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Monthly Infectious Diseases Surveillance Report

VOLUME 1, ISSUE 3

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

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

In this issue

Infectious Disease in Focus

MYCOPLASMA PNEUMONIAE

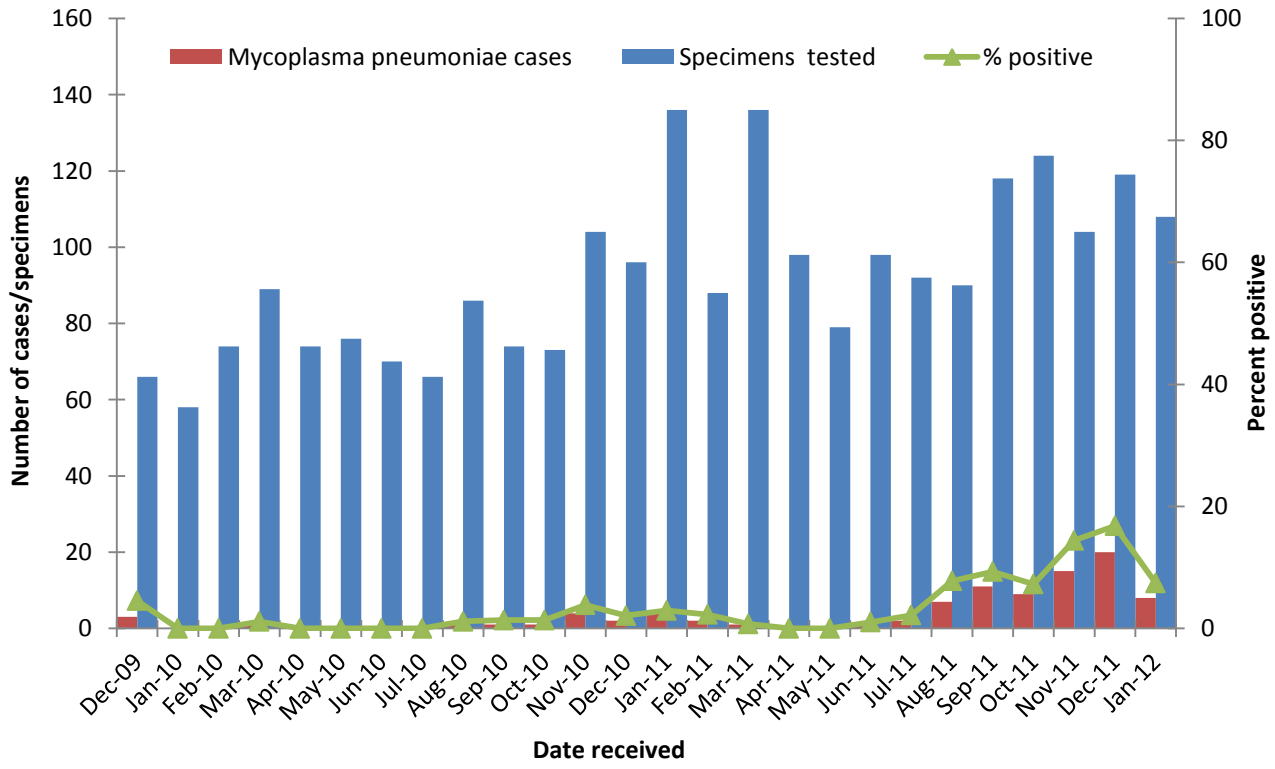
Mycoplasma pneumoniae is an infectious bacterial disease that is transmitted from person-to-person by contact with respiratory secretions (1). At-risk settings associated with disease spread include schools, dormitories, daycares and households. Symptoms of infection are non-specific and may include fever, headache, cough, sore throat and body ache (2). The incubation period averages 3 weeks (range 1 to 4 weeks) with the symptomatic period tending to progress slowly (3).

