

November 29, 2009 to December 5, 2009 (Week 48)

- At the national level, the overall influenza activity continued to decrease this week.
- All FluWatch influenza indicators declined for at least the third consecutive week. The ILI consultation rate was even within the expected range for this time of the year.
- The Pandemic (H1N1) 2009 strain accounted for nearly 100% of the positive influenza A subtyped specimens this week.
- The intensity of Pandemic (H1N1) 2009 in the population was moderate. A decline has been experienced by all provinces and territories as indicated in the continued decreasing number of reported hospitalized cases (307 vs. 804), ICU admissions (83 vs. 139) and deaths (33 vs. 56) reported this week. Hospitalized cases occurred in all provinces and territories (PTs) that reported this week except YT while the deaths were from all PTs except NB, PE, NT and NU. From August 30 to December 5, 2009, a total of 6,621 hospitalized cases including 1,041 (15.7%) cases admitted to an intensive care unit (ICU) as well as 292 (4.4%) deaths had been reported.

Pandemic (H1N1) 2009 virus Surveillance and Epidemiology

A total of 8,102 hospitalized cases including 1,332 (16.4%) cases admitted to ICU and 593 (7.3%) cases required ventilation as well as 369 (4.6%) deaths of Pandemic (H1N1) 2009 were reported to PHAC since the beginning of the pandemic. Core data was available for 7,322 (90.4%) hospitalizations, 1,283 (96.3%) ICU admissions and 348 (94.3%) deaths. All provinces and territories continued to show activity of Pandemic (H1N1) 2009 during the last week. A decline has been experienced by all provinces and territories as indicated in the continued decreasing number of reported hospitalized cases (307 vs. 804), ICU admissions (83 vs. 139) and deaths (33 vs. 56) reported this week. Compared to the first wave, BC, AB, YT, NT, and the Atlantic provinces have experienced intense activity levels during the second wave. On the other hand compared to the first wave, MB and NU have experienced lower hospitalization, ICU and death rates in the second wave. The proportion of severe cases (ICU admissions and deaths) among all hospitalized cases was slightly lower in the second wave than in the first wave. While the proportion of men who were hospitalized, admitted to ICU and died was slightly higher than for women during the second wave, the proportion of women for these indicators was higher than men in the first wave. Given this pattern, the cumulative crude hospitalization, ICU admission and mortality rates showed that men and women have been equally affected since the beginning of the pandemic. All age groups had experienced many fold higher rates for hospitalization (4 to 6 fold), ICU admission (2 to 5 fold) and mortality (1.5 to 5 fold) in the second wave than in the first wave. The under 5 year olds continued to have the highest hospitalization rates since the beginning of the pandemic while those 45 years of age and older had the highest mortality rates per 100,000 population. 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 10 times more likely to die compared to those without underlying medical conditions. Among the hospitalized cases, ICU admissions and deaths, chronic pulmonary disease (including asthma) was the most commonly reported underlying medical condition (34.3%, 37.1% and 41.8%, respectively). Immunosuppression (including cancer) (14.9%) and diabetes (14.0%) were also frequently reported among hospitalized cases, while ICU cases were also affected by diabetes (22.6%) and chronic heart disease (18.9%) and the fatal cases had immunosuppression (27.5%) and chronic heart disease (26.8%). Among all hospitalized cases reported from August 30 to December 5, 2009, 232 (4.0%) were among people of Aboriginal origin (186 First Nations, 22 Metis, 20 Inuit, and 4 with unknown Aboriginal subgroup). Of note, the cumulative crude hospitalization rate among people of Aboriginal origin was lower in the period from August 30 to December 5, 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 5, 2009†

Province/ Territory	This week (Nov. 29-Dec. 5, 2009)*			From August 30, 2009 to December 5, 2009**			Up to August 29, 2009**		
	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU admissions	Deaths
BC ¹	52	5	5	958	122	42	51	19	5
AB	40	6	5	1107	202	55	129	29	7
SK	2	2	1	29	25	9	23	12	4
MB ²	0	0	0	35	5	2	224	43	7
ON	115	35	9	1275	204	79	381	68	25
QC	67	26	10	2422	348	72	572	104	27
NB ¹	6	3	0	166	27	7	2	1	0
NS ¹	2	0	1	253	40	6	17	8	1
PE	2	0	0	49	9	0	1	0	0
NL ¹	17	5	1	262	49	16	3	1	0
YT	0	0	1	14	3	3	0	0	0
NT	1	1	0	46	7	1	6	0	0
NU	3	0	0	5	0	0	72	6	1
Canada	307	83	33	6621	1041	292	1481	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 from MB. † 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 5, 2009†

