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Monthly Infectious Diseases Surveillance Report

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This is the fourth issue of a new monthly report produced by Public Health Ontario (PHO) for the public health community of Ontario. 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

TUBERCULOSIS

TB is a disease of international importance. According to the WHO report on global tuberculosis control, the three countries with the largest number of incident cases in 2010 were India, China and South Africa (4). Canada has a relatively low incidence rate of TB. The majority of tuberculosis cases in Canada are related to reactivation of previously acquired infections among individuals who have moved to Canada from areas of relatively high TB prevalence.

Tuberculosis (TB) is caused by mycobacteria belonging to the *Mycobacterium tuberculosis* complex (MTBC). MTBC is a genetically related group that encompasses *Mycobacterium tuberculosis* (MTB), *M. bovis, M. bovis* BCG, *M. africanum*, *M. caprae, M. microti* and *M. pinnipedii*. Nontuberculous mycobacteria (NTM) include all mycobacterial species except those that cause TB. *Mycobacterium tuberculosis* is mainly acquired through inhalation of droplet nuclei from someone who is infected with respiratory TB. These nuclei are created by expiratory efforts such as coughing, sneezing, singing and playing wind instruments. They usually settle in the lungs which is where the infection originates.

Transmission of TB depends on the infected person's ability to produce airborne infectious droplets. Adolescents and adults with laryngeal TB are considered more infectious than children, although, on occasion, children can be highly infectious. There must be viable bacteria in the sputum of the source case as well as

aerosolization (force and vigor of coughing) of sputum. In order to prevent transmission, early diagnosis, respiratory isolation, and effective treatment are required.

Latent TB infection (LTBI) occurs when MTB remains dormant. People with LTBI are not infectious. They do not show signs and symptoms of TB but if their infection is detected they can be treated with prophylactic medication for approximately 6 months. This will reduce their risk of progressing to active TB disease. Without consideration of other risk factors, a person with LTBI is at highest risk of developing active disease within the first two years of being infected (5%); thereafter the risk is 5% over a patient's lifetime (2).

A tuberculin skin test (TST) is used to test for LTBI. This test consists of an intradermal injection usually administered in the forearm. The forearm is examined 48-72 hours later for a reaction. A positive reaction is demonstrated by localized induration (swelling) at the site of the injection of a specific size or greater. Interferon-gamma release assays (IGRAs) are new, in vitro T-cell based assays used to test for LTBI (2).

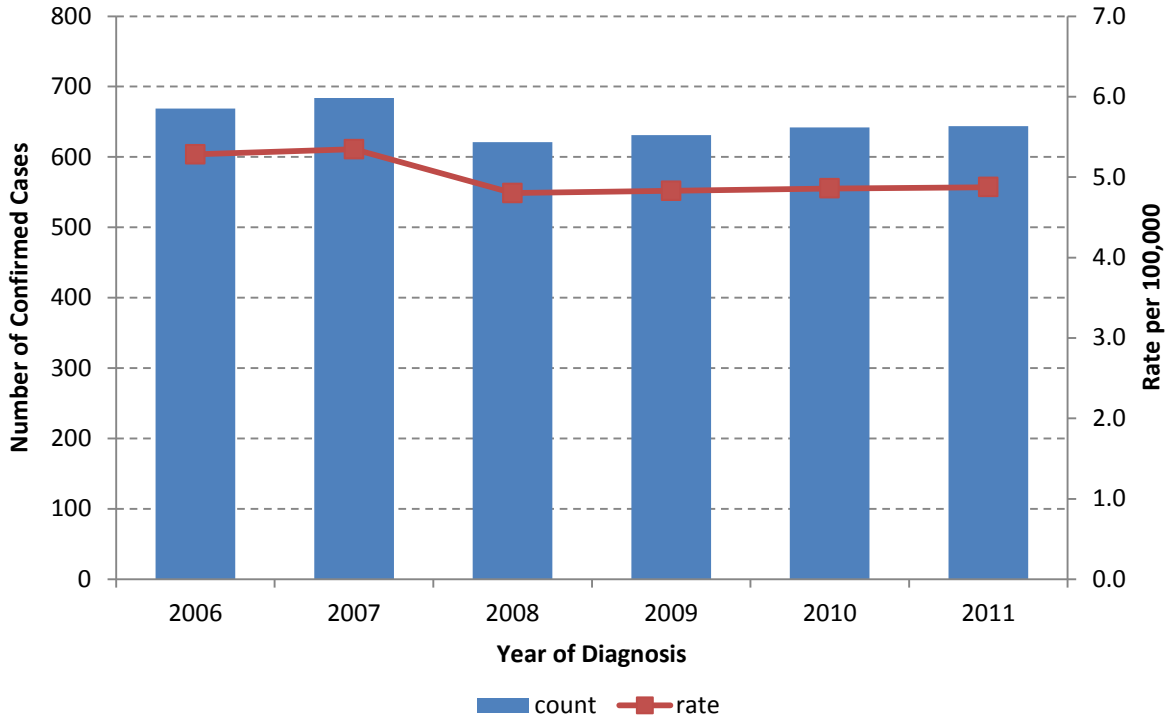
Active TB is the infectious form of TB. Pulmonary TB is found in the throat or lungs. Some signs of active disease are: a new cough lasting two or more weeks, coughing up blood, decreased appetite, weight loss, night sweats and fever. TB disease can be treated with targeted antibiotics. It is important for all medication to be taken or resistance can develop. TB medication may be taken anywhere from 9 months for up to 2 years, depending on an individual's response and adherence to treatment. Due to such a long treatment regime, and side effects from these medications, directly observed therapy is often used to support the patient through treatment.

