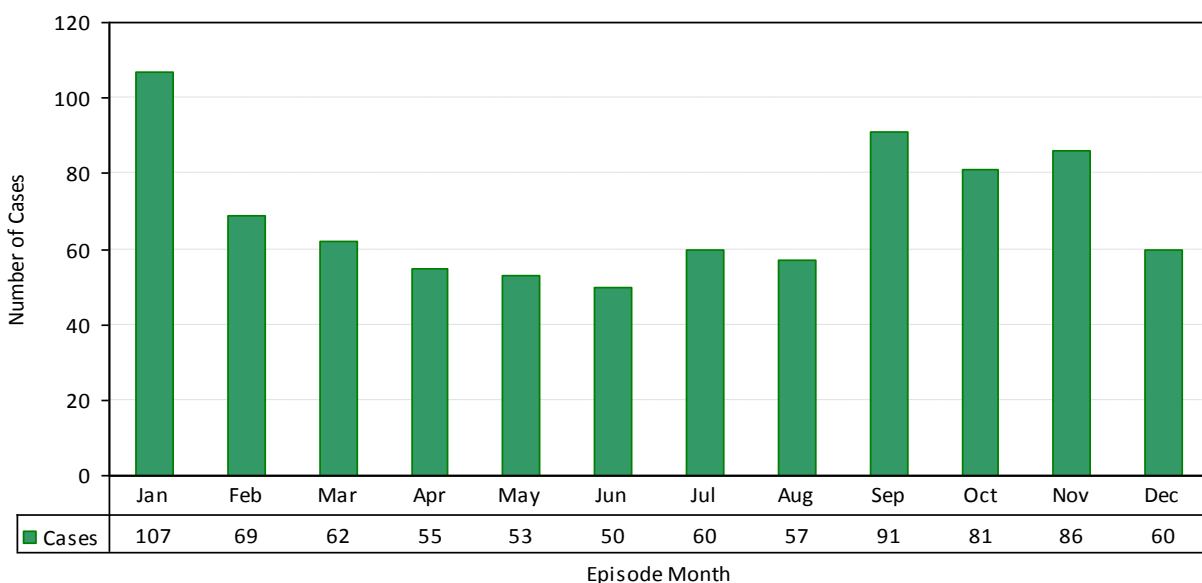
Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded March 6, 2009: http://dsol-smed.phac.aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010]

Note 1: Canadian rates available up to 2004.

Note 2: Publicly funded tetanus, diphtheria and acellular pertussis vaccine (Adacel [dTap]) for adolescents aged 14-16 years introduced in 2003 - replaced the Td-IPV adolescent booster dose.

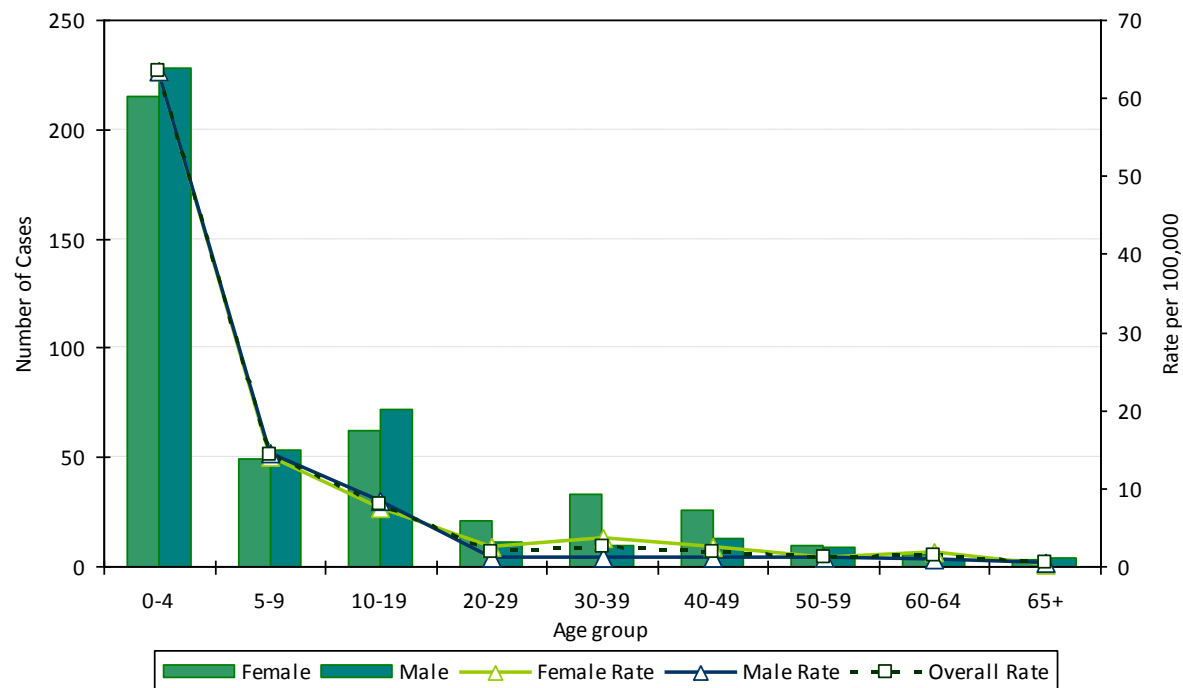
Figure 2.4.2: Incidence of Pertussis by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 2.4.3: Incidence of Pertussis by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note: Excludes 3 cases for which sex and/or age were unknown

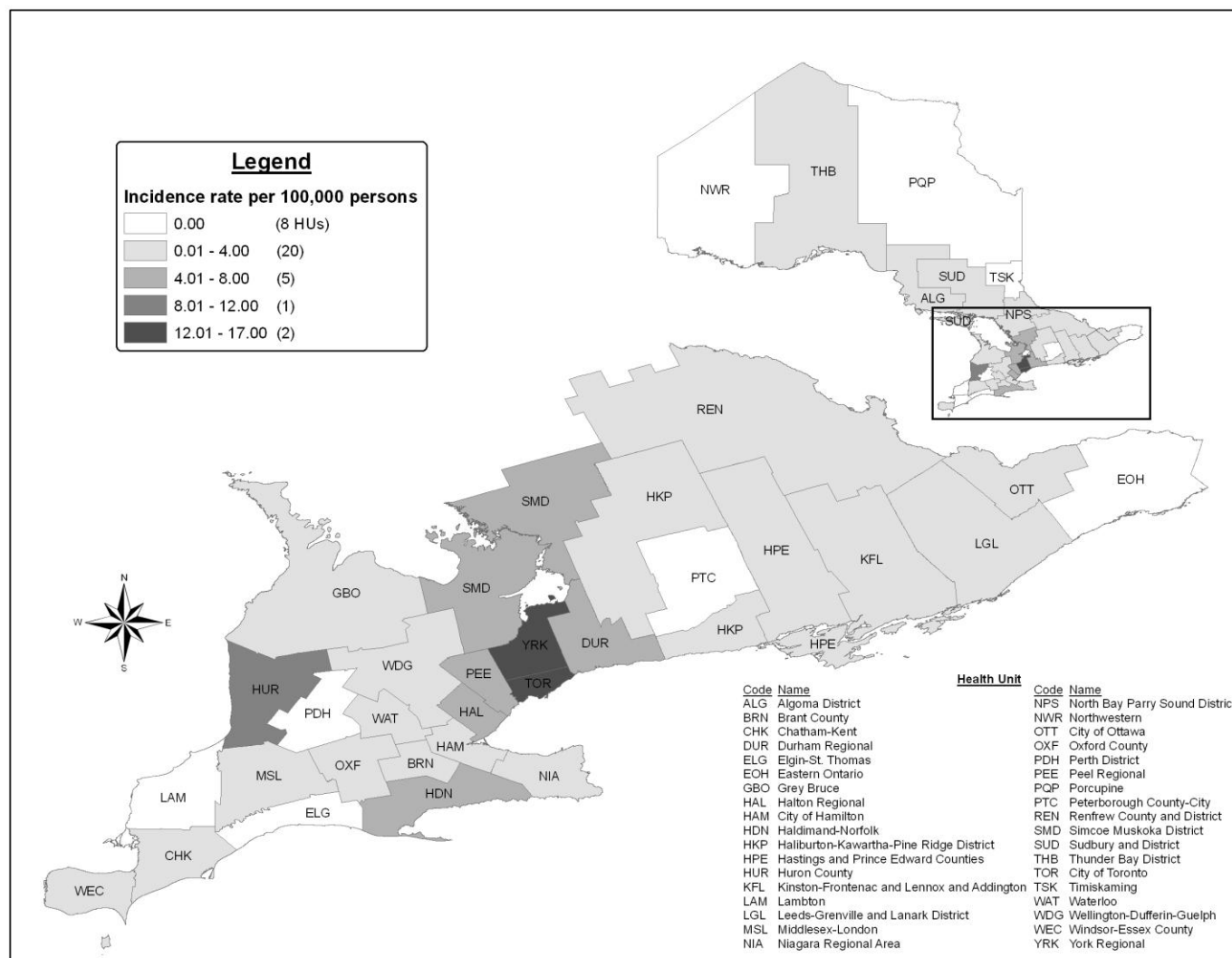
Table 2.4.1: Incidence of Pertussis by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	215	63.3	228	63.4	443	63.4
5-9	49	14.0	53	14.4	102	14.2
10-19	62	7.5	72	8.3	134	7.9
20-29	21	2.4	11	1.2	32	1.8
30-39	33	3.7	10	1.1	43	2.4
40-49	26	2.5	13	1.2	39	1.9
50-59	10	1.1	9	1.0	19	1.1
60-64	6	1.7	3	0.9	9	1.3
65+	3	0.3	4	0.5	7	0.4
Total	425	6.5	403	6.3	828	6.4

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Excludes 3 cases for which sex and/or age were unknown

Map 2.4.1: Incidence Rates of Pertussis by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010]

Note: Health unit refers to diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 2.4.2: Incidence of Pertussis by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Toronto	428	16.1
York Region	147	14.9
Huron County	5	8.2
Peel Region	76	5.9
Durham Region	33	5.5
Halton Region	25	5.2
Simcoe Muskoka District	24	4.7
Haldimand-Norfolk	5	4.5
Waterloo Region	16	3.1
Oxford County	3	2.8
Hamilton	14	2.7
Haliburton, Kawartha, Pine Ridge	4	2.3
Ottawa	17	2.0
Thunder Bay District	3	1.9
Wellington-Dufferin-Guelph	5	1.9
Leeds, Grenville and Lanark District	3	1.8
Kingston, Frontenac, Lennox & Addington	3	1.6
North Bay Parry Sound District	2	1.6
Grey Bruce	2	1.2
Renfrew County and District	1	1.0
Sudbury and District	2	1.0
Windsor-Essex County	4	1.0
Chatham-Kent	1	0.9
Niagara Region	4	0.9
Algoma District	1	0.8
Brant County	1	0.7
Hastings & Prince Edward Counties	1	0.6
Middlesex-London	1	0.2
Eastern Ontario	0	0.0
Elgin-St. Thomas	0	0.0
Lambton County	0	0.0
Northwestern	0	0.0
Perth District	0	0.0
Peterborough County-City	0	0.0
Porcupine	0	0.0
Timiskaming	0	0.0
Ontario	831	6.4

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

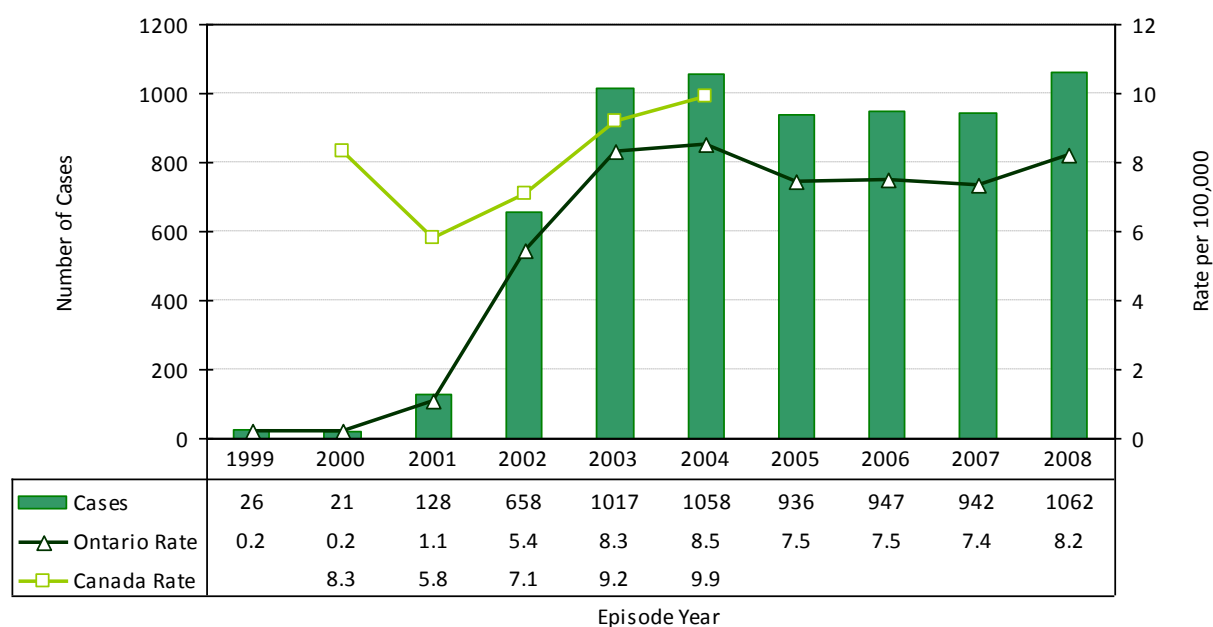
Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note: Health unit refers to diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

2.5 STREPTOCOCCUS PNEUMONIAE, INVASIVE

- In 2008, Ontario reported 1,062 confirmed cases of invasive *S. pneumoniae*, which represents an incidence rate of 8.2 cases per 100,000 population (Figure 2.5.1).
- Between 2005 and 2007, the incidence rate of invasive *S. pneumoniae* stabilized to approximately 7.5 cases per 100,000 population (940 case per year). In 2008, the incidence rate of *S. pneumoniae* increased by 9% to 8.2 cases per 100,000 population (Figure 2.5.1).
- The national incidence rate of invasive *S. pneumoniae* was higher than Ontario's between 1999 and 2004. In 2004, the gap narrowed to 16% following stabilization of both surveillance systems. (Figure 2.5.1).
- Confirmed cases of invasive *S. pneumoniae* followed a seasonal trend in 2008, with the majority of cases (81%) occurring in the cooler months (January to May and October to December) and the remaining cases (19%) occurring in the warmer months from June to September (Figure 2.5.2).
- In 2008, invasive *S. pneumoniae* was reported more frequently among males at 8.8 cases per 100,000 population compared to females at 7.6 per 100,000 (Figure 2.5.3, Table 2.5.1).
- While persons aged 65 years and older accounted for the highest number of confirmed cases, the highest incidence rates occurred among persons at both ends of the age spectrum. Cases aged 65 years and older had the highest incidence rate at 24 cases per 100,000 population and cases under the age of one had the second highest incidence rate at 17 cases per 100,000 population (Figure 2.5.3, Table 2.5.1).
- The incidence rate of *S. pneumoniae* varied across health units with the three highest rates occurring in Thunder Bay (16.0 cases per 100,000 population), Perth District (15.6 per 100,000), and Haldimand-Norfolk health units (14.5 per 100,000) (Map 2.5.1 and Table 2.5.2).

Figure 2.5.1: Incidence of Invasive Streptococcus Pneumoniae in Ontario and Canada: 1999-2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

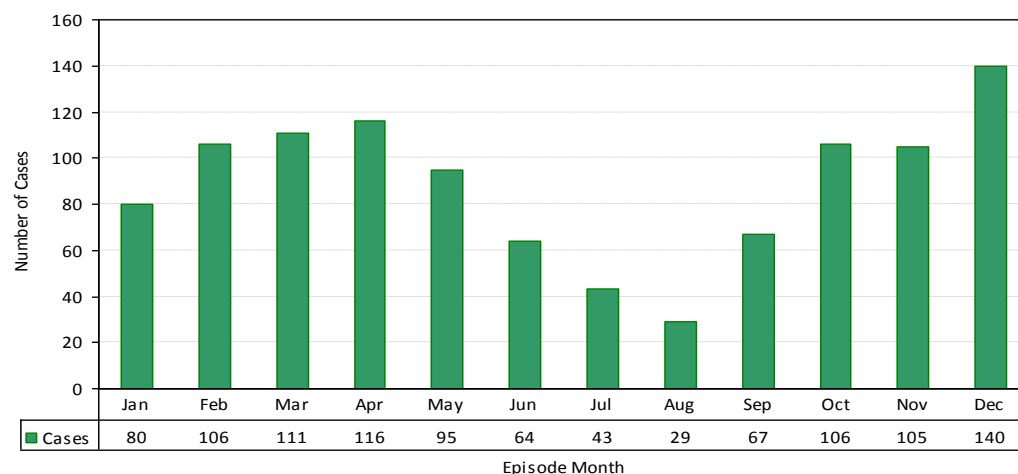
Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010]

Note 1: Invasive *S. pneumoniae* became nationally reportable in 2000 and are available up to 2004.

Note 2: Invasive *S. pneumoniae* became reportable in Ontario in 2001. Interpret Ontario trend before 2003 with caution: Consistency in reporting was not achieved until 2003.

Note 3: Publicly funded Pneumococcal conjugate vaccine was introduced in September 2003 for high risk children under the age of 2 years, expanded in July 2004 to include high risk children under the age of 5 years and in January 2005 to include all children under the age of 2 years.

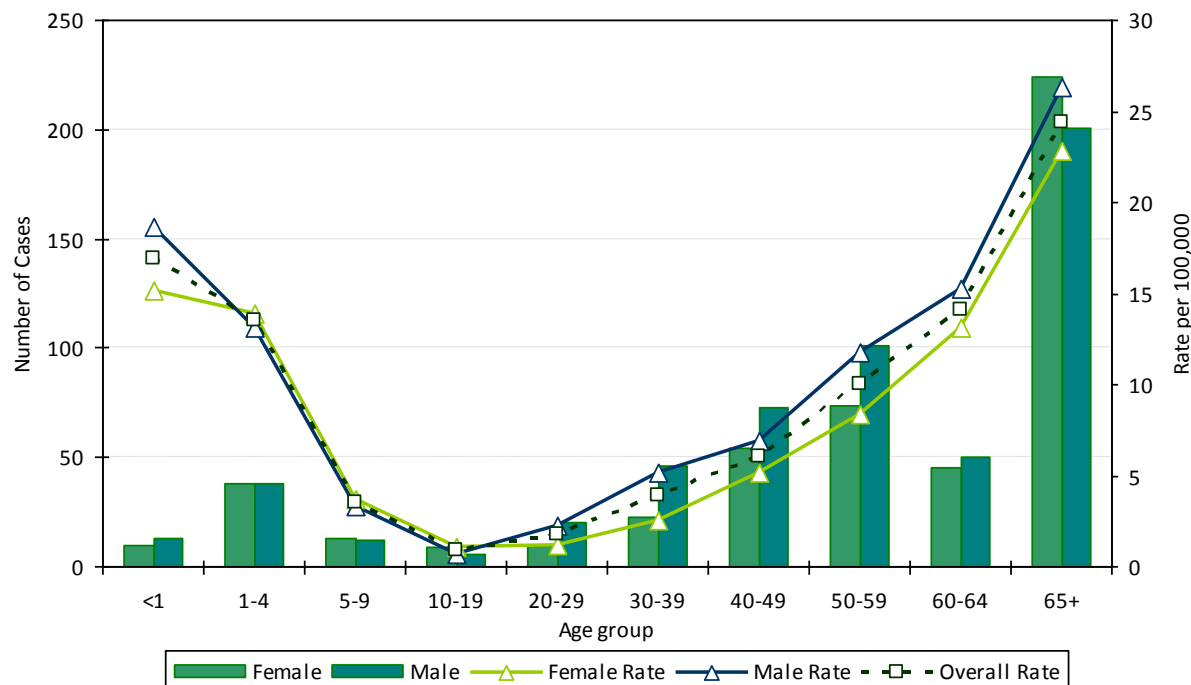
Figure 2.5.2: Incidence of Invasive Streptococcus Pneumoniae by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 2.5.3: Incidence of Streptococcus Pneumoniae by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note: Excludes 2 cases for which sex and/or age were unknown

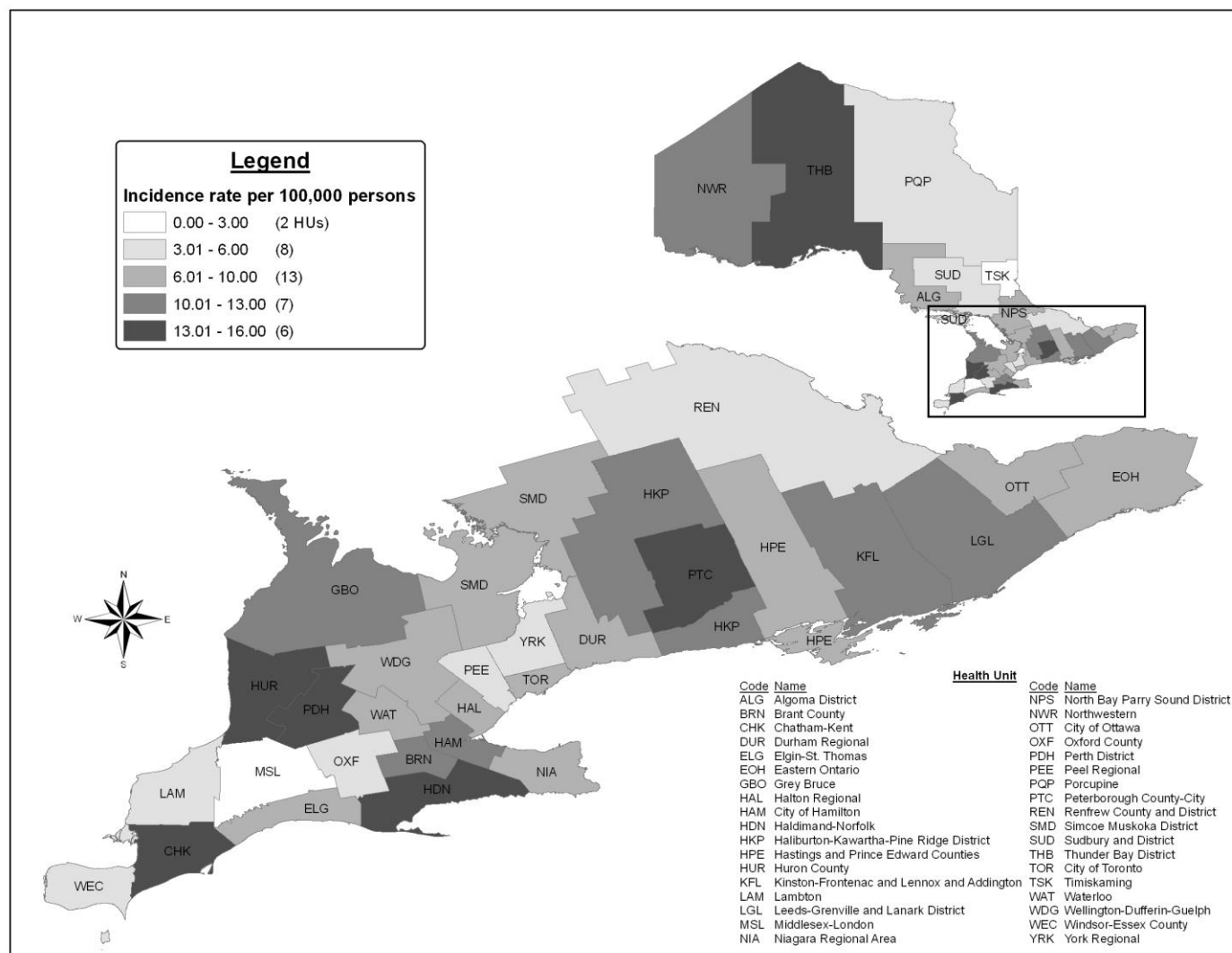
Table 2.5.1: Incidence of Streptococcus Pneumoniae by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
<1	10	15.1	13	18.6	23	16.9
1-4	38	13.9	38	13.1	76	13.5
5-9	13	3.7	12	3.3	25	3.5
10-19	9	1.1	6	0.7	15	0.9
20-29	10	1.1	20	2.3	30	1.7
30-39	23	2.5	46	5.2	69	3.8
40-49	54	5.2	73	6.9	127	6.0
50-59	74	8.4	101	11.7	175	10.0
60-64	45	13.1	50	15.2	95	14.1
65+	224	22.8	201	26.3	425	24.4
Total	500	7.6	560	8.8	1,060	8.2

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Excludes 2 cases for which sex and/or age were unknown

Map 2.5.1: Incidence Rates of Streptococcus Pneumoniae by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010]

Note: Health unit refers to diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 2.5.2: Incidence of Streptococcus Pneumoniae by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Thunder Bay District	25	16.0
Perth District	12	15.6
Haldimand-Norfolk	16	14.5
Chatham-Kent	16	14.4
Huron County	8	13.2
Peterborough County-City	18	13.1
Grey Bruce	21	12.9
Northwestern	10	12.2
Brant County	16	11.6
Hamilton	58	11.0
Kingston, Frontenac, Lennox & Addington	21	10.9
Haliburton, Kawartha, Pine Ridge	18	10.2
Leeds, Grenville and Lanark District	17	10.1
Algoma District	12	10.0
Hastings & Prince Edward Counties	16	9.8
Niagara Region	42	9.5
Toronto	250	9.4
Waterloo Region	47	9.2
Wellington-Dufferin-Guelph	24	8.9
Ottawa	77	8.9
Simcoe Muskoka District	45	8.8
North Bay Parry Sound District	11	8.7
Eastern Ontario	17	8.5
Elgin-St. Thomas	7	7.8
Durham Region	43	7.1
Halton Region	31	6.5
Lambton County	8	6.0
Sudbury and District	12	6.0
Porcupine	5	5.7
Peel Region	72	5.6
York Region	55	5.6
Windsor-Essex County	19	4.7
Renfrew County and District	4	3.9
Oxford County	4	3.8
Middlesex-London	5	1.1
Timiskaming	0	0.0
Ontario	1,062	8.2

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [05/03/2010].

Note: Health unit refers to diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Chapter 3: SEXUALLY TRANSMITTED AND BLOODBORNE INFECTIONS

- Chlamydia was the most frequently reported sexually transmitted infection (STI) (and reportable disease) in Ontario in 2008 with 26,200 confirmed cases. Gonorrhea and syphilis were the second and third most commonly reported bacterial STIs with 3,868 and 452 confirmed cases, respectively (Table 3.1).
- The incidence of chlamydia and gonorrhea increased gradually over the period 1999-2008, with chlamydia increasing by 94% and gonorrhea by 70% over this period (Figure 3.1.1.).
- The annual incidence of syphilis increased from an average of 50 cases or 0.4 cases per 100,000 population in the early 2000's to at least 2.0 cases per 100,000 population since 2002. The incidence rate in 2008 was 3.5 cases per 100,000 population (Figure 3.7.1).
- Rates of chlamydia and gonorrhea were highest among the 20-24 age group (Table 3.1.1 and 3.2.1). Northwestern health unit had the highest incidence rate for both diseases (Tables 3.1.2 and 3.2.2).
- Lack of condom use during sex was reported as the main risk factor for acquiring both chlamydia and gonorrhea (Tables 3.1.3 and 3.2.3).
- Most confirmed cases of HIV and syphilis were reported in the health units of Toronto and Ottawa (Tables 3.6.2 and 3.7.2), and among men between the ages of 25 and 49 years (Tables 3.6.1 and 3.7.1). Men having sex with men (MSM) was the most frequently reported risk factor for acquiring both diseases (Tables 3.6.3 and 3.7.3).
- From 1999-2008, the rate of HIV in Ontario has remained relatively stable and comparable to that of Canada (Figure 3.6.1). During this period, the rate of AIDS continued to decline, although the decline has been faster in Canada than in Ontario (Figure 3.6.2).
- The rate of Hepatitis C declined over the past 10 years (Figure 3.5.1). The top three risk factors reported were intravenous and intranasal drug use; non-medical invasive procedures such as tattooing, piercing, electrolysis and acupuncture; and out of Canada exposures (Table 3.5.3).
- The incidence of Hepatitis B has remained relatively stable over the past 10 years, with an average annual incidence rate of 1.3 cases per 100,000 population. The most commonly reported risks were out of Canada exposures, sexual exposures, and intravenous and intranasal drug use (Table 3.4.3).
- One hundred and four cases of mother to child transmission of sexually transmitted and blood-borne infections were reported in 2008. These infections included 54 cases of neonatal Group B streptococcal disease, 17 cases of Hepatitis C, 13 cases of congenital chlamydia, 8 cases of neonatal herpes, 7 cases of HIV, 3 cases of cytomegalovirus and 1 case each for Hepatitis B and congenital syphilis. No cases of congenital gonorrhea were reported in 2008.

Table 3.1: Incidence of Sexually Transmitted and Bloodborne Infections; Ontario, 1999-2008

Sexually Transmitted and Bloodborne Infections ²	1999		2000		2001		2002		2003		2004		2005		2006		2007		2008	
	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹
Chlamydia	13513	117.4	14805	126.7	16360	137.5	18363	151.7	19478	158.8	20801	167.5	21931	174.6	22542	177.7	23275	181.8	26200	202.6
Gonorrhea	2271	19.7	2858	24.0	2954	24.8	3085	25.5	3360	27.4	3513	28.3	3325	26.5	3860	30.4	3954	30.9	3868	29.9
Infectious Syphilis	54	0.5	49	0.4	52	0.4	241	2.0	427	3.5	496	4.0	360	2.9	366	2.9	401	3.1	452	3.5
Hepatitis B (acute)	143	1.2	148	1.3	123	1.0	152	1.3	172	1.4	168	1.4	161	1.3	187	1.5	182	1.4	144	1.1
Hepatitis C (acute)	6811	59.2	6009	51.4	5572	46.8	5479	45.3	5491	44.8	5418	43.6	4616	36.8	3999	31.5	4512	35.4	4695	36.1
Hepatitis D	7	0.1	10	0.1	8	0.1	9	0.1	2	0.0	2	0.0	9	0.1	4	0.0	2	0.0	5	0.0
HIV ³	750	6.5	773	6.6	857	7.2	982	8.1	943	7.7	990	8.0	901	7.2	983	7.7	946	7.4	948	7.3
AIDS	216	1.9	172	1.5	204	1.7	186	1.5	213	1.7	189	1.5	196	1.6	131	1.0	129	1.0	133	1.0
Group B Streptococcus	47	0.4	53	0.5	64	0.5	69	0.6	65	0.5	55	0.4	52	0.4	55	0.4	46	0.3	54	0.4
Cytomegalovirus, congenital	11	0.1	8	0.1	4	0.0	6	0.0	8	0.1	7	0.1	7	0.1	8	0.1	4	0.0	3	0.0
Herpes, neonatal	10	0.1	1	0.0	4	0.0	5	0.0	2	0.0	11	0.1	5	0.0	5	0.0	3	0.0	8	0.1
Ophthalmia neonatorum	7	0.1	11	0.1	7	0.1	3	0.0	4	0.0	6	0.0	6	0.0	3	0.0	3	0.0	3	0.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [11/02/2010] for 2008.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008

Note 1: Incidence rate per 100,000 population

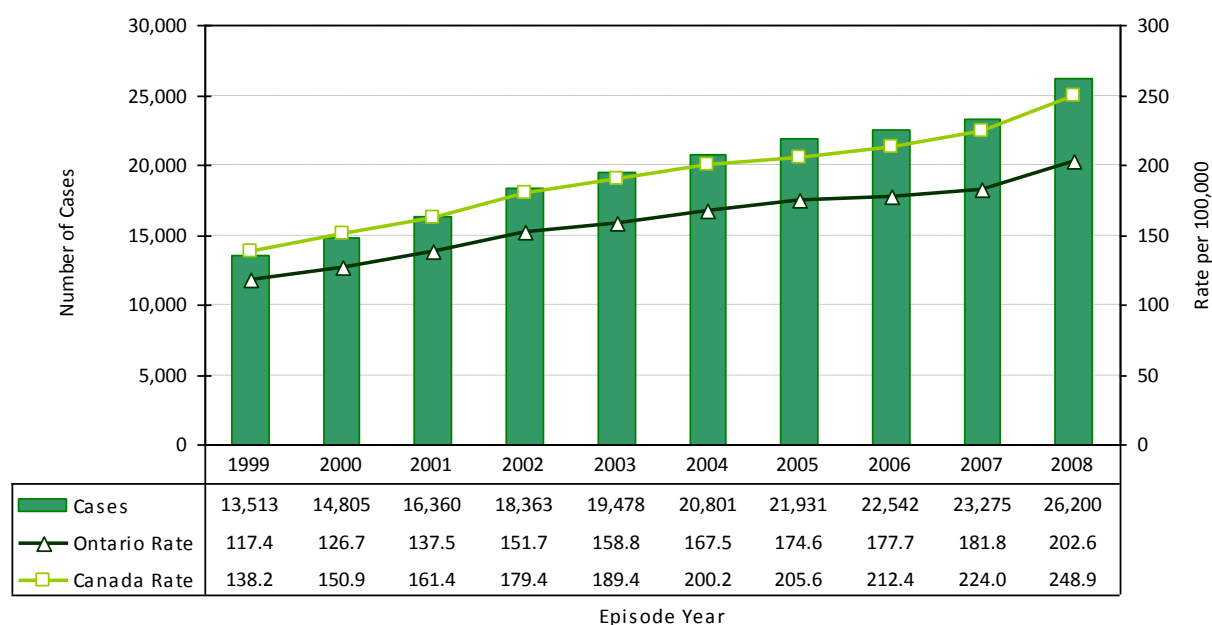
Note 2: No cases were reported for the following sexually transmitted and bloodborne infections in Ontario during the period 1999-2007: hemorrhagic fevers and chancroid

Note 3: HIV became reportable in 2002 pursuant to the Ontario Health Protection and Promotion Act, O. Reg. 749/91, s. 1. Previously, only AIDS was reportable. This may explain the increase in HIV incidence in 2002.

3.1 CHLAMYDIA

- In 2008, chlamydia was the most frequently reported sexually transmitted infection in Ontario with a total of 26,200 confirmed cases which represents 203 cases per 100,000 population (Table 3.1).
- Over the last ten years, the incidence rate of chlamydia in Ontario increased steadily from 117 cases per 100,000 population in 1999 to 203 cases per 100,000 population in 2008, an increase of 73%. During this period, Canada reported a comparable and increasing trend that grew faster than Ontario's at an average of 12 cases per year per 100,000 population per year compared to 9 cases per 100,000 population per year for Ontario (Figure 3.1.1).
- In 2008, the incidence rate of chlamydia among females was about 80% higher than that of their male counterparts (259 cases per 100,000 compared to 144 cases per 100,000 population, respectively) (Table 3.1.1). This may be explained in part by the higher likelihood of chlamydia screening and detection during routine medical care for females.
- The incidence rate of chlamydia was highest among persons aged 20-24 years at 1,097 cases per 100,000 population. Sex-specific incidence rates for this age group were also the highest at 1,475 and 735 cases per 100,000 population for females and males, respectively (Figure 3.1.2).
- Northwestern Health Unit (596 cases per 100,000 population) and Thunder Bay District Health Unit (282 cases per 100,000 population) in northern Ontario reported the first and second highest incidence rates of chlamydia in 2008. Toronto Public Health reported the third highest incidence rate at 278 cases per 100,000 population. Huron County Health Unit had the lowest incidence rate of chlamydia in 2008 at 54 cases per 100,000 population (Map 3.1.1, Table 3.1.2).
- The most frequently reported risk factors for acquiring chlamydia among confirmed chlamydia cases reporting at least one risk factor were lack of condom use (85%), having multiple sex partners in the last 6 months (16%), and having a new partner in the last 2 months (15%) (Table 3.1.3).
- Among women with chlamydia reporting at least one risk factor, 423 reported being pregnant, resulting in maternal transmission to 10 infants in 2008.
- Of the 26,200 confirmed cases of chlamydia reported in 2008, 1,242 (5%) reported having a simultaneous infection (co-infection) with gonorrhea.
- Individuals with single episodes of chlamydia accounted for 92% (24,080) of chlamydia cases reported in 2008. The remaining 8% (2,120) of cases were reported by 1,026 individuals who had reoccurring infections. Among these individuals, 962 had two episodes of chlamydia, 60 had three episodes and 4 had four or more episodes.

