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Monthly Infectious Diseases Surveillance Report

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This is the second issue of a new monthly report produced by PHO. We anticipate that the report will evolve over time according to users' needs and a following a formal evaluation in 2012. We welcome feedback to se@oahpp.ca.

For further information on the Monthly Infectious Diseases Surveillance Report, online versions of are available at: http://www.oahpp.ca/resources/monthly-infectious-diseases-surveillance-report.html

In this issue

Infectious Disease in Focus

MUMPS

Mumps virus, the causative agent of mumps, belongs to the genus *Rubulavirus* in the *Paramyxoviridae* family. Infection with mumps is characterized by fever, swelling and tenderness of one or more salivary glands, most often the parotid gland (inflammation is known as parotitis), and occasionally the sublingual or submaxillary glands. Other nonspecific symptoms include myalgia, anorexia, malaise and headache (1, 3). Approximately one third of infections do not cause clinically apparent swelling of the salivary gland and manifest primarily as respiratory tract infections (2). While fever may last for up to 4 days, parotitis, when present, lasts 7-10 days; approximately 20% of mumps infections are asymptomatic (3, 4).

Orchitis (inflammation of one or both of the testicles) is relatively common in post-pubertal males, occurring in 30-40% of cases and may rarely result in sterility. Severe complications of mumps are rare but can include acquired hearing loss, mumps-associated encephalitis and aseptic meningitis. Mumps in the first trimester of pregnancy may cause fetal loss, however there is no evidence that mumps during pregnancy causes congenital malformations (1, 4). Mumps virus replicates in the upper respiratory tract and is

generally spread from person to person via respiratory droplets or by direct contact with the saliva of an infected individual; infections are restricted to humans. The average incubation period is 16-18 days with a range of 12 to 25 days. While the virus has been isolated from saliva between 7 days before to 9 days after the onset of parotitis, a person with mumps is most infectious between 1-2 days before to 5 days after onset of illness. Asymptomatic infections can still be sources of infection for other susceptible individuals (1, 2).

Immunization with a mumps-containing vaccine is the most effective method of preventing mumps infection. The National Advisory Committee on Immunization (NACI) recommends routine immunization of all children with two doses of mumps-containing vaccine. The first dose is combined with measles and rubella vaccine (MMR vaccine) on or shortly after their first birthday and the second dose given after 15 months of age or older but before school entry. NACI also recommends documented receipt of two doses of mumps-containing vaccine for students at educational institutions, health care workers and military personnel without laboratory evidence of immunity, a history of laboratory-confirmed mumps disease or who were born before 1970 (5).

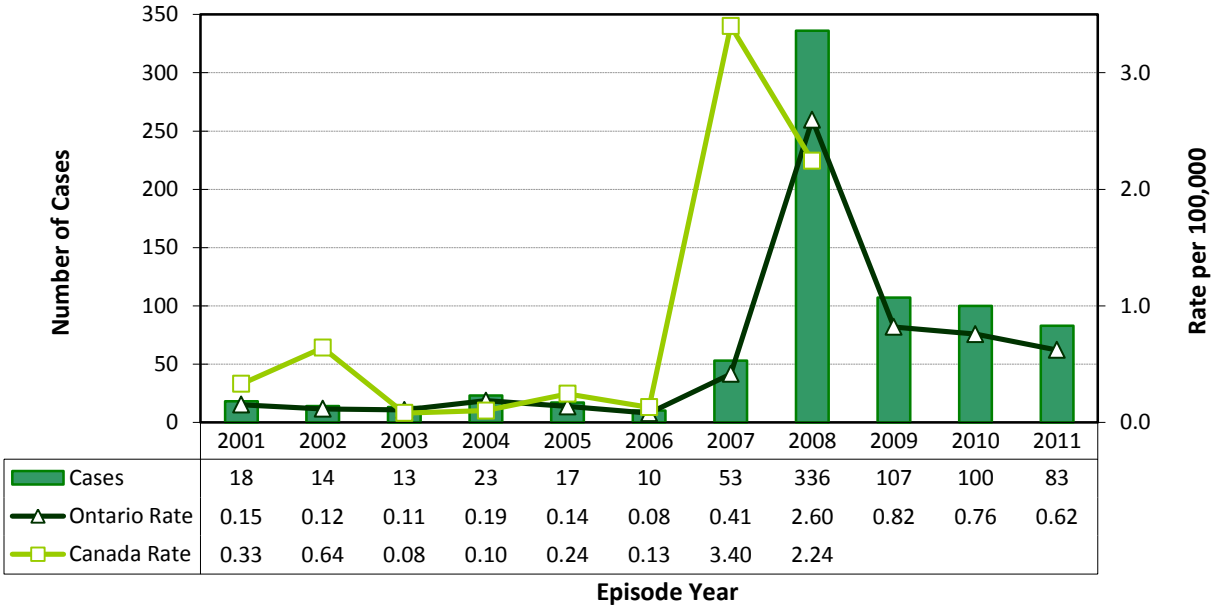
A live attenuated mumps vaccine was licensed in Canada in 1969, and introduced in Ontario shortly thereafter. In 1975, a single dose of combined measles, mumps, and rubella (MMR) vaccine was implemented in Ontario. A single dose program continued until 1996, when a second dose of MMR vaccine was implemented as part of a measles eradication plan. It is important to note that a single dose of monovalent measles vaccine was offered to all Ontario students 4 to 18 years of age in 1996 as part of a measles catch-up campaign. However, mumps-containing vaccine was not used, leaving a cohort of individuals born before 1992 who had only received one dose of mumps vaccine and were therefore potentially susceptible to the virus.

The annual incidence rate of mumps in Ontario has significantly increased since 2001 (Figure 1; $p<0.0001$), even after excluding a large outbreak in 2008. Compared to more recent years, the incidence of mumps in Ontario from 2001 to 2006 was low, with an average of 16 reported cases per year and annual incidence rates between 0.08 and 0.19 cases per 100,000 per year. National incidence rates during this period were also relatively low, with the exception of years in which outbreaks occurred in other provinces (range from 0.08 to 0.64 cases per 100,000 per year). In contrast, an average of 136 cases per year and incidence rates of 0.82 to 2.60 per 100,000 per year were reported in Ontario from 2007 to 2011. The annualised rate of disease in the province after 2008 was significantly higher than the annualised rate of disease before 2008 (0.73 per 100,000 versus 0.17 per 100,000, $p<0.0001$).

