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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: cdepr@oahpp.ca. Past issues and additional information are available online.

IN FOCUS

Yersiniosis

Yersiniosis is an enteric infection caused by a certain genus of the bacterium *Yersinia*. *Y. enterocolitica* is the predominant species affecting humans around the world; it has over 50 serotypes and five biotypes, many of which are non-pathogenic to humans.[1,2] *Y. enterocolitica* serotype O3 is responsible for most human infections in North America and Europe.[3] In Russia and Japan, *Y. pseudotuberculosis* is the predominant serotype that causes illness in humans.[1]

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The primary reservoir for pathogenic *Y. enterocolitica* is pigs. In contrast, birds, rodents and other small mammals serve as the main reservoirs for *Y. pseudotuberculosis*.[1,2] Infection with *Yersinia* is most often acquired through the fecal-oral route with ingestion of contaminated food or water as the primary vehicle. If hands are not adequately cleaned afterwards, transmission may also occur following direct contact with the feces of infected persons or animals, particularly puppies and kittens.[1,2] Infections attributed to yersiniosis have been linked to the consumption of unpasteurized milk, raw or undercooked pork and pork products such as chitterlings.[1,4,5] Occasionally fresh produce has been suspected in yersiniosis outbreaks; however most yersiniosis cases occur sporadically and are not associated with outbreaks.[6,7]

Symptoms of yersiniosis usually develop within three to seven days after exposure to the bacterium. In young children, uncomplicated infections typically manifest as acute diarrhea and fever with abdominal pain. In older children and adults, fever and pseudo-appendicitis, which may be mistaken for appendicitis, are the predominant symptoms. Infection with *Yersinia* generally lasts from one to three weeks; however, fecal shedding of the bacteria may continue as long as symptoms persist and can last for up to three months among untreated persons.[1,2] Though rare, complications of yersiniosis can occur, presenting as bacteremia and post-infectious reactive arthritis and erythema nodosum. While susceptibility to yersiniosis is universal, the risk of severe illness is higher in children due to dehydration resulting from diarrhea, and in adolescents and older adults as a result of post-infectious arthritis. Susceptibility to severe illness and complications is also high among individuals immunocompromised by other illnesses or chemotherapy.

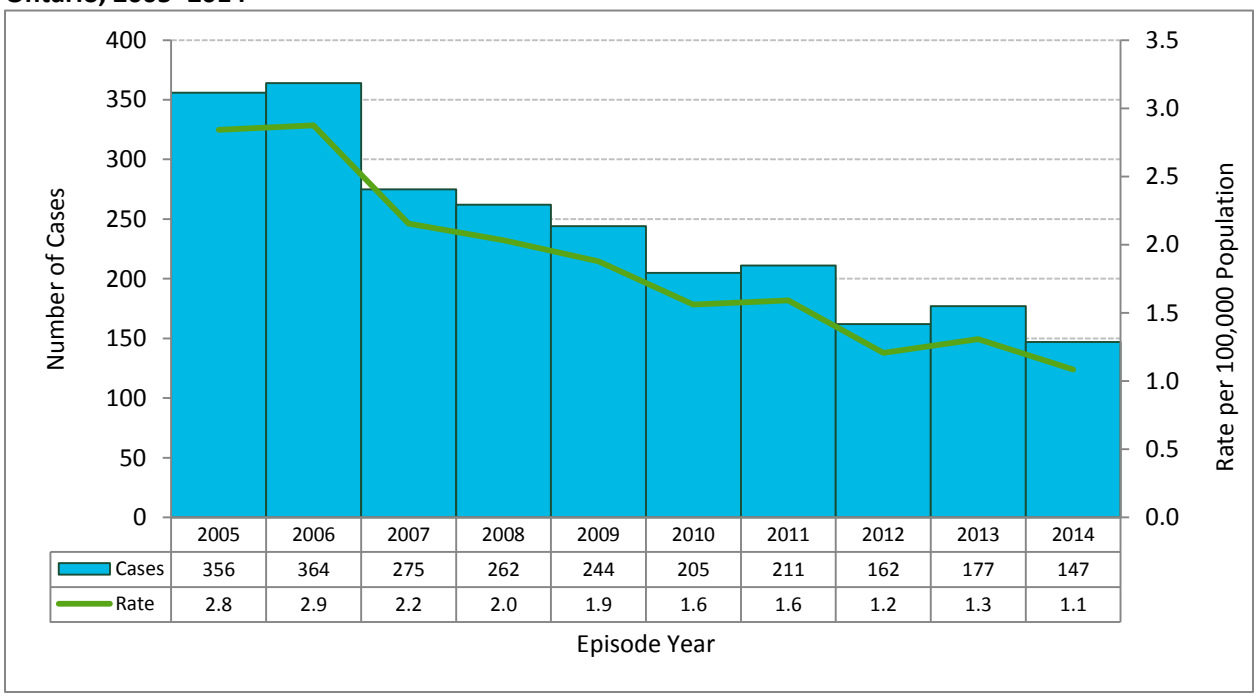
Yersiniosis is a reportable disease in Ontario, but is not notifiable nationally. In Ontario, the annual number of reported cases and corresponding incidence rates decreased by approximately 60% from 2005 to 2014: incidence rates decreased from 2.8 cases per 100,000 population in 2005 to 1.1 cases per 100,000 population in 2014, and the number of cases decreased from 356 in 2005 to 147 in 2014. Similar declines in the incidence of yersiniosis have also been observed in the European Union and in certain U.S. populations.[8,9] In the United States, the decrease has been attributed to reductions in the rate of *Yersinia* colonization in pigs at slaughter and to public health education that promotes the safe handling of meats.[8] While the reason for the decline in Ontario is unclear, it is consistent with the overall decreasing trend in the incidence of enteric diseases in Ontario in the last decade.

