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The Monthly Infectious Diseases Surveillance Report is produced by Public Health Ontario (PHO) for the public health community of Ontario. This will be the last issue of the report in its current format, with new changes being implemented in our upcoming May 2013 issue. We welcome feedback by email to SurveillanceServices@oahpp.ca.

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

In this issue:

Infectious Disease in Focus

FOODBORNE BOTULISM

Botulism is a rare but serious illness. There are four naturally occurring forms of botulism: foodborne, wound, infant and colonization (adult intestinal toxemia). Foodborne botulism is caused by consumption of food in which *Clostridium botulinum* has grown and produced botulinum toxin. Wound botulism is caused by the production of toxin in a wound infected with *C. botulinum*. Infant and adult colonization botulism are caused by ingestion of *C. botulinum* spores and subsequent growth of the organism and production of toxin in the intestine. Infant botulism is the most common form of botulism in the United States, affecting children under one year of age when *C. botulinum* colonizes the intestinal tract before the normal bowel flora is established.[1] Conversely, colonization botulism in adults is relatively rare, occurring in those with an anatomical or functional bowel abnormality (e.g., Crohn's disease) or patients on long-term antimicrobial therapy.[1] Person-to-person transmission of botulism has not been documented.

C. botulinum is an anaerobic, Gram-positive, spore-forming bacillus that produces the neurotoxin causing botulism.[2,3] *C. botulinum* is characterized by heat-resistant spores that are ubiquitous in the environment[2,4] and found in the intestinal tract of many animals, including fish.[1] Low oxygen environments are required for germination of *C. botulinum* spores and subsequent production of botulinum toxin.[3] Such environments can be created in lightly preserved (e.g. fermented, salted and smoked meat products) and inadequately heat processed low-acid, low-salt and low-sugar foods (e.g. home-canned vegetables). Outbreaks have occurred as a result of consumption of uneviscerated smoked or salted fish, baked potatoes wrapped in foil, carrot juice, improperly handled potpies and minced garlic in oil.[1,4,5] The occurrence of foodborne botulism in northern Canada, Alaska and Greenland has been linked to consumption of traditional foods prepared by aging meat from marine mammals and fish.[6]

There are seven distinct subtypes of botulinum toxin (types A through G). Types A, B, E and, less commonly, F are known to cause human illness.[3,4,7] All forms of botulism share similar clinical features and can be fatal if not treated immediately.[4,5] Symptoms include blurred or double vision (diplopia); drooping eyelids (ptosis); slurred speech; difficulty swallowing (dysphagia); and flaccid, symmetric, descending paralysis.[3,8,9] It may take several months to recover from paralysis.[1,4] Progression to respiratory arrest may lead to death.[3,5,8] If treatment is not immediately administered, the case fatality rate is as high as five to 10% .[2,3,10] After ingestion of food contaminated with botulinum toxin, neurological symptoms may begin to appear within 12 to 36 hours.[1,10] The shorter the incubation period, the more severe the disease and higher the case fatality rate.[3]

Diagnosis and treatment of botulism must not be delayed, as symptoms progress quickly and necessitate immediate medical attention. Nerve conduction tests (e.g., electromyography [EMG]) may be used to support a botulism diagnosis.[4] Botulism antitoxin is readily available and effective against type A, B and E neurotoxins. In Ontario, the antitoxin supply is provided by the Ontario Government Pharmaceutical and Medical Supply Services.[9] Botulism antitoxin interrupts the progression of paralysis, and decreases the duration of symptoms and dependence on mechanical ventilation.[5] For foodborne botulism, confirmation of botulism diagnosis includes detection of botulinum toxin in serum, stool, gastric aspirate or an implicated food source, or isolation of *C. botulinum* from a patient's gastric aspirate or stool.[3] In Canada, clinical and food specimens are collected and submitted to the Botulism Reference Service in Ottawa to test for the presence of botulinum toxin, viable *C. botulinum*, and identification of toxin type, if applicable.

