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Monthly Infectious Diseases Surveillance Report

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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](#).

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SIGNIFICANT REPORTABLE DISEASE ACTIVITY

Table 1 provides a list of reportable diseases for which incidence in 2016 was found to be significantly higher ($p < 0.05$) than expected compared to the five-year historical average (2011-15). 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 not included for these diseases.

Table 1. Summary of statistically significant increases in reportable disease incidence: Ontario, January 1 to December 31, 2016

Reportable disease	2016				Historical comparisons						5-year avg annual count (2011-2015)
	December	December rate ‡	YTM	YTM rate ‡	Current month 5-year avg (2011-2015)	Current month 5-year avg (2011-2015) rate ‡	% difference in rates (current month minus 5-year avg)†	YTM 5-year avg (2011-2015)	YTM 5-year avg (2011-2015) rate ‡	% difference in rates (YTM 2016 minus YTM 5-year avg)†	
Chlamydial Infections ^{1,2}	3029	217.2	41623	2984.0	2664.2	196.7	10.4	36538.2	2698.0	10.6	36538.2
Cryptosporidiosis ¹	8	0.6	423	30.3	15.2	1.1	-48.9	331.2	24.5	24.0	331.2
Cyclosporiasis ¹	0	0.0	272	19.5	2.0	0.1	-100.0	135.0	10.0	95.6	135.0
Gonorrhoea (All Types) ^{1,2}	543	38.9	6761	484.7	375.6	27.7	40.4	4924.6	363.6	33.3	4924.6
Listeriosis ¹	2	0.1	96	6.9	3.8	0.3	-48.9	52.0	3.8	79.2	52.0
Lyme Disease ¹	1	0.1	343	24.6	5.6	0.4	-82.7	258.6	19.1	28.8	258.6
Shigellosis ¹	17	1.2	359	25.7	23.6	1.7	-30.1	263.8	19.5	32.1	263.8
Syphilis, Infectious ¹	32	2.3	1188	85.2	70.0	5.2	-55.6	861.8	63.6	33.8	861.8
Yersiniosis ¹	5	0.4	249	17.9	11.8	0.9	-58.9	185.4	13.7	30.4	185.4

Ontario Cases: Ministry of Health and Long-Term Care (MOHLTC), integrated Public Health Information System (iPHIS) database, extracted by PHO [2017/01/11].

Ontario Population: Population estimates [2005-2011]: Statistics Canada, distributed by MOHLTC, received [2014/07/03]. Population estimates [2012-2014]: Statistics Canada, distributed by MOHLTC, received [2015/11/18]. Population projections [2015-2016]: MOHLTC, IntelliHEALTH Ontario, extracted by PHO [2015/03/13].

‡ 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 December 31, 2016) compared to the five-year historical average (January 1 to December 31, 2011-15), using a likelihood ratio test.

² Statistically significant difference ($p < 0.05$) in incidence reported in current month (December 2016) compared to the five-year historical average (December 2011-15), using a likelihood ratio test.

Bacterial Sexually Transmitted Infections (STIs)

Compared to the five-year historical average, there were statistically significant increases in the YTM incidence of all three bacterial STIs (chlamydia, gonorrhea, and infectious syphilis) reported between January 1 and December 31, 2016. During this period, laboratory-confirmed cases of chlamydia increased 10.6% (from 2,698.0 to 2,984.0 cases per 1,000,000 population), gonorrhea cases increased 33.3% (from 363.6 to 484.7 cases per 1,000,000 population), and infectious syphilis cases increased 33.8% (from 63.6 to 85.2 cases per 1,000,000 population).

There were also statistically significant increases in the monthly incidence of both chlamydia and gonorrhea reported in December 2016. Chlamydial infections increased 10.4% (from 196.7 to 217.2 cases per 1,000,000 population) and gonorrhea increased 40.4% (from 27.7 to 38.9 cases per 1,000,000 population).

The potential reasons for these provincial increases in bacterial STIs are under active investigation and are likely multifactorial. PHO will continue to monitor the epidemiology of bacterial STIs in Ontario in subsequent months.

