

SURVEILLANCE WEEK 32 (August 9, 2009– August 15, 2009)

This issue of the Ontario Influenza Bulletin provides information on the surveillance period from August 9, 2009– August 15, 2009, (Week 32). **All data are for week 32 unless otherwise specified. Death and hospitalization information among pandemic (H1N1) 2009 (or abbreviated as pH1N1) confirmed cases is current as of August 19, 2009.** Data extraction and analysis for this issue of the Bulletin occurred on August 20, 2009. Please note, since pH1N1 is community based, we have expanded our surveillance reports to include other types of community outbreaks such as pH1N1 in overnight camps.

In order to enable our readers to better assess influenza activity in Ontario, we have combined various sources of information in the following table.

Assessment of Influenza Activity in Ontario

Measure	Assessment of measure compared to previous week (Lower, Similar, Higher)	Reasoning behind assessment
Laboratory Confirmed Cases	Lower	22 total influenza cases (14 pH1N1) in week 32 compared to 29 reported in week 31 (20 pH1N1). The percent positivity of laboratory tests for pH1N1 was <5%, which is much lower than the peak in June (>40%).
Influenza A Outbreaks	Similar	No new institutional influenza outbreaks were reported during week 32
Influenza Activity Levels Reported by Health Units	Similar	The majority of health units continue to report “sporadic” activity and only one reported “localized” activity
ILI Consultation Rate reported by Sentinel Physicians	Lower	The overall ILI consultation rate decreased from 18.9/1,000 patient visits to 12.16/1,000 patient visits
Hospitalizations Among Lab Confirmed Cases of pandemic (H1N1) 2009 virus	Higher	A higher number of hospitalized cases were reported from August 13 to August 19 as compared to August 6 to August 12.
Deaths Among Lab Confirmed Cases of pandemic (H1N1) 2009 virus	Similar	One new death was reported from August 12 to August 19, which is similar to the number reported in previous weeks.
OVERALL ASSESSMENT	Influenza activity in Ontario is <i>similar</i> compared to the previous week	Many of the measures indicate that influenza activity in week 32 was similar to activity in week 31. This represents a flattening in the downward trend in activity that started in June. However, influenza activity still remains above what is expected for this time of year.

Overall, influenza activity in Ontario during week 32, 2009, was **similar to** week 31, 2009. Ontario health units reported 22 new confirmed cases of influenza through the integrated Public Health Information System (iPHIS). This count includes 14 laboratory confirmed cases of pH1N1, which is fewer than the 29 cases reported in week 30. During week 32, new laboratory confirmed cases of pH1N1 continued to be seen across the province, with Central West reporting most of these cases. No new institutional influenza outbreaks were reported. For week 32, North East health region reported 'localized' level activity while the remaining health regions reported 'sporadic' level activity. The rate of influenza-like illness (ILI) in patients seen by sentinel physicians was above the range that is expected for this time of the year based on the average ILI rate reported in week 32 for the past 3 years.

For a definition of ILI activity levels and links to websites providing current influenza information from other sources, please refer to the attached Appendix- I. If you would like to provide feedback on the Bulletin, please contact Christine D'Souza (christine.dsouza1@ontario.ca, 416-212-5323), Michael Whelan (michael.whelan@ontario.ca, 416-327-9174) or Anne-Luise Winter (anne-luise.winter@ontario.ca, 416-327-7301).

Table 1: Summary of confirmed influenza cases and institutional influenza outbreaks by health region (Week 32, 2009)

Confirmed influenza cases*†	HEALTH REGION							TOTAL
	North West	North East	Eastern	Central East	Toronto	South West	Central West	
Pandemic (H1N1) 2009	3	1	2	2	0	0	6	14
Influenza A (Other Subtypes/Not Subtyped)	0	0	0	2	3	0	3	8
Influenza B	0	0	0	0	0	0	0	0
Influenza A & B	0	0	0	0	0	0	0	0
Total new cases	3	1	4	2	3	0	9	22
Institutional outbreaks of pandemic (H1N1) 2009 ‡	0	0	0	0	0	0	0	0
Institutional outbreaks of Influenza (Other Subtypes/Not Subtyped)‡	0	0	0	0	0	0	0	0

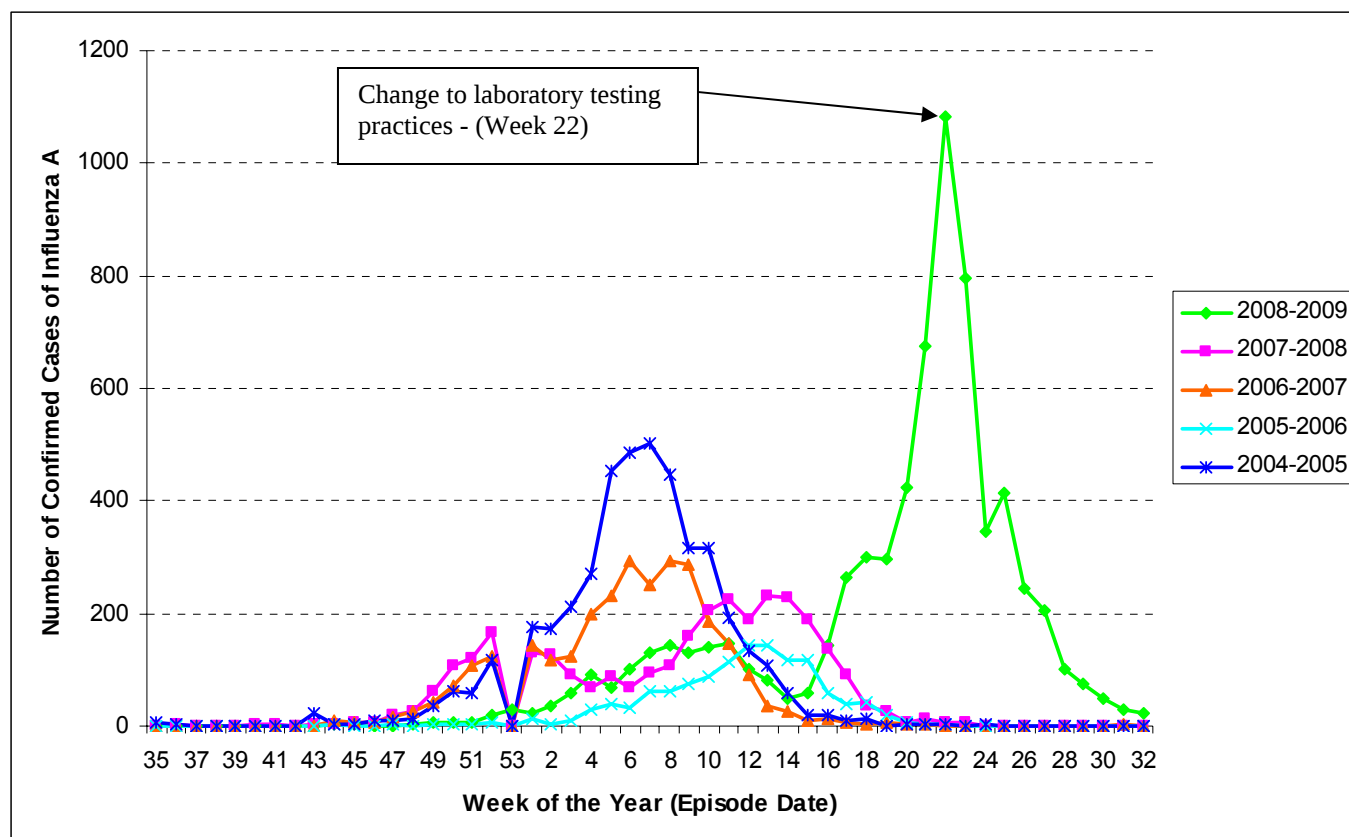
SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [19/08/2009].

* Includes reports of confirmed influenza through iPHIS, as well as cases in institutional outbreaks, with dates of onset for the first case in the surveillance period.

‡ Confirmed outbreaks in institutions with onset date of symptoms during the surveillance period.

As seen in Figure 1, the total number of influenza A positive cases occurring between weeks 17 and 22, for the current season, is higher than the seasonal peak that was seen in late-February to mid-March (weeks 8 – 11). A change in laboratory testing patterns is reflected in week 23, as the population eligible for testing was drastically reduced, resulting in a decline in the number of laboratory confirmed cases of influenza A. Beginning June 21, 2009 (week 25) health units began reporting weekly aggregate counts of pH1N1. Aggregate reports are based on the date the health unit was informed of the pH1N1 subtype as opposed to the reported symptom onset date for the case.

Figure 1: All confirmed cases of Influenza A in Ontario by week, between September 1 and August 15, 2004-2009†*



SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [20/08/2009].

† Episode Date for a case corresponds to the earliest date on record for the case according to the iPHIS hierarchy (Symptom Date > Clinical Diagnosis Date > Specimen Collection Date > Lab Test Date > Reported Date)

Table 2: Confirmed cases of pandemic (H1N1) 2009 virus by health unit & health region, with a reported week[†] during Week 32, 2008-09 and cumulative* confirmed cases between September 1, 2008 – August 15, 2009