As of November 30, 195 cases have been reported in the province for 2015, representing a year-to-date incidence rate of 1.4 cases per 100,000 population. The reason for the higher incidence in 2015,

particularly in the fall months, is under investigation at the time of publication of this report. The proportion of yersiniosis cases accounted for by males and females in 2015 was 52% and 48%, respectively. Children under the age of 15 years accounted for 41% of all cases (Figure 2). The observed age and sex patterns among cases reported in Ontario are consistent with global trends that show that incidence rates are higher in younger children and that males and females are equally susceptible.[1] Severity due to yersiniosis remains low in Ontario, with 11 (6%) hospitalizations among reported cases in 2015 and no deaths.

Twenty-eight of 36 public health units (PHUs) reported yersiniosis cases in 2015. PHUs in the Ottawa and Greater Toronto Area accounted for over 70% of reported cases. PHUs with larger populations reported the greatest number of cases during 2015, including Toronto (63 cases), York Region (29 cases) and Peel Region (18 cases). The highest incidence rates were reported for York Region (2.5 cases per 100,000 population), Porcupine (2.3 cases per 100,000 population) and Toronto (2.2 cases per 100,000 population).

Figure 1. Number of confirmed cases and incidence rate (per 100,000 population) of yersiniosis: Ontario, 2005–2014

