

SURVEILLANCE WEEK 28 (July 12, 2009– July 18, 2009)

This issue of the Ontario Influenza Bulletin provides information on the surveillance period from July 12, 2009– July 18, 2009, (Week 28). **All data is for week 28 unless otherwise specified. Death and hospitalization information among novel H1N1 Influenza A virus confirmed cases is current as of July 23, 2009.** Data extraction and analysis for this issue of the Bulletin occurred on July 23, 2009. Please note, since the novel H1N1 influenza A virus is community based, we have expanded our surveillance reports to include other types of community outbreaks such as novel H1N1 Influenza A virus 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	96 total influenza cases (71 novel H1N1) in week 28 compared to 196 reported in week 27 (165 novel H1N1). The percent positivity of laboratory tests for novel H1N1 was <5%, which is much lower than the peak towards the end of June (>40%).
Influenza A Outbreaks	Lower	One new novel H1N1 outbreak was reported in a camp and one institutional influenza A outbreak with no subtype identified were reported during week 28
Influenza Activity Levels Reported by Health Units	Similar	The majority of health units continue to report “sporadic” activity while three have reported “localized” activity
ILI Consultation Rate reported by Sentinel Physicians	Lower	The overall ILI consultation rate dropped from 27.0/1,000 patient visits to 25.8/1,000 patient visits
Hospitalizations Among Lab confirmed Cases of novel H1N1 Influenza A virus	Lower	Fewer hospitalized cases were reported from July 17 to July 22 than from July 10 to July 16.
Deaths Among Lab confirmed Cases of novel H1N1 Influenza A virus	Lower	Fewer deaths among cases were reported from July 17 to July 22 than from July 10 to July 16
OVERALL ASSESSMENT	Influenza activity in Ontario remains <i>lower</i> to the previous week	Almost all of the measures indicate that influenza activity in week 28 was lower than activity in week 27. This continues a downward trend in activity that started at the end of June. However, influenza activity remains above what is expected for this time of year.

Overall, influenza activity in Ontario during week 28, 2009, was **lower than** week 27, 2009. Ontario health units reported 96 new confirmed cases of influenza through the integrated Public Health Information System (iPHIS). This count includes 71 laboratory confirmed cases of the novel H1N1 influenza A virus similar to week 27. During week 28, new laboratory confirmed cases of novel H1N1 Influenza A continued to be seen across the province, with the Greater Toronto Area reporting most of these cases. One new institutional influenza A outbreak with no subtype identified was reported. For week 28, Eastern and Central East and Central West health regions 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 remains above what is expected for this time of the year.

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 28, 2009)

Confirmed influenza cases*†	HEALTH REGION							TOTAL
	North West	North East	Eastern	Central East	Toronto	South West	Central West	
Novel Influenza A H1N1	2	4	9	20	13	9	14	71
Influenza A (Other Subtypes/Not Subtyped)	1	2	0	12	3	3	4	25
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	6	9	32	16	12	18	96
Institutional outbreaks of novel Influenza A H1N1 ‡	0	0	0	0	0	0	0	0
Institutional outbreaks of Influenza (Other Subtypes/Not Subtyped)‡	0	0	0	1	0	0	0	1

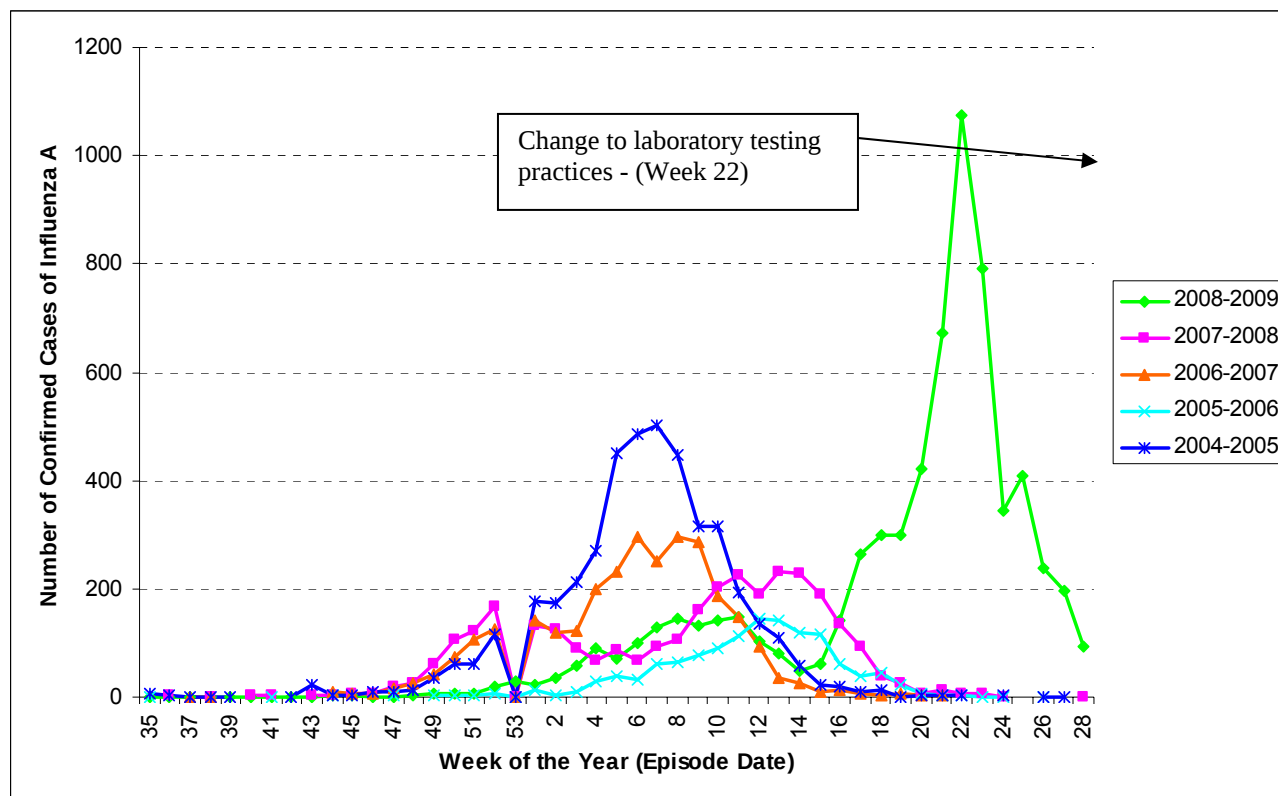
SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009].

* Includes reports of confirmed influenza through iPHIS, as well as cases in institutional outbreaks, with dates of onset in 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 novel H1N1 influenza A virus. Aggregate reports are based on the date the health unit was informed of the novel H1N1 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 July 18, 2004-2009†*



SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009].
† 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 Novel Influenza A H1N1 virus by health unit & health region, with a reported week[†] during Week 28, 2008-09 and cumulative* confirmed cases between September 1, 2008 – July 18, 2009