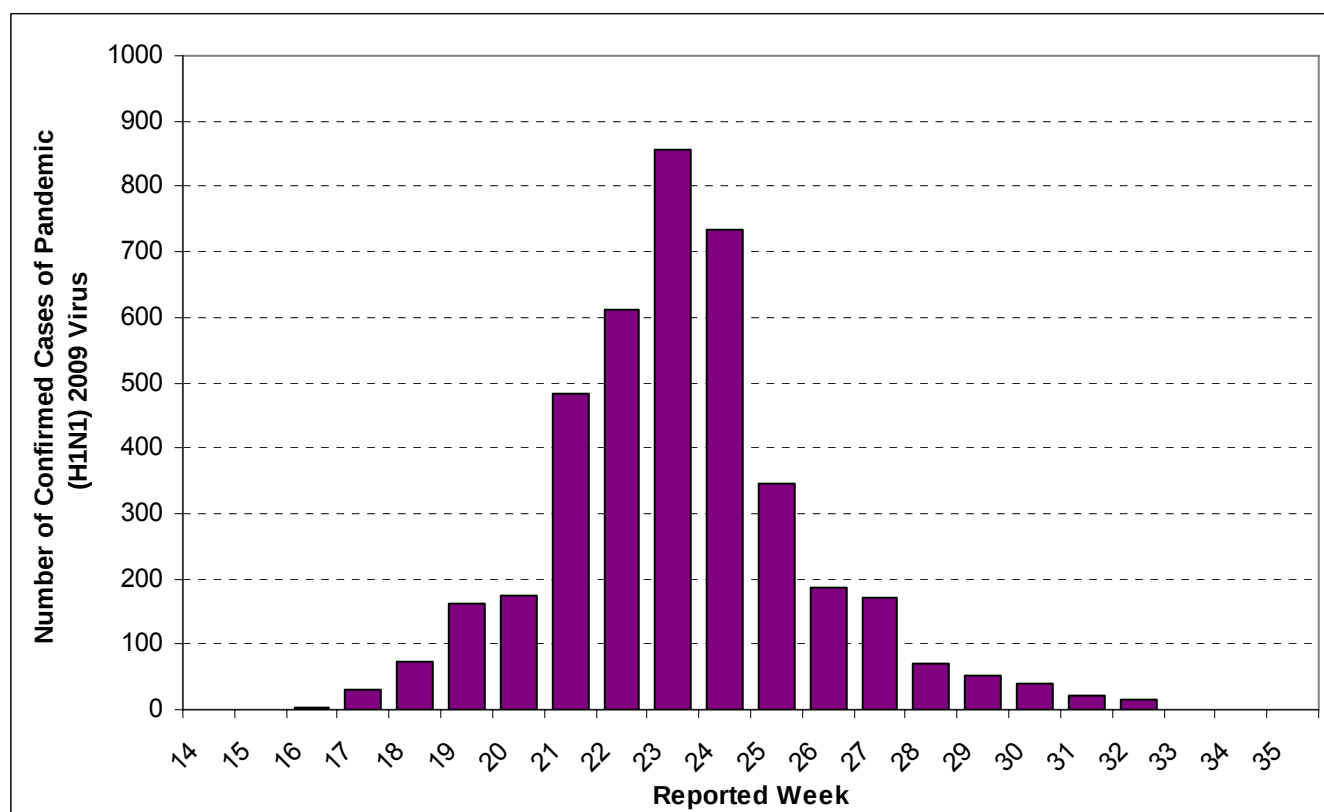
Region	Health Unit	Confirmed Influenza	
		Pandemic (H1N1) 2009 for WK 32	Pandemic (H1N1) 2009 (Total)
North West	Northwestern	1	74
	Thunder Bay District	2	7
	TOTAL NORTH WEST	3	81
North East	Algoma	0	5
	North Bay Parry Sound District	0	7
	Porcupine	0	4
	Sudbury & District	1	14
	Timiskaming	0	0
	TOTAL NORTH EAST	1	30
Eastern	City of Ottawa	0	361
	Eastern Ontario	1	23
	Hastings & Prince Edward Counties	0	4
	Kingston, Frontenac, Lennox & Addington	0	14
	Leeds, Grenville And Lanark District	0	10
	Renfrew County And District	1	12
	TOTAL EASTERN	2	424
Central East	Durham Region	0	118
	Haliburton, Kawartha, Pine Ridge	0	13
	Peel Region	0	696
	Peterborough County-City	1	4
	Simcoe Muskoka District	0	63
	York Region	1	496
	TOTAL CENTRAL EAST	2	1,390
Toronto	Toronto	0	1,577
	TOTAL TORONTO	0	1577
South West	Chatham-Kent	0	5
	Elgin-St. Thomas	0	0
	Grey Bruce	0	8
	Huron County	0	2
	Lambton County	0	1
	Middlesex-London	0	27
	Oxford County	0	3
	Perth District	0	6
	Windsor-Essex County	0	48
	TOTAL SOUTHWEST	0	100
Central West	Brant County	0	7
	City Of Hamilton	2	122
	Haldimand-Norfolk	0	6
	Halton Region	2	212
	Niagara Region	0	20
	Waterloo Region	2	36
	Wellington-Dufferin-Guelph	0	26
	TOTAL CENTRAL WEST	6	429
	Out of Province	0	6
	TOTAL ONTARIO	14	4,037

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [19/08/2009].

[†] Reported date corresponds to the date pandemic (H1N1) 2009 was reported to the health unit

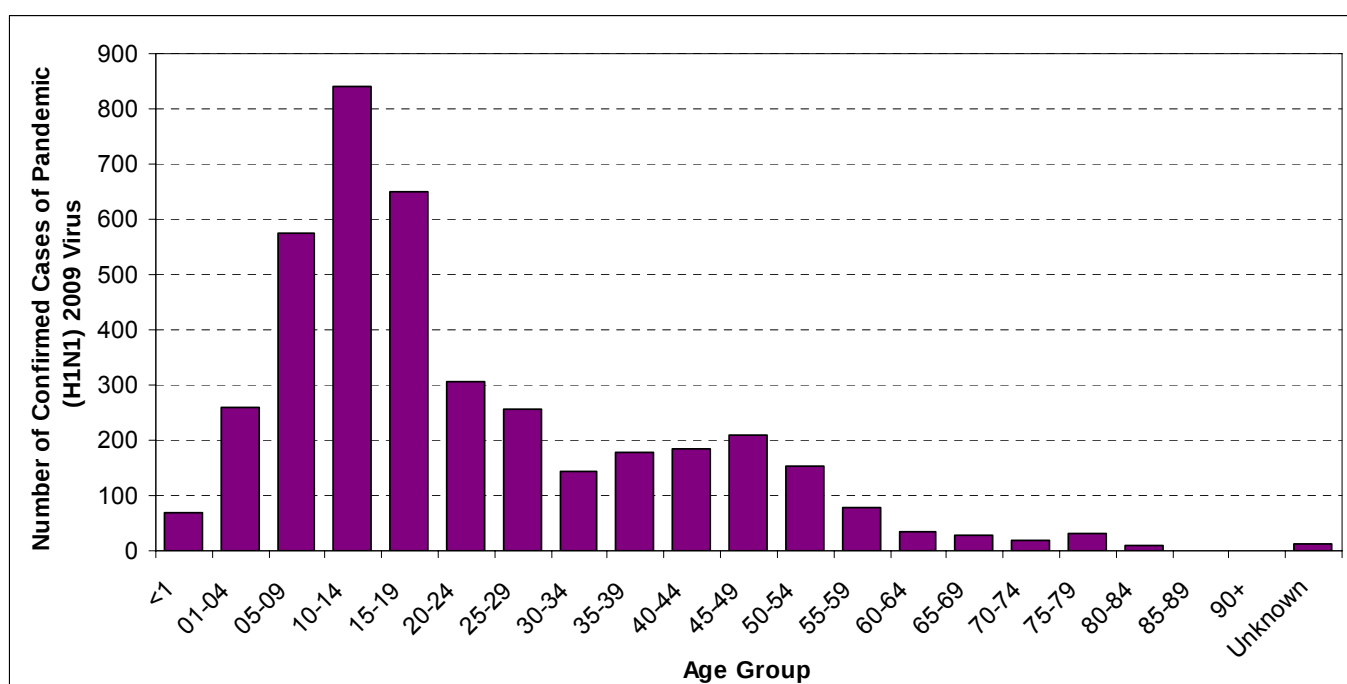
* Cumulative case counts include late reports and records that are otherwise reconciled. Therefore, cumulative counts may not equal new cases plus previous cumulative value.

Figure 2: Laboratory confirmed cases of pandemic (H1N1) 2009 in Ontario by week between April 13 and August 15, 2009



SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [19/08/2009].

Figure 3: Laboratory confirmed cases of pandemic (H1N1) 2009 in Ontario by age group between April 13 and August 15, 2009



SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [19/08/2009].

Table 3: Confirmed cases of influenza by health unit & health region, excluding laboratory confirmed pandemic (H1N1) 2009, with an episode date[†] during Week 32, 2008-09

Region	Health Unit	Confirmed Influenza			
		Influenza A (Other subtypes/Not yet Subtyped)	Influenza A & B	Influenza B	TOTAL
North West	Northwestern	0	0	0	0
	Thunder Bay District	0	0	0	0
	TOTAL NORTH WEST	0	0	0	0
North East	Algoma	0	0	0	0
	North Bay Parry Sound District	0	0	0	0
	Porcupine	0	0	0	0
	Sudbury & District	0	0	0	0
	Timiskaming	0	0	0	0
	TOTAL NORTH EAST	0	0	0	0
Eastern	City of Ottawa	0	0	0	0
	Eastern Ontario	0	0	0	0
	Hastings & Prince Edward Counties	0	0	0	0
	Kingston, Frontenac, Lennox & Addington	0	0	0	0
	Leeds, Grenville And Lanark District	0	0	0	0
	Renfrew County And District	0	0	0	0
	TOTAL EASTERN	0	0	0	0
Central East	Durham Region	1	0	0	1
	Haliburton, Kawartha, Pine Ridge	0	0	0	0
	Peel Region	0	0	0	0
	Peterborough County-City	0	0	0	0
	Simcoe Muskoka District	1	0	0	1
	York Region	0	0	0	0
	TOTAL CENTRAL EAST	2	0	0	2
Toronto	Toronto	3	0	0	3
	TOTAL TORONTO	3	0	0	3
South West	Chatham-Kent	0	0	0	0
	Elgin-St. Thomas	0	0	0	0
	Grey Bruce	0	0	0	0
	Huron County	0	0	0	0
	Lambton County	0	0	0	0
	Middlesex-London	0	0	0	0
	Oxford County	0	0	0	0
	Perth District	0	0	0	0
	Windsor-Essex County	0	0	0	0
	TOTAL SOUTHWEST	0	0	0	0
Central West	Brant County	0	0	0	0
	City Of Hamilton	2	0	0	2
	Haldimand-Norfolk	0	0	0	0
	Halton Region	1	0	0	1
	Niagara Region	0	0	0	0
	Waterloo Region	0	0	0	0
	Wellington-Dufferin-Guelph	0	0	0	0
	TOTAL CENTRAL WEST	3	0	0	3
	TOTAL ONTARIO	8	0	0	8

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [19/08/2009].

[†] Episode Date for a case corresponds to the earliest date on record for the case according to the iPHIS hierarchy (Symptom Date > Clinical Diagnosis Date > Specimen Collection Date > Lab Test Date > Reported Date)

Table 4: Cumulative* confirmed cases of influenza by health unit & health region, excluding laboratory confirmed pandemic (H1N1) 2009, with an episode date[†] between September 1, 2008 – August 15, 2009

Region	Health Unit	Confirmed Influenza			
		Influenza A (Other subtypes/Not yet Subtyped)	Influenza A & B	Influenza B	TOTAL
North West	Northwestern	6	0	7	13
	Thunder Bay District	6	0	7	13
	TOTAL NORTH WEST	12	0	14	26
North East	Algoma	5	0	10	15
	North Bay Parry Sound District	17	0	74	91
	Porcupine	20	0	30	50
	Sudbury & District	15	0	7	22
	Timiskaming	4	0	5	9
	TOTAL NORTH EAST	61	0	126	187
Eastern	City Of Ottawa	127	2	56	185
	Eastern Ontario	15	0	39	54
	Hastings & Prince Edward Counties	9	0	19	28
	Kingston, Frontenac, Lennox & Addington	32	0	32	64
	Leeds, Grenville And Lanark District	22	0	22	44
	Renfrew County And District	9	0	10	19
	TOTAL EASTERN	214	2	178	394
Central East	Durham Region	104	1	61	166
	Haliburton, Kawartha, Pine Ridge	73	0	49	122
	Peel Region	396	0	145	541
	Peterborough County-City	28	0	10	38
	Simcoe Muskoka District	79	0	77	156
	York Region	184	0	45	229
	TOTAL CENTRAL EAST	864	1	387	1,252
Toronto	Toronto	767	3	247	1,017
	TOTAL TORONTO	767	3	247	1,017
South West	Chatham-Kent	5	0	4	9
	Elgin-St. Thomas	2	0	2	4
	Grey Bruce	22	1	54	77
	Huron County	15	0	33	48
	Lambton County	5	0	6	11
	Middlesex-London	64	0	8	72
	Oxford County	15	0	10	25
	Perth District	29	0	12	41
	Windsor-Essex County	27	0	33	60
	TOTAL SOUTHWEST	184	1	162	347
Central West	Brant County	21	0	19	40
	City Of Hamilton	137	0	97	234
	Haldimand-Norfolk	11	0	11	22
	Halton Region	122	0	60	182
	Niagara Region	79	0	56	135
	Waterloo Region	125	0	85	210
	Wellington-Dufferin-Guelph	62	0	41	103
	TOTAL CENTRAL WEST	557	0	369	926
	TOTAL ONTARIO	2,659	7	1,483	4,149

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [19/08/2009].