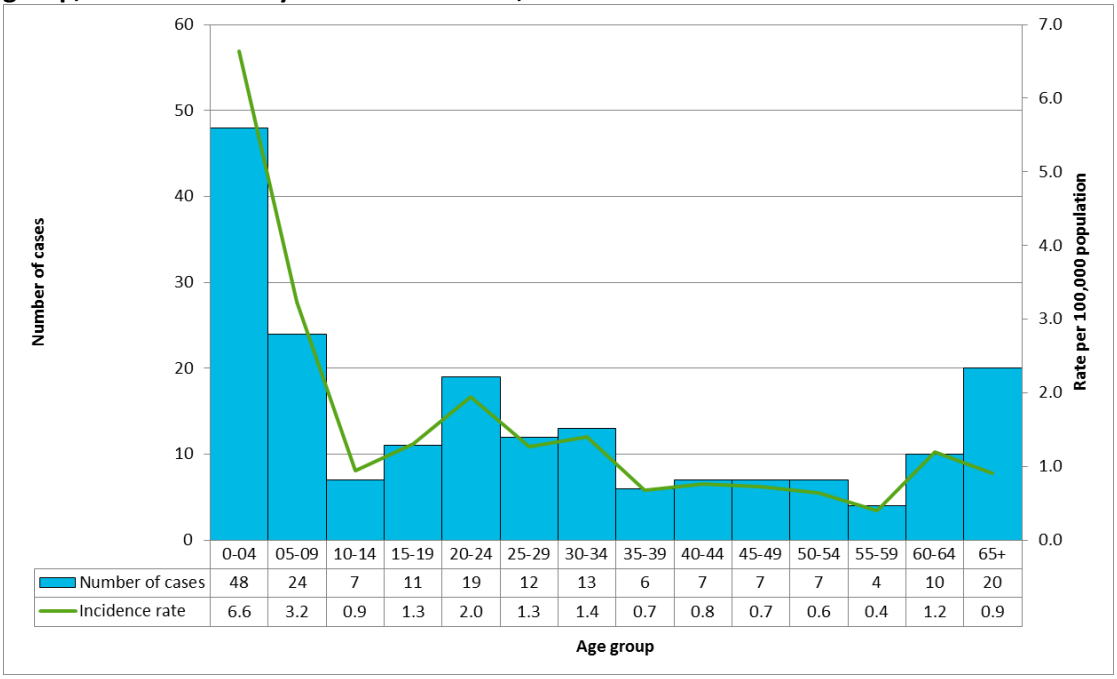


	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Cases	356	364	275	262	244	205	211	162	177	147
Rate	2.8	2.9	2.2	2.0	1.9	1.6	1.6	1.2	1.3	1.1

Ontario cases: Ontario Ministry of Health and Long-Term Care (MOHLTC), integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2015/08/20].
Ontario Population: Population Estimates [2005-2013], Statistics Canada, distributed by MOHLTC, received [2014/07/03]. Incidence rates for 2014 are based on 2013 population estimates.

Yersiniosis typically occurs more frequently in colder seasons, although there were no clear seasonal trends in Ontario in the five year period spanning 2010 to 2014. In 2014, the most recent complete year for which data are available, the majority of cases was reported from March to September, with this period accounting for more than three-quarters (111/147, 76%) of reported cases.

Figure 2. Number of confirmed cases and incidence rate (per 100,000 population) of yersiniosis by age group, Ontario: January 1 to November 30, 2015



	0-04	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Number of cases	48	24	7	11	19	12	13	6	7	7	7	4	10	20
Incidence rate	6.6	3.2	0.9	1.3	2.0	1.3	1.4	0.7	0.8	0.7	0.6	0.4	1.2	0.9

Age group

Ontario cases: Ontario MOHLTC, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2015/12/01].
Ontario Population: Population Projections [2014], Statistics Canada, distributed by Ontario Ministry of Finance, received 2014/07/03. Incidence rates for 2014 are based on 2013 population.

Risk factors were reported for 75% (147/195) of yersiniosis cases that occurred in Ontario in 2015 up to November 30. Of these cases, 39% (58/147) reported travelling outside of the province in the 11-day period before illness onset. The most frequently reported risk factors among cases that did not travel outside of Ontario prior to illness onset were animal contact at 39% (35/89), poor hand hygiene at 29% (26/89) and consumption of pork at 18% (16/89).

Yersiniosis is preventable and the risk factors identified among cases are amenable to standard enteric illness prevention and control measures. In general, yersiniosis can be prevented by avoiding consumption of raw or undercooked pork, untreated water and unpasteurized milk and dairy products; by washing hands with soap and running water before and after handling food and after contact with animals and their surroundings; and by cleaning food contact surfaces such as utensils, cutting boards and countertops with soap and hot water to avoid cross-contamination, particularly with raw meat.

Additional efforts to reduce the incidence of yersiniosis include the safe disposal of animal feces and the protection of water supplies from fecal contamination.[1,2]

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SIGNIFICANT REPORTABLE DISEASE ACTIVITY

Table 1 provides a list of reportable diseases for which incidence in 2015 was found to be significantly higher ($p<0.05$) than expected compared to the five-year historical average (2010-2014). Both monthly and year-to-month (YTM) comparisons were made for each of the reportable diseases listed in Appendix 1, with the exception of influenza, measles, rubella, and congenital rubella syndrome. Influenza surveillance data are regularly reported through the Ontario Respiratory Pathogen Bulletin. Measles, rubella, and congenital rubella syndrome have been eliminated in Canada, although cases continue to occur related to travel importations. Statistical comparisons are no longer included for these diseases.Table 1. Summary of statistically significant increases in reportable disease incidence: Ontario, January 1 to October 31, 2015

