

December 6 to December 12, 2009 (Week 49)

- On week 49, the overall influenza activity continued to decline for the fourth consecutive week in Canada.
- The ILI consultation rate was below the expected range for this time of the year and only 6.6% of the specimens tested were positive for influenza. The Pandemic (H1N1) 2009 strain still accounted for nearly 100% of the positive influenza A subtyped specimens this week.
- The number of hospitalized cases (159 vs. 307), ICU admissions (40 vs. 83) and deaths (21 vs. 33) reported this week are about half of those reported last week. Among reporting provinces and territories (PTs) this week, hospitalized cases occurred in only six provinces (BC, AB, SK, ON, QC & NS). Deaths reported this week were also from the same five provinces except MB (BC, AB, SK, MB, ON & QC).
- From August 30 to December 12, 2009, a total of 6,779 hospitalized cases including 1,081 (15.9%) cases admitted to an intensive care unit (ICU) as well as 313 (4.6%) deaths had been reported.

Pandemic (H1N1) 2009 virus Surveillance and Epidemiology

A total of 8,261 hospitalized cases including 1,372 (16.6%) cases admitted to ICU and 606 (7.3%) cases required ventilation as well as 390 (4.7%) deaths of Pandemic (H1N1) 2009 were reported to PHAC since the beginning of the pandemic. Core data was available for 7,481 (90.6%) hospitalizations, 1,323 (96.4%) ICU admissions and 348 (94.1%) deaths. 8 of the 13 provinces and territories continued to show activity of Pandemic (H1N1) 2009 during the last week. Although activity is present, a continued decline was experienced by all PTs, indicated by the decreasing number of reported hospitalized cases (159 vs. 307), ICU admissions (40 vs. 83) and deaths (21 vs. 33) reported this week compared to the previous week. The number of hospitalizations due to Pandemic (H1N1) 2009 in the second wave was 4.6 times higher than the number reported during the first wave.

The proportion of severe cases (ICU admissions and deaths) among all hospitalized cases to date was still slightly lower in the second wave than in the first wave; however, this difference is continuing to narrow (19.6% vs. 15.9% for ICU admissions and 5.2% vs. 4.6% for fatal cases). Comparing the rates of hospitalization, ICU admissions and deaths between those with underlying medical conditions and those without since the beginning of the pandemic, those with underlying medical conditions were almost 5 times more likely to be hospitalized, 7 times more likely to be admitted to ICU and more than 11 times more likely to die compared to those without underlying medical conditions. As expected, during the second wave, hospitalized cases with no underlying medical conditions have been younger (median age of 24.5 vs. 47.0 years of age) compared to hospitalized cases with underlying medical conditions. Among the hospitalized cases, ICU admissions and deaths, chronic pulmonary disease (including asthma) was the most commonly reported underlying medical condition (34.1%, 37.2% and 42.0%, respectively). Immunosuppression (including cancer) (15.1%) and diabetes (13.8%) were also frequently reported among hospitalized cases, while ICU cases were also affected by diabetes (22.0%) and chronic heart disease (18.1%). Among fatal cases, immunosuppression (27.3%) and chronic heart disease (26.1%) were most commonly reported.

Since the beginning of the pandemic, 534 hospitalized cases (7.1%) were among people of Aboriginal origin (380 First Nations, 105 Inuit, 39 Metis and 10 with unknown Aboriginal subgroup). Comparing the first wave to the second wave, the cumulative crude hospitalization rate among people of Aboriginal origin was lower in the period from August 30 to December 12, 2009, however, ICU admissions and mortality rates were slightly higher in the second wave compared to first wave (data not shown).

Weekly and cumulative numbers of hospitalized cases, ICU admissions and deaths among Pandemic (H1N1) 2009 confirmed cases, Canada, to December 12, 2009†

Province/ Territory	This week (Dec. 6-12, 2009)*			From August 30, 2009 to December 12, 2009**			Up to August 29, 2009**		
	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU admissions	Deaths
BC ¹	23	4	4	981	126	46	51	19	5
AB	14	3	2	1121	205	57	129	29	7
SK	5	5	1	34	30	10	23	12	4
MB ^{1,2}	--	0	1	35	5	3	224	43	7
ON	69	17	9	1343	221	88	382	68	25
QC	39	5	4	2461	353	76	572	104	27
NB ^{1,3}	--	5	0	163	32	7	2	1	0
NS ¹	12	1	0	265	41	6	17	8	1
PE	0	0	0	49	9	0	1	0	0
NL ¹	0	0	0	262	49	16	3	1	0
YT	0	0	0	14	3	3	0	0	0
NT	0	0	0	46	7	1	6	0	0
NU	0	0	0	5	0	0	72	6	1
Canada	159	40	21	6779	1081	313	1482	291	77

*Based on reporting date. ** Based on epidemiological date, hospitalization date and reporting date. ¹These provinces reported aggregate counts this week.

²No report received on hospitalized cases from MB. ³Note change in total hospitalizations from last week's report: duplicates were removed.