Multi-drug resistant (MDR) TB bacteria are resistant to two of the first line medications, isoniazid (INH) and rifampin. Extremely drug resistant TB (XDR) is resistant to INH, rifampin, any fluoroquinolone, and to at least one of the three injectable second-line drugs. There have also been recent reports of TB isolates completely "resistant" to all possible drug therapies, although it is difficult to ascertain resistance to some drugs as there are no standardized in vitro assays.

Extra-pulmonary TB is considered to be a form of TB that is usually not infectious. These extra-pulmonary sites, such as lymph nodes, kidneys and other organs are seeded at the time of primary infection due to bacteria moving through the lymphatic system then into distant capillary beds.

In 2011, a total of 644 cases of TB were diagnosed in Ontario; this includes both laboratory and clinically confirmed cases, representing a rate of 4.9 cases per 100,000 population. Since 2006, the rate of TB in Ontario has been fairly stable ranging from 4.9 cases per 100,000 to 5.3 cases per 100,000 population (Figure 1). This rate is similar to the Canadian rate, which ranged from 5.1 cases per 100,000 in 2006 to 4.6 cases per 100,000 in 2010 (3). The age and sex distribution of TB cases in Ontario has remained similar over the last 5 years. In 2011, males continued to account for a larger number of cases (328 cases, 5.0 cases per 100,000) than females (316 cases, 4.7 cases, per 100,000). Individuals aged 25-44 years made up the largest proportion of TB cases, representing 34.9% of the total cases in 2011 for a rate of 6.1 cases per 100,000. However, similar to Canadian trends, the overall age specific rate for Ontario is highest for those aged 75 years and older (10.29 cases per 100,000 population).

Figure 1. Incidence of Confirmed[1] Cases of Tuberculosis in Ontario: 2006-2011[2]



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by PHO [01/03/2012].

[1]Confirmed cases refer to cases who meet the provincial confirmed case definition for the year in which they were reported (5).

[2]2011 data is preliminary and may change due to data clean up.

Most TB cases in Canada occur in foreign-born individuals (2) and between 2000 and 2008, 44.9% to 59.3% of immigrant arrivals to Canada were destined for Ontario (1). Most immigrants to Ontario in 2008 arrived from India, China, The Philippines, Pakistan and the United States (1). TB patterns in Ontario are reflective of this immigration pattern and foreign-born cases of TB continue to represent the largest proportion of the overall case count when compared with the Canadian-born non-Aboriginal and Canadian-born Aboriginal populations (Table 1). The top three countries of birth for TB cases diagnosed in Ontario between 2006 and 2011 were India (16.8%; (654/3891), The Philippines (12.5%; 486/3891) and China (9.5%; 370/3891). In 2011, 78.4% (505/644) of TB cases were born outside of Canada, 8.4% (54/644) were Canadian-born non-Aboriginals and 1.6% (10/644) were Canadian-born Aboriginal peoples. Origin was unknown for the remaining 11.6% (75/644) of cases. In 2010, the overall national rate of tuberculosis in Aboriginal peoples was eight times higher than the rate observed in Ontario: 26.4 cases per 100,000 nationally versus 3.3 cases per 100,000 in Ontario (3). (Table 1).

Across Ontario's 36 health units, TB incidence ranged from 0.0 to 11.3 cases per 100,000 population in 2011. Nine health units did not report any cases of TB in 2011. Four health units had rates higher than the provincial rate of 4.9 cases per 100,000 population (Ottawa at 5.24, Peel Region at 10.46, Toronto at 11.32 and York Region at 5.09). Within Ontario, the Toronto census metropolitan area and Ottawa remain the top two destinations for immigrants, which is reflected in the higher TB rates in these four health units.

