

SURVEILLANCE WEEK 21 (May 24, 2009– May 30, 2009)

This issue of the Ontario Influenza Bulletin provides information on the surveillance period from May 24, 2009-May 30, 2009, (Week 21). The analysis for this issue occurred on May 28, 2009, therefore all data is current to that date unless otherwise specified.

Overall, influenza activity in Ontario during week 21, 2009 increased as compared to week 20, 2009. There were 452 confirmed cases of influenza reported through iPHIS from health units; this count includes confirmed cases of the novel H1N1 influenza A virus. There were no new reports of institutional influenza outbreaks. For week 21, North West, North East, & South West health region reported 'sporadic' level activity while the remaining health regions reported 'localized' level activity.

Novel H1N1 Influenza A Virus Update

As of June 4, 2009, there have been 1078 confirmed cases of novel H1N1 Influenza A virus in Ontario and 1795 confirmed cases in Canada.

For a definition of influenza-like illness (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 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 21, 2009).

Confirmed influenza cases*	HEALTH REGION							TOTAL
	North West	North East	Eastern	Central East	Toronto	South West	Central West	
Influenza A	0	1	33	163	227	0	28	452
Influenza B	0	0	0	0	0	0	0	0
Influenza A & B	0	0	0	0	0	0	0	0
Total new cases	0	1	33	163	227	0	28	452
Institutional influenza outbreaks†	0	0	0	0	0	0	0	0

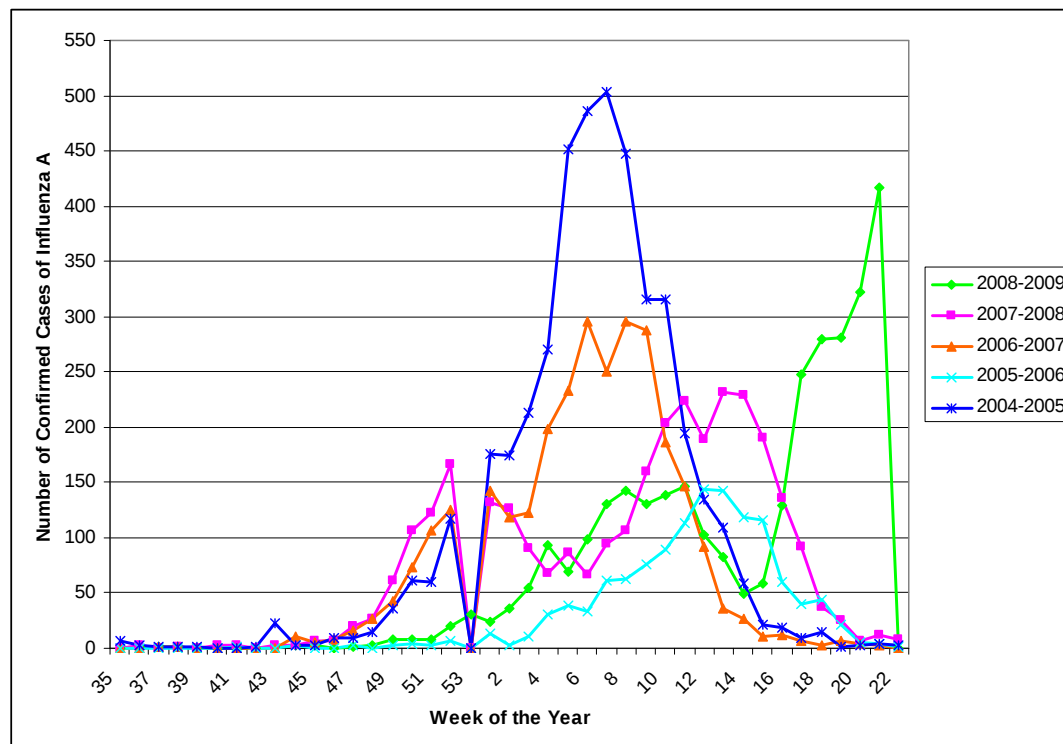
SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [04/06/2009].

