

Ontario Agency for Health Protection and Promotion (OAHPP): Laboratory Viruses Respiratory Surveillance Report

Information current as of: Monday June 7, 2010

This report summarizes patient specimens (1 specimen/patient) collected and received at the Ontario Agency for Health Protection and Promotion (OAHPP) public health laboratories (PHL) in Ontario for influenza virus testing since September 1, 2009. This information is current as of Monday June 7, 2010 and is updated weekly. Note that influenza A positivity rates are only reported for influenza A tests performed at the OAHPP 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/(pH1N1) positive sample collected on May 19, 2010 in York Region. A Flu A/ (H3) positive sample was also collected on May 19, 2010 in Toronto. The most recent influenza B sample was collected on March 24, 2010. Low levels of parainfluenza viruses (PIV), human metapneumovirus (hMPV), adenovirus and respiratory syncytial virus (RSV) are circulating in Ontario.

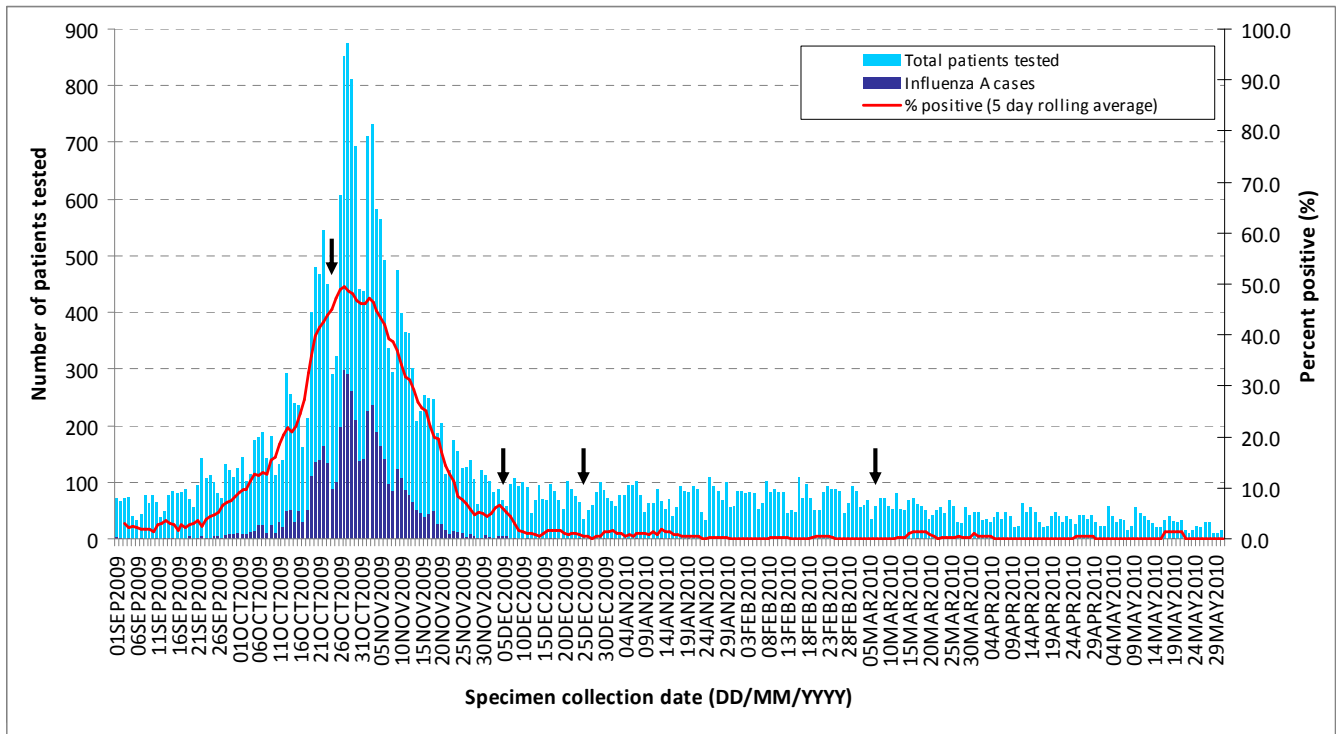
Case statistics:

Between September 1, 2009 and June 7, 2010, a total 27,829 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, 27,152 specimens and isolates have been tested for influenza A at the PHL, of which 5,043 (18.6%) 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.

