

SURVEILLANCE WEEK 46 (November 15, 2009– November 21, 2009)

This issue of the Ontario Influenza Bulletin provides information on the surveillance period from November 15, 2009–November 21, 2009, (Week 46). **All data are for week 46 unless otherwise specified. Death and hospitalization information among pandemic (H1N1) 2009 (abbreviated as pH1N1) confirmed cases is current as of November 25, 2009.** Data extraction and analysis for this issue of the Bulletin occurred on November 25, 2009.

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	Higher	960 total influenza cases (439 pH1N1) in week 46 compared to 896 reported in week 45 (664 pH1N1)*. The percent positivity of laboratory tests for influenza A was 22.8%, which is lower than in week 45 (33.8%),
Influenza A Outbreaks	Lower	No new institutional influenza outbreaks were reported for the current reporting week.
Influenza Activity Levels Reported by Health Units	Lower	Two health units reported 'widespread' influenza activity and thirteen health units reported 'localized' activity for the current reporting week.
ILI Consultation Rate reported by Sentinel Physicians	Lower	The overall ILI consultation rate decreased from 115.17/1,000 patient visits to 56.13/1,000 patient visits.
Hospitalizations Among Lab Confirmed Cases of pandemic (H1N1) 2009 virus	Lower	Fewer hospitalized cases were reported from November 18 to November 25 as compared to November 12 to November 18 (216 compared to 258).
Deaths Among Lab Confirmed Cases of pandemic (H1N1) 2009 virus	Lower	Sixteen new deaths were reported from November 18 to November 25 compared to eighteen new deaths reported from November 12 to November 18.
OVERALL ASSESSMENT	Influenza activity in Ontario is <i>lower</i> compared to the previous week.	Most measures indicate that influenza activity is lower in week 46 compared to week 45.

*Counts from previous weeks may be updated and therefore may not match reports in earlier Bulletins

Ontario Influenza Bulletin, 2009-2010

Surveillance Week 46 (November 15, 2009 – November 21, 2009)

Overall, influenza activity in Ontario during week 46, 2009, was **lower** when compared to week 45, 2009. Ontario health units reported 960 new confirmed cases of influenza through the integrated Public Health Information System (iPHIS). This count includes 439 laboratory confirmed cases of pH1N1. During week 46, new laboratory confirmed cases of pH1N1 continued to be seen in all regions of Ontario. No new institutional influenza outbreaks were reported. For week 46, two health units reported widespread influenza activity and thirteen health units reported localized activity, and the remaining health units reported 'sporadic' level influenza activity. The rate of influenza-like illness (ILI) in patients seen by sentinel physicians remained higher than the range that is expected for this time of the year based on the average ILI rate reported in week 46 from previous 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) or Michael Whelan (michael.whelan@ontario.ca, 416-327-9174).

Table 1: Summary of confirmed influenza cases and institutional influenza outbreaks by health region (Week 46, 2009-2010)

Confirmed influenza cases*†	HEALTH REGION							TOTAL
	North West	North East	Eastern	Central East	Toronto	South West	Central West	
Pandemic (H1N1) 2009	9	13	79	169	67	63	39	439
Influenza A (Not Subtyped)	8	30	15	133	161	100	71	518
Influenza A (Seasonal H1/H3)	0	0	0	0	0	0	0	0
Influenza A (Indeterminate pH1N1/ unsubtypeable)	0	0	0	0	1	0	0	1
Influenza B	0	0	0	1	0	0	1	2
Influenza A & B	0	0	0	0	0	0	0	0
Total new cases	17	43	94	303	229	163	111	960
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

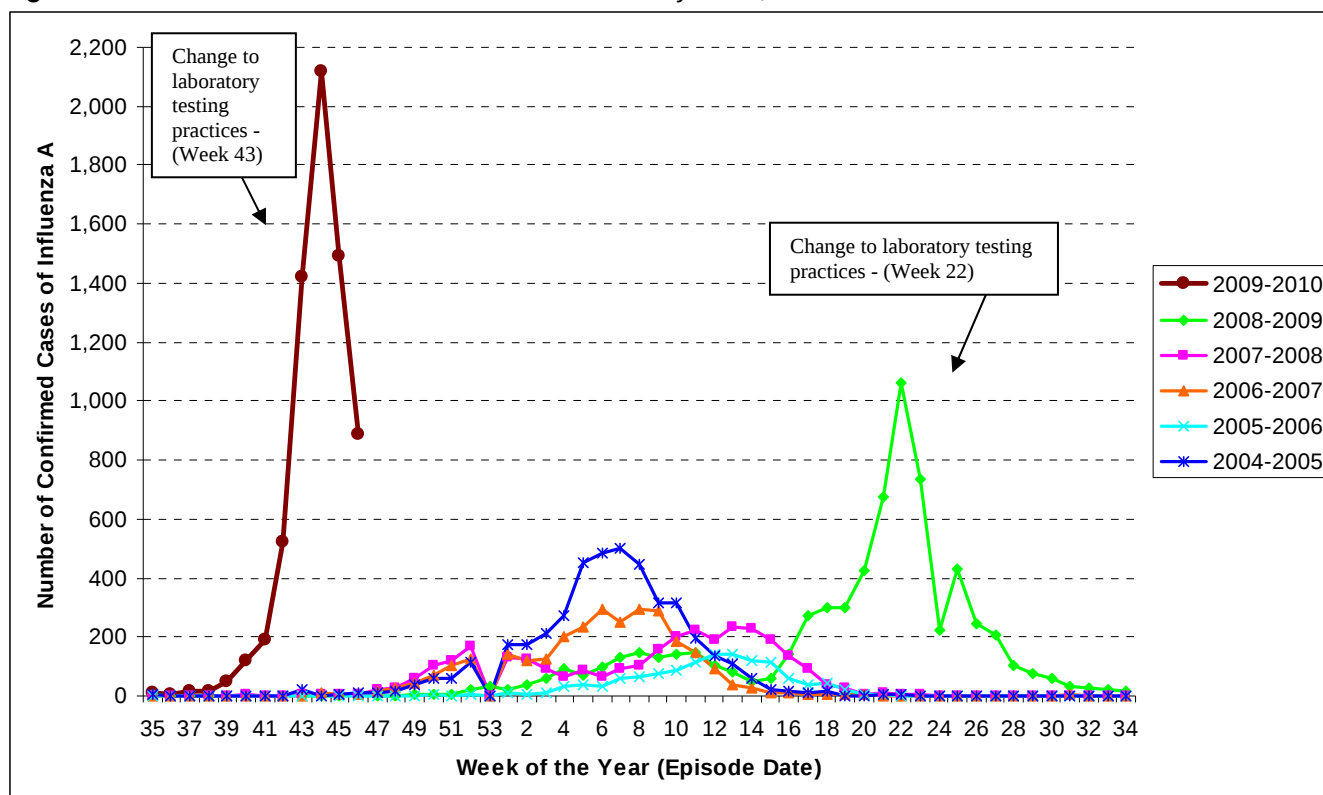
SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/11/2009].

* 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.

The number of laboratory confirmed cases of influenza A reported to date in the 2009-2010 season is much higher than in the previous five seasons at this time (Figure 1). The number of influenza A cases reported during the second wave began to increase in early September, peaking in week 44 (November 1-7). The peak in the second wave of the pandemic is higher than the peak observed in the first wave and the case volume observed to date in the 2009-2010 season has exceeded the peaks of the past five influenza seasons.

Figure 1: All confirmed cases of Influenza A in Ontario by week, 2004-2010^{†*}



SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/11/2009].

[†] 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: Laboratory confirmed cases of pandemic (H1N1) 2009 virus by health unit & health region, reported during Week 46[†], 2009-10, wave two, wave one, and cumulative* confirmed cases between April 1, 2009 – November 21, 2009

Region	Health Unit	Confirmed pH1N1			
		Current week (WK 46)	Wave 2 (WK 35-current)	Wave 1 (WK 15-WK 34)	Total cumulative
North West	Northwestern	8	70	74	144
	Thunder Bay District	1	85	10	95
	TOTAL NORTH WEST	9	155	84	239
North East	Algoma	2	53	6	59
	North Bay Parry Sound District	2	44	7	51
	Porcupine	1	104	4	108
	Sudbury & District	5	42	24	66
	Timiskaming	3	53	0	53
	TOTAL NORTH EAST	13	296	41	337
Eastern	City of Ottawa	43	395	359	754
	Eastern Ontario	6	168	25	193
	Hastings & Prince Edward Counties	6	76	4	80
	Kingston, Frontenac, Lennox & Addington	4	141	15	156
	Leeds, Grenville And Lanark District	12	91	10	101
	Renfrew County And District	8	37	12	49
	TOTAL EASTERN	79	908	425	1,333
Central East	Durham Region	19	146	118	264
	Haliburton, Kawartha, Pine Ridge	5	37	13	50
	Peel Region	105	318	704	1,022
	Peterborough County-City	4	42	4	46
	Simcoe Muskoka District	17	121	64	185
	York Region	19	179	493	672
	TOTAL CENTRAL EAST	169	843	1,396	2,239
Toronto	Toronto	67	741	1,590	2,331
	TOTAL TORONTO	67	741	1,590	2,331
South West	Chatham-Kent	5	25	6	31
	Elgin-St. Thomas	2	19	0	19
	Grey Bruce	1	25	12	37
	Huron County	3	19	2	21
	Lambton County	5	51	1	52
	Middlesex-London	30	190	28	218
	Oxford County	2	58	3	61
	Perth District	6	28	3	31
	Windsor-Essex County	9	98	49	147
	TOTAL SOUTHWEST	63	513	104	617
Central West	Brant County	6	18	8	26
	City Of Hamilton	6	203	124	327
	Haldimand-Norfolk	0	0	6	6
	Halton Region	4	145	219	364
	Niagara Region	23	215	20	235
	Waterloo Region	0	106	38	144
	Wellington-Dufferin-Guelph	0	40	26	66
	TOTAL CENTRAL WEST	39	727	441	1,168
	Out of Province	0	0	6	6
	TOTAL ONTARIO	439	4,183	4,087	8,270