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

† These data have been obtained from the FluWatch report of the Public Health Agency of Canada for Week 20, 2009.

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

Figure 1: Confirmed Cases of Influenza A in Ontario by week between September 1 and May 30, 2004-2009[†]*



SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [03/06/2009].

[†] 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)

* For Week 21, decreased influenza case counts may be attributed in part to reporting delays

Table 2: Confirmed cases of influenza by health unit & health region, with an episode date[†] during Week 21, 2008-09

Region	Health Unit	Confirmed Influenza			
		Influenza A	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	1	0	0	1
	Timiskaming	0	0	0	0
	TOTAL NORTH EAST	1	0	0	1
Eastern	City of Ottawa	29	0	0	29
	Eastern Ontario	0	0	0	0
	Hastings & Prince Edward Counties	0	0	0	0
	Kingston, Frontenac, Lennox & Addington	1	0	0	1
	Leeds, Grenville And Lanark District	3	0	0	3
	Renfrew County And District	0	0	0	0
	TOTAL EASTERN	33	0	0	33
Central East	Durham Region	11	0	0	11
	Haliburton, Kawartha, Pine Ridge	2	0	0	2
	Peel Region	93	0	0	93
	Peterborough County-City	0	0	0	0
	Simcoe Muskoka District	3	0	0	3
	York Region	54	0	0	54
	TOTAL CENTRAL EAST	163	0	0	163
Toronto	Toronto	227	0	0	227
	TOTAL TORONTO	227	0	0	227
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	1	0	0	1
	Haldimand-Norfolk	1	0	0	1
	Halton Region	25	0	0	25
	Niagara Region	0	0	0	0
	Waterloo Region	0	0	0	0
	Wellington-Dufferin-Guelph	1	0	0	1
	TOTAL CENTRAL WEST	28	0	0	28
	TOTAL ONTARIO	452	0	0	452

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [04/06/2009].

[†] 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 3: Cumulative* confirmed cases of influenza by health unit & health region with an episode date[†] between September 1, 2008 – May 30, 2009

Region	Health Unit	Confirmed Influenza			
		Influenza A	Influenza A & B	Influenza B	TOTAL
North West	Northwestern	3	0	7	10
	Thunder Bay District	4	0	7	11
	TOTAL NORTH WEST	7	0	14	21
North East	Algoma	4	0	10	14
	North Bay Parry Sound District	16	0	74	90
	Porcupine	18	0	30	48
	Sudbury & District	19	0	7	26
	Timiskaming	5	0	5	10
	TOTAL NORTH EAST	62	0	126	188
Eastern	City Of Ottawa	175	2	56	233
	Eastern Ontario	14	0	39	53
	Hastings & Prince Edward Counties	11	0	19	30
	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	262	2	178	442
Central East	Durham Region	103	1	60	164
	Haliburton, Kawartha, Pine Ridge	74	0	49	123
	Peel Region	488	0	143	631
	Peterborough County-City	29	0	10	39
	Simcoe Muskoka District	74	0	77	151
	York Region	250	0	43	293
	TOTAL CENTRAL EAST	1,018	1	382	1,401
Toronto	Toronto	1,082	3	241	1,326
	TOTAL TORONTO	1,082	3	241	1,326
South West	Chatham-Kent	5	0	4	9
	Elgin-St. Thomas	2	0	1	3
	Grey Bruce	22	1	54	77
	Huron County	15	0	33	48
	Lambton County	5	0	6	11
	Middlesex-London	39	0	9	48
	Oxford County	16	0	9	25
	Perth District	24	0	12	36
	Windsor-Essex County	32	0	32	64
	TOTAL SOUTHWEST	160	1	160	321
Central West	Brant County	20	0	19	39
	City Of Hamilton	132	0	97	229
	Haldimand-Norfolk	8	0	11	19
	Halton Region	178	0	59	237
	Niagara Region	69	0	56	125
	Waterloo Region	120	0	85	205
	Wellington-Dufferin-Guelph	60	0	41	101
	TOTAL CENTRAL WEST	587	0	368	955
	TOTAL ONTARIO	3,178	7	1,469	4,654

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [04/06/2009].

