

**Ontario Agency for Health Protection and Promotion Laboratory Pandemic H1N1 Surveillance Report
Information current as of: Monday November 16, 2009**

This report summarizes patient specimens (1 specimen/patient) collected and received at OAHPP Public Health Laboratories (PHL) in Ontario for pandemic H1N1 influenza virus (pH1N1) testing since September 1, 2009. This information is current as of Monday November 16, 2009 and is updated weekly.

Specimen collection date is used in this weekly report to classify the specimens submitted and tested by time. A daily summary is also prepared which uses the date the specimen was logged into the PHL electronic system. Because of these differences, numbers may not always match accordingly.

The PHL performs the majority of testing for pH1N1; however, several hospital laboratories also perform pH1N1 testing. 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.

RECENT CHANGE IN LAB TESTING ALGORITHM:

Starting the week of Oct 25-31st, 2009, subtyping is only being performed on 20% of influenza A positive tests, in addition to all intensive care patients and outbreak samples. As the pre-test probability for an influenza A positive sample testing positive for pH1N1 is currently 99%, the percent positive for influenza A will be reported instead of the percent positive for pH1N1. Note that influenza A positivity rates are only reported for influenza A tests performed at the OAHPP laboratories.

Starting the week of November 9-12th, 2009, only 20% of ambulatory (community) viral culture requests are being processed.

For additional details on changes to the laboratory testing algorithm, please see the November Labstract at www.oahpp.ca.

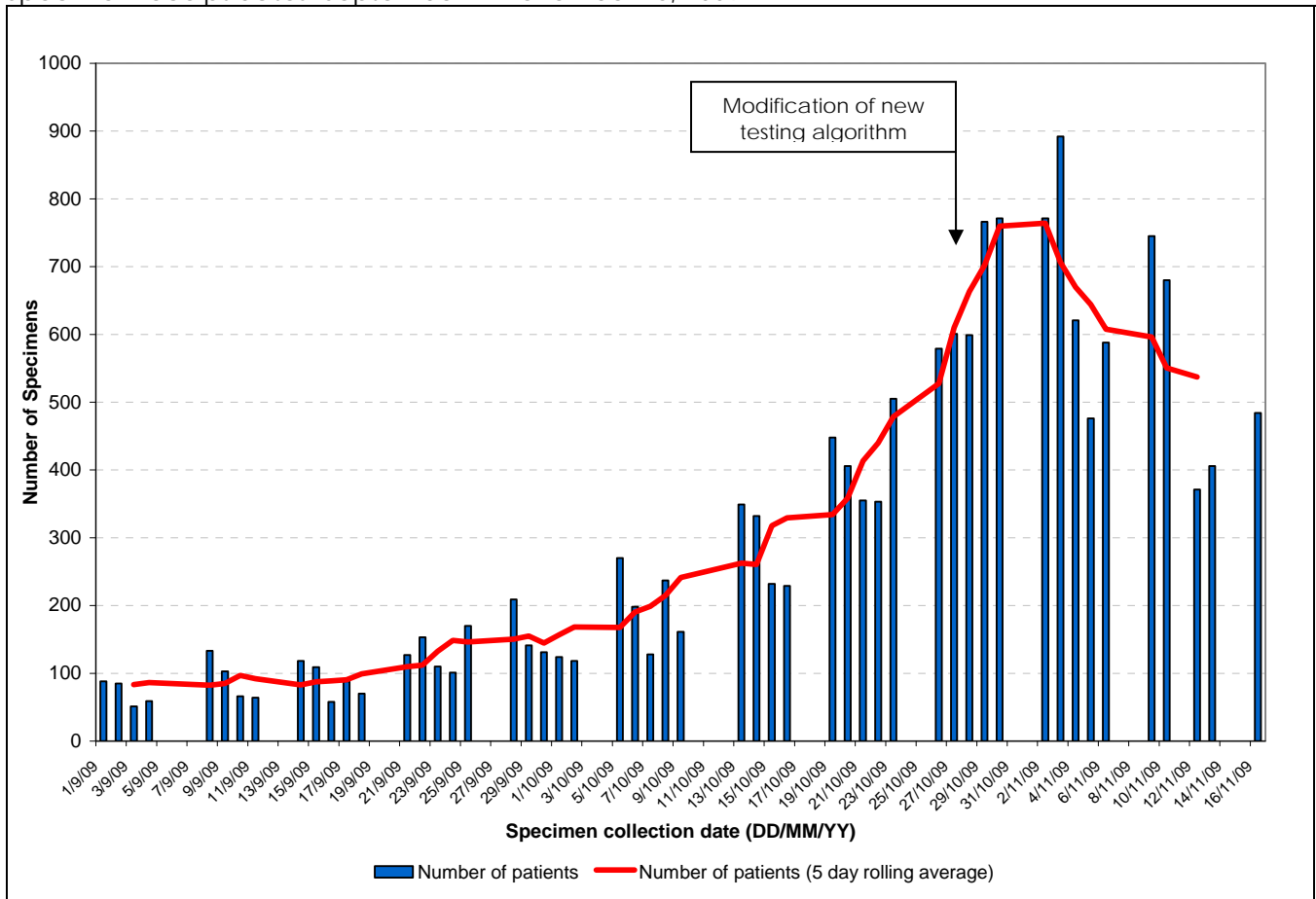
Week 45 Summary Snapshot

- 416 laboratory confirmed influenza A cases
- RT-PCT % positive (approximately) = 35%
- Northwestern PHU had the highest influenza A percent positive this week (79.2%)

Lab Submissions

Figure 1 displays the daily number of patient specimens (1 specimen/patient) received at PHL for pH1N1 testing since September 1, 2009, as well as a five-day rolling average. Rolling averages offer a method of smoothing time series data to reduce the effects of random variation and reveal underlying trends. The total number of patients with specimens received as of November 16, 2009 is 16,404. This number includes all specimens received, irrespective of testing status and also includes rejected specimens. The number of specimen submissions remained relatively constant in the first three weeks of September. However, the number of specimens received has been steadily increasing until the end of October. There were 2884 specimens received for pH1N1 testing during the 7 day period between November 9 - November 16, 2009; 17.6% of the total received since September 1. The five-day rolling average has steadily increased since the beginning of October, however, within the past two weeks submissions have begun to decline slightly.

Figure 1. The number of specimens received (1/patient) at PHL/OAHP for pH1N1 testing by date. Specimen receipt dates: September 1- November 16, 2009.



Source: PHL, Ontario Agency for Health Protection and Promotion (OAHP).