Reportable disease	2015				Historical comparisons						5-year avg annual count (2010-2014)
	Oct	Oct rate ŧ	YTM	YTM rate ŧ	Current month 5-year avg (2010-2014)	Current month 5-year avg (2010-2014) rate ŧ	% difference in rates (current month minus 5-year avg)†	YTM 5-year avg (2010-2014)	YTM 5-year avg (2010-2014) rate ŧ	% difference in rates (YTM 2015 minus YTM 5-year avg)†	
Chlamydial Infections[1]	3435	245.3	32003	2285.4	3154	234.7	4.5	29774	2215.5	3.2	35431
Cyclosporiasis[1]	9	0.6	250	17.9	6	0.5	39.3	112	8.3	114.6	117
Encephalitis/Meningitis[1]	15	1.1	169	12.1	16	1.2	-8.9	125	9.3	29.7	148
Gonorrhoea (All Types)[1,2]	505	36.1	4956	353.9	415	30.9	16.7	3768	280.4	26.2	4531
Lyme Disease[1]	13	0.9	339	24.2	9	0.7	38.6	177	13.2	83.8	187
Pertussis (Whooping Cough)[1]	57	4.1	582	41.6	37	2.8	47.0	336	25.0	66.0	402
Yersiniosis[2]	25	1.8	179	12.8	10	0.7	139.9	158	11.8	8.6	181

Ontario Cases: MOHLTC, iPHIS database, extracted by PHO [2015/11/11].
Ontario Population: Population Estimates [2010–13]: Statistics Canada, distributed by MOHLTC, received [2014/07/03]. Population Projections [2014–15]: MOHLTC, IntelliHEALTH Ontario, extracted by PHO [2014/04/11].
ŧ Rates listed are cases per 1,000,000 population.
† Percent (%) 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 October 31, 2015) compared to the five-year historical average (January 1 to October 31, 2010–14), using a likelihood ratio test.
[2] Statistically significant difference ($p<0.05$) in incidence reported in current month (October 2015) compared to the five-year historical average (October 2010–14), using a likelihood ratio test.

Chlamydia

There was a statistically significant increase of 3.2% in the YTM incidence of laboratory-confirmed chlamydial infections reported from January 1 to October 31, 2015, compared to the historical five-year average for the same period (2285.4 cases per 1,000,000 population and 2215.5 cases per 1,000,000 population, respectively). Over the past ten years, the incidence of laboratory-confirmed chlamydial infections has increased with the exception of 2013, when a decrease in the incidence and testing was observed. For further details about this decrease, please refer to Reportable Disease Trends in Ontario, 2013. The increase noted this month may be a continuation of the increase in incidence observed over

the past ten years. PHO will continue to monitor provincial chlamydia epidemiology in subsequent months.

Cyclosporiasis

Statistically significant increases in the year-to-month (YTM) incidence rate and number of reported cases of cyclosporiasis were observed in October 2015. This was the third consecutive month with a significant increase in the incidence of cyclosporiasis. Volume 4, Issue 11 and this issue of the Monthly Infectious Diseases Surveillance Report (see below) describe the sources of the increase in cyclospora. The increase in incidence in the latter part of August and in September and October was due to an increase in non-travel related cases that were associated with consumption of sugar snap peas imported from Guatemala and sold exclusively at Costco retail stores in Ontario. The retailer voluntarily recalled the suspected product on October 17, 2015. It is important to note that cyclosporiasis is not endemic in Canada and its occurrence is most frequently associated with consumption of contaminated imported food or travel to endemic countries in tropical and subtropical regions of the world.

Encephalitis/Meningitis

There was a statistically significant increase in the incidence of encephalitis/meningitis from January 1 to October 31, 2015, compared to the historical five-year average for the same period. An increase from a five-year average of 9.3 cases per 1,000,000 population to 12.1 cases per 1,000,000 population in 2015 was observed, representing an increase of 29.7%.

Gonorrhea

Compared to the five-year historical averages, there have been statistically significant increases in both the monthly and YTM incidence of gonorrhea since September 2013. The cause of this ongoing provincial increase in reported gonorrhea cases is not yet well understood and is likely multifactorial. For a summary of the analyses conducted to date, please refer to the In Focus section of the February 2015 issue of this report. Also, to download the slides and/or audio recording of a PHO Rounds presentation on gonorrhea (May 2015), please click here. PHO continues to monitor this sustained increase in provincial gonorrhea incidence.