Figure 3.1.1: Incidence of Chlamydia in Ontario and Canada: 1999-2008

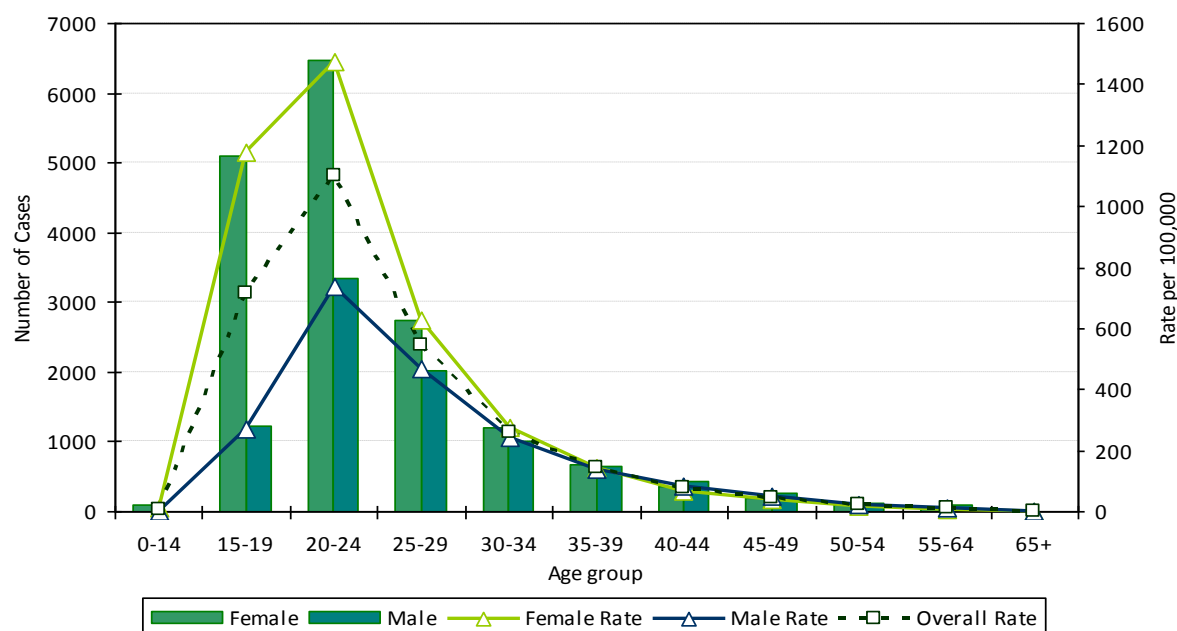


Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Data Source (Canadian data): Public Health Agency of Canada. STI Data Tables. Downloaded September 28, 2010: http://www.phac-aspc.gc.ca/std-mts/sti-its_tab/chlamydia1991-08-eng.php.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Figure 3.1.2: Incidence of Chlamydia by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note 1: The 0-14 age category includes 10 cases in neonates (<28 days old)

Note 2: Total does not include 63 cases for which sex and/or age were unknown

Table 3.1.1: Incidence of Chlamydia by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-14 ¹	95	8.8	12	1.1	107	4.8
15-19	5,098	1,175.4	1,229	271.2	6,327	713.4
20-24	6,464	1,474.6	3,355	735.0	9,819	1,097.3
25-29	2,732	625.3	2,010	466.9	4,742	546.6
30-34	1,203	274.1	1,017	239.9	2,220	257.3
35-39	669	143.8	644	138.4	1,313	141.1
40-44	350	68.1	442	85.2	792	76.7
45-49	200	37.5	254	47.0	454	42.3
50-54	85	17.9	113	24.1	198	21.0
55-64	58	7.7	88	12.2	146	9.9
65+	9	0.9	11	1.4	20	1.1
Total²	16,963	259.0	9,175	143.8	26,138	202.2

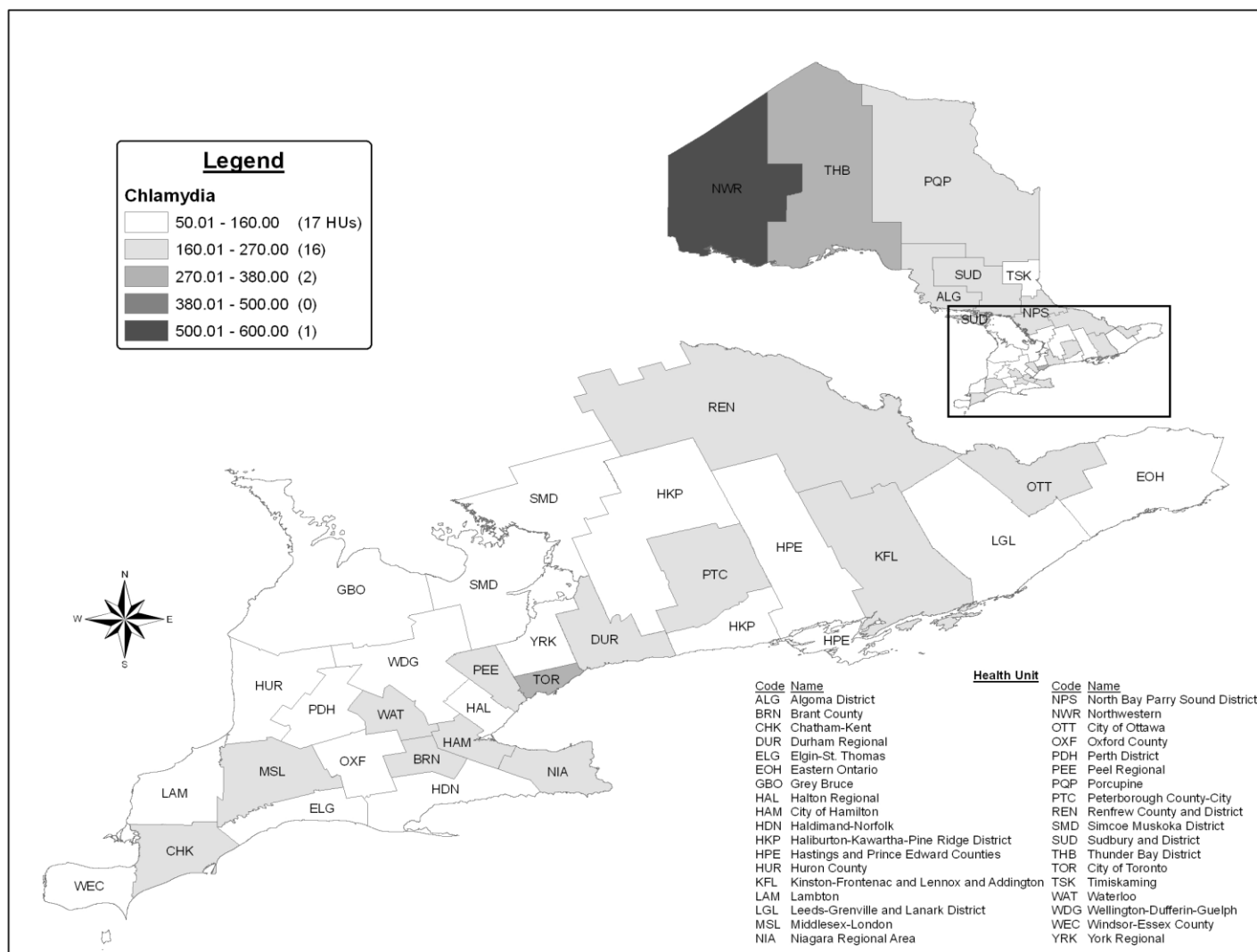
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note 1: The 0-14 age category includes 10 cases in neonates (<28 days old)

Note 2: Total does not include 63 cases for which sex and/or age were unknown

Map 3.1.1: Incidence Rates of Chlamydia by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.1.2: Incidence of Chlamydia by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Northwestern	487	596.0
Thunder Bay District	440	281.5
Toronto	7,378	278.2
Middlesex-London	1,209	269.9
Porcupine	232	262.5
Algoma District	288	240.9
Kingston, Frontenac, Lennox & Addington	451	234.9
Peterborough County-City	315	228.6
Sudbury and District	447	223.9
Hamilton	1,147	217.5
Ottawa	1,877	216.3
North Bay Parry Sound District	271	214.3
Waterloo Region	1,033	202.2
Durham Region	1,213	200.4
Peel Region	2,544	197.9
Brant County	269	194.9
Niagara Region	772	174.6
Chatham-Kent	187	168.2
Renfrew County and District	167	161.8
Windsor-Essex County	641	157.9
Timiskaming	55	156.8
Lambton County	201	151.9
Simcoe Muskoka District	746	146.7
Hastings & Prince Edward Counties	237	145.1
Grey Bruce	236	144.7
Elgin-St. Thomas	124	137.7
Wellington-Dufferin-Guelph	369	137.0
York Region	1,299	131.2
Perth District	99	128.4
Oxford County	135	127.3
Eastern Ontario	235	118.1
Haliburton, Kawartha, Pine Ridge	207	117.2
Leeds, Grenville and Lanark District	193	114.4
Haldimand-Norfolk	125	113.1
Halton Region	538	112.2
Huron County	33	54.3
Ontario	26,200	202.6

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.1.3: Risk Factors and Risk Settings for Chlamydia Cases: Ontario, 2008

Risk Factors and Settings	Females		Males		Total	
	Cases (n=8,444)	Percent (%)	Cases (n=4,784)	Percent (%)	Cases (n=13,228)	Percent (%)
No condom used	7,252	85.9	3,994	83.5	11,246	85.0
Multiple sex partners in last 6 months	953	11.3	1,123	13.3	2,076	15.7
New partner in last 2 months	1,107	13.1	925	11.0	2,032	15.4
Condom breakage	407	4.8	315	3.7	722	5.5
Partner with multiple sex partners	524	6.2	149	1.8	673	5.1
Judgement impaired by alcohol/drugs	282	3.3	269	3.2	551	4.2
Other ¹	100	1.2	124	1.5	224	1.7

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [10/12/2010].

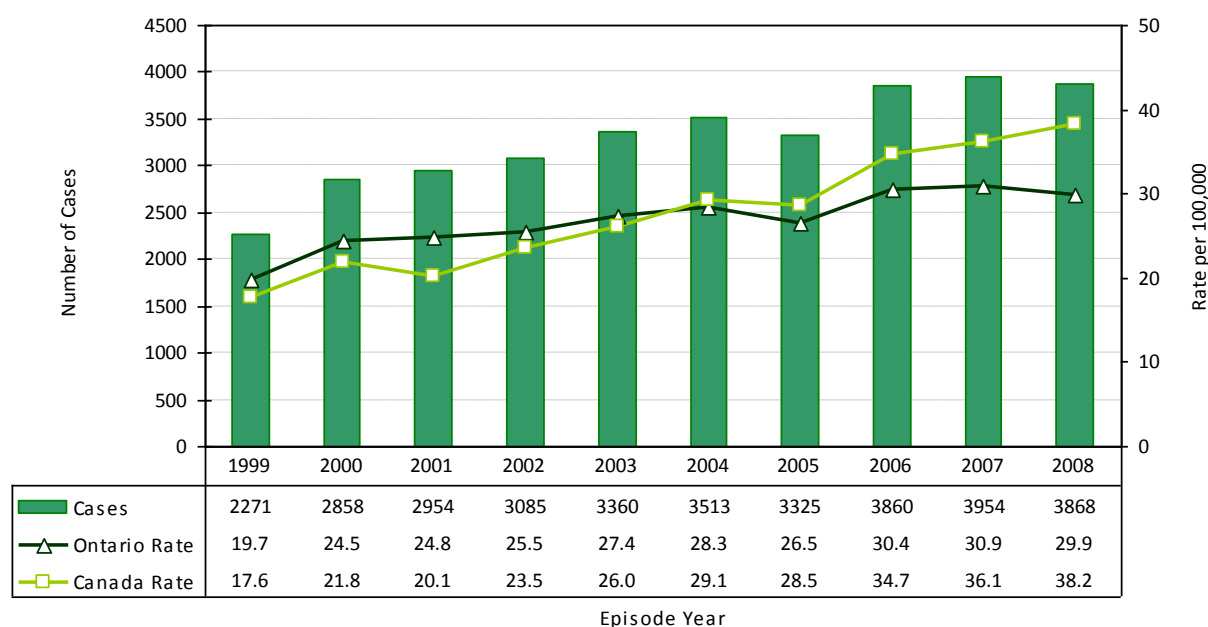
Note 1: Other includes the following risk factors: casual encounters, sex with same sex, sex with sex trade worker, sex trade worker, shared sex toys, born to an infected mother and being homeless

Note 2: Cases may report more than 1 risk factor; risk factors were reported by ~50% of reported cases in 2008

3.2 GONORRHEA

- Gonorrhea was the second most frequently reported sexually transmitted infection in Ontario in 2008 with a total of 3,868 confirmed cases (Table 3.1.).
- The incidence rate of gonorrhea in Ontario increased steadily from 20 cases per 100,000 population in 1999 to 30 cases per 100,000 population in 2008, an increase of 50% over 10 years. During this period, the incidence rate of gonorrhea in Canada more than doubled from 18 cases per 100,000 population in 1999 to 38 cases per 100,000 population in 2008 (Figure 3.2.1).
- Overall, the incidence rate of gonorrhea in Ontario in 2008 was higher among males (35 cases per 100,000 population) compared to females (25 cases per 100,000 population). However, females under the age of 20 years reported higher incidence rates than their male counterparts (Table 3.2.1).
- The incidence of gonorrhea was highest among persons aged 20-24 years regardless of sex (Figure 3.2.2).
- Similar to chlamydia, Northwestern Health Unit (98 cases per 100,000 population) and Toronto Public Health (63 cases per 100,000 population) were among the top three health units for highest incidence rates for gonorrhea, with Porcupine having the third highest incidence rate (50.9 per 100,000 population). Huron had the lowest incidence rate of gonorrhea at 0 cases per 100,000 population (Map 3.2.1, Table 3.2.2).
- The most frequently reported risk factors for acquiring gonorrhea among confirmed cases reporting at least one risk factor were failure to use a condom (82%), having multiple sex partners in the last 6 months (26%), MSM (35% of male cases) and having a new partner in the last 2 months (19%) (Table 3.2.3).
- Among women with gonorrhea reporting at least one risk factor, 38 reported being pregnant, but these pregnancies did not result in any mother to child transmission.
- Of the 3,868 confirmed cases of gonorrhea reported in 2008, 1,242 (32%) reported having a simultaneous infection (co-infection) with chlamydia.
- Individuals with single episodes of gonorrhea accounted for 92% (3,561) of gonorrhea cases reported in 2008. The remaining 8% (307) of cases were reported by 144 individuals who had recurring infections. Among these individuals, 12 had two episodes of gonorrhea, 15 had three episodes and 2 had four or more episodes.

Figure 3.2.1: Incidence of Gonorrhea in Ontario and Canada: 1999-2008

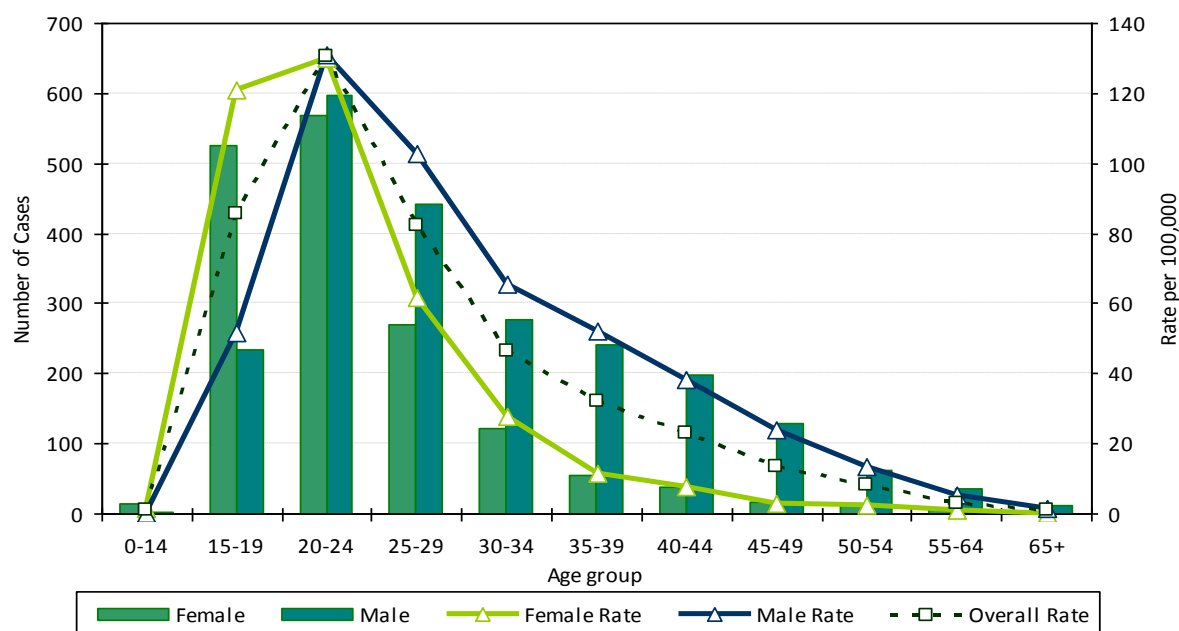


Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Data Source (Canadian data): Public Health Agency of Canada. STI Data Tables. Downloaded September 28, 2010: http://www.phac-aspc.gc.ca/std-mts/sti-its_tab/gonorrhea1980-08-eng.php.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Figure 3.2.2: Incidence of Gonorrhea by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: The 0-14 age category does not include any cases among neonates (<28 days old)

Note: Excludes 4 cases for which sex and/or age were unknown

Table 3.2.1: Incidence of Gonorrhea by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-14 ¹	14	1.3	2	0.2	16	0.7
15-19	525	121.0	233	51.4	758	85.5
20-24	569	129.8	597	130.8	1,166	130.3
25-29	270	61.8	443	102.9	713	82.2
30-34	122	27.8	278	65.6	400	46.4
35-39	54	11.6	242	52.0	296	31.8
40-44	39	7.6	199	38.4	238	23.0
45-49	16	3.0	128	23.7	144	13.4
50-54	12	2.5	63	13.4	75	7.9
55-64	8	1.1	37	5.1	45	3.1
65+	1	0.1	12	1.6	13	0.7
Total²	1,630	24.9	2,234	35.0	3,864	29.9

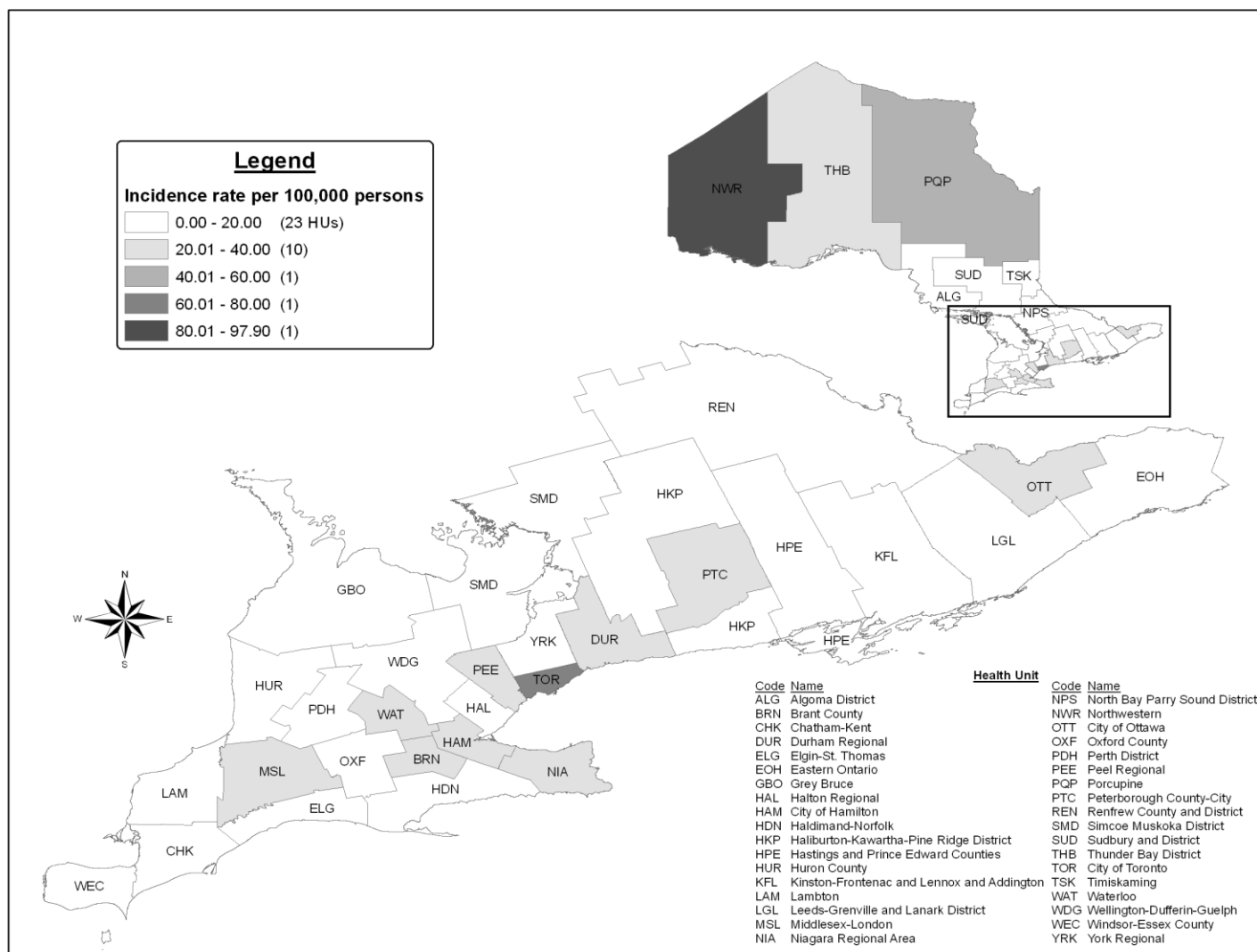
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note 1: The 0-14 age category does not include any cases among neonates (<28 days old)

Note 2: Total does not include 4 cases for which sex and/or age were unknown

Map 3.2.1: Incidence Rates of Gonorrhea Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.2.2: Incidence of Gonorrhea by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Northwestern	80	97.9
Toronto	1,680	63.3
Porcupine	45	50.9
Middlesex-London	170	38.0
Thunder Bay District	54	34.5
Waterloo Region	171	33.5
Peel Region	425	33.1
Durham Region	188	31.1
Brant County	42	30.4
Hamilton	149	28.3
Niagara Region	106	24.0
Ottawa	198	22.8
Peterborough County-City	31	22.5
Chatham-Kent	21	18.9
Kingston, Frontenac, Lennox & Addington	35	18.2
Sudbury and District	32	16.0
Oxford County	16	15.1
Algoma District	17	14.2
Halton Region	62	12.9
Hastings & Prince Edward Counties	20	12.2
York Region	119	12.0
Wellington-Dufferin-Guelph	30	11.1
Windsor-Essex County	44	10.8
Simcoe Muskoka District	47	9.2
Lambton County	11	8.3
Elgin-St. Thomas	7	7.8
North Bay Parry Sound District	9	7.1
Eastern Ontario	14	7.0
Grey Bruce	11	6.7
Timiskaming	2	5.7
Haliburton, Kawartha, Pine Ridge	10	5.7
Leeds, Grenville and Lanark District	9	5.3
Perth District	4	5.2
Renfrew County and District	5	4.8
Haldimand-Norfolk	4	3.6
Huron County	0	0.0
Ontario	3,868	29.9

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.2.3: Risk Factors and Risk Settings for Gonorrhea Cases: Ontario, 2008

Risk Factors and Settings	Females		Males		Total	
	Cases (n=861)	Percent (%)	Cases (n=1421)	Percent (%)	Cases (n=2282)	Percent (%)
No condom used	714	82.9	1,162	81.8	1,876	82.2
Multiple sex partners in last 6 months	142	16.5	449	31.6	591	25.9
MSM	N/A	N/A	495	34.8	495	21.7
New partner in past 2 months	129	15.0	302	21.3	431	18.9
Condom breakage	72	8.4	115	8.1	187	8.2
Partner with multiple sex partners	89	10.3	71	5.0	160	7.0
Judgement impaired by alcohol/drugs	32	3.7	84	5.9	116	5.1
Bath house	0	0.0	29	2.0	29	1.3
Other ¹	24	2.8	57	4.0	81	3.5

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [10/12/2010].

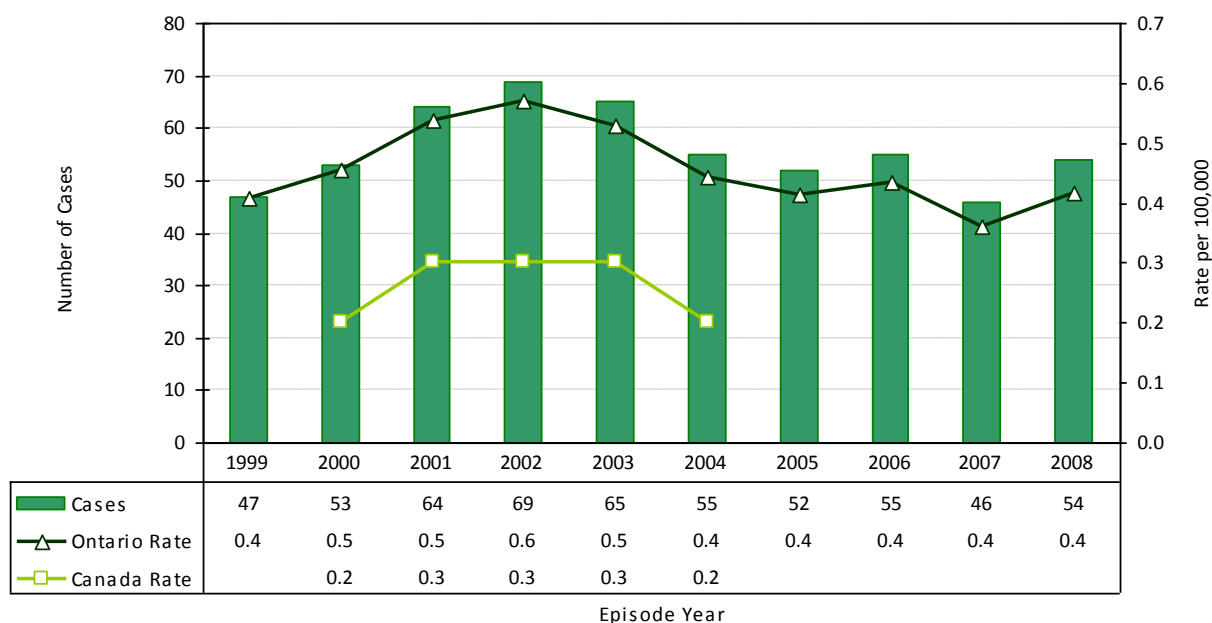
Note 1: Other includes the following risk factors: casual encounters, sex with sex trade worker, sex trade worker, shared sex toys, being homeless, had sex for drugs and born to an infected mother

Note 2: Cases may report more than 1 risk factor; Risk factors were reported by ~ 59% of reported cases in 2008

3.3 GROUP B STREPTOCOCCAL DISEASE, NEONATAL

- Neonatal group B streptococcal disease occurs exclusively among neonates (up to 28 days). In 2008, 54 cases of neonatal group B streptococcal disease were reported in Ontario, representing an incidence rate of 0.4 cases per 100,000 population (Table 3.1).
- The incidence of neonatal group B streptococcal disease peaked in the early 2000's but has remained relatively stable at approximately 50 cases per year since 2004 (Figure 3.3.1).
- Ontario's rate of neonatal group B streptococcal disease was approximately double the corresponding national rates during the years for which national data were available (2000-2004). This may no longer be the case as Ontario's rates have continued to decline (Figure 3.1.1).
- Of cases of neonatal group B streptococcal disease reported in 2008, 28 (52%) were female and 26 (48%) were male.
- Infection of newborns with group B streptococcal disease is serious and can be fatal. Three deaths related to group B streptococcal disease were reported in Ontario in 2008.
- Many public health units reported no cases of group B streptococcal disease in 2008. The highest rates were reported in Grey-Bruce, Porcupine and Renfrew County and District (Map 3.3.1, Table 3.3.2).

Figure 3.3.1: Incidence of Group B Streptococcal Disease in Ontario and Canada: 1999-2008



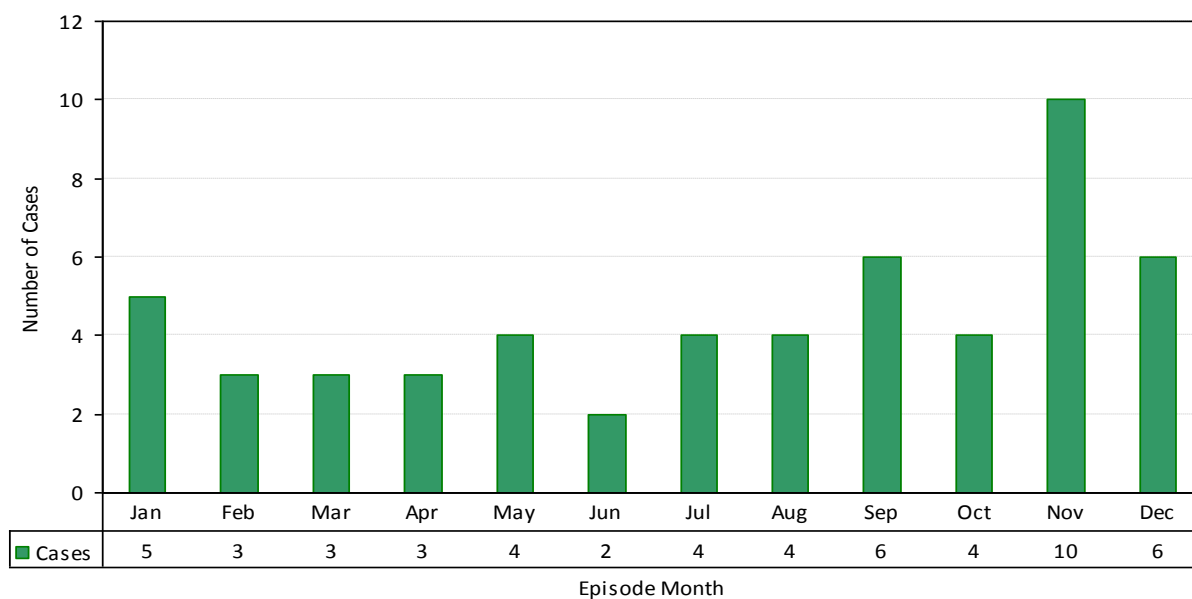
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded March 6, 2009: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Group B streptococcal disease became nationally reportable in 2000; Canadian statistics available up to 2004.

Figure 3.3.2: Incidence of Group B Streptococcal Disease by Episode Month: Ontario, 2008

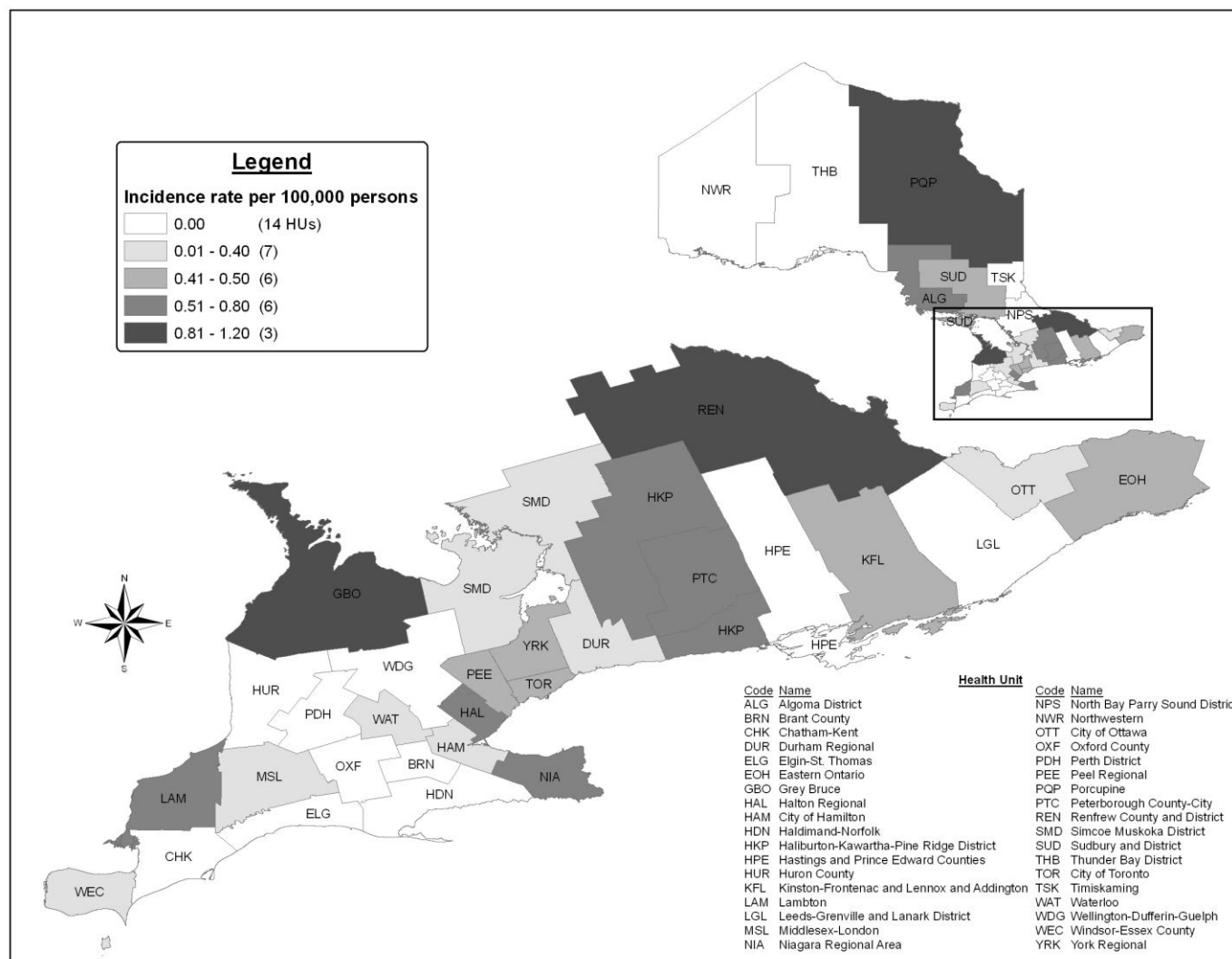


Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009]

Note: Episode month refers to the best estimate of the month of onset of illness.

Map 3.3.1: Group B Streptococcal Disease Cases by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification

Table 3.3.1: Incidence of Group B Streptococcal Disease by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Grey Bruce	2	1.2
Porcupine	1	1.1
Renfrew County and District	1	1.0
Algoma District	1	0.8
Lambton County	1	0.8
Peterborough County-City	1	0.7
Niagara Region	3	0.7
Halton Region	3	0.6
Haliburton, Kawartha, Pine Ridge	1	0.6
Peel Region	7	0.5
Kingston, Frontenac, Lennox & Addington	1	0.5
York Region	5	0.5
Eastern Ontario	1	0.5
Sudbury and District	1	0.5
Toronto	13	0.5
Waterloo Region	2	0.4
Hamilton	2	0.4
Ottawa	3	0.3
Durham Region	2	0.3
Middlesex-London	1	0.2
Windsor-Essex County	1	0.2
Simcoe Muskoka District	1	0.2
Brant County	0	0.0
Chatham-Kent	0	0.0
Elgin-St. Thomas	0	0.0
Haldimand-Norfolk	0	0.0
Hastings & Prince Edward Counties	0	0.0
Huron County	0	0.0
Leeds, Grenville and Lanark District	0	0.0
North Bay Parry Sound District	0	0.0
Northwestern	0	0.0
Oxford County	0	0.0
Perth District	0	0.0
Thunder Bay District	0	0.0
Timiskaming	0	0.0
Wellington-Dufferin-Guelph	0	0.0
Ontario	54	0.4

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

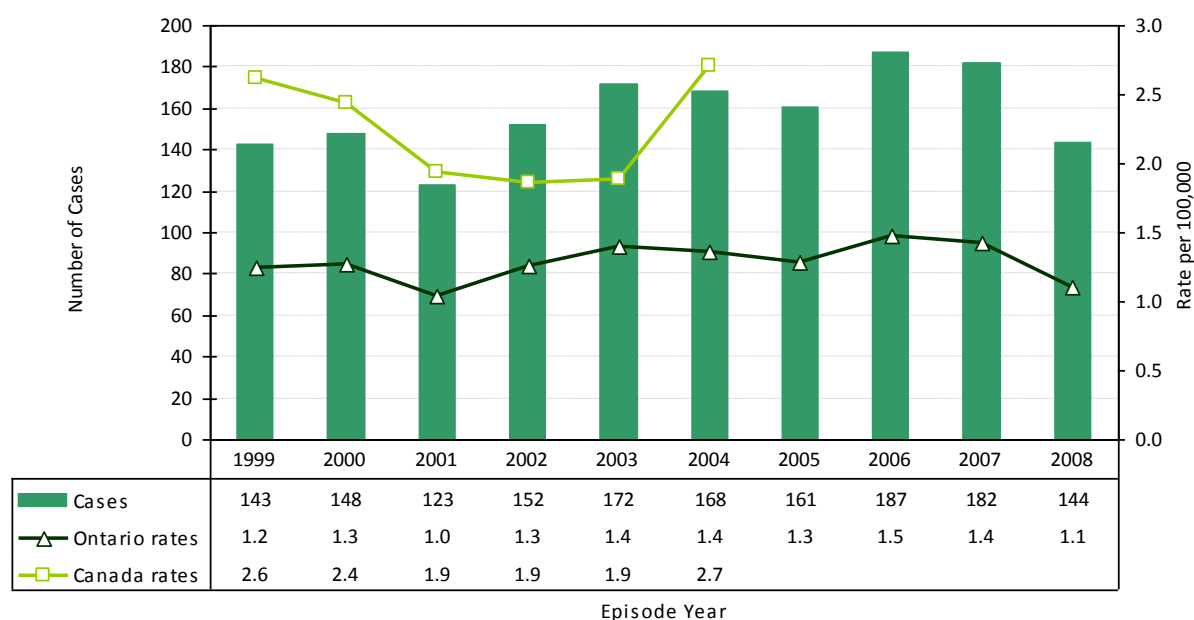
Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification.

3.4 HEPATITIS B (Acute)

- In 2008, 144 confirmed cases of Hepatitis B were reported in Ontario, which represents an incidence rate of 1.1 cases per 100,000 population (Table 3.1). This figure represents a decline of 23% from the 2007 total of 182 cases.
- During the period 1999 to 2008, the incidence rate of Hepatitis B in Ontario remained relatively stable, with an average increase of 1.2% per year. The lowest rate was observed in 2001 (1.0 per 100,000) and the highest rate in 2006 (1.5 per 100,000). The incidence rate of Hepatitis B in Canada remained higher than Ontario's at approximately 2.2 cases per 100,000 population over the period 1999 to 2004 (Figure 3.4.1).
- Males accounted for 71% (102/144) of Hepatitis B cases reported in Ontario in 2008, up from 60% in 2007, possibly reflecting increased transmission among men who have sex with men. The overall incidence rate for males in 2008 was 1.6 per 100,000 compared to 0.6 per 100,000 population for females. Men aged 50-54 years had the highest incidence rate of Hepatitis B at 3.6 cases per 100,000 population (Table 3.4.1 and Figure 3.4.2).
- The average age of Hepatitis B cases in 2008 was 44 years.
- Thunder Bay District (8.3 cases per 100,000 population), Sudbury District (8.0 cases per 100,000 population), and Kingston Frontenac Lennox Addington (5.7 cases per 100,000 population) health units reported the highest incidence rates of Hepatitis B in Ontario in 2008 (Map 3.4.1, Table 3.4.2).
- Exposures outside of Canada (33%), sexual risks (30%), and intravenous drug use (19%) were the most frequently reported risk factors for acquiring Hepatitis B among cases reporting risk factors or exposures in 2008 (Table 3.4.3).
- There was one case of maternal transmission of Hepatitis B in 2008.