Case Statistics

Between September 1 and November 16, 2009, a total of 13,474 patient specimens and isolates (1/patient) have been submitted for pH1N1 testing at the PHL and entered into the PHL electronic system. This number does not include rejected samples or samples for which testing has been cancelled. 12,913 of the samples were submitted to PHL directly for influenza A testing and subsequent pH1N1 subtyping. The additional samples, tested for influenza A at hospitals, were forwarded to the PHL to be subtyped for pH1N1. The majority of specimens received at PHL, which have been approved for testing, are first tested for influenza A by real-time reverse transcriptase (RT) polymerase chain reaction (PCR). A subset of samples is tested by viral culture. Subtyping of positive influenza A tests is done to determine if samples are pH1N1 or seasonal H1/H3. Currently subtyping is being performed on 20% of influenza A tests, in addition to all intensive care patients and outbreak samples. For Influenza A real-time RT-PCR negative samples, 20% are followed up with viral culture to look for other viral pathogens. Viral culture analyses take considerably longer to process (up to 10 days) than analyses by real-time RT-PCR. The number of patient specimens and isolates submitted for pH1N1 testing by test result (or status) by collection date is displayed in **Figure 2**. The percentage of all patient specimens tested by RT-PCR and viral culture that have detected influenza A (percent positive Influenza A for RT-PCR and viral culture) in addition to the percentage of all subtyped specimens that have detected pH1N1 (percent positive pH1N1 for subtyped cases) across specimen collection weeks are displayed in **Table 1**. The percent positive pH1N1 for resulted subtyping has remained extremely high and stable since September 1st, 2009 indicating that the vast majority of influenza A positive tests are pH1N1. Due to the high percentage of pH1N1 for resulted influenza A subtyping we can use the percent positive of influenza A tests as a proxy for the percent positive pH1N1 for all specimens submitted for testing. The highest influenza A percent positive since September 1st, 2009 reached 51.7% on October 27, 2009. At the height of the Spring/Summer pH1N1 outbreak, percent positive pH1N1 reached approximately 54% (Source: OAHPP Laboratory Pandemic H1N1 Surveillance Report: Tuesday September 22, 2009).

Figure 3 displays the number of influenza A cases detected, the total number of patients tested, as well as the 5 day rolling averages for total number of patients tested and the number of pH1N1 cases confirmed by laboratory results (average of the current date, 2 preceding and 2 following dates), by specimen collection date.

Since September 1, 2009, 12,286 patient specimens and isolates have been tested for influenza A at the PHL. Influenza A virus has been identified in 4,090 (33.3%) of the patients tested at PHL; an additional 561 patient specimens that tested positive for influenza A at hospital laboratories were forwarded to the PHL to be subtyped for pH1N1. There are 1728 specimens that have been confirmed positive for influenza A but have not been subtyped. Of all specimens and isolates subtyped for pH1N1, 2814 cases of pH1N1 have been detected. Two cases of seasonal influenza (H3) have been detected. Eighty-six samples tested positive for influenza A but were indeterminate for pH1N1 (**Table 1**).

Interpretation of subtyping results:

An **indeterminate** result occurs in a RT-PCR test when a result is obtained that 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 of the RT-PCR test, it is not known if this is a true positive result, or nonspecific activity giving a false positive response. The clinical interpretation of an indeterminate result depends on the prevalence of the target of interest in the population being tested at that point in time. Currently an indeterminate pH1N1 result should be clinically interpreted as a pH1N1 case given that over 99% of influenza samples are of this subtype. An influenza isolate is considered **unsubtypeable** when influenza A is detected, but this sample does not match any of the subtypes that can be tested for (e.g. pH1N1, seasonal H3N2, H1N1). These samples are investigated further for the possibility of new strains or subtypes (due to genetic drift or shift). On occasion an influenza A positive sample that has very low amount of virus in it does not match any subtype. This occurs because the subtyping PCR tests are less sensitive than the influenza A RT-PCR tests available. When this occurs a result of "**unable to subtype**" is released.

Table 1. Patient test results for specimens collected between September 1 and November 14, 2009, tested at the PHL in Ontario.

Specimen collection date*	pH1N1 positive	Positive influenza A, not subtyped	Seasonal H1/H3 influenza	Positive influenza A – indeterminate pH1N1	Positive influenza A – unsubtypeable	Indeterminate & negative influenza A	Total cases tested**	Percent positive (%) influenza A RT-PCR	Percent Positive (%) influenza A Viral culture†	Percent Positive (%) pH1N1 for influenza A subtyped cases
Sep. 1 – Sep. 5	2	9	0	0	0	240	251	4.0	2.4	100.0
Week 36 (Sep. 6 – 12)	2	3	1	0	0	334	340	1.6	7.2	66.7
Week 37 (Sep. 13 – 19)	11	3	1	1	0	436	452	4.9	3.1	84.6
Week 38 (Sep. 20 – 26)	27	1	0	1	0	558	587	5.8	0.8	96.4
Week 39 (Sep. 27 – Oct. 3)	59	6	0	0	0	598	663	11.4	0.0	100.0
Week 40 (Oct. 4 – 10)	125	4	0	3	0	742	874	13.9	4.2	97.7
Week 41 (Oct. 11 – 17)	293	12	0	4	0	807	1116	21.0	15.5	98.7
Week 42 (Oct. 18 – 24)	914	56	0	15	0	1083	2068	38.4	33.8	98.4
Week 43† (Oct. 25 – 31)	877	558	0	35	0	1448	2918	47.7	49.8	96.2
Week 44 (Nov. 1 – 7)	366	759	0	23	0	1228	2376	45.6	61.0	94.1
Week 45*** (Nov. 8 – 14)	138	317	0	4	0	721	1180	34.9	30.9	97.2
Total	2814	1728	2	86	0	8195	12825	32.8 (n=10,011)	33.6 (n=2,295)	97.0

Source: PHL, Ontario Agency for Health Protection and Promotion (OAHPP).

* For 747 specimens, no specimen collection date was available; the date the specimen was received at the lab has been used as a proxy.

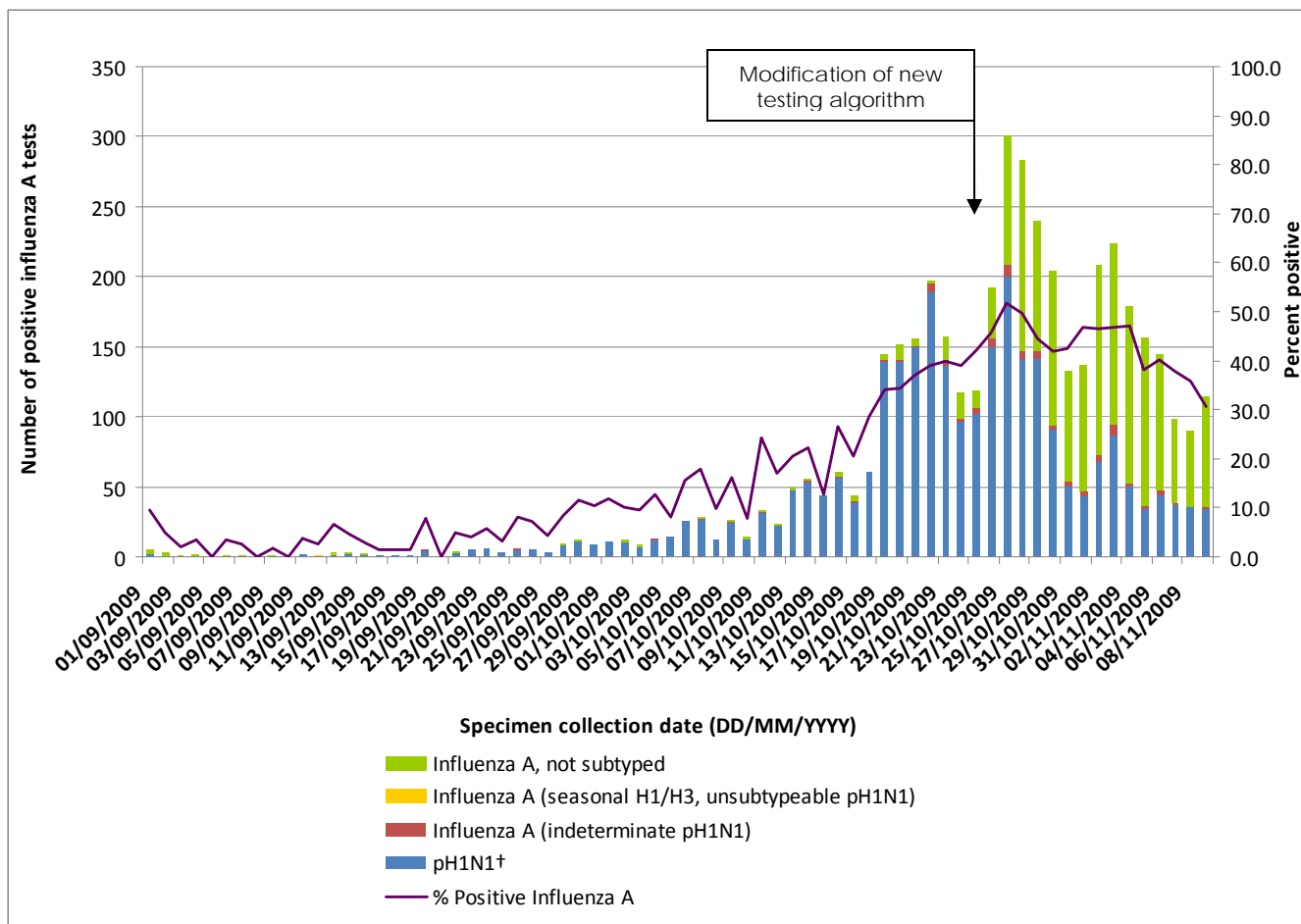
** **This number includes specimens for which the primary detection was not completed at the PHL (N=561)**