Botulism is one of the rarest reportable enteric diseases in Ontario. Between 2003 and 2012, a total of 29 confirmed cases of botulism (all types) were reported provincially (Table 1). During this ten year period, foodborne botulism was reported with the highest frequency, representing 45% (13/29) of cases. Infant and adult colonization botulism represented 34% (10/29) and 17% (5/29) of cases, respectively. For one case reported in 2009, there was insufficient clinical and laboratory evidence to classify them as having foodborne or colonization botulism. No cases of wound botulism were reported during this period.

Table 1. Confirmed cases of botulism by form of disease: Ontario, 2003 to 2012

Year	Foodborne	Infant	Colonization	Unspecified	Total
2003	-	1	-	-	**1**
2004	2	-	-	-	**2**
2005	-	1	-	-	**1**
2006	2	1	2	-	**5**
2007	1	4	1	-	**6**
2008	-	-	2	-	**2**
2009	3	-	-	1	**4**
2010	-	1	-	-	**1**
2011	1	1	-	-	**2**
2012	4	1	-	-	**5**
Total	**13**	**10**	**5**	**1**	**29**

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2013/03/13].

Of the 13 foodborne botulism cases reported in the last ten years, 62% (8/13) have been female. Cases have ranged in age from 52 to 84 years, with an average age of 65 years. The older age profile of botulism cases compared to other enteric diseases may reflect the increased likelihood that older individuals will prepare and consume high risk foods such as home-canned vegetables. Foodborne botulism cases reported since 2003 have originated from Toronto (five cases); Peel Region (three cases); Kingston, Frontenac, Lennox & Addington (two cases); Halton Region (one case); Simcoe Muskoka District (one case); and Waterloo Region (one case).

The sporadic and widespread distribution of foodborne botulism cases in Ontario is explained by the distribution of risk behaviours. Family and small local outbreaks are typically linked to home-prepared or home-canned foods that are shared by a limited number of people.[11] Forty-six percent (6/13) of foodborne botulism cases reported in Ontario between 2003 and 2012 consumed home-canned foods prior to falling ill. In Ontario and elsewhere, cases rarely result from contaminated commercial products that are more widely distributed, although such outbreaks have been documented.[12,13] In 2006, two cases of foodborne botulism in Ontario were linked to an international outbreak attributed to commercially-produced carrot juice.[13] Insufficient refrigeration of the juice is thought to have resulted in botulinum toxin production, prompting the U.S. Food and Drug Administration to issue industry guidance to reduce the risk of botulism intoxication from low-acid juices.[13]

The most recent outbreak of foodborne botulism in Ontario occurred in April 2012. The outbreak was comprised of three cases from Peel Region who attended a Sham el-Nessim gathering at a private home. Fesikh, a traditionally prepared salted and fermented fish, was identified as a common exposure by attending physicians. Notably, fesikh had been reported as the cause of type E botulism in past outbreaks in other jurisdictions.[7,14] An Ontario Outbreak Investigation Coordinating Committee (OOICC) was established and the resulting investigation led to a Class I recall of the implicated fesikh product[15], which had been made at a retail food premise in Toronto (Figure 1). Fesikh, and other products made from uneviscerated fish, are known to be a high risk item for foodborne botulism due to the concentration of *C. botulinum* spores in the viscera and the difficulty in reaching these areas using salt treatment and other antimicrobial techniques. As a result of the OOICC investigation, Health Canada issued a warning to Canadians about the high risk of botulism from uneviscerated salted fish products on May 8, 2012.[16] There is currently no prohibition against the production, sale or distribution of uneviscerated fish products in Canada. This year, Sham el-Nessim occurs on May 6, 2013.

Figure 1. Photograph of fesikh implicated in an Ontario outbreak, April 2012

Source: Canadian Food Inspection Agency, Ontario outbreak number 0000-2012-005 [April 2012].