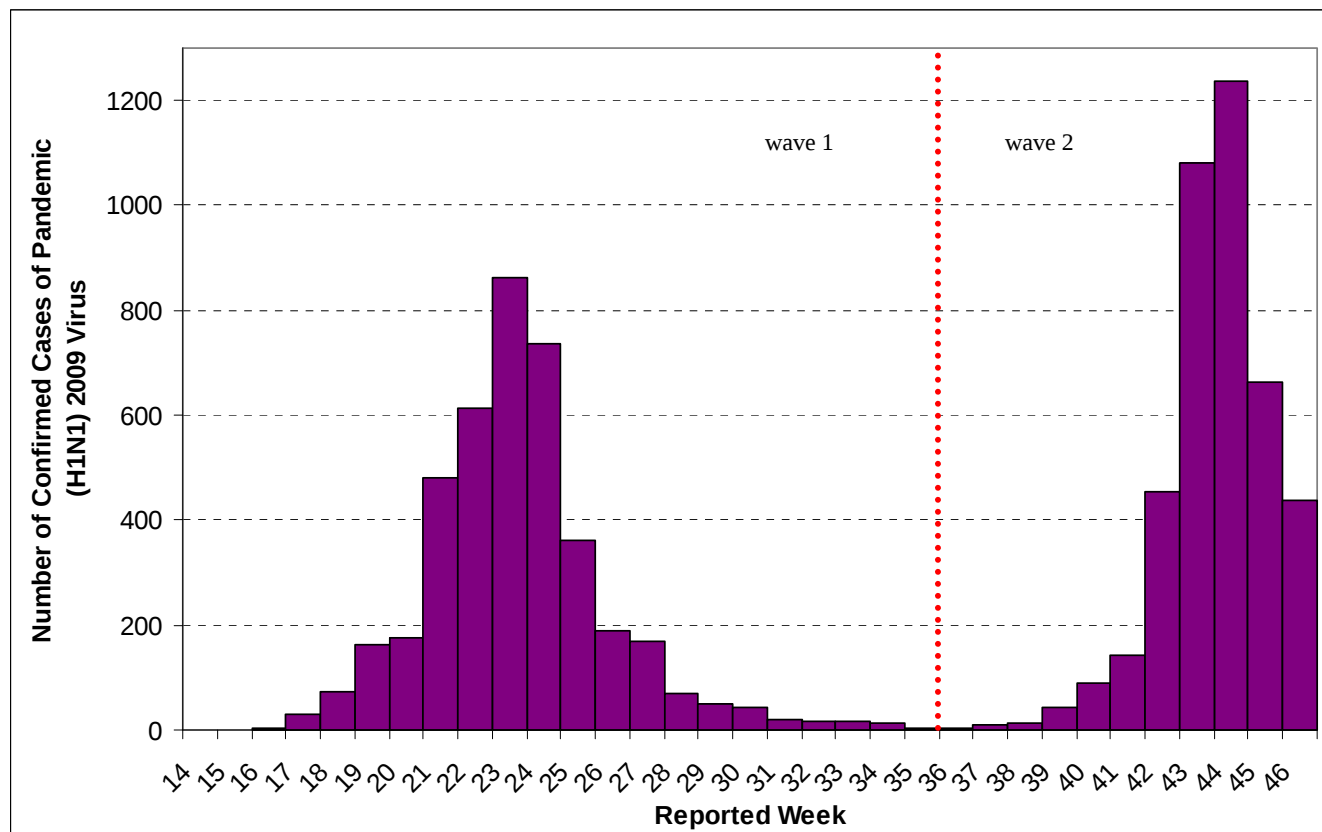
SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/11/2009].

[†] 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.

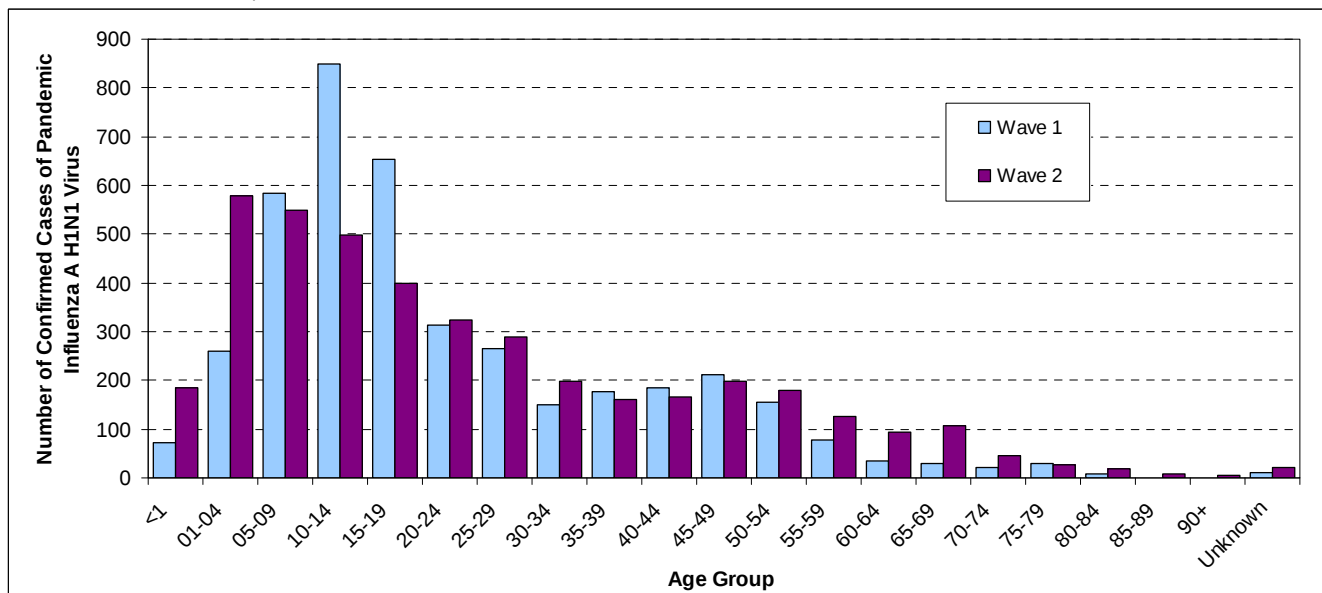
Note: Wave 1 corresponds to April 12, 2009 to August 29, 2009; Wave 2 corresponds to August 30, 2009 to the last date of the current week.

Figure 2: Laboratory confirmed cases of pandemic (H1N1) 2009 in Ontario by week between April 13 and November 21, 2009



SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/11/2009].

Figure 3: Laboratory confirmed cases of pandemic (H1N1) 2009 in Ontario by age group and wave between April 13 and November 21, 2009



SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/11/2009].

Table 3: Confirmed cases of influenza by health unit & health region, excluding laboratory confirmed pandemic (H1N1) 2009, with an episode date[†] during Week 46, 2009-10

Region	Health Unit	Confirmed Influenza				
		Influenza A (Not Subtyped)	Influenza A [‡] (Other subtypes)	Influenza A & B	Influenza B	TOTAL
North West	Northwestern	0	0	0	0	0
	Thunder Bay District	8	0	0	0	8
	TOTAL NORTH WEST	8	0	0	0	8
North East	Algoma	3	0	0	0	3
	North Bay Parry Sound District	10	0	0	0	10
	Porcupine	3	0	0	0	3
	Sudbury & District	12	0	0	0	12
	Timiskaming	2	0	0	0	2
	TOTAL NORTH EAST	30	0	0	0	30
Eastern	City of Ottawa	2	0	0	0	2
	Eastern Ontario	0	0	0	0	0
	Hastings & Prince Edward Counties	2	0	0	0	2
	Kingston, Frontenac, Lennox & Addington	5	0	0	0	5
	Leeds, Grenville And Lanark District	3	0	0	0	3
	Renfrew County And District	3	0	0	0	3
	TOTAL EASTERN	15	0	0	0	15
Central East	Durham Region	11	0	0	0	11
	Haliburton, Kawartha, Pine Ridge	5	0	0	0	5
	Peel Region	42	0	0	1	43
	Peterborough County-City	6	0	0	0	6
	Simcoe Muskoka District	38	0	0	0	38
	York Region	31	0	0	0	31
	TOTAL CENTRAL EAST	133	0	0	1	134
Toronto	Toronto	161	1	0	0	162
	TOTAL TORONTO	161	1	0	0	162
South West	Chatham-Kent	8	0	0	0	8
	Elgin-St. Thomas	2	0	0	0	2
	Grey Bruce	28	0	0	0	28
	Huron County	2	0	0	0	2
	Lambton County	0	0	0	0	0
	Middlesex-London	7	0	0	0	7
	Oxford County	3	0	0	0	3
	Perth District	3	0	0	0	3
	Windsor-Essex County	47	0	0	0	47
	TOTAL SOUTHWEST	100	0	0	0	100
Central West	Brant County	5	0	0	0	5
	City Of Hamilton	7	0	0	0	7
	Haldimand-Norfolk	2	0	0	0	2
	Halton Region	7	0	0	0	7
	Niagara Region	21	0	0	1	22
	Waterloo Region	13	0	0	0	13
	Wellington-Dufferin-Guelph	16	0	0	0	16
	TOTAL CENTRAL WEST	71	0	0	1	72
	TOTAL ONTARIO	518	1	0	2	521

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/11/2009].

[†] 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)

[‡]includes seasonal H1/H3 and Influenza A indeterminate pH1N1 and unsubtypeable

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, 2009 – November 21, 2009

Region	Health Unit	Confirmed Influenza				
		Influenza A (Not Subtyped)	Influenza A [‡] (Other subtypes)	Influenza A & B	Influenza B	TOTAL
North West	Northwestern	1	0	0	0	1
	Thunder Bay District	69	2	0	0	71
	TOTAL NORTH WEST	70	2	0	0	72
North East	Algoma	54	0	0	0	54
	North Bay Parry Sound District	59	2	0	0	61
	Porcupine	46	7	0	0	53
	Sudbury & District	71	1	0	0	72
	Timiskaming	9	1	0	0	10
	TOTAL NORTH EAST	239	11	0	0	250
Eastern	City of Ottawa	8	0	0	0	8
	Eastern Ontario	17	0	0	0	17
	Hastings & Prince Edward Counties	35	0	0	0	35
	Kingston, Frontenac, Lennox & Addington	30	0	0	0	30
	Leeds, Grenville And Lanark District	18	0	0	0	18
	Renfrew County And District	14	0	0	0	14
	TOTAL EASTERN	122	0	0	0	122
Central East	Durham Region	88	3	0	0	91
	Haliburton, Kawartha, Pine Ridge	37	1	0	0	38
	Peel Region	250	2	0	2	254
	Peterborough County-City	33	3	0	0	36
	Simcoe Muskoka District	143	1	0	0	144
	York Region	149	0	0	0	149
	TOTAL CENTRAL EAST	700	10	0	2	712
Toronto	Toronto	335	11	0	1	347
	TOTAL TORONTO	335	11	0	1	347
South West	Chatham-Kent	28	0	0	0	28
	Elgin-St. Thomas	26		0	0	26
	Grey Bruce	70	0	0	0	70
	Huron County	27	0	0	0	27
	Lambton County	7		0	0	7
	Middlesex-London	120	3	0	0	123
	Oxford County	23	5	0	0	28
	Perth District	17	0	0	2	19
	Windsor-Essex County	225	0	0	0	225
	TOTAL SOUTHWEST	543	8	0	2	553
Central West	Brant County	29	0	0	0	29
	City Of Hamilton	205	0	0	1	206
	Haldimand-Norfolk	23	0	0	0	23
	Halton Region	135	2	0	0	137
	Niagara Region	118	7	0	1	126
	Waterloo Region	122	1	0	0	123
	Wellington-Dufferin-Guelph	53	0	0	1	54
	TOTAL CENTRAL WEST	685	10	0	3	698
	TOTAL ONTARIO	2694	52	0	8	2754

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/11/2009].