While *M. pneumoniae* infection occurs in all age groups, it is most common between the ages of 5 and 20 years and is less common in children under than 5 years of age (4). *M. pneumoniae* is the leading cause of pneumonia in school-age children and young adults. Infection with this bacterium is usually mild and most commonly results in acute bronchitis and upper respiratory infections, including pharyngitis and otitis media; it leads to pneumonia in approximately 10% of cases. Epidemics of *M. pneumoniae* tend to occur every 4-8 years with seasonal peaks from December to February (5). *M. pneumoniae* is estimated to be responsible for up to 40% of cases of community-acquired pneumonia and up to 18% of cases requiring hospitalization in children. The disease is

usually self-limiting, and treatmentwith macrolides (e.g., erythromycin, clarithromycin), tetracyclines or fluoroquinolones are effective. However, resistance to macrolides, the first-line antibiotic used to treat *M. pneumoniae,* has emerged in both paediatric and adult populations in Asia, Europe and the United States since 2000 (6). Internationally, resistance rates vary from 10% (North America) to 90% (China) (7). While sporadic infections with *M. pneumoniae* are not reportable in Ontario under the *Health Protection and Promotion Act* (HPPA), respiratory infection outbreaks in institutions caused by this bacterium are reportable.

Laboratory data reveals that from December 1, 2009 to January 31, 2012, 93 cases of *M. pneumoniae* were detected at Public Health Ontario Laboratories (PHOL) using polymerase chain reaction (PCR) (Figure 1). PHOL detected an increase in mycoplasma cases in 2011 compared to 2010: 72 cases in 2011 (5.6% positivity) versus 10 cases in 2010 (1.1% positivity) (p value<0.01). Percent positivity is the percentage of specimens that are positive for a disease out of all specimens tested. For *M. pneumoniae*, percent positivity above 5% indicates increased levels of disease activity, as many cases do not undergo laboratory testing. Futher, it is important to note that private and hospital laboratories in Ontario also perform testing for *M. pneumoniae*, so cases identified by PHOL do not reflect total counts for the province. Percent positivity for tests completed at PHOL climbed above 5% in August 2011 and peaked at 16.8% in December 2011. The percent positivity remained above 5% until January 2012. While there was a slight increase in the number of specimens tested for mycoplasma at PHOL during this period, this alone does not explain the increase in the number of cases. The basis for the increase is unknown, but could reflect the cyclical nature of the disease. Some European jurisdictions have similarly reported increases in *M. pneumoniae* activity over this period (8-11).

Figure 1. Number of *Mycoplasma pneumoniae* cases and percent positivity by date specimen received, PHOL: December 1, 2009 to January 31, 2012



Source: Public Health Ontario, Public Health Ontario Laboratories.

Figure 1 highlights the seasonal nature of the disease in Ontario, with higher levels of activity in the colder months from late fall to early spring. The median age of cases in Ontario identified through PHOL from December 2009 and January 2012 was 13 years, with a range of 0 to 80 years. There was a similar distribution of cases between males and females (46 females: 47 males). The majority of cases were from Toronto (24.7%), Peel Region (12.9%), York Region (12.8%) and Durham Region (11.8%) health units with the geographical distribution of cases similar during the increase in 2011. Of the 47 cases who had setting information reported, 26 (55.3%) were hospitalized. It is important to note, however, that the majority of cases of mycoplasma have mild symptoms, and as such are not prioritized for laboratory testing (7).

In Ontario, detailed information on individual cases (e.g., risk factors, outcomes) is limited because *M. pneumoniae* is not reportable under the HPPA. Of all *M. pneumoniae* cases detected at PHOL during this period, only one case was listed as outbreak-related; however, this information is limited as outbreak specimens are not routinely tested for mycoplasma at PHOL unless specifically requested. *M. pneumoniae* testing should be considered for evolving respiratory outbreaks in institutions where no pathogen has been found during routine virology and bacteriology testing.

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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. Diseases have also been excluded if rates are expected to increase over time. For example, rates of Chlamydia have been increasing in Ontario since the early 1990s, which has largely been attributed to increased case finding. Appendix 1 contains 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 has yet to be determined.

Table 1. Summary of significant* Year-to-Month (YTM) increases in reportable disease activity rates, for the periods January-December 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)†
Group A Streptococcal Disease, Invasive	676	5.1	563	4.3	18.7	472	3.6	40.0
Haemophilus influenzae B Disease, Invasive	12	0.1	2	0.02	493.1	4	0.03	193.2
Legionellosis	160	1.2	116	0.9	36.3	70	0.5	123.4
Pertussis	185	1.4	101	0.8	81.1	375	2.9	-51.8
Verotoxin Producing *E. coli* including HUS	289	1.7	153	1.2	48.0	166	1.3	34.8
West Nile virus	56	0.4	6	0.05	822.6	2	0.02	2636.2

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2012/01/30]. Population data obtained from IntelliHEALTH Ontario, retrieved by Public Health Ontario [2011/03/30].

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

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

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.