	From April to August 29, 2009			From Aug. 30, 2009 to Dec. 5, 2009			Cumulative (From April to Dec. 5, 2009)		
	Hospitalized cases (n=1,481)	ICU-admitted (n=291)	Deaths (n=77)	Hospitalized cases (n=5,841)	ICU-admitted (n=992)	Deaths (n=271)	Hospitalized cases (n=7,322)	ICU-admitted (n=1,283)	Deaths (n=348)
Females, %	51.5	57.4	62.3	49.2	49.0	46.9	49.7	50.9	50.3
Median age	23.0	37.0	51.0	29.0	47.0	54.0	28.0	45.0	52.5
Aboriginal status, %	20.3	16.1	11.7	4.0	6.0	7.4	7.3	8.3	8.3
Underlying medical conditions ¹ , %	47.1	57.5	65.3	52.4	60.8	67.4	50.5	59.9	66.8
	(646/1,373)	(157/273)	(49/75)	(1,366/2,608)	(455/748)	(126/187)	(2,012/3,981)	(612/1,021)	(175/262)
Pregnancy ² , %	28.0 (77/275)	19.7 (15/76)	28.6 (4/14)	18.9 (167/884)	9.0 (14/155)	0.0	21.1 (244/1,159)	12.6 (29/231)	8.9 (4/45)

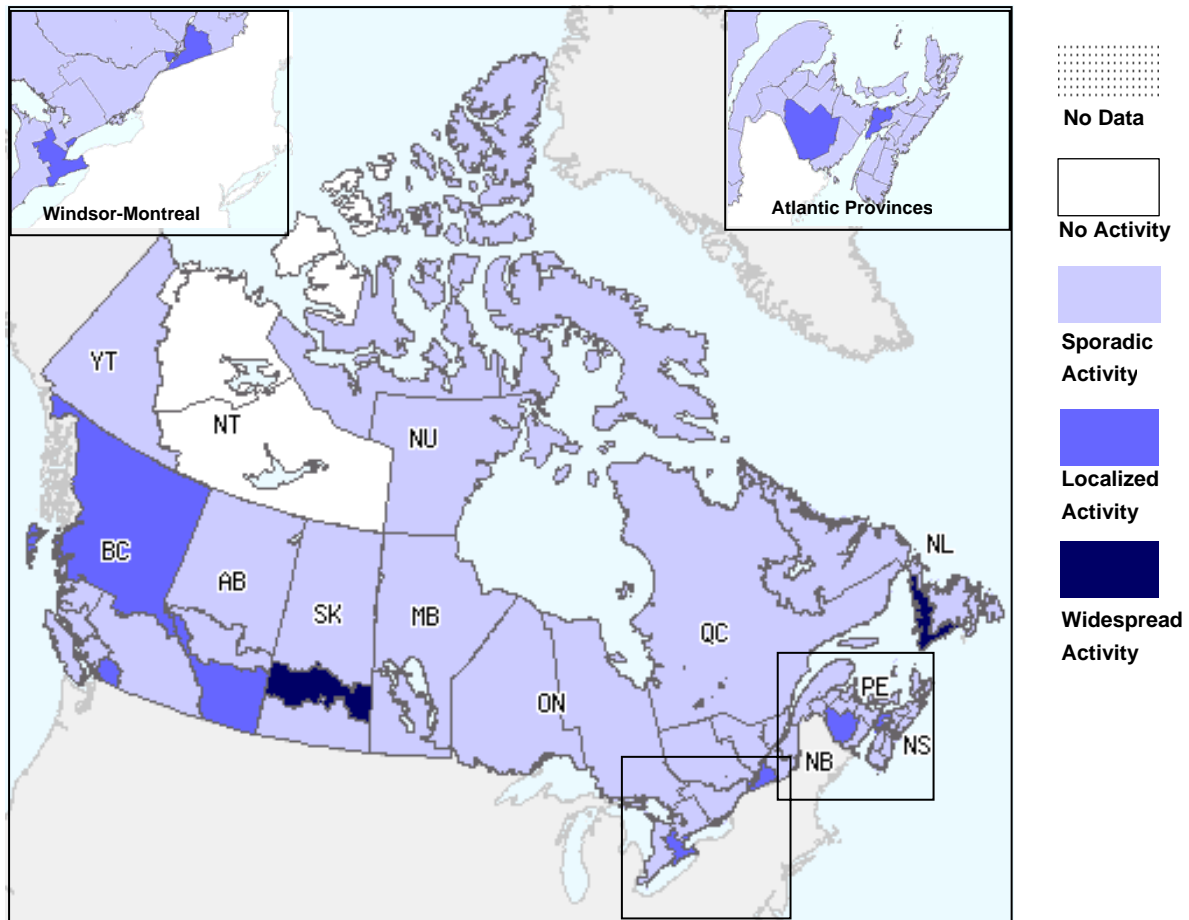
¹Proportion of cases with at least one underlying medical condition (excluding pregnancy) among those for whom the information was available. Missing/unknown information has been removed from all calculations except for data reported on underlying condition from MB and ON, where it was not possible to 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 48 (November 29 to December 5, 2009)