* 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)

[‡]includes seasonal H1N1 and Influenza A indeterminate pH1N1 and unsubtypeable

Deaths among pandemic (H1N1) 2009 virus cases, April 13 – November 25, 2009

A total of 95 deaths have been reported since April, with 26% (25) reported in wave 1 and 74% (70) in wave 2. Of the reported deaths, 76% (72) were hospitalized prior to death. Overall, cases that died ranged in age from 0 to 95 years and had a mean and median age of 52 and 55 years, respectively. Women accounted for slightly less than half of all cases that have died, with 43% of deaths occurring among women.

Mortality due to pH1N1 increased with increasing age; people in the 45-64 and in the 65 and older age groups accounted for the highest mortality rates. These rates were higher than the overall provincial rate. A similar trend was observed for both waves one and two.

The mean and median days from symptom onset to death were 14.1 and 12 days, respectively, in Wave 1. The mean and median days from symptom onset to death were 7.7 and 6 days, respectively, in Wave 2. Among the 95 confirmed cases that have died, 72% (68%) had underlying chronic medical conditions reported, compared to 88% (22) of wave 1 cases and 66% (46) of wave 2 cases. Reporting of underlying chronic medical conditions may be incomplete for wave 2 cases due to backlogs in data entry.

Hospitalizations among pandemic (H1N1) 2009 virus cases, April 13 – November 25, 2009

A total of 1,541 hospitalizations have been reported, with 25% (383) reported in wave 1 and 75% (1158) reported in wave 2. The cumulative hospitalization rate of pH1N1 related hospitalizations is 11.9 hospitalizations per 100,000 population. In general, the incidence among hospitalized cases of pH1N1 decreased with increasing age, with persons in the three youngest age ranges (under 15 years) accounting for the highest incidence rates. Persons aged 15 years and older had lower rates of hospitalization which were all below the overall provincial hospitalization rate for pH1N1. A similar trend was observed for wave one and wave two cases. Hospitalized cases under the age of 20 years account for 41% of hospitalized cases in wave 1 and 40% of hospitalized cases in wave 2.

Admission to ICU and/or use of a ventilator was reported for 21% (80) of wave one cases and 16% (186) of wave 2 cases; Overall, 17% (266) of hospitalizations have been admitted to ICU and/or placed on a ventilator. Fever, cough, shortness of breath, vomiting, malaise, myalgia and sore throat/difficulty swallowing have been the most commonly reported symptoms among hospitalized cases. The mean and median days from symptom onset to hospitalization were 2.8 and 3 days, respectively, in Wave 1. The mean and median days from symptom onset to hospitalization were 2.2 and 2 days, respectively, in Wave 2.

Table 5. Overview of key surveillance indicators among fatal and hospitalized cases in Ontario*

Surveillance Indicators	Wave 2 (Sep 1 – Nov 25, 2009)	Wave 1 (Apr - Aug 31, 2009)	Total (Apr - Nov 25, 2009)
Number of deaths	70 (74%)	25 (26%)	95 (100%)
Number of hospitalizations	1158 (75%)	383 (25%)	1,541 (100%)
Hospitalization status			
Discharged	81% (936)	98% (375)	85% (1,311)
Currently hospitalized	19% (222)	2% (8)	15% (230)
Length of hospital stay (days)			
Mean	4	10	6
Median	3	4	3
Range	0-94	0-95	0-95

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [25/11/2009]

* **Note:** Cases that were hospitalized or that have died are not mutually exclusive.

* 23 fatal cases were not hospitalized before death; LOS excludes 3 LOS greater than 95 days.

Table 6. Hospitalizations among confirmed cases of pandemic (H1N1) 2009 in Ontario, April 13 – November 25, 2009

Hospitalization Status	Ventilator and/or ICU	Not in ICU and not on ventilator	Number of cases hospitalized to date
Number Currently Hospitalized	76 (33%)	154 (67%)	230 (100%)
Number Hospitalized and Discharged	190 (14%)	1121 (86%)	1311 (100%)
Total Hospitalized to date	266 (17%)	1275 (83%)	1541 (100%)

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [25/11/2009]

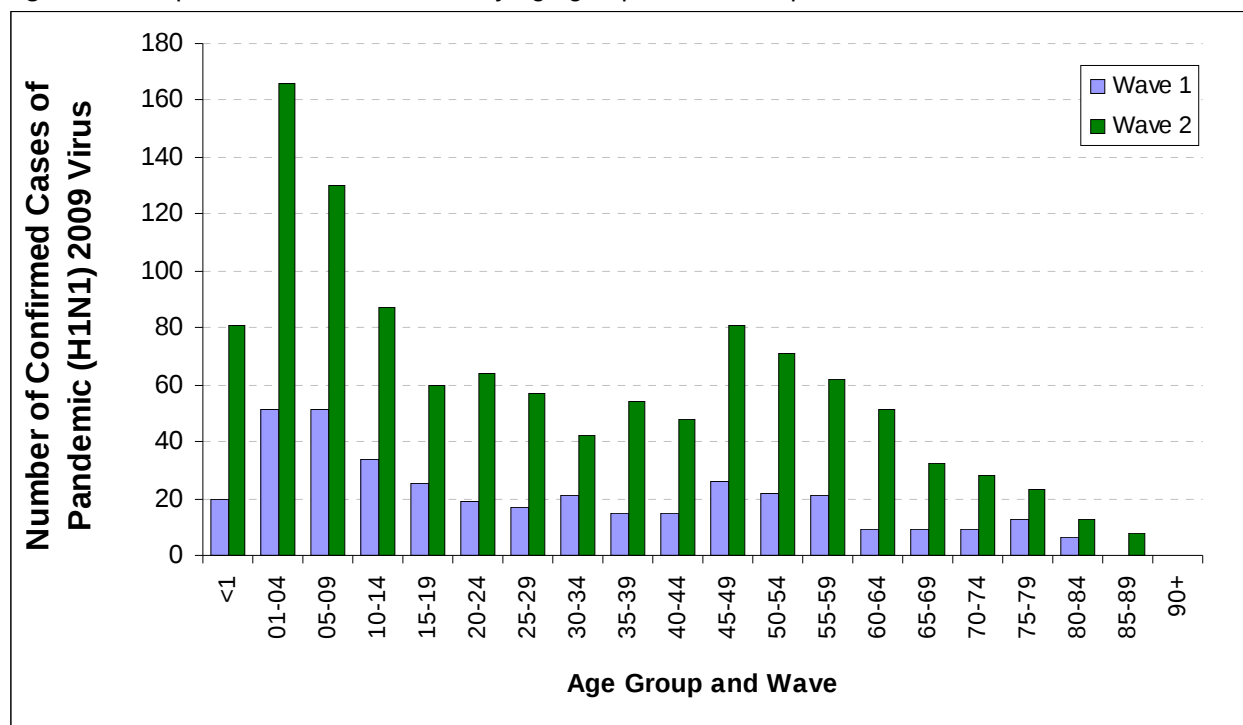
Table 7. Incidence of hospitalization and death due to pandemic H1N1 2009 in Ontario, April 13 – November 25, 2009

Age Group	Hospitalizations	Rate/100,000	Deaths	Rate/100,000
<1	101	75.38	1	0.75
1-4	217	39.73	0	0.00
5-14	302	19.56	5	0.32
15-24	168	9.60	7	0.40
25-44	269	7.18	16	0.43
45-64	343	9.87	41	1.18
65+	141	8.16	25	1.45
TOTAL	1541	11.93	95	0.74

Source (incidence): Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [25/11/2009]

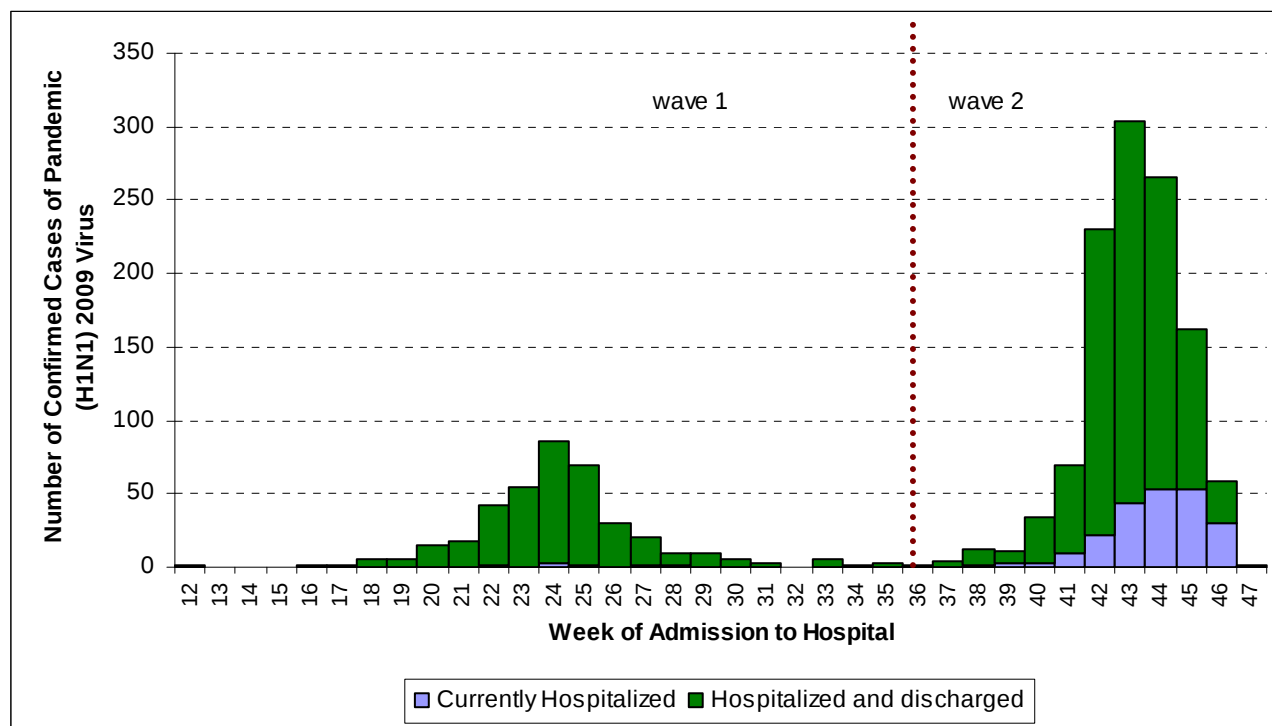
Source (incidence): Ontario population projections for 2008: Ontario Ministry of Health and Long-Term Care, Public Health Planning Database (PHPDB), extracted [12/02/2009]

Figure 4: Hospitalized cases in Ontario by age group and wave, April 13 to November 25, 2009



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [25/11/2009]

Figure 5: Hospitalized cases of pandemic (H1N1) 2009 by hospital admission week in Ontario, April 13 – November 25, 2009*



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted at 8:30 am [25/11/2009]

Note: Interpret with caution due to reporting lags, changes in lab testing, case identification and data entry.