In the past five years, the increase in mumps in Ontario has been largely outbreak driven. Sporadic mumps cases do not exhibit a clear seasonal pattern apart from a slight increase in the summer months. From 2007 to 2011, 17.7% (120/679) of all mumps cases reported in Ontario were sporadic and 82.3% (559/679) were outbreak-related, having links to four separate outbreaks: in 2007, 28 cases attributed to the importation of mumps from outbreaks occurring in Nova Scotia and New Brunswick (this outbreak accounted for high Canadian incidence in 2007) (7); in 2008, 324 cases in an unimmunized community in Oxford County with links to concurrent mumps outbreaks in The Netherlands and British Columbia; between September 2009 and June 2010 (8), 167 cases (131 confirmed and 36 probable) reported in a multi-health unit outbreak with links to concurrent outbreaks in Quebec and the United States (9, 10); in 2011, 39 cases reported in nine Ontario health units following confirmation of a positive case of mumps in a Toronto resident.

The Toronto investigation in 2011 identified a cluster of cases with a link to a restaurant in downtown Toronto. The index case was suspected to be travel related, having visited Vancouver, British Columbia where there was an ongoing outbreak. Further investigation by Toronto Public Health identified additional cases and exposure sites including the surrounding office buildings near the restaurant and a nearby area in the downtown core. The cases ranged in age from 12 to 56 years with a median age of 29 years. The cases were clustered in the 20-24 and 30-34 age categories, with males accounting for 61.5% (24/39) of all cases. Orchitis was reported in 7.7% (3/39) of cases. Two cases were hospitalized, no emergency room visits, hospitalizations or deaths were reported.

Figure 1. Incidence of mumps in Ontario and Canada: 2001-2011



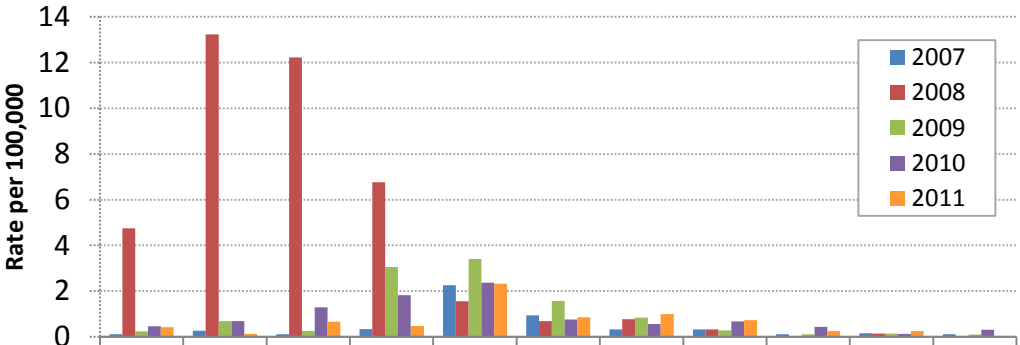
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Cases	18	14	13	23	17	10	53	336	107	100	83
Ontario Rate	0.15	0.12	0.11	0.19	0.14	0.08	0.41	2.60	0.82	0.76	0.62
Canada Rate	0.33	0.64	0.08	0.10	0.24	0.13	3.40	2.24			

Episode Year

Ontario cases: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database. **Canadian rate:** Public Health Agency of Canada, Canadian Notifiable Disease Section, Surveillance and Risk Assessment Division, Centre for Communicable Diseases and Infection Control. **Ontario population:** Ontario Ministry of Health and Long-Term Care, intelliHEALTH Ontario. **Note:** Canadian rates available up to 2008.

Between 2007 and 2011, mumps was reported slightly more commonly among males, accounting for 56.6% of cases reported in Ontario. Age-specific incidence rates for mumps over the period 2007 to 2011 were highest among young adults in the 15-19 and 20-24 year age categories. The exception was 2008, when a large outbreak in an unimmunized Oxford County community affected primarily children, with highest rates in those 5-14 years of age (Figure 2).

Figure 2. Incidence rates of mumps in Ontario by episode year and age group: 2007-2011

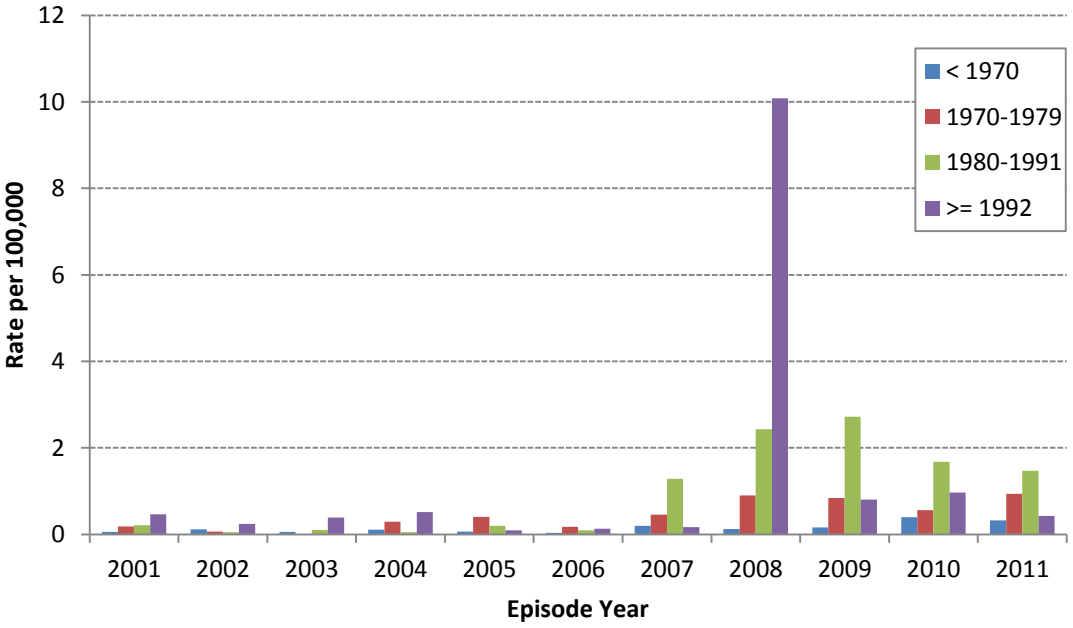


	0-4	5-9	10-14	15-19	20-24	25-29	30-39	40-49	50-59	60-64	65+
2007	0.12	0.28	0.12	0.34	2.25	0.95	0.33	0.33	0.12	0.16	0.11
2008	4.75	13.23	12.22	6.76	1.56	0.69	0.78	0.33	0.00	0.15	0.00
2009	0.24	0.69	0.25	3.05	3.41	1.57	0.84	0.29	0.11	0.14	0.11
2010	0.47	0.69	1.29	1.82	2.37	0.77	0.56	0.67	0.43	0.14	0.31
2011	0.42	0.14	0.66	0.46	2.33	0.86	1.00	0.73	0.26	0.26	0.00

Age group at the time of illness

Ontario cases: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database.
Ontario population: Ontario Ministry of Health and Long-Term Care, intelliHEALTH Ontario.