Five cases of seasonal influenza (H3) have been detected in Weeks 36, 37, 52, 2009, and Week 2 and 20, 2010. No seasonal influenza A H1 has been detected. Eight cases of influenza B have been detected: one each in Week 40 of 2009 and Weeks 2, 8, 9, 10 and 12 of 2010, and two in Week 43 of 2010.

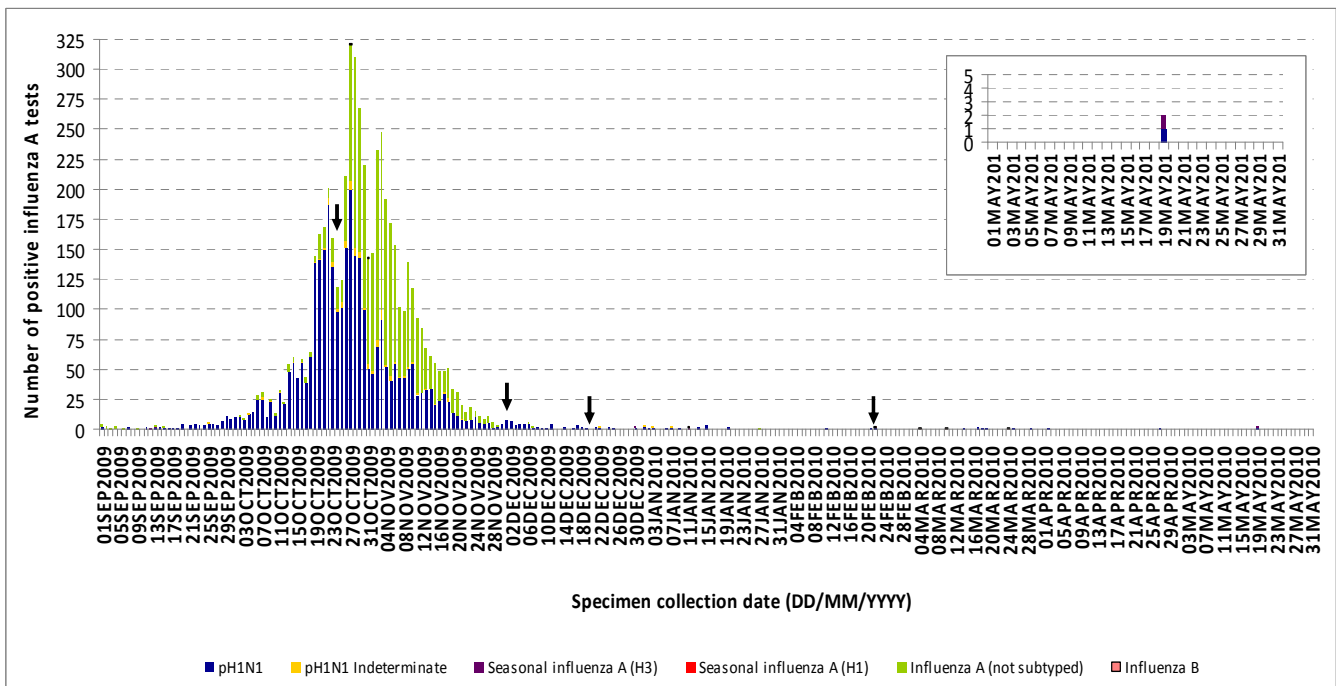
Please refer to **Appendix 1** for further information on lab testing algorithms and interpreting subtyping results.

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 – May 31, 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 – May 31, 2010**.