Foodborne botulism is preventable. The use of various preservation methods (e.g., refrigerated storage, low pH, thermal inactivation) to prevent growth of *C. botulinum* and/or eliminate spores has been well described.[17] However, in order to be effective, application of these methods must adhere to strict standards. Health Canada has published food preparation guidelines to help reduce the risk of foodborne botulism from home-prepared goods.[10] In particular, special care and precaution must be taken when practicing home-canning so that botulinum toxins and spores are effectively eliminated.[4] Any home-prepared food stored in oil such as garlic, herbs and spices must be stored under refrigeration and consumed within ten days.[8,10] It is advised to avoid using aluminum foil to wrap potatoes or other vegetables for baking, unless they are intended for immediate consumption, as an anaerobic environment can be created. Also, maintaining good general hygiene practices before and after handling food, including frequent and proper hand washing, is recommended. Consumers should avoid eating food from cans that are dented, bulging, or leaking.[10] Lastly, uneviscerated fish products, such as fesikh, should be avoided due to the increased risk of foodborne botulism they pose.

Significant Reportable Disease Activity

From January 1 to February 28, 2013, there were no significant increases in rates of reportable diseases in Ontario compared to the year-to-month (YTM) rates for 2012 and 2011. Appendix 1 provides additional details on the YTM confirmed counts for reportable diseases for 2013 with comparisons to 2012 and 2011.

Infectious Disease Activity in Other Jurisdictions

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

HUMAN INFECTIONS CAUSED BY AVIAN INFLUENZA A(H7N9) VIRUS IN CHINA

On March 31, 2013, China announced the identification of three cases of human infection with avian influenza A(H7N9) virus. Prior to this event, there were no reports of human infection with A(H7N9), although other A(H7) subtype infections causing human illness have been reported in Europe and North America, mainly in association with poultry outbreaks. Currently, some of the confirmed cases had contact with animals or with an animal environment, and the A(H7N9) virus has been identified in various poultry species including pigeons, chicken and ducks. Investigations are ongoing to determine potential reservoirs and modes of transmission, as the source of infection remains unclear. There is currently no evidence of sustained human-to-human transmission of A(H7N9). Until a source of infection is identified, it is likely that there will be further cases of human infection identified in previously unaffected areas of China.

Editor's Note: At this time, there have been no cases of A(H7N9) reported outside of China, although the Public Health Agency of Canada has issued a Level 2 Travel Health Notice for the situation (practice special precautions). Public Health Ontario Laboratories (PHOL) will be alerted of a possible case if a specimen is influenza-positive but un-subtypeable when tested by first line subtyping assays (seasonal A(H3N2) HA gene and A(H1N1)pdm09 NA gene), as is done with the current testing algorithm. According to current practice, any un-subtypeable influenza A-positive specimens are forwarded to the National Microbiology Laboratory for further investigation in parallel to PHOL conducting further testing. For the latest case counts and updates, please refer to the resources below.

http://www.who.int/influenza/human_animal_interface/avian_influenza/archive/en/
http://www.phac-aspc.gc.ca/eri-ire/h7n9/index-eng.php
http://www.health.gov.on.ca/en/pro/programs/emb/avian/
http://www.oahpp.ca/about/hot-topics.html

Telehealth Report

Telehealth Ontario is a toll-free nursing helpline available to all residents of Ontario 24 hours a day, seven 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 the 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 on EARS and SaTScan can be found in the Glossary.

In March 2013, one distinct GI syndrome cluster and one distinct respiratory syndrome cluster were identified among Telehealth calls (Table 2). In addition, two Fever/ILI syndrome, two GI syndrome and one respiratory syndrome EARS flags indicating statistically significant increases above the expected call volume, were identified in the month of March (Figures 2 to 4).

