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The Monthly Infectious Diseases Surveillance Report is produced by Public Health Ontario (PHO) for the public health community of Ontario. We welcome feedback by email to: SurveillanceServices@oahpp.ca. Past issues and additional information are available online.

INFECTIOUS DISEASE IN FOCUS

LEGIONELLOSIS

Legionellosis is caused by Gram-negative, aerobic bacteria from the genus *Legionella*.[1] Currently, 50 species and over 70 distinct serogroups of *Legionella* have been identified.[2] Although all species are potentially pathogenic in humans, legionellosis is most often caused by *Legionella pneumophila*.[1,3-5]

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Other species of *Legionella* commonly associated with disease in humans include: *L. micdadei*, *L. bozemanii*, *L. dumoffii*, and *L. longbeachae*.[1,3,5]

Legionellosis may present clinically as either Pontiac fever or Legionnaires' disease. Pontiac fever is a mild, self-limiting febrile illness that typically resolves in 2–5 days without the need for medical care.[1] While fever is the defining symptom, other symptoms may include loss of appetite, fatigue, malaise, abdominal pain, and diarrhea.[1,3] Legionnaires' disease is the more severe form of legionellosis that is characterized by pneumonia, and which may progress to respiratory failure and death.[1,3] In addition to the symptoms listed above that are associated with Pontiac fever, individuals with Legionnaires' disease may also experience a mild, non-productive cough;[1] however, other site-specific symptoms may occur as well, particularly in the less common extrapulmonary manifestations of legionellosis.[3] Both Pontiac fever and Legionnaires' disease are reportable in Ontario.[6]

Legionella can be found in any natural or artificial aqueous environment.[1,3] The bacteria are parasitic, in that they multiply and survive in fresh water protozoa.[3] *Legionella* thrive in warm, humid conditions,[3,7,8] particularly where there is stagnant water and biofilms can develop.[3] Common reservoirs for *Legionella* include lakes, rivers and streams, cooling towers, water distribution systems, hot tubs, decorative water fountains, showers, respiratory therapy equipment, and damp potting soil/compost.[1,3] Susceptible individuals may become infected with *Legionella* when they inhale aerosolized water droplets contaminated with the bacteria into their lungs, where they can multiply within human alveolar macrophages.[1,9] The incubation period of *Legionella* has a range of 5–72 hours (average: 24–48 hours) for Pontiac fever, and 2–14 days (average: 5–6 days) for Legionnaires' disease;[1] however, longer incubation periods can occur.[1,3,9] There have been no documented cases of human-to-human transmission of *Legionella*.[1]