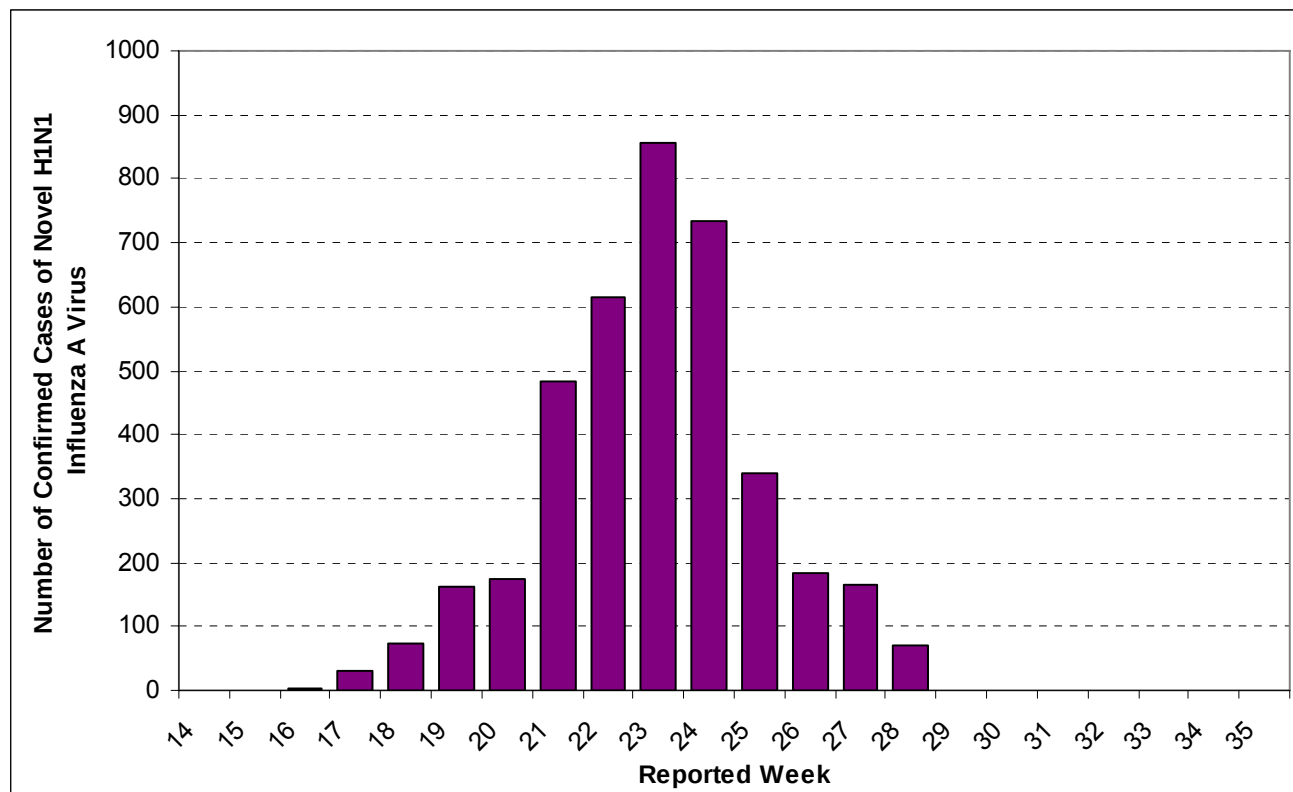
Region	Health Unit	Confirmed Influenza	
		Novel Influenza A H1N1 for WK 28	Novel Influenza A H1N1 (Total)
North West	Northwestern	2	70
	Thunder Bay District	0	5
	TOTAL NORTH WEST	2	75
North East	Algoma	0	1
	North Bay Parry Sound District	0	5
	Porcupine	4	7
	Sudbury & District	0	11
	Timiskaming	0	0
	TOTAL NORTH EAST	4	24
Eastern	City of Ottawa	3	356
	Eastern Ontario	2	21
	Hastings & Prince Edward Counties	0	4
	Kingston, Frontenac, Lennox & Addington	0	12
	Leeds, Grenville And Lanark District	2	10
	Renfrew County And District	2	16
	TOTAL EASTERN	9	419
Central East	Durham Region	3	116
	Haliburton, Kawartha, Pine Ridge	1	13
	Peel Region	7	669
	Peterborough County-City	0	2
	Simcoe Muskoka District	7	57
	York Region	2	483
	TOTAL CENTRAL EAST	20	1340
Toronto	Toronto	13	1550
	TOTAL TORONTO	13	1550
South West	Chatham-Kent	0	3
	Elgin-St. Thomas	0	0
	Grey Bruce	0	7
	Huron County	0	2
	Lambton County	0	0
	Middlesex-London	2	25
	Oxford County	0	3
	Perth District	1	2
	Windsor-Essex County	6	46
	TOTAL SOUTHWEST	9	88
Central West	Brant County	1	7
	City Of Hamilton	11	104
	Haldimand-Norfolk	0	6
	Halton Region	0	205
	Niagara Region	0	15
	Waterloo Region	1	31
	Wellington-Dufferin-Guelph	1	27
	TOTAL CENTRAL WEST	14	395
	Out of Province	0	5
	TOTAL ONTARIO	71	3896

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009].

[†] Reported date corresponds to the date Novel Influenza A H1N1 was reported to the health unit

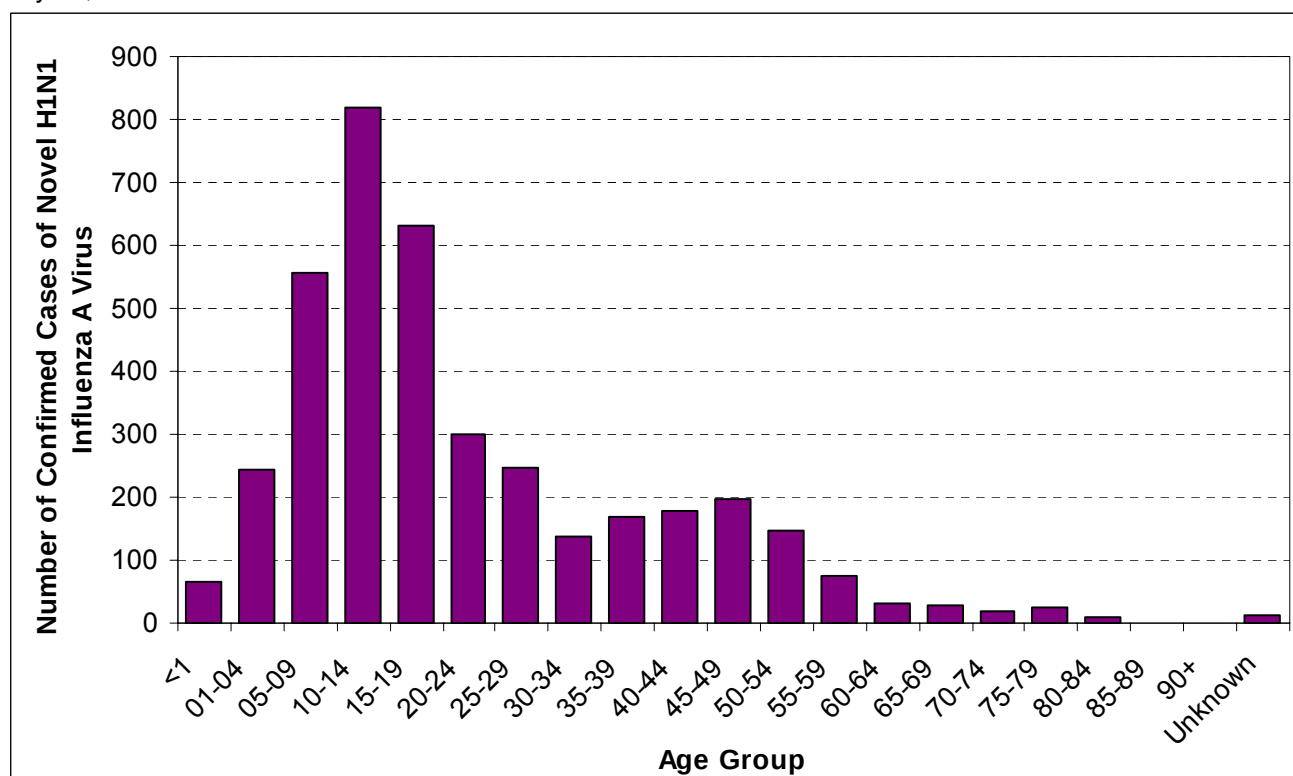
* Cumulative case counts include late reports and records that are otherwise reconciled. Therefore, cumulative counts may not equal new cases plus previous cumulative value.

Figure 2: Laboratory confirmed cases of novel H1N1 Influenza A in Ontario by week between April 13 and July 18, 2009



SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009].

Figure 3: Laboratory confirmed cases of novel H1N1 Influenza A in Ontario by age group between April 13 and July 18, 2009



SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009].

Table 3: Confirmed cases of influenza by health unit & health region, excluding laboratory confirmed novel H1N1 Influenza A, with an episode date[†] during Week 28, 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	1	0	0	1
	TOTAL NORTH WEST	1	0	0	1
North East	Algoma	0	0	0	0
	North Bay Parry Sound District	1	0	0	1
	Porcupine	1	0	0	1
	Sudbury & District	0	0	0	0
	Timiskaming	0	0	0	0
	TOTAL NORTH EAST	2	0	0	2
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	4	0	0	4
	Haliburton, Kawartha, Pine Ridge	0	0	0	0
	Peel Region	3	0	0	3
	Peterborough County-City	0	0	0	0
	Simcoe Muskoka District	3	0	0	3
	York Region	2	0	0	2
	TOTAL CENTRAL EAST	12	0	0	12
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	3	0	0	3
	Oxford County	0	0	0	0
	Perth District	0	0	0	0
	Windsor-Essex County	0	0	0	0
	TOTAL SOUTHWEST	3	0	0	3
Central West	Brant County	0	0	0	0
	City Of Hamilton	1	0	0	1
	Haldimand-Norfolk	0	0	0	0
	Halton Region	2	0	0	2
	Niagara Region	0	0	0	0
	Waterloo Region	0	0	0	0
	Wellington-Dufferin-Guelph	1	0	0	1
	TOTAL CENTRAL WEST	4	0	0	4
	TOTAL ONTARIO	25	0	0	25

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009].