Table 2. Significant call clusters identified by SaTScan by syndrome type: Ontario, March 2013

Cluster Type	Cluster	FSA	# FSAs	Health Units Affected	Rad (km)	Obs	Exp	Obs/ exp	p
GI	Mar 11 to Mar 17	K1Z	20	Ottawa	10.65	78	50.10	1.56	.011
Resp	Mar 14 to Mar 20	M9W	97	Toronto, York and Peel	19.06	245	193.22	1.27	.021

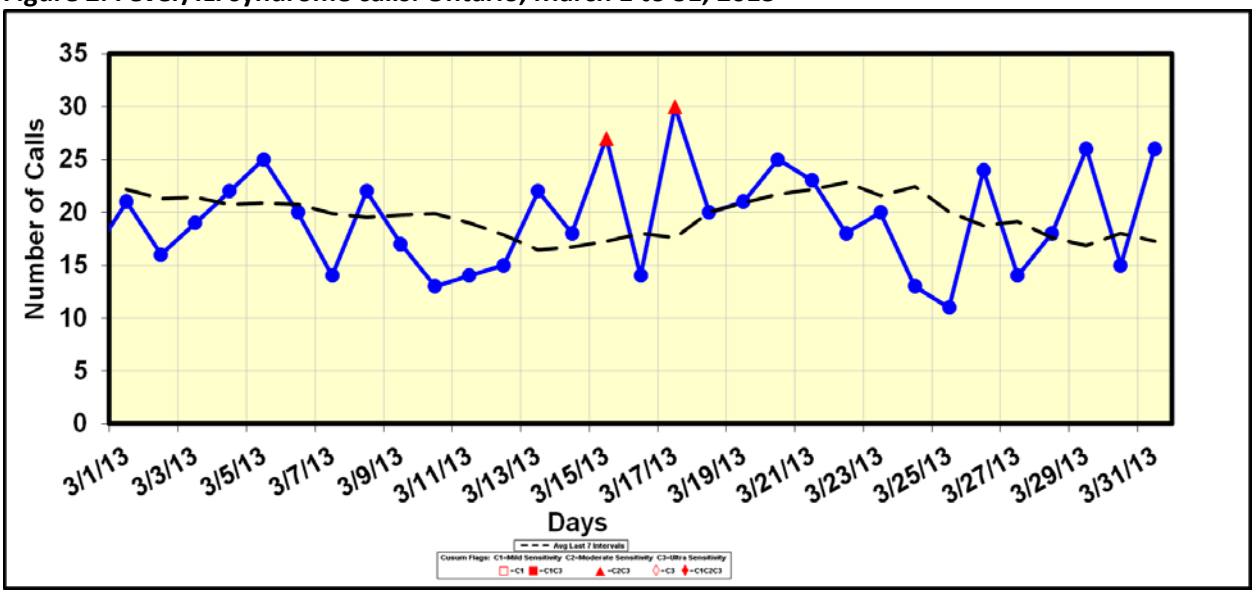
Obs = Observed count, Exp = Expected count, FSA = Forward sortation area, Km = Kilometre
Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2013/04/01].

[*] Evidence on the use of Telehealth to identify outbreaks is limited; however this information is being provided in order to present full disclosure of information available to Public Health Ontario

TELEHEALTH CALL VOLUMES - FEVER/ILI SYNDROME

For the month of March 2013, no Fever/ILI syndrome clusters were detected (Table 2). However, two Fever/ILI EARS flags were identified on March 15 and 17, indicating a statistically significant increase above the expected call volume in mid-March 2013 (Figure 2).