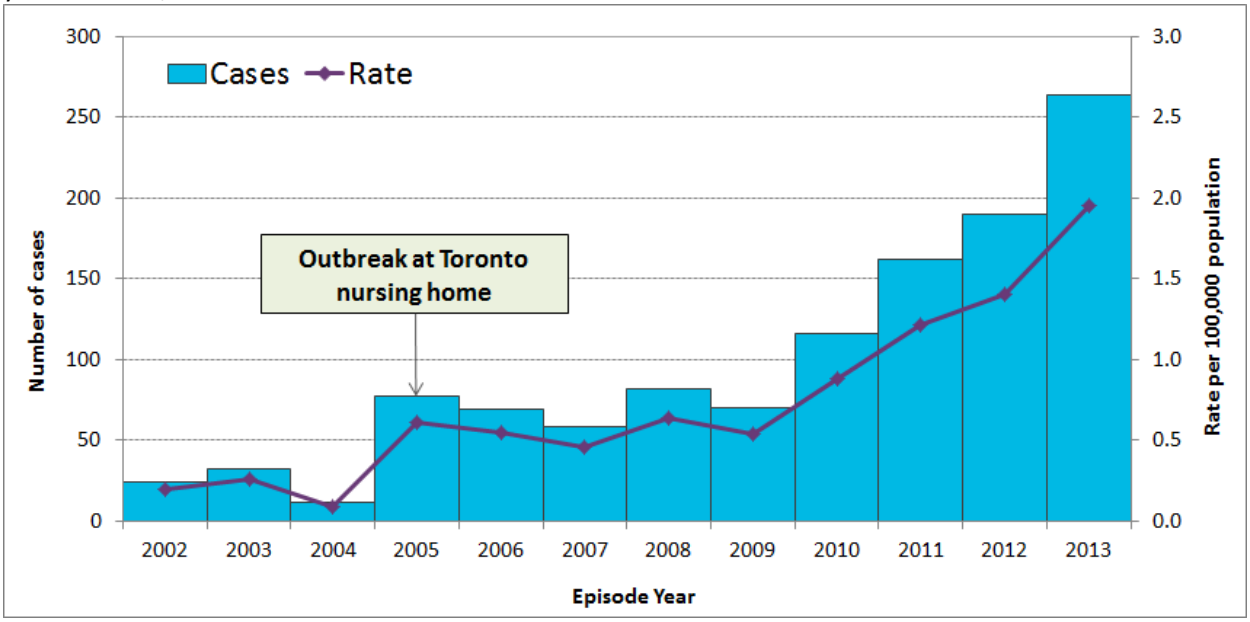
Individual risk factors for *Legionella* infection include male sex, age over 40 years, smoking, alcohol abuse, certain chronic diseases (e.g., diabetes, chronic heart/lung diseases, chronic renal failure), immunocompromise (e.g., corticosteroids, chemotherapy, transplant recipient), haematological malignancy, iron overload, and/or a history of recent travel.[3] Additional risk factors for hospital-acquired infections include age over 25 years, intubation, cancers (including leukemias/lymphomas), and treatment with respiratory therapy devices.[3]

Laboratory testing for the detection of *Legionella* may include respiratory culture, urine antigen testing (UAT), serum antibody testing, and other molecular methods (e.g., PCR). Respiratory culture is the gold standard for diagnosis of legionellosis, and permits the identification of species and subgroups. While UAT is the most frequently used testing method among clinicians, this method is only able to identify *L. pneumophila* serogroup 1. As a result, it is not possible to identify other *Legionella* species or match clinical isolates to environmental samples. For additional information on laboratory testing for *Legionella*, refer to PHOL's Test Directory[13] and April 2012 Labstract, *Legionella – Change in testing methodology to real-time PCR testing.*[14]

Legionellosis occurs worldwide.[1] Over the past decade, incidence rates for legionellosis have been increasing in Canada, United States, and Europe.[10-12] In Ontario, the first early increase in legionellosis

occurred in 2005, which was largely due to an outbreak of legionellosis that occurred in a nursing home in Toronto (Figure 1). Since 2009, the incidence rates of reported confirmed cases of legionellosis have increased by an average of 39.2% each year. In 2013, 264 cases of legionellosis were reported in Ontario, corresponding to an incidence rate of 2.0 cases per 100,000 population.

Figure 1. Number of confirmed cases and incidence rates (per 100,000 population) of legionellosis by year: Ontario, 2002–2013



