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Monthly Infectious Diseases Surveillance Report

VOLUME 1, ISSUE 5

This is the fifth 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

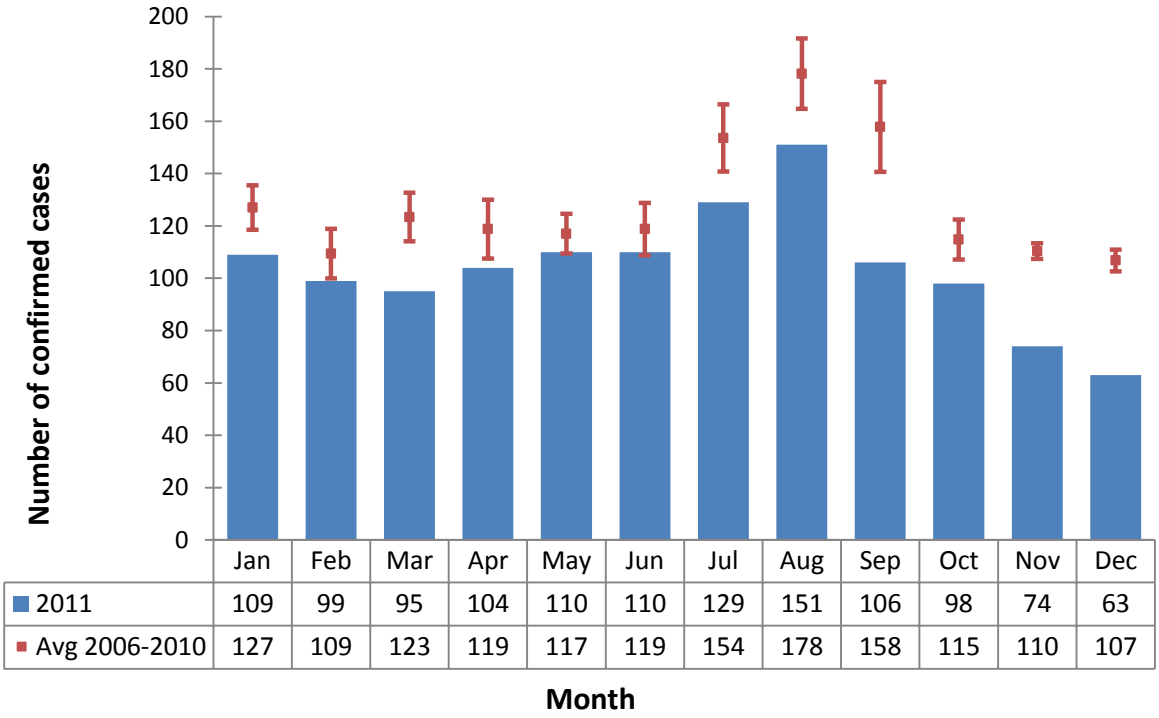
GIARDIASIS

Giardia intestinalis (also known as *G. lamblia* and *G. duodenalis*) is the most common intestinal parasite of humans identified in North America (1,2). *Giardia* is a flagellated protozoan which exists in two forms: cysts and trophozoites. The hardy cysts are the most infectious form, and can be found on surfaces, soil, food or water that has been contaminated with feces from infected humans or animals. Although beavers are a commonly reported reservoir of *Giardia* (hence the name 'beaver fever' often used to describe the disease), the parasite is widespread among vertebrates including domestic animals (1). Giardiasis is transmitted via the fecal-oral route, and most often occurs through person-to-person contact or consumption of fecally-contaminated water or food. Animal-to-person transmission may also occur. The infectious dose for acquiring the disease is low; ingestion of as little as 10 cysts may cause infection (1). The incubation period for giardiasis is 3 to 25 days (3). Symptoms of giardiasis include abdominal cramps, bloating, frequent loose and/or pale greasy stools, fatigue, weight loss, chronic diarrhea, malabsorption, nausea, vomiting, fever and rash (3,4). In more severe cases, chronic enteric disorders (e.g. post-infectious irritable bowel syndrome), allergies and

reactive arthritis may also occur (1,5). Asymptomatic infections are also common (1,5).
Factors that increase the risk of acquiring giardiasis include: travel to endemic areas; close contact with infected household members; consumption of contaminated drinking water from unfiltered surface water sources or shallow wells; exposure to recreational water (e.g. lakes, rivers, and poorly disinfected swimming and wading pools); contact with infected animals; and anal-oral contact (1,5). The highest infection rates typically occur among children under the age of 5 years, likely due to poor hygiene practices (5).