Figure 2. Fever/ILI syndrome calls: Ontario, March 1 to 31, 2013

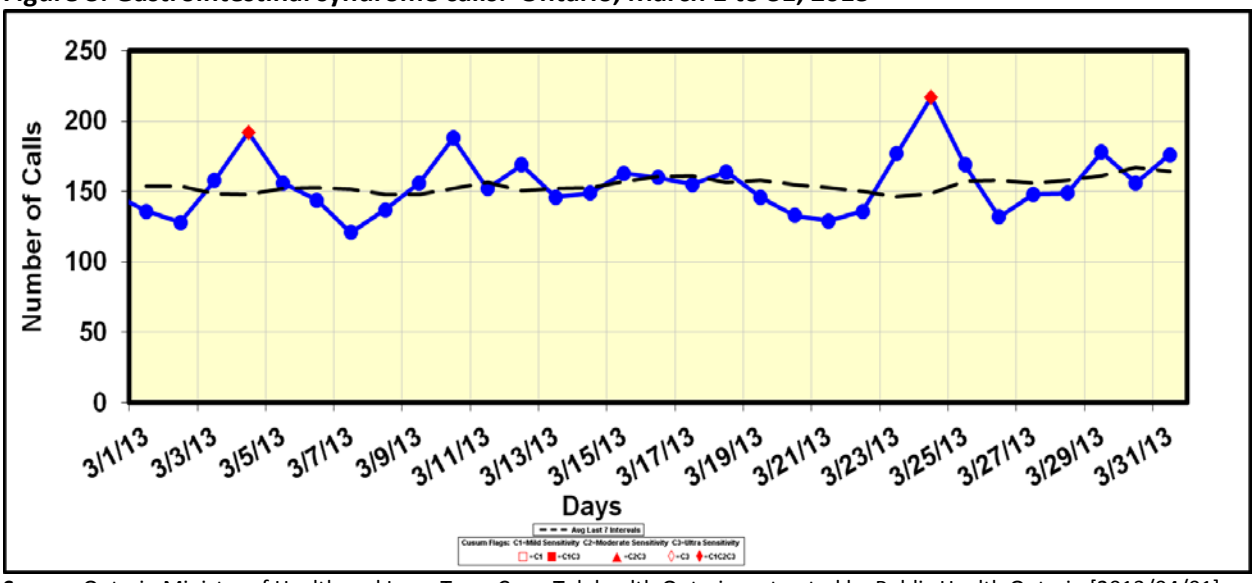


Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2013/04/01].

TELEHEALTH CALL VOLUMES - GI SYNDROME

One GI syndrome cluster was identified in March 2013 (Table 2). The cluster was observed among calls made from March 11 to 17 in the Ottawa health unit area. Additionally, two GI EARS flags were detected on March 4 and 24, indicating a statistically significant increase above the expected call volume at the beginning and near the end of the month (Figure 3).

Figure 3. Gastrointestinal syndrome calls: Ontario, March 1 to 31, 2013

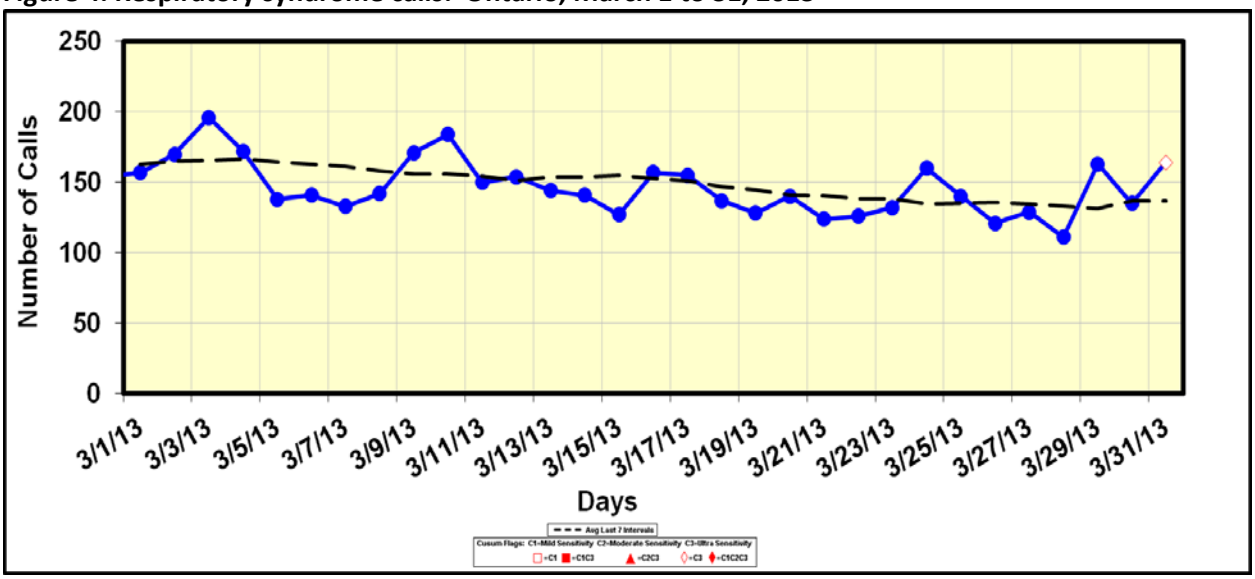


Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2013/04/01].