* 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)

Influenza Subtype(s):

During week 21, a total of 4335 isolates were received by the Public Health Agency of Canada, with 352 testing positive for influenza A and 17 positive for influenza B. Ninety-two of the reported influenza A isolates were from Ontario (26.1%), 90 were from Quebec (25.6%) and 75 were from Saskatchewan (21.3%). Four of the influenza B isolates were from Ontario (23.5%), 3 each were from Quebec and Alberta (17.7%), and 2 each were from Manitoba and Saskatchewan (11.8%).*

Antigenic Characterization (National):

Since September 1, 2008, National Microbiology Laboratory (NML) has antigenically characterized 953 influenza viruses that were received from Canadian provincial and hospital laboratories: 163 influenza A (H3N2), 239 influenza A (H1N1) and 551 B viruses. The 163 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. The 239 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 551 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. 373 B isolates were characterized as B/Malaysia/2506/04-like and 164 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 (Provincial):

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):

Since the start of the season, the NML has tested 562 influenza A isolates (257 H1N1 and 305 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 930 influenza isolates (253 A/H1N1, 166 A/H3N2 & 511 B) for oseltamivir (Tamiflu) resistance. All of the A/H3N2 and B isolates were sensitive; however 252 of the A/H1N1 isolates were resistant to oseltamivir due to the H274Y mutation (resistance = 100% or 252/252). One H1N1 isolate was sensitive to oseltamivir.

All 875 influenza isolates (202 A/H1N1, 162 A/H3N2 & 511 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) swl (Human Swine Influenza):

40 novel influenza A (H1N1) swl have been tested for resistance to amantadine by sequencing. The testing results showed that all 40 isolates were to resistant amantadine. Seventy-two novel influenza A (H1N1) swl have been tested for resistance to oseltamivir by sequencing; all were sensitive. 8 of the novel H1N1 were tested for zanamivir resistance. The testing results showed that all 8 isolates were resistant to zanamivir.