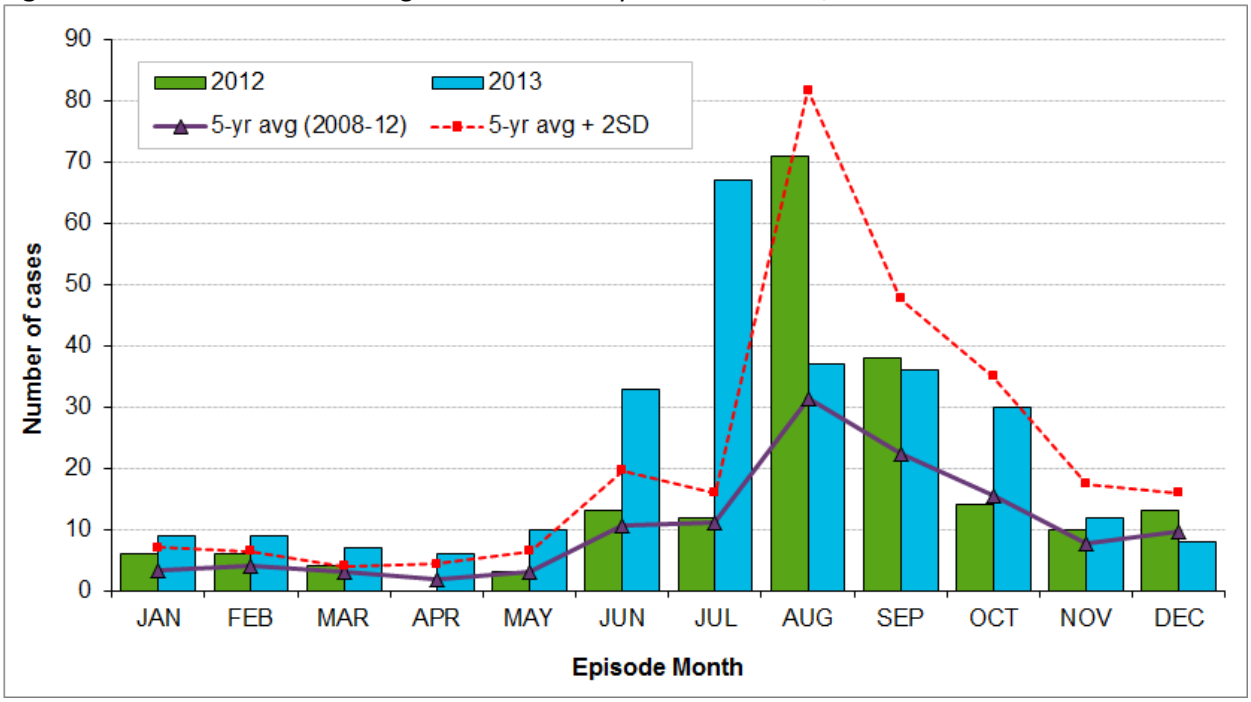
Data sources:

Cases: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2014/02/14].

Population estimates [2002-2012]: Ontario Ministry of Health and Long-Term Care, intelliHEALTH Ontario, Date Extracted: [2013/09/16]. Note: The 2012 population estimate for Ontario was used to calculate the 2013 incidence rate.

The incidence of legionellosis follows a seasonal pattern, with most cases reported in months with higher temperatures, rainfall, and/or humidity.[1,3,7] In Ontario, the incidence of legionellosis has historically increased in the late summer and early fall months. In 2013, nearly two-thirds (65.5%, 173/264) of reported legionellosis cases occurred between June 1 and September 30, with the largest percentage of cases (25.4%, 67/264) for the year reported in July (Figure 2). The seasonal peak in 2013 occurred earlier than in previous years and the reason for this is unclear.

Figure 2. Number of confirmed legionellosis cases by month: Ontario, 2012–2013



Data source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2014/02/14].

In 2013, over half (52.7%, 139/264) of all legionellosis cases occurred in males over 50 years of age. Nearly three-quarters (73.9%, 195/264) of legionellosis cases reported in 2013 had pneumonia entered in iPHIS as either a complication or symptom of disease, which is a key diagnostic criterion for Legionnaire's disease; 83.7% (221/264) were reported as hospitalized; and 10.2% (27/264) were reported as fatal, with legionellosis identified as the underlying cause of death for one-third (33.3%, 9/27) of the fatal cases. Information about clinical diagnoses, hospitalizations, and deaths for cases of legionellosis is underreported due to missing data in iPHIS. With respect to clinical diagnosis, it is likely that a higher proportion of laboratory-confirmed cases of legionellosis have Legionnaires' disease, but that pneumonia has not been reported in iPHIS as either a symptom or complication of illness.

The majority of legionellosis cases are reported from public health units (PHUs) in and around the Golden Horseshoe area. In 2013, just over half of cases (51.9%, 137/264) were reported from three health units: City of Toronto (62 cases), Peel Region (51 cases), and Niagara Region (24 cases). Among PHUs with five or more cases of legionellosis reported in 2013, Niagara Region had the highest incidence rate with 5.4 cases per 100,000 population. The reason for the relatively high rate in Niagara Region is not known.