Lyme disease

The YTM incidence rate of Lyme disease was significantly higher in 2015 for the period January to October in comparison to the average for the same period in the previous five years. The number of cases reported in 2015 to date (339) has exceeded the five-year average annual count of 187 cases and is the highest number of cases ever reported in Ontario. The number of cases reported since September 2015 (22 cases) is consistent with the expected decrease in case counts toward the end of the season. Annually, the incidence of Lyme disease peaks in June and July, and this is consistent with trends in other Lyme disease-endemic regions in the United States and Canada. The occurrence of Lyme disease in the summer coincides with both greater participation in outdoor activities and increased presence of

infectious nymphal ticks in the environment, both of which increase the opportunity for exposure to Lyme disease.

Yersiniosis

A statistically significant increase in the incidence rate for yersiniosis was observed for the month of October (25 cases; 1.8 cases per 1,000,000 population) compared to the five-year historical average for October (10 cases; 0.7 cases per 1,000,000 population). Of the 25 cases reported for the month of October, the majority were from the Greater Toronto Area. PHO issued an Enhanced Surveillance Directive to investigate the increase, for which the cause is unknown at the time of publication of this report.

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.

CYCLOSPORIASIS IN CANADA, UNITED KINGDOM AND UNITED STATES

Summary

Cyclosporiasis is an intestinal illness that results from infection by *Cyclospora*, a microscopic single-celled parasite. The disease is characterized by watery diarrhea, nausea, loss of appetite, abdominal cramps, fatigue, muscle aches and weight loss.[1] Infection is acquired through the consumption of food or water contaminated with *Cyclospora* oocysts. *Cyclospora* is endemic in some developing countries in tropical and subtropical regions of the world.[1,2] Contamination of produce with *Cyclospora* usually occurs during cultivation via contaminated irrigation water or through contact by infected workers during harvesting, packaging or transportation.[3]

Increases in the incidence of cyclosporiasis were reported in Canada, the United Kingdom and the United States in 2015. Between June 1 and September 22, the United Kingdom reported an outbreak of 79 cases of cyclosporiasis linked to hotel stays on the Riviera Maya coast of Mexico. The source of the outbreak was suspected to be a food product that was distributed to hotels in that area.[4] Between May and September 2015, the United States also investigated an outbreak associated with restaurants that was traced back to cilantro imported from Puebla, Mexico.[5] Other outbreaks in Canada and the United States have historically been linked to imported fresh produce such as basil, cilantro, pre-packaged salad mix, mesclun lettuce, snow peas and raspberries.[3]

Implications

There has been an increase in the incidence of cyclosporiasis in Ontario from May to October 2015. The increase up to early August was attributed to cases that reported travel to Mexico, as well as to cases linked to an outbreak in four provinces, including Ontario. Although the source of this outbreak was not definitively confirmed, imported produce has been the source of past outbreaks.[6,7] As noted in the Significant Reportable Disease Activity discussion on cyclosporiasis above, the increase in Ontario in the latter part of August and in September and October was attributed to the consumption of sugar snap peas imported from Guatemala and sold exclusively in Ontario by a single retailer. This product was voluntarily recalled on October 17, 2015.[7]

Cyclospora is not endemic in Canada and its occurrence is most frequently associated with consumption of contaminated food imported from endemic countries or with travel to those countries. Measures such as hand washing prior to food handling, thoroughly washing and cooking produce prior to consumption and freezing produce will help reduce the risk of cyclosporiasis, though it may not always eliminate the risk. Travelers to regions where *Cyclospora* is prevalent should avoid fruits and vegetables that cannot be peeled or cooked and should only drink water that is sealed or treated.[3,8]

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RECENTLY DISCONTINUED ENHANCED SURVEILLANCE DIRECTIVES

Verotoxin-Producing *Escherichia coli*

In collaboration with local, provincial and federal public health authorities, PHO investigated several clusters of *Escherichia coli* O157 cases that contributed to a province-wide increase in incidence in August and September of this year. Outbreak Investigation Coordinating Committees (OICC) were established to investigate three clusters. Cases associated with each of these three clusters were linked via pulsed field gel electrophoresis (PFGE). There was no evidence of a common exposure between the clusters.