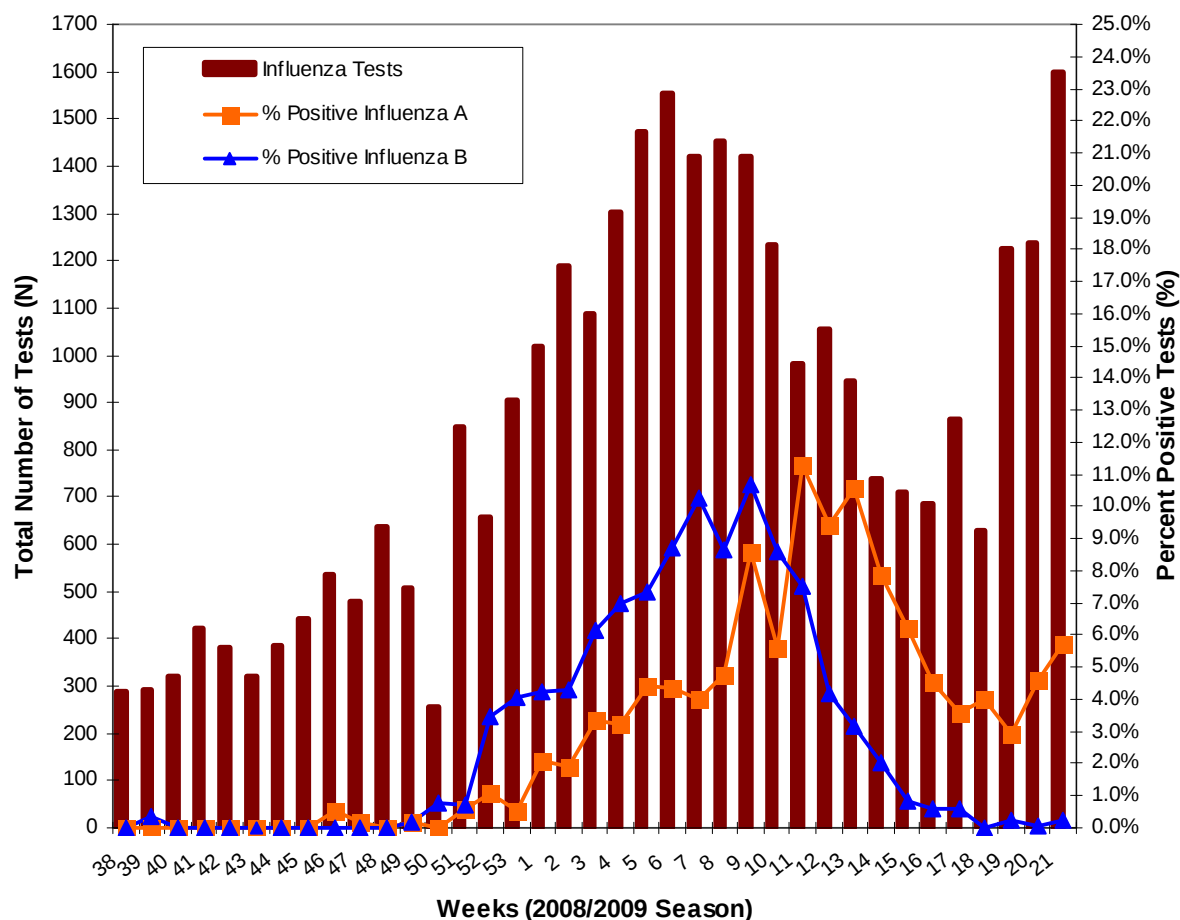
Antiviral Resistance (Provincial):

All 57 A/H3N2 isolates tested were resistant to amantadine in Ontario. All of the 93 H1N1 isolates tested were sensitive to amantadine. Ninety-one of the 92 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 21, 2009

† These data have been obtained from the National Microbiology Laboratory of the Public Health Agency of Canada for Week 20, 2009. Current FluWatch information is not available at this time.

Figure 4: 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/>

Table 4a: Institutional respiratory infection outbreaks in Ontario: New Outbreaks* in Week 21 and Total Outbreaks for the Season**

Institutional Respiratory Infection Outbreaks		
New Outbreaks*	N	% (of outbreaks)
Influenza A	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	68	11.3
Influenza B	18	3.0
Influenza A and B	1	0.2
Parainfluenza (All types)	30	5.0
RSV	49	8.2
Combined Outbreaks [†]	0	0.0
Other organisms	36	6.0
No organism identified	398	66.3
TOTAL	600	100.0
Types of Institutions (All Outbreaks) **	N	% (of outbreaks)
Long-Term Care Homes	393	65.5
Hospitals	21	3.5
Retirement Homes	50	8.3
Other	2	0.3
Unknown	134	22.3
TOTAL	600	100.0

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [04/06/2009]

* 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. May 24, 2009 – May 30, 2009

** Season to date includes all outbreaks in which the date of onset of illness in the first case occurred from September 1, 2008 – May 30, 2009

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

Table 4b: Outbreak Related Complications in institutional respiratory infection outbreaks in Ontario during the Surveillance Season*