The overall influenza activity continued to decrease this week at the national level. All FluWatch influenza indicators declined for the third consecutive week.

Two regions reported widespread activity in SK & NL and eight regions in BC, AB, ON, QC, NB & NS reported localized activity, while forty-two regions reported sporadic activity in BC, AB, SK, MB, ON, QC, NB, PE, NS, NL, YT & NU and two regions in NT reported no activity. The 53 influenza outbreaks reported this week were all in schools except 3 in hospitals and/or residential facilities (AB, QC & NL) and 1 in an unspecified location (NS). The school outbreaks were in QC (38), NB (5), NS (4), AB (7), and BC (2). 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.

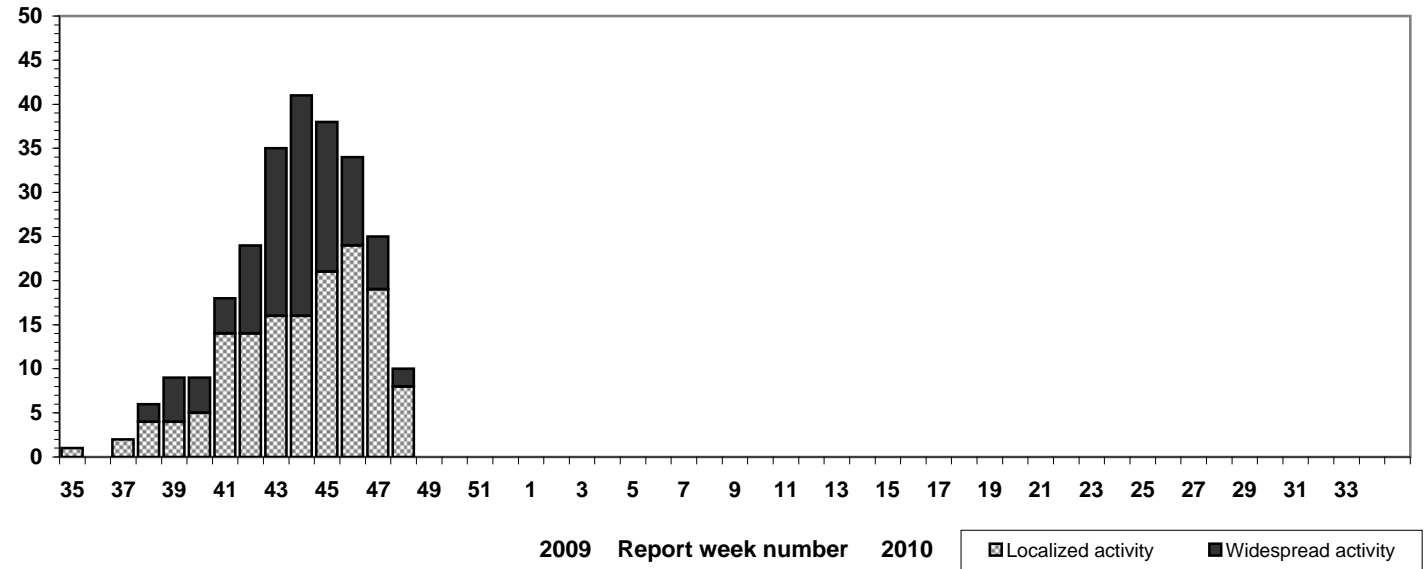
Map of overall Influenza activity level by provinces and territories, Week 48, Canada