Table 1. Confirmed TB cases by diagnosis year and top 10 countries of birth; Ontario, 2006-2011[3]

Birth Country	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	**Total**
Born Outside Canada							
India	114	110	105	121	111	93	654
Philippines	76	70	88	87	81	84	486
China	78	72	59	58	57	46	370
Viet Nam	38	32	37	28	42	30	207
Pakistan	36	38	27	17	24	22	164
Sri Lanka	21	29	22	12	21	21	126
Somalia	20	20	26	20	17	15	118
Hong Kong	14	19	13	13	17	12	88
Ethiopia	24	12	10	15	12	7	80
Bangladesh	10	15	8	11	14	7	65
Other	154	187	149	163	171	156	980
Unknown Country of Birth[4]	5	0	5	1	0	12	23
Total	***590***	***604***	***549***	***546***	***567***	***505***	***3361***
Born in Canada							
Inuit	0	1	2	1	1	4	9
Non-Aboriginal	51	48	53	69	54	54	329
Registered/Status Indian, Other Aboriginal[5]	7	13	7	9	5	6	47
Total	***58***	***62***	***62***	***79***	***60***	***64***	***385***
Unknown/Missing							
No birth information available	21	18	10	6	15	75	145
Total	***21***	***18***	***10***	***6***	***15***	***75***	***145***
TOTAL	***669***	***684***	***621***	***631***	***642***	***644***	***3891***

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by PHO [01/03/2012].

[3]2011 data is preliminary and may change due to data clean up.

[4]Unknown country of Birth includes cases who reported being born outside of Canada, but birth country is blank or unknown

[5] Registered/Status Indian may include cases that are classified as 'other aboriginal'

In advance of World TB day on March 24th, Health Canada introduced a tuberculosis campaign for First Nations and Inuit Health. To learn more about this campaign, please visit www.healthycanadians.gc.ca/tuberculosis or join the conversation on Facebook.com/HealthyFirstNationsandInuit

Significant Reportable Disease Activity

Table 2 provides a list of reportable diseases in 2012 by month for which counts were significantly higher than expected compared to previous year-to-month (YTM) counts. The table does not include increases that have been determined to be the result of functions beyond the natural epidemiologic course of the disease (e.g. inaccurate case classification). Ongoing increases that have already been recognized and are under review are also excluded as in the case of chlamydia. Appendix 1 contains year-to-date reportable disease statistics for 2012 compared to 2011 and 2010.

There were significant changes in the rates of influenza, legionellosis, and pertussis for the period January 2012 in comparison to similar periods in previous years (Table 2). The increase in both the YTM count and rate for pertussis in January 2012 compared to 2011 and 2010 can be attributed to an ongoing outbreak in five southwestern Ontario health units. This outbreak started in November 2011 and continued into 2012.

Causes for increases in the YTM count and rate for legionellosis in 2012 compared to 2011 and 2010 are unknown at this time. However, higher levels of legionellosis were observed in Ontario from August through to December 2011. While the cause of this increase has not been identified, it may have been related to increased testing, surveillance and/or shifts in the start and conclusion of seasonal activity. The Monthly Infectious Diseases Surveillance Report December 2011 (Volume 1, Issue 1) provides additional details about the epidemiology of legionellosis in Ontario. (http://www.oahpp.ca/resources/monthly-infectious-diseases-surveillance-report.html)

For influenza, the January 2012 YTM count and rate decreased significantly in comparison to 2011, with influenza B accounting for a majority of the reported cases for the first time since the 2009-2010 influenza season. Many factors influence the timing and intensity of influenza seasons. For this current season, a warmer than usual winter (6-7), higher levels of population immunity to the circulating influenza A strain which is covered in this season's vaccine, and lower levels of immunity to the circulating influenza B strain which is not contained in this seasons influenza vaccine have been observed. These lower influenza A rates offset the increase in influenza B, resulting in lower than expected overall influenza rates in January 2012.

Table 2. Summary of significant* Year-to-Month (YTM) increases in reportable disease activity rates, for the periods January 1st to 31st in 2010, 2011 and 2012

Disease	2012		2011			2010		
	Confirmed cases	YTM rate per 100,000	Confirmed cases	YTM rate per 100,000	% Difference (YTM 2012-2011)†	Confirmed cases	YTM rate per 100,000	% Difference (YTM 2012-2010)†
Influenza	217	1.6	2307	17.3	-90.7	32	0.2	562.0
Legionellosis	7	0.1	4	0.0	72.9	1	0.0	583.3
Pertussis	63	0.5	5	0.0	1144.9	4	0.0	1437.5

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 [2012/03/15].

* Statistically significant differences (P<0.05) were reported where diseases reported in 2012 differed significantly from either 2010 or 2011 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.