Outbreak Related Complications (All Outbreaks)	N	% (of total cases)
Total Cases		
Residents	7466	74.1
Patients	345	3.4
Staff	2190	21.7
Total Cases	10075	100.0
Deaths		% (of cases per role)
Residents	165	2.2
Patients	9	2.6
Staff	0	0.0
Pneumonia (Chest x-ray confirmed)		% (of cases per role)
Residents	279	3.7
Patients	28	8.1
Staff	9	0.4
Hospitalizations		% (of cases per role)
Residents	316	4.2
Staff	1	0.1
Outbreak Related Complications (Influenza Outbreaks)	N	% (of total cases)
Total Cases		
Residents	1067	73.9
Patients	44	3.1
Staff	365	25.3
Total Cases	1443	100.0
Deaths		% (of cases per role)
Residents	35	3.3
Patients	0	0.0
Staff	0	0.0
Pneumonia (Chest x-ray confirmed)		% (of cases per role)
Residents	69	6.5
Patients	3	6.8
Staff	5	1.4
Hospitalizations		% (of cases per role)
Residents	81	7.6
Staff	0	0.0

SOURCE: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted [04/06/2009]

* Season to date includes all outbreaks in which the date of onset of illness in the first case occurred from September 1, 2008 – May 30, 2009

Figure 5: Institutional respiratory infection outbreaks in Ontario by onset of illness in the first case: Total Outbreaks from September 1, 2008 – May 30, 2009 by causative organism