SUSCEPTIBILITY OF THE CANADIAN POPULATION TO SWINE INFLUENZA A (H3N2)

A recent study investigated the current vulnerability of the Canadian population to emerging zoonotic transmissions of swine influenza A H3N2 viruses. Using pre- and post-immunization sera from children and adults immunized with the 2010/11 trivalent influenza vaccine, the study assessed age-related patterns of susceptibility and vaccine-induced antibodies to a representative swine H3N2 (swH3N2) and a related ancestral human H3N2 (A/Sydney/5/1997) influenza virus.

Few children, but a greater proportion of adults, had serum samples indicative of pre-immunization protection against H3N2 viruses. Protection was found to increase with age among children and decrease in adults aged 40 years and older. Following immunization, sero-conversion occurred in fewer than 20% of study participants (indicated by a four-fold rise in antibody titres to either virus). These findings suggest broad susceptibility to swine-origin H3N2 infection in young children and older adults, and are especially important after the recent discovery of a reassortant variant H3N2 virus in the U.S. Further investigation is underway to guide ongoing risk assessment and response to emerging swine H3N2 viruses.

http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20066

NEW MAP DETAILS AREAS OF HIGHEST RISK FOR LYME DISEASE IN THE UNITED STATES

A new map pinpoints well-defined areas of the eastern U.S. where humans have the highest risk of contracting Lyme disease. As part of the most extensive Lyme disease-related field study ever undertaken, researchers found high infection risk confined mainly to the northeast, mid-Atlantic and upper midwest parts of the country and low levels of risk in the southern states. The goal of the new field work was to provide doctors and public health officials with a better sense of where people are at risk of Lyme disease using the presence of known Lyme-carrying ticks as the main indicator of exposure risk.

http://www.medicalnewstoday.com/releases/241067.php

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 targeted syndromes. Significant geo-temporal clusters (detected using SaTScan) and/or temporal aberrations (detected using the 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 future case identification and outbreak activity, serving as a potential early warning system for these phenomena. More information can be found in the Glossary.

From the last week of December 2011 to the end of January 2012, two distinct SaTScan clusters (Table 2) and three EARS flags were identified in Telehealth data. A fever/ILI cluster in two neighbouring health units (Toronto and York Region) remained significant for two days. The affected health units were notified of these findings.

Table 2. Significant fever/ILI, gastrointestinal (GI), and respiratory syndrome clusters identified by SaTScan in January

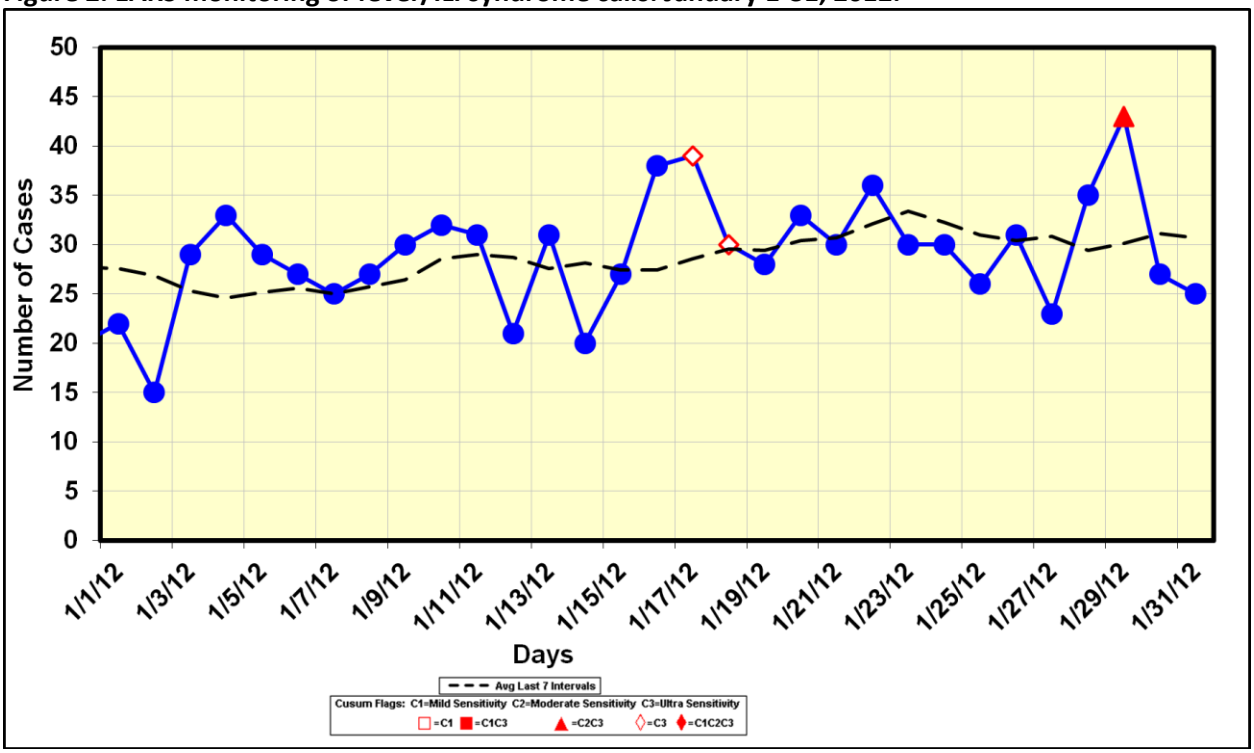
Cluster Type	Cluster	FSA	# FSAs in the cluster	Health Units Affected	Rad (km)	Obs	Exp	Obs/ Exp	p
Fever/ ILI	Dec 28- Jan 3*	M3N	34	TOR, YRK	12.47	41	20.32	2.02	0.00
	Dec 29 – Jan 4*	M3N	44	TOR, YRK	12.47	41	19.78	2.07	0.00
Resp	Dec 30- Jan 5	L5T	6	PEEL	4.48	14	4.86	2.88	0.04