[†] 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 novel H1N1 Influenza A, with an episode date† between September 1, 2008 – July 18, 2009

Region	Health Unit	Confirmed Influenza			
		Influenza A (Other subtypes/Not yet Subtyped)	Influenza A & B	Influenza B	TOTAL
North West	Northwestern	5	0	7	12
	Thunder Bay District	6	0	7	13
	TOTAL NORTH WEST	11	0	14	25
North East	Algoma	5	0	10	15
	North Bay Parry Sound District	18	0	74	92
	Porcupine	20	0	30	50
	Sudbury & District	15	0	7	22
	Timiskaming	4	0	5	9
	TOTAL NORTH EAST	62	0	126	188
Eastern	City Of Ottawa	127	2	56	185
	Eastern Ontario	14	0	39	53
	Hastings & Prince Edward Counties	9	0	19	28
	Kingston, Frontenac, Lennox & Addington	32	0	32	64
	Leeds, Grenville And Lanark District	21	0	22	43
	Renfrew County And District	9	0	10	19
	TOTAL EASTERN	212	2	178	392
Central East	Durham Region	99	1	61	161
	Haliburton, Kawartha, Pine Ridge	73	0	49	122
	Peel Region	396	0	145	541
	Peterborough County-City	28	0	10	38
	Simcoe Muskoka District	74	0	77	151
	York Region	178	0	45	223
	TOTAL CENTRAL EAST	848	1	387	1,236
Toronto	Toronto	757	3	246	1,006
	TOTAL TORONTO	757	3	246	1,006
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	53	0	8	61
	Oxford County	15	0	10	25
	Perth District	26	0	12	38
	Windsor-Essex County	27	0	33	60
	TOTAL SOUTHWEST	170	1	162	333
Central West	Brant County	21	0	19	40
	City Of Hamilton	137	0	97	234
	Haldimand-Norfolk	11	0	11	22
	Halton Region	119	0	60	179
	Niagara Region	77	0	56	133
	Waterloo Region	124	0	85	209
	Wellington-Dufferin-Guelph	60	0	41	101
	TOTAL CENTRAL WEST	549	0	369	918
	TOTAL ONTARIO	2,609	7	1,482	4,098

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009].

* 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)

Deaths among Novel H1N1 Influenza A Virus cases, April 13 – July 22, 2009

NOTE: Information presented on deaths and hospitalizations includes cases reported up to July 22, 2009.

Eighteen deaths have been reported among confirmed cases representing a population-based mortality rate of 0.1 deaths per 100,000 population. Almost all of these fatalities (83%) were hospitalized prior to death. Among the reported fatalities, males (8) accounted for slightly fewer deaths than females (10). 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, 83% (15/18) occurred in individuals over the age of 40 years. The symptom onset dates of the fatal cases range from May 6 to July 5, 2009.

Among confirmed cases that have died, 13 (72%) had underlying chronic medical conditions, compared to 55% (167/302) of hospitalized cases.

Hospitalizations among Novel H1N1 Influenza A Virus cases, April 13 – July 22, 2009

Three hundred and two confirmed cases of novel H1N1 Influenza A have been hospitalized to date representing a population-based hospitalization rate of 2.3 hospital admissions per 100,000 population in Ontario. Of these, 250 cases have been discharged. The average and median length of hospital stay were 6 days and 4 days, respectively, with lengths of stay ranging from less than 24 hours to 45 days. Among cases that were discharged from hospital, 89% (222/250) had a length of stay of at least 2 days. There are currently 52 confirmed cases that are reported as still being hospitalized. There was only one case with a length of stay under 24 hours, and this case has been removed from all subsequent analyses.

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 52 cases still hospitalized, a total of 29 were placed on a ventilator and/or were admitted to ICU.

Table 5. Hospitalizations among confirmed cases of novel H1N1 Influenza A in Ontario, April 13 – July 22, 2009

Hospitalization Status	Ventilator and/or ICU	Not in ICU and not on ventilator	Number of cases hospitalized to date
Number Currently Hospitalized	29	23	52
Number Hospitalized and Discharged	25	224	249
Total Hospitalized to date	54	247	301*

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [22/07/2009]

*Excludes case with a length of stay of 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 49% (148/300) of hospitalized cases. In contrast, cases under the age of 20 accounted for 60% (2318/3879) of all cases of novel H1N1 influenza A 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. Age category and hospitalization status of novel H1N1 Influenza A in Ontario, April 13 – July 22, 2009

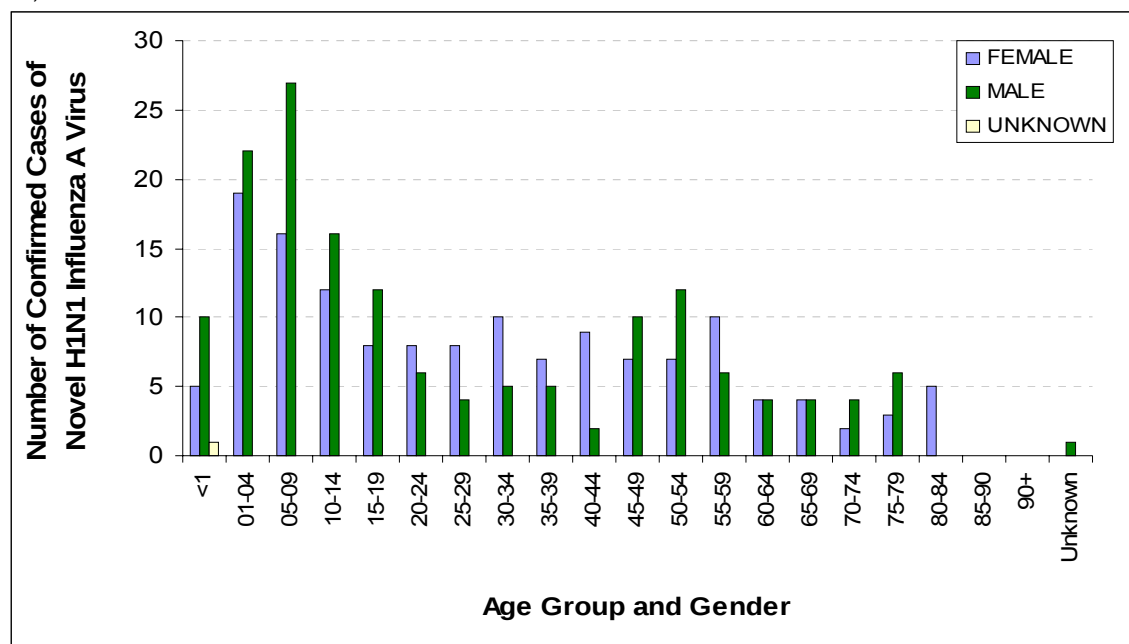
Hospitalization Status	Hospitalized Cases*	Non-hospitalized Cases	Total Cases
< 20 years	148	2170	2318
≥ 20 years	152	1409	1561
Total	300	3579	3879

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [22/07/2009]

*Age was unknown for 11 cases

Figure 4 shows the age and sex distribution of the 301 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 20 years and the average age is 31 years.

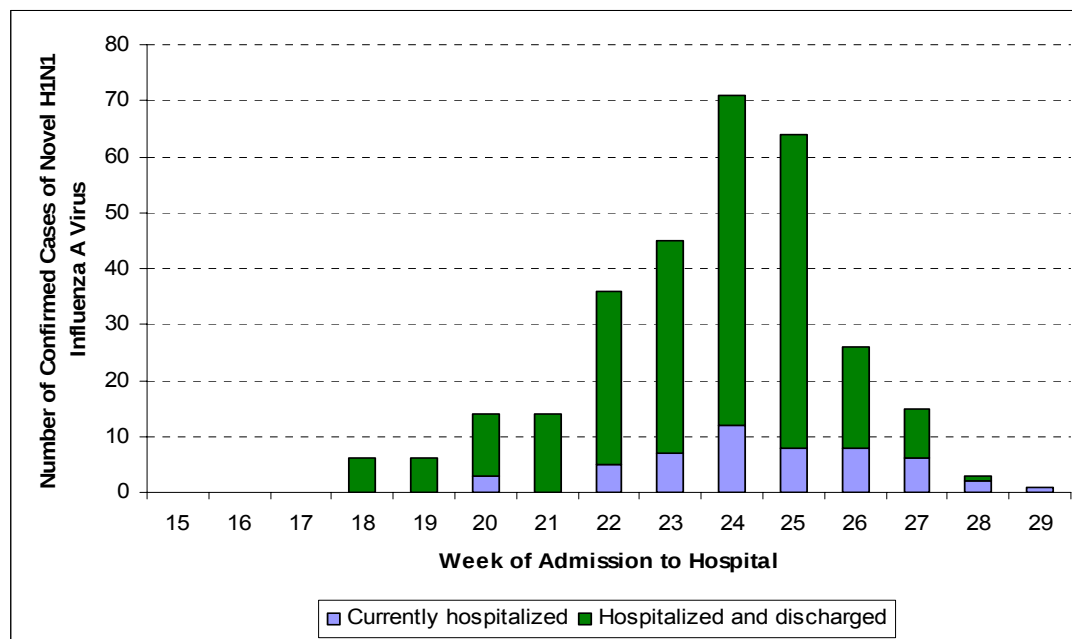
Figure 4: Hospitalized cases of novel H1N1 Influenza A in Ontario by age group and gender, April 13 to July 22, 2009



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [22/07/2009] **Note:** Gender is unknown for 1 case.