*** 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.

† Commencing the week of Oct 25-31st, 2009, subtyping will be only performed on 20% of influenza A positive tests, in addition to all intensive care patients and outbreak samples.

‡ Viral culture % positive is based on resulted tests from September 1st 2009 onwards.

Figure 2. The number of positive test results and the percent positive for influenza A, by subtype (pH1N1, seasonal H1/H3, unsubtypeable & indeterminate pH1N1 or pending subtype), for specimen collection dates* September 1 – November 9, 2009, 2009**.



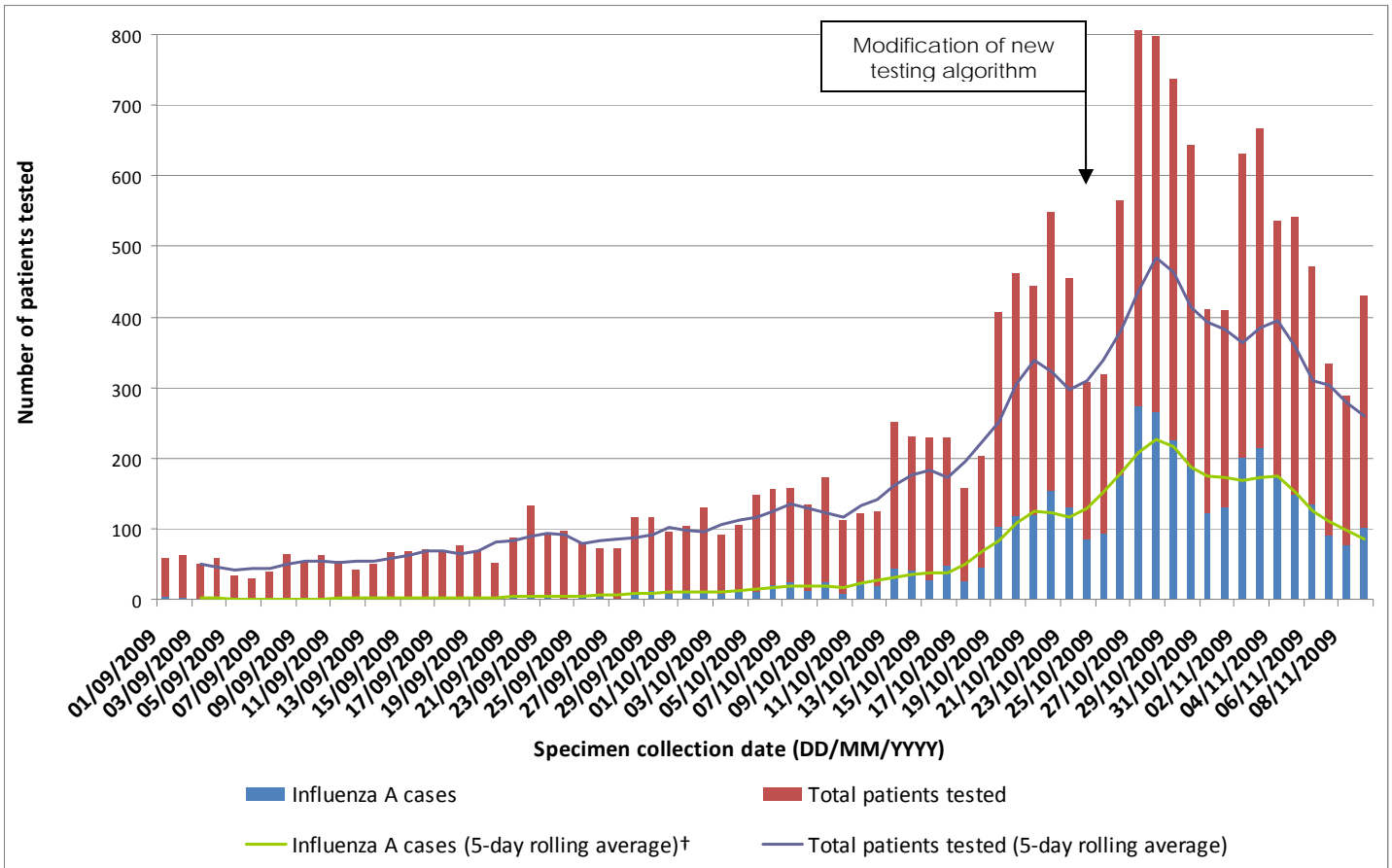
Source: PHL, Ontario Agency for Health Protection and Promotion (OAHP).

* For 747 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 November 9th, 2009 has been excluded from Figures 3. Since not all specimens collected on those dates have test results available, the data from those days may not reflect the current situation.

Figure 3. Total counts and 5 Day rolling averages of the number of influenza A cases and number of patients tested, by specimen collection* dates September 1 – November 9, 2009**.

Source: PHL, Ontario Agency for Health Protection and Promotion (OAHPP).



* For 747 specimens, no specimen collection date was available; the date the specimen was received at the lab has been used as a proxy.