Influenza Subtype(s):

During week 46, a total of 12202 results of isolate testing were received by the Public Health Agency of Canada, with 4189 testing positive for influenza A and one positive for influenza B. 1477 of the reported influenza A isolates were from Quebec (35.3%), 757 were from Manitoba (18.1%), 543 were from Ontario (13.0%), and 403 were from Saskatchewan (9.6%). The influenza B isolate was from Quebec. Quebec also reported 2 seasonal H3 isolates for week 46*

(Antigenic Characterization and Antiviral Resistance data are current as of November 18, 2009)

Antigenic Characterization (National):

Since September 1, 2009, National Microbiology Laboratory (NML) has antigenically characterized 310 pandemic H1N1 viruses and four seasonal influenza viruses (two A/H1N1, one H3N2 and one B virus) that were received from Canadian laboratories.

Pandemic Influenza A (H1N1):

Among the 310 pandemic influenza A (H1N1) viruses characterized, 309 (99.7%) were antigenically related to A/California/7/2009, which is the pandemic reference virus selected by WHO as a potential candidate for 2009 influenza A (H1N1) vaccine. One virus (0.3%) tested showed reduced titer with antisera produced against A/California/7/09. Sequence analysis showed that the virus with reduced titer did not have the mutation at amino acid position 222 as reported by Norway.

CDC also reported that of the 348 pandemic H1N1 viruses tested, one virus showed reduced titer with antisera produced against A/California/7/09.

Seasonal Influenza A (H1N1):

The one seasonal influenza A/H1N1 virus characterized was related to A/Brisbane/59/07, which is the influenza A/H1N1 component for the 2009-10 influenza vaccine.

Seasonal Influenza A (H3N2):

The one seasonal influenza A (H3N2) virus characterized was related to A/Brisbane/10/07, which is the influenza A/H3N2 component recommended for the 2009-10 influenza vaccine.

Influenza B:

The one influenza B virus characterized was antigenically related to B/Brisbane/60/08, which is the influenza B component for the 2009-10 influenza vaccine.

Antigenic Characterization (Provincial):

The National Microbiology Laboratory (NML) has antigenically characterized the following strains from Ontario: 171 influenza A/California/07/2009-like and 1 influenza B/Brisbane/60/2008-like.

Antiviral Resistance and Sensitivity (National):

a) Amantadine:

Nine seasonal influenza A viruses (two H1N1 and seven H3N2) and 231 pandemic H1N1 viruses were tested for resistance to amantadine and found that one H1N1 virus, all seven H3N2 viruses and all 231 pandemic H1N1 viruses were resistant. One seasonal H1N1 virus was sensitive to amantadine.

b) Oseltamivir:

Five seasonal influenza viruses (two H1N1, two H3N2 and one B) and 258 pandemic H1N1 viruses were tested for resistance to oseltamivir and found that two seasonal H1N1 isolates were resistant to oseltamivir. Three pH1N1 isolates were resistant to oseltamivir with the H275Y mutation. The resistance was associated with oseltamivir treatment. 255 pH1N1 isolates were sensitive to oseltamivir. The two H3N2 and B viruses were sensitive to oseltamivir.

c) Zanamivir:

Five seasonal influenza viruses (two H1N1, two H3N2 and one B) and 220 pandemic H1N1 viruses were tested for resistance to zanamivir. All five seasonal influenza viruses and all 220 pandemic H1N1 viruses were sensitive to zanamivir.

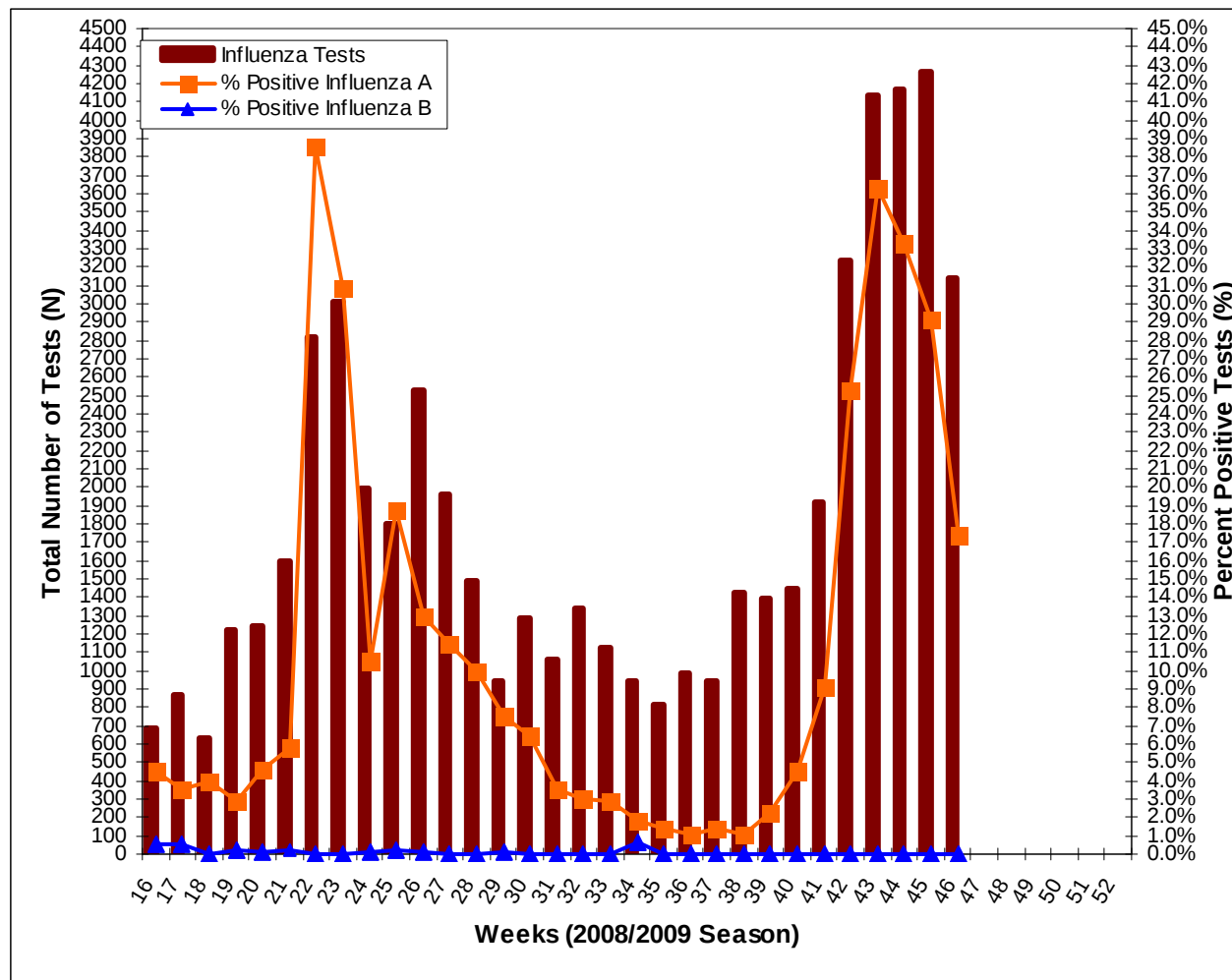
Antiviral Resistance (Provincial):

137/139 influenza pH1N1 isolates were sensitive to oseltamivir (note that the two resistant isolates were obtained from the same patient), 134 of 134 tested were sensitive to zanamivir, and 140 of 140 tested were resistant to amantadine. The influenza B isolate was sensitive to oseltamivir and zanamivir. The one H3N2 isolate was also resistant to amantadine.[†]

* 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 46, 2009. Please note that the last version received from PHAC as of 4:00PM on November 25, 2009 was used.

[†] These data have been obtained from the National Microbiology Laboratory of the Public Health Agency of Canada for Week 46, 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*.