Obs – Observed count; Exp – Expected count; FSA – Forward Sortation Area; km – kilometre; TOR – Toronto; YRK – York Region
Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2012/02/01].
* Identified fever/ILI cluster that represents a single event that remained significant for two consecutive days.

FEVER/ILI TELEHEALTH

For the month of January 2012, one fever/ILI cluster that remained significant for two consecutive days was detected. The cluster of calls was made from December 28, 2011 to January 4, 2012 and was identified in Toronto and York Region (Table 2). EARS flags were also generated on January 17th, 18th and 29th for fever/ILI calls (Figure 2).

Figure 2. EARS monitoring of fever/ILI syndrome calls: January 1-31, 2012.

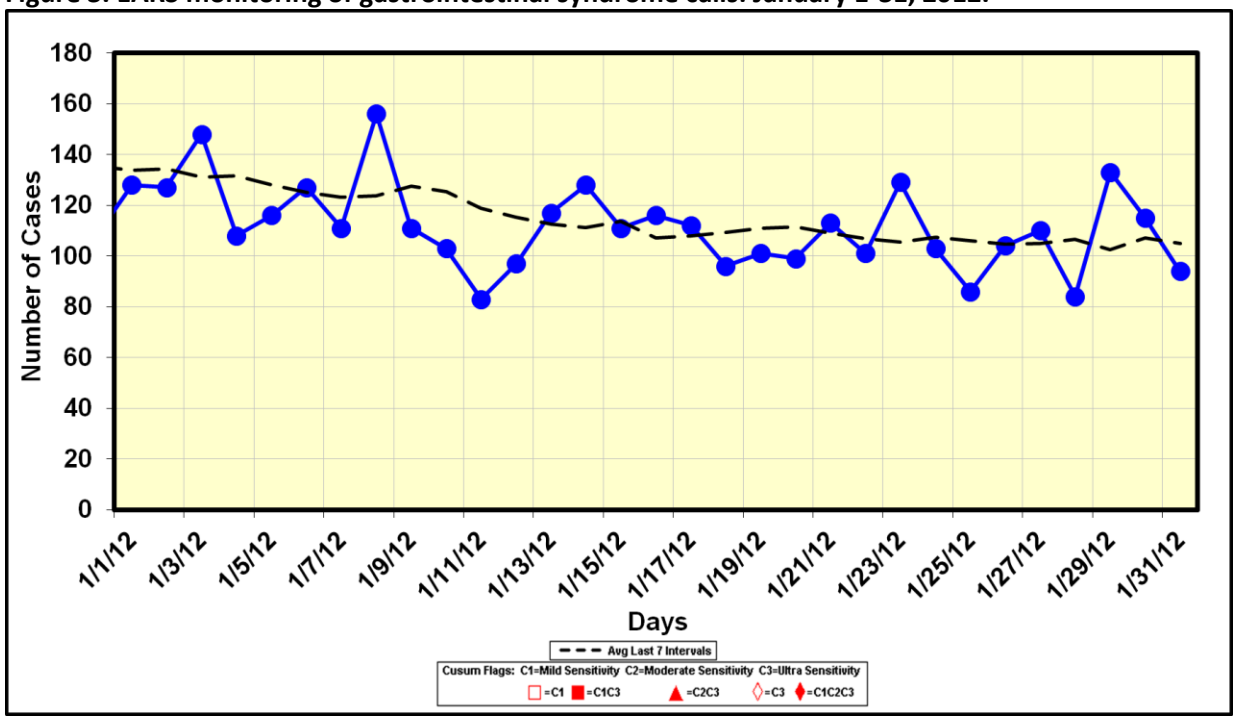


Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2012/02/01].

GASTROINTESTINAL (GI) TELEHEALTH

No GI clusters or EARS flags were detected for the month of January 2012. The number of calls made per day remained relatively constant throughout the month (Figure 3).

Figure 3. EARS monitoring of gastrointestinal syndrome calls: January 1-31, 2012.

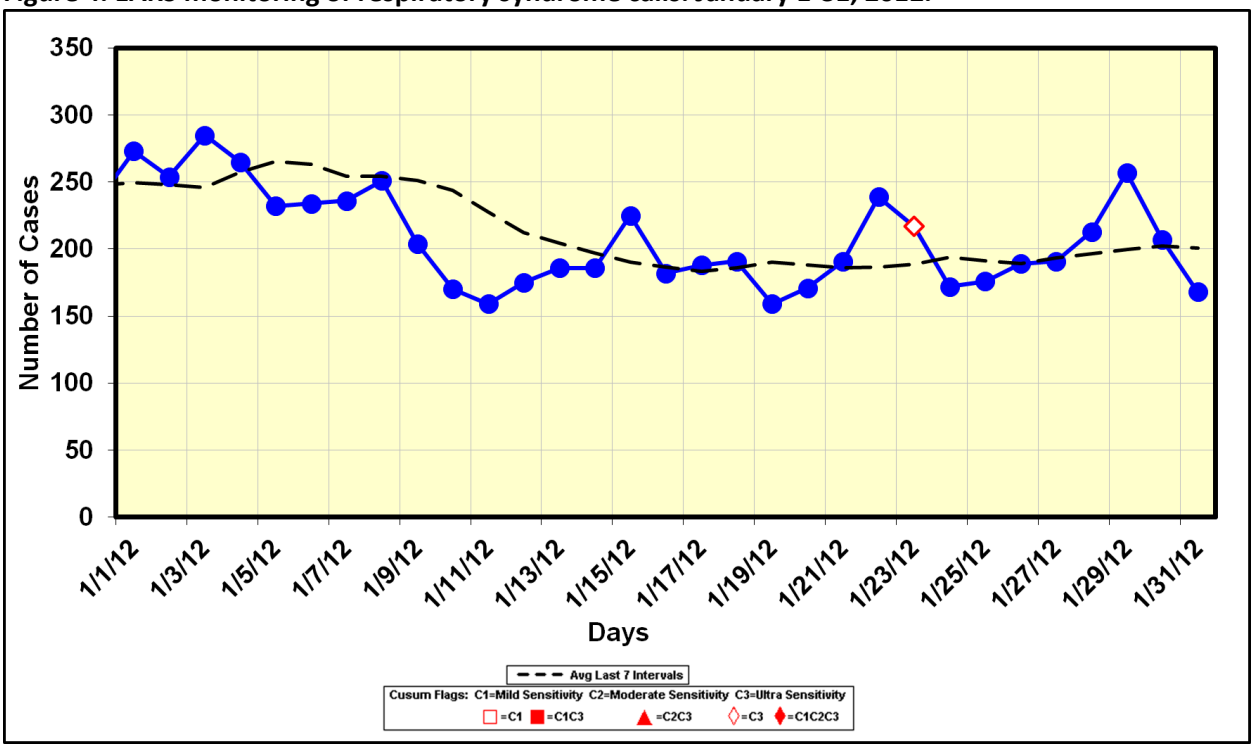


Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2012/02/01].

RESPIRATORY TELEHEALTH FLAGS

One respiratory cluster was detected in January 2012 (Table 2). The cluster was identified for the period from December 30, 2011 to January 5, 2012 in Peel Region. One respiratory EARS flag was generated on January 23rd (Figure 4).

Figure 4. EARS monitoring of respiratory syndrome calls: January 1-31, 2012.



Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2012/02/01].

Ontario Outbreak Review

The review of outbreaks section provides the total number of confirmed outbreaks from January 1 to January 31, 2012 and the total number of confirmed respiratory outbreaks for the 2011-2012 influenza season, which began on September 1, 2011. Outbreak counts during the same time period for previous years are also presented for comparison.

Table 3. Total number of confirmed outbreaks and confirmed respiratory infection outbreaks January 1 to January 31, 2010-2012.

Time period	Total Number of Confirmed Outbreaks
Total confirmed outbreaks in 2012 to January 31*	227
Total confirmed outbreaks in 2011 to January 31*	354
Total confirmed outbreaks in 2010 to January 31*	347
Total confirmed respiratory infection outbreaks for the 2011-12 season†	256
Total confirmed respiratory infection outbreaks for the 2010-11 season†	461
Total confirmed respiratory infection outbreaks for the 2009-10 season†	284

*** Source**: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2012/02/02]. Includes all outbreaks with a classification of 'Confirmed' in iPHIS.
† **Sources:** Ontario Influenza Bulletin – Surveillance Week 4 (January 22-28, 2012); Surveillance Week 4 (January 23-29, 2011); and Surveillance Week 4 (January 24-30, 2010).

Enhanced Surveillance Directives (ESD) Discontinued in January

No Enhanced Surveillance Directives were discontinued this month.