TELEHEALTH CALL VOLUMES – RESPIRATORY SYNDROME

One distinct respiratory syndrome cluster was identified in March 2013 (Table 2). The cluster was identified among calls made from March 14 to 20 in Toronto, Peel Region and York Region health units. There was also one respiratory syndrome EARS flag detected on March 31, indicating a statistically significant increase above the expected call volume towards the end of the month (Figure 4).

Figure 4. Respiratory syndrome calls: Ontario, March 1 to 31, 2013



Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2013/04/01].

Ontario Outbreak Review

The Ontario Outbreak Review section provides the total number of institutional respiratory infection outbreaks for the 2012-2013 respiratory virus season (Table 3). The number of outbreaks during the same period for the 2010-2011 and 2011-2012 respiratory virus seasons are also presented for comparison.

Table 3. Total number of institutional respiratory infection outbreaks: Ontario, surveillance season to week 13, 2010-11 to 2012-13

Time period	Total Number of Confirmed Outbreaks
2012-13 season	1,096
2011-12 season	485
2010-11 season	788

Sources: Ontario Respiratory Virus Bulletin – Surveillance Week 13 (March 24, 2013 – March 30, 2013); Ontario Influenza Bulletin – Surveillance Week 13 (March 25 – March 31, 2012); and Ontario Influenza Bulletin – Surveillance Week 13 (March 27 – April 2, 2011).

Enhanced Surveillance Directives (ESD) Discontinued in March

SALMONELLA ENTERITIDIS AMONG TRAVELLERS TO THE DOMINICAN REPUBLIC

On March 7, 2013, Public Health Ontario (PHO) issued a Public Health Alert (EA-002756) following the notification of two cases of *Salmonella* Enteritidis (SE) who travelled to Grand Paradise Bavaro Resort in Punta Cana, Dominican Republic. These cases travelled as part of a large trip of approximately 600 students from several Ontario universities including Wilfred Laurier, University of Western Ontario, University of Guelph and University of Ottawa. In total, 13 cases reported visiting this resort between February 16 and 24 from eight different health units. Symptom onset dates of cases ranged from February 18 to March 3, 2013 and all cases were between the ages of 20 and 24 years. The ESD was discontinued on March 22, 2013.

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Appendix – Reportable Diseases