Figure 3.4.1: Incidence of Hepatitis B in Ontario and Canada: 1999 – 2008



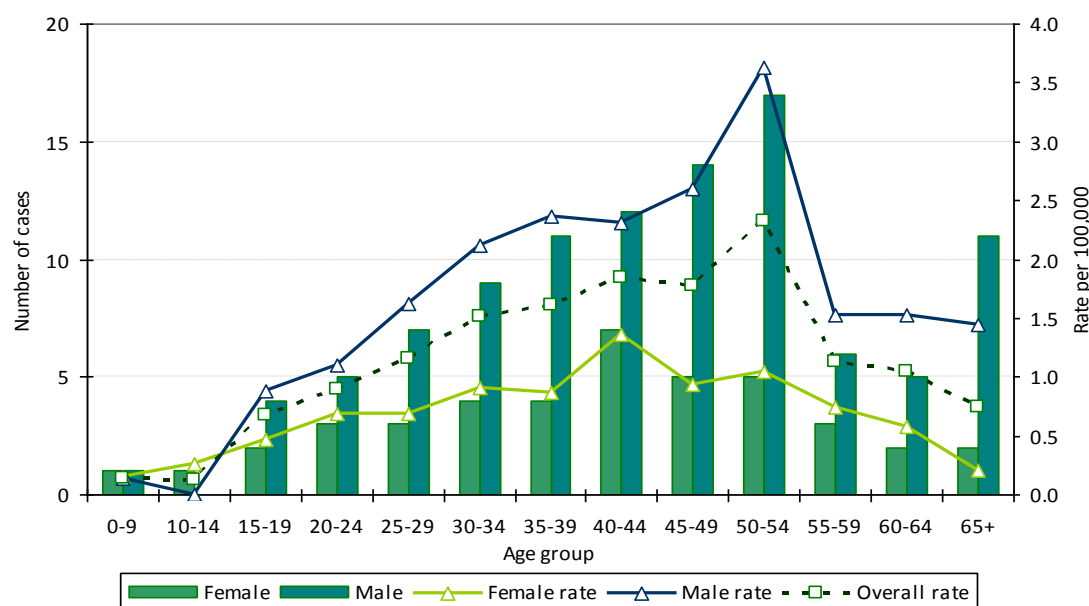
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, data from 1999-2007 extracted [01/15/2009], data for 2008 extracted [05/25/2010].

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 13, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, data from 1999-2007 extracted [01/14/2010], data from 2008 extracted [08/13/2010].

Note: Canadian statistics available up to 2004.

Figure 3.4.2: Incidence of Hepatitis B by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note: The 0-9 age category includes one case in a neonate (<28 days old)

Table 3.4.1: Incidence of Hepatitis B by Age and Sex: Ontario, 2008

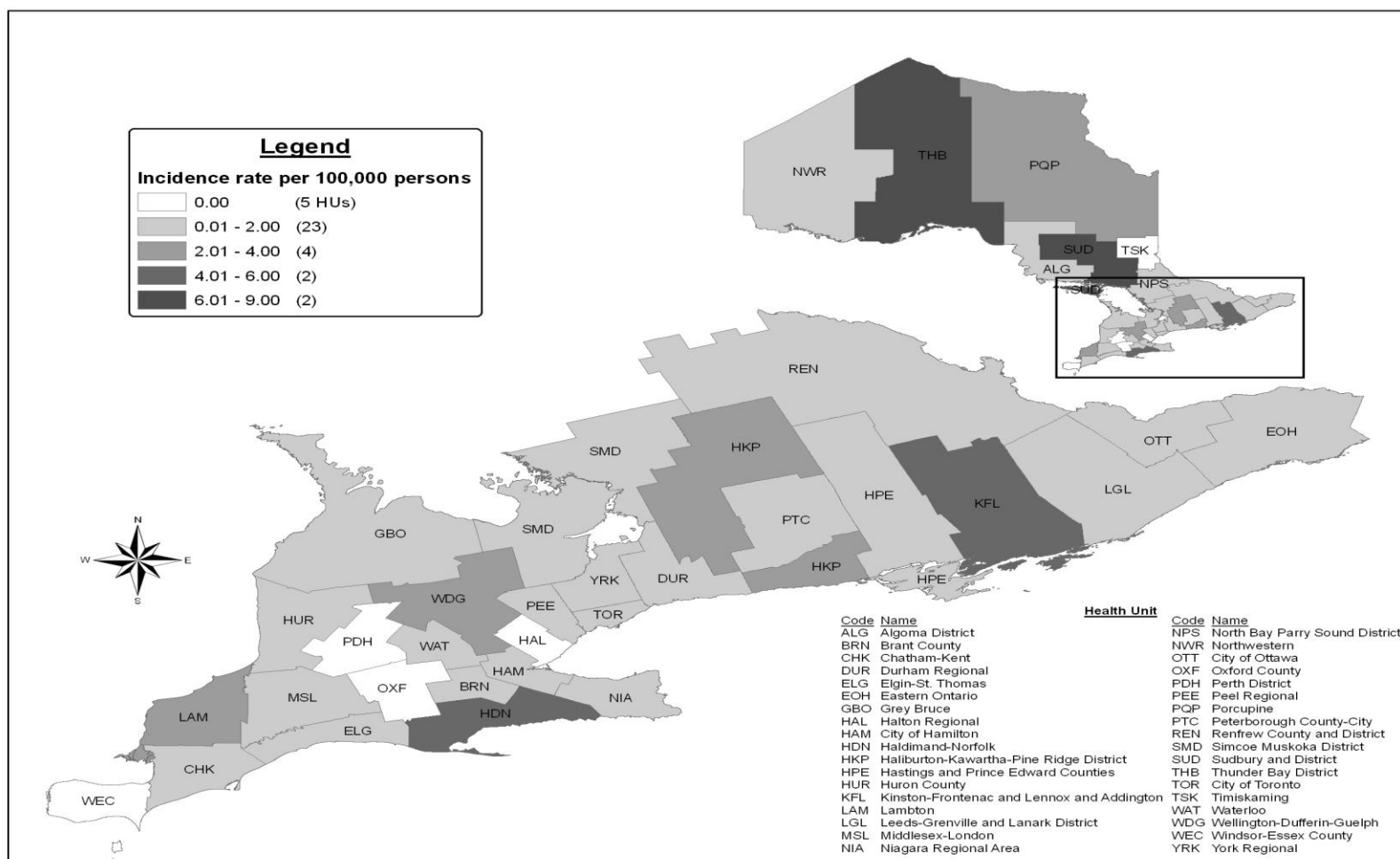
Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-9	1	0.1	1	0.1	2	0.1
10-14	1	0.3	0	0.0	1	0.1
15-19	2	0.5	4	0.9	6	0.7
20-24	3	0.7	5	1.1	8	0.9
25-29	3	0.7	7	1.6	10	1.2
30-34	4	0.9	9	2.1	13	1.5
35-39	4	0.9	11	2.4	15	1.6
40-44	7	1.4	12	2.3	19	1.8
45-49	5	0.9	14	2.6	19	1.8
50-54	5	1.1	17	3.6	22	2.3
55-59	3	0.7	6	1.5	9	1.1
60-64	2	0.6	5	1.5	7	1.0
65+	2	0.2	11	1.4	13	0.7
Total	42	0.6	102	1.6	144	1.1

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note: The 0-9 age category includes one case in a neonate (<28 days old)

Map 3.4.1: Incidence Rates of Hepatitis B by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.4.2: Incidence of Hepatitis B by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Thunder Bay District	13	8.3
Sudbury and District	16	8.0
Kingston, Frontenac, Lennox & Addington	11	5.7
Haldimand-Norfolk	5	4.5
Porcupine	3	3.4
Wellington-Dufferin-Guelph	9	3.3
Haliburton, Kawartha, Pine Ridge	4	2.3
Lambton County	3	2.3
Renfrew County and District	2	1.9
Hamilton	9	1.7
Huron County	1	1.6
North Bay Parry Sound District	2	1.6
Eastern Ontario	3	1.5
Brant County	2	1.4
Hastings & Prince Edward Counties	2	1.2
Leeds, Grenville and Lanark District	2	1.2
Northwestern	1	1.2
Toronto	32	1.2
Elgin-St. Thomas	1	1.1
Chatham-Kent	1	0.9
Algoma District	1	0.8
Simcoe Muskoka District	4	0.8
Peterborough County-City	1	0.7
Grey Bruce	1	0.6
Waterloo Region	3	0.6
Ottawa	3	0.3
Peel Region	4	0.3
Durham Region	1	0.2
Middlesex-London	1	0.2
Niagara Region	1	0.2
York Region	2	0.2
Halton Region	0	0.0
Oxford County	0	0.0
Perth District	0	0.0
Timiskaming	0	0.0
Windsor-Essex County	0	0.0
Ontario	144	1.1

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Notes: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.4.3: Risk Factors and Risk Settings for Hepatitis B: Ontario, 2008

Risk Factors & Settings ¹	Females		Males		Total	
	Cases (n=26)	Percent (%)	Cases (n=87)	Percent (%)	Cases (n=113)	Percent (%)
Out of Canada exposure ²	10	38.5	27	31.0	37	32.7
Sexual risks and other non-sexual risks ³	8	30.8	16	18.4	24	21.2
Sexual contact only ⁴	2	7.7	8	9.2	10	8.8
Intravenous or intranasal drug use	6	23.1	18	20.7	22	19.4
Tattoo/acupuncture/piercing/electrolysis	6	23.1	12	13.8	18	15.9
Medical/dental procedures	3	11.5	9	10.3	12	10.6
Blood transfusion	4	15.4	6	6.9	10	8.8
Immuno-compromised	3	11.5	7	8.0	10	8.8
Other ⁵	3	11.5	10	11.5	13	11.5
Unknown	0	0	25	28.7	25	22.1

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note 1: Cases may report more than one risk factor and exposure setting; Risk factors and exposures including unknown were reported by 78% of cases reported in 2008

Note 2: Out of Canada exposures include travel to, living in or receiving medical care in an endemic area

Note 3: Case reported sexual risks and other risks such as IDU, tattoo etc.

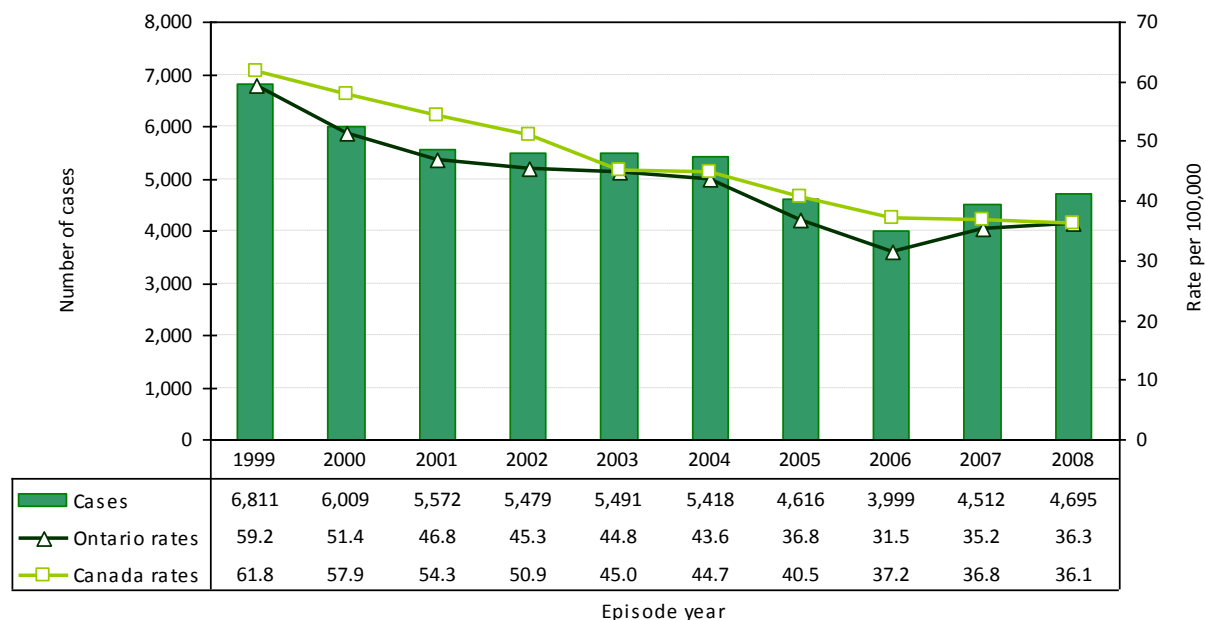
Note 4: Cases reported only sexual contact as their only risk factor

Note 5: Includes: household exposure, fighting, incarceration, occupational risks, mother to child transmission,

3.5 HEPATITIS C (acute)

- In 2008, Hepatitis C was second to chlamydia as a leading cause of reportable sexually transmitted/bloodborne disease in Ontario (Table 3.1).
- There were 4,695 (36 cases per 100,000 population) confirmed cases of Hepatitis C reported in Ontario in 2008, up 4% from 4,512 cases in 2007 (Table 3.1).
- The rate of Hepatitis C in Ontario declined by 47% from 59 cases per 100,000 population in 1999 to 31 cases per 100,000 population in 2006. Since 2007, the rate of Hepatitis C in Ontario has increased to over 35 cases per 100,000 population. (Figure 3.5.1).
- During the period 1999-2008, the rate of Hepatitis C in Ontario remained below the national rate until 2008 when both rates converged at 36 cases per 100,000 population (Figure 3.5.1).
- Males accounted for 60% of Hepatitis C cases reported in Ontario in 2008. Between the ages of 25 and 64, men had higher rates of Hepatitis C than women. Women under age 25 years, and older than 65 years had higher rates of Hepatitis C than men (Figure 3.5.2, Table 3.5.1).
- In 2008, males aged 50 to 54 years had the highest rate of Hepatitis C at 104 cases per 100,000 population. This figure is almost triple the overall rate for Ontario and 37% higher than the 2007 rate of 76 cases per 100,000 population (Figure 3.5.2, Table 3.5.1).
- Nineteen cases of Hepatitis C were reported for infants under the age of one year in 2008. Of these cases, at least eight were transmitted from mother to child during pregnancy or birth.
- Thunder Bay District Health Unit reported the highest rate of Hepatitis C in 2008 at 99 cases per 100,000 population. Kingston-Frontenac and Lennox and Addington Public Health Unit reported the second highest rate of Hepatitis C at 87 cases per 100,000 population (Map 3.5.1, Table 3.5.2).
- Intravenous/intranasal drug use (42%), receipt of invasive procedures by tattoo, acupuncture, piercing or electrolysis (23%), and exposures outside of Canada (16%) were the most commonly reported risks for acquiring Hepatitis C among cases that reported risk factors and/or exposures in 2008 (Table 3.5.3).
- Among Hepatitis C cases, intravenous drug use as a risk factor decreased from 57% of cases in 2007 to 42% in 2008.
- Although sexual transmission of Hepatitis C is not widely recognized, ninety-two cases reported it as their only risk factor.

Figure 3.5.1: Reported Cases and Rates of Hepatitis C in Ontario and Canada: 1999-2008

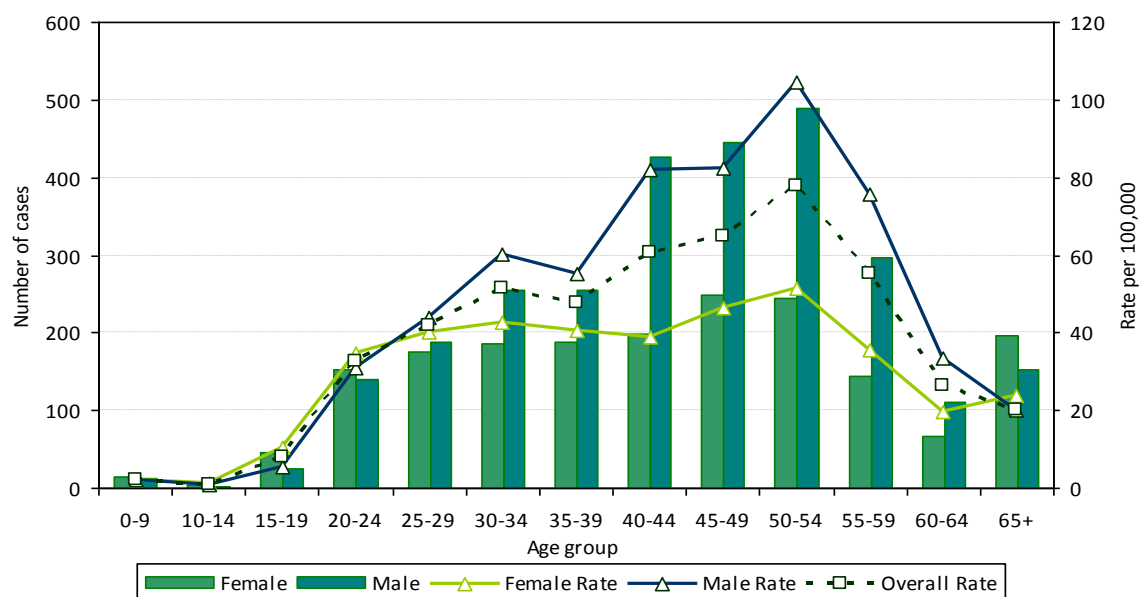


Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, data from 1999-2007 extracted [01/15/2009], data for 2008 extracted [05/25/2010].

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded August 8, 2010: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, data from 1999-2007 extracted [01/08/2009], data from 2008 extracted [08/13/2010].

Figure 3.5.2: Reported Cases and Rates of Hepatitis C by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note 1: The 0-9 age category includes 20 cases in infants (< 1 year old) of which 5 are neonates (<28 days old)

Note 2: Overall rate does not include 25 cases for which sex and/or age were unknown

Table 3.5.1: Reported Cases and Rates of Hepatitis C by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-9	15	2.2	13	1.9	28	2.0
10-14	5	1.3	3	0.7	8	1.0
15-19	45	10.4	25	5.5	70	7.9
20-24	152	34.7	141	30.9	293	32.7
25-29	175	40.1	189	43.9	364	42.0
30-34	187	42.6	256	60.4	443	51.3
35-39	188	40.4	256	55.0	444	47.7
40-44	199	38.7	426	82.1	625	60.5
45-49	248	46.5	446	82.6	694	64.7
50-54	244	51.3	489	104.3	733	77.6
55-59	145	35.6	297	75.7	442	55.3
60-64	67	19.5	110	33.4	177	26.3
65+	197	23.9	152	19.9	349	20.0
Unknown	-	-	-	-	25	-
Total²	1,867	28.5	2,803	43.9	4,695	36.3

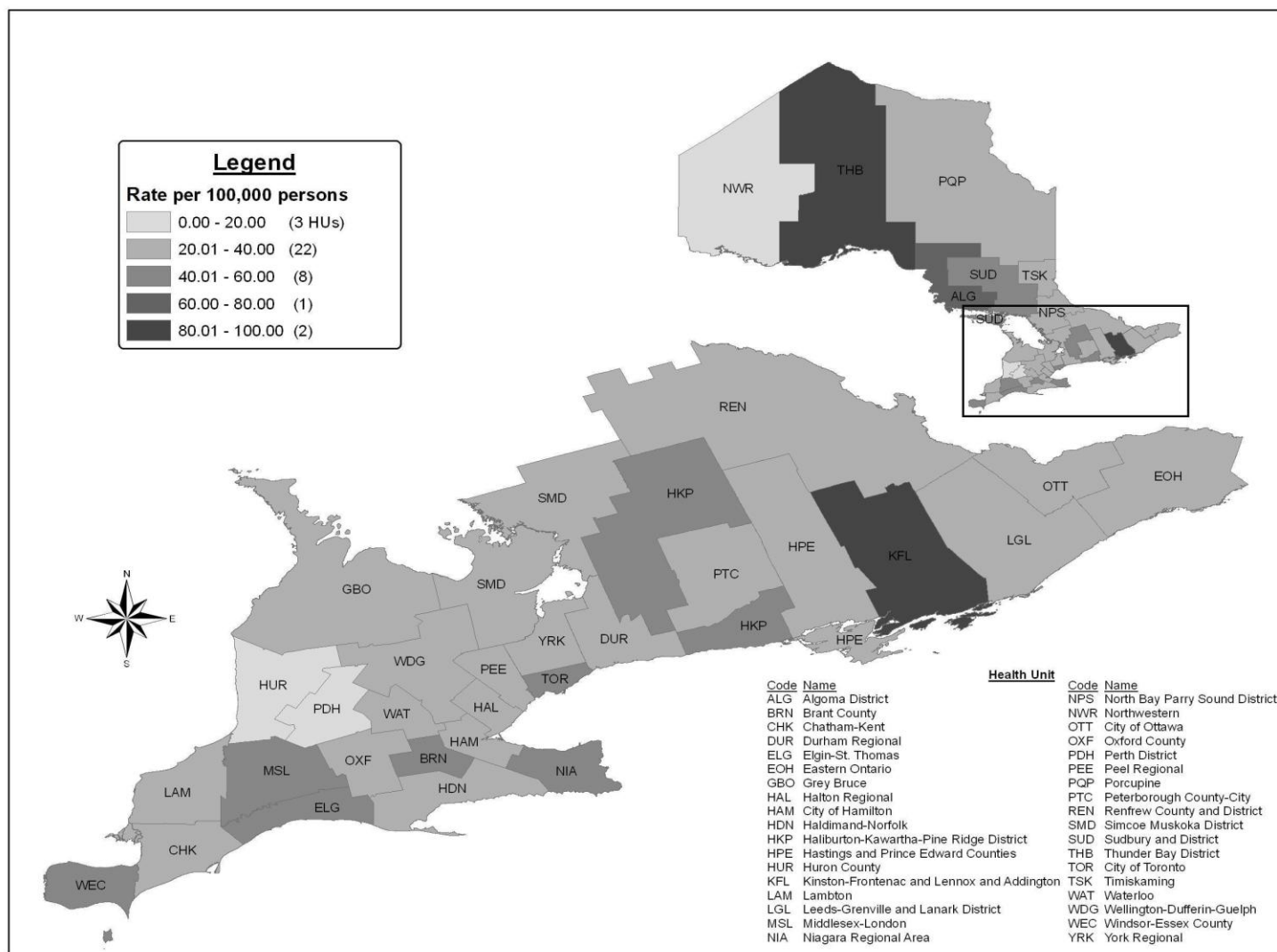
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note 1: The 0-9 age category includes 20 cases in infants (< 1 year old) of which 5 are neonates (<28 days old)

Note 2: Total and denominator for overall rate includes 25 cases for which sex and/or age were unknown

Map 3.5.1: Rates of Hepatitis C by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010]

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.5.2: Reported Cases and Rates of Hepatitis C by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Thunder Bay District	155	99.2
Kingston, Frontenac, Lennox & Addington	188	97.9
Algoma District	87	72.8
Middlesex-London	239	53.4
Niagara Region	224	50.7
Haliburton, Kawartha, Pine Ridge	85	48.1
Windsor-Essex County	173	42.6
Brant County	58	42
Elgin-St. Thomas	37	41.1
Sudbury and District	81	40.6
Toronto	1,070	40.3
Timiskaming	14	39.9
Leeds, Grenville and Lanark District	66	39.1
Hamilton	204	38.7
Oxford County	39	36.8
Simcoe Muskoka District	171	33.6
Durham Region	202	33.4
North Bay Parry Sound District	42	33.2
Hastings & Prince Edward Counties	53	32.4
Haldimand-Norfolk	35	31.7
Ottawa	270	31.1
Peel Region	394	30.6
Lambton County	38	28.7
Renfrew County and District	29	28.1
Halton Region	125	26.1
Peterborough County-City	36	26.1
Wellington-Dufferin-Guelph	67	24.9
Grey Bruce	40	24.5
York Region	239	24.1
Waterloo Region	119	23.3
Porcupine	19	21.5
Eastern Ontario	42	21.1
Chatham-Kent	23	20.7
Northwestern	14	17.1
Huron County	10	16.5
Perth District	7	9.1
Ontario	4,695	36.3

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.5.3: Risk Factors and Risk Settings for Hepatitis C: Ontario, 2008

Risk Factors and Settings ¹	Females		Males		Total ⁴	
	Cases (n=1,554)	Percent (%)	Cases (n=2,337)	Percent (%)	Cases (n=3,913)	Percent (%)
Intravenous/intranasal drug use	548	35.3	1095	46.9	1656	42.3
Tattoo/acupuncture/piercing/electrolysis	356	22.9	551	23.6	912	23.3
Out of Canada exposure ²	297	19.1	328	14.0	627	16.0
Invasive medical/dental procedures	222	14.3	266	11.4	490	12.5
Transfusion recipient	244	15.7	241	10.3	485	12.4
Sexual risks and other non-sexual risks	150	9.7	199	8.5	350	8.9
History of incarceration	16	1.0	126	5.4	146	3.7
Sexual contact only ³	37	2.4	55	2.4	92	2.4
Immunocompromised	26	1.7	40	1.7	67	1.7
Household Transmission (not sexual)	26	1.7	32	1.4	58	1.5
Occupational	27	1.7	19	0.8	46	1.2
Fighting	0	0	30	1.3	30	0.8
Organ or tissue transplant	9	0.6	11	0.5	20	0.5
Mother-to-child transmission	3	0.2	5	0.2	8	0.2
Unknown	414	26.6	577	24.7	997	25.5

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note 1: Cases may report more than one risk factor or exposure setting; Risk factors and exposures were reported by 83% of cases 2008

Note 2: Includes travel to, living in or receiving medical care in an endemic area

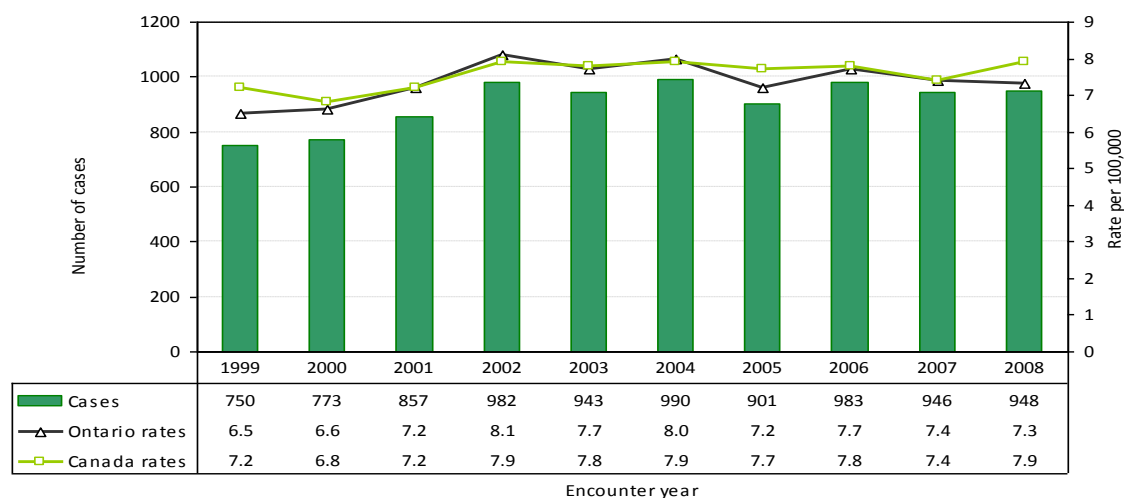
Note 3: Cases reported only sexual contact as their only risk factor

Note 4: Total includes cases where gender is specified as "unknown", "transgender" and "other".

3.6 HIV/AIDS

- In 2008, 948 newly diagnosed cases of HIV were reported in Ontario. This figure represents a rate of 7.3 cases per 100,000 population and is similar to the number of cases reported in 2007 (946 cases) Table 3.1.
- The rate of HIV in Ontario was relatively stable over the past seven years with rates fluctuating between 7 to 8 cases per 100,000 population (Figure 3.6.1).
- Since 2000, the rate of newly diagnosed cases of HIV in Ontario has been similar to the corresponding national rates (Figure 3.6.1).
- Between 2006 and 2008, the number of AIDS diagnoses in Ontario has remained stable likely due to access to HIV treatment that slows progression to AIDS. However, over the past eight years, rates in Ontario have decreased at a slower pace than the corresponding national AIDS rates (Figure 3.6.2).
- Although the rate of HIV among males in Ontario decreased, the rate among males remained higher and was more than triple the rate for females in 2008. The rate of HIV among males declined by 5% from the 2007 rate of 12.0 cases to 11.4 cases per 100,000 population in 2008. The corresponding rate among females increased by 17% from 2.9 cases per 100,000 population in 2007 to 3.4 cases per 100,000 in 2008 (Figure 3.6.3, Table 3.6.1).
- Males in the age groups from 20 to 54 years reported rates of HIV that were higher than the provincial rate of 7.3 cases per 100,000 population; women in the age groups from 25 to 39 years also reported rates of HIV that were higher than the provincial rate (Figure 3.6.3).
- The rate of HIV was highest in Toronto at 21 cases per 100,000 population, City of Ottawa at 11 cases per 100,000 population and Niagara at 8 cases per 100,000 population (Map 3.6.2 and Table 3.6.3). Toronto also reported the largest number of AIDS cases at 80; all other health units reported 6 or fewer cases in 2008 (Map 3.6.1 and Table 3.6.3).
- The most common risk groups for HIV in 2008 were: men who have sex with men (49%), heterosexual transmission (16%), and immigration from HIV endemic countries (14%) (Table 3.6.4). The corresponding rates in 2007 for these risks were 39%, 10% and 21%, respectively.
- Twenty-seven percent of HIV cases reported in 2008 emigrated from other countries. The top places of origin for HIV cases were Africa (44%), the Caribbean (17%) and Latin America (16%).
- Seven cases of mother-to-child transmission of HIV were reported in 2008, including three cases who were born outside of Canada.
- Twelve percent (113/948) of HIV cases that were reported in 2008 had a concurrent AIDS diagnosis in 2008. Seventy three percent (97/133) of AIDS cases diagnosed in 2008 became known to public health for the first time in 2008 or 2009. The other 27% of cases were reported as HIV positive in earlier years.

Figure 3.6.1: Reported Number and Rate of HIV Diagnoses in Ontario and Canada: 1999-2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-1997 and [09/28/2010] for 2008.

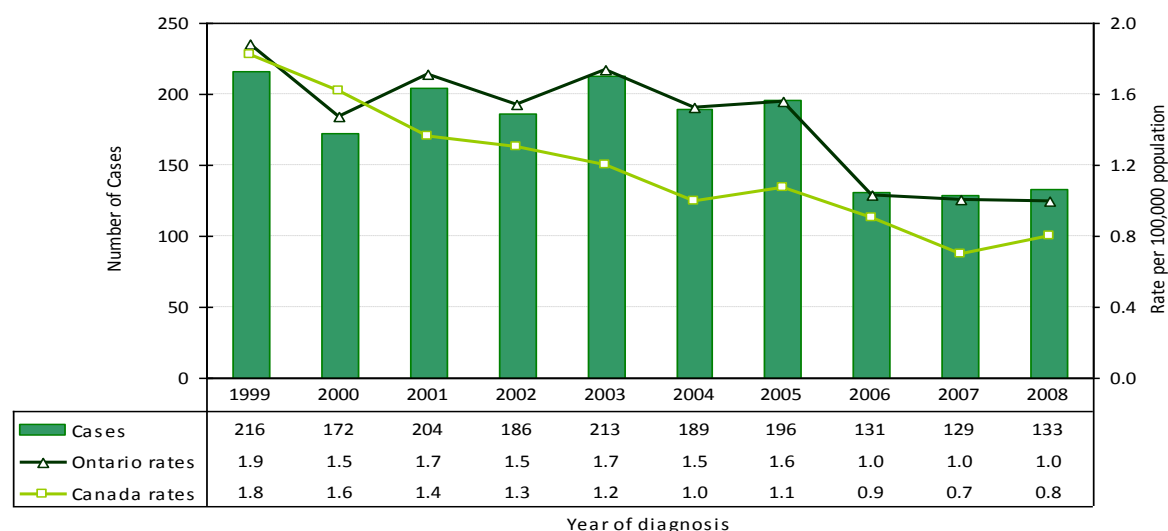
Data Source (Canadian data): Public Health Agency of Canada. *HIV and AIDS in Canada: Surveillance Report to December 31, 2007* and *HIV and AIDS in Canada: Surveillance Report to December 31, 2008*. Available online: <http://www.phac-aspc.gc.ca/aids-sida/publication/index-eng.php#surveillance>

Population Data (Ontario): Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1997-2008 and [01/14/2010] for 2008.

Population Data (Canada): <http://www.statcan.gc.ca/pub/91-215-x/2010000/t002-eng.pdf>, extracted [01/08/2009] for 1999-2007 and [10/13/2010] for 2008.

Note: Ontario data reflects cases reported to public health. Canadian data based on number of positive HIV tests per 100,000 population

Figure 3.6.2: Reported Number and Rate of AIDS Diagnoses in Ontario and Canada: 1998-2008



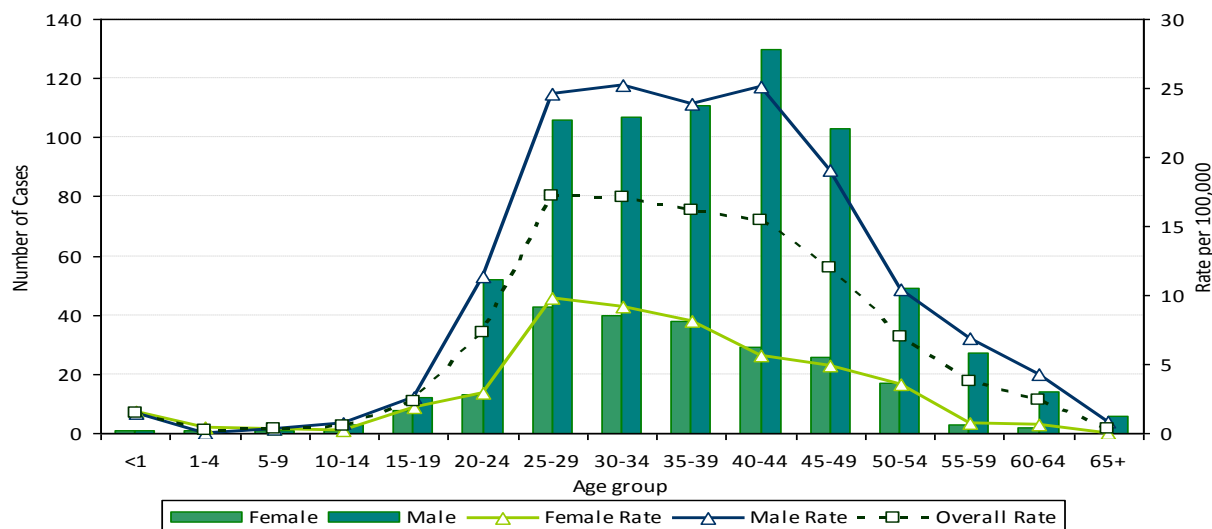
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1997-2008 and [12/22/2009] for 2008.

Data Source (Canadian data 1999-2007): Public Health Agency of Canada. Public Health Agency of Canada (2008). *HIV and AIDS in Canada. Surveillance Report to December 31, 2007*. (Canadian data 2008) Public Health Agency of Canada. Public Health Agency of Canada (200). *HIV and AIDS in Canada. Surveillance Report to December 31, 2008*

Population Data (Ontario): Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1997-2008 and [01/14/2010] for 2008.

Population Data (Canada): <http://www.statcan.gc.ca/pub/91-215-x/2010000/t002-eng.pdf>, extracted [01/08/2009] for 1999-2007 and [10/13/2010] for 2008.