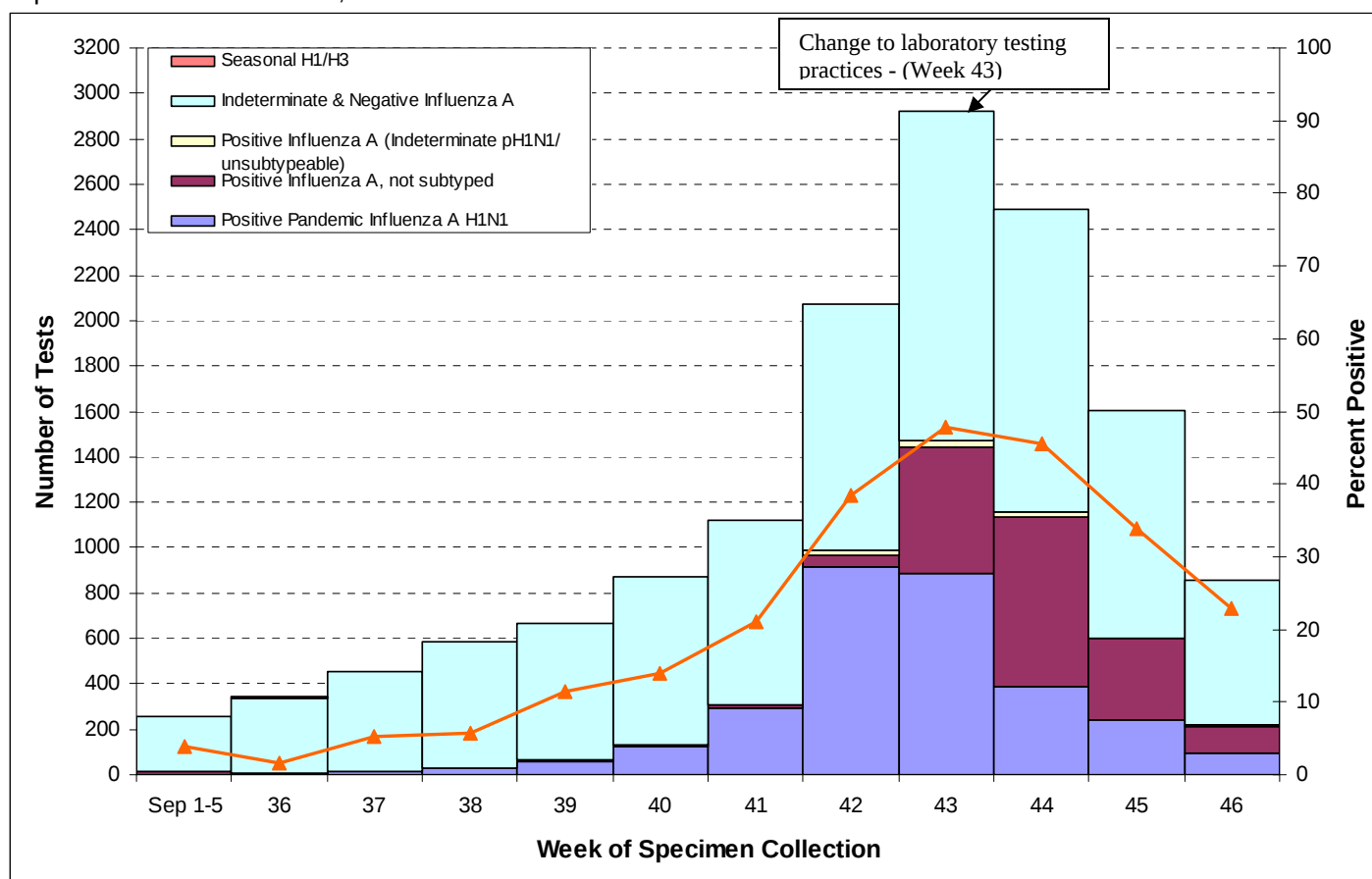


Source: Public Health Agency of Canada. These data have been obtained from the Respiratory Virus Detection tables of Public Health Agency of Canada from 17 labs in Ontario and do not include data from late reports to PHAC for the current season: Week 45, 2009. Please note that the last version received from PHAC as of 4:00PM on November 18, 2009 was used.

* Total numbers reported include late reports from previous seasons; 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 September 1 – November 23, 2009



Source: Adapted from Table 1 in the "OAHPP Laboratory Pandemic H1N1 Surveillance Report"; Monday, November 23, 2009

Note: Not all cases with specimens collected during week 46 are included in this summary due to the lag in time from the date of specimen collection to the date the final test result is confirmed.

Note: Beginning on Week 43, subtyping will be only performed on 20% of influenza A positive tests, in addition to all intensive care patients and outbreak samples.

Table 8: Summary of Other Respiratory Virus Detections/Isolations in Ontario in Week 46

Organism Name	Number of Positive Tests	Number of Tests	% Positive
Respiratory Syncytial Virus	90	1337	6.73
Parainfluenza (all types)	51	1377	3.70
Adenovirus	8	1877	0.43
Human Metapneumovirus	2	352	0.57

SOURCE: These data have been obtained from the Respiratory Virus Detection tables of Public Health Agency of Canada from 17 labs in Ontario and do not include data from late reports to PHAC: Week 45, 2009. Please note that the last version received from PHAC as of 4:00PM on November 25, 2009 was used.

Table 9: Institutional respiratory infection outbreaks in Ontario: new outbreaks* in Week 46 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	1	100.0
TOTAL	1	100.0
Total Respiratory Infection Outbreaks of the Season to date**	N	% (of outbreaks)
Influenza A	52	27.7
Influenza B	0	0.0
Influenza A and B	0	0.0
Parainfluenza (All types)	2	1.1
RSV	1	0.5
Combined Outbreaks [†]	17	9.0
Other organisms	50	26.6
No organism identified	66	35.1
TOTAL	188	100.0
Types of Institutions – All Outbreaks **	N	% (of outbreaks)
Long-Term Care Homes	106	56.4
Hospitals	16	8.5
Retirement Homes	11	5.9
Other	6	3.2
Unknown	49	26.1
TOTAL	188	100.0
	N	% (of outbreaks)
New Outbreaks – Pandemic (H1N1) 2009*	0	0.0
Total pH1N1 2009 Infection Outbreaks of the Season to date**	40	100.0
Types of Institutions (pH1N1 Outbreaks)	N	% (of outbreaks)
Long-Term Care Homes	8	20.0
Hospitals	12	30.0
Retirement Homes	3	7.5
Other	2	5.0
Unknown	15	37.5
TOTAL	40	100.0

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/11/2009]

* 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. November 15, 2009 – November 21, 2009

** Season to date includes all outbreaks in which the date of onset of illness in the first case occurred up to Week 45. For pH1N1 note that there have been 4 outbreaks between April 13, 2009 and August 31, 2009 - 2 in LTCHs and 2 in Hospitals.

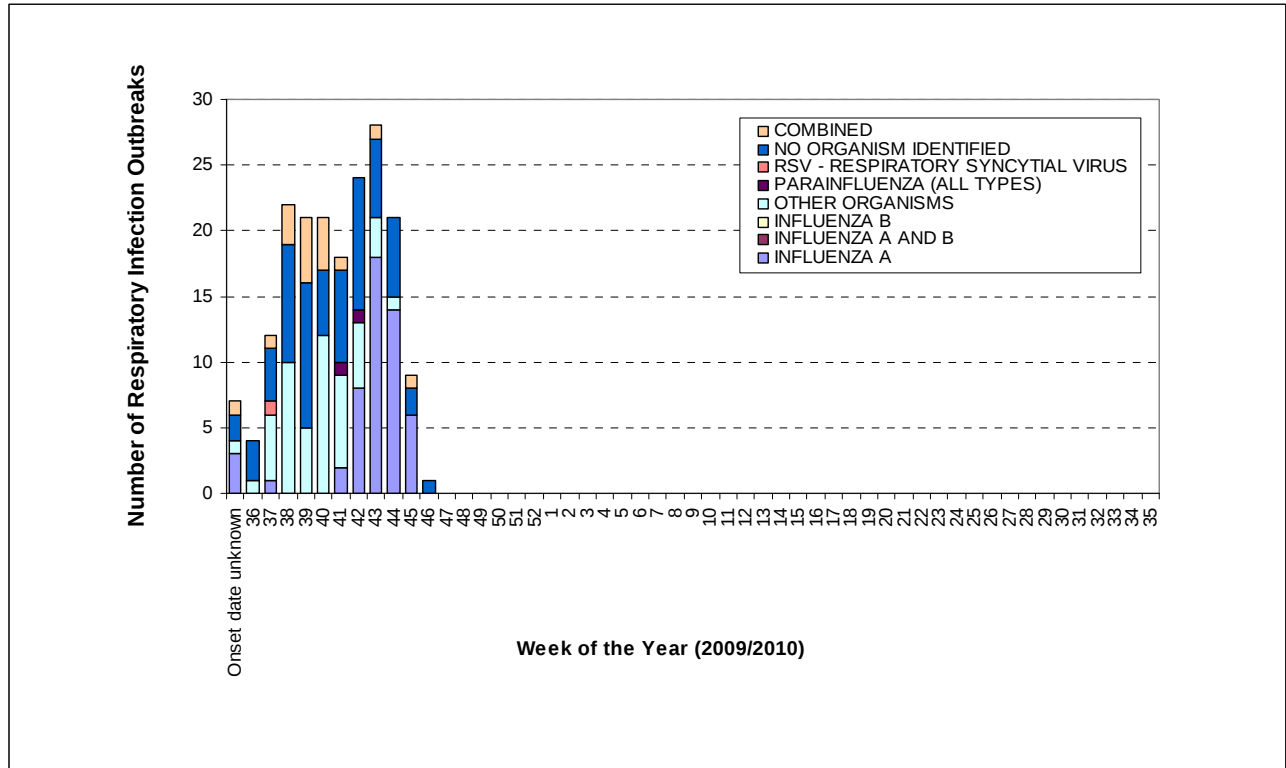
[†] Combined outbreaks include outbreaks in which more than one non-influenza organism has been identified (e.g. RSV, parainfluenza, rhinovirus, etc.)

Table 10: Outbreak Related Complications in institutional respiratory infection outbreaks in Ontario during the Surveillance Season*

Outbreak Related Cases – All Outbreaks	N	% (of total cases)
Residents	1640	64.5
Patients	134	5.3
Staff	767	30.2
Total Cases	2451	100.0
Deaths		% (of cases per role)
Residents	39	2.4
Patients	2	1.5
Staff	0	0.0
Pneumonia (Chest x-ray confirmed)		% (of cases per role)
Residents	39	2.4
Patients	8	6.0
Staff	0	0.0
Hospitalizations		% (of cases per role)
Residents	62	3.8
Staff	0	0.0
Outbreak Related Cases – All Influenza Outbreaks	N	% (of total cases)
Residents	216	55.1
Patients	56	14.3
Staff	120	30.6
Total Cases	392	100.0
Deaths		% (of cases per role)
Residents	9	4.2
Patients	1	0.0
Staff	0	0.0
Pneumonia (Chest x-ray confirmed)		% (of cases per role)
Residents	2	0.9
Patients	4	1.9
Staff	0	0.0
Hospitalizations		% (of cases per role)
Residents	13	6.0
Staff	0	0.0
Outbreak Related Cases – Pandemic (H1N1) 2009 Outbreaks	N	% (of total cases)
Residents	129	46.1
Patients	47	16.8
Staff	104	37.1
Total Cases	280	100.0
Deaths		% (of cases per role)
Residents	8	6.2
Patients	1	2.1
Staff	0	0.0
Pneumonia (Chest x-ray confirmed)		% (of cases per role)
Residents	1	0.8
Patients	4	8.5
Staff	0	0.0
Hospitalizations		% (of cases per role)
Residents	11	8.5
Staff	0	0.0