* Cumulative case counts include late reports and records that are otherwise reconciled. Therefore, cumulative counts may not equal new cases plus previous cumulative value.

† Episode Date for a case corresponds to the earliest date on record for the case according to the iPHIS hierarchy (Symptom Date > Clinical Diagnosis Date > Specimen Collection Date > Lab Test Date > Reported Date)

NOTE: Data presented on deaths and hospitalizations includes cases reported up to August 19, 2009.

Deaths among pandemic (H1N1) 2009 Virus cases, April 13 – August 19, 2009

Twenty two deaths have been reported among lab confirmed cases representing a population-based mortality rate of 0.17 deaths per 100,000 population. Almost all of these fatalities (86%) were hospitalized prior to death. Among the reported fatalities, males (10) accounted for slightly fewer deaths compared to females (12). Fatal cases range in age from 6 to 81 years of age; the median age is 58 years and the average age is 55 years. Of the fatal cases, 82% (18/22) occurred in individuals over the age of 40 years. The symptom onset dates of the fatal cases range from May 6 to July 6, 2009.

Among the 22 confirmed cases that have died, 19 (86%) had underlying chronic medical conditions, compared to 65% (228/351) of hospitalized cases.

Hospitalizations among pandemic (H1N1) 2009 Virus cases, April 13 – August 19, 2009

Three hundred and fifty-two confirmed cases of pH1N1 have been hospitalized to date representing a population-based hospitalization rate of 2.7 hospital admissions per 100,000 population in Ontario. Of these, 315 cases have been discharged. The average and median length of hospital stay were 8 days and 4 days, respectively, with lengths of stay ranging from <1 to 80 days. Among cases that were discharged from hospital, 89% (279/314) had a length of stay of at least 2 days. There are currently 37 confirmed cases that are reported as still being hospitalized. Subsequent analyses exclude one case that was hospitalized for less than 24 hours.

Among cases that are currently or have previously been hospitalized, a number of underlying medical conditions have been reported, including but not limited to diabetes, cardiovascular conditions, renal conditions and pulmonary conditions. Of the 37 cases still hospitalized, a total of 19 were placed on a ventilator and/or were admitted to ICU.

Table 5. Hospitalizations among confirmed cases of pandemic (H1N1) 2009 in Ontario, April 13 – August 19, 2009

Hospitalization Status	Ventilator and/or ICU	Not in ICU and not on ventilator	Number of cases hospitalized to date
Number Currently Hospitalized	19	18	37
Number Hospitalized and Discharged	50	264	314
Total Hospitalized to date	69	282	351*

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [19/08/2009]

*Excludes one case hospitalized for less than 24 hours

Table 6 below compares cases under the age of 20 years to those 20 years of age and older with respect to hospitalization status. Cases under the age of 20 accounted for 48% (167/351) of hospitalized cases. In contrast, cases under the age of 20 accounted for 59% (2395/4026) of all cases of pandemic (H1N1) 2009 reported in Ontario since April 13. Cases <20 years of age were significantly less likely to be hospitalized than cases ≥ 20 ($p < 0.05$) (Table 6).

Table 6. Age category and hospitalization status of pandemic (H1N1) 2009 in Ontario, April 13 – August 19, 2009

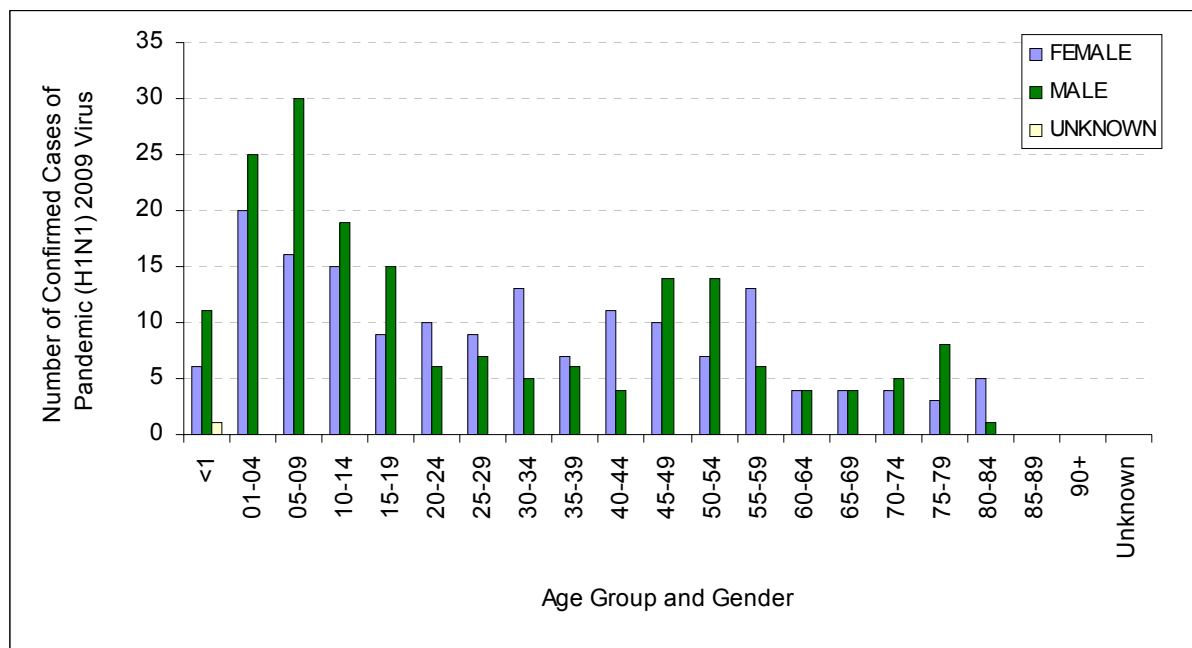
Hospitalization Status	Hospitalized Cases*	Non-hospitalized Cases	Total Cases
< 20 years	167	2228	2395
≥ 20 years	184	1447	1631
Total	351	3675	4026

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [19/08/2009]

*Age was unknown for 11 cases

Figure 4 shows the age and sex distribution of the 351 cases that were hospitalized for more than 24 hours. These cases range in age from <1 to 84 years of age; the median age is 22 years and the average age is 29 years.

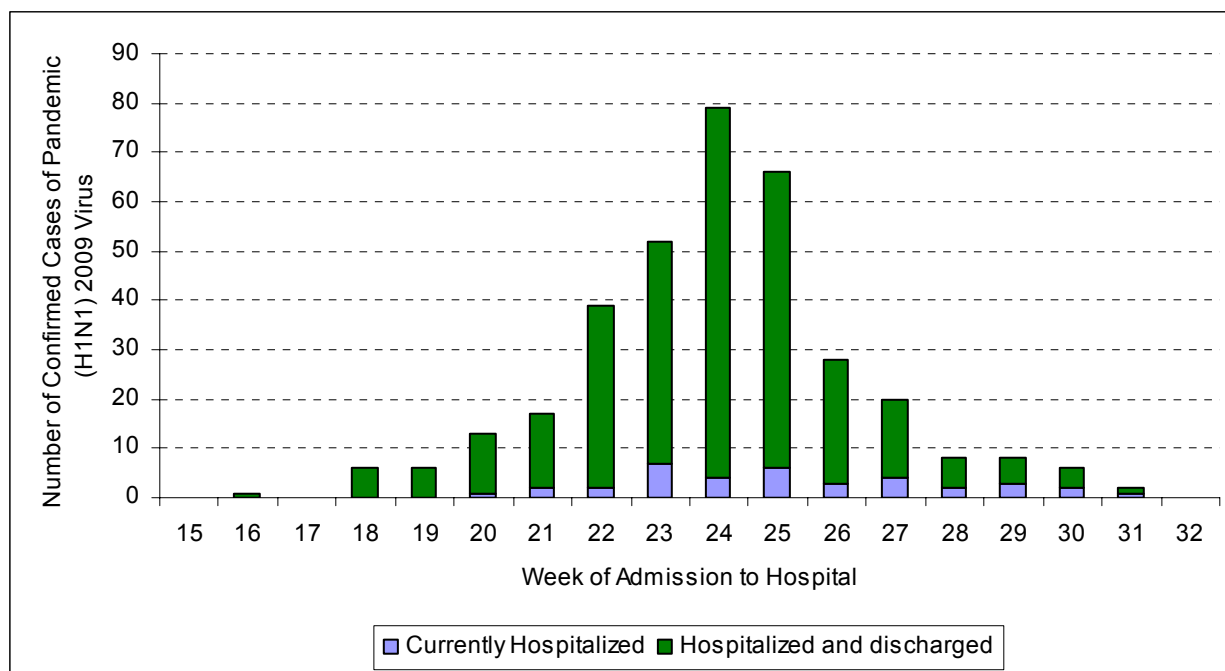
Figure 4: Hospitalized cases of pandemic (H1N1) 2009 in Ontario by age group and gender, April 13 to August 19, 2009



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [19/08/2009] **Note:** Gender is unknown for 1 case. *Excludes case with a length of stay of less than 24 hours

The hospital admission dates in hospitalized cases ranged from April 20 to August 5, 2009 (Figure 5). Case counts from weeks 30 to 32 should be interpreted with caution due to lags in case identification, laboratory testing, and data entry.

Figure 5: Hospitalized cases of pandemic (H1N1) 2009 by hospital admission date in Ontario, April 13 – August 19, 2009*



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [19/08/2009] *For Week 28-32, decreased counts may be attributed in part to reporting delays.

Influenza Subtype(s):

During week 32, a total of 4640 isolates were received by the Public Health Agency of Canada, with 196 testing positive for influenza A and one positive for influenza B. 60 of the reported influenza A isolates were from British Columbia (30.6%), 53 were from Alberta (27.0%), 41 were from Ontario (20.9%), and 12 were from Nova Scotia (6.1%). The influenza B isolate was from Quebec (100.0%)*.

(Antigenic Characterization and Antiviral Resistance data are Current as of August 20, 2009)

Antigenic Characterization (National) – Seasonal Influenza:

Since September 1, 2008, National Microbiology Laboratory (NML) has antigenically characterized 996 seasonal human influenza viruses (172 influenza A/H3N2, 254 influenza A/H1N1 and 570 B viruses) that were received from Canadian provincial and hospital laboratories and 291 pandemic influenza A (H1N1) viruses. All 172 influenza A/H3N2 isolates characterized were antigenically similar to A/Brisbane/10/07, which is the influenza A (H3N2) component recommended for the 2008-09 influenza vaccine. All 254 influenza A/H1N1 isolates characterized were antigenically similar to A/Brisbane/59/2007, which is the influenza A (H1N1) component recommended for the 2008-09 influenza vaccine.