The Public Health Agency of Canada led a multi-provincial OICC that investigated one of the three clusters. This investigation involved 29 cases of *E. coli* O157 in four provinces, including 10 cases from Ontario. Cases in this cluster had PFGE pattern combination ECXAI.3246/ECBNI.0594 or one of five other closely related patterns. Symptom onset dates for all cases ranged from July 12 to August 28, 2015. The source of this outbreak was not identified and the outbreak was declared over on September 28, 2015 following a return to the expected baseline of zero cases for the outbreak PFGE pattern combinations. The Enhanced Surveillance Directive (ESD) was discontinued on October 2, 2015.

PHO also led two Ontario OICCs (ON-OICC). The first outbreak investigation involved a cluster of five *E. coli* O157 cases from Waterloo Region and Oxford County with symptom onset dates ranging from August 6 to 27, 2015. Cases in this cluster had PFGE pattern combination ECXAI.1236/ECBNI.1407. The source of the outbreak was not identified but was hypothesized to be foodborne. The outbreak was declared over on September 16, 2015 following a return to baseline for the outbreak PFGE pattern combination. The ESD was discontinued on October 2, 2015 and the ON-OICC was deactivated on November 19, 2015.

The second ON-OICC investigated a cluster of six cases from four public health units. Cases in this cluster had PFGE pattern combination ECXAI.0221/ECBNI.0152 with symptom onset dates ranging from August 5 to September 13, 2015. Three cases in this cluster attended three separate pig roasts in Simcoe-Muskoka (two cases) and York Region (one case). Pork served at these events was traced back to a single farm where *E. coli* O157 was detected in specimens taken from live pigs. The outbreak was declared over on October 3, 2015 following a return to baseline for the outbreak PFGE pattern combination.

Appendix – Reportable Diseases

Appendix 1. Confirmed cases of reportable diseases, and probable cases of select reportable diseases, by month: Ontario, 2010–15*