HEALTH UNIT ADVISES HOW TO REDUCE INFECTIONS INCLUDING MENINGOCOCCCAL DISEASE

The Middlesex-London Health Unit reminded residents how to reduce the risk of becoming sick as viruses and bacteria, including meningococcal disease, may be more likely to circulate at this time of year. The advice comes after the Health Unit was notified of a case of meningococcal disease in a university student.

Meningococcal bacteria are carried in the nose and throat and are spread when secretions from these areas come in contact with the mouth or nose of another person. The bacteria, along with other bacteria and viruses, can spread when people share cigarettes, drinks, food or other objects that have been in someone else's mouth. The health unit recommended avoiding these activities, and taking additional protective measures such as getting recommended vaccinations and frequent hand washing or use of alcohol-based hand sanitizers.

http://www.healthunit.com/article.aspx?id=17807

ESTIMATING INFLUENZA VACCINE EFFECTIVENESS IN COMMUNITY-DWELLING ELDERLY PATIENTS USING THE INSTRUMENTAL VARIABLE ANALYSIS METHOD

Health administrative databases in Ontario were linked to examine the influenza vaccine effectiveness by measuring the association between influenza vaccination and all-cause mortality among community-dwelling individuals older than 65 years for 9 influenza seasons (2000-2001 to 2008-2009). The results showed that influenza vaccination is associated with reductions in hospitalizations for pneumonia and influenza and all-cause mortality during the influenza season but not mortality alone. The authors concluded that current guidelines recommending annual vaccination against influenza for elderly individuals should remain in place until more definitive evidence has been collected. With more accurate estimates of influenza vaccine effectiveness, informed decision making with respect to effective strategies for reducing burden at the individual and population levels can be made.

http://archinte.ama-assn.org/cgi/content/short/archinternmed.2011.2038

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 are 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 January 2012 to the end of February 2012, five distinct SaTScan clusters (Table 3) and four EARS flags were identified in Telehealth data. Two separate GI clusters in the Eastern Ontario health region as well as one fever/ILI cluster in neighbouring health units remained significant for up to three days. Two separate respiratory clusters were also detected. The affected health units were notified of these findings.

Table 3. Significant fever/ILI, gastrointestinal (GI), and respiratory syndrome clusters identified by SaTScan in February

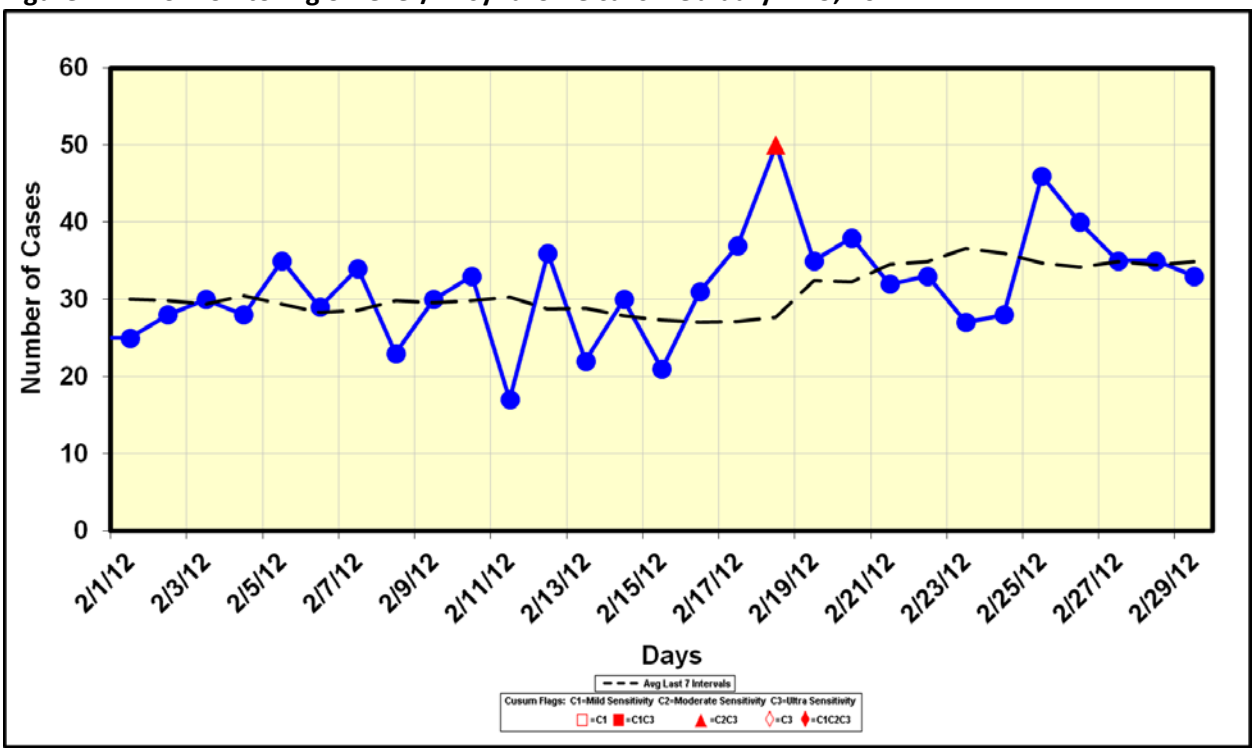
Cluster Type	Cluster	FSA	# FSAs in the cluster	Health Units Affected	Rad (km)	Obs	Exp	Obs/ Exp	p
Fever/ ILI	Feb 20 – Feb 26[1]	K0J-1	52	REN, OTT	187.26	22	10.61	2.07	0.039
	Feb 21 – Feb 27[1]	K0J-1	52	REN, OTT, NPS	187.26	29	14.59	1.99	0.010
GI	Jan 25 – Jan 31[2]	K1Y	15	OTT	8.40	38	19.60	1.94	0.012
	Jan 26 – Feb 1[2]	K1P	13	OTT	6.39	35	16.44	2.13	0.002
	Feb 3 – Feb 9[3]	K4C	16	OTT	23.66	22	8.19	2.69	0.011
	Feb 6 – Feb 12[3]	K4B	13	OTT, EOH	19.32	28	12.78	2.19	0.010
	Feb 7 – Feb 13[3]	K4B	13	OTT, EOH	19.32	33	16.62	1.98	0.014
Resp	Feb 1 – Feb 7	N0R	24	WEC, CHK	36.73	22	8.18	2.69	0.013
	Feb 3 – Feb 9	N0M	43	MSL, LAM, ELG, HUR, PDH, CHK	67.66	43	23.01	1.87	0.044