† Note that due to reporting delays, some PTs reported retrospectively on first wave cases.

Descriptive characteristics of laboratory-confirmed Canadian Pandemic (H1N1) 2009 hospitalized cases, ICU-admitted cases and deaths with core information available, reported to PHAC as of December 12, 2009†

	From April 12 to August 29, 2009			From Aug. 30, 2009 to Dec. 12, 2009			Cumulative (From April 12 to Dec. 12, 2009)		
	Hospitalized cases (n=1,482)	ICU-admitted (n=291)	Deaths (n=77)	Hospitalized cases (n=5,999)	ICU-admitted (n=1,032)	Deaths (n=290)	Hospitalized cases (n=7,481)	ICU-admitted (n=1,323)	Deaths (n=367)
Females, %	51.5	57.4	62.3	49.4	49.3	47.6	49.8	51.1	50.7
Median age	23.0	37.0	51.0	29.0	47.0	54.0	28.0	45.0	53.0
Aboriginal status, %	20.3	16.2	11.7	3.9	5.9	6.9	7.1	8.2	7.9
Underlying medical conditions ¹ , %	47.0 (645/1,373)	57.5 (157/273)	65.3 (49/75)	52.6 (1,409/2,677)	61.8 (479/775)	67.3 (136/202)	50.7 (2,054/4,050)	60.7 (636/1,048)	66.8 (185/277)
Pregnancy ² , %	28.0 (77/275)	19.7 (15/76)	28.6 (4/14)	19.1 (172/900)	9.3 (15/161)	0.0	21.2 (249/1,175)	12.7 (30/237)	8.7 (4/46)

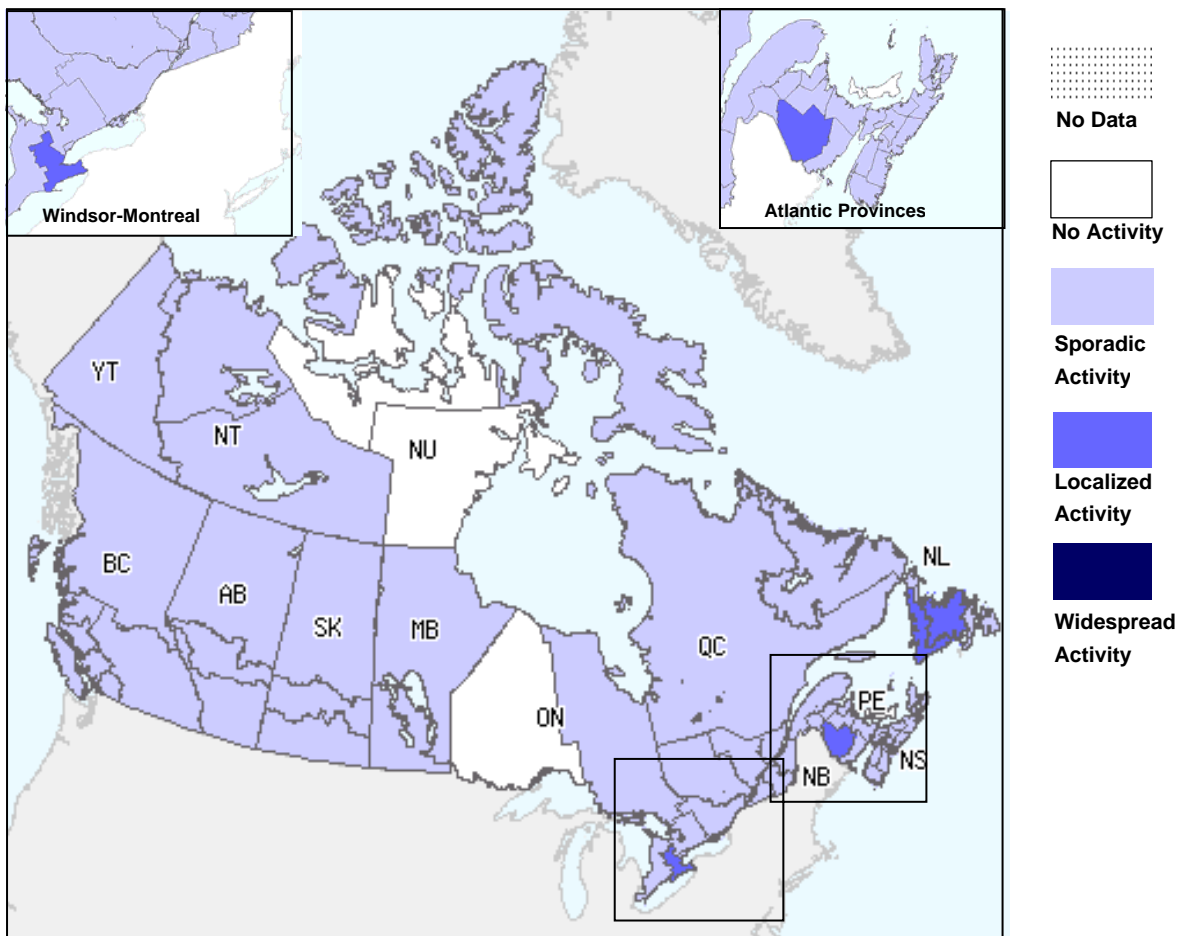
¹Proportion of cases with at least one underlying medical condition (excluding pregnancy) among those for whom the information was available. Missing/unknown information has been removed from all calculations except for data reported on underlying condition from MB and ON, where it was not possible to delineate missing information from absence of underlying condition. For these two provinces, missing information has been included in the denominator. This may have affected the observed proportion this week. ²Percent of pregnant women among women 15 to 44 years of age. Note that Ontario retrospectively provided information on pregnant women this week. †Note that due to reporting delays, some PTs reported retrospectively on first wave cases.