Influenza B viruses currently circulating can be divided into two antigenically distinct lineages represented by B/Yamagata/16/88 and B/Victoria/2/87 viruses. Of the 570 influenza B isolates characterized, 11 were antigenically similar to B/Florida/4/2006, which is the B component recommended for the 2008-09 influenza vaccine and belongs to B/Yamagata lineage. 379 B isolates were characterized as B/Malaysia/2506/04-like and 180 were characterized as B/Brisbane/60/08-like, which belong to the Victoria lineage. B/Brisbane/60/08 is the recommended B component for the 2009-2010 influenza vaccine.

Antigenic Characterization - Pandemic (H1N1) 2009:

NML has antigenically characterized 291 pandemic influenza A (H1N1) isolates by HI assay. The results reveal that these viruses are antigenically related to A/California/7/2009 (H1N1), which is the variant reference virus selected by WHO as a potential candidate for pandemic (H1N1) vaccine. Antigenic characterization also indicates that these viruses are antigenically and genetically unrelated to seasonal influenza A (H1N1) viruses, which suggests that there is little or no protection to be expected from vaccination with seasonal influenza vaccine.

The National Microbiology Laboratory (NML) has antigenically characterized the following strains from Ontario: 7 influenza A/California/07/2009-like.

Antigenic Characterization (Provincial) – Seasonal Influenza:

The National Microbiology Laboratory (NML) has antigenically characterized the following strains from Ontario: 79 influenza A/Brisbane/59/2007(H1N1)-like, 21 influenza A (H3N2)/A/Brisbane/10/2007-like, 40 B/Brisbane/60/2008-like, 6 influenza B/Florida/4/2006-like, and 177 B/Malaysia/2506/2004-like.†

Antiviral Resistance (National) – Seasonal Influenza:

Since the start of the season, the NML has tested 715 influenza A isolates (319 H1N1 and 396 H3N2) for amantadine resistance. All of the H1N1 isolates were sensitive; however all of the H3N2 isolates were resistant to amantadine. The NML has also tested 1083 influenza isolates (316 A/H1N1, 194 A/H3N2 & 573 B) for oseltamivir (Tamiflu) resistance. All of the A/H3N2 and B isolates were sensitive; however 315 of the A/H1N1 isolates were resistant to oseltamivir due to the H274Y mutation (resistance = 99.7% or 315/316). One H1N1 isolate was sensitive to oseltamivir.

All 1022 influenza isolates (254 A/H1N1, 190 A/H3N2 & 578 B) tested for zanamivir resistance to date were sensitive to zanamivir.†

The WHO recommends that the vaccines to be used in the 2009-2010 season (northern hemisphere) contain the following: an A/Brisbane/59/2007 (H1N1)-like virus; an A/Brisbane/10/2007 (H3N2)-like virus; and a B/Brisbane/60/2008-like virus. <http://www.who.int/csr/disease/influenza/recommendations2009_10north/en/index.html>

Antiviral Resistance – Pandemic (H1N1) 2009:

340 pandemic influenza A (H1N1) isolates have been tested for resistance to amantadine by sequencing. The testing results showed that all 340 isolates were resistant to amantadine. 465 pandemic influenza A (H1N1) isolates have been tested for resistance to oseltamivir by sequencing; all were sensitive. 238 of the pH1N1 were tested for zanamivir resistance. The testing results showed that all 238 isolates were sensitive to zanamivir.

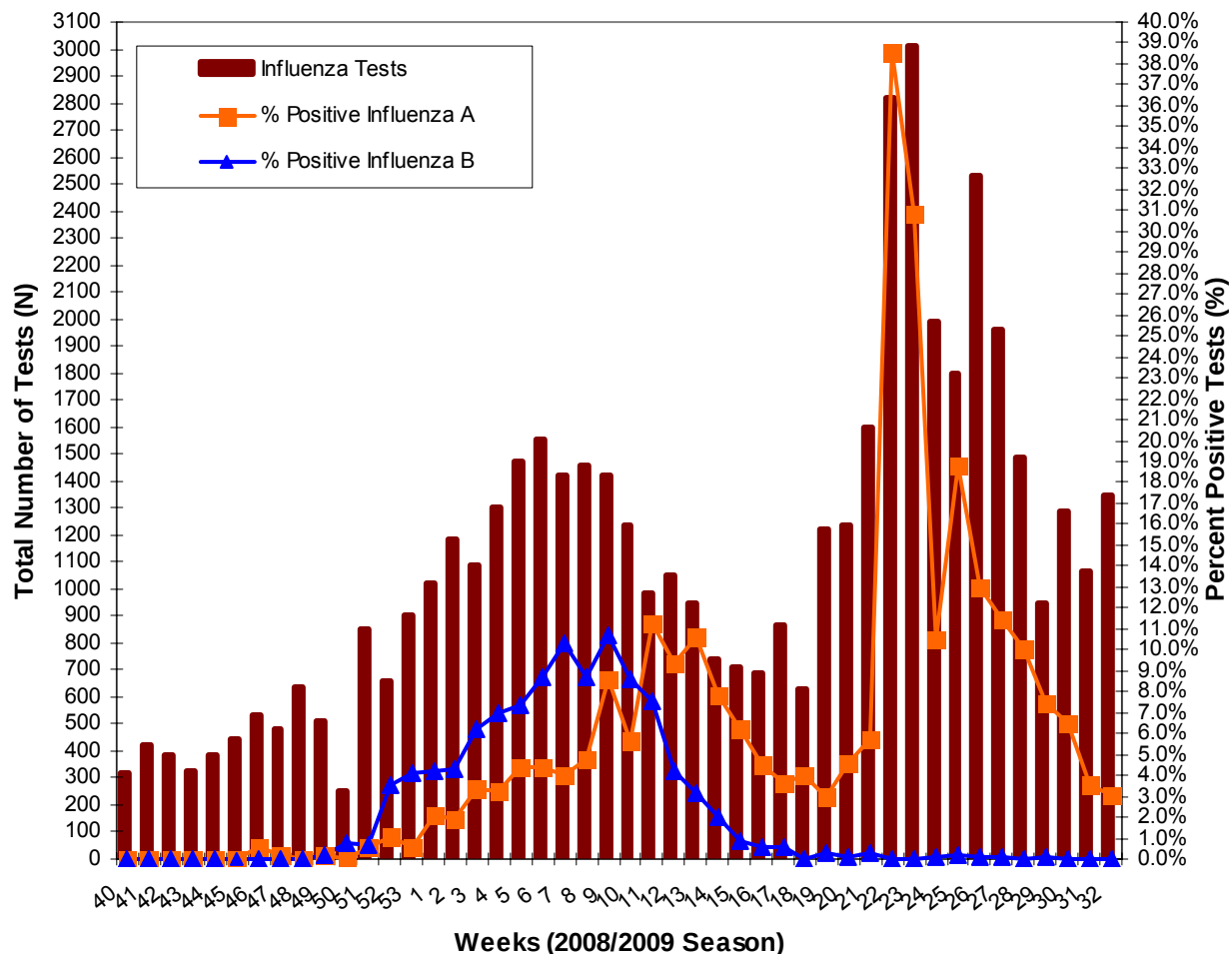
Antiviral Resistance (Provincial) – Seasonal Influenza:

All 83 A/H3N2 isolates tested were resistant to amantadine in Ontario. All of the 100 H1N1 isolates tested were sensitive to amantadine. Ninety-nine of the 100 tested A/H1N1 isolates were resistant to oseltamivir due to the H274Y mutation, one H1N1 isolate was sensitive.†

* These data have been obtained from the Respiratory Virus Detection tables of Public Health Agency of Canada and do not include data from late reports to PHAC: Week 32, 2009

† These data have been obtained from the National Microbiology Laboratory of the Public Health Agency of Canada for Week 33, 2009.

Figure 6: Total number of influenza tests performed and percent of positive tests in Ontario reported to the Centre for Immunization and Respiratory Infectious Diseases (CIRID), by report week*.

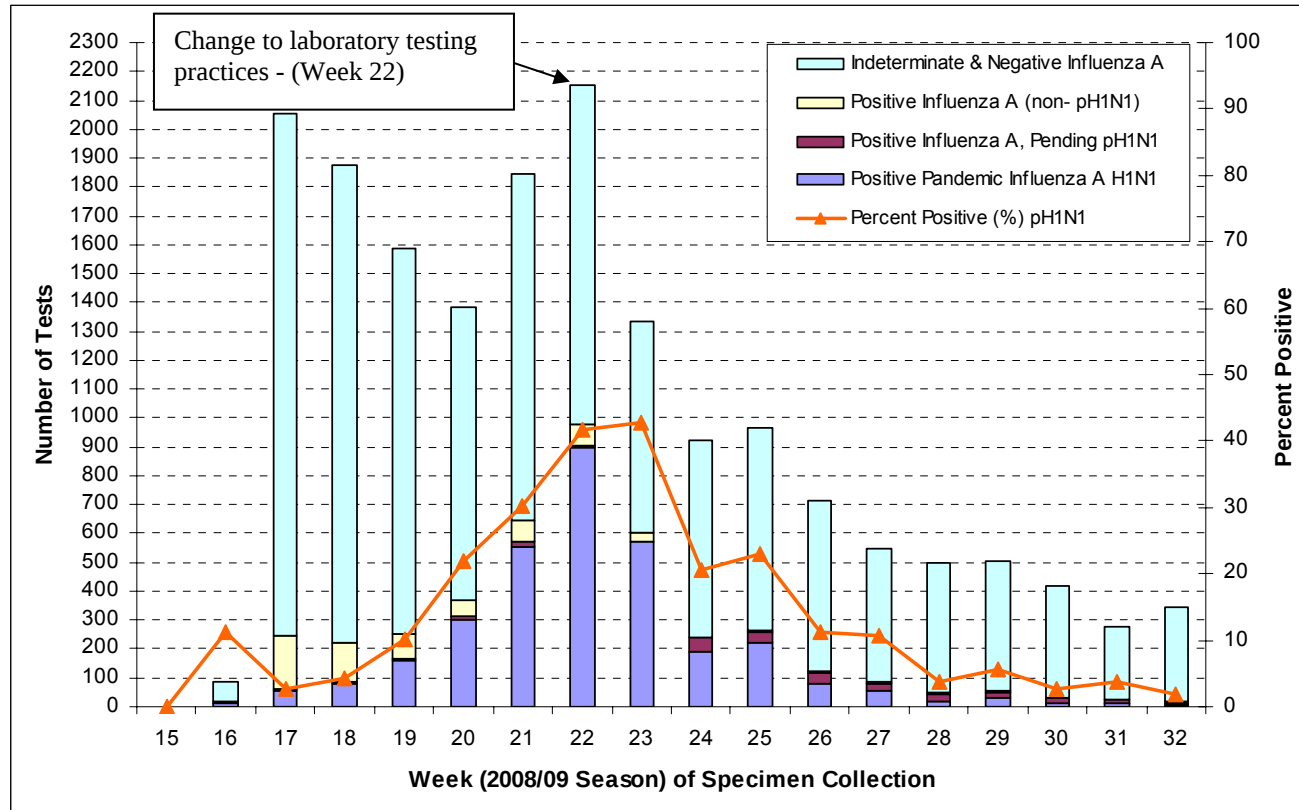


Source: Public Health Agency of Canada

* Total numbers reported include late reports; therefore totals may not be equal to the sum of the weekly numbers.

