

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

Information current as of: Monday August 16, 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 August 16, 2010 and is updated bi-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) and Adenoviruses are circulating in Ontario.

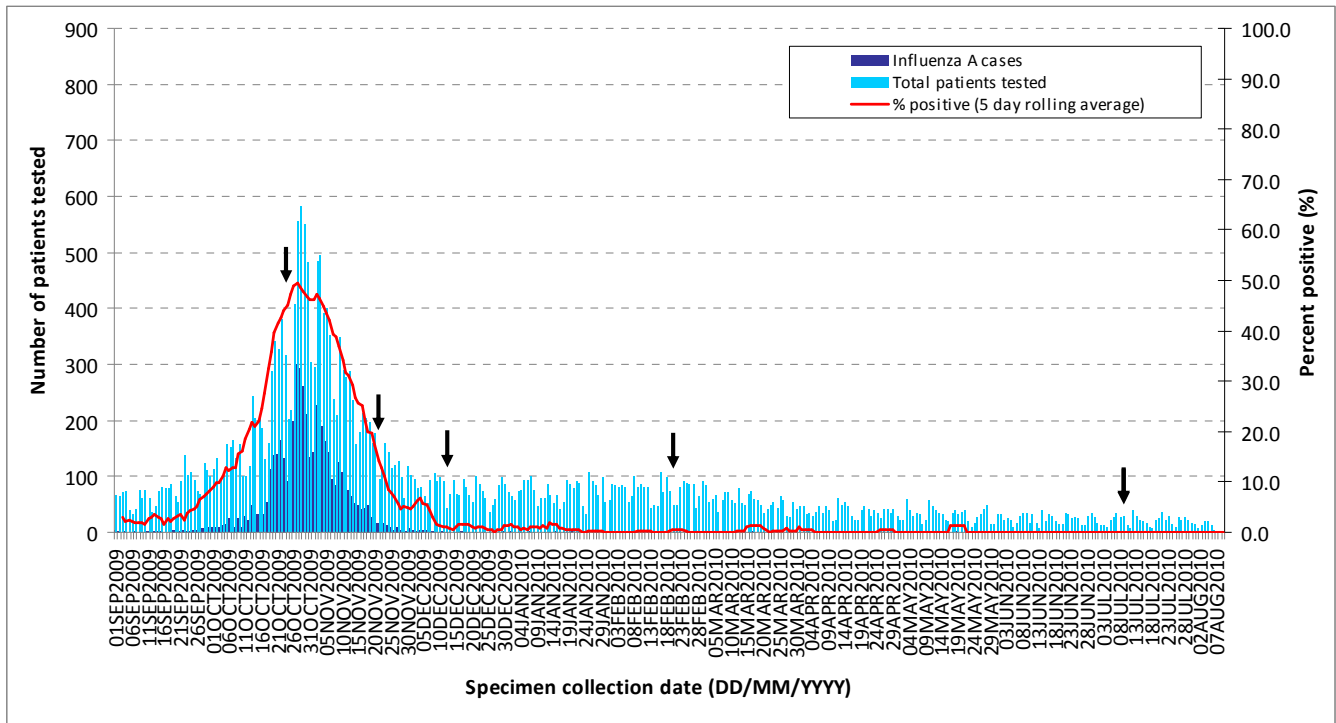
Case statistics:

Between September 1, 2009 and August 16, 2010, a total 29,374 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, 28,689 specimens and isolates have been tested for influenza A at the PHL, of which 5,043 (17.6%) 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 2009.

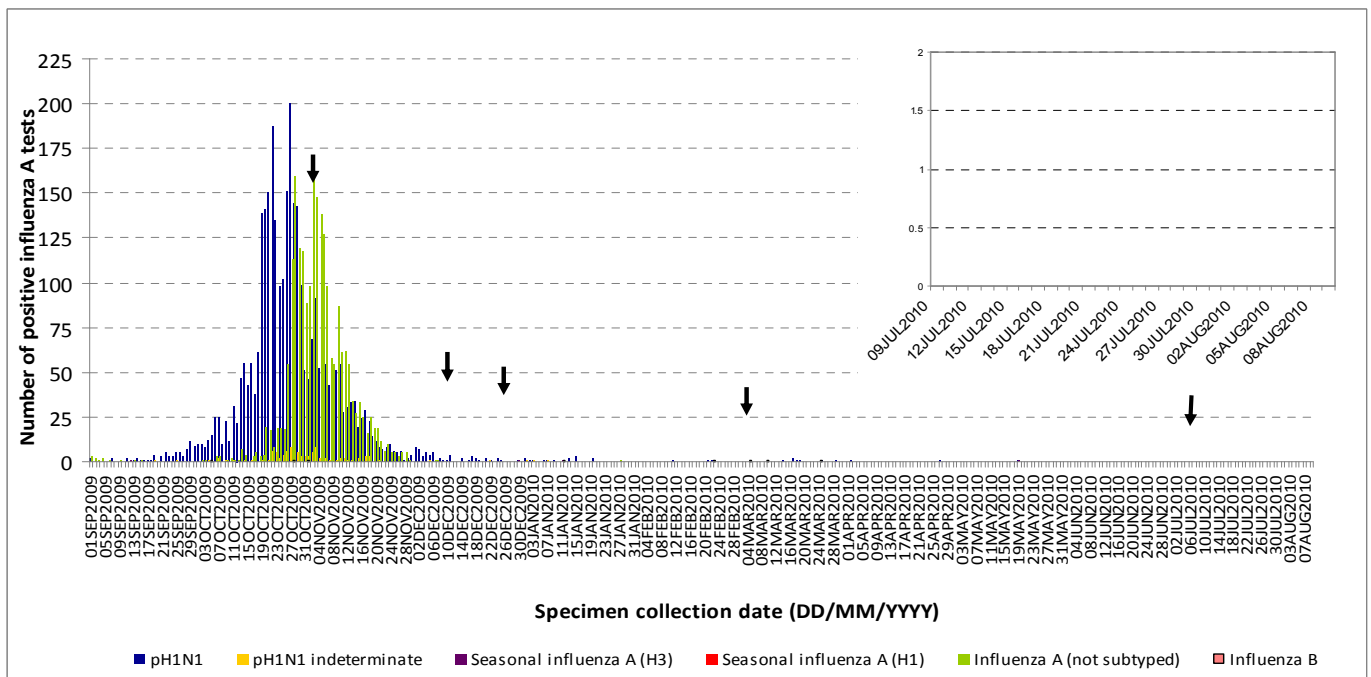
Please refer to **Appendix 1** for further information on lab testing algorithms and interpreting subtyping results.