Overall Influenza Summary - Week 49 (December 6 to December 12, 2009)

At the national level, the overall influenza activity continued to decrease this week. All FluWatch influenza indicators declined for at least the fourth consecutive week. The ILI consultation rate was even below the expected range for this time of the year.

On week 49, only four regions in ON, NB & NL reported localized activity and none have reported widespread activity. The 28 influenza outbreaks reported this week were all in schools and occurred in QC (27) and NB (1). Note that this is the first year that all the provinces and territories are reporting on influenza outbreaks in schools (greater than 10% absenteeism on any day most likely due to ILI) which is increasing considerably the total number of outbreaks reported compared to previous years.

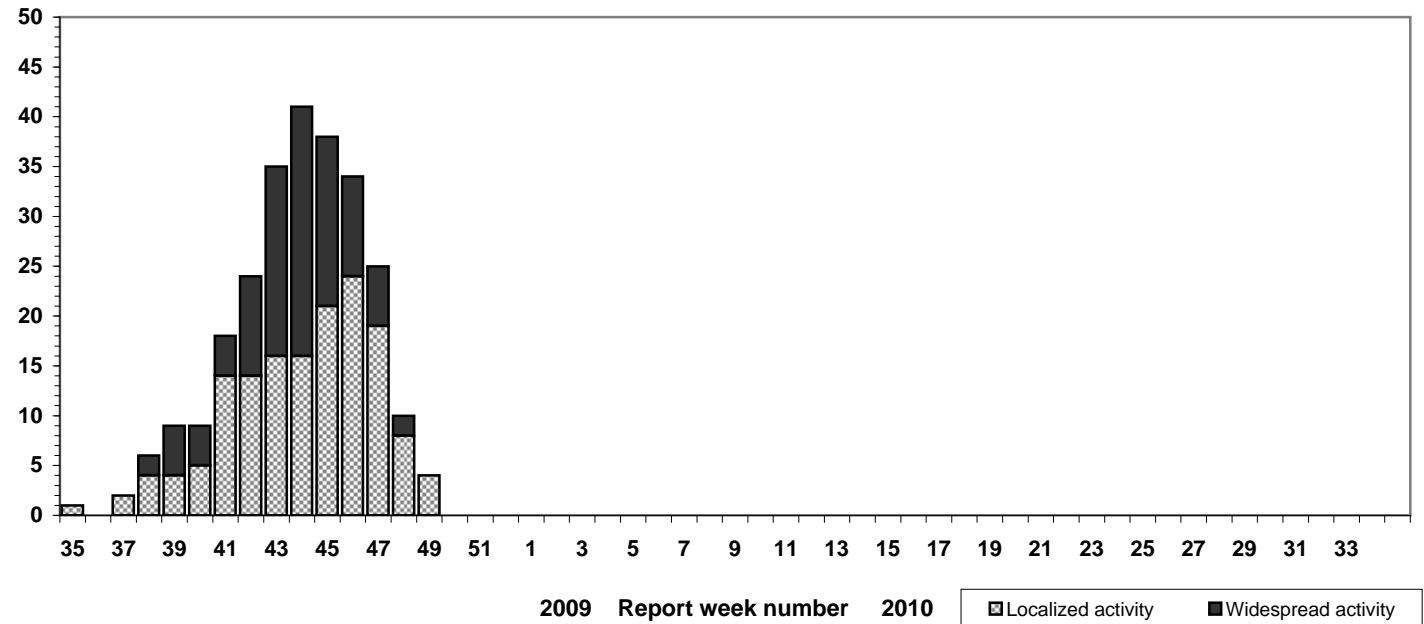
Map of overall Influenza activity level by provinces and territories, Week 49, Canada



Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2009-2010 (N=54)