In Ontario, *Giardia* is the third leading cause of enteric disease, following *Campylobacter* and *Salmonella*. In 2011, 1248 cases of giardiasis were reported provincially (Figure 1). Compared to the average incidence rate of giardiasis in Ontario from 2006 to 2010 (11.8 cases per 100,000 population), the incidence rate in 2011 was slightly lower at 9.4 cases per 100,000 population. Historically, rates of giardiasis in Ontario have been similar to those at the national level, which ranged from 13.2 cases in 2005 to 12.7 cases per 100,000 population in 2008. Due to the ubiquitous and relatively non-severe and self-limiting symptoms associated with giardiasis, underdiagnosis and underreporting occurs, resulting in an underestimation of the true burden of disease (1).

Figure 1. Reported number of confirmed cases of giardiasis by month, 2011, compared to 2006-2010 baseline, Ontario



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	109	99	95	104	110	110	129	151	106	98	74	63
Avg 2006-2010	127	109	123	119	117	119	154	178	158	115	110	107

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2012/02/06].
Data note: 2006-2010 baseline is based on 5 year monthly averages and 95% confidence intervals. A blue bar that exceeds the average trend (red lines) is considered higher than expected.

As shown in Figure 1, giardiasis occurs throughout the year, but tends to follow a seasonal pattern with increased activity towards the end of summer and early fall. The median age of cases reported in Ontario in 2011 was 35 years, with a range of 4 months to 92 years. Approximately half of the cases (617/1248) were between the ages of 20 and 49 years. The highest rates of giardiasis occurred in the

younger age groups from 1 to 4 years (20.5 cases per 100,000 population) and 5 to 9 years (13.6 cases per 100,000 population). Of the 1248 cases reported in Ontario in 2011, 60.4% (758/1248) were male and 38.9% (489/1248) were female (sex was unknown for one case). One and a half percent of giardiasis cases were hospitalized in 2011.

In 2011, giardiasis cases were reported by every health unit in Ontario. Notably, rates of giardiasis were significantly higher than the provincial average (9.4 cases per 100,000 population) in three health units, all of which represent largely urban areas: Ottawa (17.4 cases per 100,000 population), Toronto (13.4 cases per 100,000 population) and Peel Region (11.4 cases per 100,000 population). Conversely, the lowest rates of giardiasis occurred in rural areas of the province: Brant County (1.43 cases per 100,000 population), Lambton County (1.51 cases per 100,000 population) and Porcupine (2.28 cases per 100,000 population) health units. While this analysis shows that incidence varied by health unit of residence, it does not necessarily reflect the actual place of exposure which may be linked to travel or camping in remote areas. This variance in incidence by health unit may also reflect testing and reporting biases.

Among giardiasis cases that reported at least one risk factor in 2011, 52.6% (386/734) reported living or travelling outside of Ontario prior to becoming ill. Waterborne transmission including ingestion of potentially contaminated water and contact with recreational water sources was reported by 48.3% (168/348) of cases who acquired their disease within Ontario. Other risk factors reported by non-travel related cases included animal contact (32.8%), close contact with another case, including anal-oral contact (15.5%), and consumption of raw unwashed fruits or vegetables (14.6%). In a study of risk settings in Ontario from 1990-1998, daycares and camps were found to be less important risk factors for the transmission of giardiasis than previously thought (5). Other studies have shown higher rates of giardiasis in areas in close proximity to bodies of water (6), which is consistent with the high proportion of waterborne exposures noted in Ontario in 2011.

In general, risk factors associated with the acquisition and transmission of giardiasis can be modified through changes in behaviour. For instance, the risk of infection and spread of giardiasis can be reduced through prevention and control measures including proper hand hygiene, protecting water sources from contamination and adequate treatment of drinking water sources, safe sex and appropriate disinfection of swimming and wading pools (7).

Significant Reportable Disease Activity

Table 1 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 were excluded, as was the case for 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 gonorrhea, legionellosis, pertussis, and salmonellosis for the period up to the end of February 2012 in comparison to similar periods in previous years (Table 1). The YTM count and rate of gonorrhea was essentially the same in 2012 as compared to 2011. However, the overall annual count and rate for 2011 was higher than that for 2010, representing a sustained elevation in counts and rates in 2011 that carried through to 2012. The cause of the initial increase is undetermined at this time as it is a part of an ongoing decade-long trend of increases in the incidence of gonorrhea.