Collecting data on potential exposure sources and locations is an ongoing challenge with legionellosis due to its ubiquity in the environment. For the past several years, Public Health Ontario (PHO) has provided a tool to assist PHUs in collecting more detailed exposure information for legionellosis cases that occur during the seasonal increase. Frequently reported exposures among legionellosis cases in Ontario in 2013 included various exposures within the home (e.g., humidifier, taking showers, etc.), as

well as exposure to heating/ventilation systems in a building, potting soil/compost, ponds/creeks, and travel within Ontario. No cases were identified during the 2013 legionellosis season that shared a common exposure, with the exception of two cases in a northern health unit that shared a common residential hot tub exposure. This linkage was confirmed based on environmental testing.

Of the 264 cases of legionellosis reported in 2013, at least one medical risk factor was entered in iPHIS for 166 cases (62.9%), and at least one behavioural risk factor was entered for 187 cases (70.8%). Among cases with risk factor information recorded in iPHIS, the most frequently reported medical risk factors included chronic disease/underlying medical condition (73.5%, 122/166), diabetes (30.7%, 51/166), and being immunocompromised (27.1%, 45/166). Smoking (64.7%, 121/187), recent exposure to aerosolized water (28.3%, 53/187), and gardening/disturbing soil (20.3%, 38/187) were the most frequently reported behavioural risk factors.

In 2013, 8,530 individuals were tested for *Legionella*, which was 22.1% higher than the number of individuals tested in 2012. The number of individuals tested for *Legionella* increased by an average of 17.2% each year in Ontario from 2010–13, while the per cent positivity increased by an average of 10.9% each year. These findings suggest that increased testing only partially explains the increase in *Legionella* cases detected in the province.

During the 2013 legionellosis season, PHO conducted weekly epidemiological analyses to monitor provincial legionellosis activity, based on iPHIS and laboratory data. Geospatial analyses were conducted each week, including identification of spatiotemporal clusters and case and exposure location mapping. Key data challenges related to legionellosis include the difficulty in identifying potential exposure sources and locations for an organism that is ubiquitous in aqueous environments, difficulty acquiring details from individuals (or their proxies) who are often severely ill, and under-reporting of legionellosis among those who do not seek medical care for their illness. PHO is currently developing and will distribute a surveillance package to local PHUs in preparation for the 2014 legionellosis season.

Primary prevention of legionellosis involves controlling the growth and proliferation of *Legionella* in the environment, particularly in artificial water sources. Although prevention and control activities are dependent on the setting (i.e., community vs. institutional), general recommendations include draining cooling towers when not in use and routine mechanical cleaning to remove scale and sediment, appropriate use of biocides, maintaining hot water systems at greater than 50 degrees Celsius, and avoid using tap water in respiratory therapy equipment.[1] While there is mixed evidence on the role of water sampling to identify *Legionella* in potential exposure sources for confirmed cases of legionellosis,[15,16] in Ontario the Infectious Diseases Protocol, 2013 recommends that environmental sampling be reserved for clusters or outbreaks.[17]

SIGNIFICANT REPORTABLE DISEASE ACTIVITY

Table 1 provides a list of reportable diseases for which incidence in 2014 was significantly higher than expected compared to the five-year historical average (2009-2013). Both monthly and year-to-month (YTM) comparisons were made for each of the reportable diseases listed in Appendix 1.

Table 1. Summary of significant increases in reportable disease incidence: Ontario, January 1 to March 31, 2014

Reportable disease	2014				Historical comparisons						5-year avg annual count (2009-2013)
	Mar	Mar rate ŧ	YTM	YTM rate ŧ	Current month 5-year avg (2009-2013)	Current month 5-year avg (2009-2013) rate ŧ	% difference in rates (current month minus 5-year avg)†	YTM 5-year avg (2009-2013)	YTM 5-year avg (2009-2013) rate ŧ	% difference in rates (YTM 2014 minus YTM 5-year avg)†	
Gonorrhoea (All Types)[1,2]	437	31.6	1311	94.7	329	24.6	28.3	981	73.4	29.1	4070
Group A Streptococcal Disease, Invasive[1]	84	6.1	238	17.2	61	4.5	33.9	182	13.6	26.2	585
Influenza[1,2]	1461	105.5	5420	391.5	746	55.8	89.0	2844	212.7	84.1	7328
Measles[1,2]	9	0.7	12	0.9	1	0.1	624.3	2	0.1	479.5	8