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 [2012/03/01].
1 Identified Fever/ILI clusters that represent a single event that remained significant for two consecutive days.
2 Identified GI clusters that represent a single event that remained significant for two consecutive days.
3 Identified GI clusters that represent a single event that remained significant for three days.

FEVER/ILI TELEHEALTH

For the month of February 2012, one fever/ILI cluster that remained significant for two consecutive days was detected. The cluster of calls was made from February 20, 2011 to February 27, 2012 and was initially identified in Renfrew and Ottawa and later expanded to include North Bay-Parry Sound (Table 3). An EARS flag indicating an overall increase in fever/ILI calls was generated during this period on February 18th 2012 (Figure 2).

Figure 2. EARS monitoring of fever/ILI syndrome calls: February 1-29, 2012.

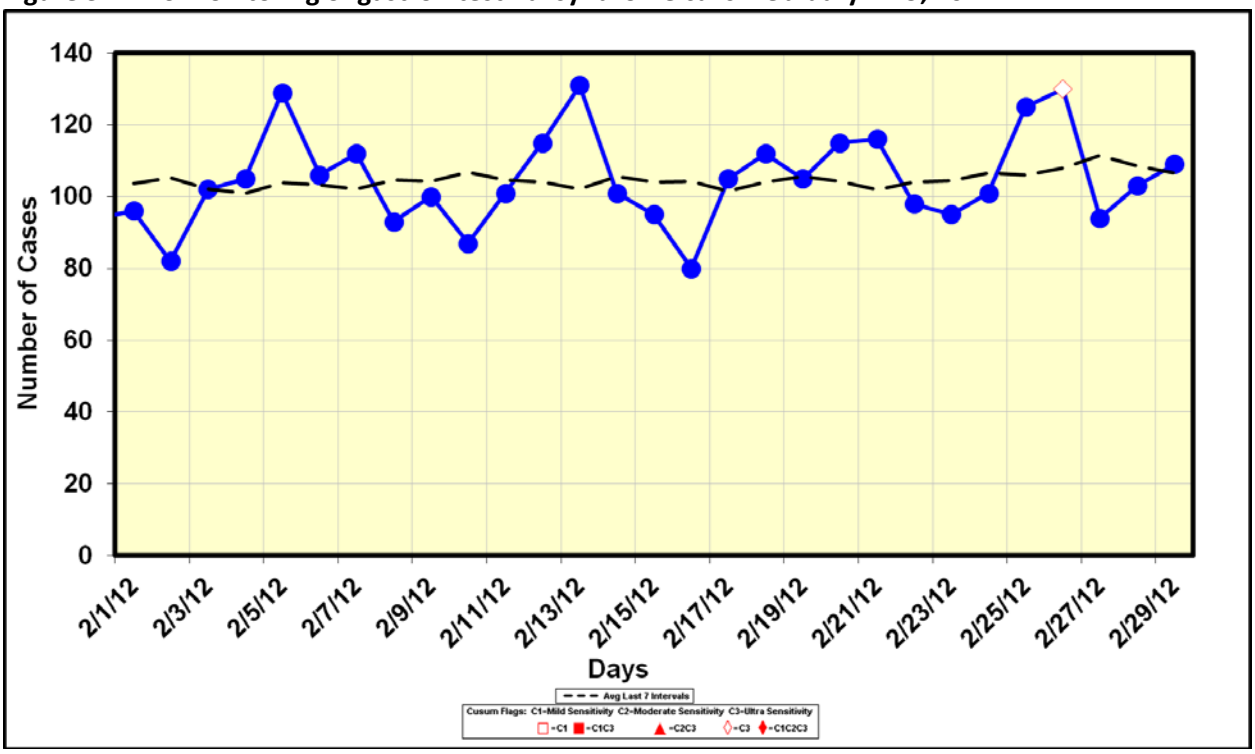


Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2012/03/05].

GASTROINTESTINAL (GI) TELEHEALTH

Two distinct GI clusters were detected in February 2012. The first cluster of calls was made from January 25, 2012 to February 1, 2012 and was identified in Ottawa Health Unit. The cluster remained significant for two consecutive days. The second GI cluster of calls was made from February 3, 2012 to February 13, 2012 and was identified in Ottawa and Eastern Ontario health units (Table 3). One GI EARS flag was generated on February 26th, indicating an increase over the expected number of calls pertaining to GI symptoms (Figure 3). Throughout February, the number of calls made per day ranged from 80 to 131 (Figure 3).

Figure 3. EARS monitoring of gastrointestinal syndrome calls: February 1-29, 2012.

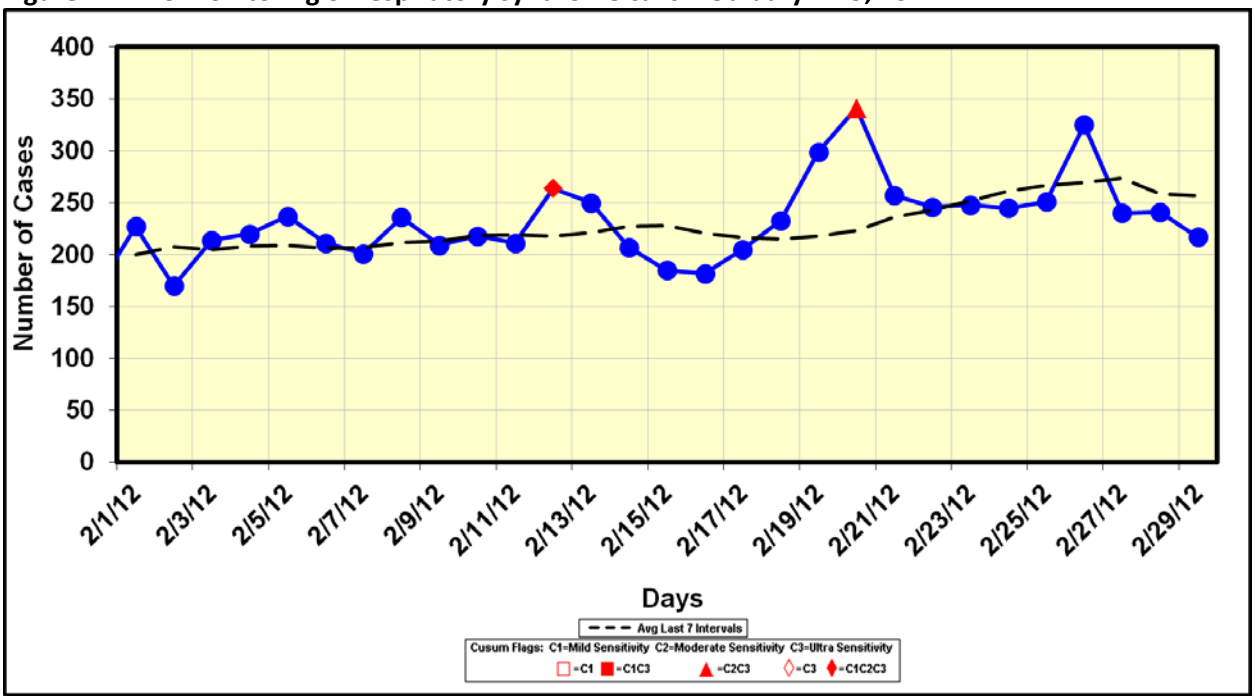


Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2012/03/12].