Figure 3.6.3: Reported Number and Rates of HIV Diagnoses by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [09/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [08/13/2010]

Note 1: The <1 age category includes 4 cases in neonates (<28 days old)

Note 2: Excludes 3 cases for which sex or age were unknown

Table 3.6.1: Reported Number and Rates of HIV Diagnoses by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
<1	1	1.5	1	1.4	2	1.5
1-4	1	0.4	0	0.0	1	0.2
5-9	1	0.3	1	0.3	2	0.3
10-14	1	0.3	3	0.7	4	0.5
15-19	8	1.8	12	2.6	20	2.3
20-24	13	3.0	52	11.4	65	7.3
25-29	43	9.8	106	24.6	149	17.2
30-34	40	9.1	107	25.2	147	17.0
35-39	38	8.2	111	23.9	150	16.1
40-44	29	5.6	130	25.1	159	15.4
45-49	26	4.9	103	19.1	129	12.0
50-54	17	3.6	49	10.5	66	7.0
55-59	3	0.7	27	6.9	30	3.8
60-64	2	0.6	14	4.3	16	2.4
65+	0	0.0	6	0.8	6	0.3
Total²	223	3.4	722	11.3	945	7.3

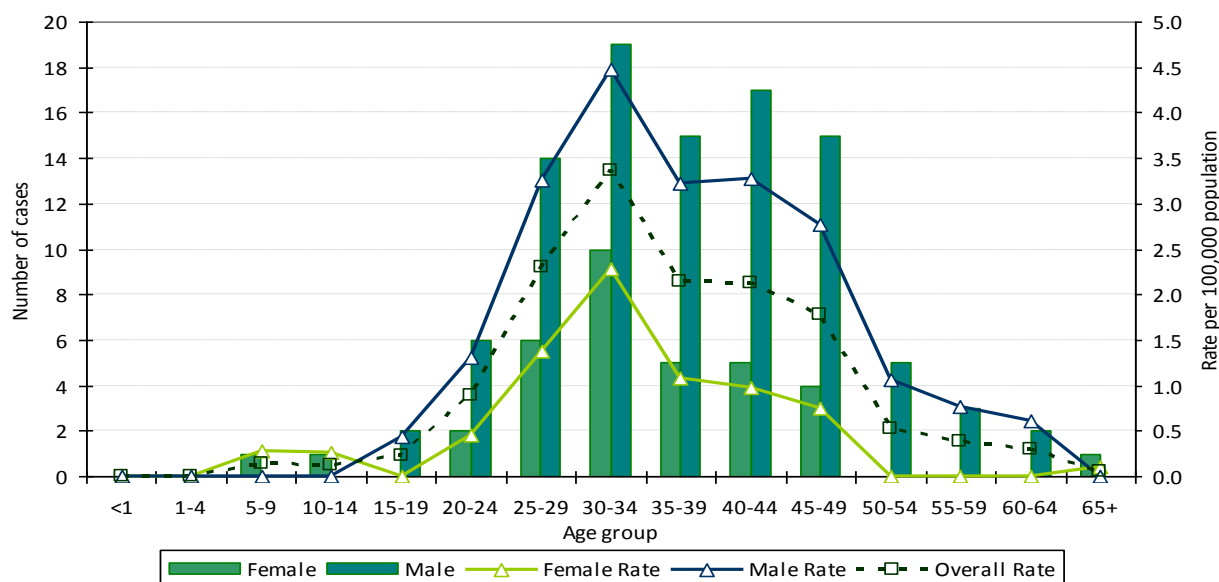
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [09/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [08/13/2010]

Note 1: The <1 age category includes 4 cases in neonates (<28 days old)

Note 2: Total does not include 3 cases for which sex or age were unknown

Figure 3.6.4: Reported Number and Rate of AIDS Diagnoses by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [12/22/2009].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [08/13/2010]

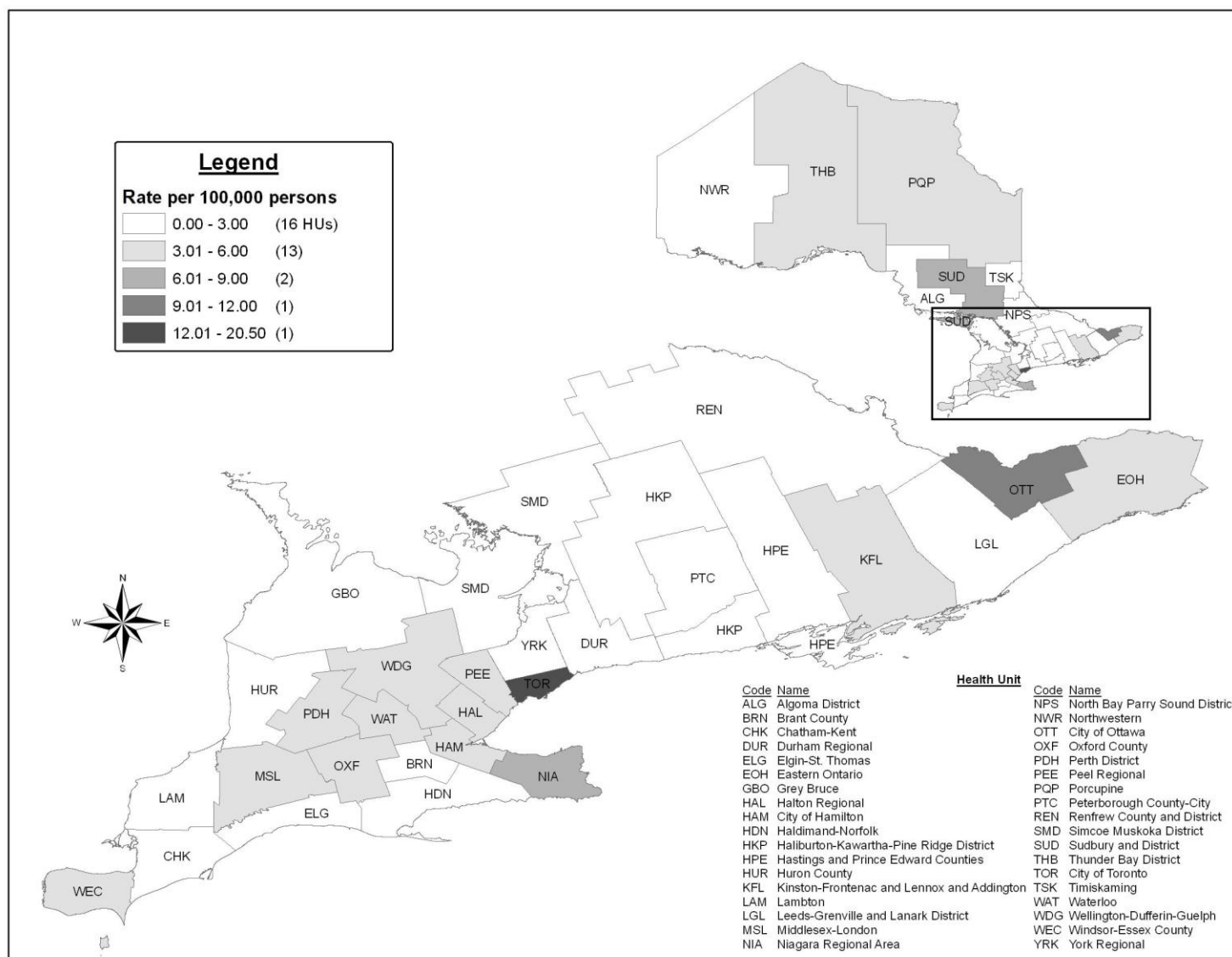
Table 3.6.2: Reported Number and Rates of AIDS Diagnoses by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
<1	0	0.0	0	0.0	0	0.0
1-4	0	0.0	0	0.0	0	0.0
5-9	1	0.3	0	0.0	1	0.1
10-14	1	0.3	0	0.0	1	0.1
15-19	0	0.0	2	0.4	2	0.2
20-24	2	0.5	6	1.3	8	0.9
25-29	6	1.4	14	3.3	20	2.3
30-34	10	2.3	19	4.5	29	3.4
35-39	5	1.1	15	3.2	20	2.1
40-44	5	1.0	17	3.3	22	2.1
45-49	4	0.8	15	2.8	19	1.8
50-54	0	0.0	5	1.1	5	0.5
55-59	0	0.0	3	0.8	3	0.4
60-64	0	0.0	2	0.6	2	0.3
65+	1	0.1	0	0.0	1	0.1
Total	35	0.5	98	1.5	133	1.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [12/22/2009].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [08/13/2010]

Map 3.6.1: Rates of HIV Diagnoses by Public Health Unit: Ontario, 2008

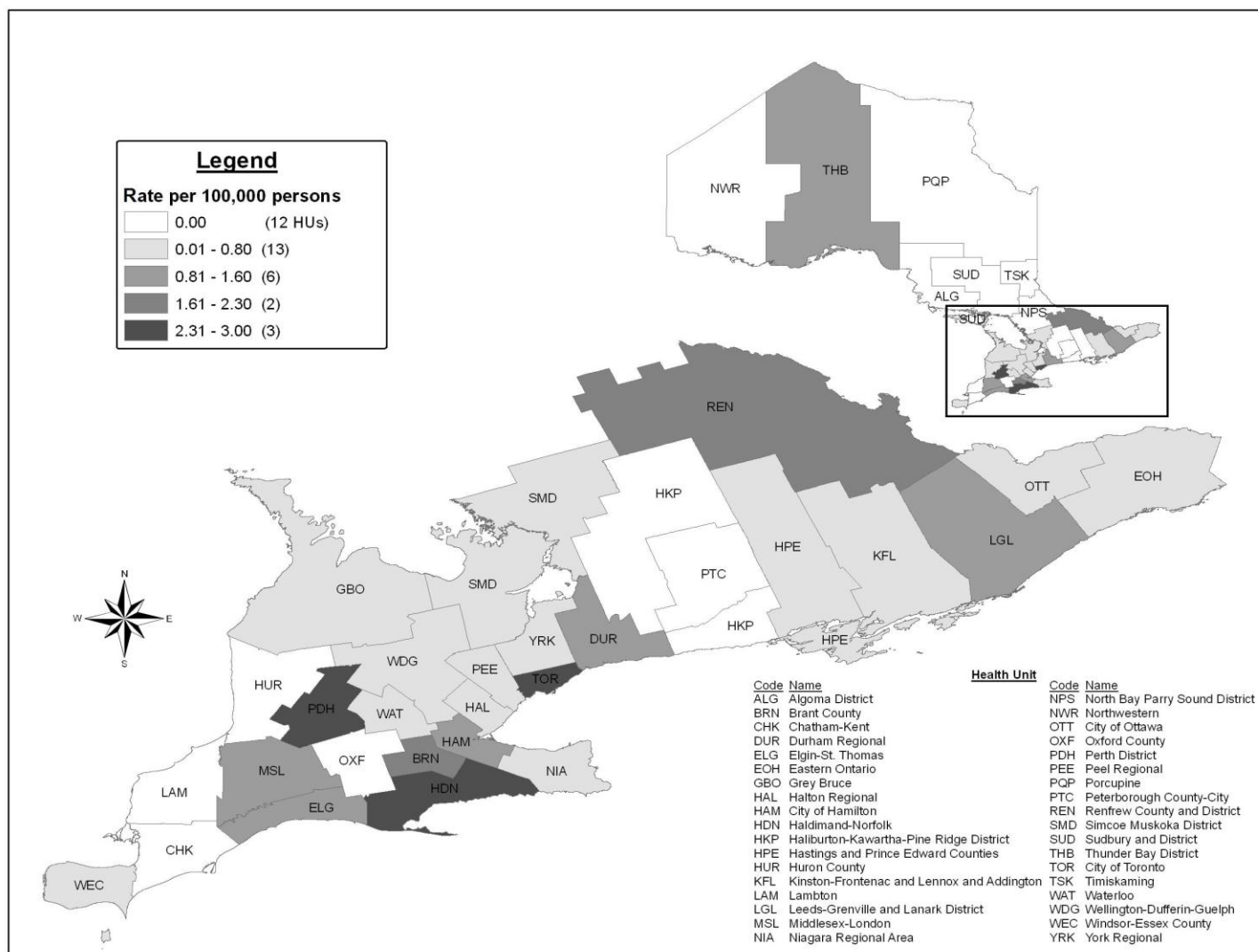


Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [09/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Notes: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Map 3.6.2: Rates of AIDS Diagnoses by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [12/22/2009].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Notes: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.6.3 Reported Number and Rates of HIV and AIDS Diagnoses by Public Health Unit: Ontario, 2008

Public Health Unit	HIV		AIDS	
	Number of cases	Rate/100,000 population	Number of cases	Rate/100,000 population
Toronto	544	20.5	80	3
Ottawa	92	10.6	5	0.6
Niagara Region	35	7.9	3	0.7
Sudbury and District	14	7.0	0	0
Hamilton	30	5.7	5	0.9
Oxford County	5	4.7	0	0
Eastern Ontario	9	4.5	1	0.5
Peel Region	56	4.4	2	0.2
Middlesex-London	19	4.2	6	1.3
Waterloo Region	21	4.1	1	0.2
Halton Region	19	4.0	1	0.2
Perth District	3	3.9	2	2.6
Windsor-Essex County	16	3.9	3	0.7
Wellington-Dufferin-Guelph	10	3.7	1	0.4
Porcupine	3	3.4	0	0
Thunder Bay District	5	3.2	0	0
Kingston, Frontenac, Lennox & Addington	6	3.1	1	0.5
Durham Region	18	3.0	5	0.8
Haldimand-Norfolk	3	2.7	3	2.7
Algoma District	3	2.5	0	0
Brant County	3	2.2	3	2.2
Renfrew County and District	2	1.9	2	1.9
Leeds, Grenville and Lanark District	3	1.8	2	1.2
North Bay Parry Sound District	2	1.6	0	0
Peterborough County-City	2	1.5	0	0
Simcoe Muskoka District	7	1.4	2	0.4
York Region	13	1.3	2	0.2
Northwestern	1	1.2	0	0
Elgin-St. Thomas	1	1.1	1	1.1
Grey Bruce	1	0.6	1	0.6
Haliburton, Kawartha, Pine Ridge	1	0.6	0	0
Hastings & Prince Edward Counties	1	0.6	1	0.6
Chatham-Kent	0	0	0	0
Huron County	0	0	0	0
Lambton County	0	0	0	0
Timiskaming	0	0	0	0
Ontario	948	7.3	133	1.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [09/28/2010] for HIV and [12/22/2009] for AIDS.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010]

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.6.4: Risk Factors and Risk Settings for HIV: Ontario, 2008

Risk Factors and Settings	Females		Males		Total	
	Cases (n=221)	Percent (%)	Cases (n=722)	Percent (%)	Cases (n=943)	Percent (%)
Men who have sex with men (MSM)	n/a	n/a	462	64	462	49
Heterosexual transmission	72	32	78	11	150	16
HIV Endemic Country	82	37	47	6	129	14
Illicit drug use (IDU)	14	6	17	2	31	3
MSM/IDU	0	0	8	1	8	1
Mother to child	3	1	4	1	7	1
Transfusion	3	1	3	0	7	1
Occupational exposure	0	0	2	0	2	0
Missing/other*	49	22	103	14	152	16

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [09/28/2010].

Note 1: missing risk factors =128, other risk factors =24

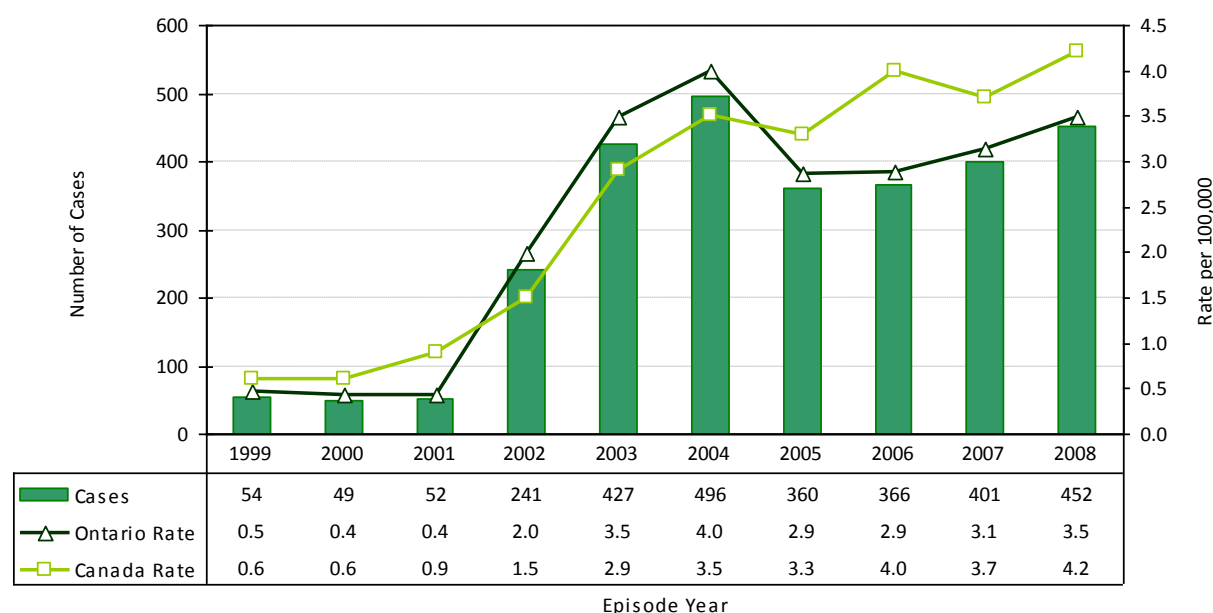
Note 2: one risk factor category per person based on a hierarchy of most likely risk

Note 3: Total does not include 1 case with unknown sex

3.7 INFECTIOUS SYPHILIS

- Ontario reported 452 cases of syphilis in 2008, which corresponds to an incidence rate of 3.5 cases per 100,000 population, an increase of 700% from 0.5 cases per 100,000 population in 1999 (Figure 3.7.1).
- The incidence of syphilis in Ontario over the past 10 years is marked by a period of relative stability from 1999 to 2001, a rapid increase between 2002 and 2004 and a stage of continued high rates from 2005 to 2008. The increase in cases beginning in 2002 and the continuation of elevated case counts is related to an ongoing syphilis outbreak among men who have sex with men (MSM) primarily in Toronto and Ottawa (Figure 3.7.1).
- The incidence rate of syphilis in Canada in 2008 was 20% higher than that of Ontario at 4.2 cases per 100,000 population compared to 3.5 cases per 100,000 population in Ontario (Figure 3.7.1).
- Canada experienced a similar rapid increase in the incidence of syphilis beginning in 2001 with incidence rates remaining higher than Ontario from 2005 through to 2008 (Figure 3.7.1). The national trend from 2002 to 2008 was driven in part by the increase in syphilis cases in Ontario.
- In 2008, males accounted for 92% (417) of reported cases of syphilis. The incidence rate of syphilis among males was 13 times higher than that of females at 6.5 cases per 100,000 population compared to 0.5 cases per 100,000 (Table 3.7.1).
- The provincial incidence rate of syphilis in 2008 was driven primarily by males aged 20-49 years. Incidence rates within this age span ranged from 9 cases per 100,000 population in the 20-24 age category to a high of 15 cases per 100,000 population in the 40-44 age category (Figure 3.7.2).
- The cities of Toronto (75%) and Ottawa (8%) accounted for 83% of syphilis cases reported in Ontario in 2008. With 16 cases, Hamilton accounted for the third highest incidence rate of syphilis in Ontario. Sixteen public health units did not report any cases of syphilis in 2008 (Map 3.7.1, Table 3.7.2).
- MSM (83%), failure to use a condom (69%), having multiple sex partners in the last 6 months (43%) and having a new partner in the last 2 months (20%) were the most frequently reported risk factors for acquisition of syphilis among syphilis cases in 2008 that reported at least one risk factor (Table 3.7.3).
- Forty-one percent (187/452) of syphilis cases reported in Ontario in 2008 had an HIV diagnosis prior to or during 2008.

Figure 3.7.1: Incidence of Infectious Syphilis in Ontario and Canada: 1999-2008

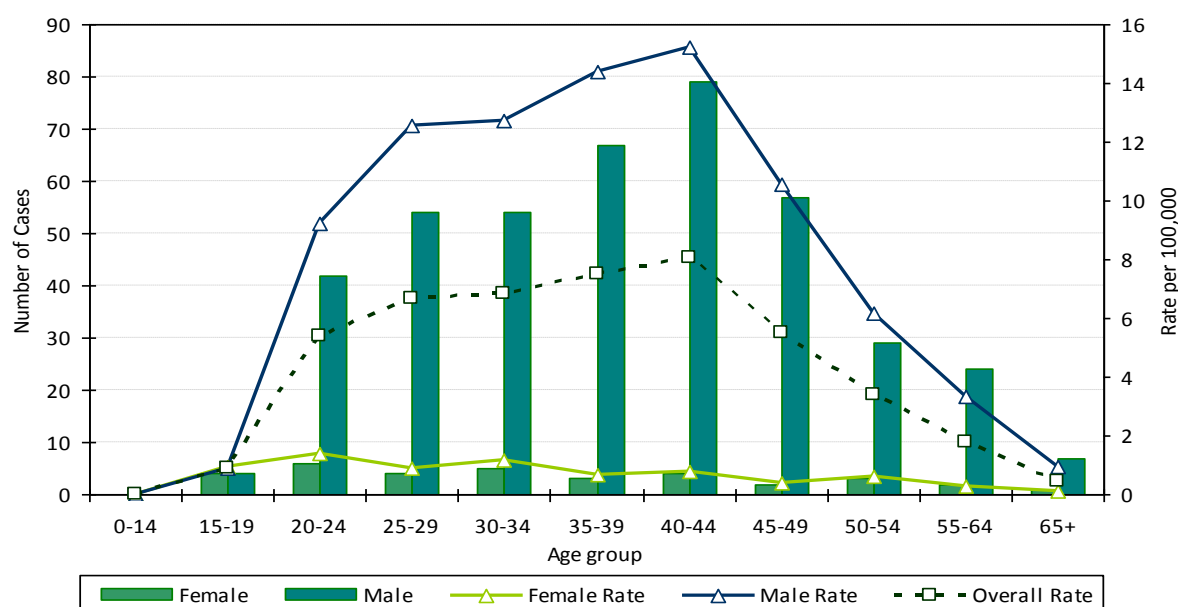


Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Data Source (Canadian data): Public Health Agency of Canada. STI Data Tables. Downloaded September 28, 2010: http://www.phac-aspc.gc.ca/std-mts/sti-its_tab/syphilis1993-08-eng.php.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Figure 3.7.2: Incidence of Infectious Syphilis by Age and Sex: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note 1: One case of congenital syphilis was reported in Ontario in 2008 but is not included in the counts for infectious syphilis.

Note 2: Excludes 1 case for which sex or age was unknown

Table 3.7.1: Incidence of Infectious Syphilis by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-14	0	0.0	0	0.0	0	0.0
15-19	4	0.9	4	0.9	8	0.9
20-24	6	1.4	42	9.2	48	5.4
25-29	4	0.9	54	12.5	58	6.7
30-34	5	1.1	54	12.7	59	6.8
35-39	3	0.6	67	14.4	70	7.5
40-44	4	0.8	79	15.2	83	8.0
45-49	2	0.4	57	10.6	59	5.5
50-54	3	0.6	29	6.2	32	3.4
55-64	2	0.3	24	3.3	26	1.8
65+	1	0.1	7	0.9	8	0.5
Total²	34	0.5	417	6.5	451	3.5

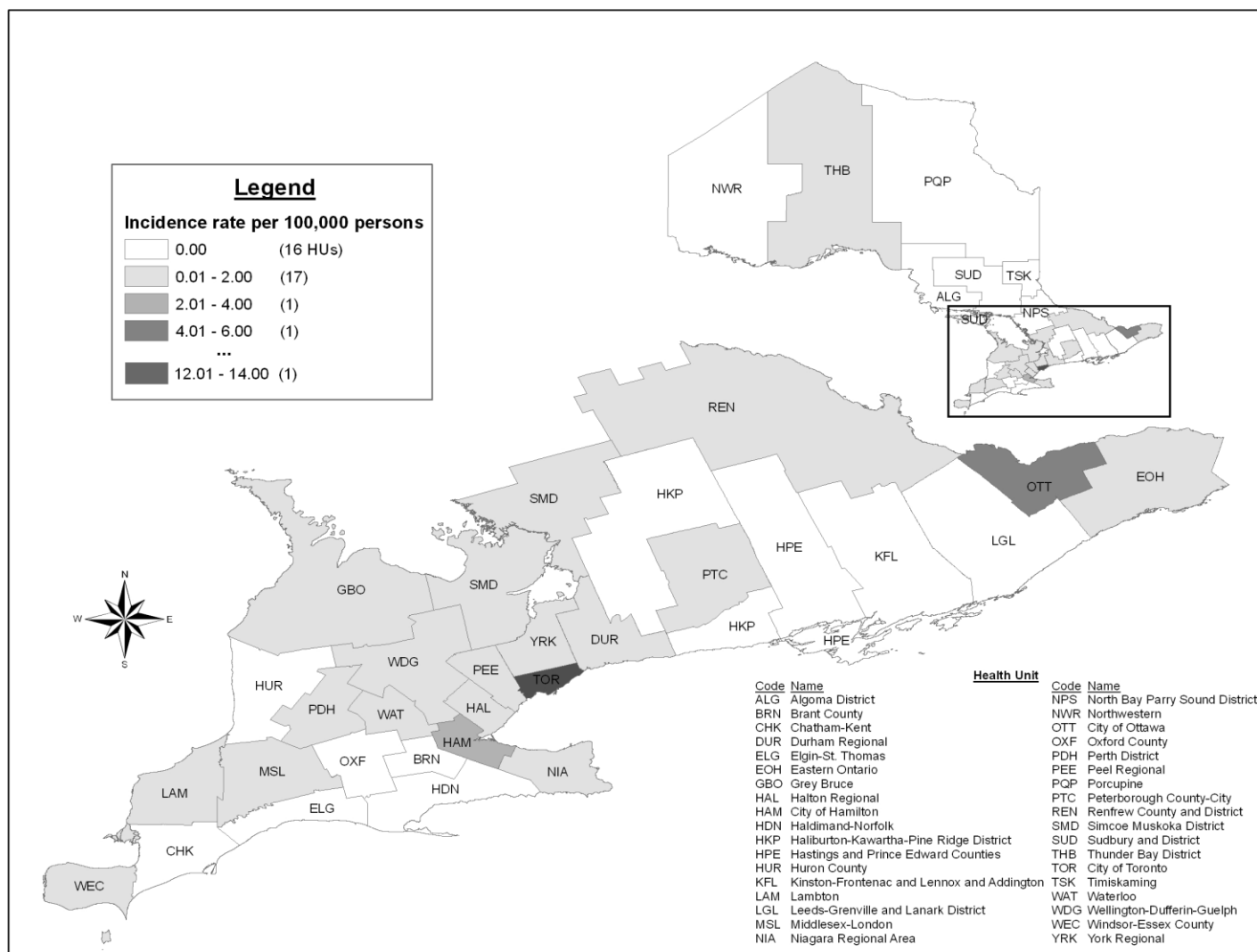
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note 1: One case of congenital syphilis was reported in Ontario in 2008 but is not included in the counts for infectious syphilis.

Note 2: Excludes 1 case for which sex was unknown

Map 3.7.1: Incidence of Infectious Syphilis by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.7.2: Incidence of Infectious Syphilis by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Toronto	339	12.8
Ottawa	38	4.4
Hamilton	16	3.0
Renfrew County and District	2	1.9
Grey Bruce	3	1.8
Eastern Ontario	3	1.5
Perth District	1	1.3
Simcoe Muskoka District	6	1.2
Niagara Region	5	1.1
York Region	11	1.1
Peel Region	11	0.9
Durham Region	5	0.8
Lambton County	1	0.8
Peterborough County-City	1	0.7
Thunder Bay District	1	0.6
Halton Region	3	0.6
Windsor-Essex County	2	0.5
Middlesex-London	2	0.4
Wellington-Dufferin-Guelph	1	0.4
Waterloo Region	1	0.2
Algoma District	0	0.0
Brant County	0	0.0
Chatham-Kent	0	0.0
Elgin-St. Thomas	0	0.0
Haldimand-Norfolk	0	0.0
Haliburton, Kawartha, Pine Ridge	0	0.0
Hastings & Prince Edward Counties	0	0.0
Huron County	0	0.0
Kingston, Frontenac, Lennox & Addington	0	0.0
Leeds, Grenville and Lanark District	0	0.0
North Bay Parry Sound District	0	0.0
Northwestern	0	0.0
Oxford County	0	0.0
Porcupine	0	0.0
Sudbury and District	0	0.0
Timiskaming	0	0.0
Ontario	452	3.5

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [06/28/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 3.7.3: Risk Factors and Risk Settings for Infectious Syphilis Cases: Ontario, 2008

Risk Factors and Settings	Females		Males		Total	
	Cases (n=22)	Percent (%)	Cases (n=387)	Percent (%)	Cases (n=409)	Percent (%)
MSM	N/A	N/A	322	83.2	322	78.7
No condom used	19	86.4	262	67.7	281	68.7
Multiple sex partners In last 6 months	4	18.2	171	44.2	175	42.8
New partner in past 2 months	2	9.1	78	20.2	80	19.6
Partner with multiple sex partners	3	13.6	35	9.0	38	9.3
Bath house encounter	1	4.5	34	8.8	35	8.6
Judgment impaired by alcohol/drugs	1	4.5	15	3.9	16	3.9
Partner is HIV positive	0	0.0	14	3.6	14	3.4
Other ¹	0	0.0	22	5.7	22	5.4

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [10/12/2010].

Note 1: Other includes the following risk factors: casual encounters, sex with sex trade worker, sex trade worker, shared sex toys, being homeless and had sex for drugs

Note 2: Cases may report more than 1 risk factor; Risk factors were reported by ~ 90% of reported cases in 2008

Chapter 4: DISEASES TRANSMITTED BY DIRECT CONTACT AND RESPIRATORY ROUTES

- Tuberculosis (TB), invasive group A streptococcus disease (iGAS), influenza and legionellosis are the most frequently reported diseases transmitted by direct contact and respiratory routes in Ontario
- Between 1999 and 2008 the incidence rate of TB in Ontario decreased steadily from 6.1 to 4.7 cases per 100,000 population. With the exception of 2008, Ontario's annual incidence rates for TB consistently exceeded the national rates (Figure 4.4.1).
- Five percent (31/603) of TB cases reported in 2008 were co-infected with HIV.
- Eighty-six percent of TB cases reported in Ontario between 1999 and 2008 were not born in Canada, 11% were and 3% had an unknown country of origin (Figure 4.4.4).
- From 2005 to 2008, the proportion of TB cases reporting resistance to one or more drugs decreased from 11% to 8%. (Table 4.4.8)
- The incidence of iGAS increased by 74% from 2.3 cases per 100,000 population in 2004 to 4.0 cases per 100,000 population in 2008 (Figure 4.1.1)
- The incidence of legionellosis declined 76% from 45 cases in 1999 to a low of 11 cases in 2004. Since 2005, the incidence of legionellosis has increased, peaking at 81 cases in 2008 (Figure 4.3.1).
- The incidence of influenza in the 2008/2009 season was higher than all previous seasons with 8,243 confirmed cases. This increase was attributed to the first wave of the influenza pandemic.
- In 2008, the incidence rates for iGAS, legionellosis and tuberculosis were highest among cases age 65 years and older (Tables 4.1.1, 4.3.1 and 4.4.1). For influenza, the highest incidence rate occurred among cases under the age of one year and was significantly lower than expected for cases aged 65 years and older (Table 4.2.1).
- There were no significant sex differences in the incidence rates for males and females for iGAS and TB in 2008. In contrast, 70% of legionellosis cases reported in 2008 occurred in men. The gender distribution is unknown for influenza due to reporting constraints.
- While Toronto accounted for the highest proportions of iGAS, legionellosis and influenza cases in 2008, the highest incidence rates for these diseases were reported by Thunder Bay (36 cases per 100,000 population), Hamilton (3 cases per 100,000 population) and Northwestern (107 cases per 100,000 population) health units, respectively. Toronto reported the highest incidence and incidence rate for tuberculosis in 2008 (Tables 4.1.2, 4.2.2, 4.3.2 and 4.4.2).

Table 4.1: Incidence of Diseases Transmitted by Direct Contact and Respiratory Routes; Ontario, 1999-2008

Diseases Transmitted by Direct Contact and Respiratory Routes	1999		2000		2001		2002		2003		2004		2005		2006		2007		2008	
	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹
Invasive Group A streptococcus	310	2.7	409	3.5	328	2.8	385	3.2	409	3.3	288	2.3	392	3.1	465	3.7	501	3.9	512	4.0
Influenza ^{2,3}	2,882	24.7	791	6.6	2,274	18.8	981	8.0	5,389	43.4	5,778	46.0	2,486	19.6	2,930	22.9	5,163	40.3	8,243	63.8
Legionellosis	45	0.4	41	0.4	21	0.2	24	0.2	32	0.3	11	0.1	75	0.6	69	0.5	58	0.5	81	0.6
Tuberculosis	698	6.1	700	6.0	699	5.9	716	5.9	693	5.7	661	5.3	654	5.2	691	5.4	680	5.3	603	4.7

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note 1: Incidence rate per 100,000 population

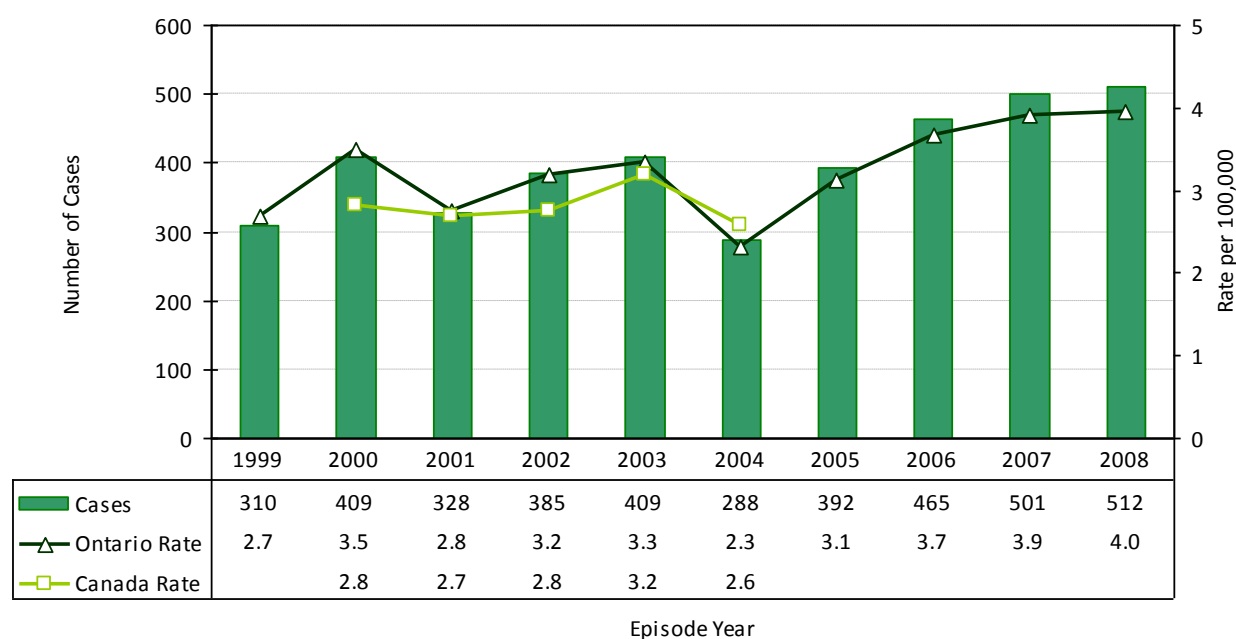
Note 2: Influenza counts and rates are based on seasons that run from September 1 to August 31 of the following year; e.g. 2008 in the table above represents the 2008/2009 influenza season

Note 3: Non-pandemic influenza data does not include cases routinely reported in aggregate. However pandemic H1N1 influenza cases reported in aggregate are included

4.1 INVASIVE GROUP A STREPTOCOCCUS DISEASE

- In 2008, 512 confirmed cases of invasive group A streptococcus disease (iGAS) were reported in Ontario, representing an incidence rate of 4.0 cases per 100,000 population (Table 4.1).
- The incidence of iGAS increased by 74% from 2.3 cases per 100,000 population in 2004 to 4.0 cases per 100,000 population in 2008 (Figure 4.1.1).
- Confirmed iGAS cases reported in 2008 occurred throughout the year. Approximately $\frac{3}{4}$ of iGAS cases were reported in the cooler months of the year (Figure 4.1.2).
- Males (255 cases) and females (257 cases) each accounted for 50% of iGAS cases reported in 2008. Sex-specific incidence rates were also very similar at 4.0 cases per 100,000 population for males and 3.9 cases per 100,000 population for females (Figure 4.1.3, Table 4.1.1).
- The incidence rate of iGAS in 2008 was highest for females (7.3 cases per 100,000) and males (8.1 cases per 100,000) in the 65 and older age group. Persons in the 60-64, 30-39 and 0-4 age groups also had incidence rates that were higher than the overall iGAS incidence rate of 0.4 cases per 100,000 population (Figure 4.1.3, Table 4.1.1).
- In 2008, the North West region, comprised of Thunder Bay District Health Unit (35.8 cases per 100,000) and Northwestern Health Unit (18.4 cases per 100,000), reported higher than expected incidence rates for iGAS. In Thunder Bay, the increased incidence of iGAS was attributed to a local outbreak that started in 2007 (Map 4.1.1 and Table 4.1.2).

Figure 4.1.1: Incidence of Invasive Group A Streptococcal Disease in Ontario and Canada: 1999-2008



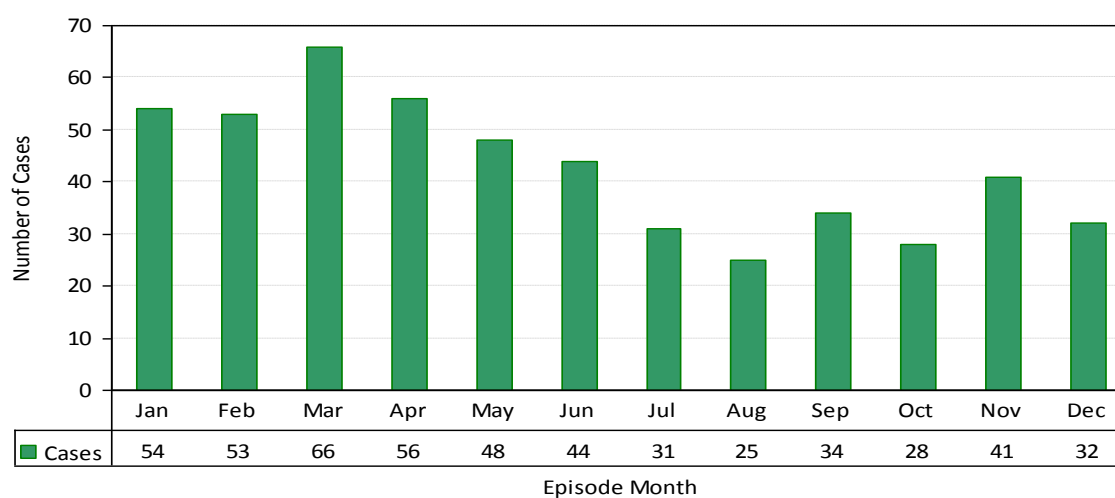
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded March 6, 2009: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Invasive group A streptococcus became nationally reportable in 2000. Canadian rates available up to 2004.