Figure 3: Incidence rate of mumps (per 100,000) by episode year and birth cohort in Ontario: 2001-2011



Ontario cases: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database.
Ontario population: Ontario Ministry of Health and Long-Term Care, intelliHEALTH Ontario.

A birth cohort analysis was undertaken to compare the incidence rates of disease among groups who may have been subject to different exposures to the disease and changes to the immunization program

(Figure 3). In Canada, individuals born prior to 1970 are generally assumed to be immune to mumps since they were likely exposed to mumps virus that circulated widely prior to that time (11). In consideration of the two dose MMR vaccination program that was introduced in 1996 among 4 to 6 year olds, individuals born as of 1992 may also be assumed to be at lower risk of disease since they were eligible to receive two doses of vaccine once they reach the appropriate age (the recommended age for the second dose was changed from 4 to 6 years to 18 months in 2007 and back to 4 to 6 years in 2011). In contrast, individuals born between 1970 and 1991 are the most likely to be susceptible to mumps infection, since they are less likely to have acquired natural immunity and were only eligible to receive one dose of vaccine. Further, it has been suggested that the active social lifestyle of this cohort may facilitate the transmission of disease (12). These differences in susceptibility are generally reflected in the incidence rates presented in Figure 3 as of 2007. The rates are lowest among individuals born prior to 1970 and as of 1992, while the highest rates tend to occur in the 1970-1979 and 1980-1991 cohorts, with the exception of the Oxford County outbreak. In this outbreak, cases among those born as of 1992 are to be expected since the outbreak occurred in an unimmunized community.

There has been a significant increase in mumps in the province over the past decade. The epidemiology of mumps in recent years has reflected the susceptible cohort of individuals only eligible to receive one dose of vaccine; apart from a large outbreak in 2008 affecting children in an unimmunized community. Ensuring completion of the recommended two dose series of mumps-containing vaccine is the most effective method of preventing infection for all, in order to maximize protection against mumps in Ontario.

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Significant Reportable Disease Activity

Table 1 provides a list of reportable diseases in 2011 by month for which counts were significantly higher than expected compared to previous year-to-month (YTM) counts. The table does not include diseases that have been determined to be the result of artefacts present in the data. Appendix 1 contains all year-to-date reportable disease statistics for 2011 compared to 2009 and 2010.

When compared to previous years, there were significant increases in the rates of invasive Group A Streptococcal disease (iGAS), *Haemophilus influenzae* type b (Hib), legionellosis, pertussis, verotoxin producing *E. coli* including HUS (VTEC) and West Nile virus (WNV) (Table 1). The increases in iGAS, legionellosis and VTEC in 2011 compared to 2010 and 2009 as well as the increase in pertussis in 2011 compared to 2010 are attributed to outbreaks or clusters of each disease that took place in the province in 2011. The increase in WNV cases in 2011 compared to 2010 and 2009 is attributed to the concurrent increase in WNV positive mosquito pools in Ontario this year, which resulted in higher risk of transmission. The reason for the increase in Hib cases in 2011 compared to 2010 and 2009 is currently undetermined.

Table 1. Summary of significant* Year-to-Month (YTM) increases in reportable disease activity rates, for the periods January-October in 2009, 2010 and 2011

Disease	2011		2010			2009		
	Confirmed cases	YTM rate per 100,000	Confirmed cases	YTM rate per 100,000	% Difference (YTM 2011-2010)	Confirmed cases	YTM rate per 100,000	% Difference (YTM 2011-2009)
iGAS	581	4.3	435	3.3	32.0	405	3.1	40.2
Hib	10	0.1	2	0.02	394.3	3	0.02	225.7
Legionellosis	136	1.0	101	0.8	33.1	55	0.4	141.6
Pertussis	138	1.0	85	0.6	60.1	357	2.7	-62.2
VTEC	211	1.6	140	1.1	49.0	155	1.2	33.0
WNV	54	0.4	6	0.1	789.7	2	0.02	2538.5

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2011/12/20]. Population data obtained from: IntelliHEALTH Ontario; Retrieved [2011/03/30].

Data note: *statistically significant differences (P<0.05) were reported where diseases reported in 2011 differed significantly from either 2009 or 2010 rates or both.

Definitions: Year-to-Month (YTM); invasive Group A Streptococcal disease (iGAS); *Haemophilus influenzae* type b (Hib); verotoxin producing *E. coli* including HUS (VTEC); West Nile virus (WNV).

Infectious Disease Activity in Surrounding Jurisdictions

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

NOVEL INFLUENZA A H3N2 VIRUS

In recent weeks, a new variant of the influenza A H3N2 virus now referred to as A(H3N2)v was identified in 12 cases in the USA. Early cases of infection with A(H3N2)v were associated with contact with pigs, but more recent cases were not, suggesting that A(H3N2)v may be capable of limited human to human spread. A(H3N2)v is a swine origin influenza virus also containing genes from birds and humans, and typically infects pigs. No cases of the A(H3N2)v influenza virus have been identified in Canada. However, the Public Health Agency of Canada is working with the provinces and territories to closely monitor the situation and has increased its surveillance for A(H3N2)v in Canada.

http://www.phac-aspc.gc.ca/influenza/h3n2-eng.php

DRUG RESISTANT TUBERCULOSIS (TB) RAISES ALARMS IN CANADA

Recently, physicians in Mumbai reported 12 cases of TB with a strain that was resistant to many drugs, of which, three patients died. Due to increased global travel, a case of drug resistant TB in India raises alarms for TB specialists in Canada. As a result, Canadian doctors are offering more support to physicians in India who are struggling to treat patients with drug resistant forms of TB. Physicians from West Park Health Care Centre in Toronto highlight that rich countries need to help resource poor countries to increase TB control. In Canada, most cases of TB occur among immigrants in Toronto, Montreal and Vancouver. The Public Health Agency of Canada has stated there have been five cases of extensively resistant TB in Canada. These cases can be very expensive to treat; the mismanagement of a case can amplify drug resistance; and an undiagnosed and/or untreated case can infect approximately 14 people per year, of which typically one or two will develop an infection.