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)

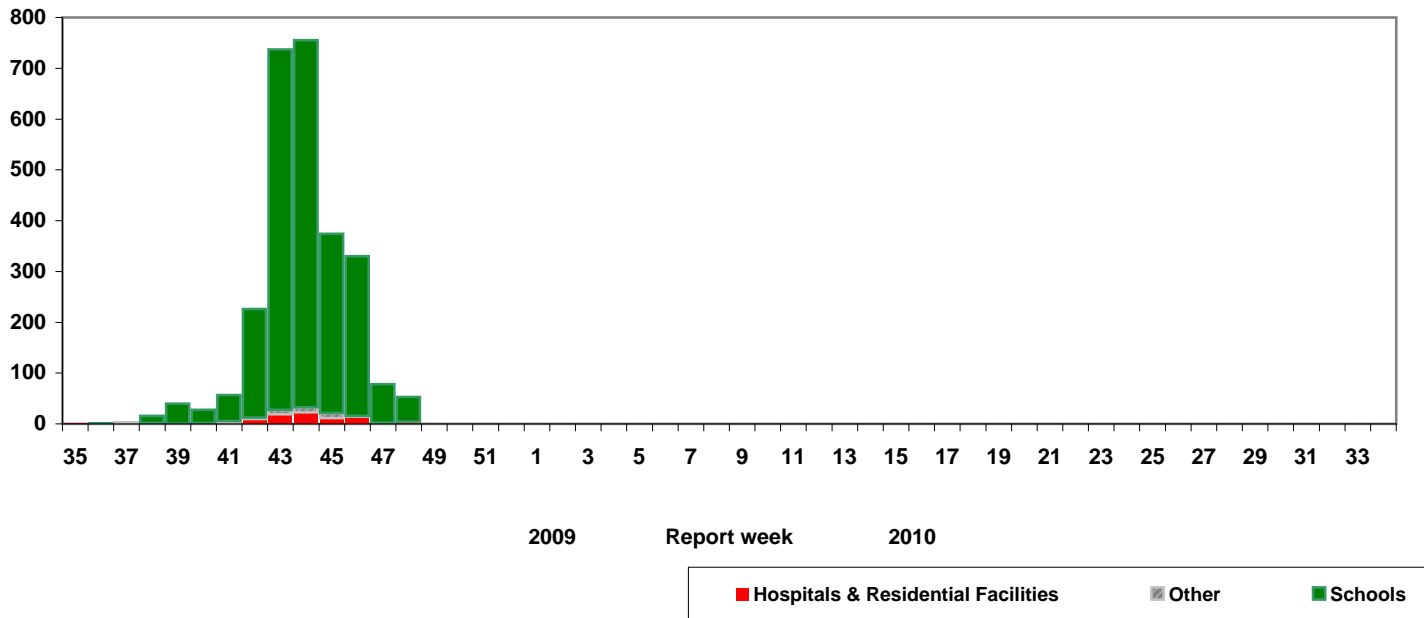
Number of regions



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

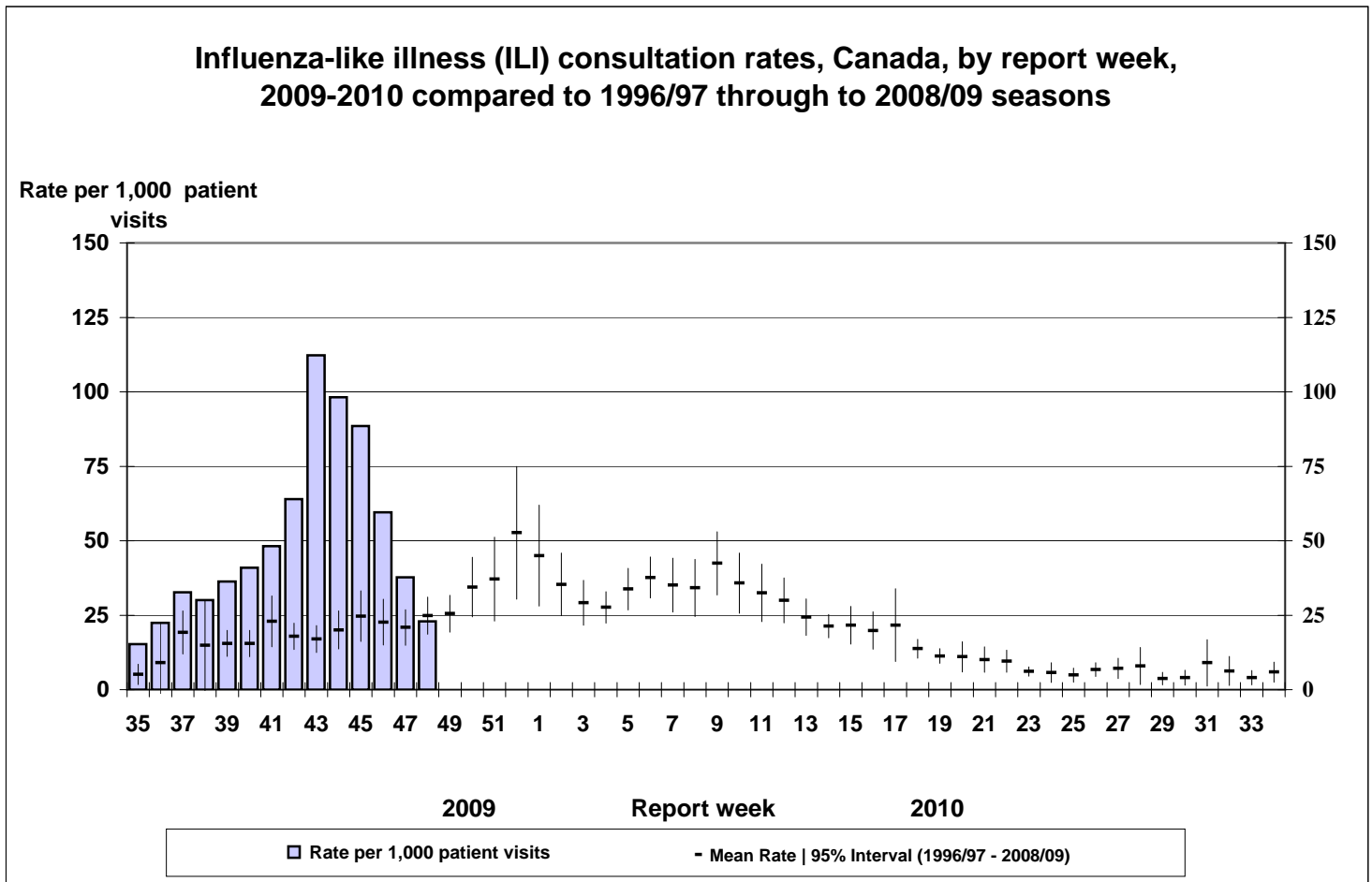
Overall Number of Influenza Outbreaks, Canada, by Report Week, 2009-2010

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 within the expected range for this time of the year. All provinces and territories had lower ILI consultations rates compared to their respective ILI rates in the previous week except AB and MB. Those under 20 years of age still had the highest consultation rates, with 29 and 37 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.