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	NOV	DEC	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	3	5	2	**77**	0.6	**105**	0.8	*-27.5*	**105**	0.8	**119**	0.9	*-36.8*	**119**	0.9
Amebiasis	24	21	27	19	17	22	27	30	21	16	18	10	**252**	1.9	**387**	2.9	*-35.6*	**387**	2.9	**577**	4.4	*-57.3*	**577**	4.4
Botulism	0	0	0	0	0	0	0	1	0	0	0	0	**1**	0.0	**1**	0.0	*-1.1*	**1**	0.0	**4**	0.0	*-75.6*	**4**	0.0
Brucellosis	0	0	0	0	0	0	1	0	0	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	351	517	472	370	315	261	161	**3,472**	26.0	**3,363**	25.4	*2.1*	**3,363**	25.4	**3,251**	24.9	*4.4*	**3,251**	24.9
Chlamydial Infections	3,012	2,661	3,357	2,991	3,014	3,076	2,767	3,087	3,195	3,142	3,310	2,724	**36,336**	271.7	**33,542**	253.7	*7.1*	**33,542**	253.7	**28,851**	220.8	*23.1*	**28,851**	220.8
Cholera	0	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	15	11	12	**299**	2.2	**338**	2.6	*-12.6*	**338**	2.6	**307**	2.3	*-4.8*	**307**	2.3
Cyclosporiasis	3	2	3	6	18	30	25	2	4	4	3	4	**104**	0.8	**168**	1.3	*-38.8*	**168**	1.3	**143**	1.1	*-28.9*	**143**	1.1
Encephalitis- Primary Viral	1	1	1	1	1	0	2	5	0	0	1	0	**13**	0.1	**15**	0.1	*-14.3*	**15**	0.1	**19**	0.1	*-33.1*	**19**	0.1
Encephalitis- Unspecified	0	0	0	0	0	1	0	0	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	10	9	**140**	1.0	**159**	1.2	*-13.0*	**159**	1.2	**130**	1.0	*5.2*	**130**	1.0
Food poisoning, all causes	0	7	5	15	5	3	3	4	5	3	6	4	**60**	0.4	**90**	0.7	*-34.1*	**90**	0.7	**48**	0.4	*22.2*	**48**	0.4
Giardiasis	109	98	96	104	110	110	129	154	106	98	74	59	**1,247**	9.3	**1,408**	10.7	*-12.5*	**1,408**	10.7	**1,511**	11.6	*-19.4*	**1,511**	11.6
Gonorrhoea (All types)	361	320	337	329	301	328	352	414	377	375	396	306	**4,196**	31.4	**3,967**	30.0	*4.6*	**3,967**	30.0	**3,553**	27.2	*15.4*	**3,553**	27.2
Group A Streptococcal Disease, Invasive	69	80	87	67	94	47	37	31	40	29	38	57	**676**	5.1	**563**	4.3	*18.7*	**563**	4.3	**472**	3.6	*40.0*	**472**	3.6
Group B Streptococcal Disease, Neonatal	2	6	4	4	7	2	8	6	5	6	3	5	**58**	0.4	**54**	0.4	*6.2*	**54**	0.4	**50**	0.4	*13.4*	**50**	0.4
Haemophilus Influenzae B Disease, Invasive	2	1	2	3	1	0	0	1	0	0	0	2	**12**	0.1	**2**	0.0	*493.1*	**2**	0.0	**4**	0.0	*193.2*	**4**	0.0
Hepatitis A	6	15	11	3	7	8	10	9	14	7	5	7	**102**	0.8	**136**	1.0	*-25.9*	**136**	1.0	**122**	0.9	*-18.3*	**122**	0.9
Hepatitis B	7	6	20	8	8	9	10	10	14	14	8	9	**123**	0.9	**129**	1.0	*-5.7*	**129**	1.0	**146**	1.1	*-17.7*	**146**	1.1
Hepatitis C	349	311	384	348	339	349	307	333	350	353	372	292	**4,087**	30.6	**4,545**	34.4	*-11.1*	**4,545**	34.4	**4,623**	35.4	*-13.6*	**4,623**	35.4
Hepatitis D	0	0	0	0	0	0	0	1	0	0	1	0	**2**	0.0	**1**	0.0	-	**1**	0.0	**2**	0.0	*-2.3*	**2**	0.0
Herpes, Neonatal	0	0	4	1	1	0	0	0	1	1	0	1	**9**	0.1	**9**	0.1	*-1.1*	**9**	0.1	**6**	0.0	*46.6*	**6**	0.0
HIV	67	61	105	59	73	79	85	60	72	66	68	68	**863**	6.5	**848**	6.4	*0.6*	**848**	6.4	**864**	6.6	*-2.4*	**864**	6.6
Infectious Syphilis	59	55	63	53	50	73	51	72	59	51	64	31	**681**	5.1	**761**	5.8	*-11.5*	**761**	5.8	**767**	5.9	*-13.2*	**767**	5.9
