

Ontario Agency for Health Protection and Promotion (OAHP): Laboratory Pandemic Influenza Surveillance Report

Information current as of: Monday April 19, 2010

This report summarizes patient specimens (1 specimen/patient) collected and received at the Ontario Agency for Health Protection and Promotion (OAHP) public health laboratories (PHL) in Ontario for influenza virus testing since September 1, 2009. This information is current as of Monday April 19, 2010 and is updated weekly. Note that influenza A positivity rates are only reported for influenza A tests performed at the OAHP Public Health Laboratories.

This report uses the specimen collection date to classify the specimens submitted. The PHL performs the majority of subtype testing; however, several hospital laboratories also perform subtyping. Therefore, the numbers reported here may not reconcile precisely with those reported through the integrated Public Health Information System (iPHIS) since results from hospital laboratories may be entered into iPHIS without being entered into the PHL database.

SUREVILLANCE SUMMARY

Pandemic influenza (pH1N1) is virtually absent in Ontario with the most recent Flu A positive sample collected on April 2, 2010. The most recent influenza B sample was also identified on March 25, 2010. The predominant circulating respiratory virus continues to be respiratory syncytial virus (RSV); however, RSV has significantly declined.

PLEASE NOTE DUE TO A TECHNICAL CHANGE ON MARCH 12, 2010 THE RESULTS PRESENTED IN THIS WEEK'S REPORT MAY DIFFER FROM PREVIOUS REPORTS.

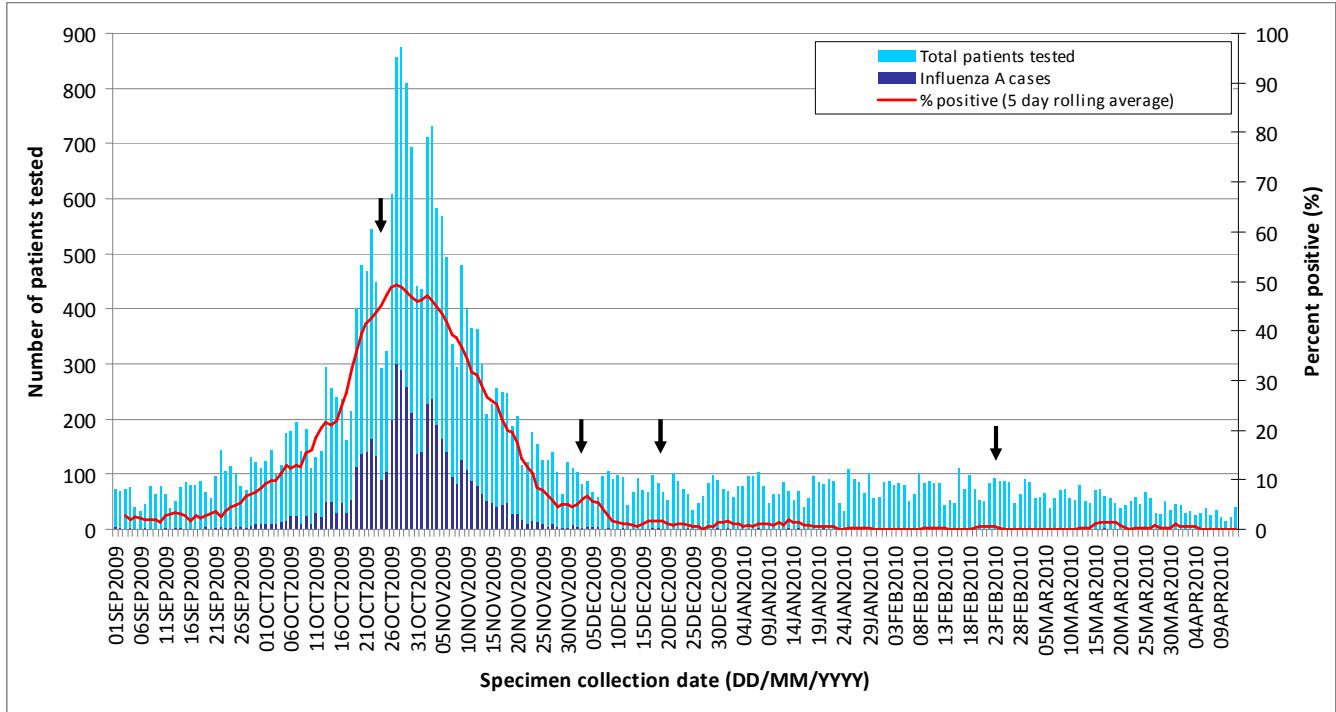
Case statistics:

Between September 1, 2009 and April 19, 2010, a total 26,339 patient specimens and isolates (1/patient) have been submitted for influenza testing and subtyping at the PHL and entered into the PHL electronic system. Of those, 25, 631 specimens and isolates have been tested for influenza A at the PHL, of which 5,039 (19.7%) were positive for Influenza A; an additional 487 patient specimens that tested positive for influenza A at hospital laboratories were forwarded to the PHL for subtyping.

Four cases of seasonal influenza (H3) have been detected in Weeks 36,37, 52, 2009, and Week 2, 2010. No seasonal influenza A H1 has been detected. Eight cases of influenza B have been detected: one each in Week 40,,44,,45 of 2009 and Weeks 2, 10 and 12 of 2010, and two in Week 9 of 2010.

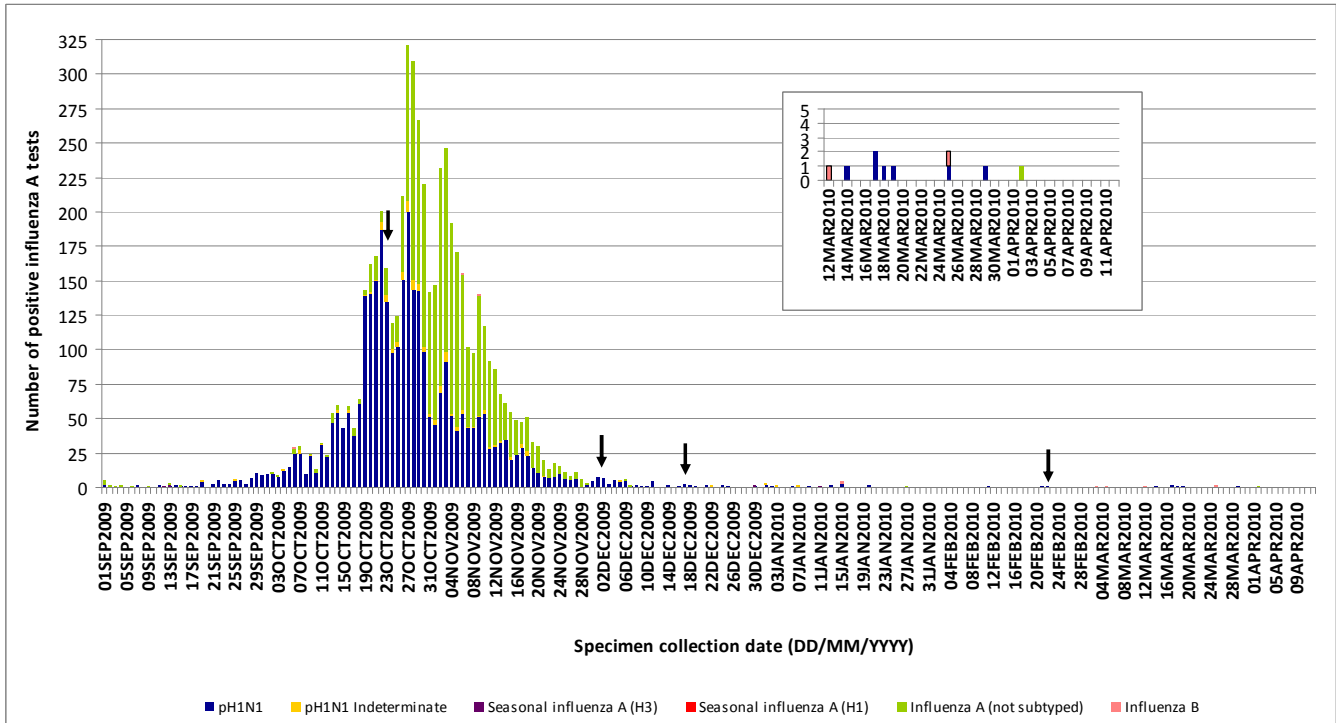
Please refer to **Appendix 1** for further information on lab testing algorithms and interpreting subtyping results.