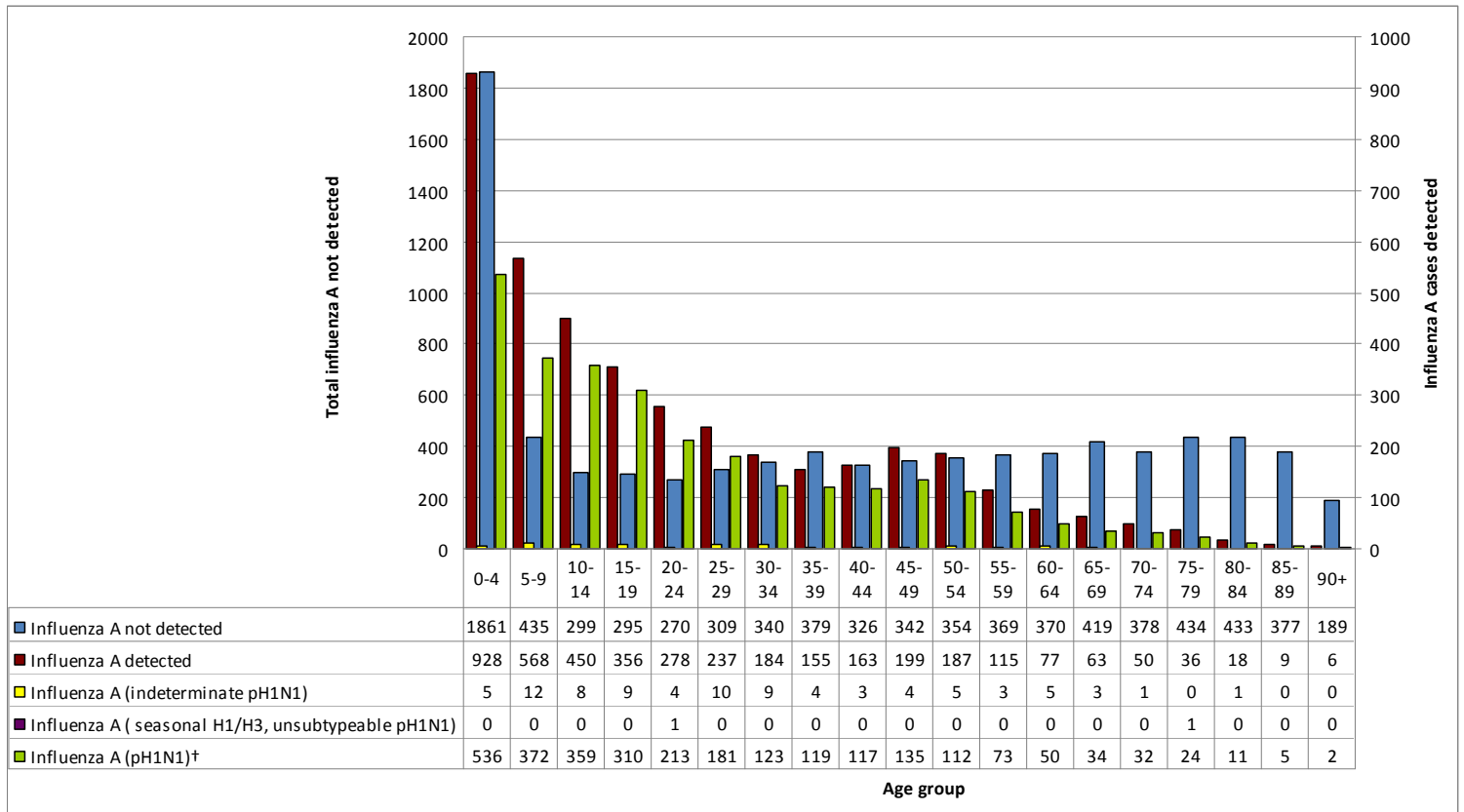
**Data collected since November 9th, 2009 has been excluded from Figures 3. Since not all specimens collected on those dates have test results available, the data from those days may not reflect the current situation.

Sex and Age Distribution

Over half (56.1%; n=6931) of all patient specimens submitted for testing for pH1N1 were from female patients. Males made up 43.9% (n=5419) of patients and sex was not reported for 242 of patients. Females make up 51.5% (n=1,419) of all lab confirmed cases of pH1N1 detected. Males made up 48.5% (n=1,336) of confirmed pH1N1 cases. Sex was not reported for 60 cases.

The age distribution of patients by pH1N1 test result since September 1, 2009 is shown in **Figure 4**. The largest amount of pH1N1 cases occurred in children under the age of five, with 536 cases (19.1%). Children aged 0-19 represent over half of the cases (56.2%; n=1577). There were 394 cases of pH1N1 among adults aged 20-29 (14.0%). Adults aged 30-59 make up 24.2% of pH1N1 cases (n=679). 158 pH1N1 cases occurred among adults 60 years of age and older.

Figure 4. Age distribution of patients tested at PHL for influenza A by test result, for specimens collected between September 1- November 16, 2009*.



Source: PHL, Ontario Agency for Health Protection and Promotion (OAHP).

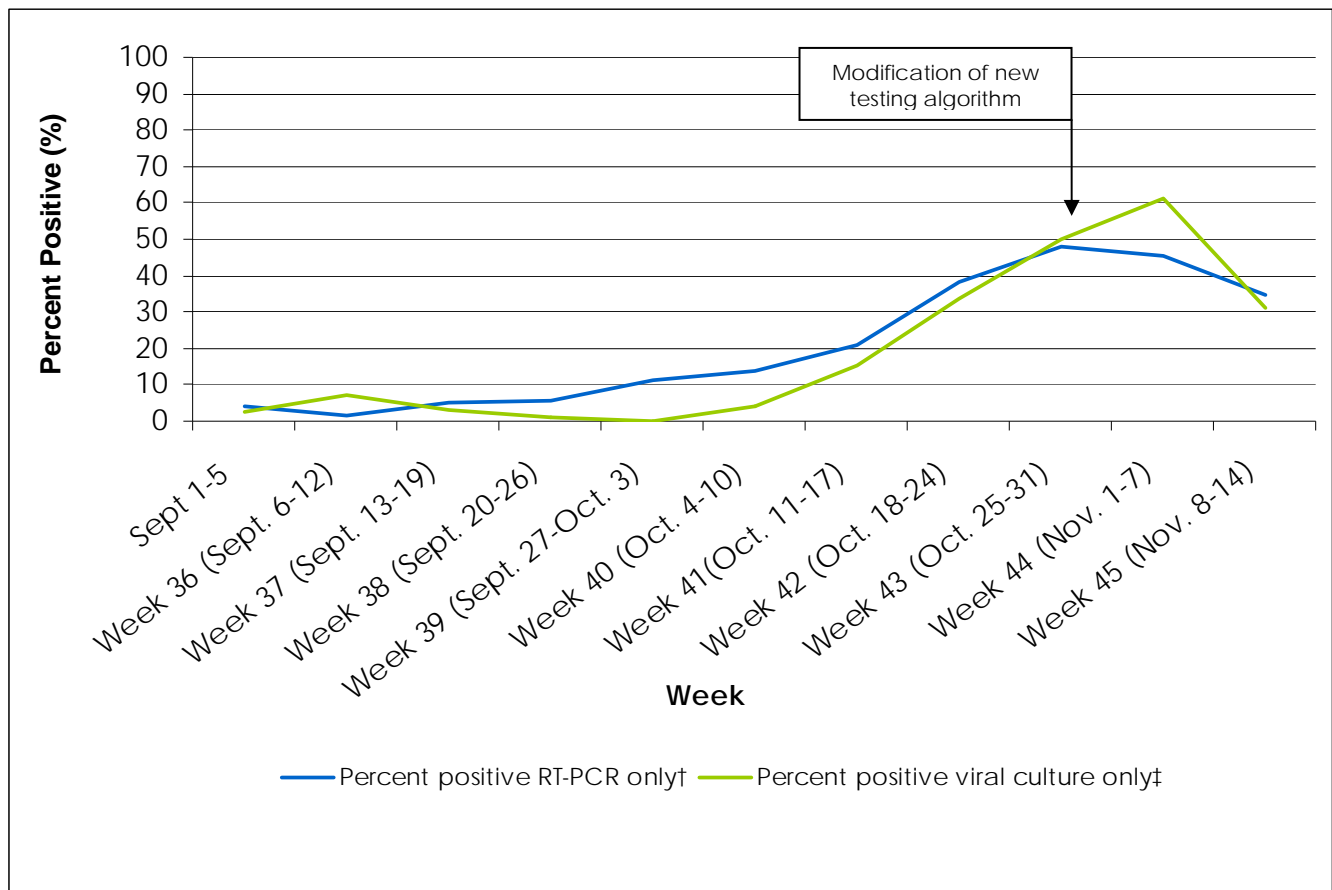
*Note: Age was not available for 31 patients.