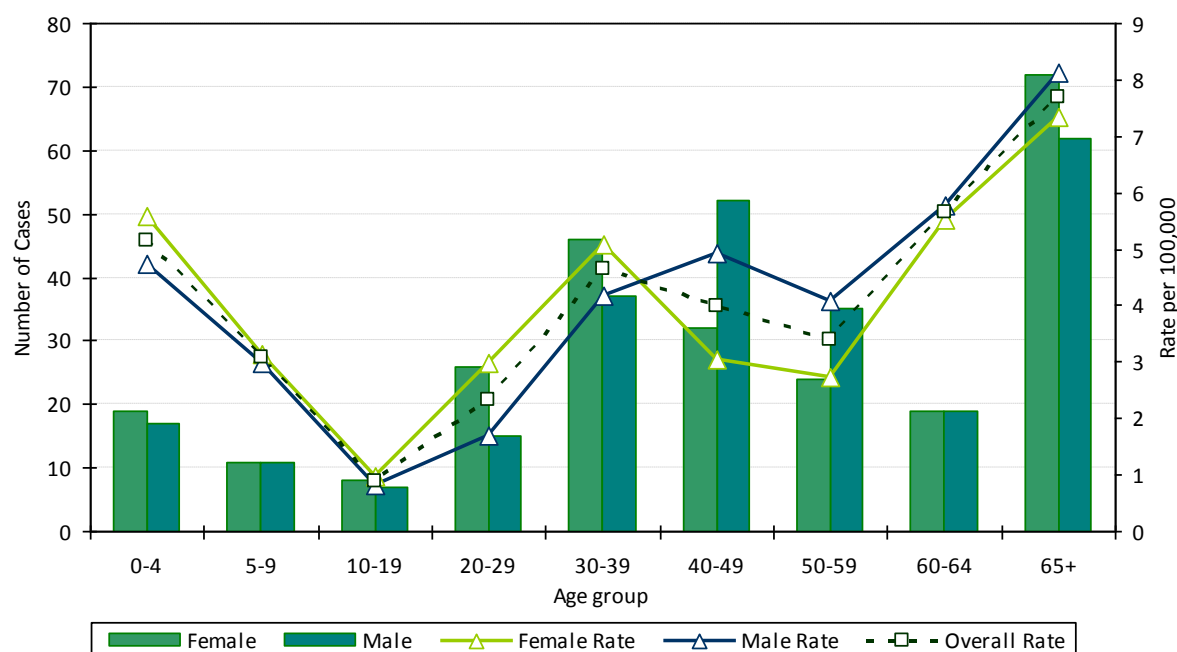
Figure 4.1.2: Incidence of Invasive Group A Streptococcal Disease by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 4.1.3: Incidence of Invasive Group A Streptococcal Disease by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

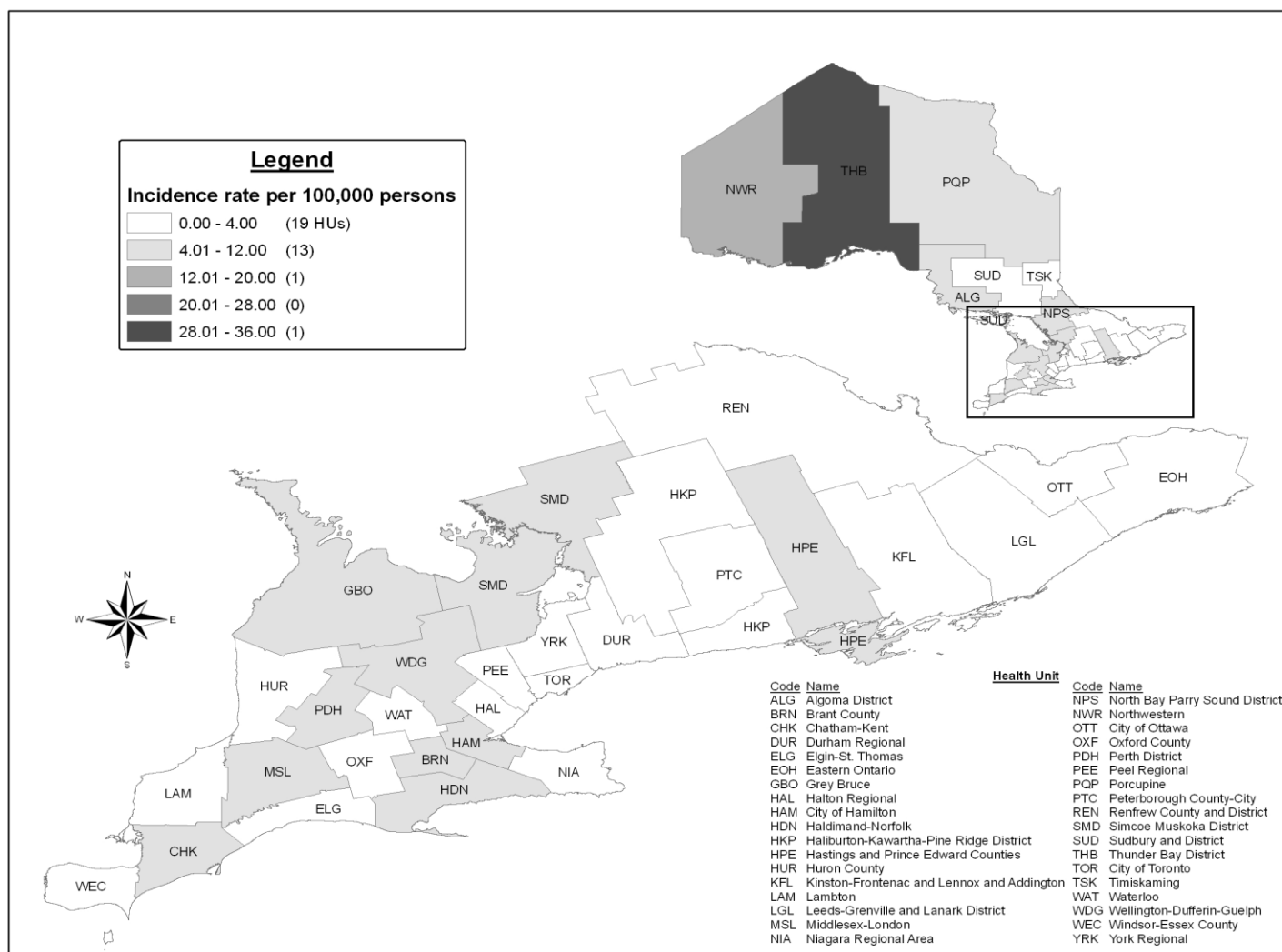
Table 4.1.1: Incidence of Invasive Group A Streptococcal Disease by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	19	5.6	17	4.7	36	5.2
5-9	11	3.1	11	3.0	22	3.1
10-19	8	1.0	7	0.8	15	0.9
20-29	26	3.0	15	1.7	41	2.3
30-39	46	5.1	37	4.2	83	4.6
40-49	32	3.1	52	4.9	84	4.0
50-59	24	2.7	35	4.1	59	3.4
60-64	19	5.5	19	5.8	38	5.6
65+	72	7.3	62	8.1	134	7.7
Total	257	3.9	255	4.0	512	4.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009].

Map 4.1.1: Incidence of Invasive Group A Streptococcal Disease by Diagnosing Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the health unit where the case resided at the time of disease identification; Includes travel-related cases

Table 4.1.2: Incidence of Invasive Group A Streptococcal Disease by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Thunder Bay District	56	35.8
Northwestern	15	18.4
Perth District	5	6.5
North Bay Parry Sound District	8	6.3
Hamilton	33	6.3
Middlesex-London	28	6.3
Waterloo Region	24	4.7
Porcupine	4	4.5
Haldimand-Norfolk	5	4.5
Chatham-Kent	5	4.5
Brant County	6	4.3
Simcoe Muskoka District	22	4.3
Grey Bruce	7	4.3
Hastings & Prince Edward Counties	7	4.3
Algoma District	5	4.2
Ottawa	35	4.0
Sudbury and District	8	4.0
Toronto	102	3.8
Wellington-Dufferin-Guelph	10	3.7
Kingston, Frontenac, Lennox & Addington	7	3.6
Niagara Region	15	3.4
Elgin-St. Thomas	3	3.3
Windsor-Essex County	12	3.0
Durham Region	17	2.8
Eastern Ontario	5	2.5
Leeds, Grenville and Lanark District	4	2.4
Lambton County	3	2.3
Peterborough County-City	3	2.2
Halton Region	10	2.1
Peel Region	25	1.9
Renfrew County and District	2	1.9
Oxford County	2	1.9
Haliburton, Kawartha, Pine Ridge	3	1.7
York Region	16	1.6
Huron County	0	0.0
Timiskaming	0	0.0
Ontario	512	4.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

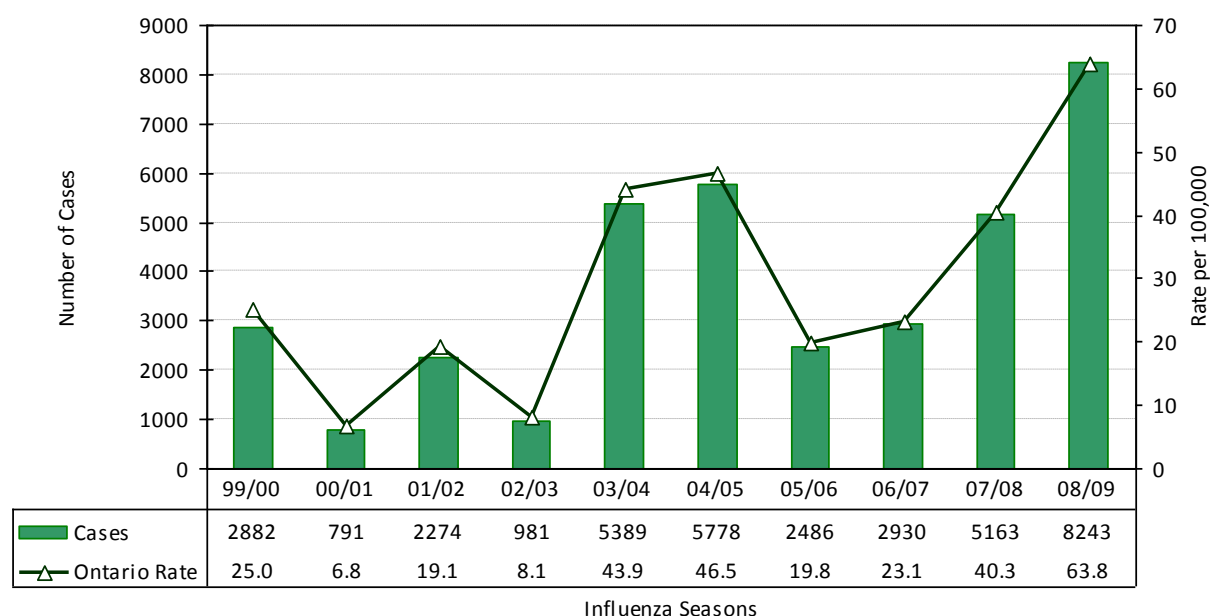
Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers the health unit where the case resided at the time of disease identification; Includes travel-related cases

4.2 INFLUENZA

- A total of 8,243 confirmed cases of influenza were reported in Ontario in the 2008/2009 influenza season which ran from September 1, 2008 to August 31, 2009. This figure represents an incidence rate of 64 cases per 100,000 population (Figure 4.2.1).
- The incidence of influenza in the 2008/2009 season was higher than all previous seasons. This increase was attributed to the occurrence of the first wave of the H1N1 influenza pandemic which accounted for 49% (4,040 cases) of influenza cases reported in the 2008/2009 season (Figure 4.2.1).
- The incidence of influenza in the 2008/2009 season peaked in June, 2009, which coincided with the rapid rise in disease incidence during the first wave of the pandemic. The month of June accounted for 2,944 (36%) cases, which is more than 80% of the average incidence for the three previous influenza seasons (Figure 4.2.2).
- Influenza disproportionately affects individuals at both ends of the age spectrum: children under the age of five years and older adults over the age of 65 years. In the 2008/2009 season, the age-specific trends in incidence rate were different from past influenza seasons. In general, the incidence rate for influenza decreased among older age groups, with cases in the age groups between 5 and 64 years accounting for 79% of influenza cases reported in the 2008/2009 season (Figure 4.2.3 and Table 4.2.1).
- Although children under the age of one year experienced the highest incidence rate of influenza (234 cases per 100,000 population), the incidence rate for cases aged 65 years and older was significantly lower than expected in comparison to cases in the age range from 5 to 49 years.
- Youths aged 10-19 years accounted for over one-quarter (2,255 cases) of influenza cases reported in the 2008/2009 season (Figure 4.2.3 and Table 4.2.1).
- Toronto and Peel Region reported the highest incidence of influenza with 2,559 and 1,234 cases, respectively. The highest incidence rate was reported by Northwestern Health Unit at 107 cases per 100,000 population (Table 4.2.2).

Figure 4.2.1: Incidence of Influenza in Ontario: 1999/2000 - 2008/2009

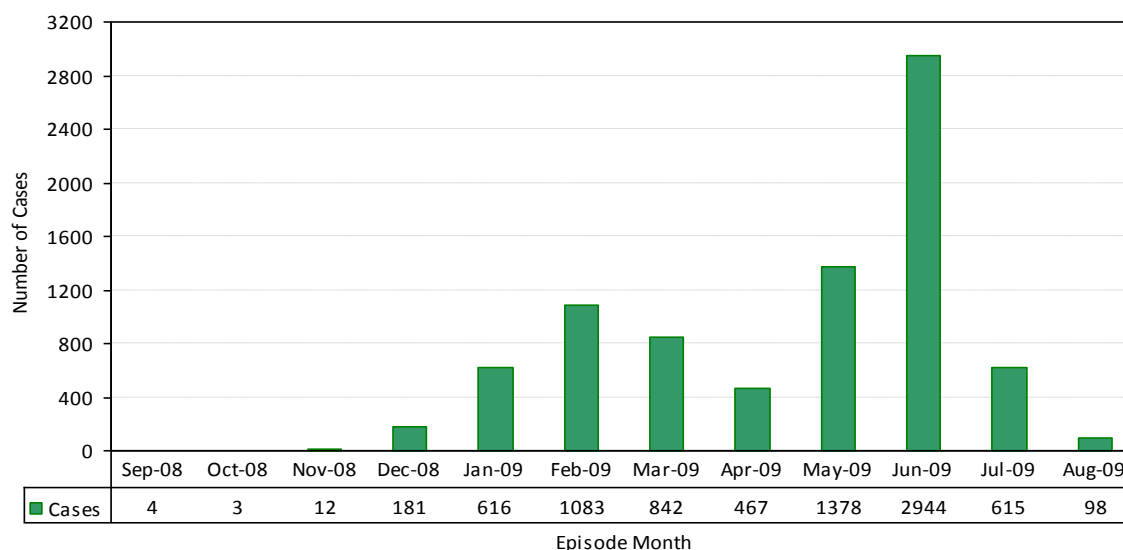


Data Source (Ontario rates): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 97/98-07/08 and [07/12/2010] for 08/09.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/15/2009] for 97/98-07/08 and [01/14/2010] for 08/09.

Notes: The 2008/09 season includes 6 pandemic influenza cases from out-of-province. It was not possible to exclude these cases because they were reported in aggregate

Figure 4.2.2: Incidence of Influenza by Episode Month: Ontario, 2008/2009

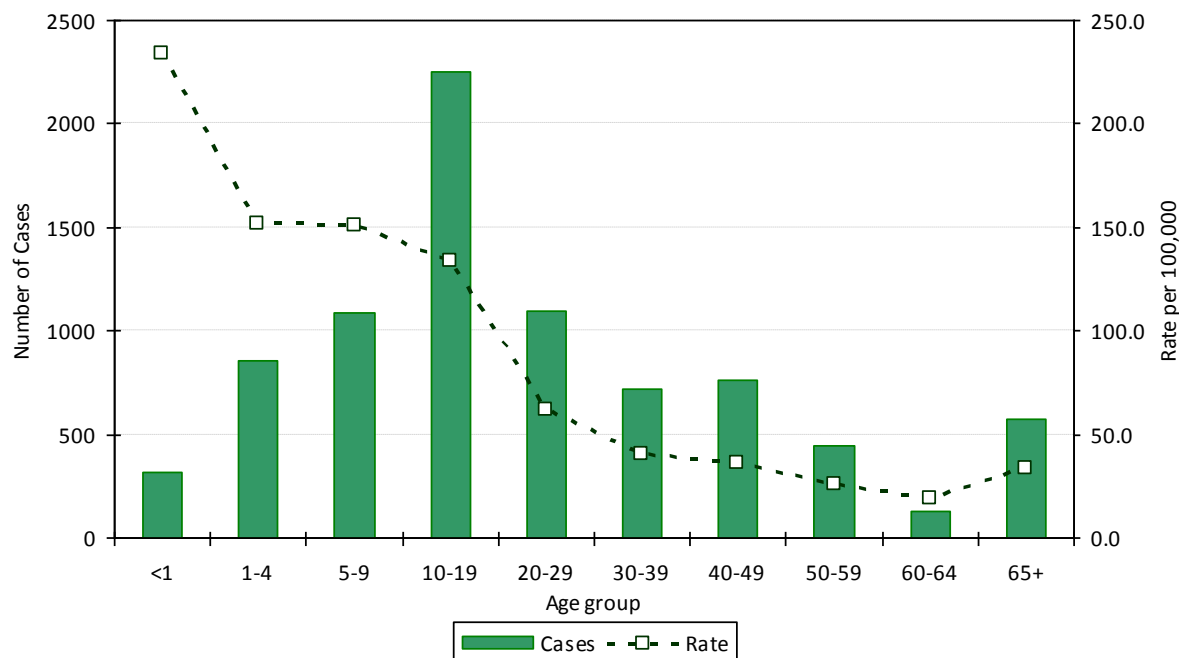


Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [07/12/2010].

Note 1: Episode month refers to the best estimate of the month of onset of illness.

Note 2: The 2008/09 season includes 6 pandemic influenza cases from out-of-province. It was not possible to exclude these cases because they were reported in aggregate

Figure 4.2.3: Incidence of Influenza by Age: Ontario, 2008/2009



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [07/12/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [14/01/2010].

Note 1: Total does not include 14 cases for which age is unknown. It also includes 6 pandemic influenza cases from out-of-province which were not possible to exclude because they were reported in aggregate

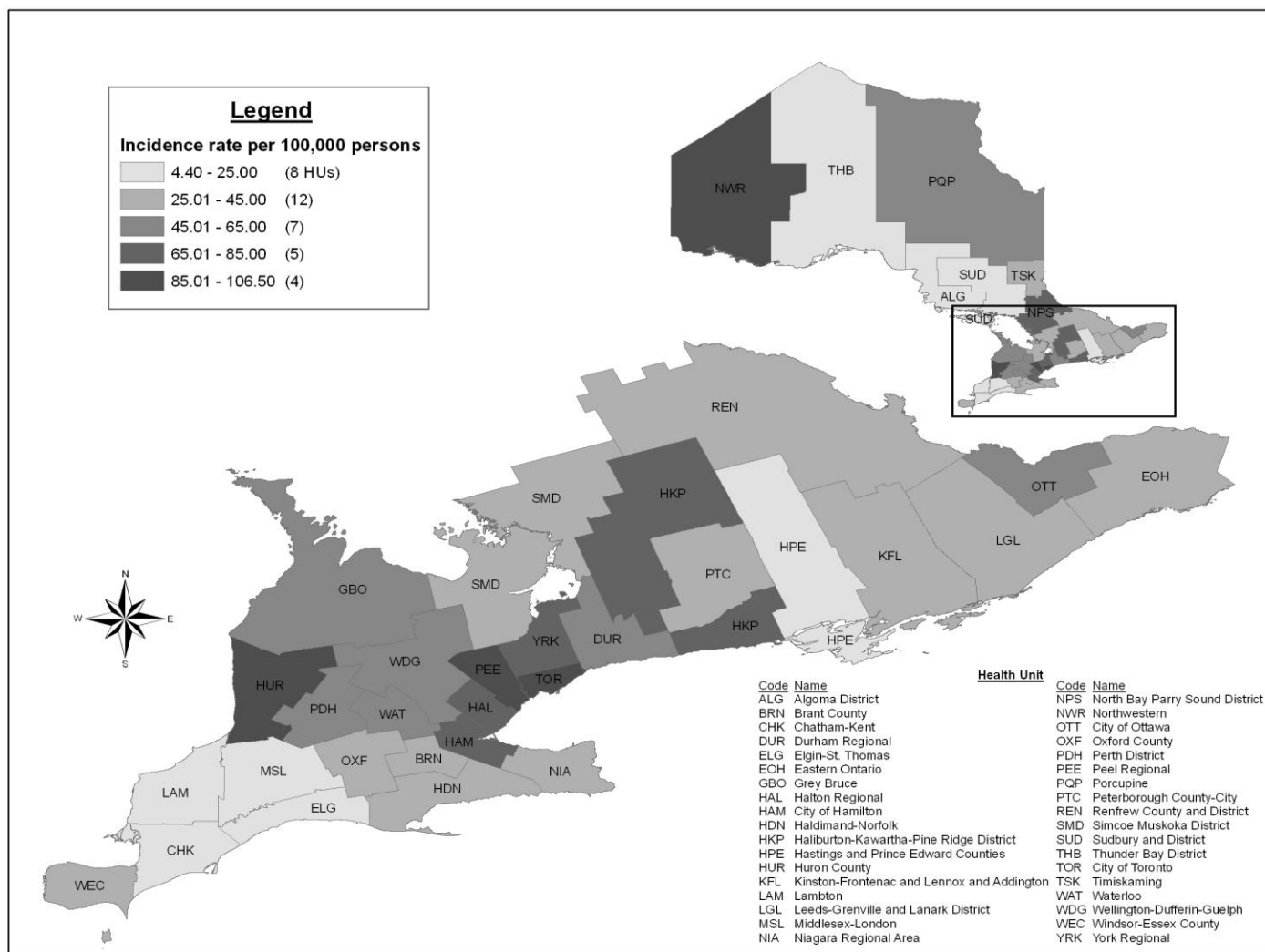
Table 4.2.1: Incidence of Influenza by Age Group: Ontario, 2008/2009

Age group (years)	Number of cases	Rate/100,000 population
<1	318	233.8
1-4	854	151.7
5-9	1,084	151.0
10-19	2,255	133.5
20-29	1,092	62.0
30-39	718	40.0
40-49	761	36.1
50-59	444	25.5
60-64	126	18.7
65+	577	33.1
Total¹	8,229	63.6

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [07/12/2010].

Note 1: Total does not include 14 cases for which age is unknown. It also includes 6 pandemic influenza cases from out-of-province which were not possible to exclude because they were reported in aggregate

Map 4.2.1: Incidence of Influenza by Public Health Unit: Ontario, 2008/2009



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [07/12/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the health unit where the case resided at the time of disease identification; Includes one case that is not a resident of Ontario; Includes travel-related cases. Does not include out-of-province cases reported in Ontario.

Table 4.2.2: Incidence of Influenza by Public Health Unit: Ontario, 2008/2009

Public Health Unit¹	Number of cases	Rate/100,000 population
Northwestern	87	106.5
Toronto	2,559	96.5
Peel Region	1,234	96.0
Huron County	53	87.3
Halton Region	394	82.2
North Bay Parry Sound District	102	80.7
Haliburton, Kawartha, Pine Ridge	139	78.7
York Region	745	75.3
Hamilton	360	68.3
Ottawa	545	62.8
Porcupine	54	61.1
Perth District	44	57.1
Grey Bruce	89	54.6
Waterloo Region	252	49.3
Wellington-Dufferin-Guelph	129	47.9
Durham Region	288	47.6
Simcoe Muskoka District	229	45.0
Kingston, Frontenac, Lennox & Addington	86	44.8
Eastern Ontario	78	39.2
Niagara Region	155	35.1
Brant County	47	34.1
Leeds, Grenville and Lanark District	53	31.4
Timiskaming	11	31.4
Peterborough County-City	43	31.2
Renfrew County and District	32	31.0
Windsor-Essex County	116	28.6
Oxford County	29	27.3
Haldimand-Norfolk	28	25.3
Sudbury and District	46	23.0
Middlesex-London	100	22.3
Hastings & Prince Edward Counties	32	19.6
Algoma District	22	18.4
Thunder Bay District	23	14.7
Chatham-Kent	16	14.4
Lambton County	13	9.8
Elgin-St. Thomas	4	4.4
Out-of-Province	6	n/a
Ontario	8,243	63.7

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [07/12/2010].

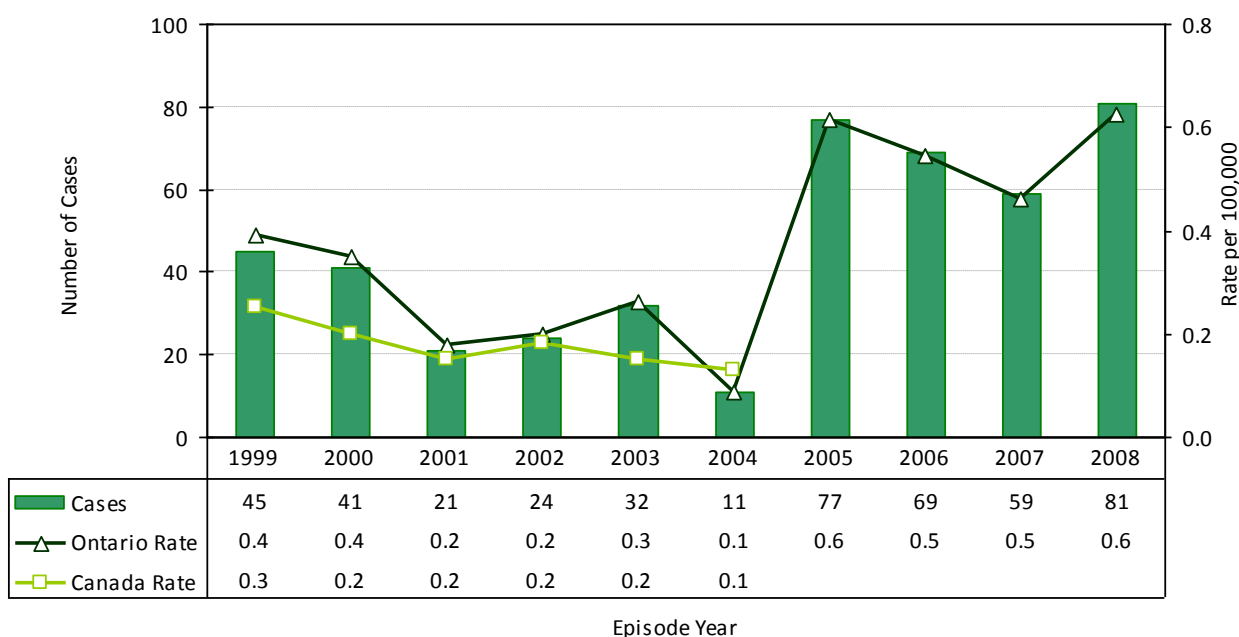
Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [14/01/2010].

Note 1: Health unit refers the health unit where the case resided at the time of disease identification; Includes travel-related cases.

4.3 LEGIONELLOSIS

- In 2008, Ontario reported 81 confirmed cases of legionellosis, which represents an incidence rate of 0.6 cases per 100,000 population (Table 4.3.1).
- Between 1999 and 2004, the incidence of legionellosis in Ontario declined by 76% to a low of 11 cases in 2004. In 2005, the incidence of legionellosis increased due mainly to a large outbreak in Toronto. Since then, the incidence of legionellosis has remained high, peaking at 81 cases in 2008 (Figure 4.3.1).
- During the period 1999 to 2004, a comparable decline in the incidence rate for legionellosis also occurred at the national level with a 67% decrease in incidence from 0.3 cases per 100,000 population in 1999 to 0.1 cases per 100,000 population in 2004 (Figure 4.3.1).
- In Ontario, legionellosis typically demonstrates a seasonal pattern, with most cases occurring late summer to early fall. In 2008, 47% of cases were reported in August and September (Figure 4.3.2).
- The incidence of legionellosis increases with increasing age, with 93% (75/81) of cases occurring in individuals aged 40 years and older. Incidence rates within this age range were 50% to 180% higher than the overall incidence rate for the province (Figure 4.3.3, Table 4.3.1).
- In 2008, females accounted for 31% (25 cases) of reported cases of legionellosis for an incidence rate of 0.4 cases per 100,000 population. Males accounted for the remaining 69% (56 cases) of cases for an incidence rate of 0.9 cases per 100,000 population (Figure 4.3.3, Table 4.3.1).
- Over 40% (16/36) of Ontario health units reported no cases of legionellosis in 2008. Of those reporting, 80% (16/20) reported incidence rates that were higher than the overall provincial incidence rate of 0.6 cases per 100,000 population. Hamilton reported the highest incidence rate of legionellosis at 2.8 cases per 100,000 population; an outbreak of 9 cases contributed to the high incidence rate in Hamilton (Table 4.3.2).
- Exposures that occur in the home were reported by 20% of legionellosis cases in 2008 who reported an exposure (Figure 4.3.4).

Figure 4.3.1: Incidence of Legionellosis in Ontario and Canada: 1998-2008

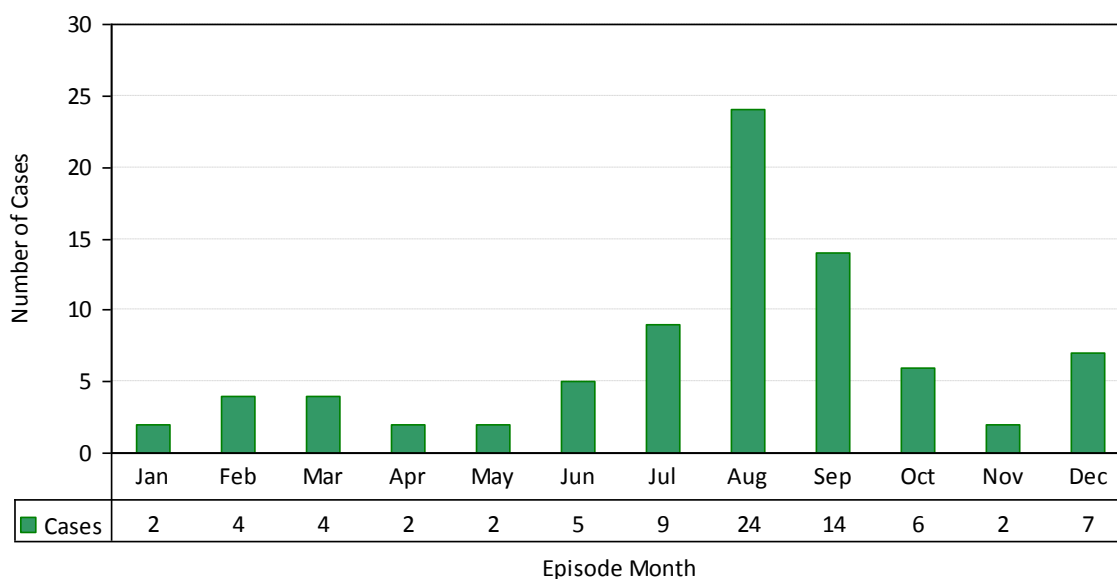


Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded [08/13/2010]: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

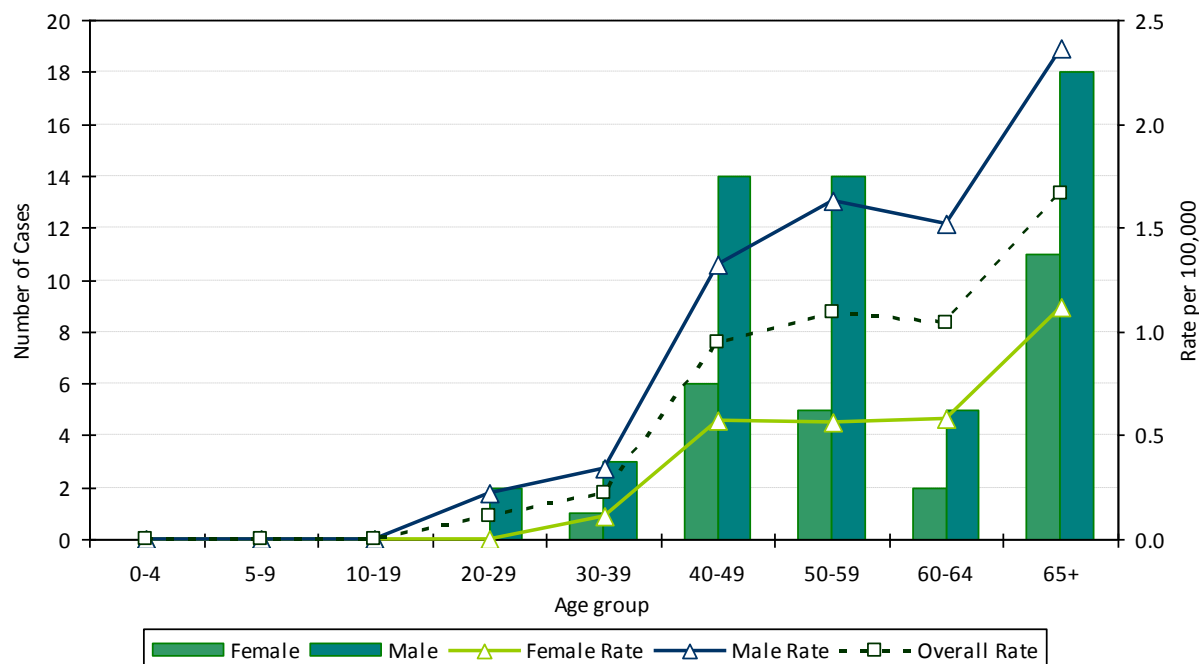
Figure 4.3.2: Incidence of Legionellosis by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 4.3.3: Incidence of Legionellosis by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

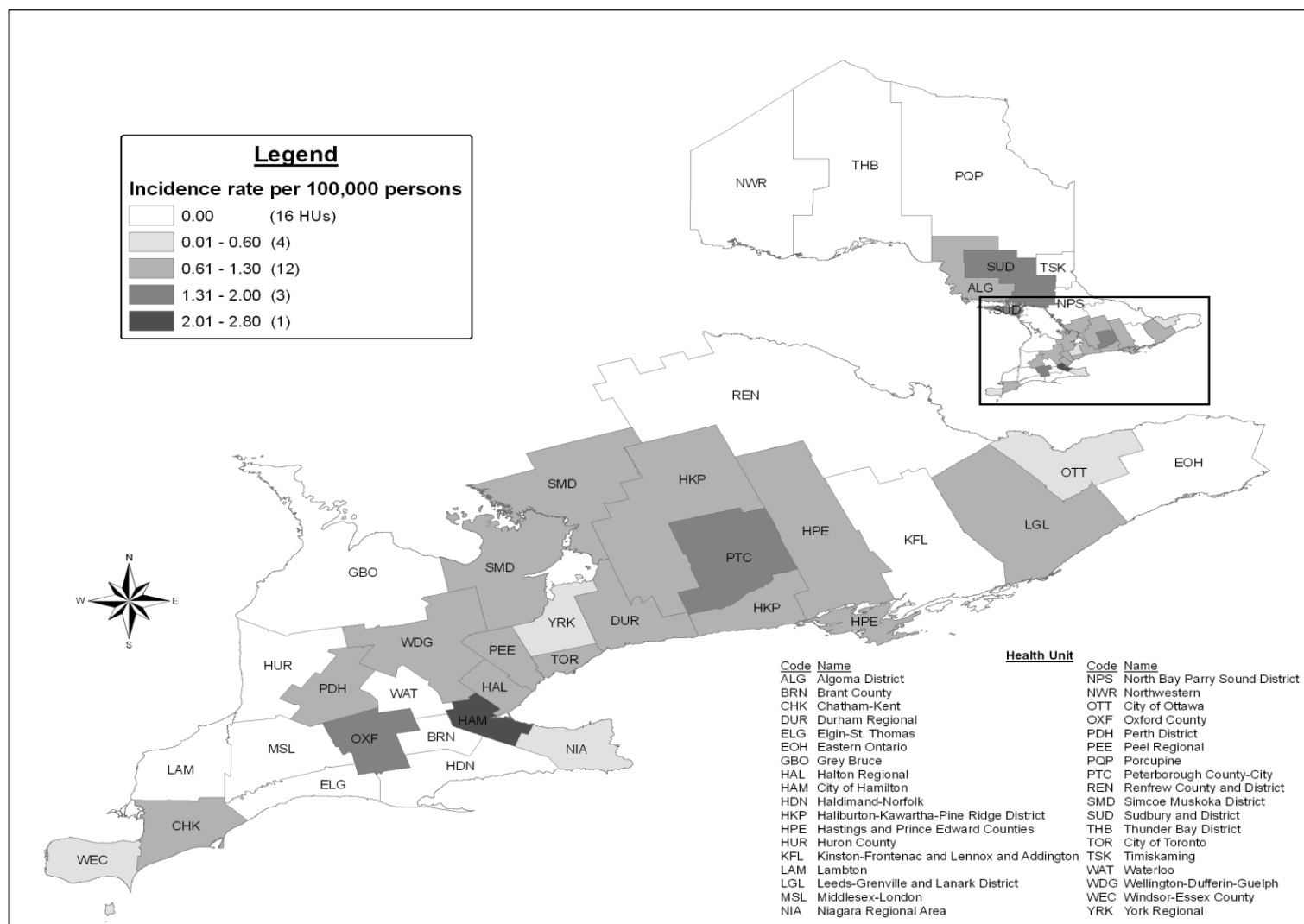
Table 4.3.1: Incidence of Legionellosis by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	0	0.0	0	0.0	0	0.0
5-9	0	0.0	0	0.0	0	0.0
10-19	0	0.0	0	0.0	0	0.0
20-29	0	0.0	2	0.2	2	0.1
30-39	1	0.1	3	0.3	4	0.2
40-49	6	0.6	14	1.3	20	0.9
50-59	5	0.6	14	1.6	19	1.1
60-64	2	0.6	5	1.5	7	1.0
65+	11	1.1	18	2.4	29	1.7
Total	25	0.4	56	0.9	81	0.6

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Map 4.3.1: Incidence of Legionellosis by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers the health unit where the case resided at the time of disease identification; Includes travel-related cases