Influenza**	2,307	1,123	536	169	22	2	2	1	1	3	10	72	**4,248**	31.8	**1,954**	14.8	*114.9*	**1,954**	14.8	**15,503**	118.6	*-73.2*	**15,503**	118.6
Legionellosis	4	3	3	1	2	12	10	40	33	28	14	10	**160**	1.2	**116**	0.9	*36.3*	**116**	0.9	**70**	0.5	*123.4*	**70**	0.5
Leprosy	0	0	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	4	5	**57**	0.4	**60**	0.5	*-6.1*	**60**	0.5	**55**	0.4	*1.3*	**55**	0.4
Lyme Disease	0	0	1	2	9	20	23	20	8	5	3	0	**91**	0.7	**71**	0.5	*26.7*	**71**	0.5	**78**	0.6	*14.0*	**78**	0.6
Malaria	15	10	13	17	24	31	25	33	21	13	9	22	**233**	1.7	**260**	2.0	*-11.4*	**260**	2.0	**181**	1.4	*25.8*	**181**	1.4
Measles	0	1	1	0	6	0	0	0	0	0	0	0	**8**	0.1	**9**	0.1	*-12.1*	**9**	0.1	**7**	0.1	*11.7*	**7**	0.1
Meningitis- Bacterial	1	2	0	6	2	2	2	1	1	2	5	1	**25**	0.2	**32**	0.2	*-22.8*	**32**	0.2	**30**	0.2	*-18.6*	**30**	0.2
Meningitis- Other	1	0	0	1	1	0	0	0	0	1	0	0	**4**	0.0	**5**	0.0	*-20.9*	**5**	0.0	**13**	0.1	*-69.9*	**13**	0.1
Meningitis- Viral	0	3	3	1	3	1	6	8	8	3	1	3	**40**	0.3	**108**	0.8	*-63.4*	**108**	0.8	**61**	0.5	*-35.9*	**61**	0.5
Meningococcal Disease, Invasive	4	5	5	3	2	6	4	5	3	3	0	2	**42**	0.3	**34**	0.3	*22.1*	**34**	0.3	**70**	0.5	*-41.4*	**70**	0.5
Mumps	2	0	0	3	2	2	21	19	7	2	3	2	**63**	0.5	**68**	0.5	*-8.4*	**68**	0.5	**95**	0.7	*-35.2*	**95**	0.7
Ophthalmia Neonatorum	0	0	0	1	0	0	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	77	61	59	73	76	51	61	48	55	51	**726**	5.4	**814**	6.2	*-11.8*	**814**	6.2	**1,008**	7.7	*-29.6*	**1,008**	7.7
Paratyphoid Fever	9	1	5	13	5	5	4	8	7	1	2	2	**62**	0.5	**60**	0.5	*2.1*	**60**	0.5	**43**	0.3	*40.9*	**43**	0.3
Pertussis (Whooping Cough)	5	5	8	11	5	14	20	28	21	21	14	33	**185**	1.4	**101**	0.8	*81.1*	**101**	0.8	**375**	2.9	*-51.8*	**375**	2.9
Q Fever	0	0	0	1	0	3	1	3	1	2	4	0	**15**	0.1	**8**	0.1	*85.3*	**8**	0.1	**6**	0.0	*144.3*	**6**	0.0
Rubella	0	0	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**	0.0	**1**	0.0	-	**1**	0.0
Salmonellosis	192	193	207	228	213	216	306	332	251	160	141	125	**2,564**	19.2	**2,727**	20.6	*-7.1*	**2,727**	20.6	**2,325**	17.8	*7.8*	**2,325**	17.8
Shigellosis	19	14	15	12	45	31	37	21	14	12	17	12	**249**	1.9	**252**	1.9	*-2.3*	**252**	1.9	**254**	1.9	*-4.2*	**254**	1.9
Streptococcus Pneumoniae, Invasive	133	121	157	135	109	76	45	46	57	102	106	142	**1,229**	9.2	**1,208**	9.1	*0.6*	**1,208**	9.1	**1,263**	9.7	*-4.9*	**1,263**	9.7
Tetanus	0	1	0	0	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	57	63	54	46	50	46	53	**624**	4.7	**642**	4.9	*-3.9*	**642**	4.9	**631**	4.8	*-3.4*	**631**	4.8
Tularemia	0	0	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	22	15	8	11	8	4	7	7	10	6	2	4	**104**	0.8	**92**	0.7	*11.7*	**92**	0.7	**77**	0.6	*32.0*	**77**	0.6
Verotoxin Producing E. Coli including HUS	7	5	11	5	15	30	35	51	30	23	11	6	**229**	1.7	**153**	1.2	*48.0*	**153**	1.2	**166**	1.3	*34.8*	**166**	1.3
West Nile Virus Illness	0	0	0	0	1	2	2	30	18	1	2	0	**56**	0.4	**6**	0.0	*822.6*	**6**	0.0	**2**	0.0	*2636.2*	**2**	0.0
Yersiniosis	20	15	28	13	24	18	17	25	13	10	15	12	**210**	1.6	**205**	1.6	*1.3*	**205**	1.6	**244**	1.9	*-15.9*	**244**	1.9