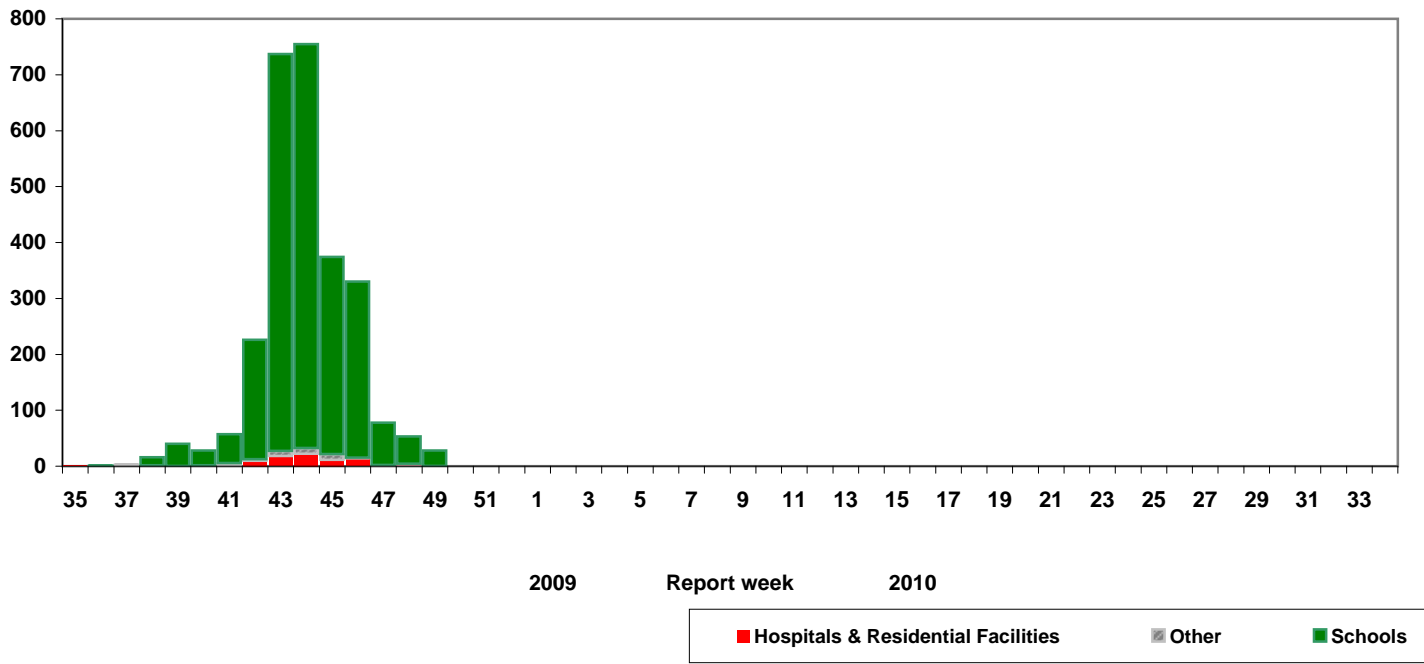
Number of regions



† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

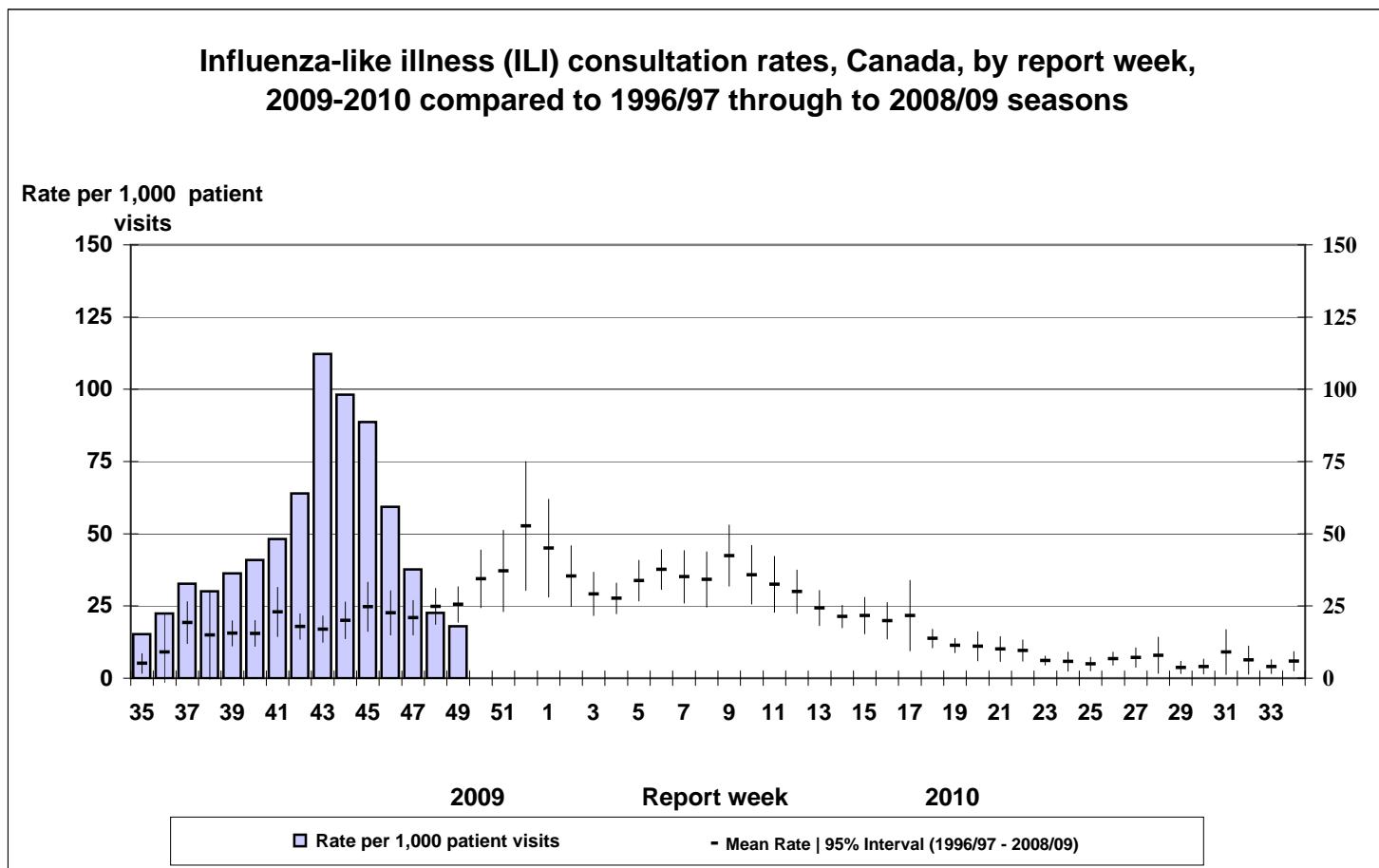
Overall Number of Influenza Outbreaks, Canada, by Report Week, 2009-2010