RESPIRATORY TELEHEALTH

Two geographically distinct respiratory clusters were detected in February 2012 (Table 3). The first cluster was observed for the period February 1 to February 7 and was identified in Windsor-Essex and Chatham-Kent health units. The second cluster was detected for the period February 3 to February 9 in six health units in Southwestern Ontario, which also included Chatham-Kent as well as Middlesex-London, Lambton, Elgin-St. Thomas, Huron County and Perth District. Respiratory EARS flags were generated on February 12th and 20th (Figure 4).

Figure 4. EARS monitoring of respiratory syndrome calls: February 1-29, 2012.



Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2012/03/12].

Ontario Outbreak Review

The review of outbreaks section provides the total number of confirmed outbreaks from February 1 to February 29, 2012 and the total number of confirmed respiratory outbreaks for the 2011-2012 influenza season. Outbreak counts during the same time period for 2010 and 2011 are also presented for comparisons.

Table 4. Total number of confirmed outbreaks and confirmed respiratory infection outbreaks January 1 to February 29, 2012 and January 1 to February 28, 2010 & 2011.

Time period	Total Number of Confirmed Outbreaks
Total confirmed outbreaks in 2012 to February 29*	563
Total confirmed outbreaks in 2011 to February 28*	647
Total confirmed outbreaks in 2010 to February 28*	693
Total confirmed respiratory infection outbreaks for the 2011-12 season†	337
Total confirmed respiratory infection outbreaks for the 2010-11 season†	610
Total confirmed respiratory infection outbreaks for the 2009-10 season†	351

* **Source:** Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2012/03/06]. Includes all outbreaks with a classification of 'Confirmed' in iPHIS.
† **Sources**: Ontario Influenza Bulletin - Surveillance Week 8 (February 19 - 25, 2012); Surveillance Week 8 (February 20 - 26, 2011); and Surveillance Week 8 (February 21 - 27, 2010)

Enhanced Surveillance Directives (ESD) Discontinued in February

No Enhanced Surveillance Directives were discontinued this month.