Appendix 1. Confirmed cases of reportable diseases by month: Ontario, 2011-2013*

REPORTABLE DISEASE	2013														2012					2011				
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YTD	YTD Rate	YTM	YTM Rate	% Difference (YTM 2013 - 2012)†	2012 Total	2012 Rate	YTM	YTM Rate	% Difference (YTM 2013 - 2011)†	2011 Total	2011 Rate
AIDS	9	1											10	0.1	16	0.1	*-37.5*	62	0.5	16	0.1	*-38.2*	106	0.8
Amebiasis	8	9											17	0.1	42	0.3	*-59.5*	196	1.4	38	0.3	*-55.8*	216	1.6
Botulism	0	0											0	0.0	0	0.0	-	5	0.0	0	0.0	-	2	0.0
Brucellosis	0	0											0	0.0	1	0.0	*-100.0*	9	0.1	0	0.0	-	1	0.0
Campylobacter Enteritis	143	178											321	2.4	389	2.9	*-17.5*	3,853	28.5	380	2.8	*-16.5*	3,507	26.2
Chlamydial Infections	3,124	2,693											5,817	43.0	6,525	48.2	*-10.9*	36,461	269.4	5,672	42.4	*1.3*	36,408	272.3
Cholera	0	0											0	0.0	0	0.0	-	0	0.0	0	0.0	-	0	0.0
Cryptosporidiosis	8	14											22	0.2	25	0.2	*-12.0*	295	2.2	27	0.2	*-19.5*	301	2.3
Cyclosporiasis	1	0											1	0.0	2	0.0	*-50.0*	79	0.6	5	0.0	*-80.2*	105	0.8
Cytomegalovirus Infection, Congenital	2	1											3	0.0	0	0.0	-	3	0.0	1	0.0	*196.4*	11	0.1
Encephalitis- Primary Viral	1	1											2	0.0	3	0.0	*-33.3*	16	0.1	2	0.0	*-1.2*	14	0.1
Encephalitis- Unspecified	1	1											2	0.0	1	0.0	*100.0*	3	0.0	0	0.0	-	1	0.0
Encephalitis/Meningitis	4	10											14	0.1	18	0.1	*-22.2*	173	1.3	14	0.1	*-1.2*	139	1.0
Food poisoning, all causes	6	2											8	0.1	6	0.0	*33.3*	47	0.3	6	0.0	*31.7*	63	0.5
Giardiasis	106	75											181	1.3	198	1.5	*-8.6*	1,298	9.6	214	1.6	*-16.4*	1,291	9.7
Gonorrhoea (All types)	440	297											737	5.4	696	5.1	*5.9*	4,091	30.2	680	5.1	*7.1*	4,205	31.4
Group A Streptococcal Disease, Invasive	48	59											107	0.8	136	1.0	*-21.3*	604	4.5	147	1.1	*-28.1*	668	5.0
Group B Streptococcal Disease, Neonatal	4	3											7	0.1	9	0.1	*-22.2*	53	0.4	8	0.1	*-13.5*	57	0.4
Haemophilus Influenzae B Disease, Invasive	2	0											2	0.0	0	0.0	-	5	0.0	3	0.0	*-34.1*	11	0.1
Hepatitis A	14	5											19	0.1	25	0.2	*-24.0*	124	0.9	21	0.2	*-10.6*	105	0.8
Hepatitis B	5	8											13	0.1	18	0.1	*-27.8*	101	0.7	13	0.1	*-1.2*	122	0.9
Hepatitis C	315	276											591	4.4	716	5.3	*-17.5*	4,123	30.5	662	5.0	*-11.8*	4,169	31.2
Hepatitis D	0	0											0	0.0	2	0.0	*-100.0*	3	0.0	0	0.0	-	3	0.0
Herpes, Neonatal	0	0											0	0.0	0	0.0	-	5	0.0	0	0.0	-	8	0.1
HIV	45	34											79	0.6	161	1.2	*-50.9*	775	5.7	127	0.9	*-38.5*	867	6.5
Influenza	3,336	778											4,114	30.4	1,181	8.7	*248.3*	8,426	62.3	3,421	25.6	*18.8*	4,247	31.8
Legionellosis	9	6											15	0.1	12	0.1	*25.0*	188	1.4	7	0.1	*111.7*	162	1.2
Leprosy	0	0											0	0.0	0	0.0	-	0	0.0	0	0.0	-	1	0.0
Listeriosis	0	1											1	0.0	7	0.1	*-85.7*	44	0.3	13	0.1	*-92.4*	57	0.4
Lyme Disease	0	0											0	0.0	1	0.0	*-100.0*	107	0.8	2	0.0	*-100.0*	90	0.7
Malaria	14	8											22	0.2	19	0.1	*15.8*	217	1.6	25	0.2	*-13.1*	231	1.7
Measles	1	1											2	0.0	0	0.0	-	3	0.0	1	0.0	*97.6*	8	0.1
Meningitis- Bacterial	5	1											6	0.0	7	0.1	*-14.3*	44	0.3	3	0.0	*97.6*	26	0.2
Meningitis- Other	0	0											0	0.0	1	0.0	*-100.0*	7	0.1	1	0.0	*-100.0*	4	0.0
Meningitis- Viral	2	1											3	0.0	5	0.0	*-40.0*	68	0.5	3	0.0	*-1.2*	41	0.3