http://www.cbc.ca/news/health/story/2012/01/30/tuberculosis-resistant-india.html?cmp=rss

Telehealth Report

Telehealth Ontario is a toll-free nursing helpline available to all residents of Ontario 24 hours a day, 7 days a week. PHO conducts surveillance using Telehealth call data that has been categorized into three syndromes: gastrointestinal (GI), fever/influenza like illness (ILI) and respiratory (which includes both upper and lower respiratory symptoms). Data is utilized to determine whether observed call volumes are greater than statistically expected and to identify significant clusters of the targeted syndromes. Significant geo-temporal clusters (SaTScan) and/or temporal aberrations Early Aberration Reporting System (EARS) are communicated through the Public Health Ontario Portal and directly to the affected health unit(s) when they occur. Aberrations in Telehealth data may precede case identification and outbreak activity serving as a potential early warning system for reportable diseases.

In the last week of November and December 2011, four distinct Telehealth SaTScan clusters (Table 2) and seven Telehealth EARS flags were identified. All of the clusters remained significant for at least two days. The affected health units were notified of these findings.

Table 2. Significant Fever/ILI, Gastrointestinal (GI), and Respiratory (Resp) syndrome clusters identified by SaTScan in the last week of November and December 2011

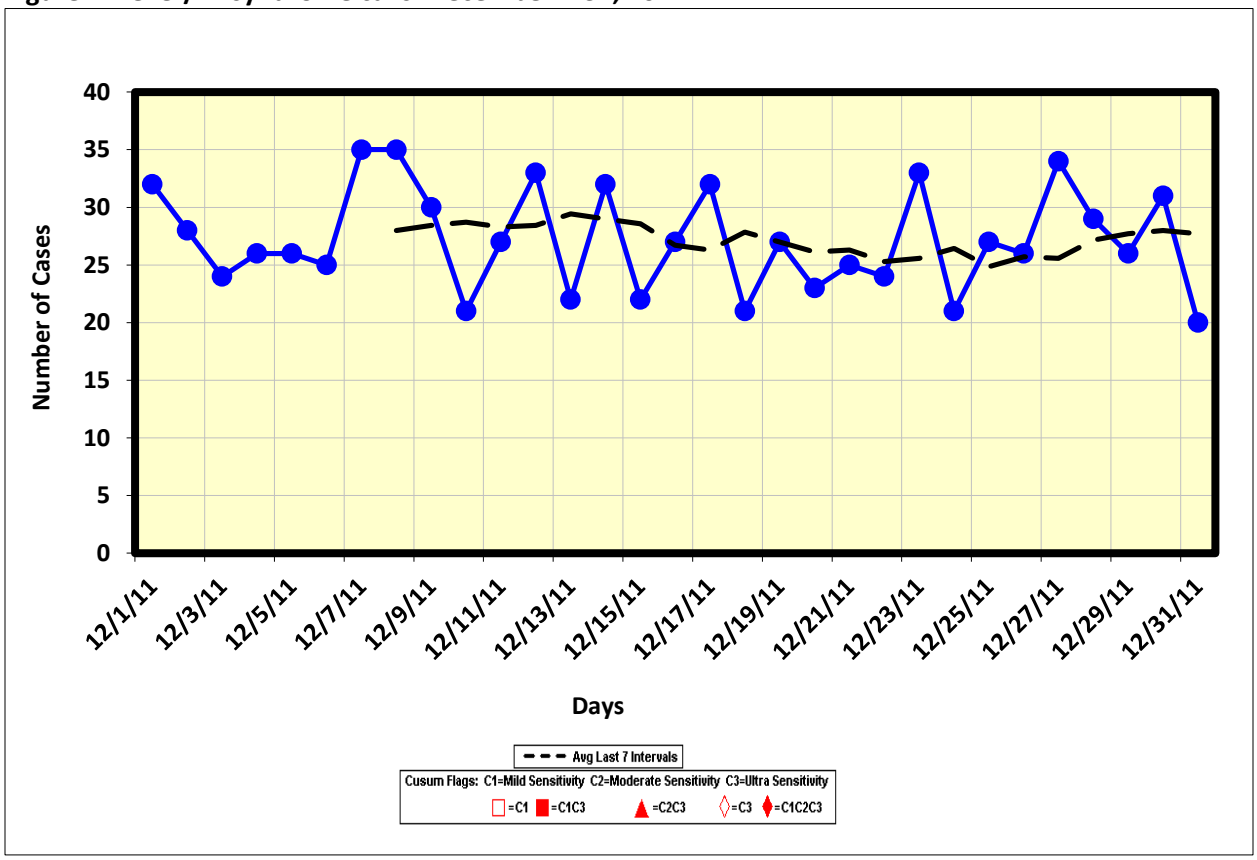
Cluster Type	Cluster	FSA	# FSAs in the cluster	Health Units Affected	Rad (km)	Obs	Exp	Obs/ exp	p
Fever/ ILI	Dec 1- 7*	N4S	24	OXF, MSL, BRN, WAT, PDH, WDG	52.0	29	13.9	2.1	0.00
	Dec 2- 8*	N0M -8	9	OXF, MSL, PDH	29.5	11	3.3	3.3	0.03
	Dec 16- 22**	M4K	10	TOR	4.1	20	8.3	2.1	0.01
	Dec 23- 29**	M1R	6	TOR	3.8	12	3.6	3.4	0.02
GI	Dec 7- 13†	N5L	42	ELG, MSL, OXF, BRN, WAT, PDH, LAM, CHK, HUR, HDN	101.7	78	52.4	1.5	0.05
	Dec 8- 14†	N4G	32	OXF, MSL, BRN, WAT, PDH, HDN	62.0	69	42.3	1.6	0.00
	Dec 9- 15†	N4G	32	OXF, MSL, BRN, WAT, PDH, HDN	59.4	71	42.8	1.7	0.00
Resp	Nov 28- Dec 4††	M2M	8	TOR, YRK	4.7	39	25	1.8	0.04
	Nov 29- Dec 5††	M2M	8	TOR,YRK	4.7	40	20.8	1.9	0.02
	Nov 30- Dec 6††	M4G	8	TOR,YRK	15.9	317	260	1.2	0.04