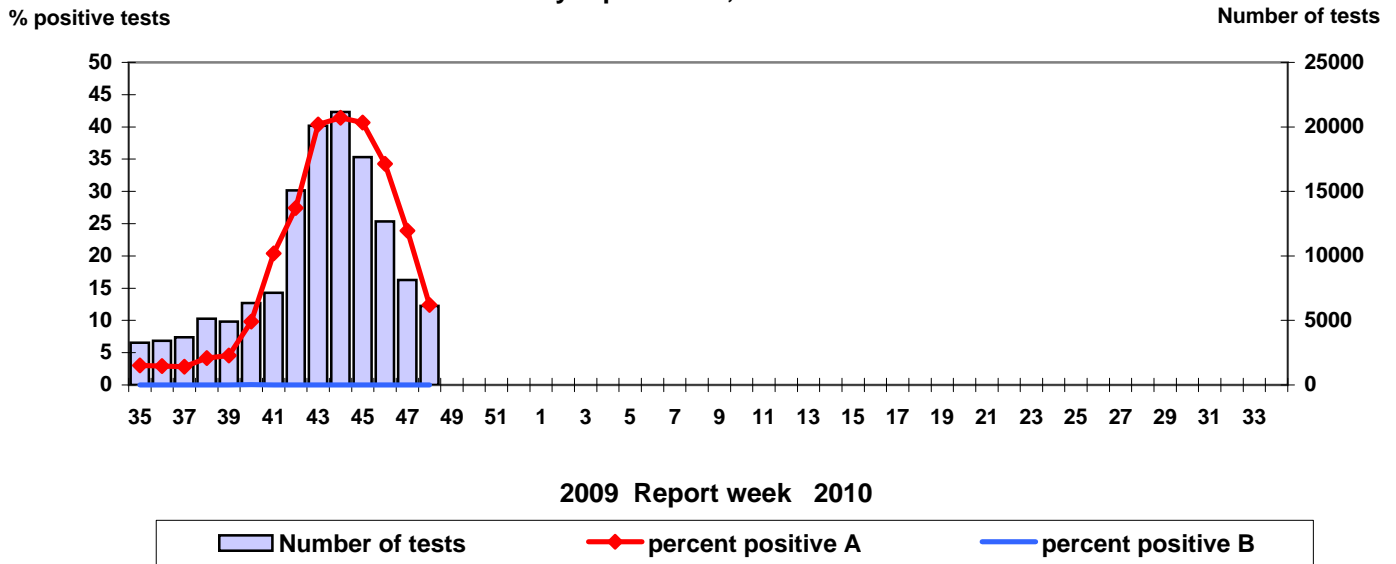
Paediatric Influenza Hospitalizations and Deaths

In week 48, 25 laboratory-confirmed influenza-associated paediatric hospitalizations and 1 death were reported through the Immunization Monitoring Program Active (IMPACT) network. All of these cases were due to Pandemic (H1N1) 2009. 1,306 hospitalizations had been reported since week 17 (April 26): 97.0% of these hospitalizations were officially due to Pandemic (H1N1) 2009. Since the beginning of the pandemic, ten paediatric deaths due to Pandemic (H1N1) 2009 were reported through the IMPACT network among children under 16 years of age. The death reported this week was in an infant from AB who had no known medical conditions.