Cryptosporidiosis

The 2016 YTM incidence rate for cryptosporidiosis continues to be significantly higher than the average for the same period in the previous five years. From January 1 to December 31, 2016, 423 cases of cryptosporidiosis were reported compared to an expected average of 331 cases. Possible reasons for this increase were first described in the [November 2016](#) issue of this report; the monthly rate was not above expected in December.

Cyclosporiasis

A statistically significant increase in the YTM incidence rate of cyclosporiasis was observed again in December 2016. For 2016, 272 cases of cyclosporiasis were reported compared to an expected average of 135 cases. No cases of cyclosporiasis were reported in December. The year-to-month incidence for 2016 was elevated due to an outbreak of non-travel cases of cyclosporiasis investigated from July 15 to October 4, 2016.

Listeriosis

The 2016 YTM incidence rate for listeriosis continues to be significantly higher than the average for the same period in the previous five years. From January 1 to December 31, 2016, 96 cases of listeriosis were reported compared to an expected average of 52 cases. The increase observed in the first half of 2016 can be attributed to two separate outbreaks that began in 2015; the monthly rate was not above expected in December. Additional details about these outbreaks are available in the [June 2016](#), [July 2016](#) and [August 2016](#) issues of this report.

Lyme disease

A statistically significant increase in the YTM incidence rate of Lyme disease was observed again in December 2016. For 2016, 343 cases of Lyme disease were reported compared to an expected average of 258 cases; the monthly rate was not above expected in December. The YTM incidence is elevated due to an increased incidence of Lyme disease each year compared to previous years, with this trend in incidence beginning in 2011. Several factors are responsible for the incidence trend, including new and expanding risk areas with *Borrelia burgdorferi*-infected blacklegged ticks as well as increased awareness by the public and testing by physicians.

Shigellosis

Incidence rates for shigellosis continued to be higher than expected in 2016. The YTM incidence rate for 2016 was significantly higher than the average for the same period in the previous five years. From January 1 to December 31, 2016, 359 cases of shigellosis were reported compared to an expected average of 264 cases. However, the number of cases reported since September indicates that this sustained increase in incidence may be waning. The source of the increase observed in 2015 through to the first part of 2016 was described in the [May 2016](#) issue of this report.

Yersiniosis

A statistically significant increase in the YTM incidence rate of reported cases of yersiniosis was observed. From January 1 to December 31, 2016, 249 cases of yersiniosis were reported compared to an expected average of 185 cases. The monthly rate was not significantly above expected in any month from July to December and the information available does not suggest the increase earlier in the year was due to a single source.

APPENDIX – REPORTABLE DISEASES

Appendix 1. Confirmed cases of reportable diseases, and probable cases of select reportable diseases, by month: Ontario, 2011-16*