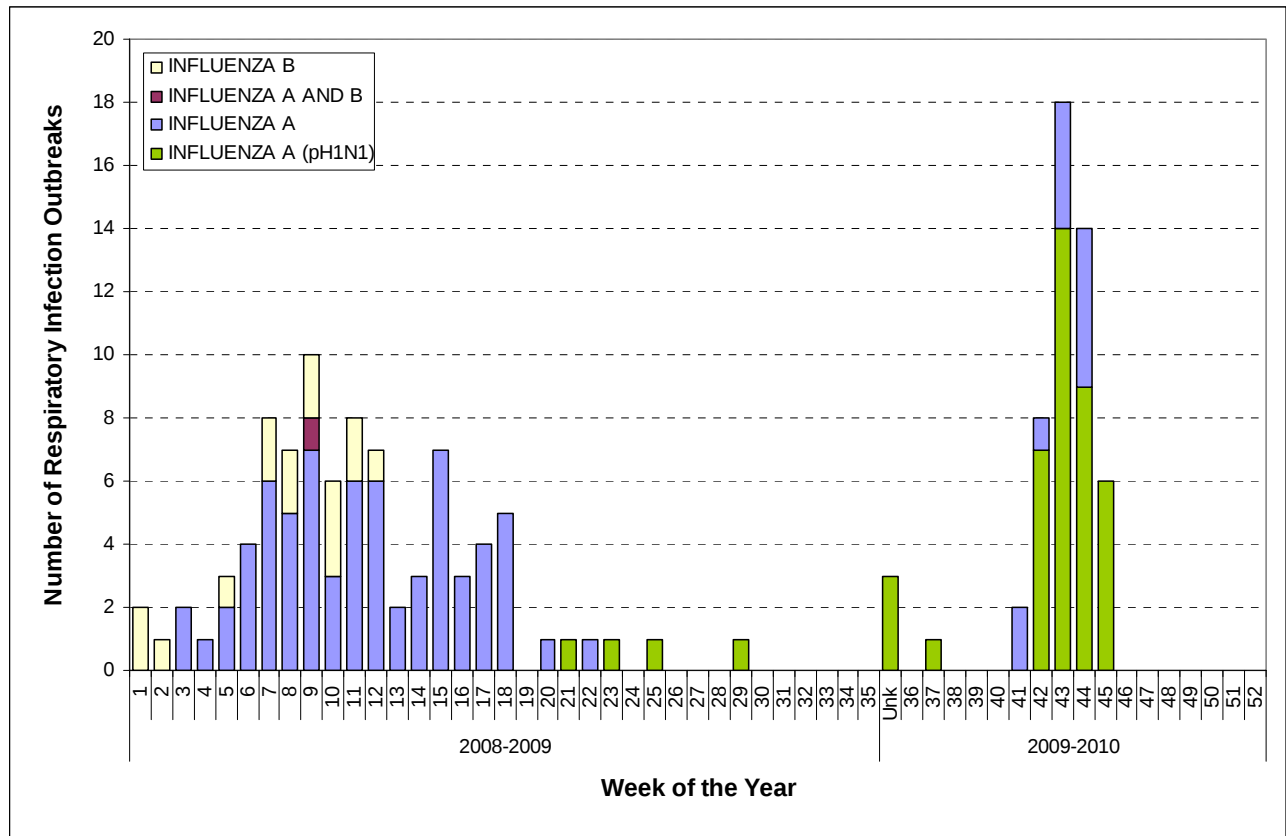
SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/11/2009]

Figure 8: Institutional respiratory infection outbreaks in Ontario by onset of illness in the first case: Total Outbreaks up to and including Week 46 by causative organism



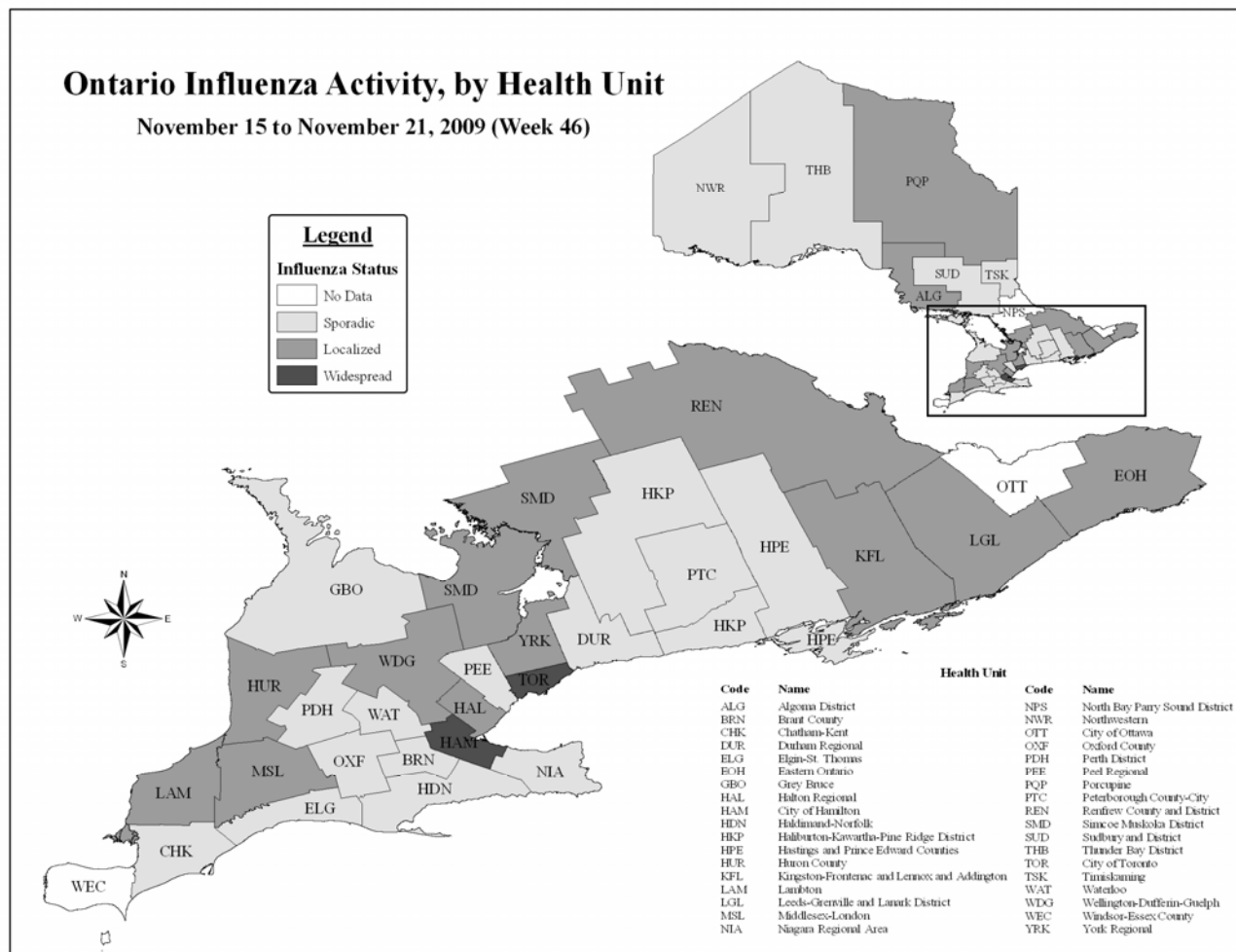
Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [18/11/2009]

Figure 9: Institutional influenza outbreaks in Ontario by onset of illness in the first case: Total Outbreaks up to and including Week 46 by subtype



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [18/11/2009]

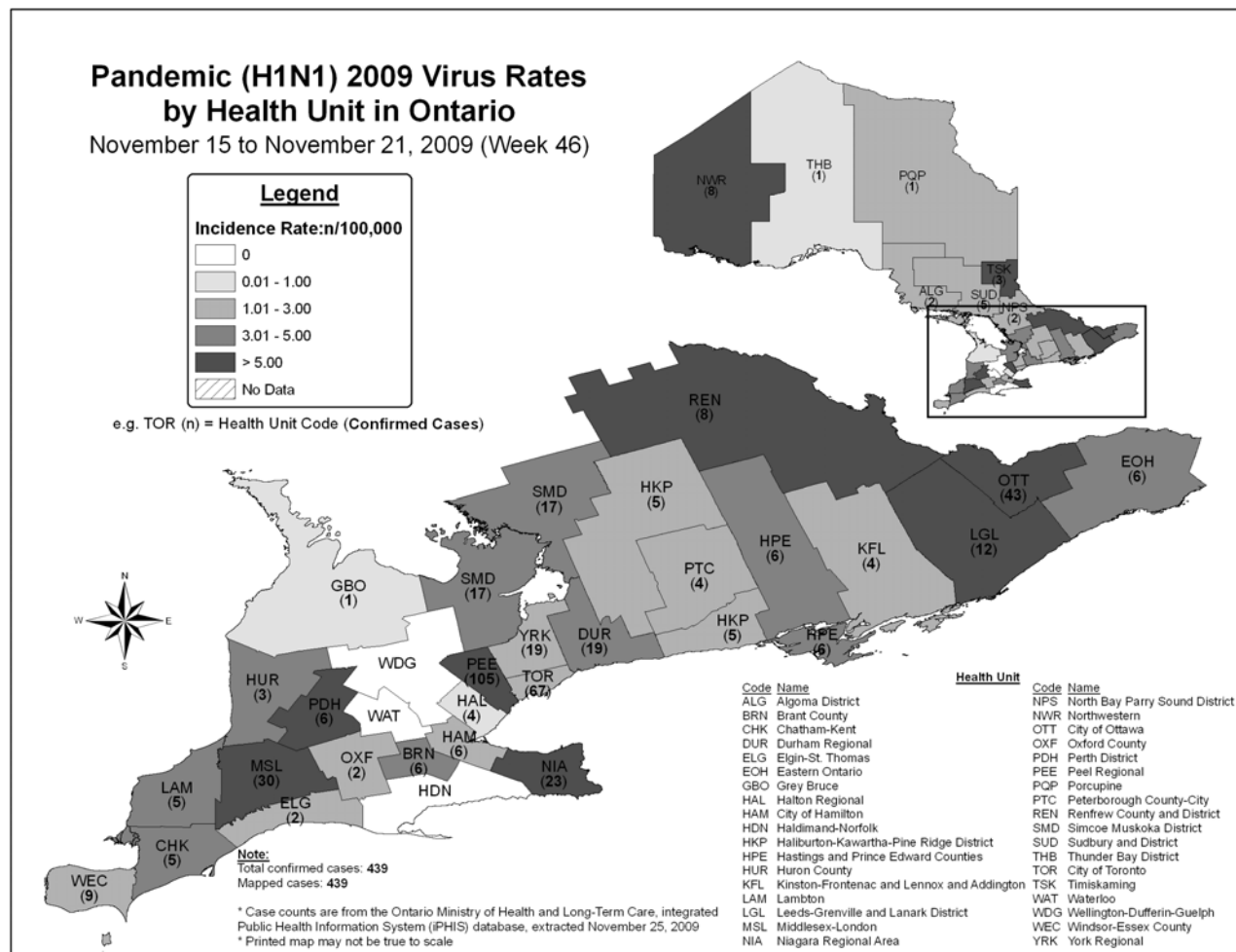
Figure 10: Influenza Activity* levels in Ontario by health unit for Week 46, 2009