The increases in the YTM count and rate for legionellosis in 2012 compared to 2010 and 2011 are of unknown origin at this time. Many of the cases have no known exposures and no common exposures have been identified to date. Higher numbers of legionellosis were also observed in Ontario from August through to December 2011. While the cause of the increase has not been identified, it may have been related to enhanced surveillance that carried into 2012 and/or shifts in the start and end of seasonal activity, and not related to increased testing. 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)

The increase in both the YTM count and rate for pertussis in January-February 2012 compared to the same periods in 2011 and 2010 can be attributed in part to an ongoing outbreak in an under immunized community across six southwestern Ontario health units. This outbreak started in November 2011 and is ongoing although new cases have tapered off significantly with the last case occurring on March 20. Beyond the outbreak, an increase in sporadic cases compared to the previous two years is still apparent which is anticipated due to the cyclical nature of pertussis. The last peak in incidence in Ontario occurred in 2006.

The YTM increase in salmonellosis in 2012 can be primarily attributed to two outbreaks that occurred across the province since the start of the year, both of which are summarized on page 11 of this report. The City of Hamilton investigated a local outbreak of 51 cases, with symptom onset ranging from Feb 1 to Feb 22. In addition, a provincial outbreak involving 75 cases of *S.* Heidelberg in 17 health units was investigated in January and February.

Table 1. Summary of significant* Year-to-Month (YTM) increases in reportable disease activity rates, for the periods January 1st to February 28th in 2010, 2011 and February 29th, 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)†
Gonorrhea	686	5.1	679	5.1	-0.2	564	4.3	18.7
Legionellosis	12	0.1	7	0.1	69.4	4	0.0	192.9
Pertussis	88	0.7	10	0.1	769.4	6	0.0	1331.7
Salmonellosis	455	3.4	384	2.9	17.1	377	2.9	17.8

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2012/04/16]. 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 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.

GENITAL HERPES IN CANADA: DECIPHERING THE HIDDEN EPIDEMIC

Using administrative data from physicians, this study investigates the rates of diagnosed cases of genital herpes (GH) in Canada from 2002 to 2007. Annual rates of medically attended GH cases during this time period were estimated to range from 261.2 to 386.6 cases per 100,000 population, based on data including both incident and prevalent cases. Since the data only include cases presenting for medical care, they are likely to be an underestimate of the actual number of cases. Additional research would be helpful to assess the true burden of infection and to plan appropriate diagnostic, treatment and preventive counselling services.

http://www.pulsus.com/journals/abstract.jsp?HCtype=Physician&sCurrPg=abstract&jnlKy=3&atlKy=10497&isuKy=1015&isArt=t&fromfold=Current%20Issue&

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.

For March 2012, two distinct SaTScan clusters (Table 2) were identified among Telehealth calls. One fever/ILI cluster in southwestern Ontario was detected, as well as one large respiratory cluster in Eastern Ontario, which remained significant for three days. The affected health units were notified of these findings. During the month of March, no EARS flags for Telehealth calls were generated, which indicates that there was no significant change in the number of calls related to any of the three syndromes.