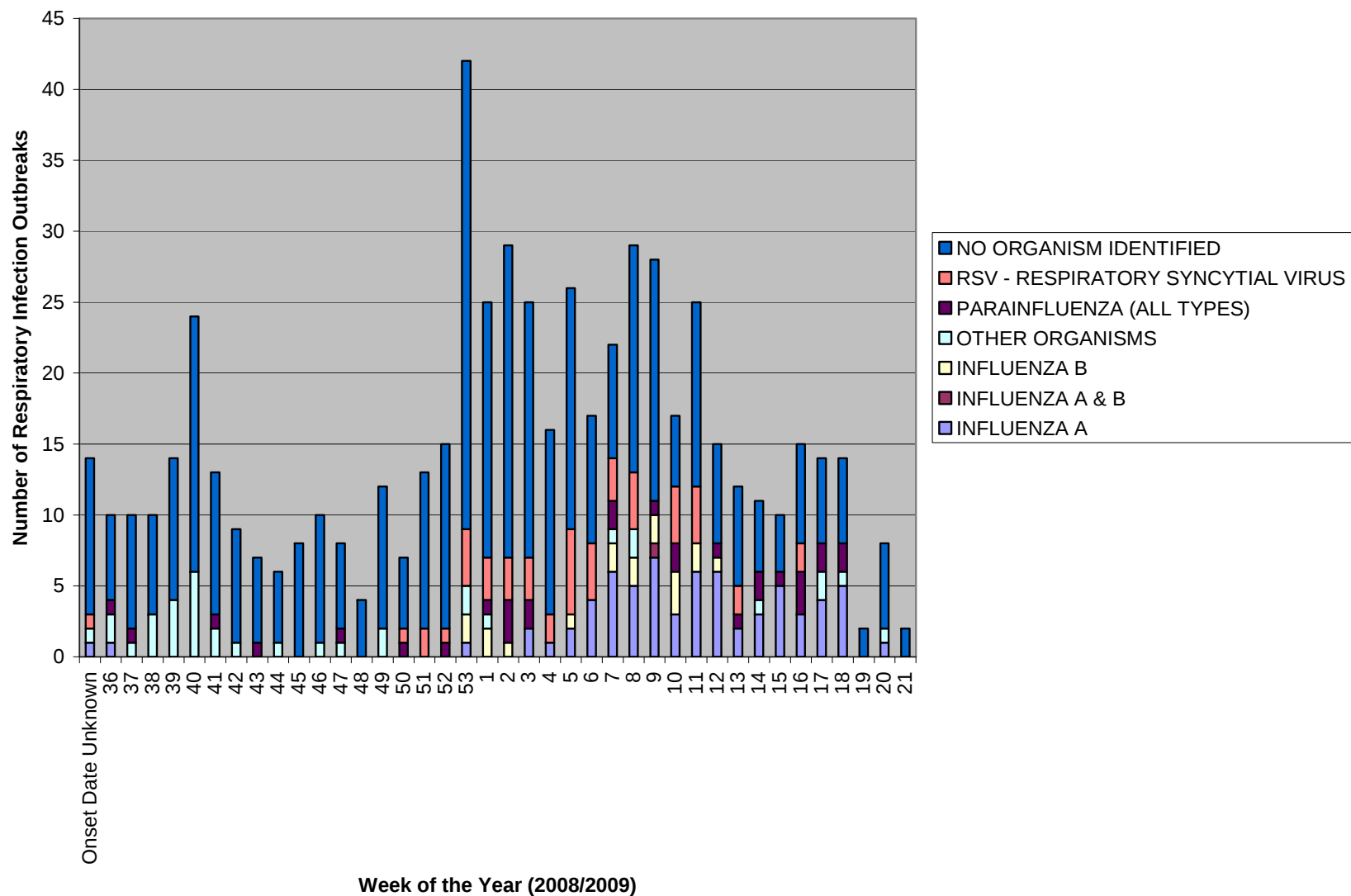


Figure 6: Influenza Activity* levels in Ontario by health unit for Week 21, 2009

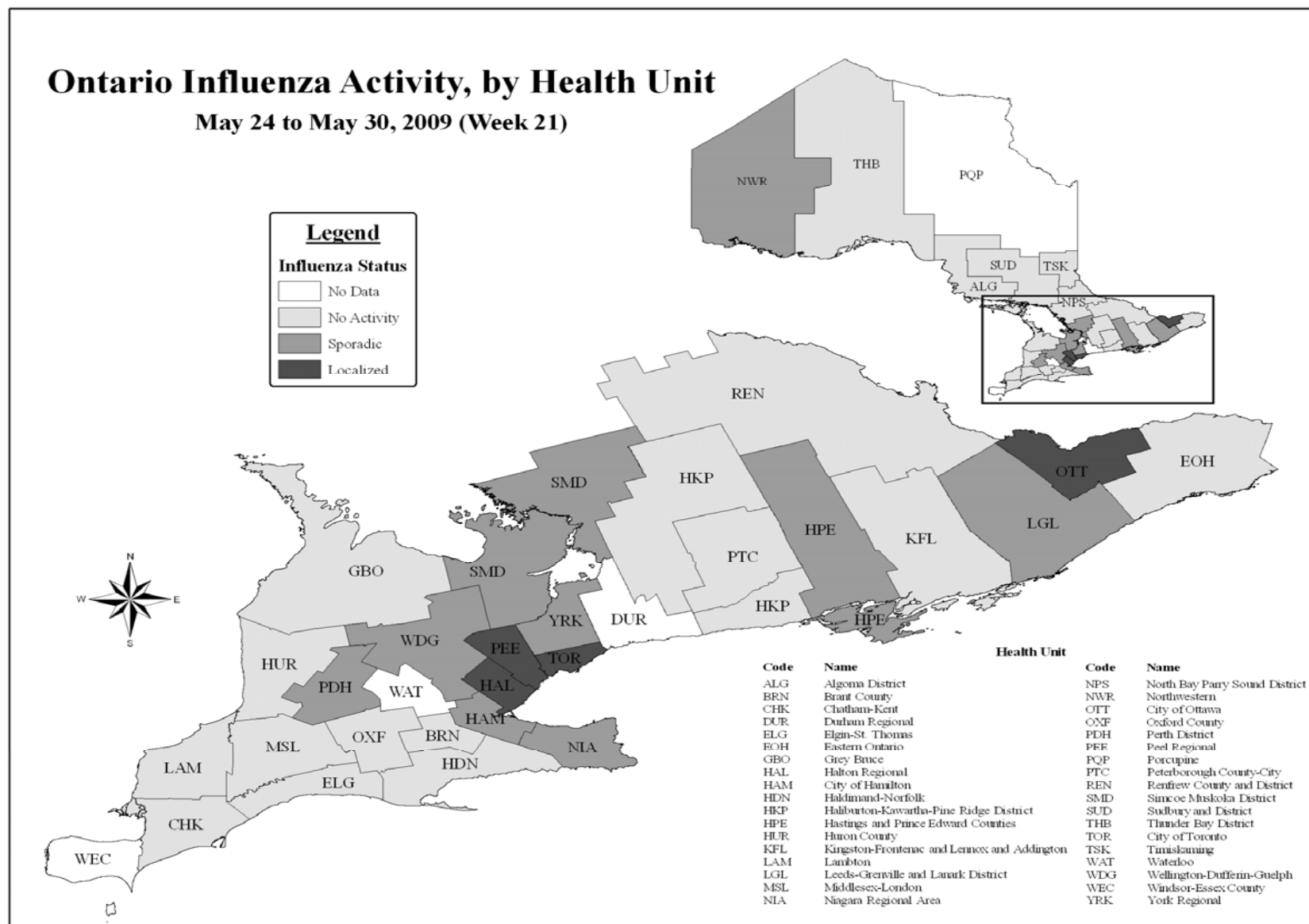
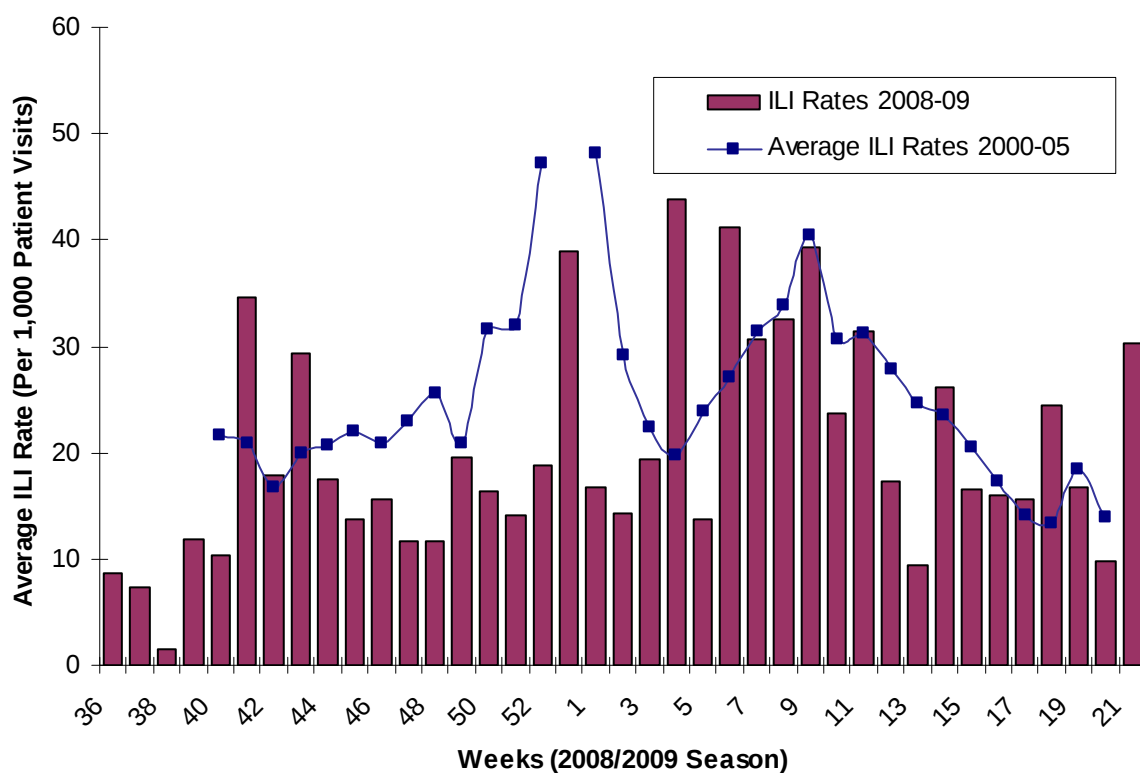


Figure 7: Average influenza-like illness (ILI) consultation rate (per 1,000 patient visits) reported by sentinel physicians* in Ontario in 2008- 2009 season, by report week, compared to Ontario average† (1999/2000 to 2004/05 seasons).