Table 4.3.2: Incidence of Legionellosis by Public Health Unit: Ontario, 2008

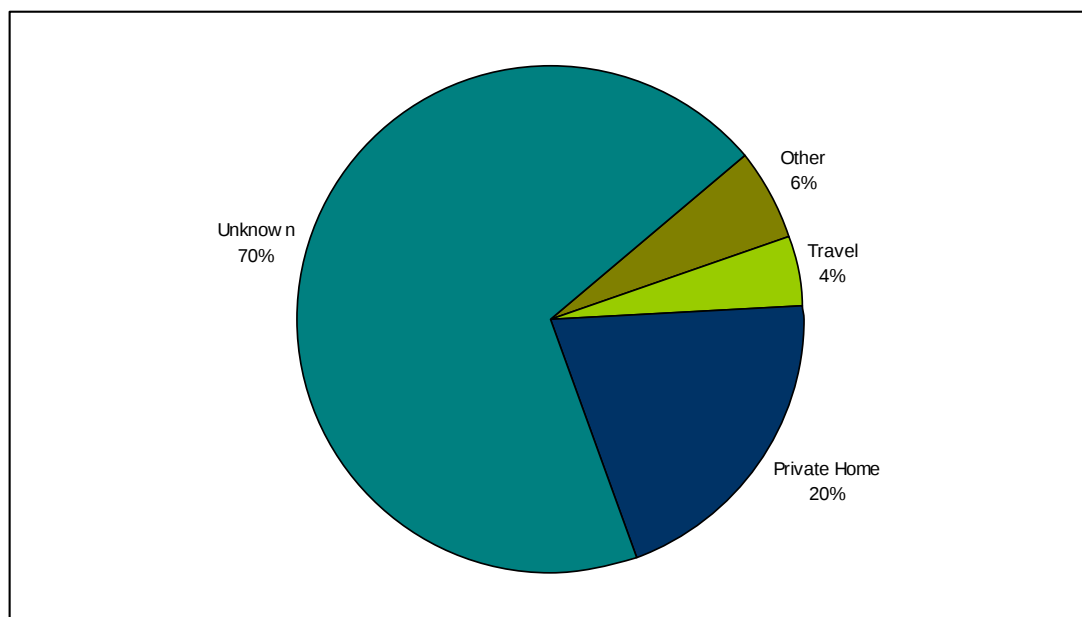
Public Health Unit	Number of cases	Rate/100,000 population
Hamilton	15	2.8
Oxford County	2	1.9
Sudbury and District	3	1.5
Peterborough County-City	2	1.5
Peel Region	17	1.3
Perth District	1	1.3
Chatham-Kent	1	0.9
Algoma District	1	0.8
Halton Region	4	0.8
Durham Region	5	0.8
Wellington-Dufferin-Guelph	2	0.7
Hastings & Prince Edward Counties	1	0.6
Leeds, Grenville and Lanark District	1	0.6
Simcoe Muskoka District	3	0.6
Haliburton, Kawartha, Pine Ridge	1	0.6
Toronto	15	0.6
York Region	4	0.4
Windsor-Essex County	1	0.2
Niagara Region	1	0.2
Ottawa	1	0.1
Brant County	0	0.0
Eastern Ontario	0	0.0
Elgin-St. Thomas	0	0.0
Grey Bruce	0	0.0
Haldimand-Norfolk	0	0.0
Huron County	0	0.0
Kingston, Frontenac, Lennox & Addington	0	0.0
Lambton County	0	0.0
Middlesex-London	0	0.0
North Bay Parry Sound District	0	0.0
Northwestern	0	0.0
Porcupine	0	0.0
Renfrew County and District	0	0.0
Thunder Bay District	0	0.0
Timiskaming	0	0.0
Waterloo Region	0	0.0
Ontario	81	0.6

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the health unit where the case resided at the time of disease identification; Includes travel-related cases

Figure 4.3.4: Most Likely Exposure Setting for Legionellosis Cases: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

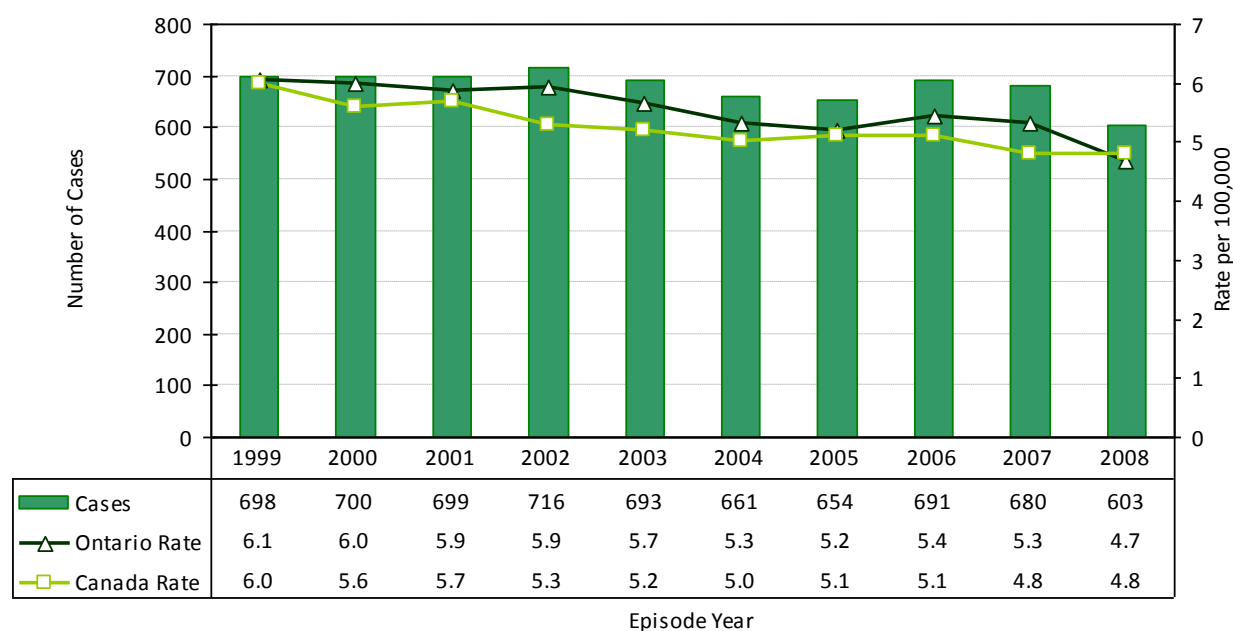
Note 1: The most likely exposure was selected for cases reporting more than one exposure

Note 2: Exposure details were not reported for 15% of cases; these cases were excluded

4.4 TUBERCULOSIS

- In 2008, Ontario reported 603 confirmed cases of tuberculosis (TB), which represents an incidence rate of 4.7 cases per 100,000 population (Figure 4.4.1).
- Between 1999 and 2008, the incidence rate of TB in Ontario decreased steadily from 6.1 to 4.7 cases per 100,000 population. With the exception of 2008, Ontario's annual incidence rates for TB consistently exceeded the national rates during this period (Figure 4.4.1).
- In 2008, the overall incidence rate for TB was similar for males and females at 4.9 and 4.4 cases per 100,000 population, respectively. However, age-specific rates varied widely among males and females (Figure 4.4.3, Table 4.4.1).
- The incidence of TB was highest among people aged 65 years and older, with an overall incidence rate of 9.2 cases per 100,000 population (Figure 4.4.3, Table 4.4.1).
- Toronto and Peel Region reported the highest incidence rates of TB in 2008 at 10.3 and 8.8 cases per 100,000 population, respectively. Northwestern reported the third highest incidence rate at 8.6 cases per 100,000 population (Table 4.4.2).
- Residence in a TB endemic area (475), underlying medical conditions (97) and being a close contact of a TB case (72) were the most commonly reported risk factors for acquiring TB in 2008 among TB cases who reported at least one risk factor (Table 4.4.3).
- Among TB cases reported in 2008, 31 tested positive for HIV, for an overall co-infection rate of 5%.
- Of the 6,795 individuals who contracted TB between 1999 and 2008, 5,835 (86%) were born outside Canada, and 721 (11%) were born within Canada. Country of birth was unknown or missing for 3% of these cases (Table 4.4.4).
- The top five countries of birth for TB cases diagnosed with active infections and who were born outside of Canada between 1999 and 2008 were India (18%), the Philippines (12%), China (11%), Vietnam (8%) and Pakistan (5%) (Table 4.4.4).
- Among active TB cases that died in 2008 (n=63), TB was classified as an underlying cause of death for 28%, a contributing cause of death for 41% and unrelated to cause of death for 25%.
- From 2005 to 2008, the proportion of TB cases reporting resistance to one or more drugs decreased from 11% to 8%. The proportion of cases exhibiting multi-drug resistance (MDR) decreased from 2% to 1% (Table 4.4.7)

Figure 4.4.1: Incidence of Tuberculosis in Ontario and Canada: 1999-2008

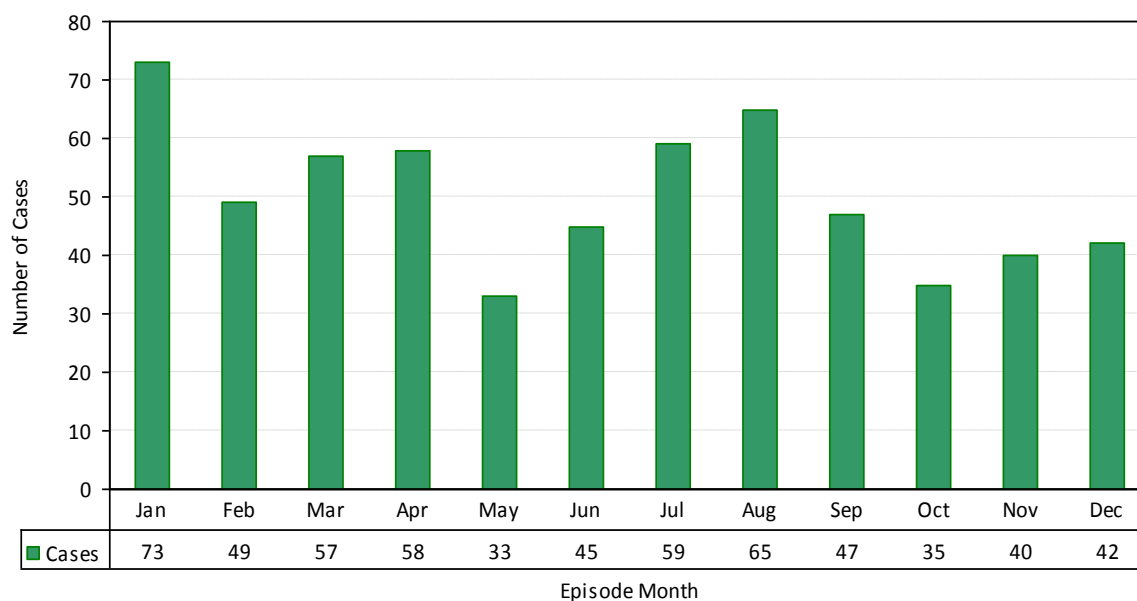


Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [02/02/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Tuberculosis in Canada 2008 (pre-release). Ottawa (Canada): Minister of Public Works & Government Services Canada; 2009. Available online: <http://www.phac-aspc.gc.ca/tbpc-latb/pubs/tbcan08pre/pdf/tbcan2008pre-eng.pdf>.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

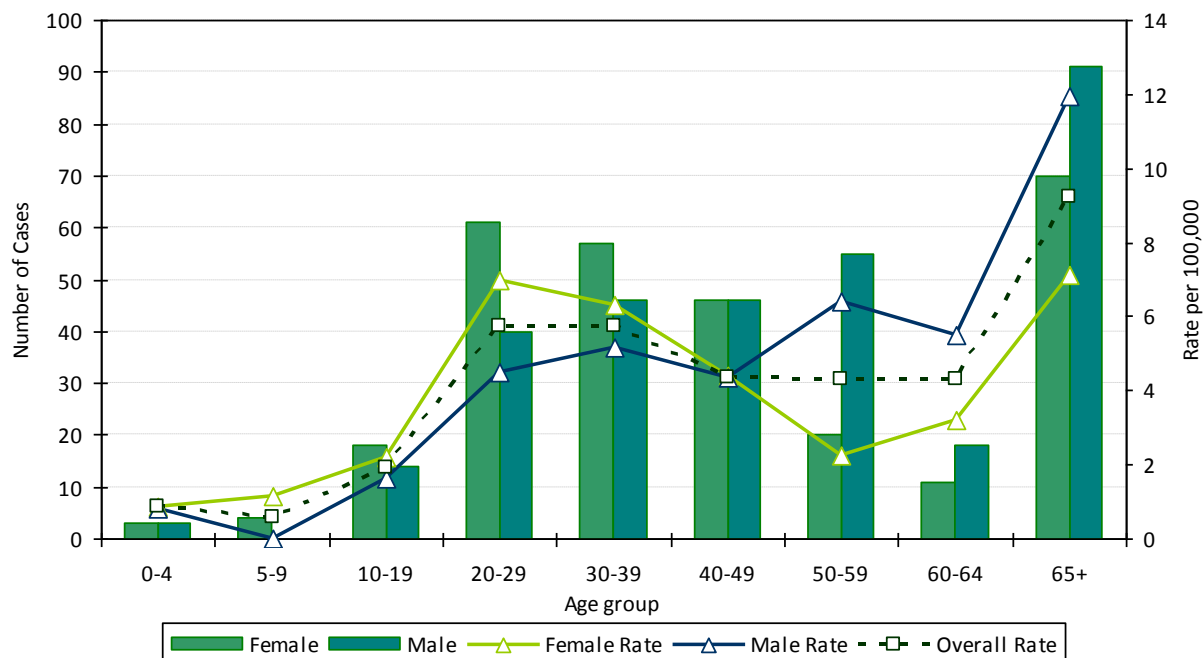
Figure 4.4.2: Number of reported cases of Tuberculosis by month, Ontario 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [02/02/2010]

Note: Episode onset month refers to the best estimate of the onset of illness month.

Figure 4.4.3: Incidence of Tuberculosis by Age and Sex: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [02/02/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

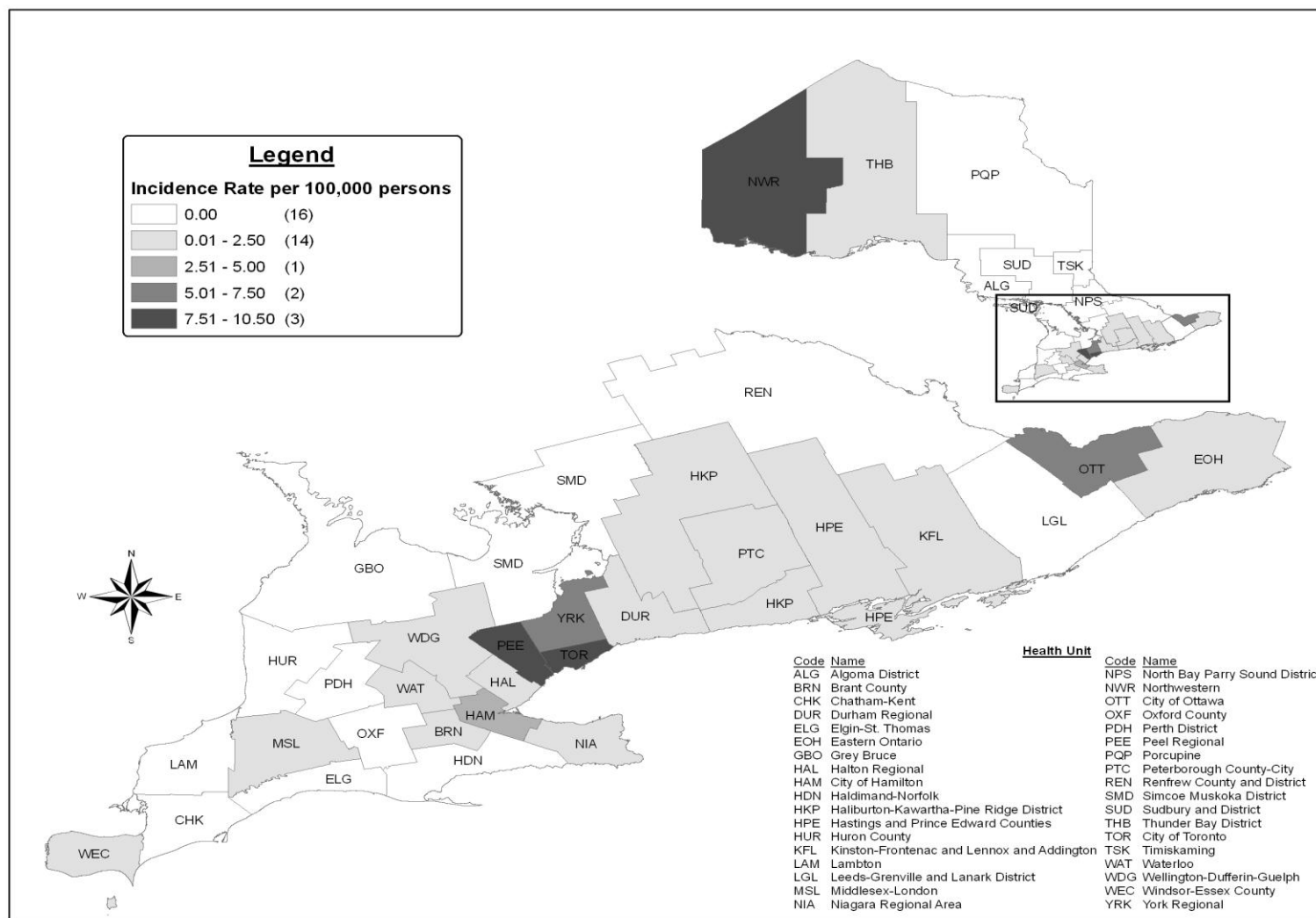
Table 4.4.1: Incidence of Tuberculosis by Age and Sex: Ontario, 2008

Age group (years)	Females		Males		Total	
	Number of Cases	Rate/ 100,000 population	Number of Cases	Rate/ 100,000 population	Number of Cases	Rate/ 100,000 population
0-4	3	0.9	3	0.8	6	0.9
5-9	4	1.1	0	0.0	4	0.6
10-19	18	2.2	14	1.6	32	1.9
20-29	61	7.0	40	4.5	101	5.7
30-39	57	6.3	46	5.2	103	5.7
40-49	46	4.4	46	4.3	92	4.4
50-59	20	2.3	55	6.4	75	4.3
60-64	11	3.2	18	5.5	29	4.3
65+	70	7.1	91	11.9	161	9.2
Total	290	4.4	313	4.9	603	4.7

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [02/02/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Map 4.4.1: Incidence Rate of Tuberculosis by Public Health Unit: Ontario, 2008



Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [02/02/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification.

Table 4.4.2: Incidence of Tuberculosis by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Toronto	273	10.3
Peel Region	113	8.8
Northwestern	7	8.6
York Region	60	6.1
Ottawa	51	5.9
Hamilton	20	3.8
Waterloo Region	13	2.5
Durham Region	15	2.5
Haliburton, Kawartha, Pine Ridge	4	2.3
Wellington-Dufferin-Guelph	6	2.2
Niagara Region	8	1.8
Halton Region	8	1.7
Kingston, Frontenac, Lennox & Addington	3	1.6
Eastern Ontario	3	1.5
Windsor-Essex County	6	1.5
Peterborough County-City	2	1.5
Brant County	2	1.4
Middlesex-London	6	1.3
Thunder Bay District	2	1.3
Hastings & Prince Edward Counties	1	0.6
Algoma District	0	0.0
Chatham-Kent	0	0.0
Elgin-St. Thomas	0	0.0
Grey Bruce	0	0.0
Haldimand-Norfolk	0	0.0
Huron County	0	0.0
Lambton County	0	0.0
Leeds, Grenville and Lanark District	0	0.0
North Bay Parry Sound District	0	0.0
Oxford County	0	0.0
Perth District	0	0.0
Porcupine	0	0.0
Renfrew County and District	0	0.0
Simcoe Muskoka District	0	0.0
Sudbury and District	0	0.0
Timiskaming	0	0.0
Ontario	603	4.7

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [02/02/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers the health unit where the case resided at the time of disease identification; Includes travel-related cases

Table 4.4.3: Exposure Settings and Risk Factors for Tuberculosis, Ontario: 2008

Risk Factors and Exposure Setting		Cases Reporting the Risk Factor/ Exposure Setting (n = 603)
Social/ Behavioural Risk Factors	Close contact of a TB case	72
	Low income	23
	Injection substance abuse	20
	Other ¹	11
	Unknown ²	498
Exposure Settings	Lived in an endemic area	475
	Travelled to an endemic area	68
	Resident of an institution	27
	Under-housed	18
	Other ³	8
	Lived in First Nation community	6
	Unknown ²	92
Medical Risk Factor	Diabetes mellitus	51
	Self-reported HIV/AIDS ⁴	28
	Immuno-compromised	23
	Low body weight	14
	Other underlying medical conditions	97
	Other ⁵	6
	Less than 5yrs old when infected	6
	Unknown ²	327

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [02/02/2010]

Note 1: "Other" includes factors such as "tattooing and piercing" and "smoker". Risk factors in this category may not be specific to the acquisition of TB

Note 2: Unknown or value missing

Note 3: Includes factors such as "refugee camp" or "Home"

Note 4: The number of cases reporting HIV/AIDS as a medical risk factor was substantially greater than the number of reported co-infections of HIV/AIDS and TB as reported in the TB chapter. This may be attributed to the fact that the TB/HIV co-infections rate is based on laboratory confirmed cases that were officially reported whereas medical risk factors were self-reported.

Note 5: Includes factors such as "stress", "other" and "inadequate treatment"

Table 4.4.4: Tuberculosis by Country of Origin: Ontario, 1999-2008

Country of Origin	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Born Outside Canada											
India	69	86	95	101	115	115	115	127	105	108	1,036
Philippines	63	70	58	69	73	67	56	83	72	84	695
China	62	66	56	72	63	52	67	69	80	56	643
Vietnam	69	47	44	53	48	56	37	34	33	38	459
Pakistan	25	26	36	30	25	29	21	40	40	22	294
Somalia	37	38	21	26	27	22	27	22	22	20	262
Hong Kong	36	40	24	27	27	12	9	16	18	14	223
Sri Lanka	19	18	18	14	23	21	26	26	27	15	207
Ethiopia	22	16	13	16	25	18	20	22	12	9	173
South Korea	0	0	0	0	0	0	8	11	13	5	37
Other	179	182	204	210	179	184	172	161	182	153	1,806
Sub-Total	581	589	569	618	605	576	558	611	604	524	5,835
Born in Canada											
Non-Aboriginal	79	73	83	67	56	45	49	46	48	55	601
Registered/ Status Indian	14	12	18	13	8	17	6	9	10	8	115
Inuit	0	0	0	1	0	0	1	0	1	2	6
Sub-Total	93	85	101	81	64	62	56	55	59	65	721
Unknown	24	26	29	17	24	23	40	25	17	14	239
TOTAL	698	700	699	716	693	661	654	691	680	603	6,795

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [02/02/2010] for 2008.

Table 4.4.5: Detection Method for Tuberculosis Cases: Ontario, 2008

Method of Detection ¹	Number of cases	Percentage of Total (n=603)
Symptom presentation	462	76.6%
Immigration screening	51	8.5%
Routine screening	34	5.6%
Contact tracing	23	3.8%
Targeted screening	4	0.7%
Other ²	23	3.8%
Unknown	6	1.0%
Total	603	100%

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [02/02/2010].

Note 1: Method of detection refers to the means through which the case of Tuberculosis was initially identified.

Note 2: Other includes post-mortem and detection during medical treatment of other conditions.

Table 4.4.6: Tuberculosis Cases by Diagnostic Site: Ontario, 2008

Diagnostic Site ¹	Number of cases	Percentage of Total (n=603)
Respiratory System	422	70.0%
Lymphatic System	89	14.7%
Pleurisy	30	5.0%
Bones and Joints System	22	3.6%
Nervous System	16	2.6%
Gastrointestinal System	16	2.6%
Miliary	15	2.5%
Genitourinary System	12	2.0%
Other body sites/systems	12	2.0%
Integumentary System	10	1.7%

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [02/02/2010].

Note 1: TB may be diagnosed at more than one body site. In all, 646 disease sites were identified among 603 cases.

Table 4.4.7: Drug Resistance among Tuberculosis Cases: Ontario, 2005- 2008

Level of Resistance	2005		2006		2007		2008	
	Number of cases	Percentage of Total	Number of cases	Percentage of Total	Number of cases	Percentage of Total	Number of cases	Percentage of Total
Any Drug Resistance	75	11%	53	8%	62	9%	50	8%
MDR ¹	14	2%	8	1%	8	1%	7	1%
XDR ¹	0	0%	0	0%	1	0%	0	0%
XXDR ¹	0	0%	0	0%	0	0%	0	0%
Total Cases	654	100%	691	100%	680	100%	603	100%

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 2005-2007 and [02/02/2010] for 2008.

Note 1: Multiple drug resistant (MDR), extensively drug resistant (XDR), extremely drug resistant (XXDR); see Technical Notes for full definitions.

Table 4.4.8: Compliance with Prescribed Treatment by Tuberculosis Cases: Ontario, 2005-2008

Year	Number of cases	At Least 80% Compliance Level Achieved (n) ¹	At Least 80% Compliance Level Achieved (%) ¹
2005	654	489	75%
2006	691	571	83%
2007	680	539	79%
2008	603	501	84%

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 2005-2007 and [02/02/2010] for 2008.

Note 1: Compliance is an estimate of the amount of medication taken by a case over their treatment period.

Table 4.4.9: Major Modes of Tuberculosis Treatment and Compliance: Ontario, 2008

Mode of Treatment	Compliance Level ¹						Number of cases
	100%	80-99%	50-79%	<50%	0%	Unknown	
Daily- Self Administered	5	16	1	0	0	0	22
Directly observed therapy (DOT)	68	244	25	1	0	35	373
Self-Administered	25	116	8	2	1	6	158
Other	8	19	3	0	1	3	34
Unknown	0	0	0	0	0	16	16
Total	106	395	37	3	2	60	603

Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [02/02/2010].

Note 1: Compliance is an estimate of the amount of medication taken by a case over their treatment period.

Chapter 5: VECTOR-BORNE DISEASES

- Malaria, Lyme disease and West Nile virus (WNV) illness are the three vector-borne diseases of public health significance in Ontario. Both Lyme disease and WNV illness are endemic in Ontario.
- From 1999 through 2008, the incidence of Lyme disease increased steadily from 23 confirmed cases in 1999 to 109 cases in 2008.
- The proportion of travel-related Lyme disease cases decreased by 46% from a high of 69% in 2005 to a record low of 37% in 2008. Conversely, the proportion of non-travel related cases has increased by 103% from 31% of all cases with a reported exposure in 2005 to 63% in 2008.
- The incidence of WNV illness has declined sharply in Ontario since first being reported in 2002. In that year, 394 confirmed and probable cases were reported. A record low of four cases of WNV illness was reported in Ontario in 2008, which represents an incidence rate of less than 0.1 cases per 100,000 population.
- The incidence of malaria in Ontario has remained stable over the past 10 years, with an average yearly count of 175 cases.
- Malaria is not endemic in Ontario and its incidence reflects travel to malaria-endemic countries or recent immigration from those countries. During the period 1999 to 2008, no exposures to malaria occurred in Ontario.
- Of malaria cases in 2008 that reported an exposure, travel to or recent immigration from endemic countries in Africa and continental south Asia accounted for 93% of exposures, while travel to the Caribbean and Latin-American region (3%), South-East Asia (3%) and other destinations (2%) accounted for the remaining exposures.

Table 5.1: Incidence of Vector-borne Diseases; Ontario, 1999-2008

Vector-borne Diseases	1999		2000		2001		2002		2003		2004		2005		2006		2007		2008	
	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹
Lyme Disease	23	0.2	46	0.4	24	0.2	28	0.2	26	0.2	33	0.3	41	0.3	48	0.4	69	0.5	109	0.8
Malaria	166	1.4	184	1.6	162	1.4	154	1.3	167	1.4	181	1.5	187	1.5	188	1.5	176	1.4	181	1.4
West Nile virus (WNV)	nr	nr	nr	nr	nr	nr	394	3.3	89	0.7	14	0.1	101	0.8	42	0.3	17	0.1	4	0.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010], for 2008 extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note 1: Incidence rate per 100,000 population

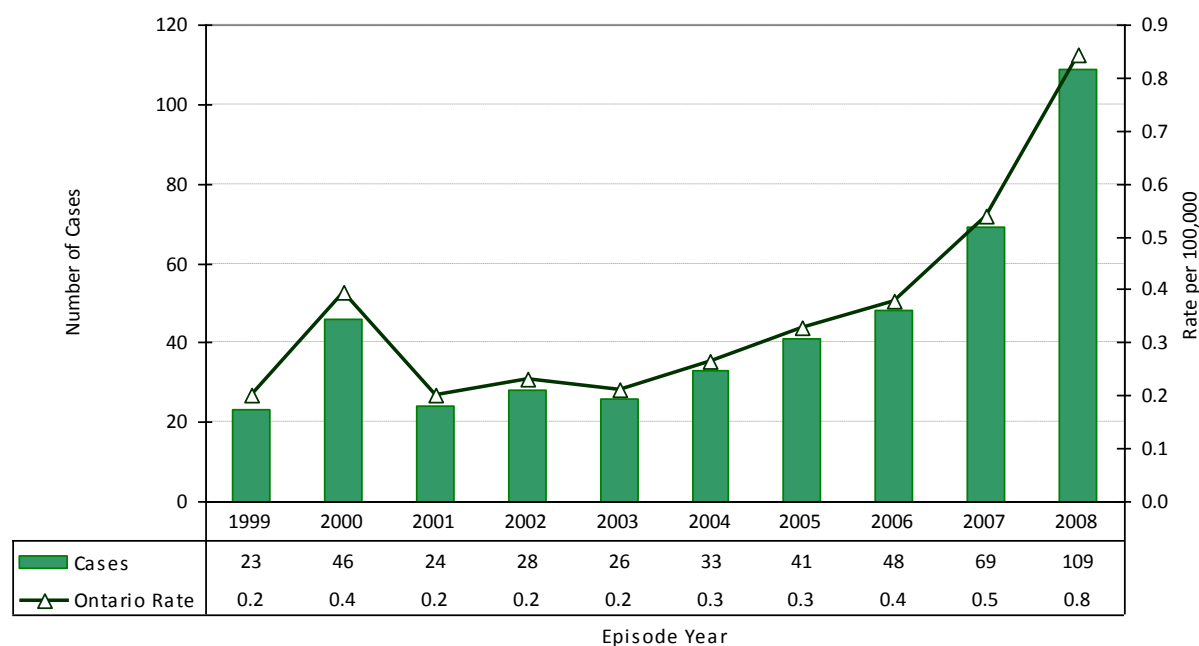
Note 2: No cases were reported for the following vector-borne diseases in Ontario during the period 1999-2008: yellow fever

Note 3: Nr - not reportable. WNV illness became a reportable disease in Ontario in 2002

5.1 LYME DISEASE

- In 2008, Ontario reported 109 confirmed cases of Lyme disease, which represents an incidence rate of 0.8 cases per 100,000 population (Figure 5.1.1).
- From 1999 through 2008, the incidence of Lyme disease increased steadily from 23 reported cases in 1999 to 109 cases in 2008 (Figure 5.1.1).
- The incidence rate of non-travel related Lyme disease cases increased from less than 0.1 cases per 100,000 population in 2005 (5 non-travel cases) to 0.5 cases per 100,000 population in 2008 (62 non-travel cases). Non-travel related Lyme disease refers to Lyme disease cases where no travel outside of Ontario was reported during the 30 days before the onset of symptoms.
- Lyme disease cases were reported throughout most of 2008, but with a notable peak in the months of June and July. Local transmission of Lyme disease was highest in June and July, accounting for 64% of total cases reported in these months (Figure 5.1.2).
- In 2008, the number of reported cases of Lyme disease was higher among females (66 cases or 1.0 case per 100,000 population) compared to their male counterparts (43 cases or 0.7 cases per 100,000 population) (Figure 5.1.3 and Table 5.1.1).
- The proportion of travel related cases of Lyme disease decreased 46% from a high of 69% of all cases with a reported exposure in 2005 to a record low of 37% in 2008. Conversely, the proportion of non-travel related cases increased 103% from 31% of all cases with a reported exposure in 2005 to 63% in 2008.
- Of the non-travel related Lyme disease cases that occurred in Ontario in 2008 (62 cases), 37 (60%) likely acquired their illness through exposures in non-endemic areas of Ontario and 17 (27%) through exposures to endemic areas in Ontario; 8 (13%) cases were attributed to exposures in unspecified locations in Ontario (Figure 5.1.5).
- The majority of non-travel related cases (60%) reported no exposures to Lyme disease endemic areas in Ontario, suggesting an increase in the range of exposure locations for the acquisition of Lyme disease in Ontario.

Figure 5.1.1: Incidence of Lyme Disease in Ontario: 1999-2008

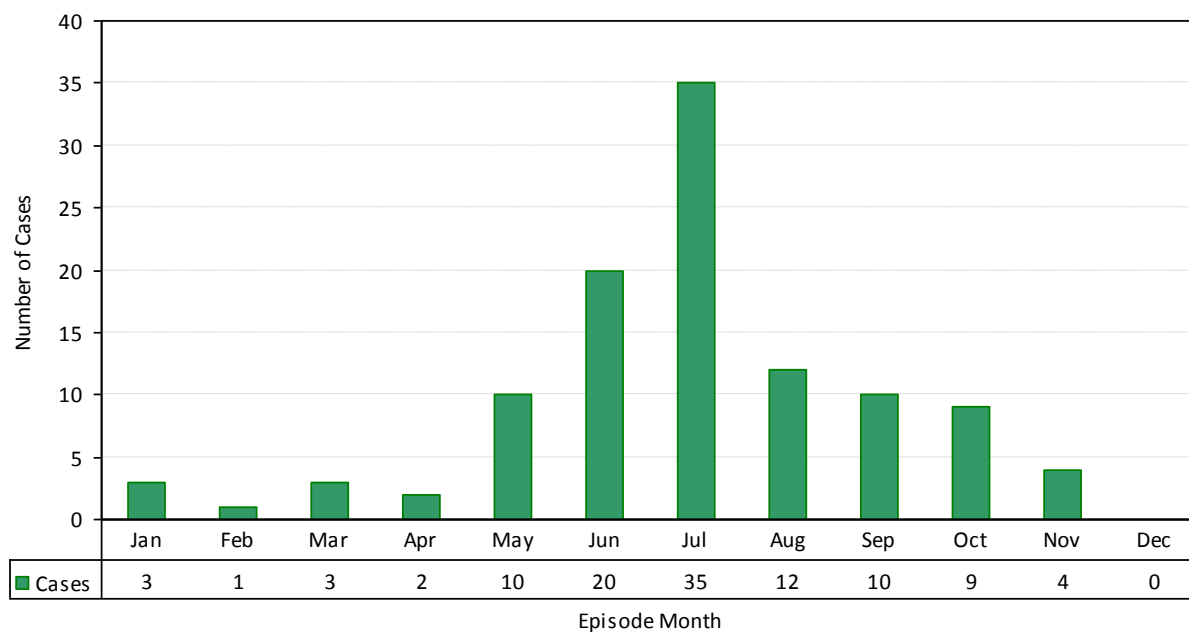


Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Lyme disease was not a nationally reportable disease in 2008.

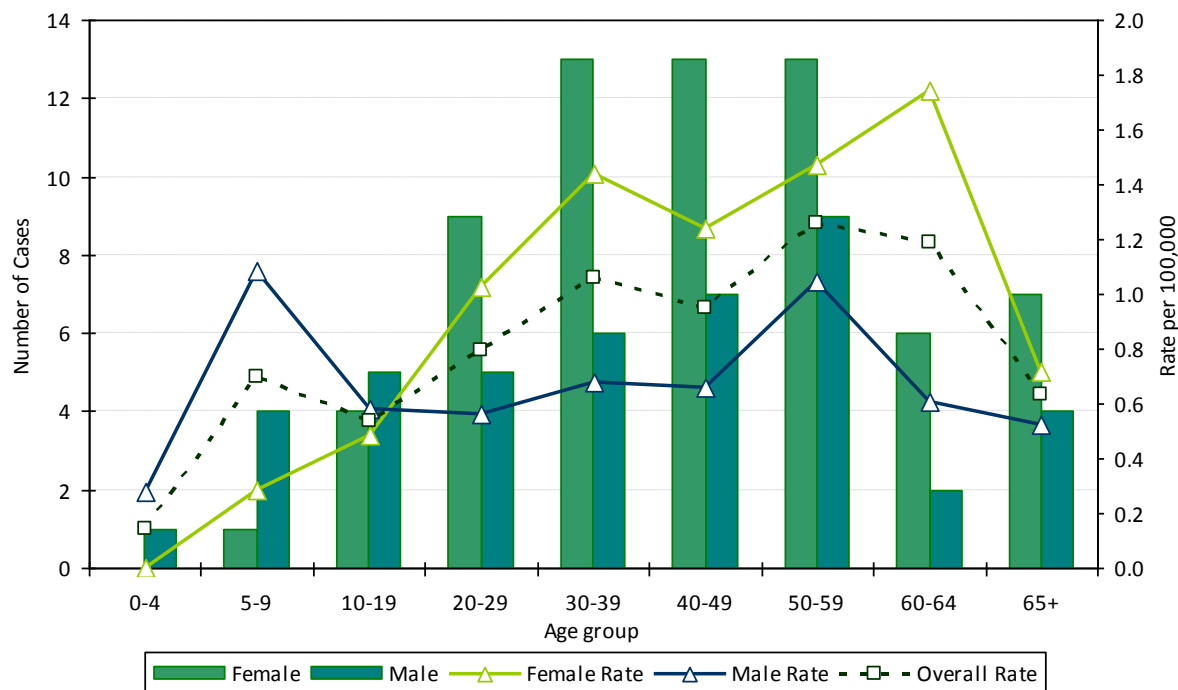
Figure 5.1.2: Incidence of Lyme Disease by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010]

Note: Episode month refers to the best estimate of the month of onset of illness.