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

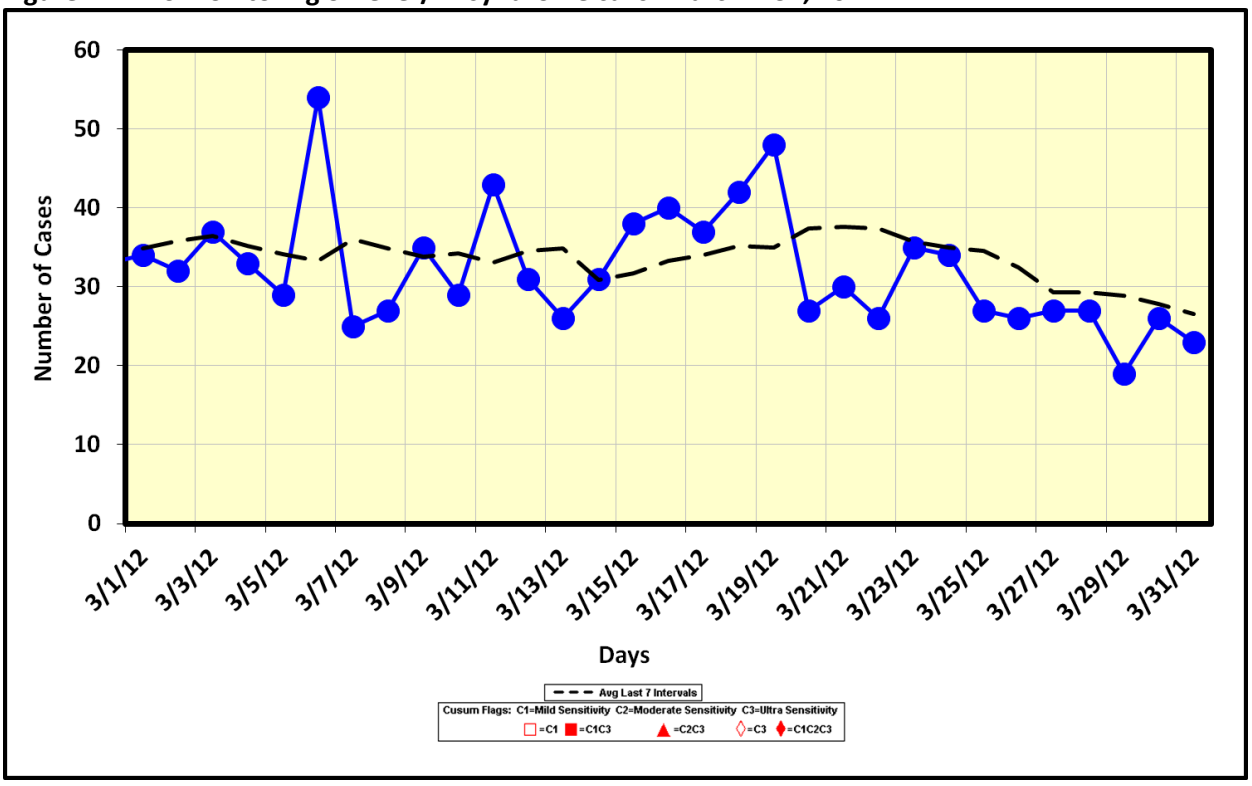
Cluster Type	Cluster	FSA	# FSAs in the cluster	Health Units Affected	Rad (km)	Obs	Exp	Obs/ Exp	p
Fever/ ILI	Mar 16 – Mar 22	N0E	37	HDN, BRN, HAM, WAT, OXF, ELG, MSL, HAL	69.76	56	35.22	1.59	0.038
GI	No GI clusters identified								
Resp	Mar 19 – Mar 25*	K7K	74	KFL, LGL, OTT, HPE, PTC, HKP, EOH, REN	148.9	244	189.41	1.29	0.014

Obs – Observed count; Exp – Expected count; FSA – (central) Forward Sortation Area; km – kilometre; Rad – Radius;
Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2012/04/10].
*Identified respiratory cluster that represents a single event that remained significant for three consecutive days.

FEVER/ILI TELEHEALTH

For the month of March 2012, one fever/ILI cluster was detected. The cluster of calls was made from March 16, 2012 to March 22, 2012 and was centered in Haldimand-Norfolk, spanning eight different health units in the Southwest and Central West health regions including Haldimand-Norfolk, Brant County, City of Hamilton, Waterloo Region, Oxford County, Elgin-St. Thomas, Middlesex-London, and Halton Region (Table 2). No EARS flags were generated for calls pertaining to fever/ILI in March (Figure 2).