Meningococcal Disease, Invasive	3	2											5	0.0	6	0.0	*-16.7*	32	0.2	9	0.1	*-45.1*	43	0.3
Mumps	1	0											1	0.0	5	0.0	*-80.0*	16	0.1	2	0.0	*-50.6*	63	0.5
Ophthalmia Neonatorum	0	2											2	0.0	1	0.0	*100.0*	3	0.0	0	0.0	-	1	0.0
Paratyphoid Fever	3	6											9	0.1	6	0.0	*50.0*	35	0.3	10	0.1	*-11.1*	62	0.5
Pertussis (Whooping Cough)	15	8											23	0.2	93	0.7	*-75.3*	798	5.9	10	0.1	*127.2*	230	1.7
Q Fever	1	1											2	0.0	4	0.0	*-50.0*	15	0.1	0	0.0	-	20	0.1
Rabies	0	0											0	0.0	0	0.0	-	1	0.0	0	0.0	-	0	0.0
Rubella	0	0**											1	0.0	1	0.0	*0.0*	1	0.0	0	0.0	-	0	0.0
Rubella, Congenital Syndrome	0	0											0	0.0	0	0.0	-	0	0.0	0	0.0	-	0	0.0
Salmonellosis	146	152											298	2.2	469	3.5	*-36.5*	3,031	22.4	384	2.9	*-23.3*	2,575	19.3
Shigellosis	21	18											39	0.3	55	0.4	*-29.1*	271	2.0	34	0.3	*13.3*	255	1.9
Streptococcus Pneumoniae, Invasive	138	84											222	1.6	260	1.9	*-14.6*	1,260	9.3	254	1.9	*-13.6*	1,258	9.4
Syphilis, Congenital	0	0											0	0.0	0	0.0	-	1	0.0	0	0.0	-	1	0.0
Syphilis, Infectious	50	19											69	0.5	146	1.1	*-52.7*	778	5.7	118	0.9	*-42.2*	768	5.7
Syphilis, Other	45	20											65	0.5	137	1.0	*-52.6*	684	5.1	107	0.8	*-40.0*	758	5.7
Tetanus	1	0											1	0.0	0	0.0	-	1	0.0	1	0.0	*-1.2*	1	0.0
Tuberculosis	38	41											79	0.6	103	0.8	*-23.3*	607	4.5	93	0.7	*-16.1*	658	4.9
Tularemia	0	0											0	0.0	0	0.0	-	1	0.0	0	0.0	-	0	0.0
Typhoid Fever	7	5											12	0.1	12	0.1	*0.0*	79	0.6	37	0.3	*-68.0*	103	0.8
Verotoxin Producing E. Coli including HUS	14	2											16	0.1	13	0.1	*23.1*	200	1.5	12	0.1	*31.7*	232	1.7
West Nile Virus Illness	0	0											0	0.0	0	0.0	-	237	1.8	0	0.0	-	57	0.4
Yellow Fever	0	0											0	0.0	1	0.0	*-100.0*	2	0.0	0	0.0	-	0	0.0
Yersiniosis	14	17											31	0.2	36	0.3	*-13.9*	159	1.2	35	0.3	*-12.5*	211	1.6

Sources: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [2013/02/20]. Population data obtained from IntelliHEALTH Ontario, retrieved by Public Health Ontario [2012/03/15].

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

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

Note 1: Rates (year-to-date (YTD) and year-to-month (YTM)) presented in the table are per 100,000 population.

Note 2: Does not include cases in which the Ministry of Health and Long-Term Care was selected as the Diagnosing Health Unit or cases with a Disposition Description set to 'does not meet' or 'entered in error'.

Note 3: Case counts for tuberculosis and AIDS are based on diagnosis date and not episode date. HIV case counts are based on encounter date.

Note 4: Differentials in year over year comparisons are reflective of changes in disease incidence and changes in the size of the population.

Note 5: The measles cases reported in January and February 2013 did not have travel history noted. ** There was one confirmed case of rubella reported in February 2013 that has since been reclassified as not meeting the provincial case definition; the numbers in the table above reflect this update.

Note 6: Statistical tests comparing rates were not performed when the YTM rate in previous years was zero.

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 a 2-day 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.