Appendix – Reportable Diseases

Appendix 1. Confirmed cases of reportable disease* by month: Ontario 2010-2012

REPORTABLE DISEASE	2012														2011					2010				
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YTD	YTD Rate	YTM	YTM Rate	% Difference (YTM 2012 - 2011)†	2011 Total	2011 Rate	YTM	YTM Rate	% Difference (YTM 2012 - 2010)†	2010 Total	2010 Rate
AIDS	7												7	0.1	8	0.1	-13.5	85	0.6	12	0.1	-43.1	104	0.8
Amebiasis	15												15	0.1	21	0.2	-29.4	208	1.6	36	0.3	-59.3	312	2.4
Botulism	0												0	0.0	0	0.0	-	1	0.0	0	0.0	-	1	0.0
Brucellosis	0												0	0.0	0	0.0	.	1	0.0	0	0.0	.	2	0.0
Campylobacter Enteritis	186												186	1.4	197	1.5	-6.7	3,493	26.1	211	1.6	-13.9	3,365	25.5
Chlamydial Infections	3,303												3,303	24.4	3,016	22.6	8.2	36,362	272.0	2,775	21.0	16.2	33,542	253.9
Cryptosporidiosis	11												11	0.1	14	0.1	-22.4	300	2.2	17	0.1	-36.8	338	2.6
Cyclosporiasis	2												2	0.0	3	0.0	-34.1	105	0.8	6	0.0	-67.5	168	1.3
Encephalitis- Primary Viral	2												2	0.0	1	0.0	97.6	14	0.1	1	0.0	95.2	15	0.1
Encephalitis- Unspecified	1												1	0.0	0	0.0	-	1	0.0	0	0.0	-	1	0.0
Encephalitis/Meningitis	13												13	0.1	8	0.1	60.6	140	1.0	7	0.1	81.3	156	1.2
Food poisoning, all causes	5												5	0.0	0	0.0	.	64	0.5	35	0.3	-86.1	90	0.7
Giardiasis	62												62	0.5	109	0.8	-43.8	1,265	9.5	114	0.9	-46.9	1,410	10.7
Gonorrhoea (All types)	373												373	2.8	361	2.7	2.1	4,200	31.4	332	2.5	9.7	3,968	30.0
Group A Streptococcal Disease, Invasive	64												64	0.5	69	0.5	-8.4	679	5.1	67	0.5	-6.8	563	4.3
Group B Streptococcal Disease, Neonatal	4												4	0.0	2	0.0	97.6	58	0.4	5	0.0	-21.9	54	0.4
Haemophilus Influenzae B Disease, Invasive	0												0	0.0	2	0.0	-100.0	12	0.1	0	0.0	-	2	0.0
Hepatitis A	4												4	0.0	6	0.0	-34.1	104	0.8	10	0.1	-61.0	136	1.0
Hepatitis B	4												4	0.0	7	0.1	-43.5	126	0.9	7	0.1	-44.2	129	1.0
Hepatitis C	348												348	2.6	351	2.6	-2.0	4,127	30.9	383	2.9	-11.3	4,543	34.4
Hepatitis D	0												0	0.0	0	0.0	-	2	0.0	0	0.0	-	1	0.0
Herpes, Neonatal	0												0	0.0	0	0.0	-	8	0.1	2	0.0	-100.0	9	0.1
HIV	80												80	0.6	66	0.5	19.8	866	6.5	57	0.4	37.0	848	6.4
Infectious Syphilis	46												46	0.3	60	0.4	-24.3	710	5.3	77	0.6	-41.7	761	5.8
Influenza**	217												217	1.6	2,307	17.3	-90.7	4,250	31.8	32	0.2	562.0	1,954	14.8
Legionellosis	7												7	0.1	4	0.0	72.9	160	1.2	1	0.0	583.3	116	0.9
Leprosy	0												0	0.0	0	0.0	-	0	0.0	1	0.0	-100.0	1	0.0
Listeriosis	2												2	0.0	5	0.0	-60.5	57	0.4	5	0.0	-61.0	60	0.5
Lyme Disease	0												0	0.0	0	0.0	-	88	0.7	0	0.0	-	71	0.5
Malaria	10												10	0.1	15	0.1	-34.1	232	1.7	22	0.2	-55.6	260	2.0
Measles	0												0	0.0	0	0.0	-	8	0.1	1	0.0	-100.0	9	0.1
Meningitis- Bacterial	5												5	0.0	1	0.0	394.0	25	0.2	3	0.0	62.7	32	0.2
Meningitis- Other	0												0	0.0	1	0.0	-100.0	4	0.0	0	0.0	-	5	0.0
Meningitis- Viral	3												3	0.0	0	0.0	-	40	0.3	5	0.0	-41.4	111	0.8
Meningococcal Disease, Invasive	2												2	0.0	4	0.0	-50.6	43	0.3	4	0.0	-51.2	34	0.3
Mumps	1												1	0.0	2	0.0	-50.6	63	0.5	34	0.3	-97.1	68	0.5
Ophthalmia Neonatorum	0												0	0.0	0	0.0	-	1	0.0	0	0.0	-	5	0.0
Other Syphilis	40												40	0.3	58	0.4	-31.9	747	5.6	77	0.6	-49.3	817	6.2
Paratyphoid Fever	5												5	0.0	9	0.1	-45.1	62	0.5	14	0.1	-65.1	60	0.5
Pertussis (Whooping Cough)	63												63	0.5	5	0.0	1144.9	217	1.6	4	0.0	1437.5	101	0.8
Q Fever	0												0	0.0	0	0.0	-	15	0.1	0	0.0	-	8	0.1
Rubella	1												1	0.0	0	0.0	-	0	0.0	0	0.0	-	1	0.0
Salmonellosis	159												159	1.2	192	1.4	-18.2	2,578	19.3	207	1.6	-25.0	2,727	20.6
Shigellosis	31												31	0.2	19	0.1	61.2	253	1.9	20	0.2	51.3	252	1.9
Streptococcus Pneumoniae, Invasive	125												125	0.9	135	1.0	-8.5	1,238	9.3	114	0.9	7.0	1,208	9.1
Tetanus	0												0	0.0	0	0.0	-	1	0.0	0	0.0	-	1	0.0
Tuberculosis	43												43	0.3	50	0.4	-15.0	642	4.8	38	0.3	10.5	642	4.9
Tularemia	0												0	0.0	0	0.0	-	0	0.0	0	0.0	-	2	0.0
Typhoid Fever	5												5	0.0	22	0.2	-77.5	104	0.8	8	0.1	-39.0	92	0.7
Verotoxin Producing E. Coli including HUS	6												6	0.0	7	0.1	-15.3	231	1.7	11	0.1	-46.8	153	1.2
West Nile Virus Illness	0												0	0.0	0	0.0	-	55	0.4	0	0.0	-	6	0.0
Yellow Fever	1												1	0.0	0	0.0	-	0	0.0	0	0.0	-	0	0.0
Yersiniosis	14												14	0.1	20	0.1	-30.8	211	1.6	22	0.2	-37.9	205	1.6

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [2012/02/24]. Population data obtained from IntelliHEALTH Ontario, retrieved by Public Health Ontario [2012/03/15].

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.

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