Number of outbreaks



ILI consultation rate

This week, the national ILI consultation rate was 18 consultations per 1,000 patient visits (see ILI graph) which was significantly lower compared to the previous weeks and even below the expected range for this time of the year. All provinces and territories had lower ILI consultation rates compared to their respective ILI rates in the previous weeks. Those under 20 years of age still had the highest consultation rates, with 57 and 20 per 1,000 patient visits among children under 5 years of age and among those 5 and 19 years of age, respectively.



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

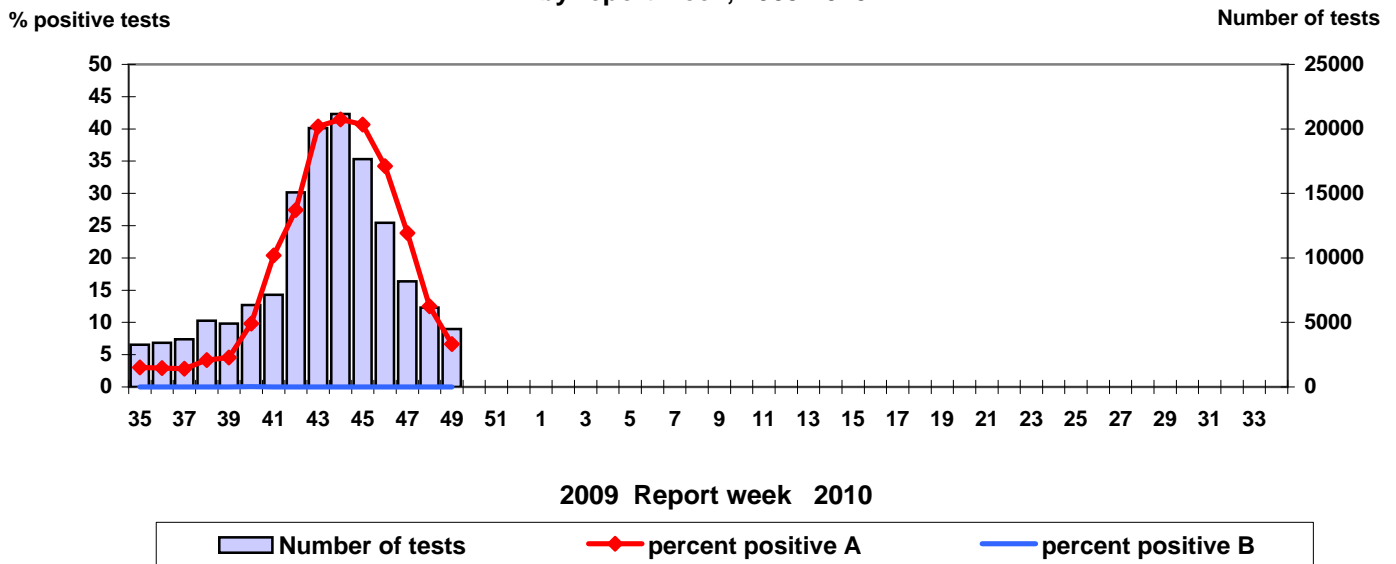
Paediatric Influenza Hospitalizations and Deaths

In week 49, 2 laboratory-confirmed influenza-associated paediatric hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. Both of these cases were due to Pandemic (H1N1) 2009. 1,318 hospitalizations had been reported since week 17 (April 26): 97.0% of these hospitalizations were due to Pandemic (H1N1) 2009. Since the beginning of the pandemic, eleven paediatric deaths due to Pandemic (H1N1) 2009 were reported through the IMPACT network among children under 16 years of age.