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

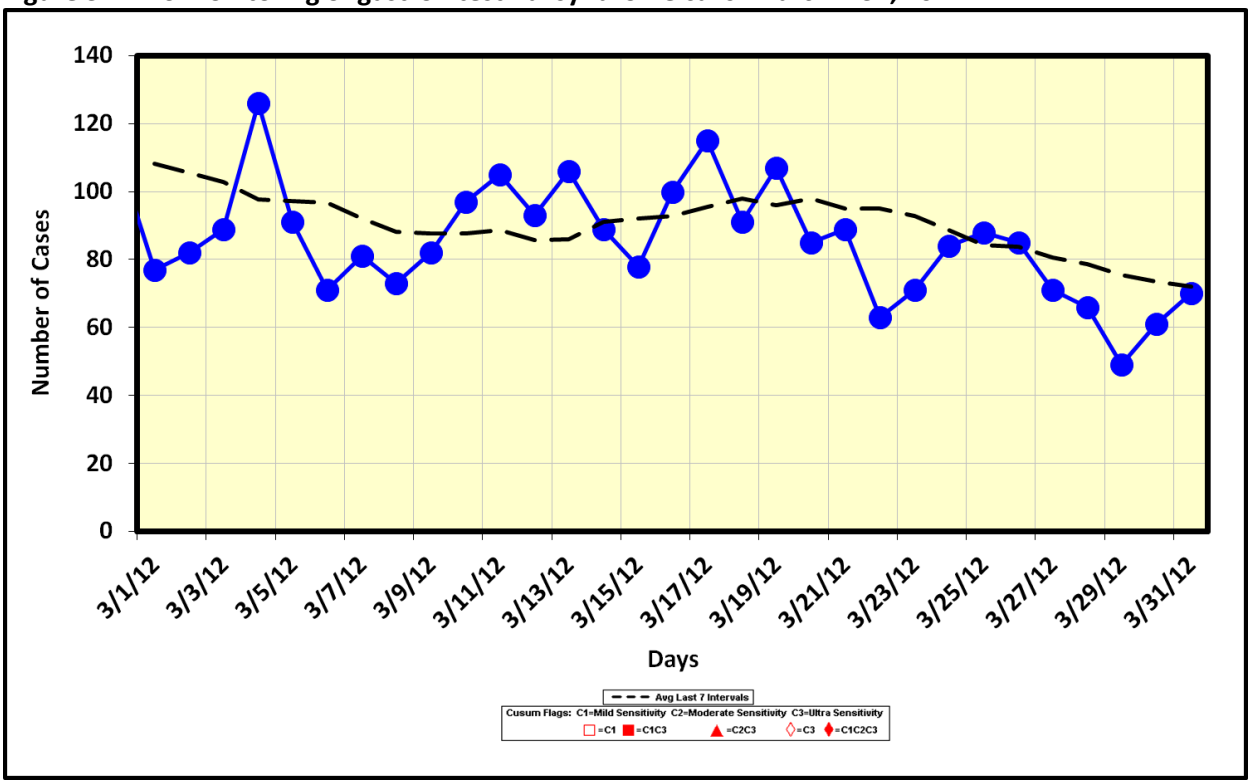


Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2012/04/10].

GASTROINTESTINAL TELEHEALTH

No GI clusters or EARS flags were detected for the month of March 2012. The number of calls during this period ranged from 49 to 126 calls per day (Figure 3).