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

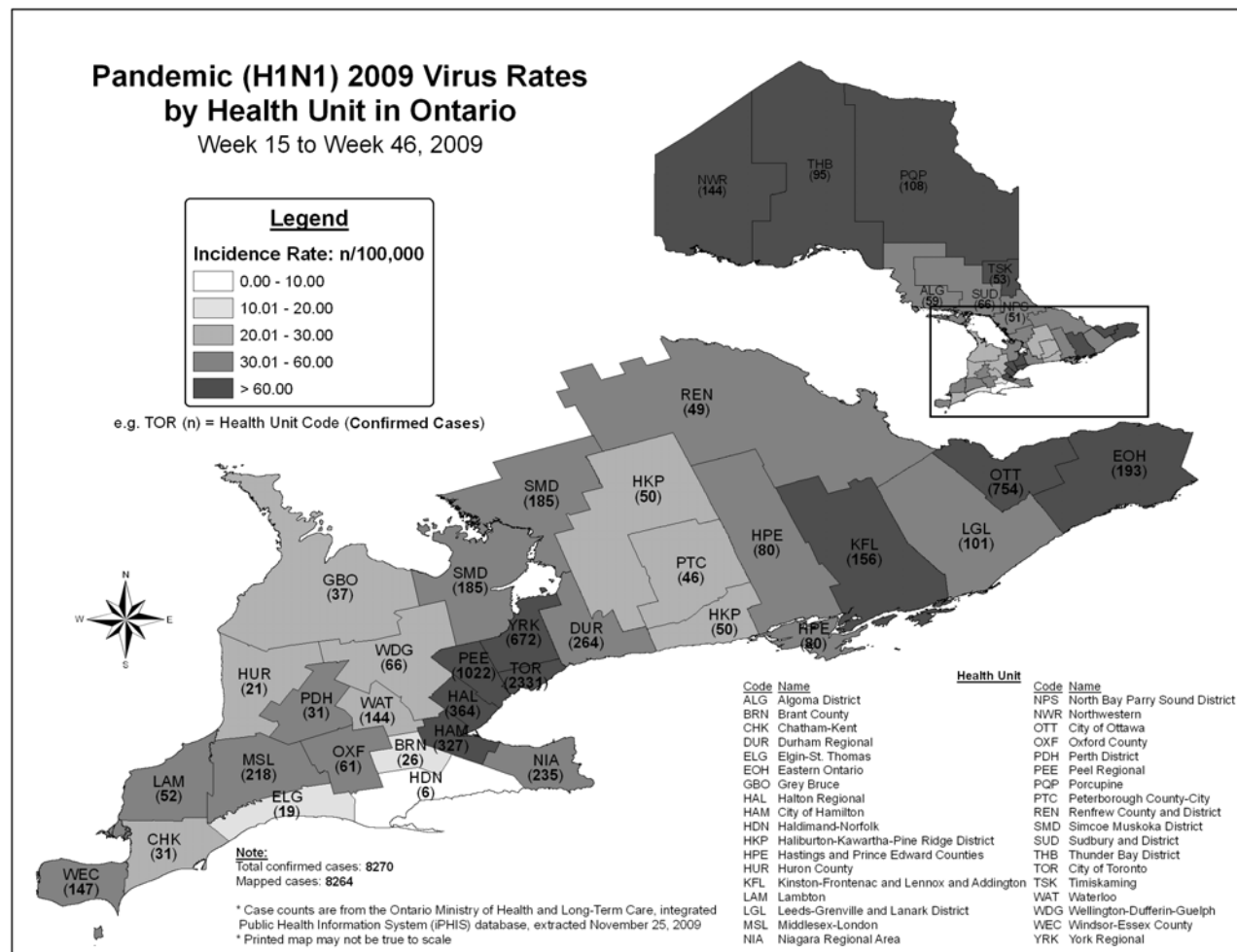
* Influenza activity levels are assigned by local public health units and reported to the MOHLTC by the Tuesday following the end of the surveillance week at 4 pm. Activity levels are assigned based on laboratory confirmations, ILI reports from various sources, and laboratory confirmed institutional outbreaks. Please refer to detailed definitions for the 2009-2010 season included in the Appendix-1]

Figure 11: Pandemic (H1N1) 2009 Virus incidence rates and counts in Ontario by health unit for Week 46, 2009



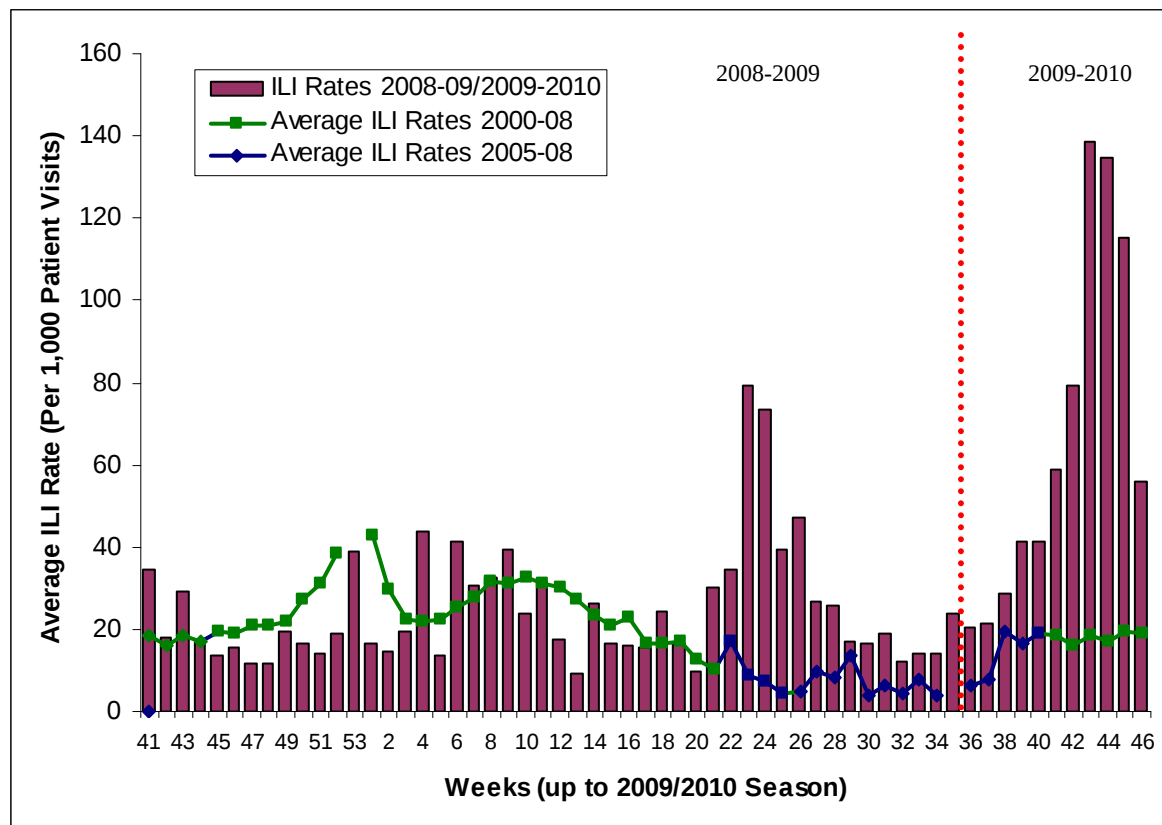
Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [25/11/2009]

Figure 12: Pandemic (H1N1) 2009 Virus cumulative incidence rates and counts in Ontario by health unit, Week 15 – 46 (April 12 – November 21, 2009)



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (IPHIS) database, extracted [25/11/2009]

Figure 13: Average influenza-like illness (ILI) consultation rate (per 1,000 patient visits) reported by sentinel physicians* in Ontario up to the 2009-10 surveillance season, by report week, compared to Ontario average[†] (1999/2000 to 2007/08 seasons).