Second wave peak

It is hard to know with any certainty when a peak in activity has been reached. However, this is easiest to identify in retrospect. To date various indicators (specimen submission, percent positive, activity at local health unit level) reveal that Ontario may be at or close to passing the peak activity in terms of infections. Note that the peak in hospitalizations and/or deaths would be anticipated to follow the peak in infections because of the lag between the onset of infection and hospitalization or death.

The percent positive for influenza A separated by testing method (PCR† and viral culture‡) is shown in **Figure 5**. The percentage of specimens positive for influenza by RT-PCR appears to be declining slightly in the past two most recent weeks. For viral culture approximately 31% of these specimens tested positive in the most recent reporting week. Percent positivity by RT-PCR provides a better indicator of the overall trend given that this test is performed on the majority of patient specimens and provides a more timely result compared to viral culture due to the inherent lag time of growing cultures. Since ambulatory samples are primarily tested with only viral culture, the percent positive of viral culture tests provides an indicator for ambulatory activity.

Figure 5: Percent positive of influenza A tests conducted by RT-PCR and viral culture at the public health labs from September 1st, 2009 to November 14th, 2009



Note:

†RT-PCR percent positive is calculated based on date of specimen collection.

‡Viral culture percent positive is calculated based on date of entry of results.

Public Health Unit

The cumulative number of specimens submitted for pH1N1 testing, submission rates, number of lab-confirmed cases and percent positives by PHU, since September 1, 2009, are displayed in **Table 2**. The number of pH1N1 cases detected in Weeks 44 and 45, as well as the total number of specimens submitted, by public health unit (PHU), is displayed in **Tables 3 and 4**. Rates of the submission of specimens for pH1N1 testing and percent positive by PHU are also displayed. A map of pH1N1 cases by PHU and specimen collection week is displayed in **Figure 6**. Each ring on the map represents one week, with the most recent full week (Week 45 – November 8 – November 14) as the outermost ring. The rings are divided into sections representing each PHU in Ontario. The map of Ontario includes the cumulative number of pH1N1 cases by PHU since the beginning of the outbreak. At the PHL, a patient is sorted into a 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, pH1N1 cases may not necessarily be residents of the PHU in which they have been classified.

Cumulative: September 1 – November 16

Since, September 1, the highest submission rates for specimens being tested for pH1N1 observed were from the Porcupine (545.4 submissions/100,000 persons) and Northwestern (340.2 submissions/100,000 persons) PHUs. The Toronto area had the highest number of influenza A cases in the province (n=519) during this time period, followed by Peel Regional (n=343) and York Regional (n=228) (**Table 2**). Percent positive for influenza A was greatest in Middlesex-London, with 54.3% of samples tested yielding positive results.

Week 44: November 1 – November 7

In the recent full week, Porcupine (97.4 submissions/100,000 persons) and Northwestern (77.0 submissions/100,000 persons) PHUs had the highest submission rates for specimens to be tested for pH1N1. In Week 44, 1094 new influenza A cases have been identified (366 confirmed new cases of pH1N1) to date. The greatest number of influenza A cases was identified in Toronto (n=168). This was followed by Peel (n=139) and Simcoe Muskoka District (n=70) (**Table 3**).

Most recent full week: November 8 – November 14 (Week 45)

In the most recent full week, Northwestern (33.5 submissions/100,000 persons) and Porcupine (27.3 submissions/100,000 persons) PHUs had the highest submission rates for specimens to be tested for pH1N1. In Week 45, 416 new influenza A cases have been identified (138 confirmed new cases of pH1N1) to date. The greatest number of cases was identified in Toronto (n=68) followed by Peel Region (n=40), and Simcoe Muskoka District (n=34) (**Table 4**).

Table 2. Number of pH1N1 specimens submitted for testing, pH1N1 cases, percent positive and submission rate (/100,000) by PHU. Specimen collection dates: September 1- November 16, 2009.

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	Percent positive (%) influenza A**
Algoma District	301	258.9	49	96	33.1
Brant County	146	116.7	26	47	35.3
Chatham-Kent	116	106.8	29	46	43.0
City of Hamilton	402	79.7	257	113	48.9
City of Ottawa	78	9.6	15	24	30.8
City of Toronto	2504	100.0	283	519	22.7
Durham Regional	442	78.8	107	140	34.3
Eastern Ontario	245	128.6	91	106	45.1
Elgin-St. Thomas	87	101.9	17	37	44.6
Grey Bruce	304	192.7	32	102	35.2
Haldimand-Norfolk	97	90.0	32	43	50.6
Haliburton-Kawartha-Pine Ridge District	175	101.9	37	49	30.4
Halton Regional	480	109.3	125	132	31.1
Hastings & Prince Edward Counties	258	165.4	87	73	34.0
Huron County	116	195.5	23	49	45.4
Kingston-Frontenac and Lennox & Addington	374	202.8	122	123	36.7
Lambton	135	105.3	31	50	38.2
Leeds-Grenville and Lanark District	156	95.7	42	57	38.8
Middlesex-London	250	59.2	133	100	54.3
Niagara Regional Area	445	104.1	115	182	42.7
North Bay Parry Sound District	214	174.2	41	69	33.2
Northwestern	274	340.2	62	107	40.8
Oxford County	114	110.9	24	43	39.8
Peel Regional	1522	131.3	184	343	24.3
Perth District	144	193.7	30	43	30.5
Peterborough County-City	155	116.5	38	65	43.0
Porcupine	459	545.4	176	227	50.0
Renfrew County & District	57	57.4	10	22	41.5
Simcoe Muskoka District	898	187.2	111	212	27.3
Sudbury & District	286	148.7	52	106	39.3
Thunder Bay District	358	232.4	79	141	41.7
Timiskaming	86	251.3	31	39	46.4
Waterloo	295	61.7	70	118	43.2
Wellington-Dufferin-Guelph	271	106.3	34	73	28.0
Windsor-Essex County	369	93.8	96	148	45.8
York Regional	809	90.6	110	228	29.8
Out of Province/Not Available	52	N/A	14	18	35.3
Grand Total	13474	110.8	2815	4090	33.3

Source: PHL, Ontario Agency for Health Protection and Promotion (OAHPP).

**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.

Table 3. Number of pH1N1 specimens submitted for testing, pH1N1 cases, percent positive and submission rate (/100,000) by PHU. Specimen collection dates: Nov. 1–Nov. 7, 2009(Week 44).