The hospital admission dates in hospitalized cases ranged from May 4 to July 19, 2009 (Figure 5). Case counts from weeks 27 to 29 should be interpreted with caution due to lags in case identification, laboratory testing, and data entry.

Figure 5: Hospitalized cases of novel H1N1 Influenza A by hospital admission date in Ontario, April 13 – July 22, 2009*



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [22/07/2009] * For Week 27-29, decreased counts may be attributed in part to reporting delays.

Influenza Subtype(s):

During week 28, a total of 6224 isolates were received by the Public Health Agency of Canada, with 814 testing positive for influenza A and none positive for influenza B. 322 of the reported influenza A isolates were from Alberta (39.6%), 149 were from Ontario (18.3%), 120 were from Nova Scotia (14.7%) and 93 were from British Columbia (11.4%).*

(Antigenic Characterization and Antiviral Resistance data are Current as of July 24, 2009)

Antigenic Characterization (National) – Seasonal Influenza:

Since September 1, 2008, National Microbiology Laboratory (NML) has antigenically characterized 984 seasonal human influenza viruses (168 influenza A/H3N2, 248 influenza A/H1N1 and 568 B viruses) that were received from Canadian provincial and hospital laboratories and 182 pandemic influenza A (H1N1) viruses. All 168 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 248 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 568 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 178 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 - Novel Influenza A (H1N1):

NML has antigenically characterized 99 novel 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 novel influenza A(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 the 08/09 seasonal influenza vaccine.

The National Microbiology Laboratory (NML) has antigenically characterized the following strains from Ontario: 8 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 689 influenza A isolates (306 H1N1 and 383 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 1070 influenza isolates (310 A/H1N1, 189 A/H3N2 & 571 B) for oseltamivir (Tamiflu) resistance. All of the A/H3N2 and B isolates were sensitive; however 309 of the A/H1N1 isolates were resistant to oseltamivir due to the H274Y mutation (resistance = 100% or 309/309). One H1N1 isolate was sensitive to oseltamivir.

All 1008 influenza isolates (247 A/H1N1, 185 A/H3N2 & 576 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 - Novel Influenza A (H1N1):

283 novel influenza A (H1N1) have been tested for resistance to amantadine by sequencing. The testing results showed that all 283 isolates were resistant to amantadine. 354 novel influenza A (H1N1) have been tested for resistance to oseltamivir by sequencing; all were sensitive. 172 of the novel H1N1 were tested for zanamivir resistance. The testing results showed that all 172 isolates were sensitive to zanamivir.

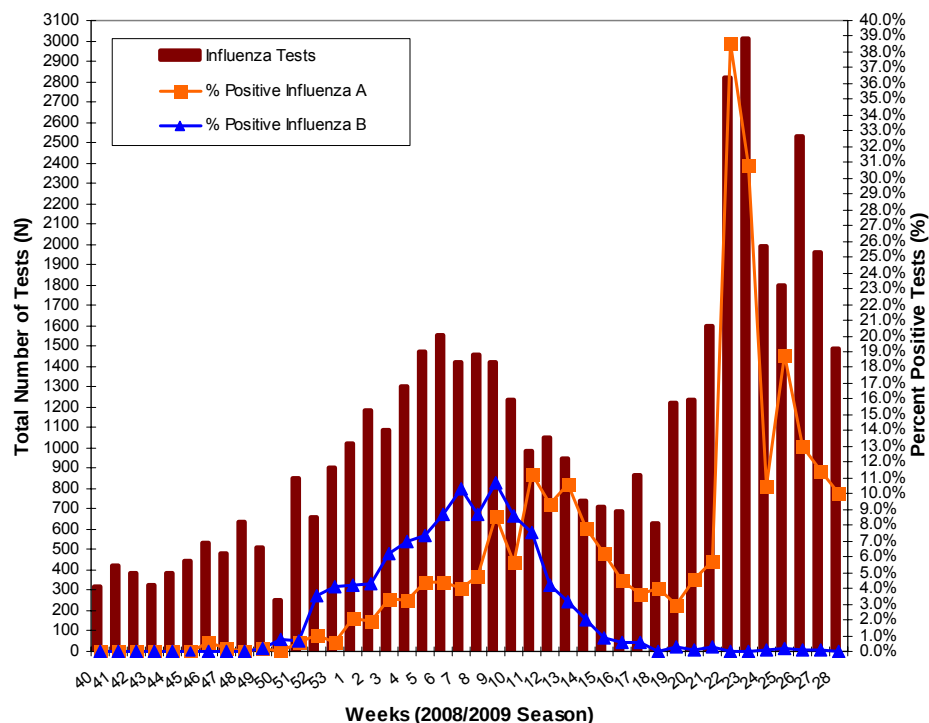
Antiviral Resistance (Provincial) – Seasonal Influenza:

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 28, 2009

[†] These data have been obtained from the National Microbiology Laboratory of the Public Health Agency of Canada for Week 29, 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*.

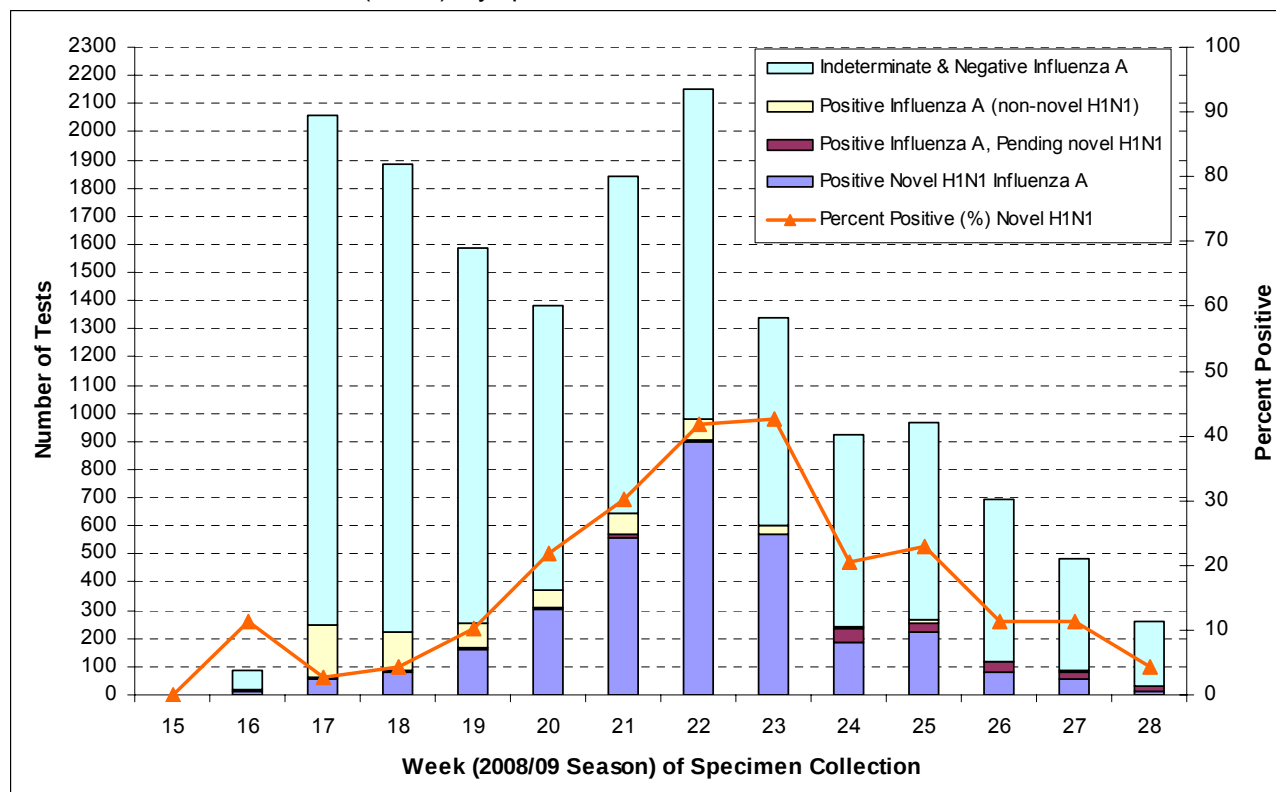


Source: Public Health Agency of Canada

* 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 Toronto Public Health Lab (TPHL), by specimen collection week