Reportable disease	2016														Historical comparisons						5-year avg (2011-2015) annual count
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTM	YTM rate ‡	Current month 5-year avg (2011-2015)	Current month 5-year avg (2011-2015) rate ‡	% difference rates (current month minus 5-year avg)†	YTM 5-year avg (2011-2015)	YTM 5-year avg (2011-2015) rate ‡	% difference rates (YTM 2016 minus YTM 5-year avg)†	
Acute Flaccid Paralysis	0	0	0	0	0	0	0	0	3	0	4	0	7	0.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a
AIDS	8	6	5	7	2	10	7	6	6	2	6	2	67	4.8	7.0	0.5	-72.3	85.4	6.3	-23.8	85.4
Amebiasis	61	71	87	77	69	74	65	79	70	55	50	31	789	56.6	53.2	3.9	-43.4	799.8	59.1	-4.2	799.8
Botulism	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.2	0.0	-100.0	2.4	0.2	-100.0	2.4
Brucellosis	0	0	1	0	0	0	0	1	0	0	0	0	2	0.1	0.4	0.0	-100.0	5.4	0.4	-64.0	5.4
Campylobacter enteritis	189	169	187	181	246	349	416	481	396	322	263	189	3388	242.9	207.2	15.3	-11.4	3689.6	272.4	-10.8	3689.6
Chlamydial Infections	3646	3257	3479	3308	3290	3576	3167	3555	3749	3605	3962	3029	41623	2984.0	2664.2	196.7	10.4	36538.2	2698.0	10.6	36538.2
Cholera	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.2	0.0	-100.0	0.4	0.0	-100.0	0.4
Cryptosporidiosis	21	23	22	25	21	18	64	109	67	23	22	8	423	30.3	15.2	1.1	-48.9	331.2	24.5	24.0	331.2
Cyclosporiasis	1	0	2	1	29	59	132	37	4	4	3	0	272	19.5	2.0	0.1	-100.0	135.0	10.0	95.6	135.0
Encephalitis	6	4	6	2	2	0	1	5	5	8	3	2	44	3.2	1.8	0.1	7.9	22.0	1.6	94.2	22.0
Encephalitis/Meningitis	9	12	12	12	12	14	19	22	33	22	20	7	194	13.9	13.0	1.0	-47.7	155.8	11.5	20.9	155.8
Food Poisoning, All Causes	4	1	2	1	1	6	2	1	1	0	0	1	20	1.4	4.6	0.3	-78.9	76.6	5.7	-74.7	76.6
Giardiasis	94	90	87	79	84	99	102	142	136	103	76	40	1132	81.2	94.2	7.0	-58.8	1337.6	98.8	-17.8	1337.6
Gonorrhoea (All Types)	565	473	537	567	528	565	532	625	596	644	586	543	6761	484.7	375.6	27.7	40.4	4924.6	363.6	33.3	4924.6
Group A Streptococcal Disease, Invasive	77	74	69	53	53	41	44	44	49	55	59	76	694	49.8	66.0	4.9	11.8	640.8	47.3	5.1	640.8
Group B Streptococcal Disease, Neonatal	8	2	6	1	6	3	5	6	3	2	5	5	52	3.7	3.8	0.3	27.7	52.8	3.9	-4.4	52.8
Haemophilus Influenzae B Disease, Invasive	1	0	0	1	0	1	0	0	2	0	0	0	5	0.4	0.6	0.0	-100.0	5.8	0.4	-16.3	5.8
Hepatitis A	4	4	17	9	8	3	1	16	14	11	4	3	94	6.7	8.6	0.6	-66.1	96.8	7.1	-5.7	96.8
Hepatitis B (Acute)	8	9	7	8	15	7	9	8	8	8	8	8	103	7.4	8.0	0.6	-2.9	104.0	7.7	-3.8	104.0
Hepatitis B (Chronic)	156	148	129	141	128	115	114	121	111	112	109	53	1437	103.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Hepatitis C	383	373	378	359	325	381	345	366	359	354	372	286	4281	306.9	296.8	21.9	-6.4	4222.2	311.8	-1.6	4222.2
HIV	67	57	63	53	60	87	57	62	63	50	81	58	758	54.3	62.0	4.6	-9.2	783.4	57.8	-6.1	783.4
Influenza	757	3846	5183	1558	446	25	19	7	37	56	219	2041	14194	1017.6	1995.6	147.4	-0.7	8386.6	619.3	64.3	8386.6
Legionellosis	5	10	3	5	11	12	12	19	16	26	11	7	137	9.8	9.4	0.7	-27.7	173.6	12.8	-23.4	173.6