Figure 1. Total number of influenza A tests conducted, the number of influenza A positive cases and the percent positive (5 day rolling average), September 1, 2009 – April 12, 2010**.



Source: The Ontario Agency for Health Protection and Promotion (OAHPP) public health laboratories.

Figure 2. The number of positive influenza A test results by subtype (pH1N1, seasonal H1/H3, indeterminate pH1N1 Influenza A - not subtyped & influenza B), September 1, 2009 – April 12, 2010**.



Source: The Ontario Agency for Health Protection and Promotion (OAHPP) public health laboratories.

For 1,426 specimens, no specimen collection date was available; the date the specimen was received at the lab has been used as a proxy. **Data collected since April 12, 2010 has been excluded from Figures 1 and 2. Since not all specimens collected on those dates have test results available, the data from those days may not reflect the current situation. ↓ **Modification to testing algorithm**

Resistance testing

A proportion of isolates undergo oseltamivir susceptibility testing, specifically looking for a nucleotide mutation at position 275 for tyrosine (H275Y) in the neuraminidase gene, which confers resistance.

Table 1: PHL oseltamivir susceptibility testing results since September 1, 2009.

Isolate tested	Total tested	Total Positive (%)	Total number of patients	Collection date of first resistant isolate
Pandemic Influenza A (H1N1)	766	15 (2.0)	5	1 Week 30 1 Week 36 2 Week 45 1 Week 49

Source: The Ontario Agency for Health Protection and Promotion (OAHPP) public health laboratories.

Nationally oseltamivir, amantadine and zanamivir susceptibility testing is conducted at the National Microbiology Laboratory (NML).

Table 2: NML susceptibility assay results for influenza isolates in Canada from September 1, 2009 – April 15, 2010

Isolates tested	Isolates tested for Oseltamivir susceptibility	Isolates resistant to Oseltamivir (%)	Isolates tested for Amantadine susceptibility	Isolates resistant to Amantadine (%)	Isolates tested for Zanamivir susceptibility	Isolates resistant to Zanamivir (%)
Seasonal Influenza A (H1N1)	6	6(100)	5	1(20)	2	0(0)
Influenza A (H3N2)	13	0 (0)	24	24(100)	13	0(0)
Influenza B	4	0 (0)	n/a	n/a	4	0(0)
Pandemic Influenza A (H1N1)	1077	12 (1.11)	1129	1129(100)	1055	0(0)

Source: Influenza and Respiratory Viruses Section, National Microbial Laboratory, Public Health Agency of Canada.

Table 3: NML strain characterization of isolates from Ontario and Canada from September 1, 2009 to April 14, 2010.

Strain	Positive isolates, Ontario	Positive isolates, Canada
Seasonal Influenza A (H1N1)		
A/Brisbane/59/2007-like	0	3
Seasonal Influenza A (H3N2)		
A/Brisbane/10/2007 – like	0	2
A/Perth/16/2009 – like	0	8
Seasonal Influenza B		
B/Brisbane/60/2008 – like	2	2
B/Florida/04/2006 –like	0	1
B/Malaysia/2506/2004 – like	1	1
Pandemic Influenza A (H1N1)		
A/California/07/2009 – like	295	848

Source: Influenza and Respiratory Viruses Section, National Microbial Laboratory, Public Health Agency of Canada.