Source: OAHPP Laboratory novel H1N1 Influenza A Virus Surveillance Report; Wednesday July 22, 2009

Table 7a: Institutional respiratory infection outbreaks in Ontario: New Outbreaks* in Week 28 and Total Outbreaks for the Season**

Institutional Respiratory Infection Outbreaks		
New Outbreaks*	N	% (of outbreaks)
Influenza A (All subtypes)	1	33.3
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	66.7
TOTAL	3	100.0
Total Respiratory Infection Outbreaks of the Season to date**	N	% (of outbreaks)
Influenza A	74	11.1
Influenza B	18	2.7
Influenza A and B	1	0.2
Parainfluenza (All types)	43	6.4
RSV	52	7.8
Combined Outbreaks [†]	0	0.0
Other organisms	60	9.0
No organism identified	417	62.7
TOTAL	665	100.0
Types of Institutions (All Outbreaks) **	N	% (of outbreaks)
Long-Term Care Homes	437	65.7
Hospitals	26	3.9
Retirement Homes	55	8.3
Other	2	0.3
Unknown	145	21.8
TOTAL	665	100.0
	N	% (of outbreaks)
New Outbreaks (Influenza A H1N1)*	0	0.0
Total Influenza A H1N1 Infection Outbreaks of the Season to date**	3	100.0
	N	% (of outbreaks)
Types of Institutions (Influenza A H1N1 Outbreaks) **		
Long-Term Care Homes	2	66.7
Hospitals	1	33.3
Retirement Homes	0	0.0
Other	0	0.0
Unknown	0	0.0
TOTAL	3	100.0

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009]

* 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. July 12, 2009 – July 18, 2009

** Season to date includes all outbreaks in which the date of onset of illness in the first case occurred from September 1, 2008 – July 18, 2009

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

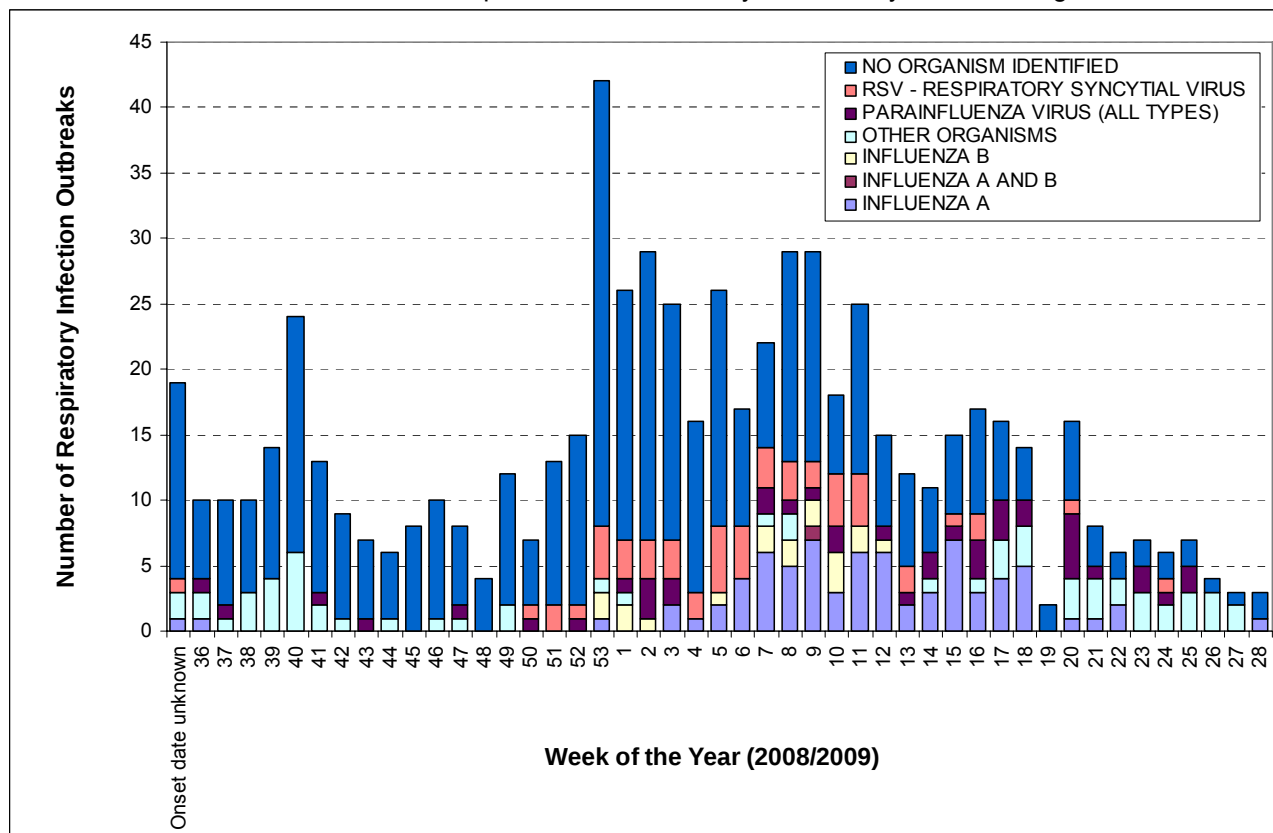
Table 7b: Outbreak Related Complications in institutional respiratory infection outbreaks in Ontario during the Surveillance Season*

Outbreak Related Cases (All Outbreaks)	N	% (of total cases)
Residents	8172	74.4
Patients	386	3.5
Staff	2429	22.1
Total Cases	10982	100.0
Deaths		% (of cases per role)
Residents	186	2.3
Patients	9	2.3
Staff	0	0.0
Pneumonia (Chest x-ray confirmed)		% (of cases per role)
Residents	288	3.5
Patients	33	8.6
Staff	8	0.3
Hospitalizations		% (of cases per role)
Residents	355	4.3
Staff	4	0.2
Outbreak Related Cases (All Influenza Outbreaks)	N	% (of total cases)
Residents	1126	71.4
Patients	47	3.0
Staff	403	25.6
Total Cases	1576	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	68	6.0
Patients	3	6.4
Staff	5	1.2
Hospitalizations		% (of cases per role)
Residents	86	7.6
Staff	0	0.0
Outbreak Related Cases (Influenza A H1N1 Outbreaks)	N	% (of total cases)
Residents	10	37.0
Patients	3	11.1
Staff	14	51.9
Total Cases	27	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	0	0.0
Patients	0	0.0
Staff	0	0.0
Hospitalizations		% (of cases per role)
Residents	1	10.0
Staff	0	0.0

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009]