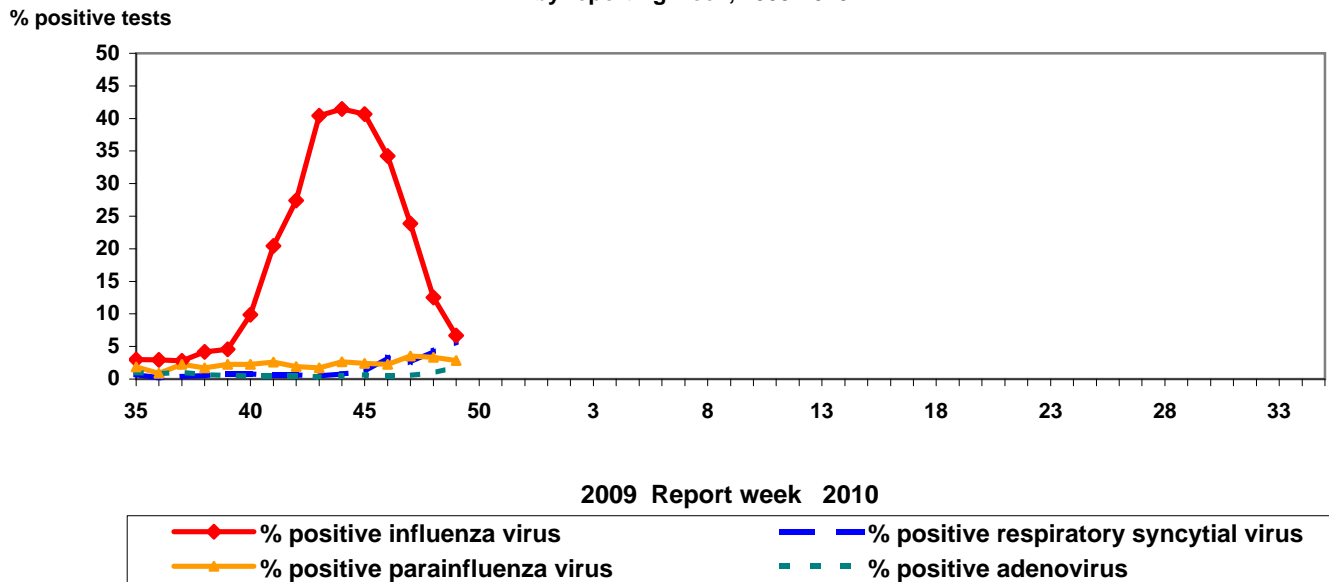
Laboratory Surveillance Summary

This week, the proportion of tests that were positive for influenza was 6.6% which represents a significant decrease compared to the previous weeks (see Tests table). All provinces and territories had a lower proportion of positive tests for influenza compared to the previous weeks except NB. This week, a total of 299 specimens tested positive for influenza (298 A and 1 B) and 99.2% of the positive influenza A subtyped specimens were Pandemic (H1N1) 2009. Note that QC reported 42 positive specimen for A/H3N2 since August 30, 2009.

Influenza tests reported and percentage of tests positive, Canada, by report week, 2009-2010



Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2009-2010



Weekly & Cumulative numbers of positive influenza specimens by Provincial Laboratories

Reporting provinces	Weekly (Dec. 6-12, 2009)						Cumulative (Aug. 30 to Dec. 12, 2009)					
	Influenza A					B	Influenza A					B
	A Total	A(H1)	A(H3)	Pand (H1N1)	A (NS)*	Total	A Total	A(H1)	A(H3)	Pand (H1N1)	A (NS)*	Total
BC	26	0	0	25	1	0	6338	0	1	5772	565	0
AB	31	0	0	27	4	0	5464	2	5	5362	95	0
SK	32	0	0	28	4	0	2590	0	1	2290	299	0
MB	33	0	0	30	3	0	1855	0	0	1730	125	0
ON	49	1	0	28	20	0	7821	2	0	3501	4318	4
QC	108	0	1	107	0	1	10637	4	42	10591	0	5
NB	11	0	0	11	0	0	1848	1	1	1827	19	1
NS	5	0	0	1	4	0	781	0	0	750	31	0
PE	0	0	0	0	0	0	102	0	0	100	2	0
NL	3	0	0	3	0	0	951	0	0	951	0	0
Canada	298	1	1	260	36	1	38387	9	50	32874	5454	10