Obs= Observed count, Exp = Expected count, FSA = Forward sortation area, Rad= Radius of the cluster in kilometres
* Identified fever/ILI clusters represent a single event that remained significant for 2 consecutive days
** Identified fever/ILI clusters that represent a single event that remained significant for 2 consecutive days
† Identified GI clusters that represent a single event that remained significant for 3 consecutive days
†† Identified resp clusters that represent a single event that remained significant for 3 consecutive days
Note: More information on SaTScan can be found at www.satscan.org

FEVER/ ILI TELEHEALTH

Two fever/ILI clusters that remained significant on two consecutive days were detected in December 2011. The first cluster of calls made from December 1 to 8 spanned several health units in South West Region: Brant County, Waterloo Region, Wellington-Dufferin-Guelph, Oxford County, Middlesex-London and Perth District (Table 2). The second cluster occurred in Toronto during the period December 16 to 29. During the month of December, no EARS flags for fever/ILI calls were generated, which indicates that there was no significant change in the number of calls related to the fever/ILI syndrome (Figure 4).

Figure 4. Fever/ILI syndrome calls: December 1-31, 2011.

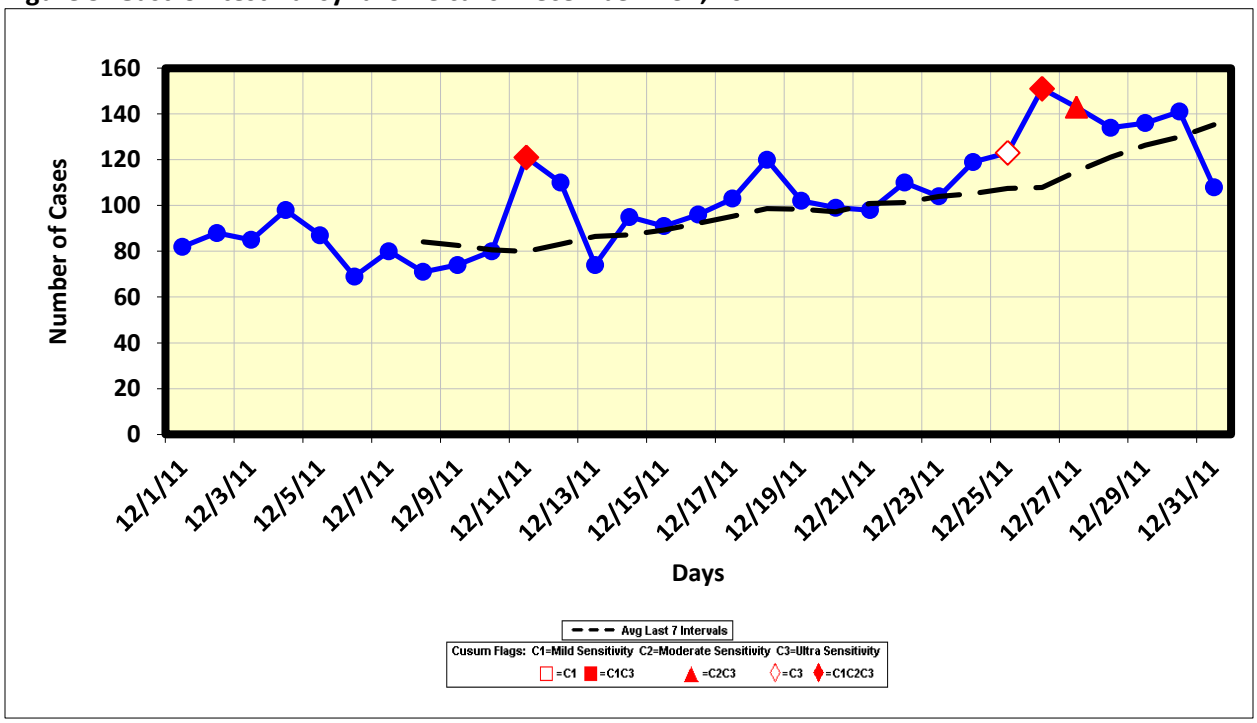


Note: EARS software from the US CDC is designed for aberration detection using public health surveillance data. EARS uses three limited baseline aberration detection methods (based on a positive 1-sided CUSUM calculation) and produces three types of statistically marked aberrations, or flags, when the observed values are greater than statistically expected (details below). More information on EARS can be found at www.bt.cdc.gov/surveillance/ears

GASTROINTESTINAL (GI) TELEHEALTH

One large GI cluster which remained significant for three consecutive days was detected in Central West and South West regions in December. The cluster occurred among calls from December 7-15 from Elgin-St. Thomas, Middlesex-London, Oxford County, Brant County, Waterloo, Perth District, Lambton, Chatham-Kent, Huron County and Haldimand-Norfolk (Table 2). EARS flags were generated for GI calls on December 11th, 26th, 27th and 28th (Figure 5).