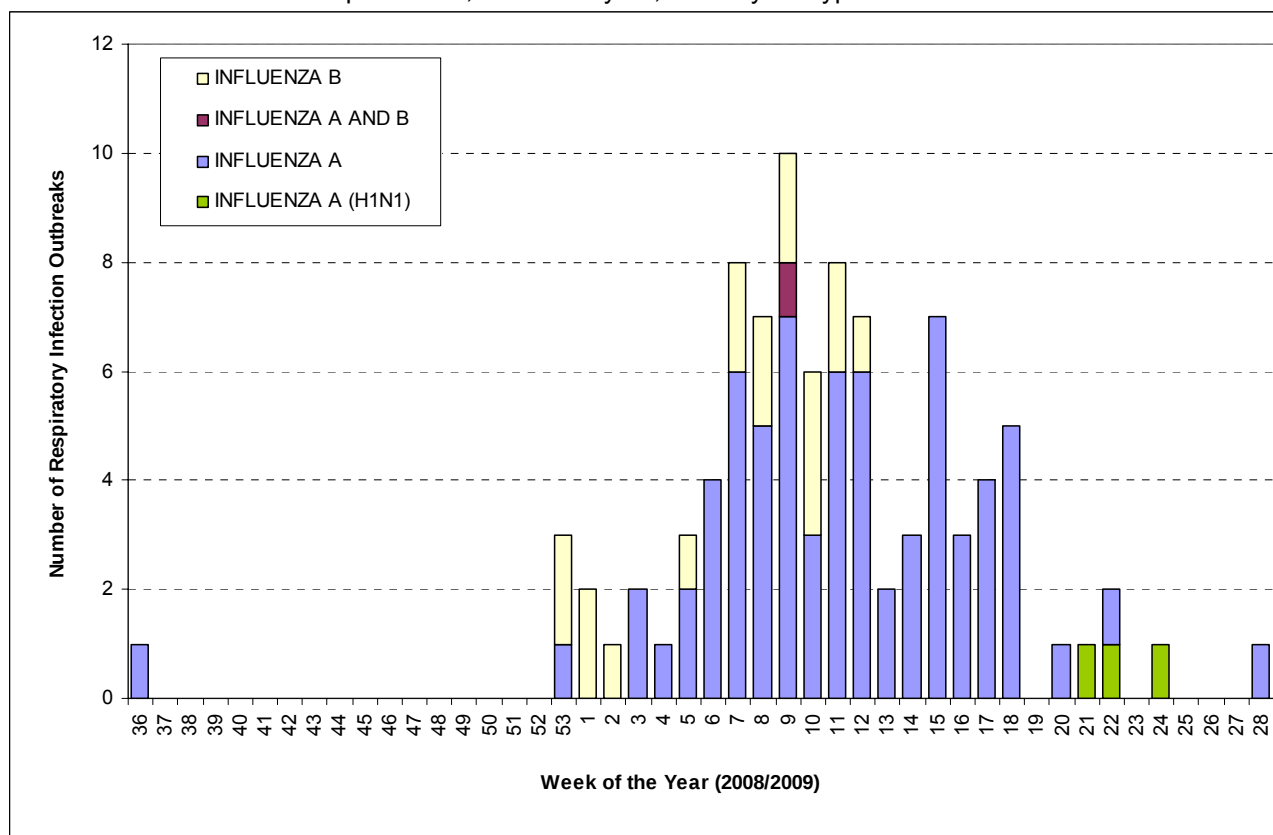
* Season to date includes all outbreaks in which the date of onset of illness in the first case occurred from September 1, 2008 – July 18, 2009

Figure 8: Institutional respiratory infection outbreaks in Ontario by onset of illness in the first case: Total Outbreaks from September 1, 2008 – July 18, 2009 by causative organism



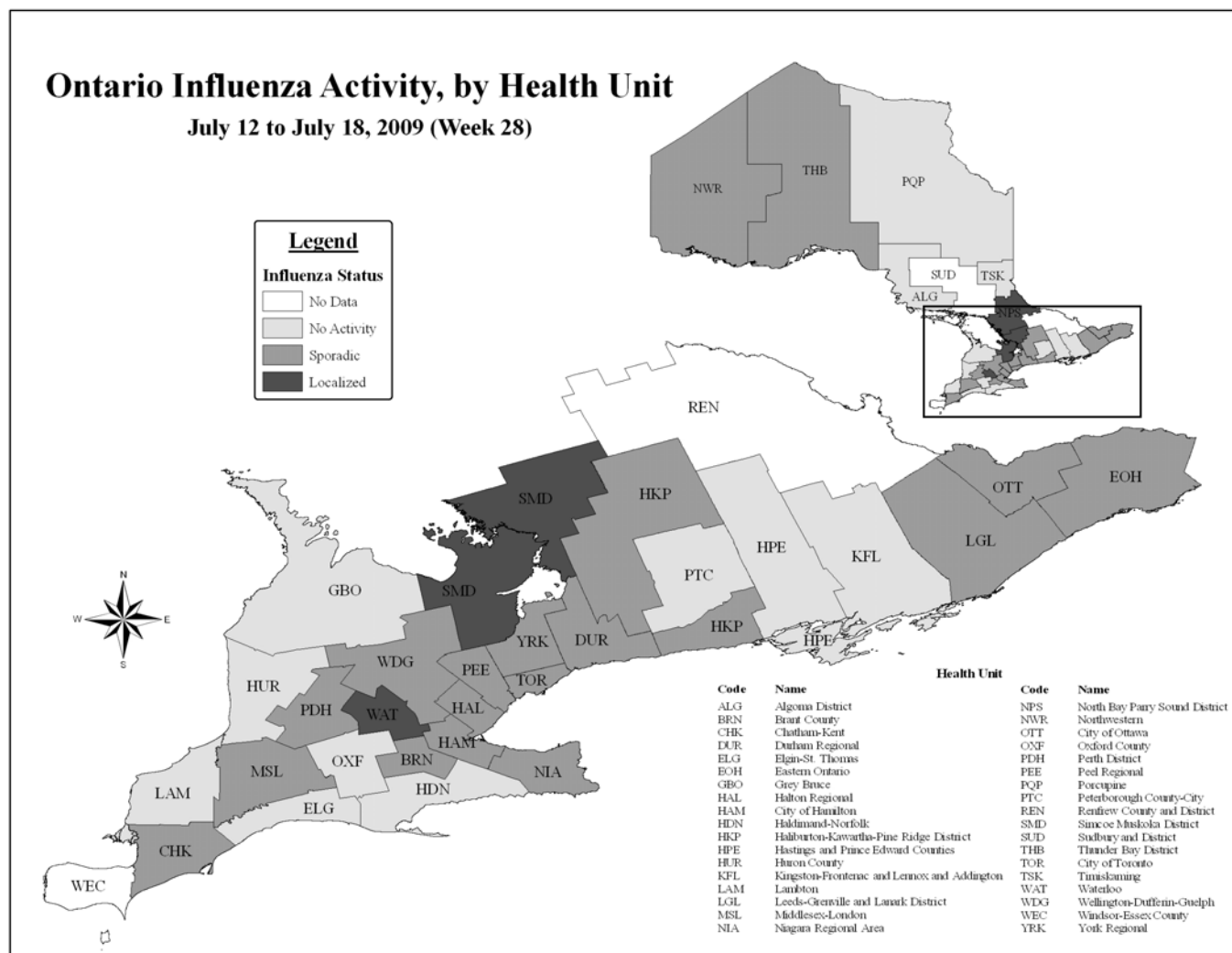
Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009]

Figure 9: Institutional influenza outbreaks in Ontario by onset of illness in the first case: Total Outbreaks from September 1, 2008 – July 18, 2009 by subtype



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009]

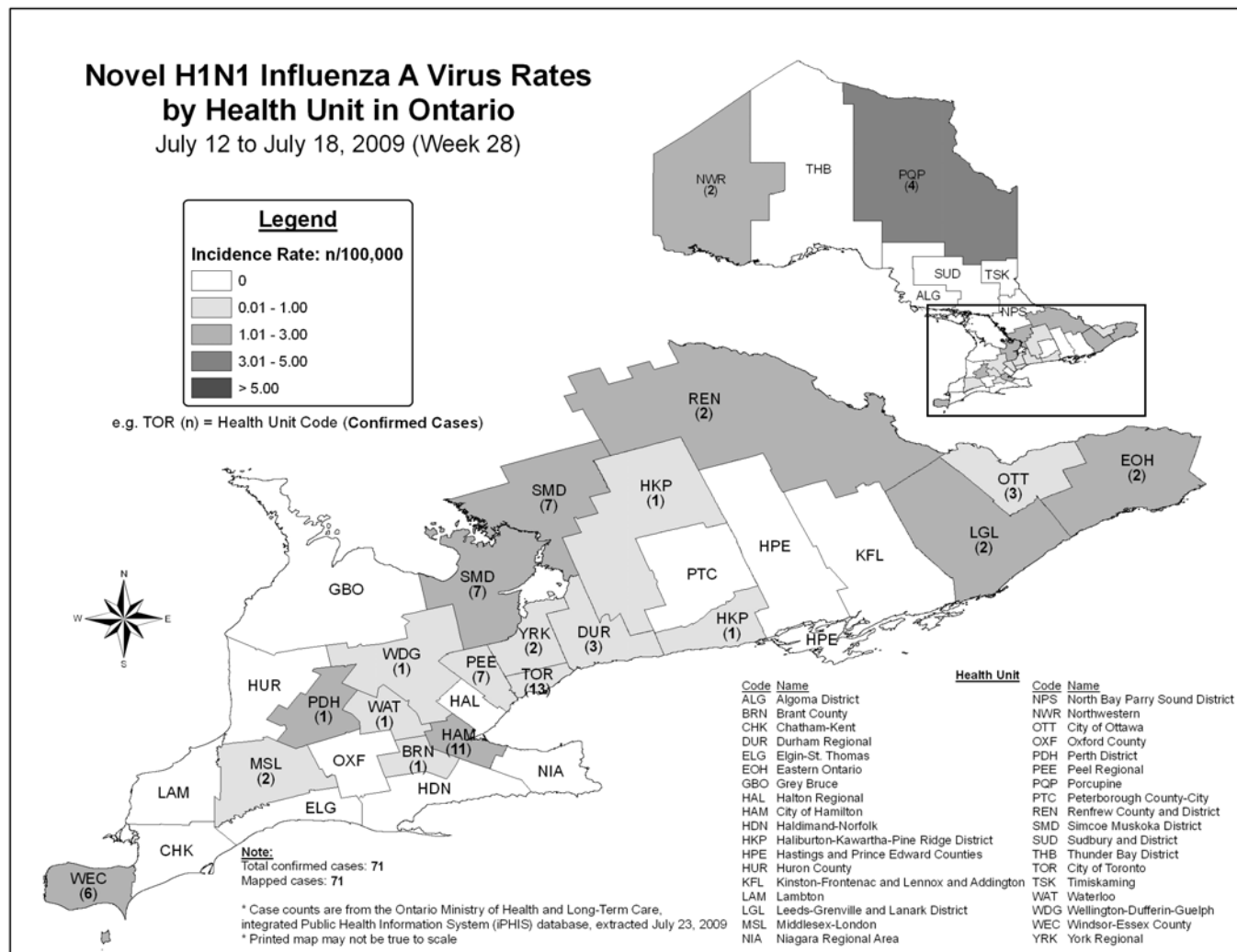
Figure 10: Influenza Activity* levels in Ontario by health unit for Week 28, 2009