Figure 5.1.3: Incidence of Lyme Disease by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Includes all case of Lyme disease reported in 2008

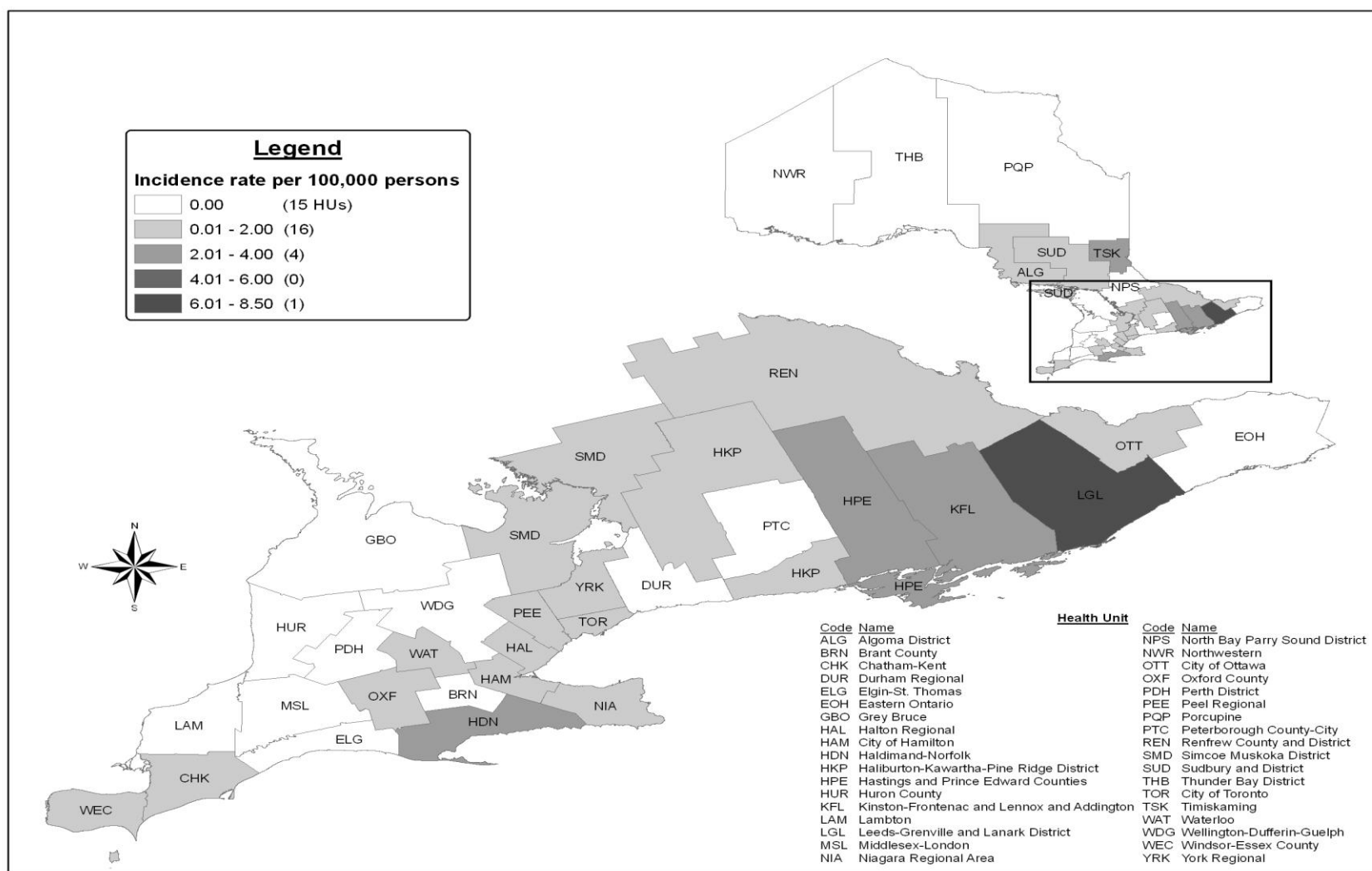
Table 5.1.1: Incidence of Lyme Disease by Age and Sex: Ontario, 2008

Age group (years)	Female		Male		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	0	0.0	1	0.3	1	0.1
5-9	1	0.3	4	1.1	5	0.7
10-19	4	0.5	5	0.6	9	0.5
20-29	9	1.0	5	0.6	14	0.8
30-39	13	1.4	6	0.7	19	1.1
40-49	13	1.2	7	0.7	20	0.9
50-59	13	1.5	9	1.0	22	1.3
60-64	6	1.7	2	0.6	8	1.2
65+	7	1.0	4	0.5	11	0.6
Total	66	1.0	43	0.7	109	0.8

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Includes all case of Lyme disease reported in 2008

Map 5.1.1: Incidence Rates of Lyme Disease by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification and not necessarily the place of exposure; includes all cases of Lyme disease reported in 2008.

Table 5.1.2: Incidence of Lyme Disease by Public Health Unit: Ontario, 2008

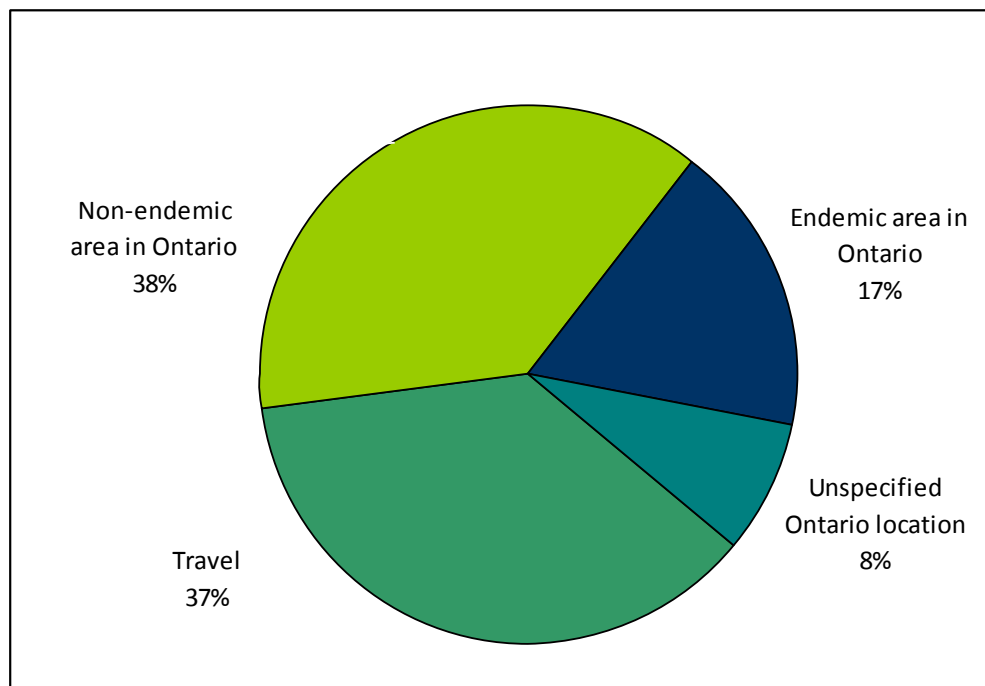
Public Health Unit	Number of cases	Rate/100,000 population
Leeds, Grenville and Lanark District	14	8.3
Haldimand-Norfolk	4	3.6
Kingston, Frontenac, Lennox & Addington	6	3.1
Timiskaming	1	2.9
Hastings & Prince Edward Counties	4	2.4
Waterloo Region	10	2.0
Oxford County	2	1.9
Chatham-Kent	2	1.8
Simcoe Muskoka District	6	1.2
Haliburton, Kawartha, Pine Ridge	2	1.1
Toronto	28	1.1
Renfrew County and District	1	1.0
Peel Region	11	0.9
Algoma District	1	0.8
Ottawa	7	0.8
Niagara Region	3	0.7
Sudbury and District	1	0.5
Halton Region	2	0.4
Hamilton	1	0.2
Windsor-Essex County	1	0.2
York Region	2	0.2
Brant County	0	0.0
Durham Region	0	0.0
Eastern Ontario	0	0.0
Elgin-St. Thomas	0	0.0
Grey Bruce	0	0.0
Huron County	0	0.0
Lambton County	0	0.0
Middlesex-London	0	0.0
North Bay Parry Sound District	0	0.0
Northwestern	0	0.0
Perth District	0	0.0
Peterborough County-City	0	0.0
Porcupine	0	0.0
Thunder Bay District	0	0.0
Wellington-Dufferin-Guelph	0	0.0
Ontario	109	0.8

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification and not necessarily the place of exposure; includes all cases of Lyme disease reported in 2008

Figure 5.1.5: Most Likely Exposure Settings for Cases of Lyme Disease: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

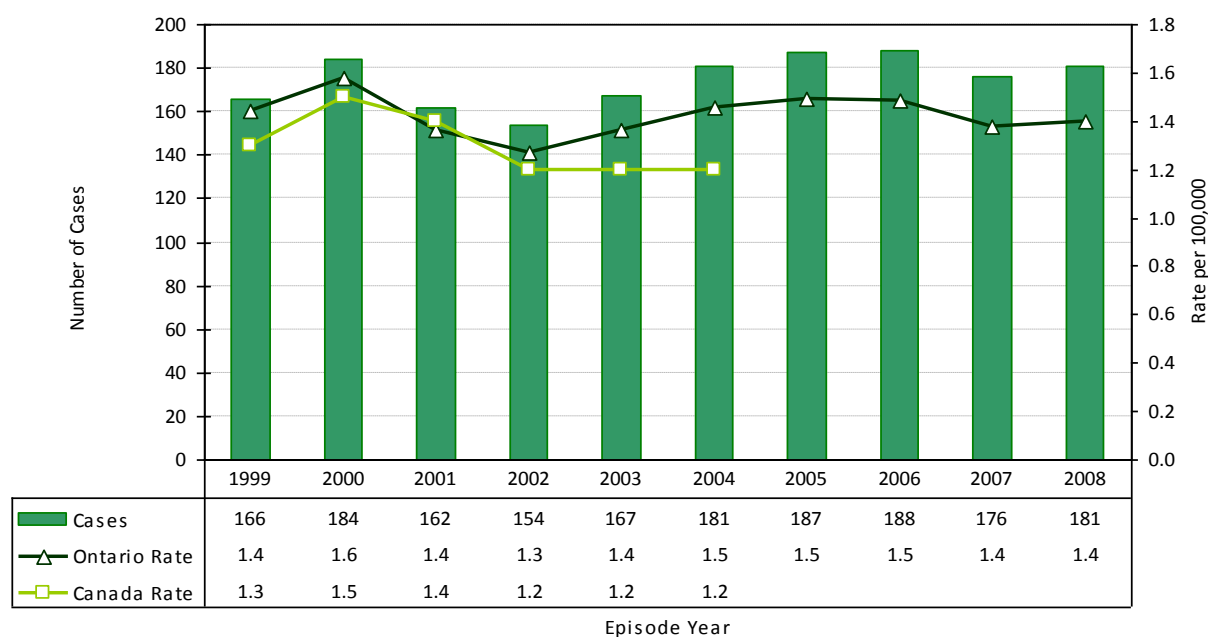
Note 1: The most likely exposure was selected for cases reporting more than 1 exposure

Note 2: Exposure details were not reported for 10% of cases; these cases were excluded

5.2 MALARIA

- In 2008, Ontario reported 181 confirmed cases of malaria, representing an incidence rate of 1.4 cases per 100,000 population (Figure 5.2.1). Malaria is not endemic in Ontario and its incidence reflects travel to malaria endemic countries or recent immigration from these countries.
- During the period 1999-2008, the incidence of malaria in Ontario remained stable with an average of 175 cases per year or 1.4 cases per 100,000 population (Figure 5.2.1).
- Nationally, the incidence of malaria remained relatively stable between 1999 and 2004 with an average incidence of 1.3 cases per 100,000 population (Figure 5.2.1).
- Unlike other vector-borne diseases that are endemic in Ontario such as West Nile virus illness and Lyme disease, malaria does not demonstrate any seasonal clustering of cases. The highest number of cases were reported in June (12.7%), July (11.0 %) and August (12.2%) and may be correlated with an increase in travel to malaria-endemic countries during these months (Figure 5.2.2).
- In 2008, males accounted for over two-thirds (68%) of all confirmed cases of malaria with an incidence rate of 1.9 cases per 100,000 population, while females accounted for 32% of cases with an incidence rate of 0.9 cases per 100,000 population (Figure 5.2.3 and Table 5.2.1).
- Males and females in the 30-39 age group had the highest incidence and incidence rate of malaria in 2008. For males in this age group, the incidence rate of malaria (3.0 cases per 100,000 population) was 114% higher than the overall rate for Ontario, the incidence rate for females in this age group (2.0 cases per 100,000 population) was 43% higher than the overall rate for Ontario (Figure 5.2.3 and Table 5.2.1).
- In 2008, Toronto and Peel Region reported the highest incidence rates of malaria at 3.1 and 3.0 cases per 100,000 population, respectively (Table 5.2.2).
- In 2008, *Plasmodium falciparum* was the etiologic agent for more than half (63%) of all reported cases of malaria for which the etiologic agent was specified. Other etiologic agents, *P. vivax* (30%), *P. ovale* (5%) and *P. malariae* (2%), accounted for the remaining cases.
- Of malaria cases that reported an exposure, travel to or recent immigration from endemic countries in Africa and continental south Asia accounted for 93% of exposures, while travel to the Caribbean and Latin-American region (3%), South-East Asia (3%) and other destinations (2%) accounted for the remaining exposures.
- *P. falciparum* (99%) and *P. ovale* (86%) were most frequently associated with travel to Africa, while *P. vivax* (83%) was most frequently associated with travel to South Asia. *P. malariae* was not associated with any region of travel.

Figure 5.2.1: Incidence of Malaria in Ontario and Canada: 1999-2008



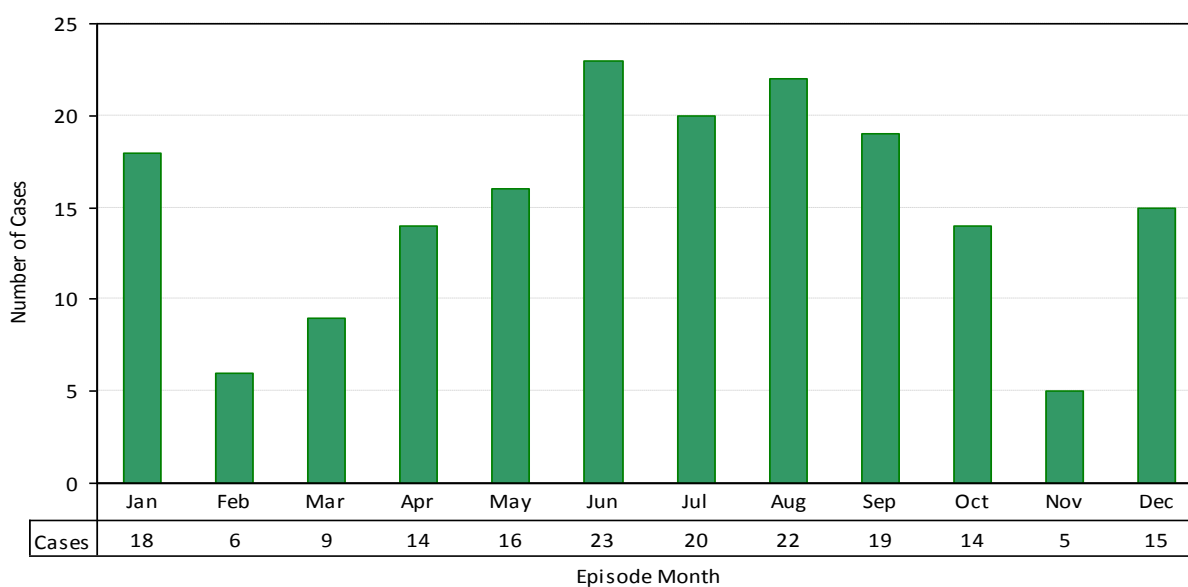
Data Source (Ontario data): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [01/15/2009] for 1999-2007 and [05/25/2010] for 2008.

Data Source (Canadian data): Public Health Agency of Canada. Notifiable Diseases On-line. Downloaded March 6, 2009: http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index_e.html.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note: Canadian rates available up to 2004.

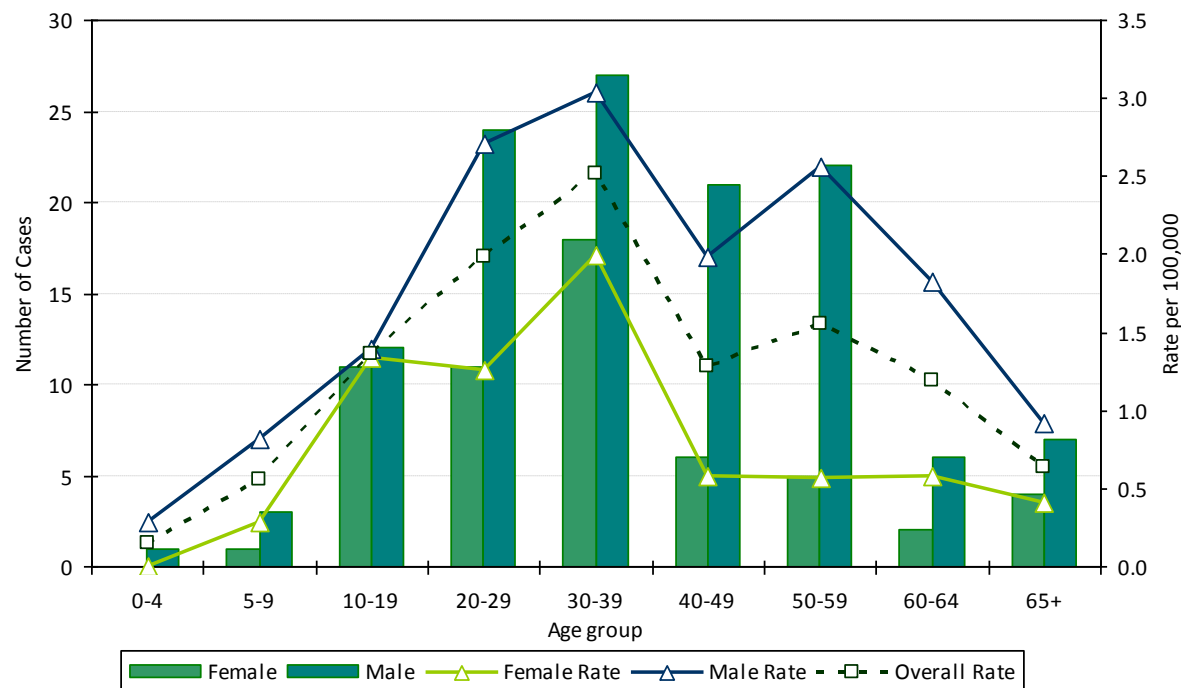
Figure 5.2.2: Incidence of Malaria by Episode Month: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Episode onset month refers to the best estimate of the month of onset of illness.

Figure 5.2.3: Incidence of Malaria by Age and Sex: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

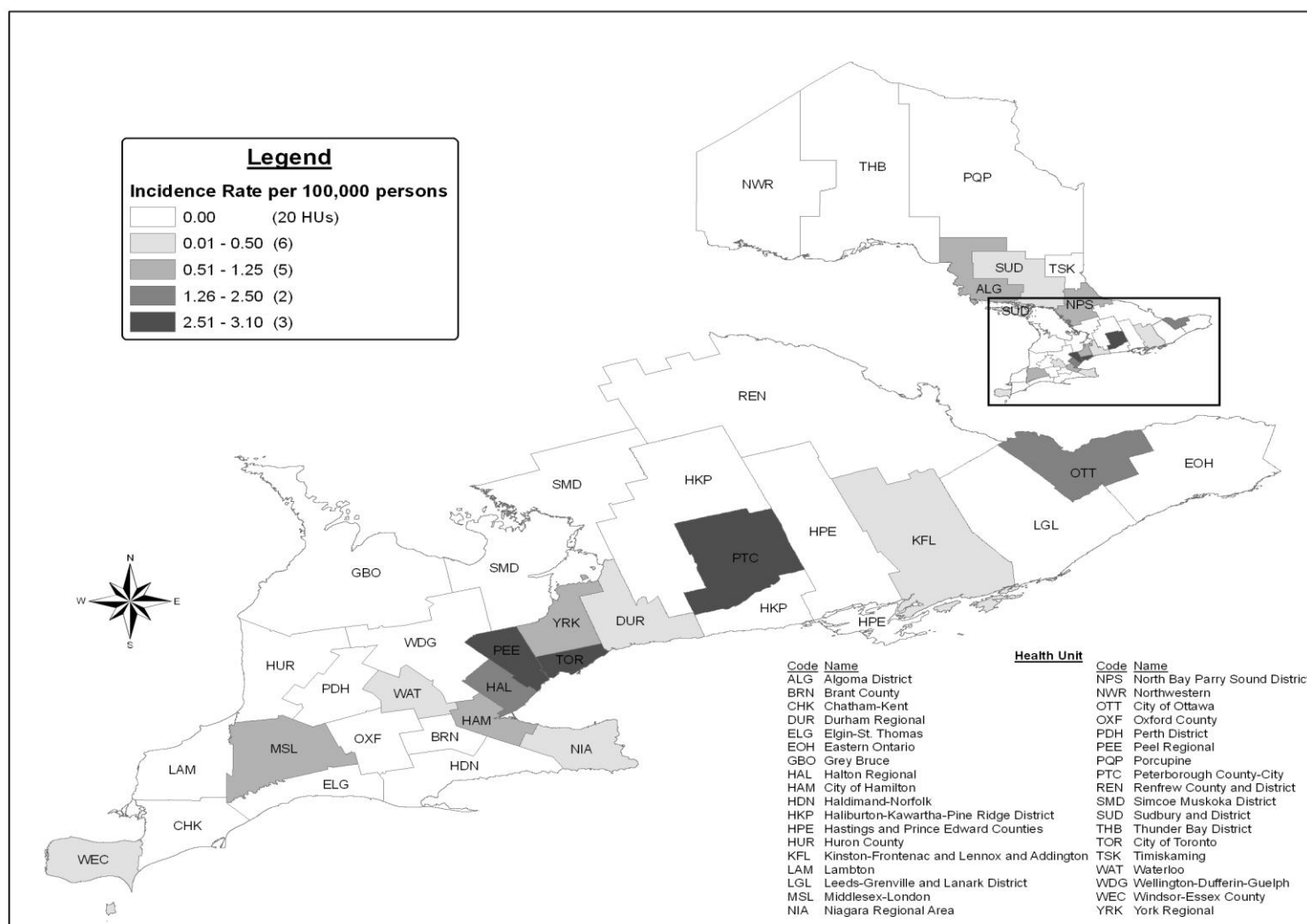
Table 5.2.1: Incidence of Malaria by Age and Sex: Ontario, 2008

Age group (years)	Female		Male		Total	
	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population	Number of cases	Rate/ 100,000 population
0-4	0	0.0	1	0.3	1	0.1
5-9	1	0.3	3	0.8	4	0.6
10-19	11	1.3	12	1.4	23	1.4
20-29	11	1.3	24	2.7	35	2.0
30-39	18	2.0	27	3.0	45	2.5
40-49	6	0.6	21	2.0	27	1.3
50-59	5	0.6	22	2.6	27	1.5
60-64	2	0.6	6	1.8	8	1.2
65+	4	0.4	7	0.9	11	0.6
Total	58	0.9	123	1.9	181	1.4

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Map 5.2.1: Incidence Rates of Malaria by Public Health Unit: Ontario, 2008



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 5.2.2: Incidence of Malaria by Public Health Unit: Ontario, 2008

Public Health Unit	Number of cases	Rate/100,000 population
Toronto	82	3.1
Peel Region	38	3.0
Peterborough County-City	4	2.9
Ottawa	20	2.3
Halton Region	7	1.5
Hamilton	6	1.1
York Region	10	1.0
Algoma District	1	0.8
North Bay Parry Sound District	1	0.8
Middlesex-London	3	0.7
Kingston, Frontenac, Lennox & Addington	1	0.5
Sudbury and District	1	0.5
Durham Region	3	0.5
Niagara Region	2	0.5
Windsor-Essex County	1	0.2
Waterloo Region	1	0.2
Brant County	0	0.0
Chatham-Kent	0	0.0
Eastern Ontario	0	0.0
Elgin-St. Thomas	0	0.0
Grey Bruce	0	0.0
Haldimand-Norfolk	0	0.0
Haliburton, Kawartha, Pine Ridge	0	0.0
Hastings & Prince Edward Counties	0	0.0
Huron County	0	0.0
Lambton County	0	0.0
Leeds, Grenville and Lanark District	0	0.0
Northwestern	0	0.0
Oxford County	0	0.0
Perth District	0	0.0
Porcupine	0	0.0
Renfrew County and District	0	0.0
Simcoe Muskoka District	0	0.0
Thunder Bay District	0	0.0
Timiskaming	0	0.0
Wellington-Dufferin-Guelph	0	0.0
Ontario	181	1.4

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Health unit refers to the diagnosing health unit, i.e. the health unit where the case resided at the time of identification; Includes travel-related cases

Table 5.2.3: Incidence of Malaria by Region of Travel and Aetiologic Agent: Ontario, 2008

Region of Travel	<i>Plasmodium</i> species					Total	
	<i>Falciparum</i>	<i>Malariae</i>	<i>Ovale</i>	<i>Vivax</i>	Unspecified	Cases (n)	Percent (%)
Africa	66	1	6	2	3	78	43%
Caribbean/L. America	0	0	0	0	3	3	2%
S.E. Asia	0	0	0	3	0	3	2%
Continental south Asia	0	0	1	24	4	29	16%
Other	1	1	0	0	0	2	2%
Unknown Region	27	1	1	15	22	66	36%
Total (n)	94	3	8	44	32	181	100 %
Total (%)	52%	2%	4%	24%	18%	181	100%

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [05/25/2010].

Note: Continental south Asia includes India, Afghanistan and Pakistan; S.E. Asia includes Burma/Myanmar and Papua New Guinea; other includes China and Spain

APPENDICES

Appendix 1: TECHNICAL NOTES

There are some limitations inherent in the data presented in this report and any interpretation or extrapolation should take these into account. Despite these limitations, it is possible to describe trends and estimate where the main burden of infectious diseases lies in Ontario.

Data Sources

Ontario Disease data

The sole source for infectious diseases data in this report is the integrated Public Health Information System (iPHIS), the electronic reporting system for reportable diseases in Ontario. Data in iPHIS are collected by thirty-six public health units in Ontario and reported centrally to the province. iPHIS was implemented in phases throughout 2005, with full implementation in all health units by the end of the year. Except where noted, data for this report were extracted from iPHIS between May and June 2010. Discrepancies in disease counts and rates provided in this report and previously published data may exist due to:

- enhanced data cleaning prior to analysis
- late reporting
- local data clean up
- differences in data extraction dates.

Where such variability exists, the data provided in the most current Annual Epidemiology Report are definitive.

Population data

Population data for Ontario were extracted from IntelliHEALTH Ontario in January, 2010. Population data were used as denominators to calculate overall, age-, sex- and geographic-specific crude incidence rates. Identified differences in rates and counts from one public health unit to another, and between Ontario and Canada, are absolute and do not imply statistical significance.

The crude incidence rate is based on the following formula:

$$\left\{ \begin{array}{l} \text{Crude incidence rate} = \\ \frac{\text{Number of cases in specified time period \& population}}{\text{Total number of people in that population}} \times 100,000 \end{array} \right\}$$

Throughout the report, the term “incidence rate” signifies a rate or the number of cases observed for every 100,000 Ontarians in a given time, while “incidence” refers to the absolute number of cases reported in a given period. In general, incidence refers to new cases of disease regardless of previous history of the same disease in the same period. HIV and Hepatitis C are exceptions. These diseases often remain undiagnosed for extended periods and their detection by public health is generally not indicative of the actual time of acquisition. Therefore, in the current report, some cases of HIV and hepatitis C that are reported occurred in individuals who likely acquired their infections in earlier years.

Comparator data

Comparative data (incidence rates) for Canada are provided in the report whenever available. These data were obtained from several reports and data tables available publicly on the Public Health Agency of Canada's website: [Notifiable Diseases On-Line](#), [STI Data Table](#), [HIV and AIDS in Canada Surveillance Report](#) and [Tuberculosis in Canada, 2007](#).

Data Limitations and Management

Reference Period

The information in this report reflects the number of incident cases of reportable infectious diseases reported in Ontario through iPHIS in 2008. Trend data cover the period from 1999 to 2008.

With the exception of HIV and AIDS, the number of incident cases in this report is based on episode dates within the reference period. The episode date is an estimate of the onset date of disease for each case. The episode date was determined using the following hierarchy:

- Symptom onset date
- Specimen collection date
- Lab test date
- Reported date

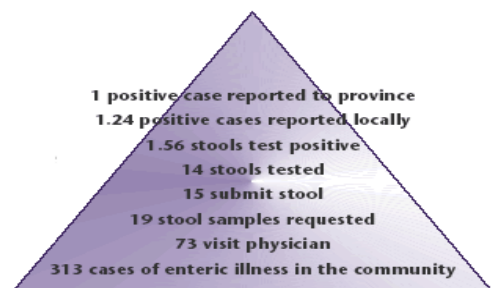
The earliest date available at each stage in the hierarchy was selected as the episode date. If an Onset Date exists, it was selected with priority instead of the specimen collection date and so on.

HIV incident case count is based on the encounter date - the date a case became known to public health.

AIDS incident case count is based on the diagnosis date, which is the date of a case's AIDS diagnosis.

Under-reporting

Passive surveillance systems such as iPHIS that rely on physician and laboratory reports of illness are characterized by under-reporting of the true burden of illness. For example, Majowicz, et al estimated that only one in every 313 actual cases of enteric illnesses in the community is reported to public health.¹ The disease reporting pyramid below depicts the infectious disease reporting chain and how each tier contributes to under-reporting.



Source: Majowicz, S.E., et al., 2005

¹ Majowicz, S.E., et al. 2005. Estimating under-reporting for infectious gastrointestinal illness in Ontario. Canadian Journal of Public Health. 96(3): 178-181.

Case Ascertainment Criteria

This report includes all reports of infectious disease made through iPHIS with an episode date in 2007, with the following exceptions:

1. Cases who were not residents of Ontario at the time of diagnosis;
2. Cases who did not meet the provincial surveillance confirmed case definition;
3. Diseases for which aggregate case counts rather than individual case reports are reported, e.g. chickenpox and institutional outbreaks of gastroenteritis and influenza;
4. Cases reported as encephalitis and meningitis with the following aetiologies: viral, bacterial, vaccine-related and unspecified;
5. Cases of food poisoning with etiologies other than those specified as the causative agent of other reportable enteric diseases; and
6. Cases associated with institutional outbreaks that have not been reported as sporadic incident cases

Re-infections – For several reportable diseases, immunity is not conferred following infection, resulting in continued susceptibility and potential for re-infection. Data in this report do not account for re-infections except where indicated. Thus a single person with more than one episode of the same disease in a single year contributes at least two cases of that disease to the total provincial count for that year.

Exposure determination

The most likely exposure was selected for cases who reported more than one exposure. Selection of the most likely exposure was based on the following hierarchy:

1. Travel-associated exposure - at least one travel destination reported for the case. The determination of travel-associated exposures was based on exposure information entered into iPHIS and is calculated using the “exposure setting”, “exposure setting type”, “exposure name”, “exposure location” and “exposure comments” fields.
2. A known exposure source - at least one exposure is reported for the case that is not travel-related or “unknown”. The following factors influence the selection of the most likely exposure source when multiple known exposures are reported: the exposure has been previously associated with illness or outbreaks, plausibility of the recorded mode of transmission, and consistency within the reported exposure fields. For example, a case with a foodborne mode of transmission cannot report person-person contact as the source of exposure.
3. Unknown exposure - an “unknown” exposure is the only exposure reported for the case
4. Missing - no exposure information is reported for the case

Exposure determination-HIV

Exposure or risk factor categories for HIV cases were determined using a mutually exclusive hierarchy that assigned HIV cases to a single exposure category that best represents the true source of infection for the case when more than one risk factor or exposure was reported. Detailed information about

the exposure hierarchy is available in appendices C1-3 of the Guidelines for the Surveillance of AIDS in Canada.²

Risk Factor Determination

The report includes risk factors for sexually transmitted and bloodborne infections. Cases of STI may report more than one risk factor and therefore the total number of risk factors reported may be greater than the total number of cases reported in a year.

Drug resistance determination-TB

TB cases that are resistant to any anti-TB medication are called drug resistant TB.³

1. Multi-drug resistant TB (MDR) refers to TB cases that are resistant to INH and rifampin, with or without resistance to other first or second line drugs
2. Extensively drug resistant TB (XDR) refers to TB cases that are resistant to at least INH and rifampin from among the first line drugs (i.e. MDR) and resistance to any fluoroquinolone and to at least one of the three injectable second line drugs (capreomycin, kanamycin and amikacin)
3. Extremely drug resistant TB (XXDR) refers to TB cases that are resistant to all first and second line anti-tuberculosis medications⁴

Duplicates – the possibility of duplicates exist because duplicate sets were not identified and excluded unless they were resolved prior to data extraction either at the local or provincial level.

Handling of missing data – A high proportion of missing or incomplete data may result in conclusions or interpretations that are not representative of disease trends. In this report, missing data are handled in three ways:

1. Reporting the proportion or number of cases with missing data to provide perspective (e.g. age, sex, exposures, risk factors)
2. Suppressing the data altogether if a significantly larger proportion of data are missing (e.g. no data are reported on hospitalizations and deaths).
3. Diseases for which fewer than five cases are reported in a year are suppressed and indicated as "<5" - less than five cases.

Definitions

Travel-associated cases - Travel-associated cases were defined as having an incubation period contained partially or entirely within the period in which travel outside of Ontario occurred. This report includes all travel-associated cases and only excludes them from analyses that attempt to enumerate exposure sources or transmissions that occurred within Ontario.

² Remis RS. (1995). Guidelines to the Surveillance of AIDS in Canada. Division of HIV/AIDS Epidemiology, Bureau of Communicable Disease Epidemiology, Laboratory Centre for Disease Control, Health Protection Branch, Health Canada. Ottawa

³ Long R, Avendano, M & Whitehead L. (2007). *Drug Resistant Tuberculosis* in Long R & Ellis E. (Eds.), Canadian Tuberculosis Standards, 6th ed. (pp. 146-181). Ottawa: Public Health Agency of Canada. Available online: <http://www.phac-aspc.gc.ca/tbpc-latb/pubs/tbstand07-eng.php>

⁴ Migliori GB, Loddenkemper R, Blasi F, Raviglione MC. (2007) 125 years after Robert Koch's discovery of the tubercle bacillus: the new XDR-TB threat: is "science" enough to tackle the epidemic? Eur Respir J, 29: 423-7.

Diagnosing health units refers to the health unit where the case resided when they became known to public health for the suspect/confirmed reportable disease episode.

Case definitions for all diseases in this report are based on laboratory confirmation and/or epidemiological links to a laboratory confirmed case. The iPHIS Manual (version 04/11/2005) outlines the provincial case definitions in effect at the time of surveillance. Cases that did not meet the provincial case definitions were not included in this report.

Appendix 2: DISEASES REPORTABLE IN ONTARIO

Reportable Diseases are specified under Ontario Regulations 559/91 and amendments under the Health Protection and Promotion Act. Diseases not reported on in this report are marked with an asterisk (*).