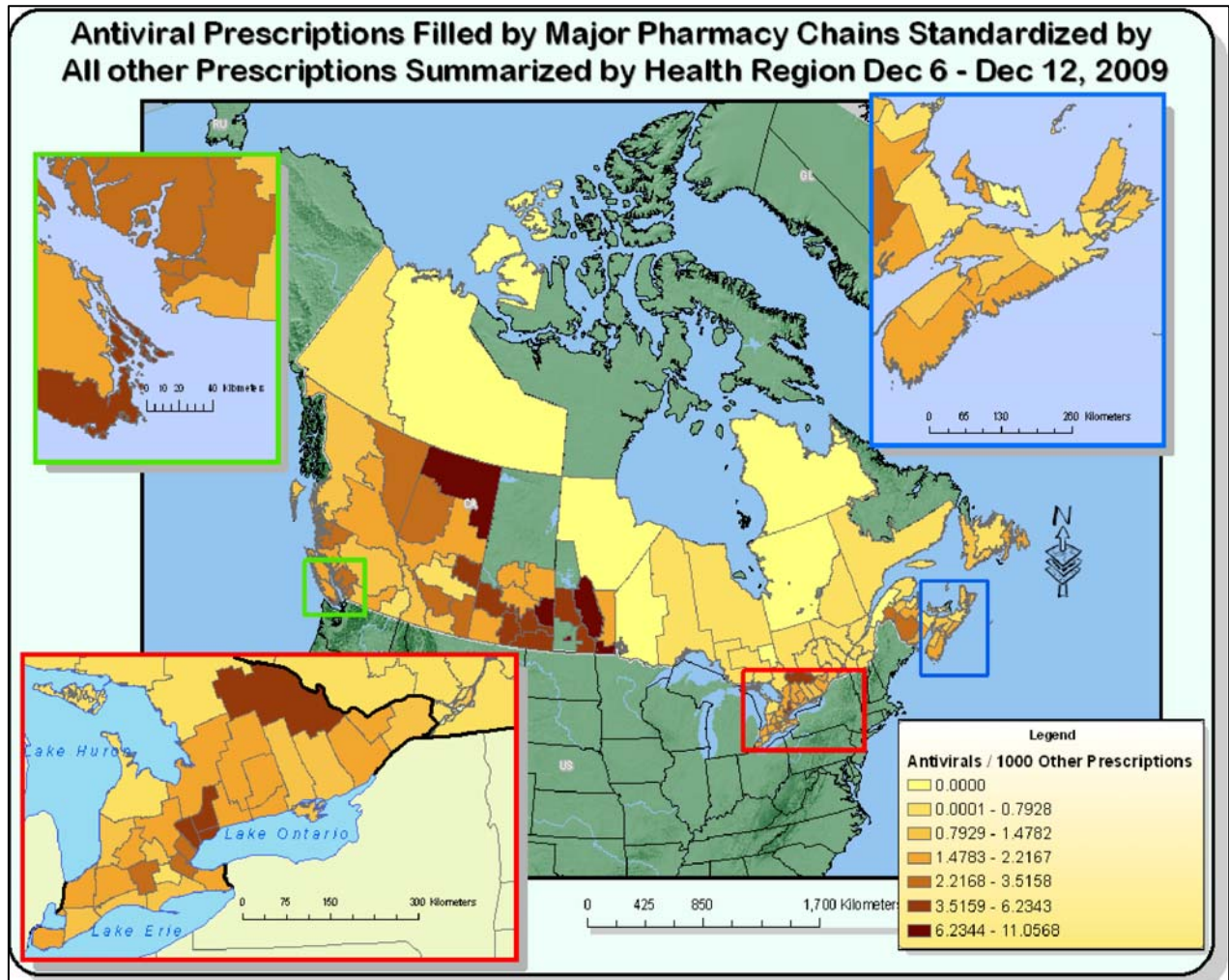
Specimens from NT, YT, and NU are sent to reference laboratories in other provinces.

Note: Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

* Not subtyped

Sale of antivirals (AV) in Canada

During week 49, antiviral prescriptions monitoring results demonstrated decreases in antiviral prescriptions among all provinces and territories.



Reference: H1N1 Antiviral and OTC Surveillance Weekly Report. CFEZID, PHAC.

Canadian situation

Antigenic Characterization

Since September 1, 2009, the National Microbiology Laboratory (NML) has antigenically characterized 518 Pandemic (H1N1) 2009 viruses and eight seasonal influenza viruses (two influenza A/H1N1, five H3N2, and one B virus) that were received from Canadian laboratories. Of the 518 Pandemic (H1N1) 2009 viruses characterized, 515 (99.4%) were antigenically related to A/California/7/2009, which is the pandemic reference virus selected by WHO as the Pandemic (H1N1) 2009 vaccine. Three viruses (0.6%) tested showed reduced titer with antisera produced against A/California/7/09. Sequence analysis of the HA showed that the two viruses with reduced titer did not have the mutation at amino acid position D222G as reported by Norway. Of the five seasonal influenza A (H3N2) viruses characterized, one was related to A/Brisbane/10/07, which is the influenza A/H3N2 component recommended for the 2009-10 influenza vaccine and four viruses were antigenically related to A/Perth/16/09, which is the WHO recommended influenza A (H3N2) component for the 2010 Southern Hemisphere vaccine.

Antiviral Resistance

NML: Pandemic (H1N1) 2009 viruses tested so far have been sensitive to zanamivir (554 samples) but resistant to amantadine (580 samples).