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	Percent positive (%) influenza A**
Algoma District	66	56.8	9	36	56.3
Brant County	25	20.0	4	9	40.9
Chatham-Kent	31	28.5	5	11	40.7
City of Hamilton	35	6.9	8	14	48.3
City of Ottawa	13	1.6	1	5	38.5
City of Toronto	468	18.7	45	168	39.6
Durham Regional	80	14.3	11	38	50.7
Eastern Ontario	30	15.7	6	12	42.9
Elgin-St. Thomas	20	23.4	2	9	45.0
Grey Bruce	40	25.4	4	20	54.1
Haldimand-Norfolk	15	13.9	4	10	66.7
Haliburton-Kawartha-Pine Ridge District	33	19.2	6	12	42.9
Halton Regional	81	18.4	11	30	43.5
Hastings & Prince Edward Counties	46	29.5	15	21	52.5
Huron County	18	30.3	4	6	40.0
Kingston-Frontenac and Lennox & Addington	46	24.9	2	7	20.6
Lambton	25	19.5	7	15	60.0
Leeds-Grenville and Lanark District	23	14.1	5	14	66.7
Middlesex-London	37	8.8	10	15	50.0
Niagara Regional Area	108	25.3	7	44	40.7
North Bay Parry Sound District	37	30.1	9	17	45.9
Northwestern	62	77.0	28	44	75.9
Oxford County	17	16.5	2	9	52.9
Peel Regional	324	27.9	37	139	44.8
Perth District	15	20.2	3	8	53.3
Peterborough County-City	28	21.0	3	11	39.3
Porcupine	82	97.4	20	49	61.3
Renfrew County & District	15	15.1	3	5	38.5
Simcoe Muskoka District	174	36.3	18	70	47.9
Sudbury & District	65	33.8	13	37	57.8
Thunder Bay District	101	65.6	25	47	49.0
Timiskaming	16	46.8	4	11	73.3
Waterloo	34	7.1	4	19	59.4
Wellington-Dufferin-Guelph	48	18.8	6	23	48.9
Windsor-Essex County	79	20.1	11	45	58.4
York Regional	157	17.6	14	62	41.6
Out of Province/Not Available	6	N/A	0	2	33.3
Grand Total	2500	20.6	366	1094	47.3

Source: PHL, Ontario Agency for Health Protection and Promotion (OAHPP).

**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

Table 4. Number of pH1N1 specimens submitted for testing, pH1N1 cases, percent positive and submission rate (/100,000) by PHU. Specimen collection dates: Nov. 8– Nov. 14, 2009 (Week 45***).

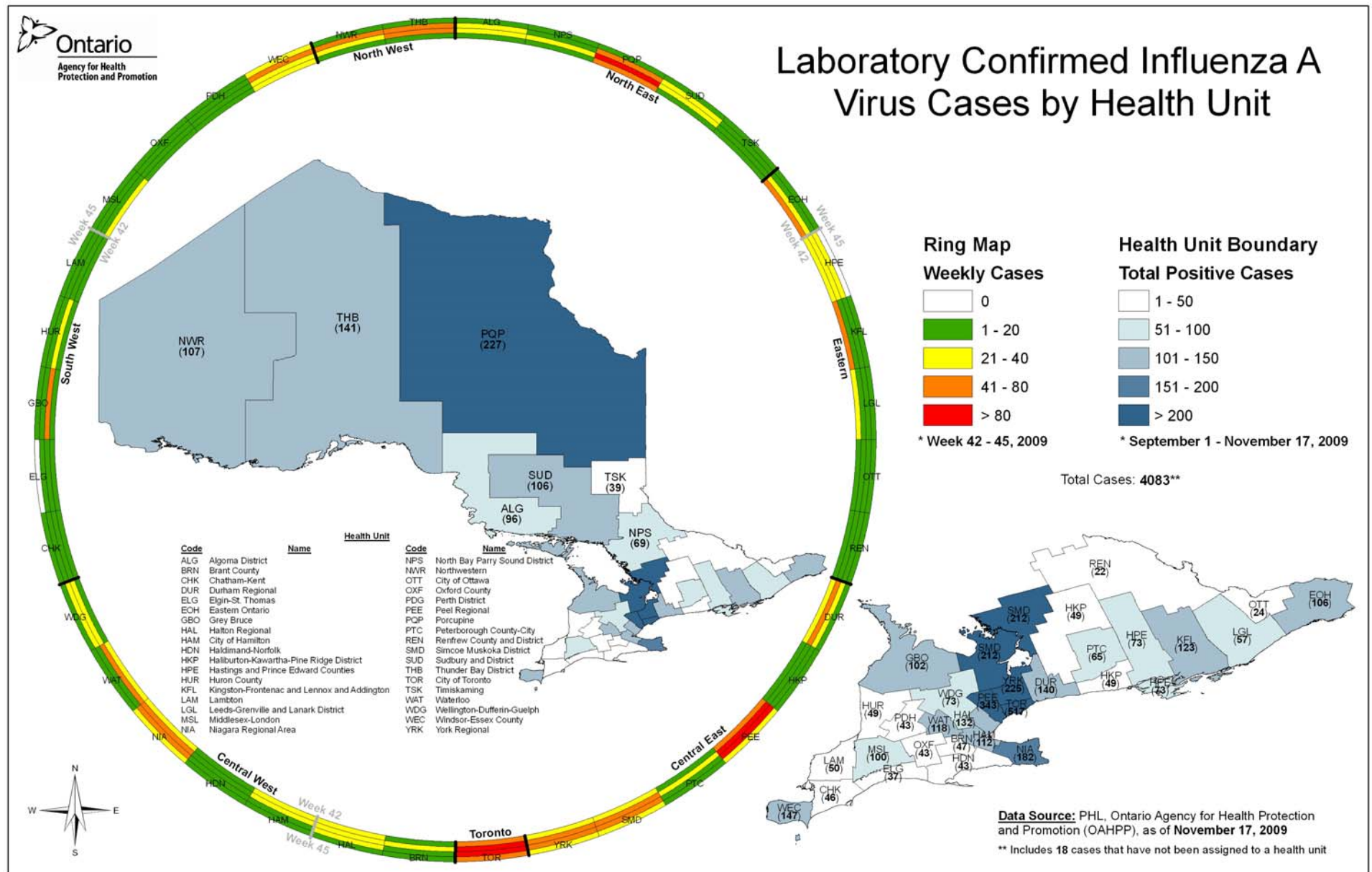
Public Health Unit	Total number of specimens submitted	Submission rate (/100,000)	Number of lab confirmed cases of pH1N1	Number of lab confirmed Influenza A cases	Percent positive (%) influenza A**
Algoma District	27	23.2	2	8	40.0
Brant County	17	13.6	2	4	50.0
Chatham-Kent	15	13.8	1	6	42.9
City of Hamilton	20	4.0	8	2	15.4
City of Ottawa	10	1.2	0	2	20.0
City of Toronto	337	13.5	18	68	31.3
Durham Regional	33	5.9	2	11	34.4
Eastern Ontario	18	9.4	1	3	18.8
Elgin-St. Thomas	9	10.5	0	0	0.0
Grey Bruce	42	26.6	0	15	48.4
Haldimand-Norfolk	17	15.8	3	5	45.5
Haliburton-Kawartha-Pine Ridge District	19	11.1	2	8	44.4
Halton Regional	54	12.3	7	11	22.9
Hastings & Prince Edward Counties	26	16.7	2	0	0.0
Huron County	10	16.9	0	4	57.1
Kingston-Frontenac and Lennox & Addington	28	15.2	2	5	33.3
Lambton	10	7.8	0	3	42.9
Leeds-Grenville and Lanark District	17	10.4	3	2	20.0
Middlesex-London	19	4.5	1	4	50.0
Niagara Regional Area	58	13.6	13	23	40.4
North Bay Parry Sound District	23	18.7	4	8	38.1
Northwestern	27	33.5	4	19	79.2
Oxford County	11	10.7	0	1	14.3
Peel Regional	195	16.8	25	40	27.8
Perth District	8	10.8	1	1	16.7
Peterborough County-City	23	17.3	0	8	38.1
Porcupine	23	27.3	7	9	45.0
Renfrew County & District	10	10.1	0	6	66.7
Simcoe Muskoka District	122	25.4	11	34	47.2
Sudbury & District	51	26.5	3	16	39.0
Thunder Bay District	40	26.0	3	10	38.5
Timiskaming	4	11.7	1	1	25.0
Waterloo	29	6.1	1	10	52.6
Wellington-Dufferin-Guelph	27	10.6	0	7	31.8
Windsor-Essex County	59	15.0	6	27	60.0
York Regional	107	12.0	3	31	38.3
Out of Province/Not Available	9	N/A	2	4	50.0
Grand Total	1554	12.8	138	416	36.7