Ontario Cases: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2014/04/16].
Population Estimates [2009-2012], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, Date Extracted: [2013/09/16].
Population Projections [2013-2014], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, Date Extracted: [2014/04/11].
ŧ Rates listed are cases per 1,000,000 population.
† Per cent (%) difference is calculated using unrounded rates; numbers displayed in these columns may vary from calculations using rounded rates.
[1] Statistically significant difference ($p<0.05$) in incidence reported in year-to-month (January 1 to March 31, 2014) compared to the five-year historical average (January 1 to March 31, 2009-2013).
[2] Statistically significant difference ($p<0.05$) in incidence reported in current month (March 2014) compared to the five-year historical average (March 2009-2013).

GONORRHEA (ALL TYPES)

Statistically significant increases in the monthly and/or YTM incidence of laboratory-confirmed gonorrhea in Ontario, in comparison to corresponding monthly/YTM historical five-year averages, have been noted since September 2013, as identified in the November 2013 issue of this report. The March 2014 issue of this report provides a summary of possible reasons for this increase. The increase has been more pronounced in some health units and Public Health Ontario is following up to investigate.

GROUP A STREPTOCOCCAL DISEASE, INVASIVE

There was a significant increase in the monthly and YTM incidence of laboratory-confirmed invasive Group A Streptococcus (iGAS) cases reported in Ontario in March 2014. A provincial iGAS summary was produced in January 2014 and distributed to health units documented that the annual incidence of iGAS

cases reported in Ontario has been gradually increasing since 2008. This increase may be explained in part by the change in case definition for iGAS that was implemented in January 2011. The age and sex distribution of iGAS cases in Ontario has not changed substantially compared to previous years. The reason for the overall increase in iGAS in Ontario over this period is not fully understood.

INFLUENZA

The YTM incidence rate of reported laboratory-confirmed influenza cases for January 1 to March 31, 2014 was significantly higher than the historical five-year (2009-2013) average YTM rate for the same period.

During the 2013/2014 season in Ontario, influenza A activity peaked in late December and early January, and then declined. Influenza B activity began to rise around mid-January 2014. The dominant circulating influenza type switched from influenza A to B at the beginning of March 2014. The resulting combination of above average counts and rates of influenza A in January and influenza B in March led to the significantly higher YTM rate for January 1 to March 31, 2014 as compared to the historical five-year average.

The influenza surveillance season begins in September and in general, most influenza activity occurs from November to the following April; however, the start of each influenza season, intensity, and the timing of peak activity varies from year to year. In addition to differences due to season severity, differences in counts and rates of laboratory-confirmed cases may be affected by the amount of testing performed and the laboratory tests used.

For more information about the current influenza season, please see the Ontario Respiratory Virus Bulletin, which is published weekly and provides detailed surveillance information on influenza and other respiratory pathogens in Ontario.

MEASLES

Measles has been eliminated from Canada, however cases still occur as a result of importations from countries where the disease remains endemic. Ontario is one of several Canadian provinces and territories reporting measles cases as a result of increased measles activity in Asia, Europe, and Africa. An increase in cases has been observed in 2014. At the time of writing (April 30, 2014), 19 confirmed cases of measles have been reported in 10 health units since January 1, 2014. Eleven cases (57.9%) were female, and cases ranged in age from 9 months to 41 years of age (median 20.0 years). Eight cases occurred among children less than 18 years of age, with three occurring in infants under one year. Eleven cases occurred in adults, none of whom were born before 1970. Of the 17 cases for whom immunization status could be determined (89.5%), 12 were unimmunized, including the three under 12 months of age. Two adults received one dose of measles-containing vaccine, and a further three adults received two doses. All cases were related to travel outside Canada: eight were classified as imported cases (travel 7-21 days before rash onset), while eleven cases were epidemiologically-linked to an imported case (import-related). Four of the imported cases had a history of travel to the Philippines,