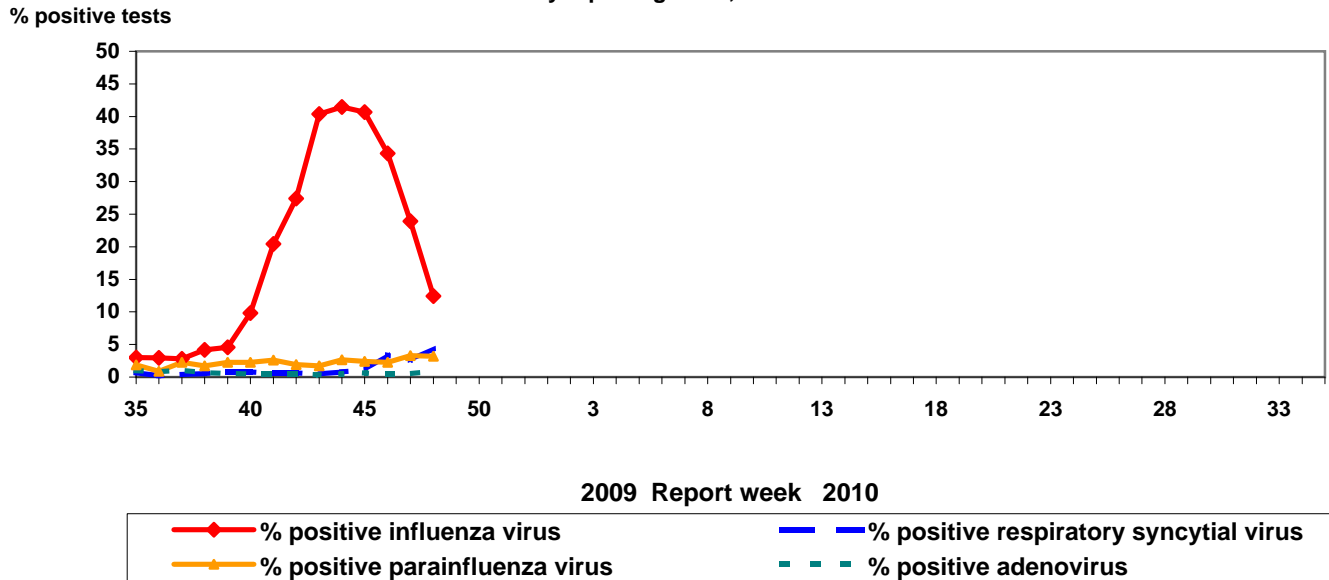
Laboratory Surveillance Summary

This week, the proportion of tests that were positive for influenza was 12.4% 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 MB and NS. This week, a total of 760 specimens tested positive for influenza (all A) and 99.9% of the positive influenza A subtyped specimens were Pandemic (H1N1) 2009. Note that QC reported this week 1 positive specimen for A/H3N2 and forty-one 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 (Nov. 29-Dec. 5, 2009)						Cumulative (Aug. 30 to Dec. 5, 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	50	0	0	49	1	0	6312	0	1	5747	564	0