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

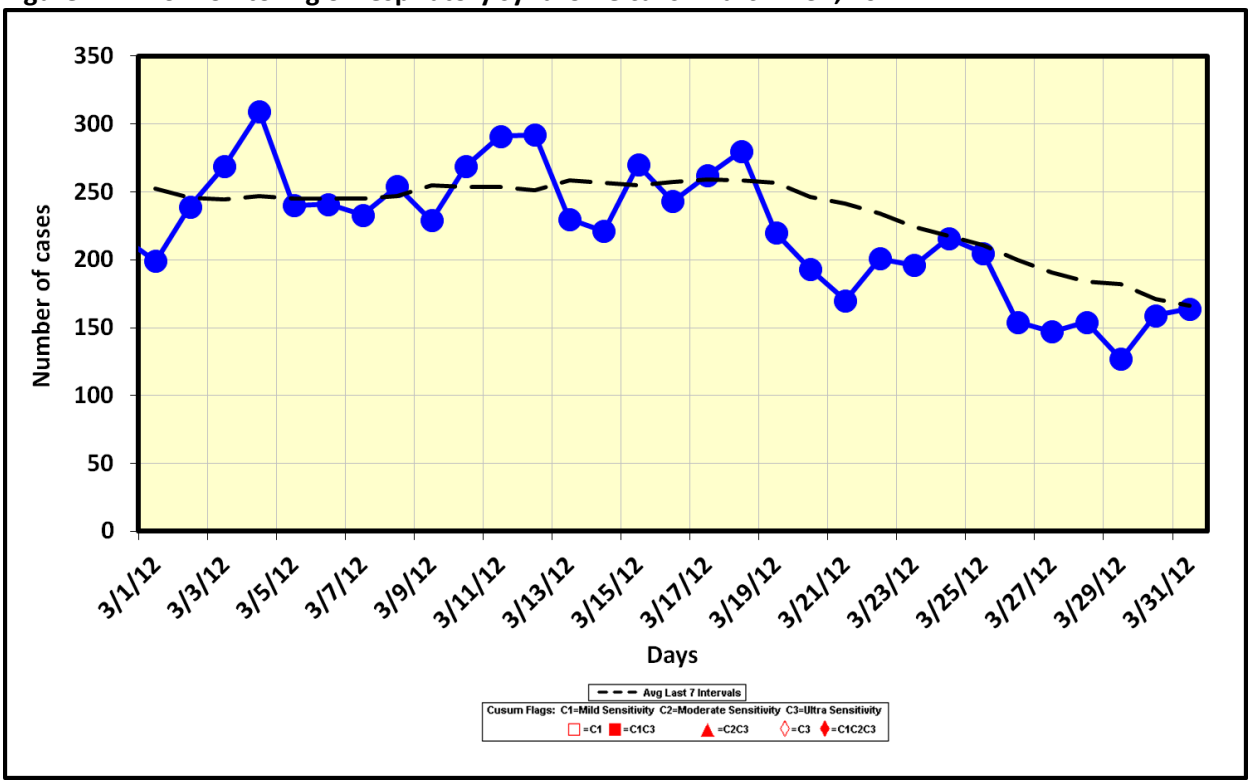


Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2012/04/10].

RESPIRATORY TELEHEALTH

One large respiratory cluster was detected in Ottawa and Eastern and Central East health regions based on calls from March 19, 2012 to March 27, 2012. This cluster remained significant for three days (Table 2). The cluster was identified in Kingston-Frontenac and Lennox & Addington and the surrounding health units of Eastern Ontario, Haliburton-Kawartha and Pine Ridge, Hastings-Prince Edward Counties, Leeds-Grenville and Lanark, Ottawa, Peterborough County and City, and Renfrew. No EARS flags were generated for respiratory syndrome calls, and the number of calls related to this syndrome appeared to decrease over the course of the month (Figure 4).

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



Source: Ontario Ministry of Health and Long-Term Care, Telehealth Ontario, extracted by Public Health Ontario [2012/04/10].

Ontario Outbreak Review

The review of outbreaks section provides the total number of confirmed outbreaks from March 1 to March 31, 2012 and the total number of confirmed respiratory infection outbreaks for the 2011-2012 influenza season. Outbreak counts during the same time period for 2010 and 2011 are also presented for comparisons.

Table 3. Total number of confirmed outbreaks and confirmed respiratory infection outbreaks January 1 to March 31, 2012 and January 1 to March 31, 2010 & 2011.

Time period	Total Number of Confirmed Outbreaks
Total confirmed outbreaks in 2012 to March 31*	803
Total confirmed outbreaks in 2011 to March 31*	951
Total confirmed outbreaks in 2010 to March 31*	960
Total confirmed respiratory infection outbreaks for the 2011-12 season†	485
Total confirmed respiratory infection outbreaks for the 2010-11 season†	788
Total confirmed respiratory infection outbreaks for the 2009-10 season†	411

* Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2012/04/12]. Includes all outbreaks with a classification of 'Confirmed' in iPHIS.
† Sources: Ontario Influenza Bulletin - Surveillance Week 13 (March 25- 31, 2012); Surveillance Week 13 (March 27- April 2, 2011); and Surveillance Week 13 (March 28 – April 3, 2010)

Enhanced Surveillance Directives (ESD) Discontinued in March

SALMONELLA ISANGI AND SALMONELLA THOMPSON

Hamilton Public Health Services investigated an outbreak of *Salmonella* associated with a local food establishment. A total of 51 cases were identified, with onset dates ranging from Feb 1 to Feb 22, 2012. Thirteen cases were serotyped as *Salmonella* Thompson and one case as *S.* Isangi. Control food samples from the establishment did not test positive for *Salmonella*. Poor food handling was determined to be the likely cause of the outbreak. The ESD was discontinued on March 2, and on March 8, 2012 the outbreak was declared over by Hamilton Public Health Services following no further reports of cases linked to this outbreak.

SALMONELLA TYPHIMURIUM AND SALMONELLA HEIDELBERG

York Region Community and Health Services Department investigated an enteric outbreak related to a Valentine's Day dance and dinner held on February 11, 2012 at a banquet hall in Woodbridge, Ontario. Approximately 540 guests from Durham Region, Halton Region, Peel Region, Simcoe-Muskoka, Toronto and York Region attended the event. One hundred and eighty-three attendees were interviewed, of which 123 (67.2%) reported gastrointestinal symptoms. A total of 52 cases were laboratory confirmed as salmonellosis including 32 *Salmonella* Typhimurium cases, 12 *S.* Heidelberg cases and 8 cases co-infected with both serotypes of *Salmonella*. Among these cases, the earliest symptom onset began 12 hours after the event. Epidemiologic analyses identified associations between gastrointestinal illness and the consumption of food served at the event. On March 22, 2012, the outbreak was declared over by York Region. Following that, the ESD was discontinued on March 23.