NML/Provinces: Seven cases of oseltamivir resistant Pandemic (H1N1) 2009 were reported to date in Canada: one in Alberta, four in Ontario and two in Quebec.

International update

Global information

WHO: Worldwide more than 208 countries and overseas territories or communities have reported laboratory confirmed cases of Pandemic (H1N1) 2009, including at least 9,596 deaths. In the temperate zone of the northern hemisphere, Pandemic (H1N1) 2009 activity has passed its peak in North America and in parts of western, northern, and eastern Europe, but activity continued to increase in parts of central and south-eastern Europe, as well as in south and east Asia. Influenza transmission remained active in much of western and central Asia and there was evidence of Pandemic (H1N1) 2009 circulation in most regions of Africa. As many countries have stopped counting individual cases, particularly of milder illness, WHO believes the case count is likely to be significantly lower than the actual number of cases that have occurred. < http://www.who.int/csr/don/2009_12_11a/en/index.html >

Antiviral resistance: To date, 102 Pandemic (2009) H1N1 isolates worldwide have been found to be resistant to oseltamivir, all with the same H275Y mutation.

<http://www.who.int/csr/disease/swineflu/laboratory11_12_2009/en/index.html >

Geographic update

Europe: In Europe, geographically widespread transmission of Pandemic (H1N1) 2009 continued to be observed across the continent. With the exception of France where activity continued to increase, activity has peaked or passed its peak in much of western Europe. In northern Europe, intensity remained high, however activity has begun to decline in Norway, Sweden, and Denmark. Increasing activity continued to be observed in parts of central and south-eastern Europe. Further east, declining rates of illness have been observed. In the Russian Federation, influenza virus circulation remained active, but overall activity may have recently peaked. 99% of subtyped influenza A viruses in Europe were Pandemic (H1N1) 2009. Of note, detections of Respiratory Syncytial Virus in Europe have increased over the past four weeks which may partially account for elevated activity among young children.

<http://www.ecdc.europa.eu/en/activities/surveillance/EISN/Pages/EISN_Bulletin.aspx and <http://www.euroflu.org/index.php>>

United States: In United States active influenza virus transmission persisted but overall activity continued to decline for the fifth consecutive week. After 8 weeks of increases, proportional mortality due to pneumonia and influenza has begun to decrease but remained elevated above the epidemic threshold; weekly numbers of lab-confirmed hospitalizations and deaths have also recently begun to decline. So far, comparing transmission during the current winter season to transmission during the summer season, there appeared to be 2-3 times more hospitalized cases and deaths in the United States. Over 99% of all subtyped influenza A viruses being reported to CDC were 2009 Pandemic (H1N1) 2009.

<<http://www.cdc.gov/flu/weekly/> and <http://www.cdc.gov/h1n1flu/update.htm>>

Asia: In Western and Central Asia, influenza virus transmission remained active. In East Asia, influenza transmission remained variable. Influenza activity continued to increase in Japan and has recently begun to increase in Hong Kong SAR and Chinese Taipei both of which previously experienced a peak of transmission. Elevated but stable ILI activity has been reported in southern China, but declined in activity continued to be observed in northern China and Mongolia. A small number of seasonal influenza viruses continued to be detected in Asia but in decreasing amounts.

<<http://www.who.int/csr/disease/swineflu/updates/en/index.html>>

FluWatch reports include data and information from five main sources: laboratory reports of positive influenza tests in Canada; sentinel physician reporting of influenza-like illness (ILI); provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, school and work site absenteeism, and outbreaks; influenza-associated pediatric hospitalizations; WHO and other international reports of influenza activity.

The map shows influenza activity in the “influenza surveillance regions” † within each jurisdiction, as determined by the provincial/territorial epidemiologists.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

ILI definition for the 2009-2010 season

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.

Definitions of ILI/Influenza outbreaks for the 2009-2010 season

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

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification.

Residential institutions include but not limited to long-term care facilities (LTCF), prisons.

Other: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. workplace, closed communities.

Influenza Activity levels are defined as:

1 = No activity: i.e. no laboratory-confirmed influenza detections during the past four weeks, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza* with NO outbreaks detected within the influenza surveillance region†

3 = Localized: sporadically occurring ILI and lab confirmed influenza* together with outbreaks of ILI in schools and worksites or laboratory confirmed influenza in residential institutions occurring in less than 50% of the influenza surveillance region(s)†

4 = Widespread: sporadically occurring ILI and lab confirmed influenza* together with outbreaks of ILI in schools and worksites or laboratory confirmed influenza in residential institutions occurring in greater than or equal to 50% of the influenza surveillance region(s)†

* confirmation of influenza within the surveillance region at any time within the prior four weeks

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

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: <http://www.phac-aspc.gc.ca/fluwatch/index.html>. Ce rapport est disponible dans les deux langues officielles. Pour en recevoir un exemplaire dans l'autre langue chaque semaine, veuillez communiquer avec Estelle Arseneault, Division de l'immunisation et des infections respiratoires au (613) 952-8484.