AB	50	0	0	48	2	0	5402	2	5	5304	91	0
SK	73	0	0	63	10	0	2558	0	1	2262	295	0
MB	114	0	0	97	17	0	1822	0	0	1700	122	0
ON	105	0	0	66	39	0	7772	1	0	3473	4298	4
QC	308	0	1	307	0	0	10526	1	41	10484	0	4
NB	29	0	0	29	0	0	1837	1	1	1816	19	1
NS	17	0	0	14	3	0	776	0	0	749	27	0
PE	8	0	0	8	0	0	110	0	0	108	2	0
NL	6	0	0	6	0	0	948	0	0	948	0	0
Canada	760	0	1	687	72	0	38063	5	49	32591	5418	9

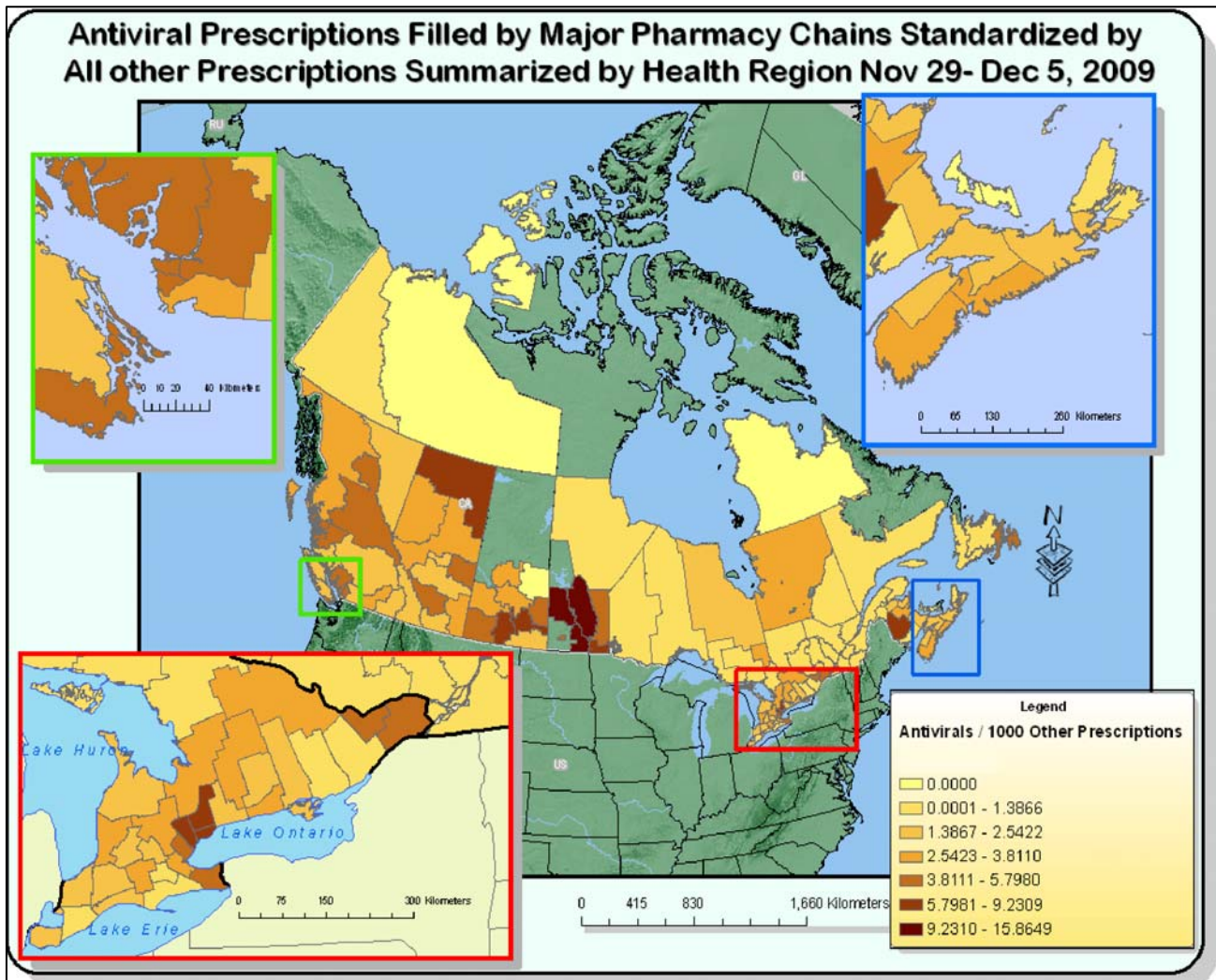
Specimens from NT, YT, and NU are sent to reference laboratories in other provinces.