Note:

Pandemic (2009) H1N1 vaccine component: A/California/07/2009

Seasonal influenza vaccine for 2009/2010: A/Brisbane/59/07-like (H1N1 component),

A/Brisbane/10/2007-like (H3N2 component), B/Brisbane/60/2008-like (influenza B component)

For the season to date, the vast majority of circulating influenza was the pH1N1 strain. However, of the seasonal influenza strains that circulated in Canada, most of the H3N2 subtype has drifted from the 2009/10 H3N2 vaccine component.

*****Due to low submissions, results from the Vaccine Effective (VE) Study will be included in a future laboratory report.*****

Additional information on the VE study can be found at <http://www.oahpp.ca/vestudy/index.php>

Ontario Public Health Units

At the PHL, a patient is sorted into a public health unit (PHU) based on their place of residence. If this information is not available, the address of the physician who submitted the sample is used to classify patients into PHUs. As a result, influenza A cases may not necessarily be residents of the PHU in which they have been classified.

Table 4. Number of influenza specimens submitted for testing, pH1N1 and influenza A cases, percent positive and submission rate and cumulative influenza A cases (/100,000) by PHU. Cumulative numbers from Sept. 1, 2009- Apr.19, 2010 (Specimens collected: April 11- April 17, 2010 (**Week 15*****)) are in displayed in brackets, **if no bracket value is 0**

Public Health Unit	Total number of specimens submitted	Submission rate (/100,000)	Number of lab confirmed cases of pH1N1	Number of lab confirmed Influenza A cases	Number of laboratory influenza A tests completed	Percent positive (%) influenza A**	Cumulative influenza A cases rate (/100,000)
Algoma District	443(4)	381.1(3.4)	50	103	442(3)	23.3	88.6
Brant County	312(4)	249.3(3.2)	28	50	310(4)	16.1	40.0
Chatham-Kent	254	233.9	33	62	251	24.7	57.1
City of Hamilton	680(6)	134.8(1.2)	265	137	508	27.0	27.2
City of Ottawa	122(1)	15.0(0.1)	18	27	120(1)	22.5	3.3
City of Toronto	5,165(57)	206.3(2.3)	371	673	5,082(29)	13.2	26.9
Durham Regional	899(10)	160.2(1.8)	122	208	888(4)	23.4	37.1
Eastern Ontario	405(3)	212.5(1.6)	99	118	400(3)	29.5	61.9
Elgin-St. Thomas	163	191.0	19	40	162	24.7	46.9
Grey Bruce	531(2)	336.6(1.3)	37	113	528(1)	21.4	71.6
Haldimand-Norfolk	183	169.8	36	50	177	28.2	46.4
Haliburton-Kawartha-Pine Ridge District	387(4)	225.4(2.3)	43	70	380(1)	18.4	40.8
Halton Regional	1,188(11)	270.5(2.5)	138	197	1,134(3)	17.4	44.8
Hastings & Prince Edward Counties	435(1)	278.9(0.6)	91	81	403	20.1	51.9
Huron County	171(1)	288.2(1.7)	24	48	169	28.4	80.9
Kingston-Frontenac and Lennox & Addington	572(4)	310.2(2.2)	133	133	552(3)	24.1	72.1
Lambton	270(4)	210.6(3.1)	35	53	266(1)	19.9	41.3
Leeds-Grenville and Lanark District	227(2)	139.3(1.2)	49	63	219(1)	28.8	38.7
Middlesex-London	339(2)	80.3(0.5)	141	104	281	37.0	24.6
Niagara Regional Area	986(8)	230.7(1.9)	128	213	960(2)	22.2	49.8
North Bay Parry Sound District	380(3)	309.3(2.4)	44	75	376(3)	19.9	61.1
Northwestern	436(16)	541.4(19.9)	70	127	429(10)	29.6	157.7
Oxford County	167	162.5	29	48	167	28.7	46.7
Peel Regional	3,450(46)	297.6(4)	252	436	3,388(33)	12.9	37.6
Perth District	282(5)	379.3(6.7)	30	43	278(2)	15.5	57.8
Peterborough County-City	327(2)	245.7(1.5)	45	84	326(1)	25.8	63.1
Porcupine	639(5)	759.3(5.9)	178	236	639(5)	36.9	280.4
Renfrew County & District	91(1)	91.6(1.0)	15	27	88	30.7	27.2
Simcoe Muskoka District	1,804(11)	376.0(2.3)	150	253	1,732(6)	14.6	52.7