Note: Cumulative numbers for season to date are available through FluWatch: <http://www.phac-aspc.gc.ca/fluwatch/>

Figure 6a: Total number of influenza tests performed and percent of positive tests in Ontario conducted by the Ontario Agency for Health Protection and Promotion Laboratory – Toronto, by specimen collection week April 12 – August 19, 2009



Source: Adapted from Table 1 in the "OAHPP Laboratory novel H1N1 Influenza A Virus Surveillance Report"; Wednesday August 19, 2009

Table 7a: Institutional respiratory infection outbreaks in Ontario: new outbreaks* in Week 32 and total outbreaks for the season**

Institutional Respiratory Infection Outbreaks		
New Outbreaks*	N	% (of outbreaks)
Influenza A (All subtypes)	0	0.0
Influenza B	0	0.0
Influenza A and B	0	0.0
Parainfluenza (All types)	0	0.0
RSV	0	0.0
Other organisms	0	0.0
No organism identified	2	100.0
TOTAL	2	100.0
Total Respiratory Infection Outbreaks of the Season to date**	N	% (of outbreaks)
Influenza A	74	10.7
Influenza B	18	2.6
Influenza A and B	1	0.1
Parainfluenza (All types)	49	7.0
RSV	52	7.4
Combined Outbreaks [†]	0	0.0
Other organisms	74	10.3
No organism identified	434	61.7
TOTAL	702	100.0
Types of Institutions – All Outbreaks **	N	% (of outbreaks)
Long-Term Care Homes	456	65.3
Hospitals	29	3.7
Retirement Homes	58	8.3
Other	3	0.4
Unknown	156	22.2
TOTAL	702	100.0
	N	--
New Outbreaks – Pandemic (H1N1) 2009*	0	--
Total pH1N1 2009 Infection Outbreaks of the Season to date**	4	--
	N	% (of outbreaks)
Types of Institutions (pH1N1 Outbreaks) **	N	% (of outbreaks)
Long-Term Care Homes	2	50.0
Hospitals	2	50.0
Retirement Homes	0	0.0
Other	0	0.0
Unknown	0	0.0
TOTAL	4	100.0

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [19/08/2009]

* New outbreaks are those in which the date of onset of illness in the first case occurred and recorded through iPHIS in the current surveillance period; i.e. August 9, 2009 – August 15, 2009

** Season to date includes all outbreaks in which the date of onset of illness in the first case occurred from September 1, 2008 – August 15, 2009

[†] Combined outbreaks include outbreaks in which more than one non-influenza organism has been identified (e.g. RSV, parainfluenza, rhinovirus, etc.)

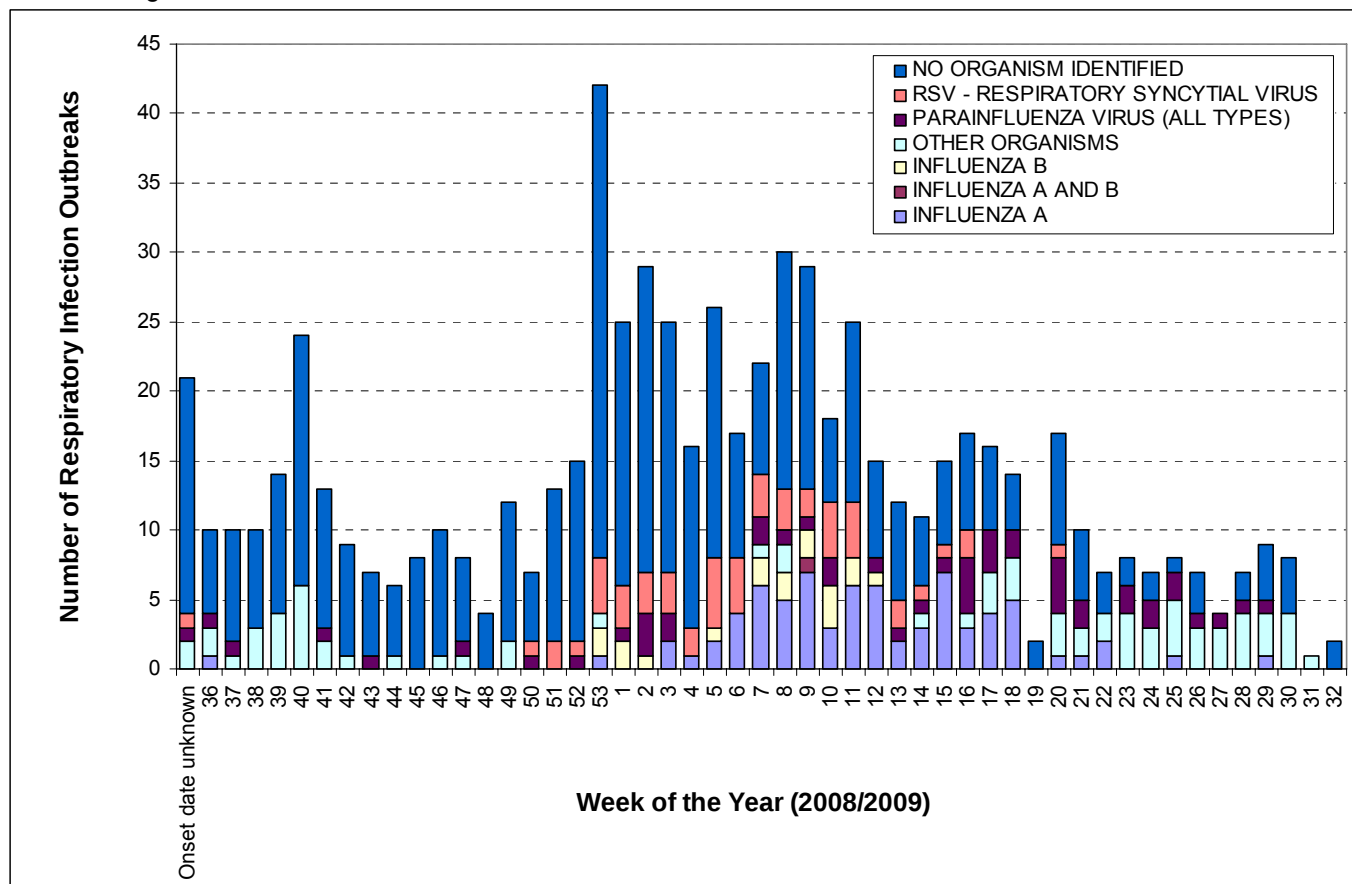
Table 7b: Outbreak Related Complications in institutional respiratory infection outbreaks in Ontario during the Surveillance Season*

Outbreak Related Cases – All Outbreaks	N	% (of total cases)
Residents	8595	74.5
Patients	424	3.7
Staff	2521	21.8
Total Cases	11540	100.0
Deaths		% (of cases per role)
Residents	202	2.4
Patients	10	2.4
Staff	0	0.0
Pneumonia (Chest x-ray confirmed)		% (of cases per role)
Residents	307	3.6
Patients	34	8.0
Staff	8	0.3
Hospitalizations		% (of cases per role)
Residents	388	4.5
Staff	4	0.2
Outbreak Related Cases – All Influenza Outbreaks	N	% (of total cases)
Residents	1123	71.2
Patients	50	3.2
Staff	405	25.7
Total Cases	1578	100.0
Deaths		% (of cases per role)
Residents	44	3.9
Patients	0	0.0
Staff	0	0.0
Pneumonia (Chest x-ray confirmed)		% (of cases per role)
Residents	69	6.1
Patients	4	0.4
Staff	5	1.2
Hospitalizations		% (of cases per role)
Residents	87	7.7
Staff	0	0.0
Outbreak Related Cases – Pandemic (H1N1) 2009 Outbreaks	N	% (of total cases)
Residents	12	35.3
Patients	6	17.6
Staff	16	47.1
Total Cases	34	100.0
Deaths		% (of cases per role)
Residents	0	0.0
Patients	0	0.0
Staff	0	0.0
Pneumonia (Chest x-ray confirmed)		% (of cases per role)
Residents	1	8.3
Patients	1	16.7
Staff	0	0.0
Hospitalizations		% (of cases per role)
Residents	2	16.7
Staff	0	0.0

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [20/08/2009]

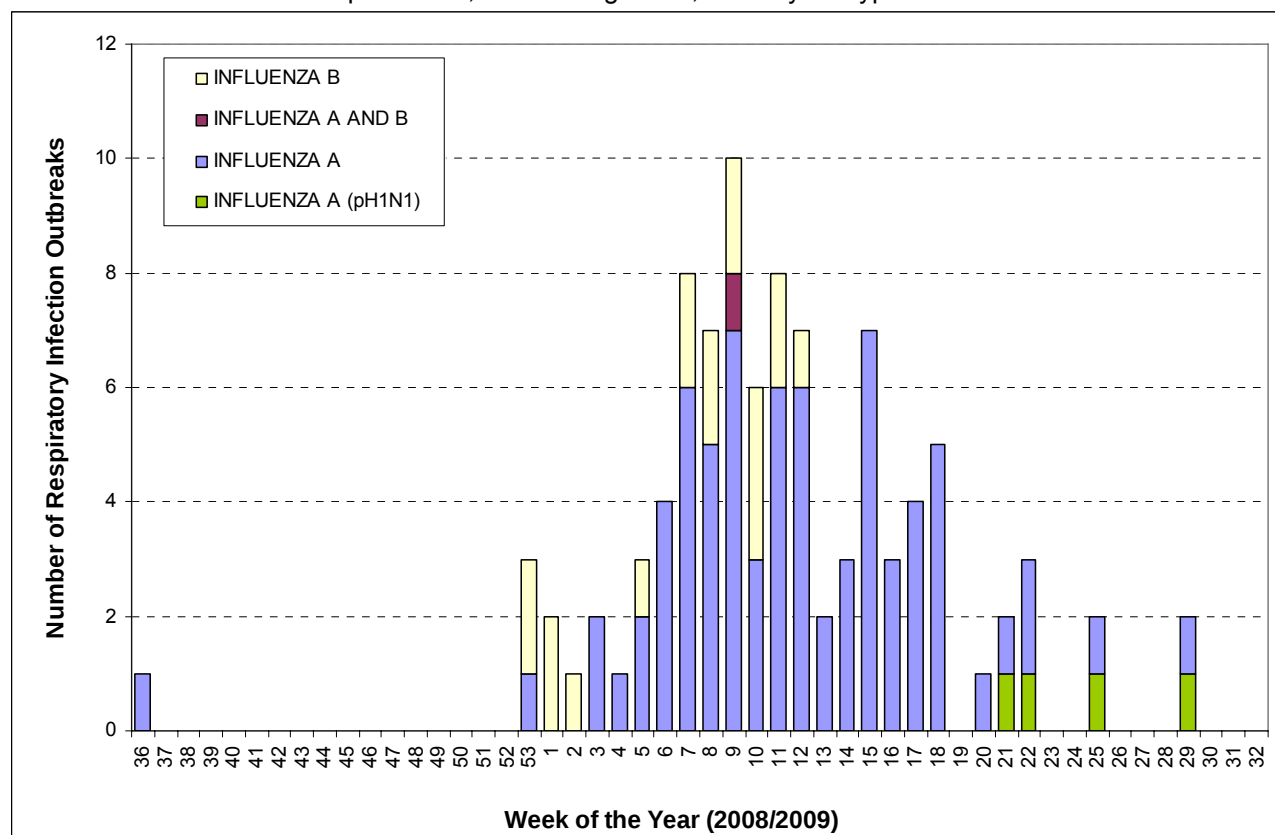
* Season to date includes all outbreaks in which the date of onset of illness in the first case occurred from September 1, 2008 – August 15, 2009