Acquired immunodeficiency syndrome (HIV/AIDS)
Amebiasis
Anthrax
Botulism
Brucellosis
Campylobacter enteritis
Chancroid
*Chickenpox (Varicella)
Chlamydia
Cholera
*Clostridium difficile associated disease
Cryptosporidiosis
Cyclosporiasis
Cytomegalovirus infection, congenital
Diphtheria
*Encephalitis, including:
 • Primary, viral
 • Post-infectious
 • Vaccine-related
 • Subacute sclerosing panencephalitis
 • Unspecified
*Food poisoning, all causes
*Gastroenteritis, institutional outbreaks
Giardiasis
Gonorrhea
Group A Streptococcal infections, invasive
Group B Streptococcal infections, neonatal
Haemophilus influenzae b disease, invasive
Hantavirus pulmonary syndrome
Hemorrhagic fevers
 • Ebola virus disease
 • Marburg virus disease
 • Other viral causes
Hepatitis A
Hepatitis B
Hepatitis C

Hepatitis D (Delta Hepatitis)
Herpes, neonatal
Influenza
Lassa fever
Legionellosis
Leprosy
Listeriosis
Lyme disease
Malaria
Measles
*Meningitis, acute
 • Bacterial
 • Viral
 • Other
Meningococcal disease, invasive
Mumps
Ophthalmia neonatorum
Paratyphoid fever
Pertussis (whooping cough)
Plague
Pneumococcal disease, invasive
*Poliomyelitis, acute
Psittacosis/ornithosis
Q Fever
*Rabies
Respiratory infection outbreaks in institutions
Rubella
Rubella, congenital syndrome
Salmonellosis
*Severe acute respiratory syndrome (SARS)
Shigellosis
*Smallpox
Syphilis
Tetanus
Transmissible spongiform encephalopathy
 • Creutzfeldt-Jakob disease, all types

- Gerstmann-Sträussler-Scheinker syndrome
- Fatal Familial Insomnia
- Kuru

Trichinosis

Tuberculosis

Tularemia

Typhoid fever

Verotoxin-producing *E. coli* including

Hemolytic

Uremic Syndrome

West Nile virus illness

Yellow fever

Yersiniosis

Appendix 3: ONTARIO PUBLIC HEALTH UNITS AND REGIONS

Region	Ontario Public Health Units
North West	Northwestern
	Thunder Bay District
North East	Algoma
	North Bay Parry Sound District
	Porcupine
	Sudbury & District
	Timiskaming
Eastern	City of Ottawa
	Eastern Ontario
	Hastings & Prince Edward Counties
	Kingston, Frontenac, Lennox & Addington
	Leeds, Grenville And Lanark District
	Renfrew County And District
Central East	Durham Region
	Haliburton, Kawartha, Pine Ridge
	Peel Region
	Peterborough County-City
	Simcoe Muskoka District
	York Region
Toronto	Toronto
South West	Chatham-Kent
	Elgin-St. Thomas
	Grey Bruce
	Huron County
	Lambton County
	Middlesex-London
	Oxford County
	Perth District
	Windsor-Essex County
Central West	Brant County
	City Of Hamilton
	Haldimand-Norfolk
	Halton Region
	Niagara Region
	Waterloo Region
	Wellington-Dufferin-Guelph

Appendix 4: DATA TABLES

Data Table 1: Incidence of Infectious Diseases in Ontario, 1999-2008

Disease Categories	1999		2000		2001		2002		2003		2004		2005		2006		2007		2008	
Enteric and Zoonotic Diseases	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹
Amebiasis	769	6.7	925	7.9	851	7.2	825	6.8	771	6.3	678	5.5	772	6.1	659	5.2	815	6.4	764	5.9
Campylobacteriosis	4192	36.4	5061	43.3	5033	42.3	4612	38.1	4127	33.7	3991	32.1	3796	30.2	3870	30.5	3873	30.2	3786	29.3
Cryptosporidiosis	210	1.8	235	2.0	250	2.1	231	1.9	277	2.3	303	2.4	266	2.1	402	3.2	405	3.2	334	2.6
Cyclosporiasis	21	0.2	9	0.1	23	0.2	52	0.4	39	0.3	95	0.8	132	1.1	92	0.7	94	0.7	104	0.8
Giardiasis	1990	17.3	2007	17.2	2060	17.3	1921	15.9	1633	13.3	1592	12.8	1626	12.9	1582	12.5	1623	12.7	1599	12.4
Hepatitis A	261	2.3	157	1.3	175	1.5	151	1.2	143	1.2	185	1.5	150	1.2	206	1.6	121	0.9	114	0.9
Listeriosis	31	0.3	37	0.3	37	0.3	43	0.4	43	0.4	42	0.3	37	0.3	42	0.3	40	0.3	95	0.7
Paratyphoid Fever	17	0.1	12	0.1	12	0.1	27	0.2	21	0.2	47	0.4	55	0.4	51	0.4	47	0.4	58	0.4
Salmonellosis	2351	20.4	2389	20.4	2564	21.6	2476	20.5	2008	16.4	2119	17.1	2956	23.5	2395	18.9	2820	22.0	2373	18.4
Shigellosis	274	2.4	288	2.5	234	2.0	847	7.0	283	2.3	286	2.3	337	2.7	206	1.6	232	1.8	239	1.8
Typhoid Fever	42	0.4	53	0.5	62	0.5	60	0.5	50	0.4	69	0.6	68	0.5	92	0.7	86	0.7	95	0.7
<i>E. coli</i> , verotoxin producing	379	3.3	1746	14.7	358	3.0	394	3.3	462	3.8	318	2.6	259	2.1	343	2.7	365	2.9	279	2.2
Yersiniosis	370	3.2	338	2.9	314	2.6	383	3.2	329	2.7	297	2.4	354	2.8	364	2.9	269	2.1	260	2.0
Botulism	1	0.0	0	0.0	0	0.0	1	0.0	2	0.0	2	0.0	1	0.0	5	0.0	4	0.0	2	0.0
Brucellosis	2	0.2	2	0.1	3	0.1	5	0.1	4	0.0	3	0.1	6	0.0	2	0.0	5	0.0	5	0.0
Cholera	0	0	0	0	3	0.0	1	0.0	2	0.0	0	0	1	0.0	1	0.0	1	0.0	3	0.0
Psittacosis/Ornithosis	0	0	2	0.0	0	0	2	0.0	1	0.0	0	0.0	0	0	0	0.0	0	0.0	0	0.0
Q-fever	19	0.2	12	0.1	12	0.1	1	0.1	8	0.0	6	0.1	2	0.0	4	0.0	3	0.0	4	0.0
Trichinosis	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0	1	0.0	0	0.0	0	0.0	0	0.0
Tularemia	0	0.0	1	0.0	0	0.0	0	0.0	2	0.0	2	0.0	1	0.0	0	0.0	0	0.0	1	0.0
Vaccine Preventable Diseases																				
Diphtheria	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Haemophilus Influenzae B	4	0.0	11	0.1	7	0.1	7	0.1	9	0.1	9	0.1	8	0.1	12	0.1	6	0.0	7	0.1
Measles	2	0.0	9	0.1	6	0.1	1	0.0	11	0.1	6	0.0	4	0.0	5	0.0	0	0.0	58	0.5
Meningococcal disease	80	0.7	82	0.7	106	0.9	59	0.5	58	0.5	55	0.4	43	0.3	67	0.5	62	0.5	48	0.4
Mumps	43	0.4	33	0.3	18	0.2	14	0.1	13	0.1	23	0.2	17	0.1	10	0.1	53	0.4	336	2.6
Pertussis	1218	10.6	716	6.1	463	3.9	532	4.4	353	2.9	633	5.1	646	5.1	1265	10.0	933	7.3	831	6.4
Rubella	4	0.0	9	0.0	17	0.0	2	0.0	9	0.0	5	0.0	313	0.0	5	0.0	2	0.0	2	0.0
Rubella, congenital	0	0.0	1	0.0	0	0.0	1	0.0	1	0.0	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0
<i>S. pneumoniae</i>	26.0	0.2	21.0	0.2	128	1.1	649	5.4	1016	8.3	1057	8.5	930	7.4	945	7.4	940	7.3	1062	8.2
Tetanus	1	0.0	1	0.0	3	0.0	2	0.0	0	0.0	0	0.0	1	0.0	1	0.0	1	0.0	0	0.0

Disease Categories	1999		2000		2001		2002		2003		2004		2005		2006		2007		2008	
Sexually Transmitted and Blood-borne Infections	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹	Case	Rate ¹
AIDS	216	1.9	172	1.5	204	1.7	186	1.5	213	1.7	189	1.5	196	1.6	131	1.0	129	1.0	133	1.0
Chlamydia	13513	117.4	14805	126.7	16360	137.5	18363	151.7	19478	158.8	20801	167.5	21931	174.6	22542	177.7	23275	181.8	26200	202.6
Gonorrhea	2271	19.7	2858	24	2954	24.8	3085	25.5	3360	27.4	3513	28.3	3325	26.5	3860	30.4	3954	30.9	3868	29.9
Group B Streptococcus	47	0.4	53	0.5	64	0.5	69	0.6	65	0.5	55	0.4	52	0.4	55	0.4	46	0.3	54	0.4
Hepatitis B, acute	143	1.2	148	1.3	123	1.0	152	1.3	172	1.4	168	1.4	161	1.3	187	1.5	182	1.4	144	1.1
Hepatitis C, acute	6811	59.2	6009	51.4	5572	46.8	5479	45.3	5491	44.8	5418	43.6	4616	36.8	3999	31.5	4512	35.4	4695	36.1
HIV	750	6.5	773	6.6	857	7.2	982	8.1	943	7.7	990	8.0	901	7.2	983	7.7	946	7.4	948	7.3
Syphilis, infectious	54	0.5	49	0.4	52	0.4	241	2.0	427	3.5	496	4.0	360	2.9	366	2.9	401	3.1	452	3.5
Cytomegalovirus, congenital	11	0.1	8	0.1	4	0.0	6	0.0	8	0.1	7	0.1	7	0.1	8	0.1	4	0.0	3	0.0
Hepatitis D	7	0.1	10	0.1	8	0.1	9	0.1	2	0.0	2	0.0	9	0.1	4	0.0	2	0.0	5	0.0
Herpes, neonatal	10	0.1	1	0.0	4	0.0	5	0.0	2	0.0	11	0.1	5	0.0	5	0.0	3	0.0	8	0.1
Ophthalmia neonatorum	7	0.1	11	0.1	7	0.1	3	0.0	4	0.0	6	0.0	6	0.0	3	0.0	3	0.0	3	0.0
Diseases Transmitted by Direct Contact and Respiratory Routes																				
Invasive Group A Streptococcus	310	2.7	409	3.5	328	2.8	385	3.2	409	3.3	288	2.3	392	3.1	465	3.7	501	3.9	512	4.0
Influenza	2,882	24.7	791	6.6	2,274	18.8	981	8.0	5,389	43.4	5,778	46.0	2,486	19.6	2,930	22.9	5,163	40.3	8243	63.8
Legionellosis	45	0.4	41	0.4	21	0.2	24	0.2	32	0.3	11	0.1	75	0.6	69	0.5	58	0.5	81	0.6
Tuberculosis	698	6.1	700	6.0	699	5.9	716	5.9	693	5.7	661	5.3	654	5.2	691	5.4	680	5.3	603	4.7
Vectorborne Diseases																				
Lyme Disease	23	0.2	46	0.4	24	0.2	28	0.2	26	0.2	33	0.3	41	0.3	48	0.4	69	0.5	109	0.8
Malaria	166	1.4	184	1.6	162	1.4	154	1.3	167	1.4	181	1.5	187	1.5	188	1.5	176	1.4	181	1.4
West Nile Virus (WNV)	nr	nr	nr	nr	nr	nr	394	3.3	89	0.7	14	0.1	101	0.8	42	0.3	17	0.1	4	0.0
Other Diseases																				
Creutzfeldt-Jakob Disease, all	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	0.0	4	0.0	5	0.0	5	0.0	5	0.0
Leprosy	6	0.0	5	0.0	3	0.0	2	0.0	4	0.0	2	0.0	3	0.0	0	0.0	2	0.0	1	0.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [15/01/2009] for 1999-2007 and [25/05/2010] for 2008.

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/08/2009] for 1999-2007 and [01/14/2010] for 2008.

Note 1: Incidence rate per 100,000 population

Note 2: Nr – Not reportable

Note 3: Publicly funded Meningococcal vaccine (serogroup C) introduced in September 2004 for one year olds and in September 2005 for grade 7 students, youths aged 15 to 19 and high-risk people of all ages.

Two dose schedule for measles vaccine with a catch-up program for students aged 4-18 years introduced in 1996.

Publicly funded tetanus, diphtheria and acellular pertussis vaccine (Adacel [Tdap]) for adolescents aged 14-16 years introduced in 2003 - replaced the Td-IPV adolescent booster dose.

Publicly funded Pneumococcal conjugate vaccine introduced in September 2003 for high risk children under the age of 2 years. Expanded in July 2004 to include high risk children under the age of 5 years and in January 2005 to include all children under the age of 2 years.

Data Table 2: Incidence of Infectious Diseases in Ontario by Public Health Unit, 2008

Data Table 2a: Frequently Reported Enteric Diseases: Ontario, 2008	Amebiasis		Campylobacteriosis		Cryptosporidiosis		Cyclosporiasis		Giardiasis		Hepatitis A		Listeriosis		Paratyphoid Fever		Salmonellosis		Shigellosis		Typhoid Fever		E. coli (VTEC)		Yersiniosis	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate
Algoma District	0	0.0	19	15.9	2	1.7	0	0.0	11	9.2	0	0.0	1	0.8	0	0.0	17	14.2	0	0.0	0	0.0	3	2.5	0	0.0
Brant County	0	0.0	32	23.2	2	1.4	1	0.7	15	10.9	0	0.0	2	1.4	0	0.0	22	15.9	0	0.0	0	0.0	2	1.4	1	0.7
Chatham-Kent	0	0.0	26	23.4	4	3.6	0	0.0	4	3.6	0	0.0	0	0.0	0	0.0	13	11.7	0	0.0	0	0.0	6	5.4	1	0.9
Durham Region	9	1.5	155	25.6	8	1.3	5	0.8	56	9.3	2	0.3	0	0.0	1	0.2	109	18.0	3	0.5	5	0.8	9	1.5	3	0.5
Eastern Ontario	4	2.0	70	35.2	12	6.0	1	0.5	12	6.0	1	0.5	0	0.0	1	0.5	45	22.6	2	1.0	0	0.0	2	1.0	0	0.0
Elgin-St. Thomas	1	1.1	20	22.2	7	7.8	0	0.0	3	3.3	2	2.2	0	0.0	0	0.0	13	14.4	0	0.0	0	0.0	5	5.6	0	0.0
Grey-Bruce	0	0.0	77	47.2	15	9.2	0	0.0	12	7.4	1	0.6	2	1.2	0	0.0	35	21.5	10	6.1	1	0.6	6	3.7	0	0.0
Haldimand-Norfolk	0	0.0	40	36.2	4	3.6	0	0.0	12	10.9	1	0.9	0	0.0	0	0.0	39	35.3	1	0.9	0	0.0	3	2.7	1	0.9
Haliburton-Kawartha-Pine Ridge District	2	1.1	51	28.9	7	4.0	1	0.6	23	13.0	0	0.0	2	1.1	0	0.0	20	11.3	0	0.0	1	0.6	1	0.6	1	0.6
Halton Region	19	4.0	138	28.8	8	1.7	4	0.8	49	10.2	6	1.3	4	0.8	3	0.6	67	14.0	8	1.7	0	0.0	14	2.9	12	2.5
Hamilton, City of	6	1.1	128	24.3	6	1.1	3	0.6	47	8.9	5	0.9	6	1.1	0	0.0	67	12.7	6	1.1	1	0.2	6	1.1	5	0.9
Hastings Prince Edward Counties	1	0.6	37	22.6	3	1.8	0	0.0	12	7.3	0	0.0	2	1.2	0	0.0	26	15.9	4	2.4	0	0.0	1	0.6	0	0.0
Huron County	0	0.0	28	46.1	8	13.2	0	0.0	3	4.9	2	3.3	0	0.0	0	0.0	10	16.5	0	0.0	0	0.0	3	4.9	2	3.3
Kingston-Frontenac & Lennox & Addington	6	3.1	46	24.0	5	2.6	3	1.6	17	8.9	1	0.5	4	2.1	0	0.0	26	13.5	4	2.1	0	0.0	0	0.0	1	0.5
Lambton County	1	0.8	23	17.4	2	1.5	0	0.0	12	9.1	1	0.8	0	0.0	0	0.0	11	8.3	1	0.8	0	0.0	2	1.5	1	0.8
Leeds-Grenville and Lanark District	3	1.8	26	15.4	7	4.1	1	0.6	18	10.7	0	0.0	0	0.0	0	0.0	34	20.2	0	0.0	0	0.0	5	3.0	4	2.4
Middlesex-London	19	4.2	128	28.6	9	2.0	4	0.9	30	6.7	1	0.2	5	1.1	0	0.0	68	15.2	5	1.1	1	0.2	4	0.9	3	0.7
Niagara Region	13	2.9	130	29.4	10	2.3	4	0.9	35	7.9	3	0.7	2	0.5	0	0.0	84	19.0	4	0.9	0	0.0	16	3.6	3	0.7
North Bay Parry Sound District	2	1.6	18	14.2	1	0.8	1	0.8	13	10.3	1	0.8	2	1.6	0	0.0	26	20.6	0	0.0	0	0.0	43	34.0	5	4.0
Northwestern	0	0.0	7	8.6	2	2.4	0	0.0	5	6.1	0	0.0	0	0.0	0	0.0	15	18.4	0	0.0	0	0.0	2	2.4	0	0.0
Ottawa, City of	105	12.1	233	26.8	23	2.6	7	0.8	186	21.4	1	0.1	6	0.7	1	0.1	154	17.7	16	1.8	1	0.1	13	1.5	11	1.3
Oxford County	1	0.9	32	30.2	7	6.6	1	0.9	3	2.8	0	0.0	0	0.0	0	0.0	15	14.1	0	0.0	0	0.0	7	6.6	1	0.9
Peel Region	88	6.8	352	27.4	32	2.5	12	0.9	191	14.9	21	1.6	5	0.4	25	1.9	248	19.3	34	2.6	36	2.8	16	1.2	39	3.0
Perth District	2	2.6	37	48.0	3	3.9	0	0.0	10	13.0	0	0.0	1	1.3	0	0.0	20	25.9	1	1.3	0	0.0	8	10.4	1	1.3
Peterborough County	2	1.5	31	22.5	9	6.5	0	0.0	13	9.4	0	0.0	3	2.2	0	0.0	22	16.0	1	0.7	0	0.0	3	2.2	1	0.7
Porcupine	1	1.1	5	5.7	3	3.4	0	0.0	5	5.7	0	0.0	1	1.1	0	0.0	11	12.4	0	0.0	0	0.0	1	1.1	0	0.0
Renfrew County and District	1	1.0	21	20.4	11	10.7	0	0.0	12	11.6	0	0.0	2	1.9	0	0.0	13	12.6	2	1.9	0	0.0	6	5.8	1	1.0
Simcoe Muskoka District	11	2.2	88	17.3	13	2.6	3	0.6	61	12.0	1	0.2	1	0.2	0	0.0	83	16.3	2	0.4	0	0.0	6	1.2	2	0.4
Sudbury and District	0	0.0	23	11.5	2	1.0	1	0.5	8	4.0	0	0.0	0	0.0	0	0.0	31	15.5	2	1.0	0	0.0	6	3.0	2	1.0
Thunder Bay District	2	1.3	27	17.3	3	1.9	0	0.0	15	9.6	1	0.6	4	2.6	0	0.0	19	12.2	1	0.6	0	0.0	4	2.6	0	0.0
Timiskaming	0	0.0	1	2.9		0.0	0	0.0	8	22.8	0	0.0	0	0.0	0	0.0	10	28.5	0	0.0	0	0.0	4	11.4	0	0.0
Toronto	402	15.2	991	37.4	55	2.1	34	1.3	467	17.6	52	2.0	25	0.9	21	0.8	575	21.7	100	3.8	41	1.5	23	0.9	86	3.2
Waterloo Region	33	6.5	177	34.7	17	3.3	3	0.6	80	15.7	2	0.4	5	1.0	0	0.0	110	21.5	6	1.2	2	0.4	15	2.9	11	2.2
Wellington-Dufferin-Guelph	2	0.7	111	41.2	13	4.8	3	1.1	46	17.1	1	0.4	3	1.1	0	0.0	57	21.2	4	1.5	1	0.4	17	6.3	6	2.2
Windsor-Essex County	0	0.0	132	32.5	4	1.0	0	0.0	34	8.4	3	0.7	2	0.5	6	1.5	58	14.3	4	1.0	0	0.0	5	1.2	6	1.5
York Region	28	2.8	326	32.9	17	1.7	12	1.2	71	7.2	5	0.5	5	0.5	0	0.0	200	20.2	18	1.8	5	0.5	12	1.2	50	5.1
Ontario	764	5.9	3786	29.3	334	2.6	104	0.8	1599	12.4	114	0.9	95	0.7	0	0.0	2373	18.4	239	1.8	95	0.7	3	2.5	260	2.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/05/2010]

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Rate is incidence per 100,000 population

Data Table 2b: Other Enteric Diseases and Zoonotic/Vectorborne Diseases: Ontario, 2008	Botulism		Cholera		Brucellosis		Psittacosis/ Ornithosis		Q-fever		Trichinosis		Tularemia		Lyme Disease		Malaria		West Nile Virus (WNV)	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate
Algoma District	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.8	1	0.8	0	0.0
Brant County	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Chatham-Kent	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	1.8	0	0.0	1	0.9
Durham Region	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	0.5	1	0.2
Eastern Ontario	0	0.0	0	0.0	1	0.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Elgin-St. Thomas	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Grey-Bruce	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Haldimand-Norfolk	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	3.6	0	0.0	0	0.0
Haliburton-Kawartha-Pine Ridge District	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	1.1	0	0.0	0	0.0
Halton Region	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.4	7	1.5	0	0.0
Hamilton, City of	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	1	0.2	6	1.1	1	0.2
Hastings Prince Edward Counties	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	2.4	0	0.0	0	0.0
Huron County	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Kingston-Frontenac & Lennox & Addington	0	0.0	0	0.0	0	0.0	0	0.0	1	0.5	0	0.0	0	0.0	6	3.1	1	0.5	0	0.0
Lambton County	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Leeds-Grenville and Lanark District	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	14	8.3	0	0.0	0	0.0
Middlesex-London	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	0.7	0	0.0
Niagara Region	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	0.7	2	0.5	0	0.0
North Bay Parry Sound District	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.8	0	0.0
Northwestern	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Ottawa, City of	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	7	0.8	20	2.3	0	0.0
Oxford County	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	1.9	0	0.0	0	0.0
Peel Region	0	0.0	1	0.1	0	0.0	0	0.0	1	0.1	0	0.0	1	0.1	11	0.9	38	3.0	0	0.0
Perth District	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Peterborough County	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	2.9	0	0.0
Porcupine	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Renfrew County and District	0	0.0	0	0.0	0	0.0	0	0.0	1	1.0	0	0.0	0	0.0	1	1.0	0	0.0	0	0.0
Simcoe Muskoka District	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	6	1.2	0	0.0	0	0.0
Sudbury and District	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.5	1	0.5	0	0.0
Thunder Bay District	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Timiskaming	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	2.9	0	0.0	0	0.0
Toronto	2	0.1	0	0.0	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	28	1.1	82	3.1	0	0.0
Waterloo Region	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	10	2.0	1	0.2	0	0.0
Wellington-Dufferin-Guelph	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Windsor-Essex County	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2	1	0.2	0	0.0
York Region	0	0.0	0	0.0	1	0.1	0	0.0	0	0.0	0	0.0	0	0.0	2	0.2	10	1.0	1	0.1
Ontario	2	0.0	3	0.0	5	0.0	0	0.0	4	0.0	0	0.0	1	0.0	109	0.8	181	1.4	4	0.1

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/05/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [01/14/2010].

Note: Rate is incidence per 100,000 population

Data Table 2c: Vaccine Preventable Diseases: Ontario, 2008	Meningococcal disease		Mumps		Pertussis		S. pneumoniae		Diphtheria		Haemophilus Influenzae B		Measles		Rubella		Rubella, congenital		Tetanus	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate
Algoma District	1	0.8	0	0.0	1	0.8	12	10.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Brant County	0	0.0	15	10.9	1	0.7	16	11.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Chatham-Kent	0	0.0	0	0.0	1	0.9	16	14.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Durham Region	2	0.3	0	0.0	33	5.5	43	7.1	0	0.0	0	0.0	2	0.3	0	0.0	0	0.0	0	0.0
Eastern Ontario	0	0.0	0	0.0	0	0.0	17	8.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Elgin-St. Thomas	0	0.0	0	0.0	0	0.0	7	7.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Grey-Bruce	0	0.0	0	0.0	2	1.2	21	12.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Haldimand-Norfolk	0	0.0	2	1.8	5	4.5	16	14.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Haliburton-Kawartha-Pine Ridge District	1	0.6	0	0.0	4	2.3	18	10.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Halton Region	2	0.4	0	0.0	25	5.2	31	6.5	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0
Hamilton, City of	1	0.2	0	0.0	14	2.7	58	11.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Hastings Prince Edward Counties	0	0.0	0	0.0	1	0.6	16	9.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Huron County	0	0.0	0	0.0	5	8.2	8	13.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Kingston-Frontenac & Lennox & Addington	3	1.6	0	0.0	3	1.6	21	10.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Lambton County	0	0.0	0	0.0	0	0.0	8	6.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Leeds-Grenville and Lanark District	1	0.6	1	0.6	3	1.8	17	10.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Middlesex-London	1	0.2	0	0.0	1	0.2	5	1.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Niagara Region	0	0.0	2	0.5	4	0.9	42	9.5	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
North Bay Parry Sound District	1	0.8	0	0.0	2	1.6	11	8.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Northwestern	0	0.0	0	0.0	0	0.0	10	12.2	0	0.0	1	1.2	0	0.0	0	0.0	0	0.0	0	0.0
Ottawa, City of	9	1.0	1	0.1	17	2.0	77	8.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Oxford County	0	0.0	309	291.3	3	2.8	4	3.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Peel Region	5	0.4	1	0.1	76	5.9	72	5.6	0	0.0	1	0.1	1	0.1	0	0.0	0	0.0	0	0.0
Perth District	0	0.0	0	0.0	0	0.0	12	15.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Peterborough County	0	0.0	0	0.0	0	0.0	18	13.1	0	0.0	0	0.0	10	7.3	0	0.0	0	0.0	0	0.0
Porcupine	0	0.0	0	0.0	0	0.0	5	5.7	0	0.0	1	1.1	0	0.0	0	0.0	0	0.0	0	0.0
Renfrew County and District	2	1.9	0	0.0	1	1.0	4	3.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Simcoe Muskoka District	1	0.2	1	0.2	24	4.7	45	8.8	0	0.0	2	0.4	2	0.4	0	0.0	0	0.0	0	0.0
Sudbury and District	1	0.5	0	0.0	2	1.0	12	6.0	0	0.0	1	0.5	0	0.0	0	0.0	0	0.0	0	0.0
Thunder Bay District	1	0.6	0	0.0	3	1.9	25	16.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Timiskaming	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Toronto	9	0.3	2	0.1	428	16.1	250	9.4	0	0.0	0	0.0	29	1.1	0	0.0	0	0.0	0	0.0
Waterloo Region	2	0.4	0	0.0	16	3.1	47	9.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Wellington-Dufferin-Guelph	3	1.1	0	0.0	5	1.9	24	8.9	0	0.0	0	0.0	12	4.5	1	0.4	0	0.0	0	0.0
Windsor-Essex County	1	0.2	0	0.0	4	1.0	19	4.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
York Region	1	0.1	2	0.2	147	14.9	55	5.6	0	0.0	0	0.0	1	0.1	0	0.0	0	0.0	0	0.0
Ontario	48	0.4	336	2.6	831	6.4	1062	8.2	0	0.0	7	0.1	58	0.5	1	0.0	0	0.0	0	0.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/05/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [14/01/2010].

Note: Rate is incidence per 100,000 population

Data Table 2d: Sexually Transmitted and Bloodborne Diseases, Ontario, 2008	AIDS		Chlamydia		Gonorrhea		Group B Streptococcus disease		Hepatitis B		Hepatitis C		HIV		Syphilis, infectious		Ophthalmia neonatorum		Cytomegalovirus, congenital		Herpes, neonatal	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate
Algoma District	0	0.0	288	240.9	17	14.2	1	0.8	1	0.8	87	72.8	3	2.5	0	0.0	0	0.0	0	0.0	0	0.0
Brant County	3	2.2	269	194.9	42	30.4	0	0.0	2	1.4	58	42.0	3	2.2	0	0.0	0	0.0	0	0.0	0	0.0
Chatham-Kent	0	0.0	187	168.2	21	18.9	0	0.0	1	0.9	23	20.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Durham Region	5	0.8	1213	200.4	188	31.1	2	0.3	1	0.2	202	33.4	18	3.0	5	0.8	0	0.0	0	0.0	1	0.2
Eastern Ontario	1	0.5	235	118.1	14	7.0	1	0.5	3	1.5	42	21.1	9	4.5	3	1.5	0	0.0	0	0.0	0	0.0
Elgin-St. Thomas	1	1.1	124	137.7	7	7.8	0	0.0	1	1.1	37	41.1	1	1.1	0	0.0	0	0.0	0	0.0	0	0.0
Grey-Bruce	1	0.6	236	144.7	11	6.7	2	1.2	1	0.6	40	24.5	1	0.6	3	1.8	0	0.0	0	0.0	0	0.0
Haldimand-Norfolk	3	2.7	125	113.1	4	3.6	0	0.0	5	4.5	35	31.7	3	2.7	0	0.0	0	0.0	0	0.0	0	0.0
Haliburton-Kawartha-Pine Ridge District	0	0.0	207	117.2	10	5.7	1	0.6	4	2.3	85	48.1	1	0.6	0	0.0	0	0.0	0	0.0	0	0.0
Halton Region	1	0.2	538	112.2	62	12.9	3	0.6	0	0.0	125	26.1	19	4.0	3	0.6	0	0.0	0	0.0	0	0.0
Hamilton, City of	5	0.9	1147	217.5	149	28.3	2	0.4	9	1.7	204	38.7	30	5.7	16	3.0	0	0.0	0	0.0	1	0.2
Hastings Prince Edward Counties	1	0.6	237	145.1	20	12.2	0	0.0	2	1.2	53	32.4	1	0.6	0	0.0	0	0.0	0	0.0	0	0.0
Huron County	0	0.0	33	54.3	0	0.0	0	0.0	1	1.6	10	16.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Kingston-Frontenac & Lennox & Addington	1	0.5	451	234.9	35	18.2	1	0.5	11	5.7	188	97.9	6	3.1	0	0.0	0	0.0	0	0.0	0	0.0
Lambton County	0	0.0	201	151.9	11	8.3	1	0.8	3	2.3	38	28.7	0	0.0	1	0.8	0	0.0	1	0.8	0	0.0
Leeds-Grenville and Lanark District	2	1.2	193	114.4	9	5.3	0	0.0	2	1.2	66	39.1	3	1.8	0	0.0	0	0.0	0	0.0	0	0.0
Middlesex-London	6	1.3	1209	269.9	170	38.0	1	0.2	1	0.2	239	53.4	19	4.2	2	0.4	0	0.0	1	0.2	0	0.0
Niagara Region	3	0.7	772	174.6	106	24.0	3	0.7	1	0.2	224	50.7	35	7.9	5	1.1	0	0.0	0	0.0	0	0.0
North Bay Parry Sound District	0	0.0	271	214.3	9	7.1	0	0.0	2	1.6	42	33.2	2	1.6	0	0.0	0	0.0	0	0.0	0	0.0
Northwestern	0	0.0	487	596.0	80	97.9	0	0.0	1	1.2	14	17.1	1	1.2	0	0.0	0	0.0	0	0.0	0	0.0
Ottawa, City of	5	0.6	1877	216.3	198	22.8	3	0.3	3	0.3	270	31.1	92	10.6	38	4.4	1	0.1	0	0.0	0	0.0
Oxford County	0	0.0	135	127.3	16	15.1	0	0.0	0	0.0	39	36.8	5	4.7	0	0.0	0	0.0	0	0.0	0	0.0
Peel Region	2	0.2	2544	197.9	425	33.1	7	0.5	4	0.3	394	30.6	56	4.4	11	0.9	0	0.0	0	0.0	0	0.0
Perth District	2	2.6	99	128.4	4	5.2	0	0.0	0	0.0	7	9.1	3	3.9	1	1.3	0	0.0	0	0.0	0	0.0
Peterborough County	0	0.0	315	228.6	31	22.5	1	0.7	1	0.7	36	26.1	2	1.5	1	0.7	0	0.0	0	0.0	0	0.0
Porcupine	0	0.0	232	262.5	45	50.9	1	1.1	3	3.4	19	21.5	3	3.4	0	0.0	0	0.0	0	0.0	0	0.0
Renfrew County and District	2	1.9	167	161.8	5	4.8	1	1.0	2	1.9	29	28.1	2	1.9	2	1.9	0	0.0	0	0.0	1	1.0
Simcoe Muskoka District	2	0.4	746	146.7	47	9.2	1	0.2	4	0.8	171	33.6	7	1.4	6	1.2	0	0.0	0	0.0	1	0.2
Sudbury and District	0	0.0	447	223.9	32	16.0	1	0.5	16	8.0	81	40.6	14	7.0	0	0.0	0	0.0	0	0.0	0	0.0
Thunder Bay District	0	0.0	440	281.50	54	34.5	0	0.0	13	8.3	155	99.2	5	3.2	1	0.6	0	0.0	0	0.0	0	0.0
Timiskaming	0	0.0	55	156.8	2	5.7	0	0.0	0	0.0	14	39.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Toronto	80	3.0	7378	278.2	1680	63.3	13	0.5	32	1.2	1070	40.3	544	20.5	339	12.8	2	0.1	1	0.0	0	0.0
Waterloo Region	1	0.2	1033	202.2	171	33.5	2	0.4	3	0.6	119	23.3	21	4.1	1	0.2	0	0.0	0	0.0	1	0.2
Wellington-Dufferin-Guelph	1	0.4	369	137.0	30	11.1	0	0.0	9	3.3	67	24.9	10	3.7	1	0.4	0	0.0	0	0.0	0	0.0
Windsor-Essex County	3	0.7	641	157.9	44	10.8	1	0.2	0	0.0	173	42.6	16	3.9	2	0.5	0	0.0	0	0.0	2	0.5
York Region	2	0.2	1299	131.2	119	12.0	5	0.5	2	0.2	239	24.1	13	1.3	11	1.1	0	0.0	0	0.0	1	0.1
Ontario	133	1.0	26200	202.6	3868	29.9	54	0.4	144	1.1	4695	36.3	948	7.3	452	3.5	3	0.0	3	0.0	8	0.1

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [11/02/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [14/01/2010].

Note: Rate is incidence per 100,000 population

Data Table 2e: Diseases Transmitted by Direct Contact or Respiratory Routes: Ontario, 2008	Invasive Group A Streptococcus disease		Influenza		Legionellosis		Tuberculosis	
	#	Rate	#	Rate	#	Rate	#	Rate
Algoma District	5	4.2	22	18.4	1	0.8	0	0.0
Brant County	6	4.3	47	34.1	0	0.0	2	1.4
Chatham-Kent	5	4.5	16	14.4	1	0.9	0	0.0
Durham Region	17	2.8	288	47.6	5	0.8	15	2.5
Eastern Ontario	5	2.5	78	39.2	0	0.0	3	1.5
Elgin-St. Thomas	3	3.3	4	4.4	0	0.0	0	0.0
Grey-Bruce	7	4.3	89	54.6	0	0.0	0	0.0
Haldimand-Norfolk	5	4.5	28	25.3	0	0.0	0	0.0
Haliburton-Kawartha-Pine Ridge District	3	1.7	139	78.7	1	0.6	4	2.3
Halton Region	10	2.1	394	82.2	4	0.8	8	1.7
Hamilton, City of	33	6.3	360	68.3	15	2.8	20	3.8
Hastings Prince Edward Counties	7	4.3	32	19.6	1	0.6	1	0.6
Huron County	0	0.0	53	87.3	0	0.0	0	0.0
Kingston-Frontenac & Lennox & Addington	7	3.6	86	44.8	0	0.0	3	1.6
Lambton County	3	2.3	13	9.8	0	0.0	0	0.0
Leeds-Grenville and Lanark District	4	2.4	53	31.4	1	0.6	0	0.0
Middlesex-London	28	6.3	100	22.3	0	0.0	6	1.3
Niagara Region	15	3.4	155	35.1	1	0.2	8	1.8
North Bay Parry Sound District	8	6.3	102	80.7	0	0.0	0	0.0
Northwestern	15	18.4	87	106.5	0	0.0	7	8.6
Ottawa, City of	35	4.0	545	62.8	1	0.1	51	5.9
Oxford County	2	1.9	29	27.3	2	1.9	0	0.0
Peel Region	25	1.9	1,234	96	17	1.3	113	8.8
Perth District	5	6.5	44	57.1	1	1.3	0	0.0
Peterborough County	3	2.2	43	31.2	2	1.5	2	1.5
Porcupine	4	4.5	54	61.1	0	0.0	0	0.0
Renfrew County and District	2	1.9	32	31	0	0.0	0	0.0
Simcoe Muskoka District	22	4.3	229	45	3	0.6	0	0.0
Sudbury and District	8	4.0	46	23	3	1.5	0	0.0
Thunder Bay District	56	35.8	23	14.7	0	0.0	2	1.3
Timiskaming	0	0.0	11	31.4	0	0.0	0	0.0
Toronto	102	3.8	2,559	96.5	15	0.6	273	10.3
Waterloo Region	24	4.7	252	49.3	0	0.0	13	2.5
Wellington-Dufferin-Guelph	10	3.7	129	47.9	2	0.7	6	2.2
Windsor-Essex County	12	3.0	116	28.6	1	0.2	6	1.5
York Region	16	1.6	745	75.3	4	0.4	60	6.1
Ontario	512	4.0	8243¹	63.7	81	0.6	603	4.7

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/05/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [14/01/2010].

Note: Rate is incidence per 100,000 population; **Note 1:** Influenza total includes 6 cases who are not residents of Ontario

Data Table 2f: Other Diseases: Ontario, 2008	Creutzfeldt-Jakob disease, all		Leprosy	
	#	Rate	#	Rate
Algoma District	0	0.0	0	0.0
Brant County	0	0.0	0	0.0
Chatham-Kent	0	0.0	0	0.0
Durham Region	1	0.2	0	0.0
Eastern Ontario	0	0.0	0	0.0
Elgin-St. Thomas	0	0.0	0	0.0
Grey-Bruce	0	0.0	0	0.0
Haldimand-Norfolk	0	0.0	0	0.0
Haliburton-Kawartha-Pine Ridge District	0	0.0	0	0.0
Halton Region	0	0.0	0	0.0
Hamilton, City of	0	0.0	0	0.0
Hastings Prince Edward Counties	0	0.0	0	0.0
Huron County	0	0.0	0	0.0
Kingston-Frontenac & Lennox & Addington	0	0.0	0	0.0
Lambton County	0	0.0	0	0.0
Leeds-Grenville and Lanark District	0	0.0	0	0.0
Middlesex-London	1	0.2	0	0.0
Niagara Region	0	0.0	0	0.0
North Bay Parry Sound District	0	0.0	0	0.0
Northwestern	0	0.0	0	0.0
Ottawa, City of	1	0.1	1	0.1
Oxford County	0	0.0	0	0.0
Peel Region	1	0.1	0	0.0
Perth District	0	0.0	0	0.0
Peterborough County	0	0.0	0	0.0
Porcupine	0	0.0	0	0.0
Renfrew County and District	0	0.0	0	0.0
Simcoe Muskoka District	0	0.0	0	0.0
Sudbury and District	0	0.0	0	0.0
Thunder Bay District	0	0.0	0	0.0
Timiskaming	0	0.0	0	0.0
Toronto	0	0.0	0	0.0
Waterloo Region	0	0.0	0	0.0
Wellington-Dufferin-Guelph	0	0.0	0	0.0
Windsor-Essex County	0	0.0	0	0.0
York Region	1	0.1	0	0.0
Ontario	5	0.0	1	0.0

Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/05/2010].

Population Data: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted [14/01/2010].

Note: Rate is incidence per 100,000 population