Source: PHL, Ontario Agency for Health Protection and Promotion (OAHPP).

**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

*** 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.

Figure 6. Map of the laboratory confirmed influenza A cases by PHU. Weekly cases are represented in the ring map, and the total number of positive influenza A cases is represented in brackets in the map of Ontario (PHU was not available for 18 influenza A cases).



Ontario Influenza Vaccine Effectiveness Program: Weekly Report.

Information current as of: November 16, 2009

Background: The Ontario Influenza Vaccine Effectiveness (VE) Program is part of a national surveillance system that monitors circulating influenza viruses. Through a case-control design, laboratory testing results are linked with patient's epidemiological information to measure the effectiveness of yearly influenza vaccine. Ontario joined the VE study in the 2006/07 influenza season along with British Columbia, Alberta and Quebec. The Ontario VE program represent a collaborations of OAHPP Public Health Laboratories and Surveillance and Epidemiology teams, the Ontario Ministry of Health and Long Term Care (MOHLTC), the College of Physicians and a network of 115 sentinel physicians across the province. Sentinel physicians who volunteer to join the VE study submit respiratory specimens (nasal or nasopharyngeal) for influenza testing along with vaccine history and other epidemiologic information collected from eligible consenting participants from community presenting within 7 days of onset of influenza like illness (ILI). ILI is defined as acute onset of respiratory illness with fever and cough and with one or more of the following: sore throat, arthralgia, myalgia or prostration. Sentinel physicians are exempted from any restrictions placed on other clinicians who submit respiratory specimens, as they contribute to national and provincial influenza surveillance systems.

At the Toronto Public Health Laboratory (TPHL) specimens are tested for influenza A/B and subtypes (seasonal H1N1 and H3N2, and pH1N1). They are also screened for a panel of common respiratory viruses and cultured for antigenic strain characterization (performed at the National Microbiology Laboratory (NML)). Lab results are merged with epidemiological data to calculate VE from cases and controls with adjustments for covariates such as age and chronic conditions. Data in this report represent VE specimens (1specimen/1patient) tested at TPHL since the beginning of September up to November 13, 2009. Rejected specimens are not included in the analyses.

Figure 1 There were 61 VE specimens submitted this week to be tested for influenza. The number of submitted specimens was considerably lower compared to the previous week. Specifically, from November 6 to November 13, 2.6 times fewer specimens were submitted compared to the previous week. Influenza A was detected in over half of specimens tested (52.5%), which represent a 10.5% lower positivity rate compared to the previous week. The predominant virus strain remains pandemic H1N1 influenza (pH1N1). One case of Flu A/ Indeterminate for pH1N1 and one case of Flu A/ Unable to subtype (negative for sH1N1, sH3N2 and p(H1N1), were detected during this week.

Figure 1. Weekly epidemic curve of influenza for VE specimens, Sept 1- Nov 13, 2009

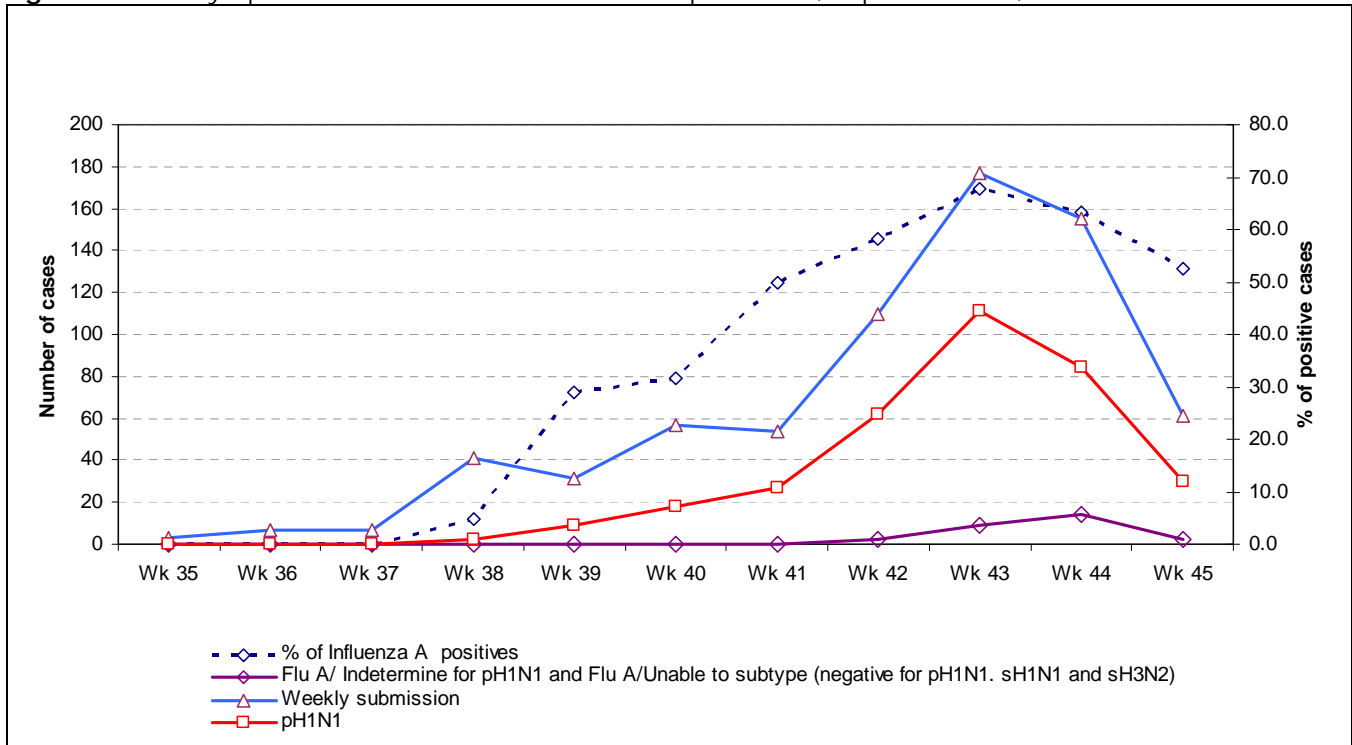


Figure 2 shows the distribution of age of influenza A positive patients (cases) and influenza A negative patients (controls). Influenza A remains more commonly detected in younger age groups, with the most cases detected in the interval age of 10-14 years. Seventy two per cent of cases were between the ages 0-24 which is slightly lower than the previous week (73.5%). Influenza was less commonly detected in older age groups. In samples tested from individuals 60 and over, the percentage of positive for Influenza A is slightly increased from 3/42 in the previous week to 5/50 in this week and all of them were positive for pH1N1. One case of Influenza A/ Unable to subtype (negative for sH1N1, sH3N2 and pH1N1) and one case of influenza A / Indeterminate for pH1N1 , were detected in the age interval of 50-54 years.