Figure 8: Institutional respiratory infection outbreaks in Ontario by onset of illness in the first case: Total Outbreaks from September 1, 2008 – August 15, 2009 by causative organism



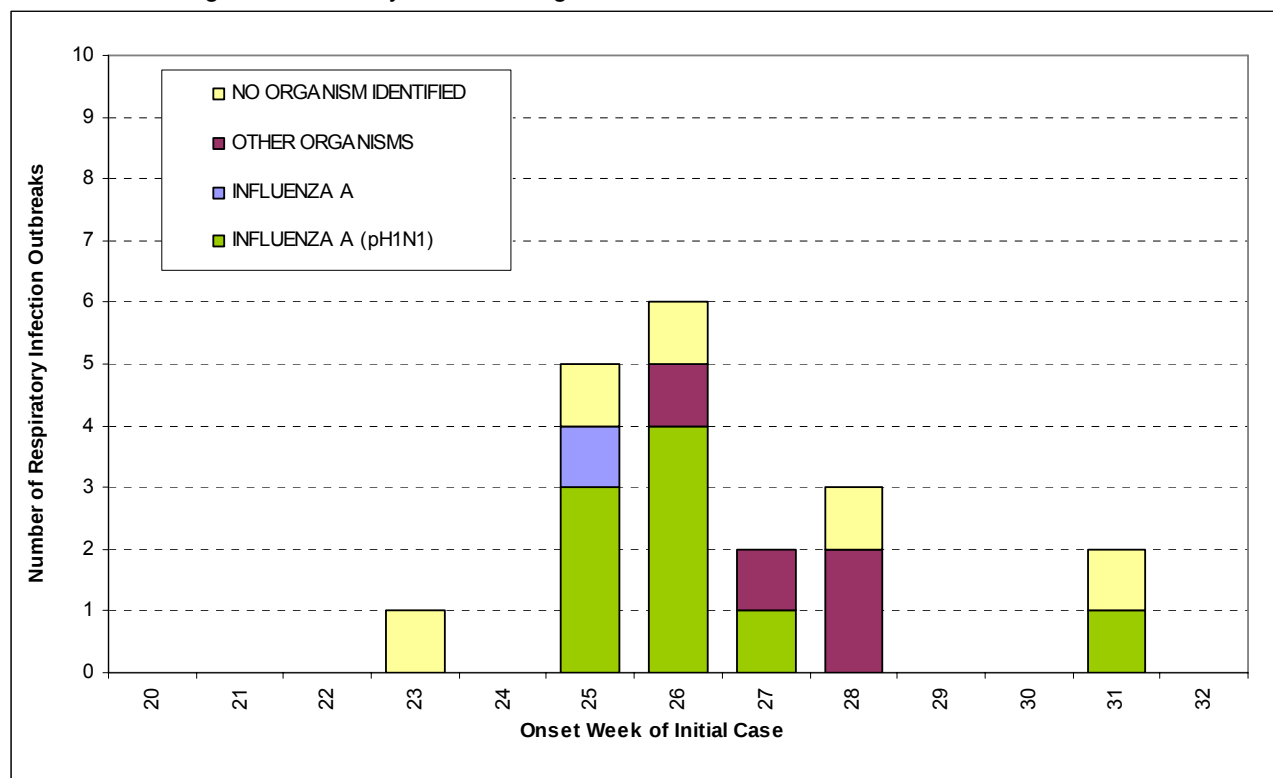
Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [19/08/2009]

Figure 9: Institutional influenza outbreaks in Ontario by onset of illness in the first case: Total Outbreaks from September 1, 2008 – August 15, 2009 by subtype



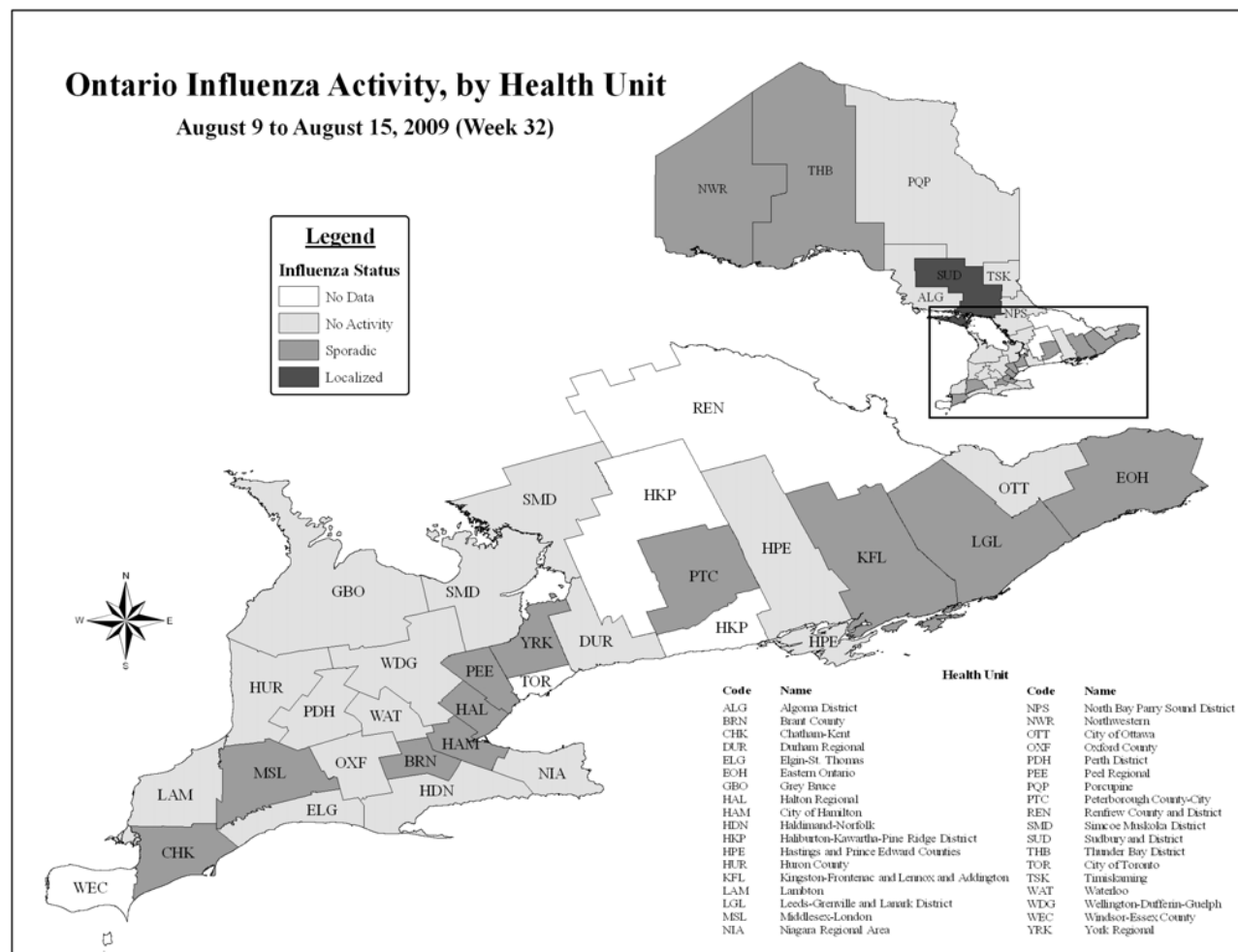
Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [19/08/2009]

Figure 10: Outbreaks in Ontario summer camps by onset of illness in the first case: Total Outbreaks from June 1 – August 19, 2009 by causative organism



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [20/08/2009]

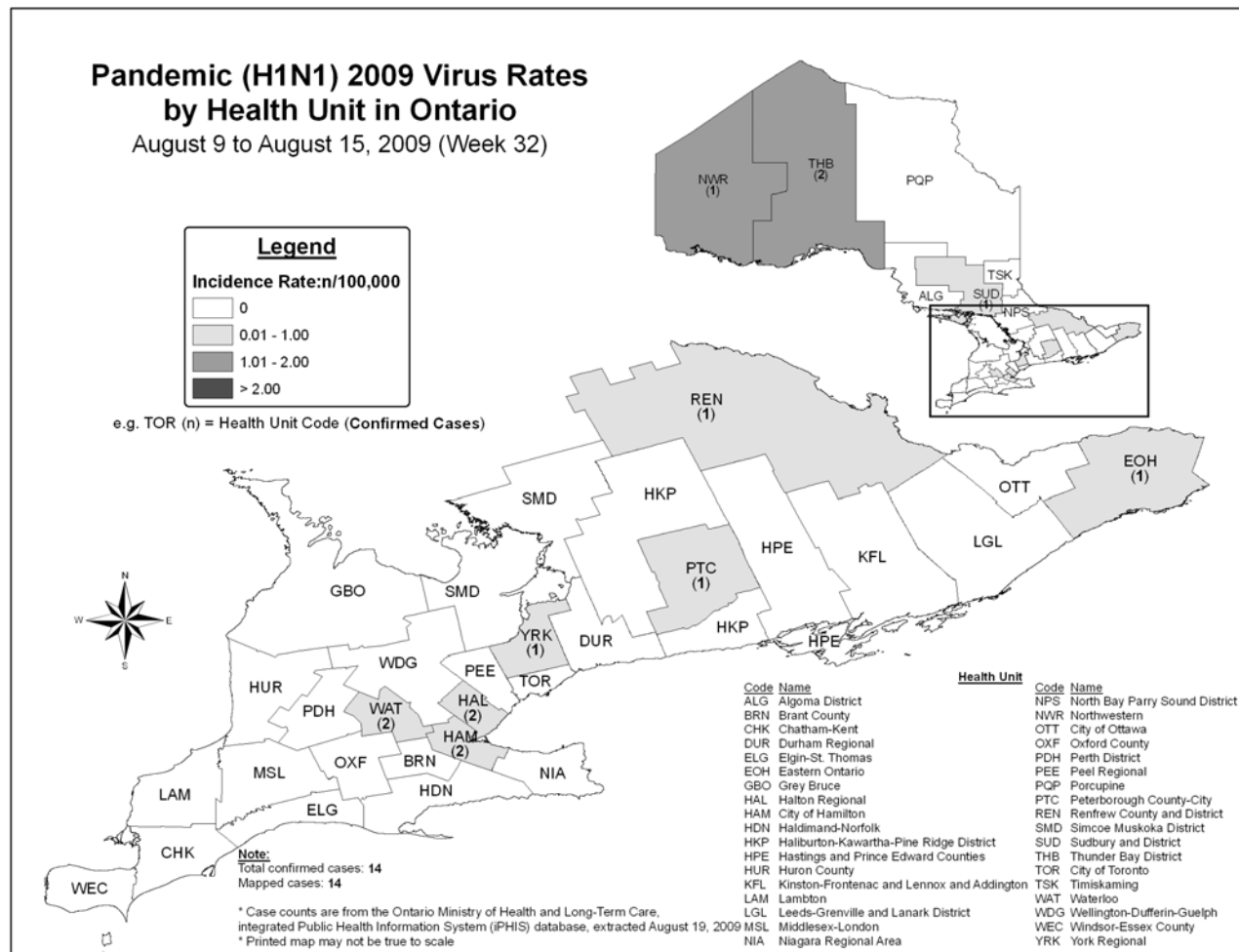
Figure 11: Influenza Activity* levels in Ontario by health unit for Week 32, 2009