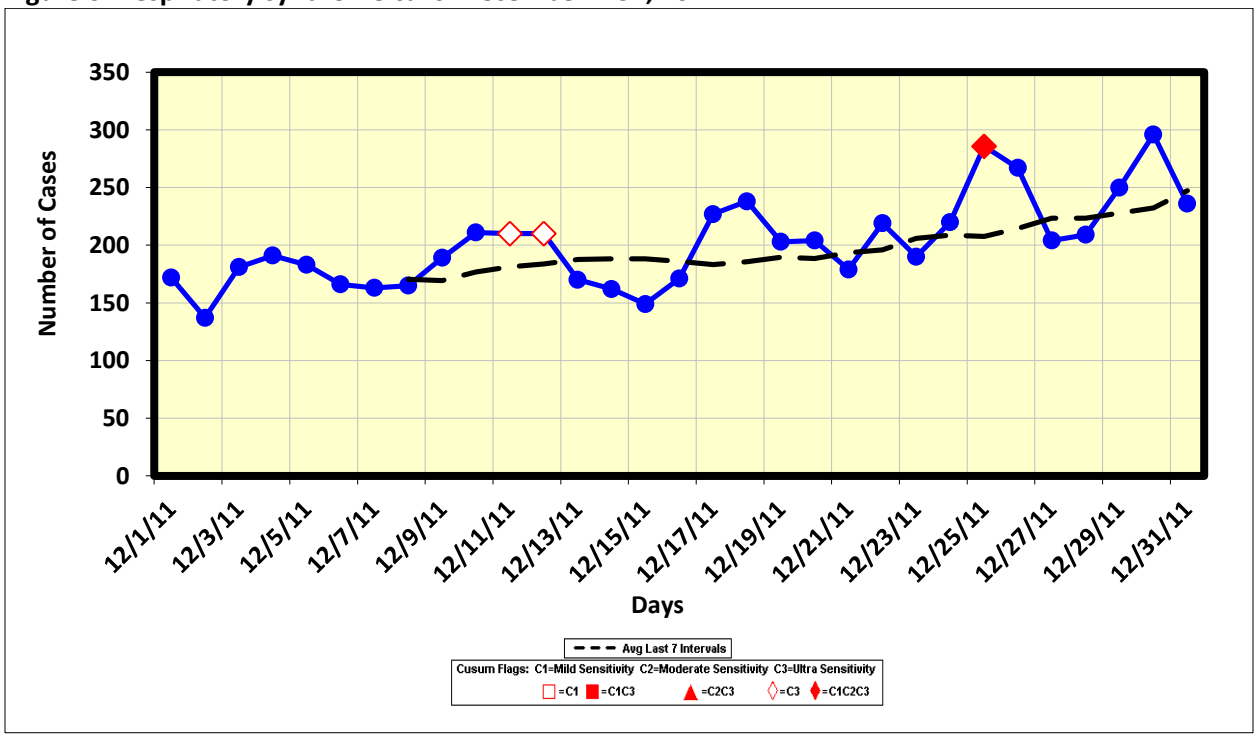
Figure 5. Gastrointestinal syndrome calls: December 1-31, 2011.



RESPIRATORY TELEHEALTH

A respiratory cluster that remained significant for three consecutive days during late November and early December 2011 was detected in Toronto and York Region (Table 2). The cluster was detected among calls made from November 28 to December 6, 2011 and grew from 39 calls when it was first identified to 317 calls on the final day. Interestingly, the cluster corresponds to a period in time of very little influenza activity in Toronto and York Region and may have been related to other respiratory viruses, of which several, such as RSV were active at the time. Three respiratory EARS flags were also generated on December 11th, 12th and 25th (Figure 6).

Figure 6. Respiratory syndrome calls: December 1-31, 2011.



Ontario Outbreak Review

The review of outbreaks section provides the total number of confirmed outbreaks and respiratory outbreaks from January 1 to December 31, 2011. Outbreak counts during the same time period for 2009 and 2010 are also presented for comparisons.

Table 3. Total number of confirmed outbreaks and confirmed respiratory infection outbreaks January to December 31, 2009-2011.

Time period	Total Number of Confirmed Outbreaks
Total confirmed outbreaks in 2011 to December 31*	1,958
Total confirmed outbreaks in 2010 to December 31*	1,985
Total confirmed outbreaks in 2009 to December 31*	2,190
Total confirmed respiratory infection outbreaks for the 2011-12 season†	160
Total confirmed respiratory infection outbreaks for the 2010-11 season†	221
Total confirmed respiratory infection outbreaks for the 2009-10 season†	212

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2012/01/31].

* Includes all outbreaks with a classification of 'Confirmed' in iPHIS

† Sources: Ontario Influenza Bulletin - Surveillance Week 50 (December 11-17, 2011); Surveillance Week 50 (December 12-18, 2010); and Surveillance Week 50 (December 13-19, 2009)

Enhanced Surveillance Directives (ESD) discontinued from November to December

MUMPS

Public Health Ontario (PHO), in collaboration with the Ministry of Health and Long-Term Care (MOHLTC) and several health units investigated a mumps outbreak commencing on July 19, 2011. The potential source case travelled to Vancouver from May 22 to June 3, 2011 where the individual was reportedly in contact with a mumps case. The outbreak was identified in Toronto in early June with a single exposure site at a restaurant and spread to include cases residing in several health units in Ontario. Province-wide, 39 mumps cases (33 confirmed and 6 probable) were linked to the outbreak. Ages ranged from 12 to 56 years, with a median age of 29 years; 61.5% were male. Seven of the cases received two doses of mumps vaccine and are considered up to date. Twenty cases were from Toronto, and the other nineteen resided in Durham (5), Ottawa (2), Brant (1), Hamilton (2), Halton (4), Haliburton-Kawartha-Pine Ridge (1), York (1) and Peel (3). The onset of symptoms of the earliest known case was June 9, 2011 and the onset of the last case was October 10, 2011. The outbreak was declared over by the MOHLTC on November 18, 2011 after no epidemiologically linked cases were identified in greater than 34 days following the last date of onset. The 34-day window was calculated based on the sum of the maximum incubation period of 25 days plus the maximum communicability period of 9 days and ended on November 13, 2011.

PERTUSSIS

The MOHLTC, in collaboration with PHO and 7 public health units investigated a provincial outbreak (0000-2011-009) of pertussis among an unimmunized community of German speaking Mennonites from Mexico (also referred to as Mexican Mennonites). The onset of symptoms of the earliest known case was July 1, 2011 and the onset of the last case was September 30, 2011. The outbreak included a total of 22 confirmed cases from Elgin-St. Thomas (12), Waterloo (3), Chatham-Kent (2), Perth (2), Grey Bruce (1), Haldimand-Norfolk (1), and Oxford County (1). The cases ranged in age from less than one month old to 50 years, with a median age of 3 years. Children aged four and under accounted for 59% of the cases (13/22). The cases are members of large families and reported frequent contact with other family members within neighbouring health units. The outbreak was declared over by the MOHLTC on November 21, 2011 after no new secondary cases were identified in the 41 days following the last date of onset of September 30, 2011. The 41-day window ended on November 10, 2011 and was calculated as the sum of the maximum incubation period of 20 days plus the maximum communicability period of 21 days.

LEGIONELLOSIS

In August, the PHO Laboratory detected an increased number of legionellosis cases in the province. There were 105 confirmed cases of legionellosis reported in iPHIS with episode dates between August 1 and November 14. Among reported cases, 39 were reported in August, 33 in September and 27 in October, which represents higher than expected counts compared to historical averages. Six cases were reported from November 1 to November 14. Cases were identified in 16 health units. Toronto, Peel, Hamilton and Durham health units accounted for 75% (n=79) of the cases. No common exposures were identified. The ESD was discontinued on November 25 following a return to expected counts. PHO routinely monitors legionellosis for deviations from the expected.