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

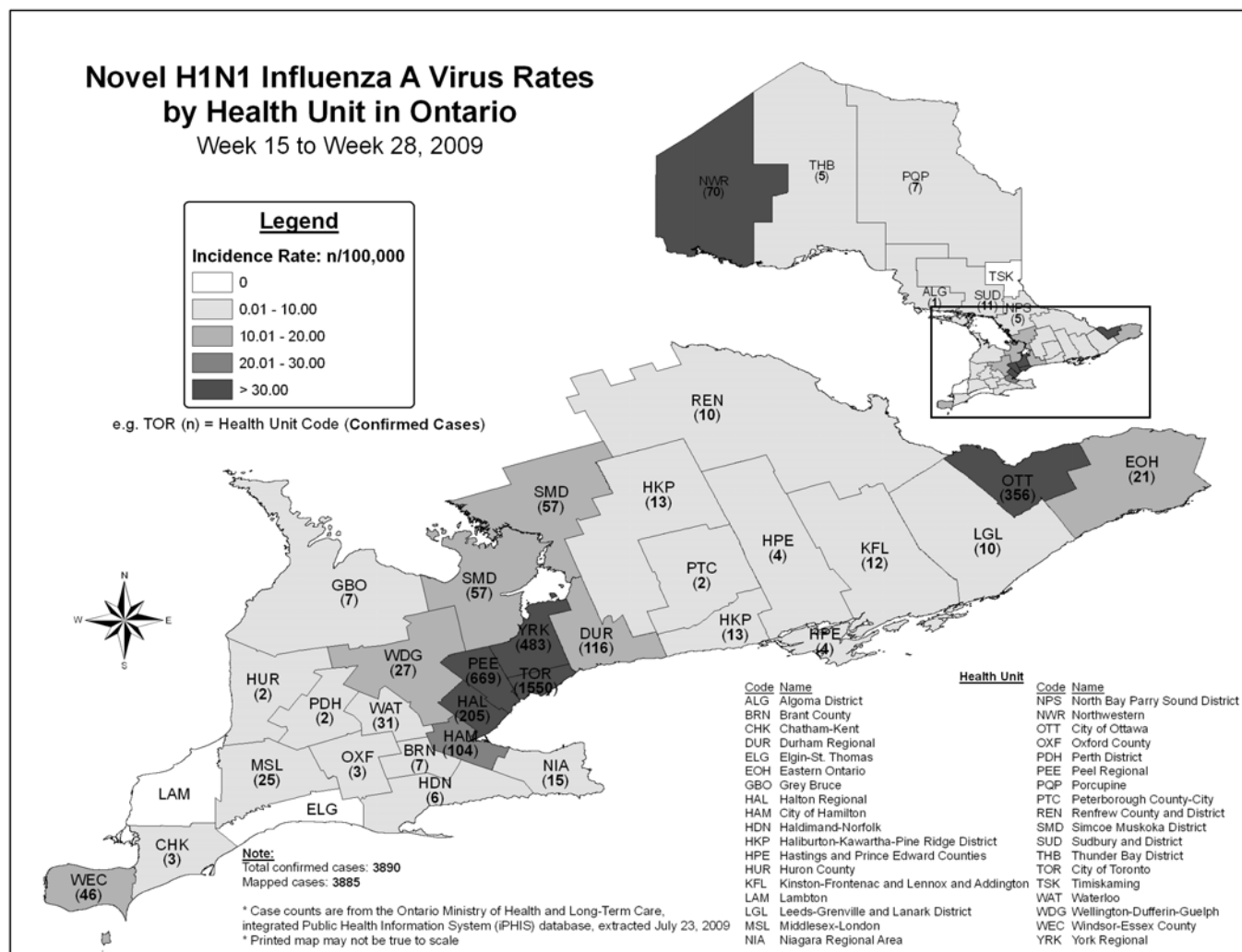
* Influenza activity levels are assigned by local public health units and reported to the MOHLTC by the Tuesday following the end of the surveillance week at 4 pm. Activity levels are assigned based on laboratory confirmations, ILI reports from various sources, and laboratory confirmed institutional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

Figure 11: Novel H1N1 Influenza A Virus incidence rates and counts in Ontario by health unit for Week 28, 2009



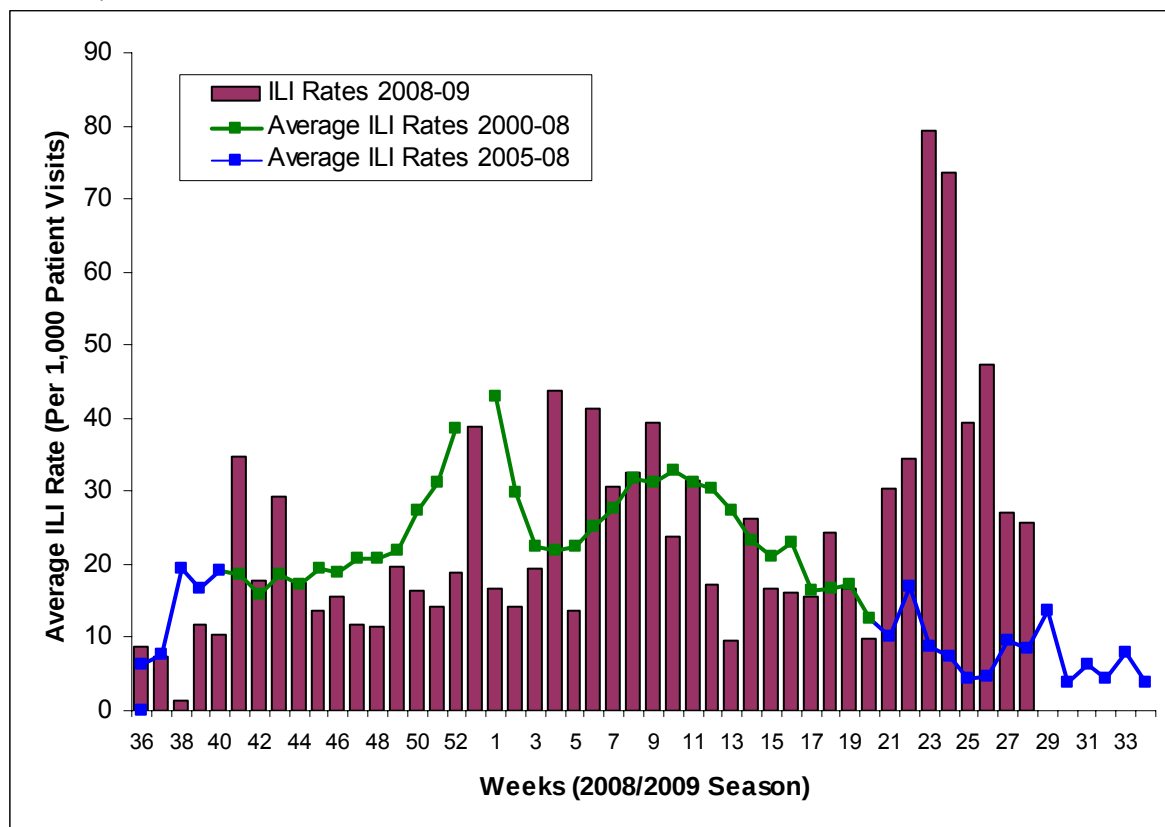
Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009]

Figure 12: Novel H1N1 Influenza A Virus cumulative incidence rates and counts in Ontario by health unit, Week 15 – 28 (April 12 – July 18, 2009)



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [23/07/2009]

Figure 13: 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).