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [2012/01/30]. Population data obtained from IntelliHEALTH Ontario, retrieved by Public Health Ontario [2011/03/30].

Note: Rates presented in the table are per 100,000 population: year-to-date (YTD) and year-to-month (YTM).

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.

* Appendix 1 does not include an exhaustive list of all reportable diseases in Ontario.

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

** For 2009 and 2010, influenza counts include the influenza A (H1N1) pdm09 counts, 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.

Glossary

Early Aberration Reporting System (EARS) – Software from the U.S. Centers for Disease Control and Prevention (CDC) 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.

C1 (mild) – Lowest sensitivity EARS flag. The baseline period for C1-MILD is obtained from the previous 7 days in closest proximity to the current value. Therefore, when this flag is produced on a particular day, the next day is less likely to produce a flag because the elevated count from the previous day will be incorporated into the new baseline period.

C2 (medium) – EARS flag that uses a 7-day baseline period, but with 2-days lag between the baseline and the current day. For example, on the 10th day of surveillance the baseline data will be from day 1 to day 7. This flag is more likely to note high consecutive values, because they are not immediately incorporated into the baseline period as for C1 flag.

C3 (ultra) – Highest sensitivity EARS flag. Uses the baseline period as the C2-MEDIUM, but the threshold is based on a 3-day average run length of the one-sided positive CUSUM. It is useful for identifying aberrations that gradually increase over short periods of time.

SaTScan – Software that analyzes geospatial and temporal data using space-time scan statistic. It utilizes thousands or millions of overlapping cylinders to define the scanning window with its base representing the geographical area of a potential outbreak and its height representing the number of days. For each cylinder the observed/expected ratio is calculated and the most likely cluster is identified, along with secondary clusters. More information on SaTScan can be found at www.satscan.org.