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 – August 9, 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 1/H3, indeterminate pH1N1 influenza A - not subtyped & influenza B), September 1, 2009 – August 9, 2010**.



Source: The Ontario Agency for Health Protection and Promotion (OAHPP) public health laboratories. For 1,676 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 August 10, 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 (OAHPP) public health laboratories.

Nationally oseltamivir, amantadine and zanamivir susceptibility testing is conducted at the National Microbiology Laboratory (NML). No updates have been received since May 5, 2010 for NML testing results

Seasonal influenza vaccine for the 2010/2011 season: A/California/7/2009-like (H1N1 component), A/Perth/16/2009 like (H3N2), B/Brisbane/60/2008-like (influenza B). For the season to date, the vast majority of circulating influenza was the pH1N1 strain. However, of the seasonal H3N2 influenza subtypes that circulated in Canada, most were the A/Perth/16/2009 strain, which was not a component of the seasonal 2009/10 vaccine, but is included in the 2010/2011 seasonal vaccine.

*****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 2. Specimens submission for influenza testing, and confirmed influenza types and subtypes by PHU. Cumulative numbers are from September 1, 2009- August 16, 2010. Specimens collected from Aug 1-Aug 14, 2010 (Week 31-32**) are 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	467(2)	50(0)	0	0	104(0)	22.3	89.5
Brant County	336(2)	28			50	15.1	40.0
Chatham-Kent	281(0)	33			62	22.1	57.1
City of Hamilton	743(6)	266			138	24.0	27.4
City of Ottawa	149(2)	17			26	17.8	3.2
City of Toronto	6132(96)	373		1	677	11.2	27.0
Durham Regional	1031(18)	122			208	20.5	37.1
Eastern Ontario	420(1)	99			117	28.3	61.4
Elgin-St. Thomas	177(3)	19			40	23.1	46.9
Grey Bruce	569(2)	37			113	20.0	71.6
Haldimand-Norfolk	207(1)	36			50	24.9	46.4
Haliburton-Kawartha-Pine Ridge District	428(1)	43			71	16.7	41.4
Halton Regional	1338(17)	138		1	197	15.3	44.8
Hastings & Prince Edward Counties	458(1)	91			80	18.8	51.3
Huron County	178	24			48	27.1	80.9
Kingston-Frontenac and Lennox & Addington	602(2)	132			132	22.6	71.6
Lambton	306(4)	35			53	17.5	41.3
Leeds-Grenville and Lanark District	241	50			64	27.1	39.3
Middlesex-London	365(2)	141		1	104	33.8	24.6
Niagara Regional Area	1116(15)	128			213	19.4	49.8
North Bay Parry Sound District	412(1)	44			74	18.2	60.2
Northwestern	456(2)	69			126	27.8	156.5
Oxford County	186	30		1	49	26.5	47.7
Peel Regional	3793(22)	250		1	435	11.6	37.5
Perth District	302(4)	32			45	15.0	60.5
Peterborough County-City	364(9)	45			84	23.2	63.1
Porcupine	691(6)	180			238	34.7	282.8
Renfrew County & District	103(1)	15			27	26.5	27.2
Simcoe Muskoka District	1974(13)	151			254	13.3	52.9

Public Health Unit									
Sudbury & District	510(5)	57				125	24.8	65.0	
Thunder Bay District	609(3)	87				157	25.8	101.9	
Timiskaming	132(10)	34				44	33.6	128.6	
Waterloo	735(10)	77				126	17.6	26.4	
Wellington-Dufferin-Guelph	620(6)	43				84	13.7	33.0	
Windsor-Essex County	946(2)	118				326	34.5	82.9	
York Regional	1890(18)	135				282	15.1	31.6	
Out of Province/Not Available	107(1)	14				20	18.7	N/A	
Grand Total	29374 (279)	3,243(0)	0	5(0)	5,043(0)	17.6	41.5		

Source: The Ontario Agency for Health Protection and Promotion (OHPP) 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
July 7, 2010	Due to low positivity rate of Influenza a change in testing algorithm was implemented at PHLs. RT_PCR testing was replaced by Multiplex and Viral Culture to test for other respiratory viruses in addition to Influenza A and B.
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>