Appendix – Reportable Diseases

Appendix 1. Confirmed cases of reportable disease by month: Ontario 2009-2011

REPORTABLE DISEASE	2011												2010					2009				
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	YTD	YTD Rate	YTM	YTM Rate	% Difference (YTM 2011 - 2010)*	2010 Total	2010 Rate	YTM	YTM Rate	% Difference (YTM 2011 - 2009)*	2009 Total	2009 Rate
AIDS	8	5	13	4	6	12	7	6	6	2	**69**	0.5	**90**	0.7	*-24.2*	**105**	0.8	**101**	0.8	*-33.2*	**119**	0.9
Amebiasis	24	21	27	18	17	22	27	30	20	17	**223**	1.7	**339**	2.6	*-35.0*	**387**	2.9	**500**	3.8	*-56.4*	**577**	4.4
Botulism	0	0	0	0	0	0	0	1	0	0	**1**	0.0	**1**	0.0	*-1.1*	**1**	0.0	**2**	0.0	*-51.1*	**2**	0.0
Brucellosis	0	0	0	0	0	0	1	0	0	0	**1**	0.0	**2**	0.0	*-50.6*	**2**	0.0	**4**	0.0	*-75.6*	**4**	0.0
Campylobacter Enteritis	197	183	214	186	245	352	515	471	370	305	**3,038**	22.7	**2,941**	22.2	*2.1*	**3,362**	25.4	**2,904**	22.2	*2.2*	**3,251**	24.9
Chlamydial Infections	3,010	2,661	3,355	2,990	3,013	3,076	2,767	3,082	3,184	3,134	**30,272**	226.4	**27,839**	210.6	*7.5*	**33,543**	253.7	**24,236**	185.4	*22.1*	**28,854**	220.8
Cholera	0	0	0	0	0	0	0	0	0	0	**0**	0.0	**0**	0.0	-	**0**	0.0	**1**	0.0	-	**1**	0.0
Cryptosporidiosis	14	13	21	18	11	15	53	79	37	14	**275**	2.1	**306**	2.3	*-11.2*	**338**	2.6	**274**	2.1	*-1.9*	**307**	2.3
Cyclosporiasis	3	2	3	6	18	30	25	2	4	4	**97**	0.7	**163**	1.2	*-41.2*	**168**	1.3	**136**	1.0	*-30.3*	**143**	1.1
Encephalitis- Primary Viral	1	1	1	1	1	0	2	5	0	0	**12**	0.1	**10**	0.1	*18.6*	**15**	0.1	**15**	0.1	*-21.8*	**19**	0.1
Encephalitis- Unspecified	0	0	0	0	0	1	0	0	0	0	**1**	0.0	**1**	0.0	*-1.1*	**1**	0.0	**3**	0.0	*-67.4*	**3**	0.0
Encephalitis/Meningitis	8	6	11	4	10	11	22	17	22	10	**121**	0.9	**144**	1.1	*-16.9*	**159**	1.2	**115**	0.9	*2.8*	**130**	1.0
Food poisoning, all causes	0	7	5	15	5	3	3	4	5	3	**50**	0.4	**85**	0.6	*-41.9*	**90**	0.7	**34**	0.3	*43.7*	**48**	0.4
Giardiasis	108	98	94	104	109	108	128	150	100	100	**1,099**	8.2	**1,186**	9.0	*-8.4*	**1,408**	10.7	1,308	10.0	*-17.9*	**1,510**	11.6
Gonorrhoea (All types)	361	319	337	330	301	328	353	412	378	372	**3,491**	26.1	**3,254**	24.6	*6.1*	**3,968**	30.0	**2,987**	22.9	*14.2*	**3,553**	27.2
Group A Streptococcal Disease, Invasive	68	80	87	67	94	48	37	31	40	29	**581**	4.3	**435**	3.3	*32.0*	**563**	4.3	**405**	3.1	*40.2*	**470**	3.6
Group B Streptococcal Disease, Neonatal	2	6	4	4	7	2	8	6	5	6	**50**	0.4	**43**	0.3	*14.9*	**54**	0.4	**41**	0.3	*19.2*	**50**	0.4
Haemophilus Influenzae B Disease, Invasive	2	1	2	3	1	0	0	1	0	0	**10**	0.1	**2**	0.0	*394.3*	**2**	0.0	**3**	0.0	*225.7*	**4**	0.0
Hepatitis A	6	15	11	3	7	8	10	10	14	7	**91**	0.7	**108**	0.8	*-16.7*	**136**	1.0	**107**	0.8	*-16.9*	**122**	0.9
Hepatitis B	5	7	18	8	7	9	9	10	13	13	**99**	0.7	**116**	0.9	*-15.6*	**129**	1.0	**128**	1.0	*-24.4*	**146**	1.1
Hepatitis C	343	312	384	350	337	349	299	335	350	348	**3,407**	25.5	**3,835**	29.0	*-12.2*	**4,544**	34.4	**3,949**	30.2	*-15.7*	**4,622**	35.4
Hepatitis D	0	0	0	0	0	0	0	1	0	0	**1**	0.0	**0**	0.0	-	**1**	0.0	**2**	0.0	*-51.1*	**2**	0.0
Herpes, Neonatal	0	0	4	1	1	0	0	0	1	1	**8**	0.1	**7**	0.1	*13.0*	**9**	0.1	**4**	0.0	*95.4*	**6**	0.0
HIV	67	60	104	59	73	80	86	60	73	64	**726**	5.4	**697**	5.3	*3.0*	**850**	6.4	**751**	5.7	*-5.5*	**865**	6.6
Infectious Syphilis	59	55	63	52	50	73	51	70	51	43	**567**	4.2	**650**	4.9	*-13.8*	**759**	5.7	**655**	5.0	*-15.4*	**769**	5.9
Influenza**	2,305	1,123	536	169	22	2	2	1	1	3	**4,164**	31.1	**123**	0.9	*3246.5*	**1,954**	14.8	**5,187**	39.7	*-21.6*	**12,504**	95.7
Legionellosis	4	3	3	1	2	12	10	40	32	29	**136**	1.0	**101**	0.8	*33.1*	**116**	0.9	**55**	0.4	*141.6*	**70**	0.5
Leprosy	0	0	0	0	0	0	0	0	0	0	**0**	0.0	**1**	0.0	-	**1**	0.0	**3**	0.0	-	**3**	0.0
Listeriosis	5	8	2	1	4	8	2	7	3	8	**48**	0.4	**53**	0.4	*-10.5*	**60**	0.5	**46**	0.4	*2.0*	**55**	0.4
Lyme Disease	0	0	1	2	9	19	22	17	8	4	**82**	0.6	**70**	0.5	*15.8*	**71**	0.5	**74**	0.6	*8.3*	**78**	0.6