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 48, 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 433 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 433 pandemic influenza A (H1N1) viruses characterized, 430 (99.3%) 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 (0.7%) 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 222 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. 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 (440 samples) but resistant to amantadine (441 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 207 countries and overseas territories or communities have reported laboratory confirmed cases of Pandemic (H1N1) 2009, including at least 8,768 deaths. The early winter influenza season continued to intensify across central Europe and in parts of central, eastern, and southern Asia. Disease activity has peaked and was declining in North America and had either recently peaked or was currently peaking in much of western and northern Europe.

Virus mutation: A mutation of D222G in the amino acid sequence of the haemagglutinin protein of the pandemic virus has been observed in Norway, Brazil, China, Chinese Taipei, Finland, France, Italy, Japan, Mexico, Spain, Ukraine, and USA, in both severe and mild cases.

Antiviral resistance: To date, 96 Pandemic (H1N1) 2009 isolates worldwide have been found to be resistant to oseltamivir – 23 of these isolates were detected in the United States.

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

Northern Hemisphere

United States: In the United States, influenza transmission remains very active and geographically widespread with disease activity appearing to have peaked in all areas of the country. States reporting widespread flu activity decreased from 43 to 32 and national visits to doctors for ILI declined. Flu-related hospitalizations and deaths declined slightly, but are still very well above expected levels for this period. The proportion of deaths attributed to pneumonia and influenza was above the epidemic threshold for the eighth consecutive week. Some reports indicate that activity has peaked in most regions.

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

Europe: In Europe, widespread and increasing transmission of pandemic influenza virus was observed across much of the continent and most countries that were not yet experiencing elevated ILI activity in the last few weeks, have seen a rapid increase in ILI. Very high activity is seen in Sweden, Norway, Moldova and Italy. Over 99% of subtyped influenza A viruses in Europe were pandemic H1N1 2009. Impact on health care services is severe in Albania and Moldova. Some countries seem to have peaked already: Belgium, Bulgaria, Belarus, Ireland, Luxemburg, Norway, Serbia, Ukraine and Iceland.

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

United Kingdom: Influenza rates increased slightly in England while it decreased or remained stable in Scotland, Wales and Northern Ireland. Modelling gives an estimate of 46,000 (range 23,000 – 99,000) new cases in England in week 47. The estimated number of new cases has decreased in most regions and age groups. Twenty-two of 3732 pandemic viruses tested have been confirmed to carry a mutation which confers resistance to the antiviral drug oseltamivir. Possible person-person transmission of resistant virus has occurred in an outbreak on a hospital ward. The majority of pandemic influenza cases continue to be mild, with 240 cumulative deaths. Fewer new patients were hospitalized than in the previous week.

<<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1242949541993?p=1242949541993>>

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.