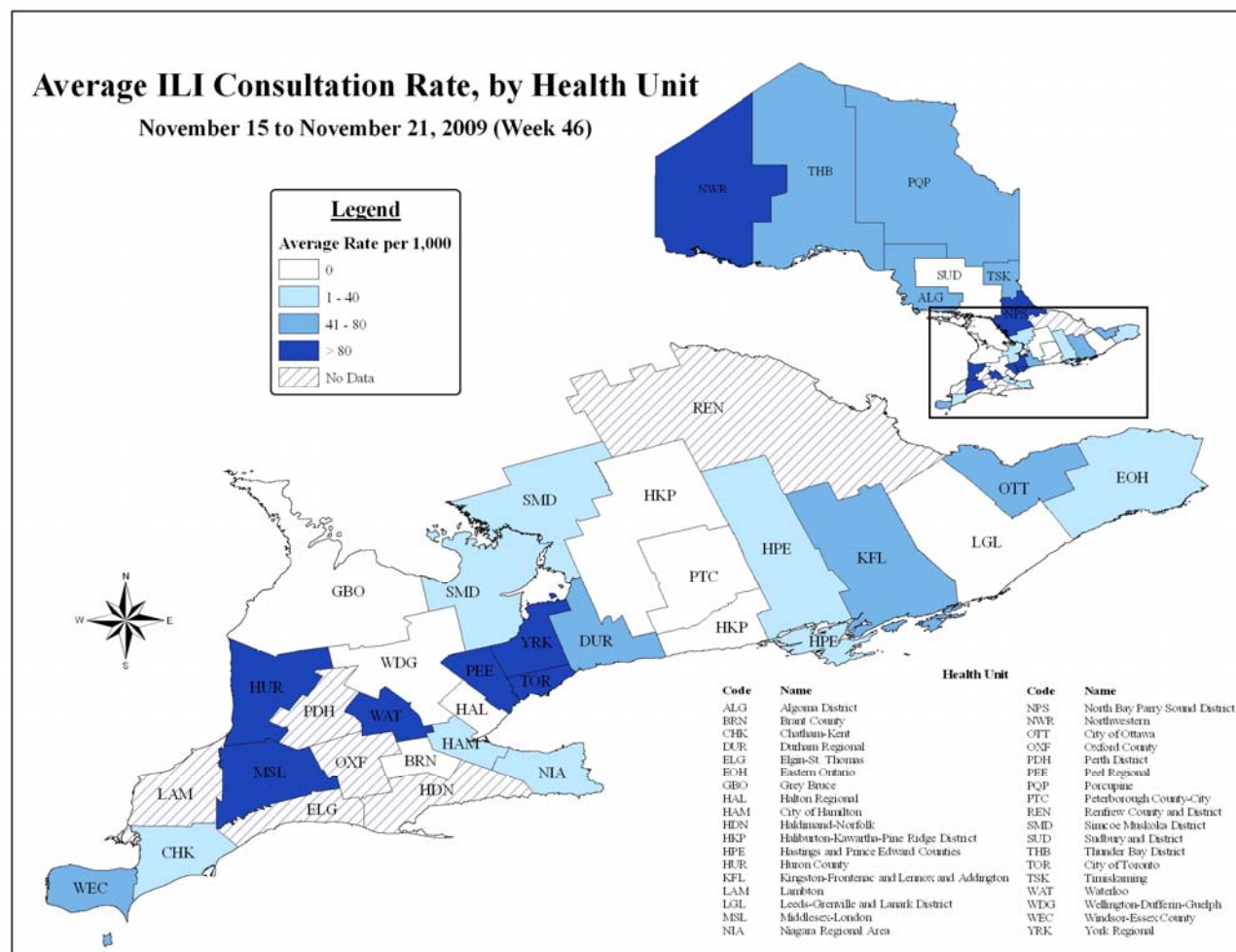
Source: Public Health Agency of Canada

* Sentinel physician information is reported to Public Health Agency of Canada, 114 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 46.



Source: Public Health Agency of Canada

* Sentinel physicians report ILI and patient data to the Public Health Agency of Canada; 114 sentinels reported this week of which all were matched to a health unit and represented in the above map.

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

Table 11: Average influenza-like illness consultation rate (per 1,000 patient visits) by age group as reported by sentinel physicians* in Ontario, for Week 46.

Age Category	0 – 4	5 – 19	20 – 64	65 +	Unknown	TOTAL
ILI Sum	26	70	117	15	0	228
ILI Consultation Rate (per 1,000 patient visits)	94.55	134.36	49.37	16.74	0.00	56.13

Source: Public Health Agency of Canada

* Sentinel physician information is reported to the Public Health Agency of Canada; 114 sentinels reported this week.

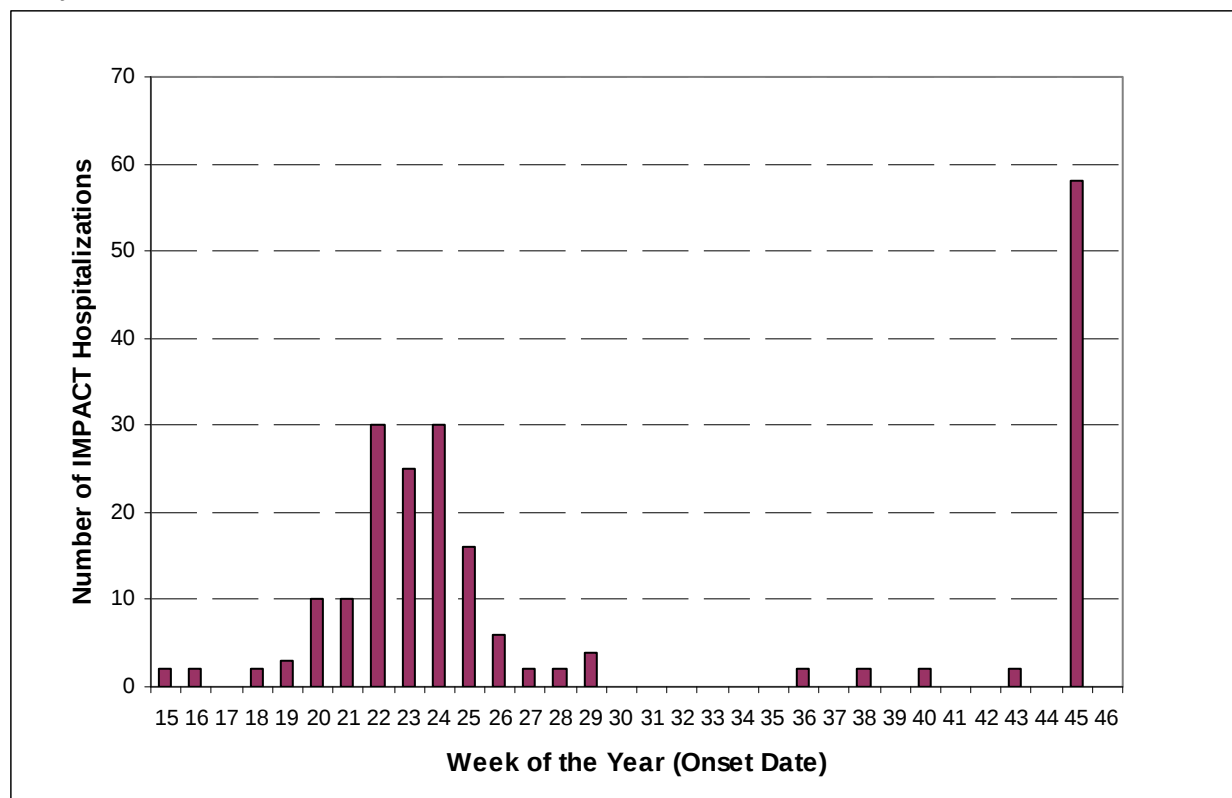
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Immunization Monitoring Program ACTive (IMPACT) is a paediatric hospital-based national active surveillance network for adverse events following immunization and selected infectious diseases in children, including influenza-associated pediatric hospitalizations 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 up to Week 46, 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.

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Table 12: Number of RT-PCR & Multiplex test results by health unit and agent in Ontario by the Ontario Agency for Health Protection and Promotion Laboratory, for the period November 9, 2009 to November 20, 2009

Health Unit	Results	Total
BRANT COUNTY	FLU A	1
EASTERN ONTARIO	FLU A	1
KAWARTHA	RSV A	2
KINGSTON FRONTENAC	FLU A	2
LEEDS GRENVILLE AND LANARK	FLU A	1
MIDDLESEX LONDON	FLU A/RSV B	3
	FLU A/RHINOVIRUS/RSV B	1
	FLU A	1
	FLU A/RHINOVIRUS	1
NIAGARA	RHINOVIRUS	1
	FLU A/RSV B	1
	FLU A	1
	FLUA/RHINOVIRUS/RSV B	1
	RHINOVIRUS	1
OTTAWA	FLU A	6
	FLU A/RHINOVIRUS	7
	RSV A	1
	FLU A/RSV B	1
OXFORD	FLUA/RHINOVIRUS	1
	FLU A	2
PEEL	RHINOVIRUS	1
	FLU A	5
	PARAINFLUENZA 2	1
	FLU A/RHINOVIRUS	1
	PARAINFLUENZA1	1
SIMCOE MUSKOKA	FLU A/INDETERMINATE FOR pH1N1	1
TIMISKAMING	FLU A	1
	PARAINFLUENZA 2	1
TORONTO	FLU A	2
WATERLOO	FLU A	1
WINDSOR	FLU A	1
YORK REGION	FLU A	1

Source: Ontario Agency for Health Protection and Promotion, November 26, 2009

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 2009-2010 and date of submission of Appendix C

WEEKS	START	END	Appendix C Submission to MOHLTC
WK47	22-Nov-09	28-Nov-09	1-Dec-09
WK48	29-Nov-09	5-Dec-09	8-Dec-09
WK49	6-Dec-09	12-Dec-09	15-Dec-09
WK50	13-Dec-09	19-Dec-09	22-Dec-09
WK51	20-Dec-09	26-Dec-09	29-Dec-09
WK52	27-Dec-09	2-Jan-10	5-Jan-10
WK1	3-Jan-10	9-Jan-10	12-Jan-10
WK2	10-Jan-10	16-Jan-10	19-Jan-10
WK3	17-Jan-10	23-Jan-10	26-Jan-10
WK4	24-Jan-10	30-Jan-10	2-Feb-10
WK5	31-Jan-10	6-Feb-10	9-Feb-10
WK6	7-Feb-10	13-Feb-10	16-Feb-10
WK7	14-Feb-10	20-Feb-10	23-Feb-10
WK8	21-Feb-10	27-Feb-10	2-Mar-10
WK9	28-Feb-10	6-Mar-10	9-Mar-10
WK10	7-Mar-10	13-Mar-10	16-Mar-10
WK11	14-Mar-10	20-Mar-10	23-Mar-10
WK12	21-Mar-10	27-Mar-10	30-Mar-10
WK13	28-Mar-10	3-Apr-10	6-Apr-10
WK14	4-Apr-10	10-Apr-10	13-Apr-10
WK15	11-Apr-10	17-Apr-10	20-Apr-10
WK16	18-Apr-10	24-Apr-10	27-Apr-10
WK17	25-Apr-10	1-May-10	4-May-10
WK18	2-May-10	8-May-10	11-May-10
WK19	9-May-10	15-May-10	18-May-10
WK20	16-May-10	22-May-10	25-May-10
WK21	23-May-10	29-May-10	1-Jun-10
WK22	30-May-10	5-Jun-10	8-Jun-10
WK23	6-Jun-10	12-Jun-10	15-Jun-10
WK24	13-Jun-10	19-Jun-10	22-Jun-10
WK25	20-Jun-10	26-Jun-10	29-Jun-10
WK26	27-Jun-10	3-Jul-10	6-Jul-10

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WEEKS	START	END	Appendix C Submission to MOHLTC
WK27	4-Jul-10	10-Jul-10	13-Jul-10
WK28	11-Jul-10	17-Jul-10	20-Jul-10
WK29	18-Jul-10	24-Jul-10	27-Jul-10
WK30	25-Jul-10	31-Jul-10	3-Aug-10
WK31	1-Aug-10	7-Aug-10	10-Aug-10
WK32	8-Aug-10	14-Aug-10	17-Aug-10
WK33	15-Aug-10	21-Aug-10	24-Aug-10
WK34	22-Aug-10	28-Aug-10	31-Aug-10
WK35	29-Aug-10	4-Sep-10	7-Sep-10

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.