SOURCE: MOHLTC [Provincial Influenza Activity Report (Appendix C) Database]

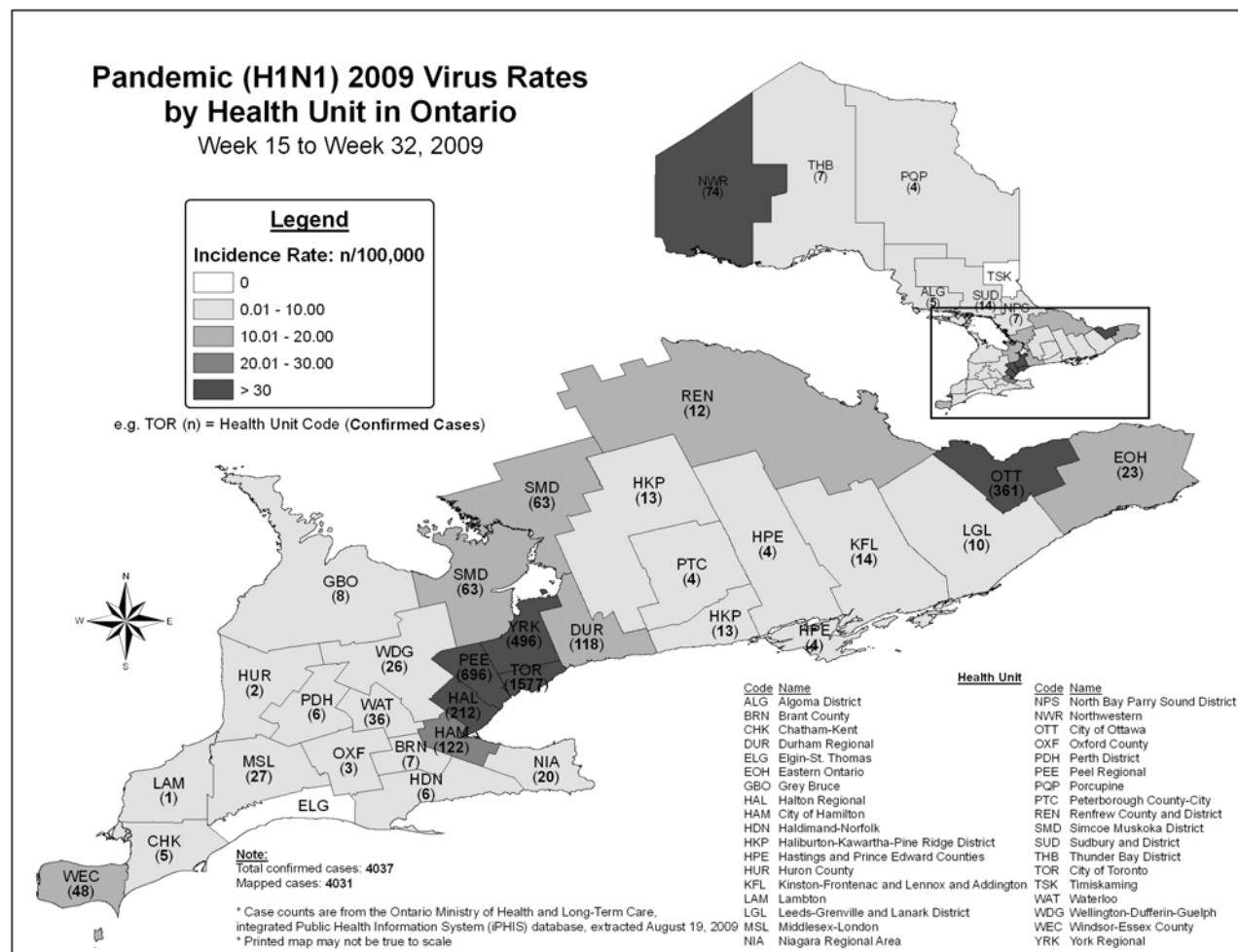
* Influenza activity levels are assigned by local public health units and reported to the MOHLTC by the Tuesday following the end of the surveillance week at 4 pm. Activity levels are assigned based on laboratory confirmations, ILI reports from various sources, and laboratory confirmed institutional outbreaks. Please refer to detailed definitions for the 2008-2009 season included in the Appendix-1]

Figure 12: Pandemic (H1N1) 2009 Virus incidence rates and counts in Ontario by health unit for Week 32, 2009



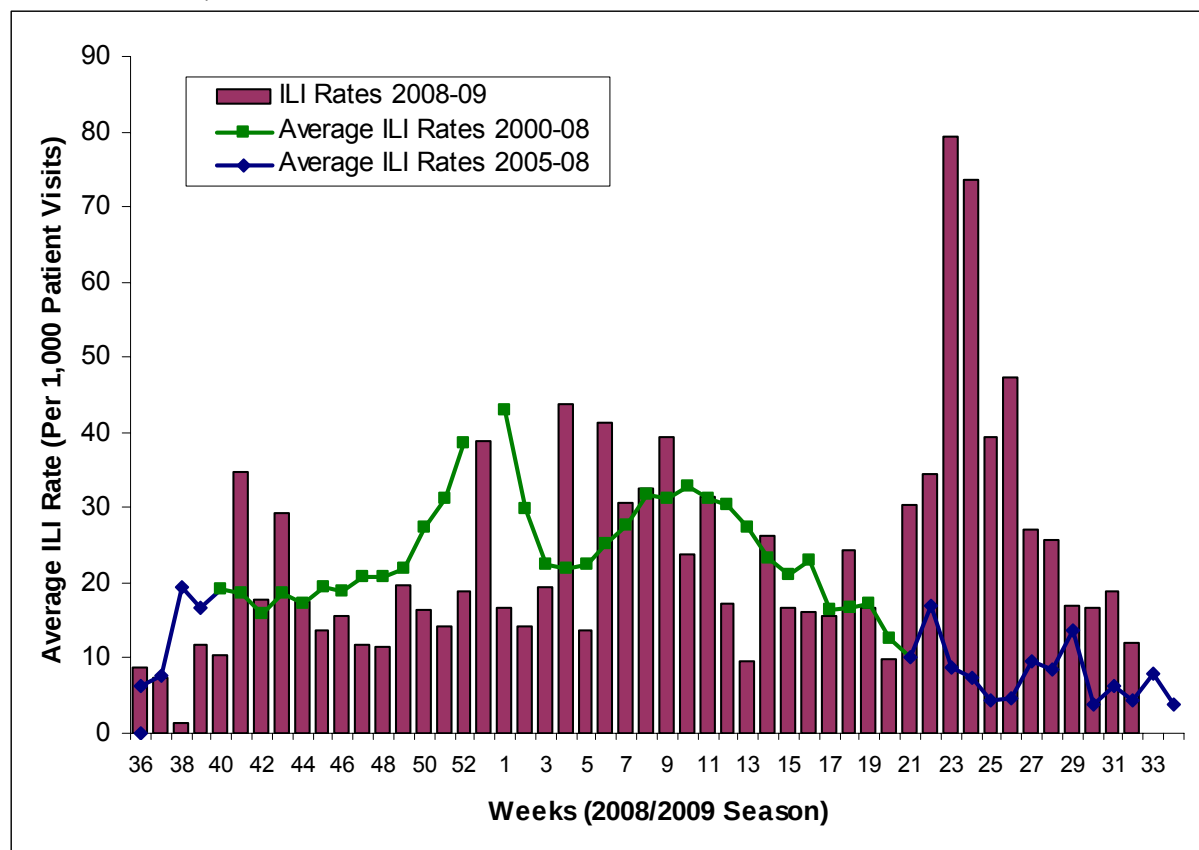
Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [19/08/2009]

Figure 13: Pandemic (H1N1) 2009 Virus cumulative incidence rates and counts in Ontario by health unit, Week 15 – 32 (April 12 – August 15, 2009)



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [19/08/2009]

Figure 14: Average influenza-like illness (ILI) consultation rate (per 1,000 patient visits) reported by sentinel physicians* in Ontario in 2008- 2009 season, by report week, compared to Ontario average[†] (1999/2000 to 2007/08 seasons).



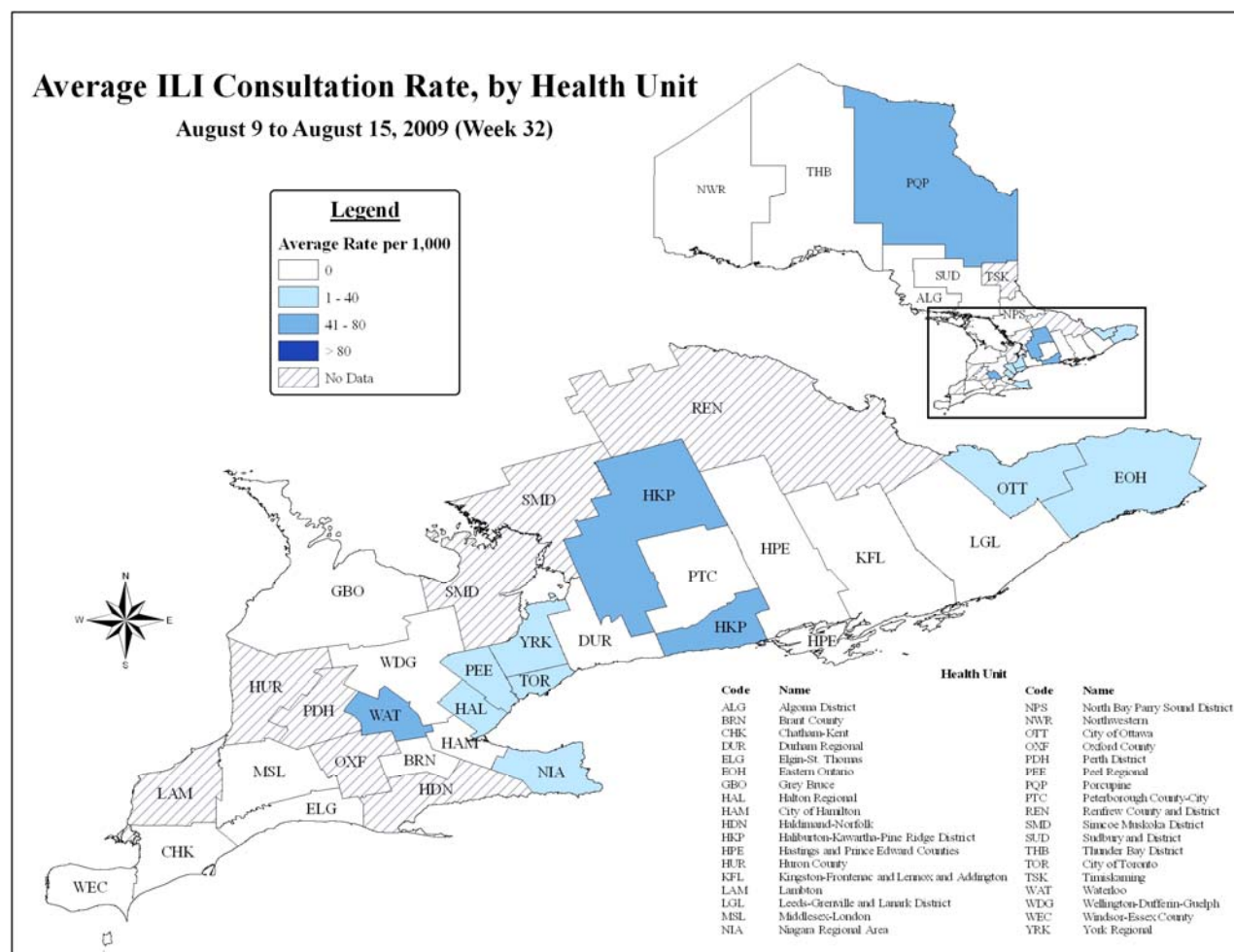
Source: Public Health Agency of Canada

* Sentinel physician information is reported to Public Health Agency of Canada, 104 sentinels reported this week.