Malaria	15	10	13	17	24	31	25	33	21	13	**202**	1.5	**227**	1.7	*-12.0*	**259**	2.0	**158**	1.2	*24.9*	**181**	1.4
Measles	0	1	1	0	6	0	0	0	0	0	**8**	0.1	**3**	0.0	*163.6*	**9**	0.1	**7**	0.1	*11.7*	**7**	0.1
Meningitis- Bacterial	1	2	0	6	2	2	2	1	1	2	**19**	0.1	**28**	0.2	*-32.9*	**32**	0.2	**25**	0.2	*-25.7*	**30**	0.2
Meningitis- Other	1	0	0	1	1	0	0	0	0	0	**3**	0.0	**3**	0.0	*-1.1*	**5**	0.0	**11**	0.1	*-73.3*	**13**	0.1
Meningitis- Viral	0	3	3	1	3	1	6	8	8	3	**36**	0.3	**97**	0.7	*-63.3*	**108**	0.8	**54**	0.4	*-34.9*	**61**	0.5
Meningococcal Disease, Invasive	4	5	5	3	2	6	4	5	3	3	**40**	0.3	**26**	0.2	*52.1*	**34**	0.3	**58**	0.4	*-32.6*	**70**	0.5
Mumps	2	0	0	3	2	2	21	19	7	2	**58**	0.4	**66**	0.5	*-13.1*	**68**	0.5	**46**	0.4	*23.2*	**95**	0.7
Ophthalmia Neonatorum	0	0	0	1	0	0	0	0	0	0	**1**	0.0	**5**	0.0	*-80.2*	**5**	0.0	**1**	0.0	*-2.3*	**1**	0.0
Other Syphilis	59	55	75	61	58	70	76	49	52	35	**590**	4.4	**677**	5.1	*-13.9*	**811**	6.1	**883**	6.8	*-34.7*	**1,009**	7.7
Paratyphoid Fever	7	1	5	13	4	7	3	8	8	1	**57**	0.4	**53**	0.4	*6.3*	**60**	0.5	**36**	0.3	*54.7*	**43**	0.3
Pertussis (Whooping Cough)	5	5	8	11	5	14	20	28	21	21	**138**	1.0	**85**	0.6	*60.5*	**101**	0.8	**357**	2.7	*-62.2*	**375**	2.9
Q Fever	0	0	0	1	0	3	1	3	1	2	**11**	0.1	**7**	0.1	*55.3*	**7**	0.1	**6**	0.0	*79.2*	**6**	0.0
Rubella	0	0	0	0	0	0	0	0	0	0	**0**	0.0	**1**	0.0	-	**1**	0.0	**3**	0.0	-	**3**	0.0
Rubella, Congenital Syndrome	0	0	0	0	0	0	0	0	0	0	**0**	0.0	**0**	0.0	-	**0**	0.0	**1**	0.0	-	**1**	0.0
Salmonellosis	191	193	207	228	213	216	306	332	250	160	**2,296**	17.2	**2,331**	17.6	*-2.6*	**2,726**	20.6	**1,989**	15.2	*12.8*	**2,325**	17.8
Shigellosis	19	14	15	12	45	31	37	21	14	12	**220**	1.6	**221**	1.7	*-1.6*	**252**	1.9	**214**	1.6	*0.5*	**254**	1.9
Streptococcus Pneumoniae, Invasive	133	121	157	135	109	76	45	46	57	102	**981**	7.3	**952**	7.2	*1.9*	**1,208**	9.1	**988**	7.6	*-3.0*	**1,263**	9.7
Tetanus	0	1	0	0	0	0	0	0	0	0	**1**	0.0	**1**	0.0	*-1.1*	**1**	0.0	**2**	0.0	*-51.1*	**2**	0.0
Tuberculosis	50	42	54	51	58	56	63	53	48	49	**524**	3.9	**528**	4.0	*-1.9*	**642**	4.9	**537**	4.1	*-4.6*	**631**	4.8
Tularemia	0	0	0	0	0	0	0	0	0	0	**0**	0.0	**2**	0.0	-	**2**	0.0	**0**	0.0	-	**0**	0.0
Typhoid Fever	21	14	8	12	8	4	7	6	11	6	**97**	0.7	**78**	0.6	*22.9*	**92**	0.7	**68**	0.5	*39.4*	**77**	0.6
Verotoxin Producing E. Coli including HUS	7	5	11	5	15	30	35	51	28	24	**211**	1.6	**140**	1.1	*49.0*	**152**	1.1	**155**	1.2	*33.0*	**166**	1.3
West Nile Virus Illness	0	0	0	0	1	2	2	30	18	1	**54**	0.4	**6**	0.0	*789.7*	**6**	0.0	**2**	0.0	*2538.5*	**2**	0.0
Yersiniosis	20	15	28	13	24	18	17	24	13	10	**182**	1.4	**179**	1.4	*0.5*	**204**	1.5	**214**	1.6	*-16.9*	**244**	1.9

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [2011/12/20]. Population data obtained from: IntelliHEALTH Ontario; Retrieved [2011/03/30].

Definitions: Year-to-Month (YTM); Year-to-Date (YTD)

Note: Rates presented in the table are per 100,000 population.

Note: Ontario adopted new case definitions for all reportable diseases in April 2009. The resulting impact on case counts vary by disease. Comparisons of data before and after April 2009 should be interpreted with caution.

Note: Does not include cases in which the Ministry of Health and Long-Term care was selected as the Diagnosing Health Unit.

Note: Tuberculosis case counts are now based on diagnosis date and not episode date.

Note: Differentials in year over year comparisons are based on both changes in disease incidence and reflective of changes to denominator data year over year.

* The % difference is calculated using unrounded rates; numbers displayed in these columns may vary from hand calculations using rounded rates.

** The Influenza counts also include the influenza A (H1N1) pdm09 counts in 2009 and 2010, in addition to seasonal Influenza A, B, and A & B. As influenza A (H1N1)pdm09 aggregate reporting occurred on a weekly basis, the week in which more days belonged to a particular month was counted in that month