Reportable disease	2015														Historical comparisons						5-year avg (2010-2014) annual count
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTM	YTM rate ŧ	Current month 5-year avg (2010-2014)	Current month 5-year avg (2010-2014) rate ŧ	% difference rates (current month minus 5-year avg)†	YTM 5-year avg (2010-2014)	YTM 5-year avg (2010-2014) rate ŧ	% difference rates (YTM 2015 minus YTM 5-year avg)†	
Acute Flaccid Paralysis	0	0	0	0	1	0	0	0	0	0	-	-	1	0.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AIDS	3	6	4	3	5	4	9	1	7	6	-	-	48	3.4	8	0.6	-28.0	85.4	6.4	-46.1	99.2
Amebiasis	56	64	65	83	65	61	75	81	52	57	-	-	659	47.1	61.2	4.6	-10.6	679.8	50.6	-7.0	794.6
Botulism	0	0	1	0	0	0	2	1	1	0	-	-	5	0.4	0	0.0	-	1.2	0.1	299.9	1.6
Brucellosis	0	0	0	1	0	1	1	0	1	0	-	-	4	0.3	0	0.0	-	4.4	0.3	-12.8	5
Campylobacter enteritis	184	174	220	194	229	297	438	436	322	268	-	-	2762	197.2	345.4	25.7	-25.5	3223.2	239.8	-17.8	3702.6
Chlamydial Infections	3227	2921	3186	3128	2948	3201	3244	3224	3489	3435	-	-	32003	2285.4	3153.6	234.7	4.5	29773.8	2215.5	3.2	35430.8
Cholera	0	0	0	0	0	0	0	1	0	0	-	-	1	0.1	0	0.0	-	0	0.0	-	0.2
Cryptosporidiosis	19	15	25	14	17	22	56	71	65	33	-	-	337	24.1	23.2	1.7	36.5	292.2	21.7	10.7	321.8
Cyclosporiasis	1	5	7	7	31	91	58	22	19	9	-	-	250	17.9	6.2	0.5	39.3	111.8	8.3	114.6	116.8
Encephalitis	2	3	0	1	2	2	1	4	5	1	-	-	21	1.5	2	0.1	-52.0	15	1.1	34.4	18.4
Encephalitis/Meningitis	12	13	12	13	6	19	29	29	21	15	-	-	169	12.1	15.8	1.2	-8.9	125	9.3	29.7	147.8
Food Poisoning, All Causes	8	0	6	2	3	2	2	1	9	0	-	-	33	2.4	3.2	0.2	-100.0	76.2	5.7	-58.4	86
Giardiasis	105	104	128	108	73	85	148	151	141	85	-	-	1128	80.6	109.4	8.1	-25.4	1152.4	85.8	-6.1	1344
Gonorrhoea (All Types)	476	436	478	413	473	511	565	514	585	505	-	-	4956	353.9	415.2	30.9	16.7	3768.2	280.4	26.2	4531.2
Group A Streptococcal Disease, Invasive	77	42	62	53	61	48	41	40	36	27	-	-	487	34.8	35.2	2.6	-26.4	522.6	38.9	-10.6	637
Group B Streptococcal Disease, Neonatal	1	2	3	3	6	3	4	1	1	4	-	-	28	2.0	6	0.4	-36.0	46.8	3.5	-42.6	55.4
Haemophilus Influenzae B Disease, Invasive	0	1	0	0	3	1	2	0	0	0	-	-	7	0.5	0.4	0.0	-100.0	3.6	0.3	86.6	4.4
Hepatitis A	11	3	10	12	1	5	5	4	12	1	-	-	64	4.6	10	0.7	-90.4	91.2	6.8	-32.7	110
Hepatitis B (Acute)	7	6	6	6	9	5	7	10	5	6	-	-	67	4.8	8.8	0.7	-34.6	91	6.8	-29.3	107.4
Hepatitis B (Chronic)	147	119	143	126	114	131	113	79	85	37	-	-	1094	78.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Hepatitis C	351	331	384	337	370	349	402	323	337	319	-	-	3503	250.2	361.2	26.9	-15.2	3595	267.5	-6.5	4266.4
HIV	57	56	71	69	53	62	56	53	51	64	-	-	592	42.3	71.6	5.3	-14.2	673.6	50.1	-15.7	800.4
Influenza	4891	2182	1311	807	221	44	22	8	31	57	-	-	9574	683.7	37.4	2.8	46.3	4275.2	318.1	114.9	6742.8
Legionellosis	7	2	4	6	10	13	17	16	17	11	-	-	103	7.4	22	1.6	-52.0	152.8	11.4	-35.3	172
Leprosy	1	0	1	0	0	0	0	0	0	0	-	-	2	0.1	0.2	0.0	-100	2.6	0.2	-26.2	2.8
Listeriosis	3	2	2	2	6	4	11	9	9	2	-	-	50	3.6	3.8	0.3	-49.5	43.8	3.3	9.6	51
Lyme Disease	3	3	0	7	28	111	110	47	17	13	-	-	339	24.2	9	0.7	38.6	177	13.2	83.8	187
Malaria	12	2	8	9	17	23	20	19	15	11	-	-	136	9.7	13.6	1.0	-22.4	194.8	14.5	-33.0	223.2
Measles	8	10	1	0	1	0	0	0	0	0	-	-	20	1.4	#	#	#	#	#	#	#
Meningitis	4	3	7	6	10	25	12	15	22	22	-	-	126	9.0	13.6	1.0	55.2	102	7.6	18.5	119.2
Meningococcal Disease, Invasive	5	3	1	4	3	3	3	1	4	2	-	-	29	2.1	3.4	0.3	-43.5	26.8	2.0	3.8	31.4
Mumps	3	1	3	2	11	8	0	1	1	0	-	-	30	2.1	1.8	0.1	-100.0	42.8	3.2	-32.7	48.6
Ophthalmia neonatorum	1	0	1	0	0	0	0	0	0	1	-	-	3	0.2	0.2	0.0	379.8	2.6	0.2	10.7	3.2
Paralytic Shellfish Poisoning	0	0	0	0	0	0	0	0	0	0	-	-	0	0.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Paratyphoid Fever	6	2	10	3	4	0	3	7	3	0	-	-	38	2.7	1.8	0.1	-100.0	39.4	2.9	-7.4	43.8
Pertussis (Whooping Cough)	16	19	29	27	89	176	95	36	38	57	-	-	582	41.6	37.2	2.8	47.0	336.4	25.0	66.0	402
Q Fever	1	0	4	2	0	1	0	2	0	1	-	-	11	0.8	1.8	0.1	-46.7	13	1.0	-18.8	15.4
Rabies	0	0	0	0	0	0	0	0	0	0	-	-	0	0.0	0	0.0	-	0.2	0.0	-100.0	0.2
Rubella	0	0	0	0	0	0	0	0	0	0	-	-	0	0.0	#	#	#	#	#	#	#
Rubella, Congenital Syndrome	0	0	0	0	0	0	0	0	0	0	-	-	0	0.0	#	#	#	#	#	#	#
Salmonellosis	186	185	251	245	268	216	251	326	269	151	-	-	2348	167.7	198	14.7	-26.8	2433	181.0	-7.4	2779.8
Shigellosis	18	19	16	19	14	11	17	32	25	19	-	-	190	13.6	15.6	1.2	16.9	224.6	16.7	-18.8	262.6
Streptococcus Pneumoniae, Invasive	103	83	113	117	73	71	50	40	55	81	-	-	786	56.1	116.2	8.6	-33.1	921.6	68.6	-18.2	1173.8
Syphilis, Early Congenital	0	0	0	0	1	0	0	1	0	0	-	-	2	0.1	0	0.0	-	1	0.1	91.9	1.2
Syphilis, Infectious	68	72	73	110	80	91	88	63	48	37	-	-	730	52.1	68.6	5.1	-48.2	667.4	49.7	5.0	800.4
Syphilis, Other	47	43	54	49	44	53	44	45	42	38	-	-	459	32.8	57.2	4.3	-36.2	579.8	43.1	-24.0	694.2
Tetanus	0	0	0	0	1	0	0	0	0	0	-	-	1	0.1	0.2	0.0	-100.0	2	0.1	-52.0	2
Tuberculosis	41	31	55	55	55	55	54	35	50	35	-	-	466	33.3	49.6	3.7	-32.3	530.2	39.5	-15.7	628.6
Tularemia	0	0	0	0	0	0	0	0	0	1	-	-	1	0.1	0	0.0	-	0.6	0.0	59.9	0.6
Typhoid Fever	5	3	3	9	4	6	5	3	3	7	-	-	48	3.4	5.6	0.4	20.0	71.2	5.3	-35.3	81.8
Verotoxin Producing E. coli including HUS	6	6	6	10	11	19	22	35	27	13	-	-	155	11.1	11	0.8	13.4	155.8	11.6	-4.5	172.6
West Nile Virus Illness	0	0	0	0	1	4	1	16	8	2	-	-	32	2.3	1.8	0.1	6.6	84.2	6.3	-63.5	86.2
Yellow Fever	0	0	0	0	1	0	0	0	0	0	-	-	1	0.1	0	0.0	-	1	0.1	-4.0	1
Yersiniosis	14	11	15	15	16	14	17	29	23	25	-	-	179	12.8	10	0.7	139.9	158.2	11.8	8.6	180.6