[†]No data available for mean rate in previous years for weeks 21 to 39 (1999-2000 through 2004-2005 seasons). During weeks 20-39, 2002-2003/2004-2005 seasons, ILI is reported once every two weeks, on even weeks only.

Since Week 23, 2009, the number of sentinel physicians has increased, which might affect ILI rate starting from week 23.

Figure 15: Average influenza-like illness consultation rate (per 1,000 patient visits) by health unit as reported by sentinel physicians* in Ontario, for Week 32.



Source: Public Health Agency of Canada

* Sentinel physicians report ILI and patient data to the Public Health Agency of Canada 104 sentinels reported this week.

Note: The small numbers of sentinel physicians reporting at the local level can make the ILI rates unstable. Please interpret these data correspondingly.

Table 8: Average influenza-like illness consultation rate (per 1,000 patient visits) by age group as reported by sentinel physicians* in Ontario, for Week 32.

Age Category	0 – 4	5 – 19	20 – 64	65 +	Unknown	TOTAL
ILI Sum	9	6	21	5	0	41
ILI Consultation Rate (per 1,000 patient visits)	43.06	16.30	10.63	7.06	0.00	12.16

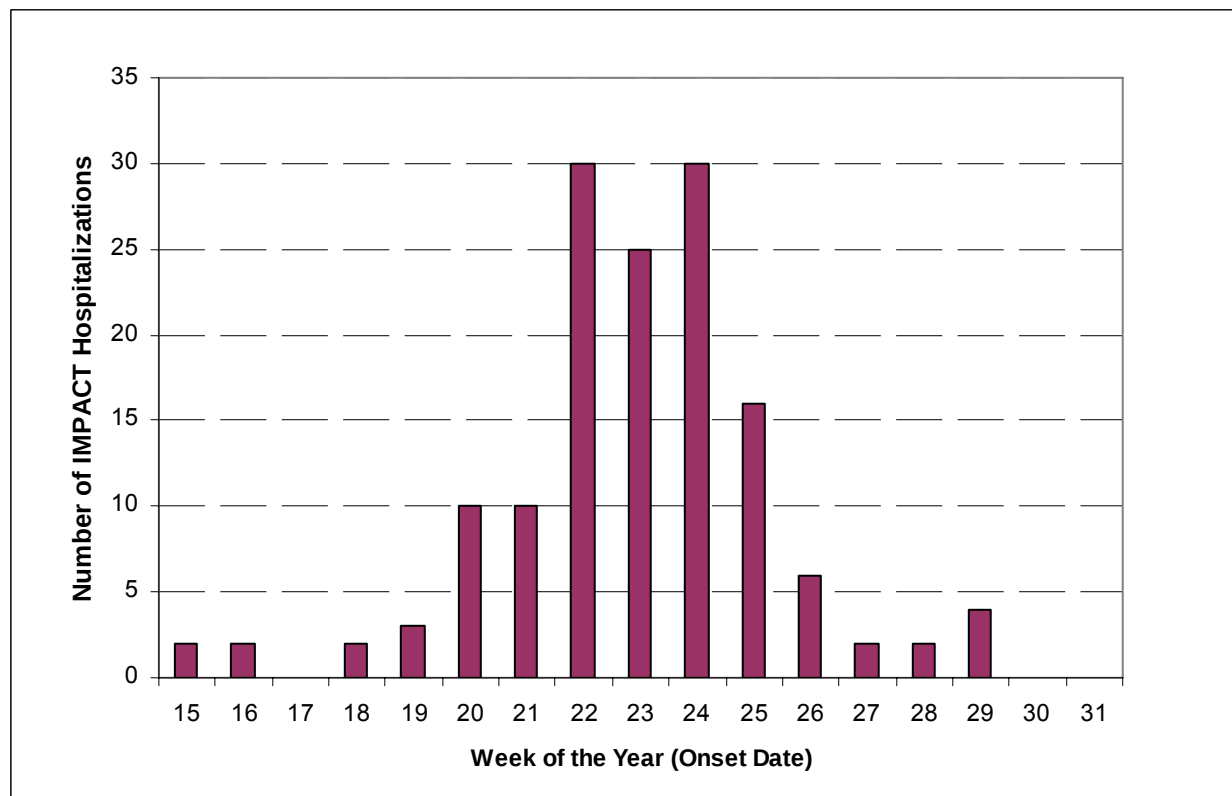
Source: Public Health Agency of Canada

* Sentinel physician information is reported to the Public Health Agency of Canada 104 sentinels reported this week.

Immunization Monitoring Program ACTive (IMPACT) is a paediatric hospital-based national active surveillance network for adverse events following immunization and selected infectious diseases in children, including influenza-associated pediatric hospitalizations and complements the [Canadian Adverse Event Following Immunization Surveillance System](#) (CAEFISS). It involves 12 Canadian centres, two of which are in Ontario (Children's Hospital of Eastern Ontario in Ottawa and the Hospital for Sick Children, Toronto).

Reports of adverse events following immunization are reported to the Vaccine Safety Unit at the Immunization Division of the Public Health Agency of Canada. Note that the number of IMPACT hospitalizations presented in this week's bulletin has been updated with the latest data received from PHAC.

Figure 16: Number of influenza related hospitalizations in Ontario reported through IMPACT in the 2008-2009 season, by onset date.



Source: Public Health Agency of Canada

*Note: The number of IMPACT hospitalizations presented reflect the latest data received at the time of publication, thus lower numbers of cases reported in recent weeks may be attributed in part to reporting delays.

FURTHER INFORMATION

1. Ontario Ministry of Health and Long-Term Care
Previous issues of the *Ontario Influenza Bulletin* can be accessed at:
http://www.health.gov.on.ca/english/providers/program/pubhealth/flu/flu_08/flubul_mn.html
2. Public Health Agency of Canada
Issues of FluWatch can be accessed at:
www.phac-aspc.gc.ca/fluwatch/
3. United States Centers for Disease Control and Prevention
<http://www.cdc.gov/flu/weekly/fluactivity.htm>
4. European Influenza Surveillance Scheme
http://www.eiss.org/cgi-files/bulletin_v2.cgi

INFORMATION ABOUT H1N1 INFLUENZA (HUMAN SWINE INFLUENZA)

1. CDC (Human swine flu investigation)
<http://www.cdc.gov/swineflu/investigation.htm>
2. PHAC (Human swine flu investigation)
http://www.phac-aspc.gc.ca/alert-alerte/swine_200904-eng.php
3. WHO Swine Flu general info
<http://www.who.int/csr/disease/swineflu/en/index.html>
4. Ontario Ministry of Health (Important Health Notices)
<http://www.health.gov.on.ca/english/providers/program/emu/ihn.html>

INFORMATION ABOUT AVIAN INFLUENZA

For latest information on the status of avian influenza worldwide please use the following link:

Public Health Agency of Canada
<http://www.phac-aspc.gc.ca/h5n1/index.html>

Influenza Surveillance Weeks 2008-2009 and date of submission of Appendix C

WEEKS	START	END	Appendix C Submission to MOHLTC
WK33	16-Aug-09	22-Aug-09	25-Aug-09
WK34	23-Aug-09	29-Aug-09	1-Sep-09
WK35	30-Aug-09	5-Sep-09	8-Sep-09

APPENDIX - I

Definitions for influenza activity levels:

No Data: No activity report corresponding to the surveillance week was received at the Ministry of Health and Long-Term Care Call Centre by the Tuesday (at 4 p.m.) following the end of the surveillance period.

No Activity: **No laboratory-confirmed* influenza and NO outbreaks detected** within the health unit/ influenza surveillance area, within the prior week, although sporadically occurring ILI may or may not be present.†

Sporadic: Sporadically (infrequently) occurring **ILI and at least one lab-confirmed influenza* case with NO outbreaks** detected within the health unit area.†

Localized: sporadically occurring **ILI and lab-confirmed influenza* together with outbreaks of ILI** in schools§ and work sites, or laboratory-confirmed influenza in residential institutions occurring in < 50% of the health unit. Outbreaks affect a single and/or adjacent geographic area within the health unit jurisdiction, e.g. outbreaks in a nursing home and a school in close proximity to each other.†

Widespread: sporadically occurring **ILI and lab-confirmed influenza* together with outbreaks of ILI** in schools and work sites, or laboratory-confirmed influenza in residential institutions occurring in > 50% of the health unit. Outbreaks affect multiple and non-adjacent geographic areas within the health unit jurisdiction, such as two or more regions of the health unit, two or more municipalities, two or more electoral wards, etc.†

* Confirmation of influenza within the surveillance region at any time within the prior week

† Sub-regions within the province or territory as defined by the provincial/territorial epidemiologist

§Health units have been requested to consider laboratory confirmed pH1N1 outbreaks in camps in their region when evaluating ILI activity levels

Influenza-Like Illness (ILI) Definitions:

A) ILI in the general population:

Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which could be due to influenza virus. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

B) ILI/Influenza outbreaks:

Schools and work sites: greater than 10% absenteeism on any day, most likely due to ILI.

Residential institutions: two or more cases of ILI within a seven-day period, **including at least one laboratory confirmed case.**

Current Provincial Surveillance Case Definition for pH1N1 (as of May 5, 2009):

Confirmed

Person with or without Influenza-like illness¹ and

Laboratory confirmation of swine influenza A (H1N1) virus infection by one or more of the following tests:

- RT-PCR with genotyping of H1 and/or N1 swine influenza virus
- Viral culture with strain typing
- Four-fold rise in swine influenza A(H1N1) virus specific antibodies by serology testing

¹Influenza-like illness: Acute onset of respiratory illness with fever AND one or more of the following - cough, sore throat, arthralgia, myalgia, prostration, or malaise. In cases under 5 or 65 and older fever may not be prominent.