Reportable disease	2016														Historical comparisons						5-year avg (2011-2015) annual count
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTM	YTM rate ‡	Current month 5-year avg (2011-2015)	Current month 5-year avg (2011-2015) rate ‡	% difference rates (current month minus 5-year avg)†	YTM 5-year avg (2011-2015)	YTM 5-year avg (2011-2015) rate ‡	% difference rates (YTM 2016 minus YTM 5-year avg)†	
Leprosy	0	0	1	0	1	0	0	0	0	0	0	0	2	0.1	0.2	0.0	-100.0	3.4	0.3	-42.9	3.4
Listeriosis	8	5	5	15	10	14	13	9	5	1	9	2	96	6.9	3.8	0.3	-48.9	52.0	3.8	79.2	52.0
Lyme Disease	2	1	5	9	18	77	118	48	31	19	14	1	343	24.6	5.6	0.4	-82.7	258.6	19.1	28.8	258.6
Malaria	13	7	12	10	19	30	17	28	31	15	8	16	206	14.8	14.8	1.1	5.0	204.4	15.1	-2.2	204.4
Measles	1	1	1	0	1	0	0	2	1	0	0	0	7	0.5	#	#	#	#	#	#	#
Meningitis	10	12	15	9	14	20	12	25	26	18	16	13	190	13.6	10.8	0.8	16.9	129.6	9.6	42.3	129.6
Meningococcal Disease, Invasive	3	1	0	4	1	2	2	2	7	4	1	1	28	2.0	2.2	0.2	-55.9	31.4	2.3	-13.4	31.4
Mumps	0	2	1	2	4	6	6	4	1	9	3	1	39	2.8	3.0	0.2	-67.6	35.0	2.6	8.2	35.0
Ophthalmia neonatorum	0	1	0	2	0	0	0	0	0	0	0	1	4	0.3	0.4	0.0	142.7	2.8	0.2	38.7	2.8
Paralytic Shellfish Poisoning	0	0	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	3	7	2	2	4	2	1	2	4	3	1	0	31	2.2	3.0	0.2	-100.0	42.0	3.1	-28.3	42.0
Pertussis (Whooping Cough)	46	13	21	92	73	36	40	36	31	21	17	13	439	31.5	41.6	3.1	-69.7	516.6	38.1	-17.5	516.6
Q Fever	1	0	0	0	3	0	1	0	1	1	0	0	7	0.5	0.8	0.1	-100.0	16.4	1.2	-58.6	16.4
Rabies	0	0	0	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	0.0	#	#	#	#	#	#	#
Rubella, Congenital Syndrome	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	#	#	#	#	#	#	#
Salmonellosis	285	256	288	246	249	268	280	331	277	210	181	148	3019	216.4	177.4	13.1	-19.0	2814.6	207.8	4.1	2814.6
Shigellosis	36	35	46	27	34	22	30	40	21	28	23	17	359	25.7	23.6	1.7	-30.1	263.8	19.5	32.1	263.8
Streptococcus Pneumoniae, Invasive	102	95	130	105	97	72	58	44	45	103	96	95	1042	74.7	142.4	10.5	-35.2	1135.4	83.8	-10.9	1135.4
Syphilis, Early Congenital	0	0	0	0	1	1	0	0	0	0	0	0	2	0.1	0.2	0.0	-100.0	1.4	0.1	38.7	1.4
Syphilis, Infectious	127	99	135	135	113	96	94	104	107	79	67	32	1188	85.2	70.0	5.2	-55.6	861.8	63.6	33.8	861.8
Syphilis, Other	55	63	57	62	55	74	52	53	54	37	44	37	643	46.1	52.8	3.9	-32.0	661.4	48.8	-5.6	661.4
Tetanus	0	0	0	0	0	0	1	0	0	0	0	0	1	0.1	0.0	0.0		2.0	0.1	-51.5	2.0
Tuberculosis	43	37	48	45	59	75	60	65	60	32	52	52	628	45.0	52.0	3.8	-2.9	619.4	45.7	-1.6	619.4
Tularemia	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0		0.4	0.0	-100.0	0.4
Typhoid Fever	11	7	6	8	1	4	5	8	9	3	5	3	70	5.0	6.6	0.5	-55.9	76.4	5.6	-11.0	76.4
Verotoxin Producing E. coli Including HUS	4	5	9	9	8	10	34	41	21	10	12	8	171	12.3	8.8	0.6	-11.7	176.6	13.0	-6.0	176.6
West Nile Virus Illness	0	0	0	0	0	0	1	28	24	0	0	0	53	3.8	0.6	0.0	-100.0	91.2	6.7	-43.6	91.2
Yellow Fever	0	0	0	0	0	0	1	0	0	0	0	0	1	0.1	0.0	0.0		1.0	0.1	-2.9	1.0
Yersiniosis	32	23	28	39	26	21	22	22	16	8	7	5	249	17.9	11.8	0.9	-58.9	185.4	13.7	30.4	185.4

Ontario Cases: MOHLTC, iPHIS database, extracted by PHO [2017/01/11].

Ontario Population: Population estimates [2005–2011]: Statistics Canada, distributed by MOHLTC, received [2014/07/03]. Population estimates [2012–2014]: Statistics Canada, distributed by MOHLTC, received [2015/11/18]. Population projections [2015-2016]: MOHLTC, IntelliHEALTH Ontario, extracted by PHO [2015/03/13].

* 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.

₹ 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.