while the remaining four imported cases travelled to the United States, Netherlands, Thailand and Pakistan. A resident of China who visited Ontario while ill led to a cluster of four co-primary and one secondary import-related case. Subsequent transmission occurred among three imported cases, resulting in secondary and tertiary transmission. As investigations are ongoing, further transmission may occur. Most health units have issued media releases and public health alerts to inform the public and public health colleagues of potential exposure sites. Further information on measles can be found in the measles Ontario Health Profile infographic.

INFECTIOUS DISEASE ACTIVITY IN OTHER JURISDICTIONS

This section of the report provides a snapshot of current activity related to infectious diseases across Canada and/or globally. The items included in this section are selected based on ongoing or potential implications for public health in Ontario.

SALMONELLA COTHAM INVESTIGATION IN THE USA LINKED TO BEARDED DRAGONS: IMPLICATIONS FOR CANADIAN REPTILE OWNERS

Summary:

The U.S. Centers for Disease Control and Prevention (CDC) is currently investigating an outbreak of *Salmonella* Cotham, an extremely rare serotype in the US, linked with exposure to pet bearded dragon lizards. As of April 21, 132 cases have been identified in 21 states. The median age of cases is two years with a range of less than one to 79 years. Fifty eight per cent of the cases are five years of age or younger. Of the cases reporting a hospitalization status, 42 per cent were hospitalized. Several countries in the European Union are reporting above expected counts of *S.* Cotham, and are also reporting exposures to bearded dragons. The CDC is collaborating with international partners to investigate additional cases of this disease as well as the source(s) of the reptiles.

Implications:

Eight cases of *S*. Cotham have been identified in Canada since 2012. Four of the eight cases are from Ontario. Exposures to bearded dragons or reptiles have been reported by three of the four Ontario cases. Owners of reptiles including bearded dragons should be advised about the risk of becoming infected with *Salmonella* as a result of handling these pets and appropriate precautions, as recommended by public health officials, should be followed. Babies, children five years of age and under, pregnant women, the elderly, and those with weaker immune systems are particularly at risk for infection and/or complications from *Salmonella*. These individuals should avoid contact with reptiles and their environment to reduce the risk of becoming infected with *Salmonella*.

Source:

1. http://www.cdc.gov/salmonella/cotham-04-14/index.html

RECENTLY DISCONTINUED ENHANCED SURVEILLANCE DIRECTIVES

There have been no recently discontinued Enhanced Surveillance Directives to report.

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In Focus – Legionella

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Appendix – Reportable Diseases

Appendix 1. Confirmed cases of reportable diseases, and probable cases of select reportable diseases, by month: Ontario, 2009-2014*