Figure 2. Age distribution of VE patients tested for influenza by influenza subtype, September 1 – November 13.

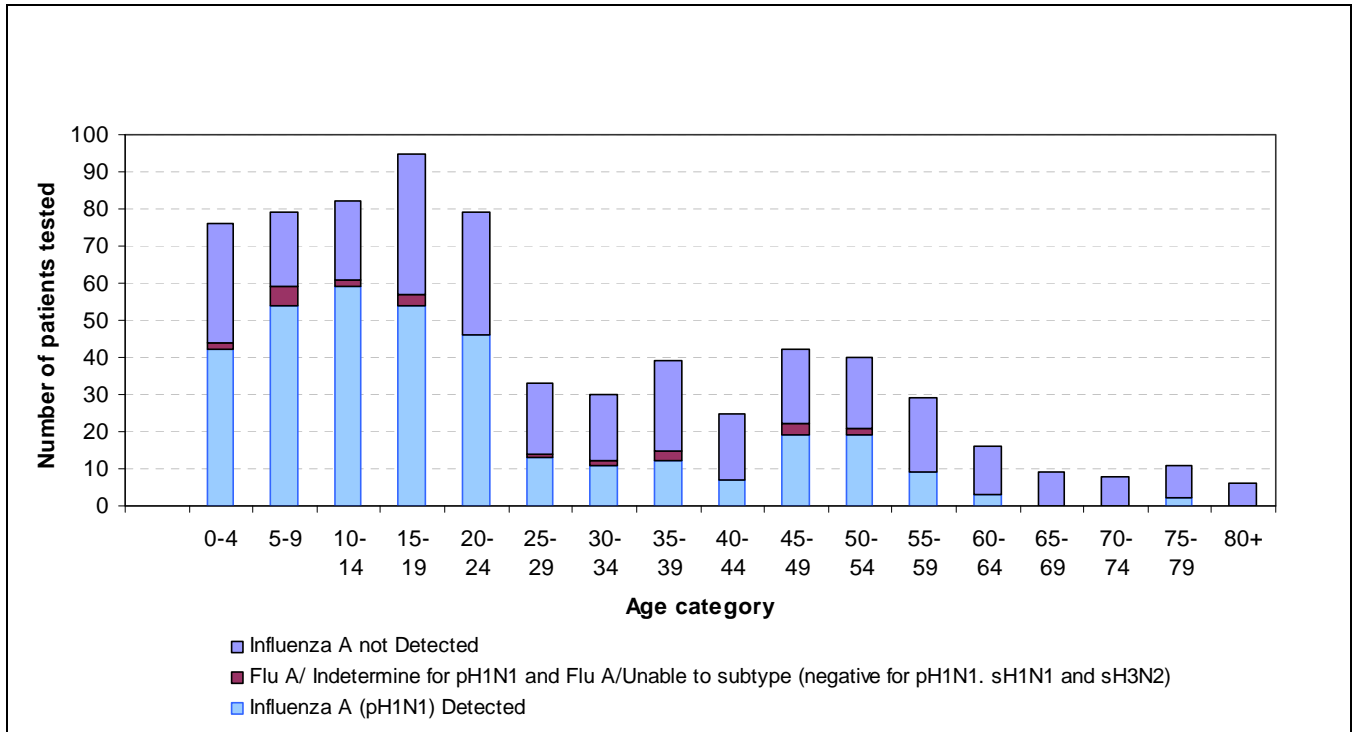


Table 1 shows the distribution of other respiratory viruses detected among VE Influenza specimens during the specified week, using the Multiplex as method of testing. To detect any coinfection that may be present, 52 specimens were tested regardless of RT_PCR results. At least one respiratory virus was detected in 53.8 % of specimens. The most common other respiratory virus detected was Respiratory Syncytial Virus A (RSV A) in 5.8 % of specimens tested followed by Rhinovirus (3.8%) and Parainfluenza 2 (1.9%). Coinfection of Flu A and at least another respiratory virus was detected in more than 19% of specimens tested. Specifically, coinfection of Flu A and RSV B was detected in 9.6% of specimens tested followed of FLUA and Rhinovirus (5.8%)and of FLU A, RSVB and Rhinovirus (3.8%).

Table 1 Other circulating respiratory viruses detected by Multiplex, November 2 to November , 2009

TESTING METHOD	THE DETECTED VIRUSES	# OF SPECIMENS	% OF SPECIMENS
MULTIPLEX	FLU A	12	23.1
	FLU A/RSV B	5	9.6
	FLU A/RHINOVIRUS	3	5.8
	FLU A/RSV B/RHINOVIRUS	2	3.8
	RHINOVIRUS	2	3.8
	RSV A	3	5.8
	PARA2	1	1.9
	TOTAL POSITIVES	28	53.8
	TOTAL SPECIMENS TESTED	52	100

Table 2 shows the geographical and age distribution of patients tested positive by Multiplex during the specified week. Other respiratory viruses were detected only in the interval age of 0-39 years. Confection of Flu A by was detected in the interval age of 0-29 years. Confections were more commonly detected in London (4/10) and Ottawa (3/10). RSV A was detected among children of 0-4 years old and was more prevalent in the Haliburton Kawartha region.

Table 2 Geographical and age distribution of positive tested patients by Multiplex, November 2- November 13, 2009.

MULTIPLEX RESULTS	PHU	AGE CATEGORY
FLU A	EASTERN ONTARIO	20-24
RSV A	HALIBURTION KAWARTHA	0-4
RSVA		0-4
FLU A	KINGSTON	5-9
FLU A	FRONTENAC	60-64
FLU A/ RSVB	LONDON	0-4
FLU A/RHINOVIRUS/RSVB		0-4
FLUA /RSVB		0-4
FLU A/RSV B		20-24
RHINOVIRUS	NIAGARA	5-9
FLU A/RSVB		0-4
FLUA/RHINOVIRUS/ RSVB		25-29
RHINOVIRUS		35-39
FLU A	OTTAWA	5-9
RSV A		0-4
FLU A/RHINOVIRUS		20-24
FLU A		20-24
FLU A/RSVB		20-24
FLUA/RHINOVIRUS		20-24
FLU A		25-29
FLU A		35-39
FLU A		50-54
FLUA/RHINOVIRUS		OXFORD
FLU A	PEEL	45-49
PARA2	TIMISKAMING	0-4
FLU A	TORONTO	50-54
FLU A		60-64
FLU A		YORK REGION