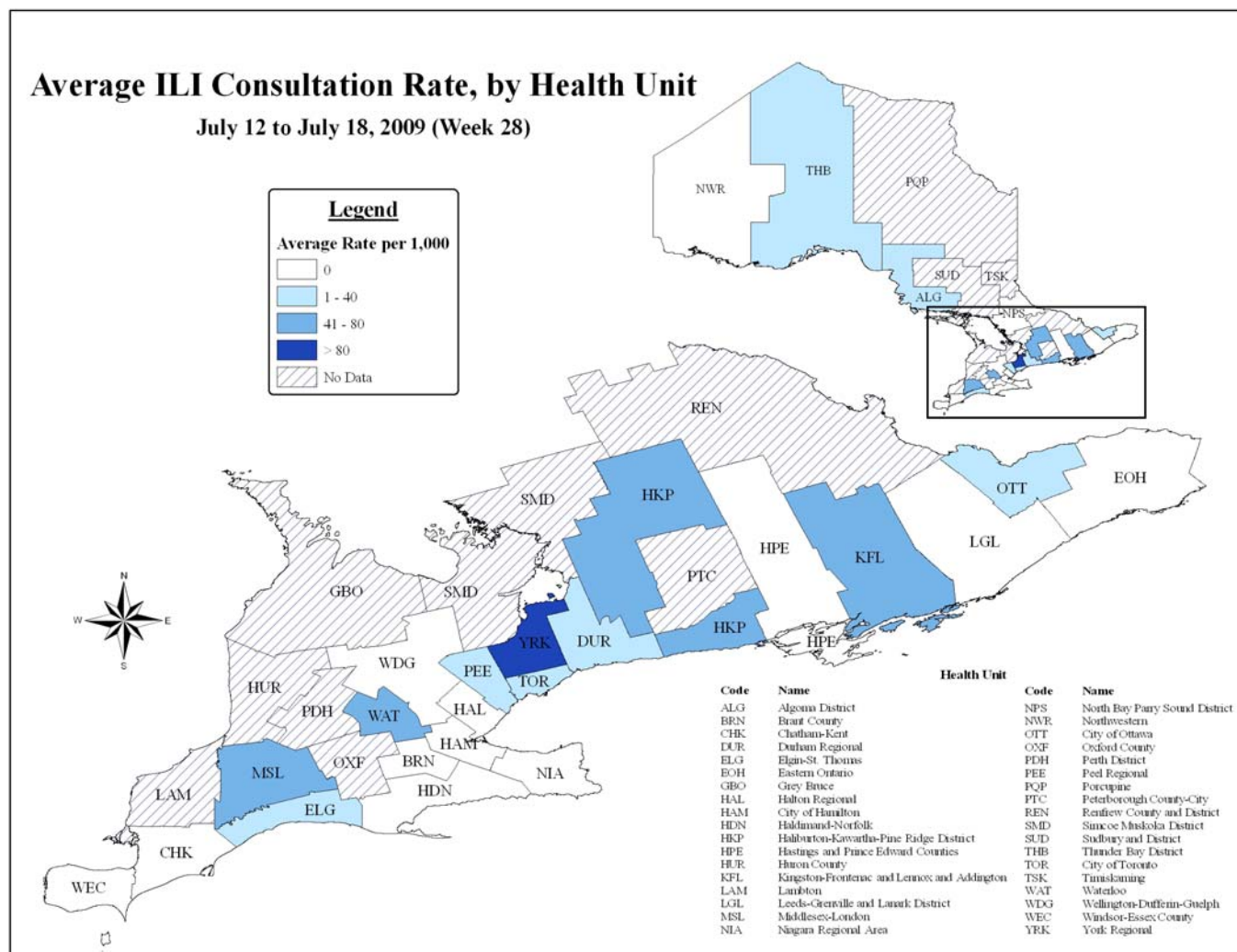
Source: Public Health Agency of Canada

* Sentinel physician information is reported to Public Health Agency of Canada, 89 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 14: Average influenza-like illness consultation rate (per 1,000 patient visits) by health unit as reported by sentinel physicians* in Ontario, for Week 28.



Source: Public Health Agency of Canada

* Sentinel physicians report ILI and patient data to the Public Health Agency of Canada 89 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 28.

Age Category	0 – 4	5 – 19	20 – 64	65 +	Unknown	TOTAL
ILI Sum	9	14	31	5	1	60
ILI Consultation Rate (per 1,000 patient visits)	60.40	65.73	22.63	10.75	7.75	25.80

Source: Public Health Agency of Canada

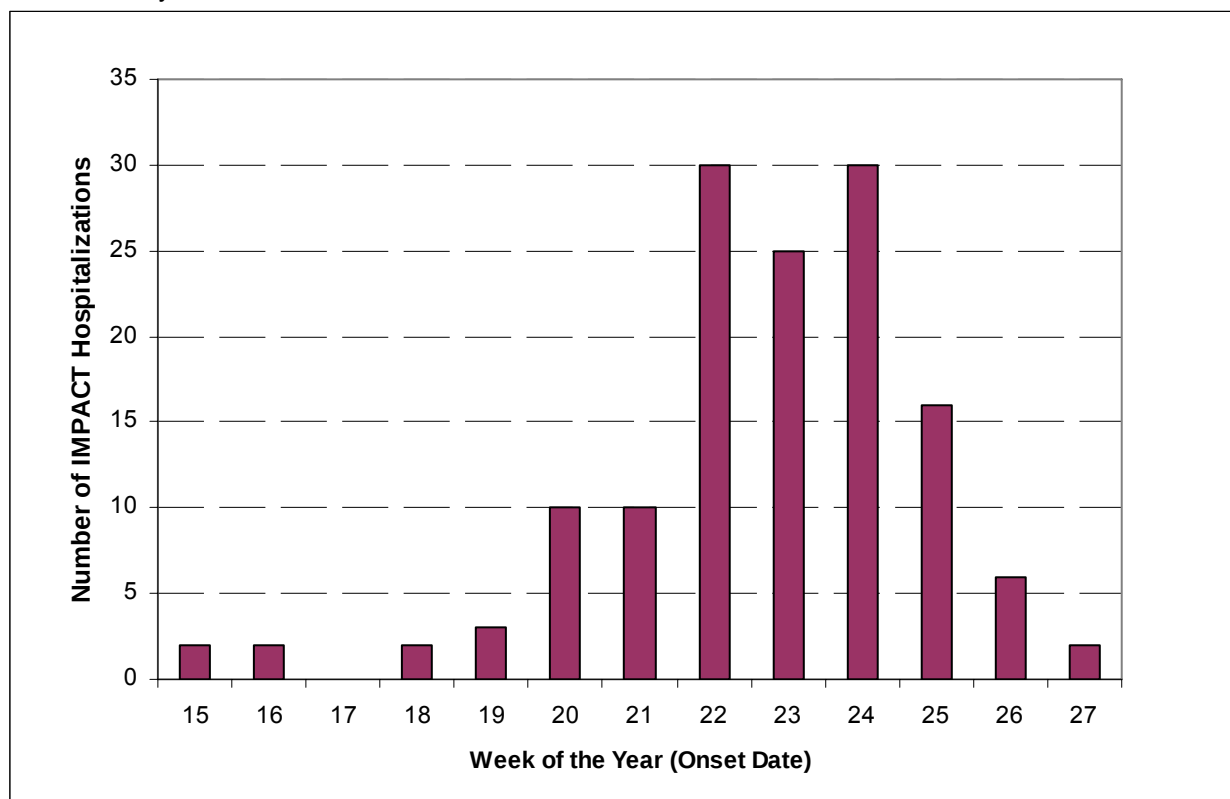
* Sentinel physician information is reported to the Public Health Agency of Canada 89 sentinels reported this week.

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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 15: 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, the decreased number for Week 27 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
WK28	12-Jul-09	18-Jul-09	21-Jul-09
WK29	19-Jul-09	25-Jul-09	28-Jul-09
WK30	26-Jul-09	1-Aug-09	4-Aug-09
WK31	2-Aug-09	8-Aug-09	11-Aug-09
WK32	9-Aug-09	15-Aug-09	18-Aug-09
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 novel H1N1 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 (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.