Source: Public Health Agency of Canada

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

† 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.

Note: For Week 41, the number of sentinel physicians reporting is lower than previous years, which may affect the average ILI rate for this period.

Table 5: Average Influenza-like illness consultation rate (per 1,000 patient visits) by age group and postal code as reported by Sentinel Physicians* in Ontario, for Week 21.

Postal Code	0 – 4	5 – 19	20 – 64	65 +	Unknown
K0C2K0	0	0	0	0	0
K0C1A0	0	0	0	0	0
K1L8H2	0	0	0	0	0
K1C1G1	1	1	1	0	0
K2P1V3	0	0	1	0	0
K1J9M2	0	0	0	0	0
K1V2G2	3	0	1	0	0
K2G6E2	3	2	2	0	0
K7H2W6	0	0	0	0	0
K0H2P0	0	0	0	0	0
K0K2T0	0	0	0	0	0
L1A3W4	0	1	0	0	0
K0M1A0	0	0	0	0	0
L1S2H6	0	0	0	0	0
L1B1H8	0	0	0	0	0
L4L4Y7	0	0	0	0	0
L4J7Y3	0	0	0	0	0
M4X1W4	0	0	0	0	0
M8Y1W3	0	0	0	0	0
M2J2Z1	0	0	0	0	0
M9W6N5	0	0	3	0	0
L5J2W4	0	0	0	0	0
L6W2A4	2	3	2	0	0
L9W1G2	0	0	0	0	0
N1H4G2	0	0	0	0	0
L6L2X4	0	1	2	0	0
L9H1V1	0	0	0	0	0
L0R1H0	0	0	0	0	0
L2V1P1	0	0	0	0	0
L2E7H1	0	0	0	0	0
L3M1P2	0	0	0	0	0
N0A1H0	0	0	0	0	0
N2G1P2	0	0	0	0	0
N2M3B5	0	0	0	0	0
N4W1P9	0	0	0	0	0
N5H1K9	0	0	0	0	0
N0R1G0	0	0	0	0	0
N0M1T0	0	0	0	0	0
N6C2R5	8	0	0	0	0
N0G1L0	0	0	0	0	0
N0C1E0	0	0	0	0	0
L3V5W5	0	0	0	0	0
P0H2H0	0	0	0	0	0
P0A1C0	0	0	0	0	0
P0M2L0	0	0	0	0	0
P4N1C6	0	0	0	0	0
P0M1Z0	0	0	0	0	0
P7E1H5	0	0	0	0	0
P0W1E0	0	0	0	0	0
P9N3W7	0	0	0	0	0
ILI Sum	17	8	12	0	0
ILI Consultation Rate (per 1,000 patient visits)	195.40	60.15	17.37	0.00	0.00

Source: Public Health Agency of Canada

* Sentinel physician information is reported to the Public Health Agency of Canada

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

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>

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

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.**

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

WEEKS	START	END	Appendix C Submission to MOHLTC
WK22	31-May-09	6-Jun-09	9-Jun-09
WK23	7-Jun-09	13-Jun-09	16-Jun-09
WK24	14-Jun-09	20-Jun-09	23-Jun-09
WK25	21-Jun-09	27-Jun-09	30-Jun-09
WK26	28-Jun-09	4-Jul-09	7-Jul-09
WK27	5-Jul-09	11-Jul-09	14-Jul-09
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