Ontario Cases: MOHLTC, iPHIS database, extracted by PHO[2015/11/11].

Ontario Population: Population Estimates [2010–13]: Statistics Canada, distributed by Ministry of Health and Long-Term Care, received [2014/07/03]. Population Projections [2014–15]: Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, extracted by PHO [2014/04/11].

Column or row-specific notes:

***** 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.

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

Historical comparison data are not provided for measles, rubella, and congenital rubella syndrome because these diseases have been eliminated in Canada. However, as these diseases remain endemic in other countries, imported and import-related cases continue to occur in Ontario.

n/a Acute Flaccid Paralysis and Paralytic Shellfish Poisoning became reportable in Ontario in December 2013. No historical data are available for comparisons. Also, a provincial case definition for chronic hepatitis B was released in January 2012. Please note that chronic and acute hepatitis B case counts are not mutually exclusive and should not be added to obtain a total for hepatitis B cases in Ontario. Historical comparisons are not available as cases of chronic hepatitis B may have been entered using varying criteria prior to this time.

- Does not include cases for 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."
- Differentials in year over year comparisons are reflective of changes in disease incidence and changes in the size of the population.
- Statistical tests comparing rates were not performed when the YTM rate in previous years was zero.
- Case counts for tuberculosis and AIDS are based on diagnosis date and not episode date. HIV case counts are based on encounter date. Case counts for all other diseases are based on episode date.