SALMONELLA HEIDELBERG

The Ministry of Health and Long-Term Care (MOHLTC), in collaboration with Public Health Ontario (PHO) and several public health units, investigated a provincial increase in *Salmonella* Heidelberg. On March 1, 2012, a provincial outbreak was declared and an Ontario Outbreak Investigation Coordination Committee (OOICC) was established. In addition, two Field Epidemiologists from the Canadian Field Epidemiology Program were deployed to PHO to support the outbreak investigation. In January and February 2012, 75 cases of *S.* Heidelberg were reported in iPHIS, representing a threefold increase above the three-year historical average (2009-2011) for the same period (26 cases). Over this period, cases were identified in 17 different health units, including Toronto (24 cases), York Region (15), Peel (11) and Ottawa (6). The increase was comprised of a number of sub-clusters including the Valentine's Day event in York Region. On March 29, 2012, the outbreak was declared over by the OOICC and the ESD was discontinued on March 30, 2012 following a return to baseline number of cases.

E.COLI O157:H7

The Public Health Agency of Canada (PHAC), in collaboration with PHO and other federal partners and provincial health authorities, recently investigated *E. coli* O157:H7 illnesses in Canada for possible links to a large national recall of ground beef by the Canadian Food Inspection Agency (CFIA). The recall was prompted by one case in another province with a genetic profile for *E. coli* that matched both open and closed samples of the ground beef product that was consumed. A food safety recall was initiated and the national investigation was concluded on March 30, 2012. The ESD was subsequently discontinued. PHAC and CFIA have issued information to the public on their websites regarding *E. coli* and safe food handling practices. Information about the recall can be found online at http://www.inspection.gc.ca/food/consumer-centre/food-safety-investigations/e-coli-est-761-and-530/eng/1331752215301/1331753163664.