Source: The Ontario Agency for Health Protection and Promotion (OAHPP) public health laboratories. For 1,529 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 June 1, 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)	770	15 (19.4)	5	1 Week 30 1 Week 36 2 Week 45 1 Week 49

Source: The Ontario Agency for Health Protection and Promotion (OAHP) 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 – May 6, 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)	1079	12 (1.11)	1136	1136(100)	1057	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 May 6, 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	851

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 are from September 1, 2009- June 7, 2010. Specimens collected from May 30 – June 5, 2010 (**Week 22*****) are in displayed in brackets; **if no bracket or empty cell, the value is 0.**

Public Health Unit	Total number of specimens submitted	Number of lab confirmed cases of pH1N1	Number of lab confirmed cases of seasonal H1N1	Number of lab confirmed cases of seasonal (H3)	Number of lab confirmed Influenza A cases	Percent positive (%) influenza A**	Cumulative influenza A cases rate (/100,000)
Algoma District	454(1)	50(0)			104	23.0	89.5
Brant County	327(2)	28			50	15.3	40.0
Chatham-Kent	265(1)	33			62	23.4	57.1
City of Hamilton	707(1)	266			138	25.6	161.7
City of Ottawa	135(2)	18			27	20.5	22.0
City of Toronto	5,627(42)	372		1	675	12.2	438.1
Durham Regional	948(2)	122			208	22.1	41.2
Eastern Ontario	413(1)	99			117	28.7	4.7
Elgin-St. Thomas	167	19			40	24.1	4.9
Grey Bruce	553(4)	37			113	20.6	20.1
Haldimand-Norfolk	193	36			50	26.9	31.7
Haliburton-Kawartha-Pine Ridge District	412(2)	43			71	17.5	65.9
Halton Regional	1,271(10)	138		1	197	16.2	103.4
Hastings & Prince Edward Counties	442(1)	91			80	19.5	46.6
Huron County	176(3)	24			48	27.6	10.9
Kingston-Frontenac and Lennox & Addington	584(1)	133			133	23.5	85.3
Lambton	288(1)	35			53	18.4	89.3
Leeds-Grenville and Lanark District	234	49			63	27.5	34.2
Middlesex-London	349(2)	141		1	104	35.9	81.1
Niagara Regional Area	1,054(7)	128			213	20.8	130.7
North Bay Parry Sound District	405(3)	44			75	18.9	17.8
Northwestern	444(1)	70			127	28.7	29.7
Oxford County	173(17)	29		1	48	27.7	59.6
Peel Regional	3,636	251		1	436	12.2	37.6
Perth District	289	30			43	15.0	41.8
Peterborough County-City	344(2)	45			84	24.5	63.1
Porcupine	661(1)	179			237	36.0	318.8
Renfrew County & District	96(2)	15			27	28.4	32.1
Simcoe Muskoka District	1891(5)	150			253	13.9	254.6

Public Health Unit	Total number of specimens submitted	Number of lab confirmed cases of pH1N1	Number of lab confirmed cases of seasonal H1N1	Number of lab confirmed cases of seasonal (H3)	Number of lab confirmed Influenza A cases	Percent positive (%) influenza A**	Cumulative influenza A cases rate (/100,000)
Sudbury & District	487(3)	57			124	25.7	25.8
Thunder Bay District	588	87			157	26.8	81.6
Timiskaming	126(1)	34			44	35.2	128.6
Waterloo	679(3)	78			127	19.0	26.6
Wellington-Dufferin-Guelph	592(4)	43			84	14.4	33.0
Windsor-Essex County	925(5)	118			325	35.3	82.6
York Regional	1,784(10)	134			281	16.0	31.5
Out of Province/Not Available	110(0)	17			25	22.7	N/A
Grand Total	27,829(140)	3,243	0	5	5,043	18.6	41.5

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.

Appendix 1

Changes to Testing Algorithm:

Date	Change
March 12, 2010	Due to technical changes made to the data extraction process, results, may differ slightly from those presented in the previous reports.
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 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>