Public Health Unit	Total number of specimens submitted	Submission rate (/100,000)	Number of lab confirmed cases of pH1N1	Number of lab confirmed Influenza A cases	Number of laboratory Influenza A tests completed	Percent positive (%) influenza A**	Cumulative influenza A cases rate (/100,000)
Sudbury & District	465(4)	241.7(2.1)	57	124	463(2)	26.8	64.5
Thunder Bay District	563(4)	365.4(2.6)	87	157	562(3)	27.9	101.9
Timiskaming	120(1)	350.7(2.9)	34	44	119	37.0	128.6
Waterloo	650(9)	135.9(1.9)	78	127	637(3)	19.9	26.6
Wellington-Dufferin-Guelph	560(8)	219.7(3.1)	43	85	551(3)	15.4	33.4
Windsor-Essex County	902(2)	229.3(0.5)	118	325	901(2)	36.1	82.6
York Regional	1,664(15)	186.4(1.7)	133	280	1,642(12)	17.1	31.4
Out of Province/Not Available	107	N/A	17	25	101	24.8	N/A
Grand Total	26,339(256)	216.6(2.1)	3,240	5039	25,631(141)	19.7	41.4

Source: The Ontario Agency for Health Protection and Promotion (OAHPP) public health laboratories.

*** Because of the lag in time from the date the specimen was collected to the date the final test result is confirmed, not all cases with specimens collected during the most recent week are included in this summary.

**Percent positive influenza A is calculated based on the number of specimens where testing has been completed. This may not equal the number of specimens submitted for testing.

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Appendix 1

Changes to Testing Algorithm:

Date	Change
February 22, 2010	All limitations on ambulatory (community) viral culture requests and influenza A subtyping have been removed.
December 17, 2009	Viral culture testing was increased to all ambulatory samples and a minimum of 20% of influenza A negative RT-PCR tests. Viral culture testing increases as resources allowed.
December 2, 2009	Subtyping was increased as resources allow.
November 9-12, 2009	Only 20% of ambulatory (community) viral culture requests were being processed.
October 25-31, 2009	Subtyping was performed on all intensive care samples, outbreak samples and on 20% of all additional influenza A positive tests.

For additional details on modifications to the testing algorithm, please view the November Lababstract at www.oahpp.ca/resources/lababstracts.html

Interpretation of subtyping results:

- **Indeterminate:** a RT-PCR test reflects a very low level of the target (e.g. influenza, or influenza subtype). Due to the level of target being near the threshold of detection it is not known if this is a true positive result, or nonspecific activity giving a false positive response.
- **Untypeable:** occurs when an influenza A is detected, but the sample does not match any of the subtypes that can be tested for (e.g. pH1N1, seasonal H3N2, H1N1).
- **Unable to subtype:** occurs when an influenza A positive sample has a very low amount of virus and the subtype cannot be detected.

A reference calendar of epidemiological weeks can be found at <http://www.phac-aspc.gc.ca/fluwatch/09-10/09-10cal-eng.php>

This report and past versions are available on our website and can be viewed at anytime at <http://oahpp.ca/h1n1>