Reportable disease	2014														Historical comparisons						5-year avg (2009-2013) annual count
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTM	YTM rate ŧ	Current month 5-year avg (2009-2013)	Current month 5-year avg (2009-2013) rate ŧ	% difference rates (current month minus 5-year avg)†	YTM 5-year avg (2009-2013)	YTM 5-year avg (2009-2013) rate ŧ	% difference rates (YTM 2014 minus YTM 5-year avg)†	
Acute Flaccid Paralysis	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AIDS	1	1	4	-	-	-	-	-	-	-	-	-	**6**	0.4	12	0.9	-67	33	2.5	-83	107
Amebiasis	44	61	51	-	-	-	-	-	-	-	-	-	**156**	11.3	74	5.5	-34	207	15.5	-27	803
Botulism	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	0	0.0	-	0	0.0	-100	2
Brucellosis	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	0	0.0	-100	1	0.1	-100	5
Campylobacter Enteritis	228	191	198	-	-	-	-	-	-	-	-	-	**617**	44.6	219	16.4	-13	601	45.0	-1	3,595
Chlamydial Infections	3,101	2,676	2,800	-	-	-	-	-	-	-	-	-	**8,577**	619.5	2,944	220.2	-8	8,574	641.2	-3	33,981
Cholera	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	0	0.0	-	0	0.0	-100	0
Cryptosporidiosis	14	13	15	-	-	-	-	-	-	-	-	-	**42**	3.0	21	1.6	-32	50	3.7	-19	311
Cyclosporiasis	2	2	1	-	-	-	-	-	-	-	-	-	**5**	0.4	6	0.4	-83	12	0.9	-58	117
Encephalitis	4	0	0	-	-	-	-	-	-	-	-	-	**4**	0.3	2	0.1	-100	5	0.4	-20	19
Encephalitis/Meningitis	13	7	8	-	-	-	-	-	-	-	-	-	**28**	2.0	8	0.6	-1	24	1.8	14	143
Food Poisoning, All Causes	4	0	6	-	-	-	-	-	-	-	-	-	**10**	0.7	7	0.6	-22	22	1.6	-55	89
Giardiasis	83	78	64	-	-	-	-	-	-	-	-	-	**225**	16.3	107	8.0	-42	327	24.4	-34	1,384
Gonorrhoea (All Types)	485	389	437	-	-	-	-	-	-	-	-	-	**1,311**	94.7	329	24.6	28	981	73.4	29	4,070
Group A Streptococcal Disease, Invasive	81	73	84	-	-	-	-	-	-	-	-	-	**238**	17.2	61	4.5	34	182	13.6	26	585
Group B Streptococcal Disease, Neonatal	6	6	3	-	-	-	-	-	-	-	-	-	**15**	1.1	4	0.3	-31	12	0.9	23	54
Haemophilus Influenzae B Disease, Invasive	0	0	2	-	-	-	-	-	-	-	-	-	**2**	0.1	0	0.0	383	1	0.1	93	4
Hepatitis A	5	6	9	-	-	-	-	-	-	-	-	-	**20**	1.4	9	0.7	-3	30	2.3	-36	117
Hepatitis B	19	10	6	-	-	-	-	-	-	-	-	-	**35**	2.5	13	0.9	-54	30	2.3	12	115
Hepatitis C	347	339	361	-	-	-	-	-	-	-	-	-	**1,047**	75.6	381	28.5	-8	1,097	82.1	-8	4,330
HIV	43	44	57	-	-	-	-	-	-	-	-	-	**144**	10.4	74	5.5	-26	206	15.4	-32	814
Influenza	2,911	1,048	1,461	-	-	-	-	-	-	-	-	-	**5,420**	391.5	746	55.8	89	2,844	212.7	84	7,328
Legionellosis	7	1	2	-	-	-	-	-	-	-	-	-	**10**	0.7	4	0.3	-46	13	1.0	-27	160
Leprosy	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	0	0.0	-	0	0.0	-100	2
Listeriosis	2	2	2	-	-	-	-	-	-	-	-	-	**6**	0.4	3	0.2	-26	10	0.7	-42	52
Lyme Disease	1	2	3	-	-	-	-	-	-	-	-	-	**6**	0.4	2	0.2	32	6	0.5	-7	172
Malaria	14	12	5	-	-	-	-	-	-	-	-	-	**31**	2.2	12	0.9	-60	39	2.9	-22	220
Measles	1	2	9	-	-	-	-	-	-	-	-	-	**12**	0.9	1	0.1	624	2	0.1	479	8
Meningitis	6	7	6	-	-	-	-	-	-	-	-	-	**19**	1.4	9	0.7	-36	20	1.5	-10	115
Meningococcal Disease, Invasive	5	3	5	-	-	-	-	-	-	-	-	-	**13**	0.9	4	0.3	10	13	1.0	-5	40
Mumps	1	0	0	-	-	-	-	-	-	-	-	-	**1**	0.1	4	0.3	-100	18	1.4	-95	67
Ophthalmia Neonatorum	0	1	0	-	-	-	-	-	-	-	-	-	**1**	0.1	0	0.0	-100	1	0.0	61	3
Paralytic Shellfish Poisoning	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Paratyphoid Fever	2	1	2	-	-	-	-	-	-	-	-	-	**5**	0.4	5	0.4	-63	18	1.3	-73	48
Pertussis (Whooping Cough)	9	6	6	-	-	-	-	-	-	-	-	-	**21**	1.5	26	1.9	-78	78	5.8	-74	421
Q Fever	1	2	0	-	-	-	-	-	-	-	-	-	**3**	0.2	0	0.0	-100	2	0.1	81	13
Rabies	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	0	0.0	-	0	0.0	-	0
Rubella	0	0	1	-	-	-	-	-	-	-	-	-	**1**	0.1	0	0.0	-	1	0.0	61	1
Rubella, Congenital Syndrome	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	0	0.0	-	0	0.0	-	0
Salmonellosis	235	223	210	-	-	-	-	-	-	-	-	-	**668**	48.2	220	16.5	-8	596	44.6	8	2,632
Shigellosis	26	21	17	-	-	-	-	-	-	-	-	-	**64**	4.6	19	1.4	-14	61	4.5	2	257
Streptococcus Pneumoniae, Invasive	114	86	78	-	-	-	-	-	-	-	-	-	**278**	20.1	126	9.5	-40	364	27.2	-26	1,205
Syphilis, Early Congenital	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	0	0.0	-100	0	0.0	-100	1
Syphilis, Infectious	55	36	32	-	-	-	-	-	-	-	-	-	**123**	8.9	73	5.4	-57	200	14.9	-40	771
Syphilis, Other	37	20	35	-	-	-	-	-	-	-	-	-	**92**	6.6	73	5.5	-54	200	15.0	-56	762
Tetanus	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	0	0.0	-	1	0.0	-100	1
Tuberculosis	31	39	47	-	-	-	-	-	-	-	-	-	**117**	8.5	57	4.2	-20	150	11.2	-24	637
Tularemia	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	0	0.0	-	0	0.0	-	1
Typhoid Fever	5	9	5	-	-	-	-	-	-	-	-	-	**19**	1.4	8	0.6	-43	27	2.0	-33	83
Verotoxin Producing E. Coli Including HUS	7	6	3	-	-	-	-	-	-	-	-	-	**16**	1.2	8	0.6	-63	22	1.6	-30	181
West Nile Virus Illness	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	0	0.0	-	0	0.0	-	84
Yellow Fever	0	0	0	-	-	-	-	-	-	-	-	-	**0**	0.0	0	0.0	-	0	0.0	-100	0
Yersiniosis	10	10	9	-	-	-	-	-	-	-	-	-	**29**	2.1	23	1.7	-62	59	4.4	-52	199