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	9	0											9	0.1	16	0.1	-44.4	96	0.7	23	0.2	-61.8	104	0.8
Amebiasis	20	12											32	0.2	37	0.3	-14.6	212	1.6	64	0.5	-51.2	313	2.4
Botulism	0	0											0	0.0	0	0.0	-	1	0.0	0	0.0	-	1	0.0
Brucellosis	0	1											1	0.0	0	0.0	-	1	0.0	0	0.0	-	2	0.0
Campylobacter Enteritis	203	168											371	2.7	380	2.8	-3.5	3,498	26.2	406	3.1	-10.8	3,358	25.4
Chlamydial Infections	3,323	3,154											6,477	47.9	5,670	42.4	12.9	36,341	271.8	5,211	39.4	21.3	33,493	253.5
Cryptosporidiosis	12	11											23	0.2	27	0.2	-15.8	299	2.2	31	0.2	-27.6	338	2.6
Cyclosporiasis	2	0											2	0.0	5	0.0	-60.5	105	0.8	12	0.1	-83.7	168	1.3
Encephalitis- Primary Viral	2	1											3	0.0	2	0.0	48.2	14	0.1	2	0.0	46.4	15	0.1
Encephalitis- Unspecified	1	0											1	0.0	0	0.0	-	1	0.0	0	0.0	-	1	0.0
Encephalitis/Meningitis	10	8											18	0.1	14	0.1	27.0	140	1.0	15	0.1	17.1	155	1.2
Food poisoning, all causes	5	0											5	0.0	6	0.0	-17.7	63	0.5	38	0.3	-87.2	90	0.7
Giardiasis	82	80											162	1.2	212	1.6	-24.5	1,287	9.6	223	1.7	-29.1	1,407	10.7
Gonorrhoea (All types)	374	312											686	5.1	679	5.1	-0.2	4,199	31.4	564	4.3	18.7	3,964	30.0
Group A Streptococcal Disease, Invasive	68	65											133	1.0	148	1.1	-11.2	678	5.1	126	1.0	3.0	561	4.2
Group B Streptococcal Disease, Neonatal	5	5											10	0.1	8	0.1	23.5	58	0.4	9	0.1	8.5	52	0.4
Haemophilus Influenzae B Disease, Invasive	0	1											1	0.0	3	0.0	-67.1	11	0.1	0	0.0	-	2	0.0
Hepatitis A	5	20											25	0.2	21	0.2	17.6	103	0.8	19	0.1	28.4	136	1.0
Hepatitis B	8	7											15	0.1	13	0.1	14.0	122	0.9	19	0.1	-22.9	117	0.9
Hepatitis C	350	327											677	5.0	660	4.9	1.3	4,118	30.8	713	5.4	-7.3	4,514	34.2
Hepatitis D	0	1											1	0.0	0	0.0	-	2	0.0	0	0.0	-	1	0.0
Herpes, Neonatal	0	0											0	0.0	0	0.0	-	8	0.1	2	0.0	-100.0	9	0.1
HIV	82	73											155	1.1	127	0.9	20.6	865	6.5	117	0.9	29.3	848	6.4
Infectious Syphilis	71	43											114	0.8	117	0.9	-3.7	760	5.7	148	1.1	-24.8	780	5.9
Influenza**	225	917											1,142	8.4	3,421	25.6	-67.0	4,246	31.8	41	0.3	2619.0	1,949	14.8
Legionellosis	6	6											12	0.1	7	0.1	69.4	162	1.2	4	0.0	192.9	116	0.9
Leprosy	0	0											0	0.0	0	0.0	-	0	0.0	1	0.0	-100.0	1	0.0
Listeriosis	3	4											7	0.1	13	0.1	-46.8	57	0.4	11	0.1	-37.9	60	0.5
Lyme Disease	0	0											0	0.0	0	0.0	-	89	0.7	1	0.0	-100.0	70	0.5
Malaria	13	5											18	0.1	25	0.2	-28.9	230	1.7	37	0.3	-52.5	259	2.0
Measles	0	0											0	0.0	1	0.0	-100.0	8	0.1	1	0.0	-100.0	9	0.1
Meningitis- Bacterial	6	2											8	0.1	3	0.0	163.5	25	0.2	4	0.0	95.2	32	0.2
Meningitis- Other	1	0											1	0.0	1	0.0	-1.2	4	0.0	0	0.0	-	5	0.0
Meningitis- Viral	3	2											5	0.0	3	0.0	64.7	40	0.3	7	0.1	-30.3	111	0.8
Meningococcal Disease, Invasive	2	3											5	0.0	9	0.1	-45.1	43	0.3	6	0.0	-18.7	34	0.3
Mumps	1	4											5	0.0	2	0.0	147.0	63	0.5	43	0.3	-88.6	68	0.5
Ophthalmia Neonatorum	0	1											1	0.0	0	0.0	-	1	0.0	0	0.0	-	5	0.0
Other Syphilis	51	52											103	0.8	110	0.8	-7.5	760	5.7	125	0.9	-19.6	793	6.0
Paratyphoid Fever	5	2											7	0.1	10	0.1	-30.8	62	0.5	23	0.2	-70.3	60	0.5
Pertussis (Whooping Cough)	68	20											88	0.7	10	0.1	769.4	221	1.7	6	0.0	1331.7	101	0.8
Q Fever	0	0											0	0.0	0	0.0	-	20	0.1	1	0.0	-100.0	7	0.1
Rubella	1	0											1	0.0	0	0.0	-	0	0.0	0	0.0	-	1	0.0
Salmonellosis	184	271											455	3.4	384	2.9	17.1	2,574	19.3	377	2.9	17.8	2,719	20.6
Shigellosis	33	19											52	0.4	34	0.3	51.1	255	1.9	38	0.3	33.6	252	1.9
Streptococcus Pneumoniae, Invasive	131	117											248	1.8	254	1.9	-3.5	1,236	9.2	214	1.6	13.1	1,204	9.1
Tetanus	0	0											0	0.0	1	0.0	-100.0	1	0.0	0	0.0	-	1	0.0
Tuberculosis	45	47											92	0.7	92	0.7	-1.2	646	4.8	87	0.7	3.2	644	4.9
Tularemia	0	0											0	0.0	0	0.0	-	0	0.0	0	0.0	-	2	0.0
Typhoid Fever	5	6											11	0.1	37	0.3	-70.6	103	0.8	18	0.1	-40.3	92	0.7
Verotoxin Producing E. Coli including HUS	5	7											12	0.1	12	0.1	-1.2	232	1.7	14	0.1	-16.3	153	1.2
West Nile Virus Illness	0	0											0	0.0	0	0.0	-	54	0.4	0	0.0	-	6	0.0
Yellow Fever	1	0											1	0.0	0	0.0	-	0	0.0	0	0.0	-	0	0.0
Yersiniosis	16	20											36	0.3	35	0.3	1.6	210	1.6	30	0.2	17.1	204	1.5

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [2012/04/16]. 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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