Ontario Cases: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2014/04/16].

Population Estimates [2009-2012], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, Date Extracted: [2013/09/16].

Population Projections [2013-2014], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, Date Extracted: [2014/04/11].

* Appendix 1 is not an exhaustive list of all reportable diseases in Ontario. Case counts for amebiasis, Lyme disease, mumps, pertussis and West Nile virus illness are based on the sum of confirmed and probable cases as reported in iPHIS.

ŧ Rates listed are cases per 1,000,000 population.

† Per cent (%) difference is calculated using unrounded rates; numbers displayed in these columns may vary from hand calculations using rounded rates.

Note 1: Does not include cases in which the Ministry of Health and Long-Term Care was selected as the Diagnosing Health Unit or cases with a Disposition Description set to 'does not meet' or 'entered in error'.

Note 2: Case counts for tuberculosis and AIDS are based on diagnosis date and not episode date. HIV case counts are based on encounter date.
Note 3: Differentials in year over year comparisons are reflective of changes in disease incidence and changes in the size of the population.
Note 4: Measles, rubella and congenital rubella syndrome have been eliminated from Canada. However, as these diseases remain endemic in other countries, imported and imported-related cases continue to occur in Ontario.
Note 5: Statistical tests comparing rates were not performed when the YTM rate in previous years was zero.
Note 6: Acute flaccid paralysis and Paralytic Shellfish Poisoning became reportable in Ontario in December 2013. No historical data is available.