

November 22, 2009 to November 28, 2009 (Week 47)

- Nationally, the activity levels reported this week continued to decrease compared to the previous week.
- All FluWatch influenza indicators declined during week 47.
- 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 moderately high with 804 hospitalizations, 139 ICU admissions and 56 deaths reported this week. Hospitalized cases occurred in all provinces and territories (P/T) that reported this week while the deaths were from all P/T except PE and 3 territories. From August 30 to November 28, 2009, a total of 6,314 hospitalized cases including 957 (15.2%) cases admitted to an intensive care unit (ICU) as well as 259 deaths had been reported.
- The proportion of severe cases (ICU admissions and deaths) among all hospitalized cases was lower in the second wave than in the first wave.
- A slight decline has been experienced in all provinces and territories as indicated in the continued decreasing number of reported hospitalized cases, ICU admissions and deaths reported this week.

Pandemic (H1N1) 2009 virus Surveillance and Epidemiology

A total of 7,795 hospitalized cases including 1,249 cases admitted to ICU and 564 cases required ventilation as well as 336 deaths of Pandemic (H1N1) 2009 were reported to PHAC since the beginning of the Pandemic. Core data was available for 7,058 (90.5%) hospitalizations, 1,205 (96.5%) ICU admissions and 319 (95.0%) deaths. The number of deaths decreased slightly this week (56 vs. 61), while the number of ICU admissions (139 vs. 243) and number of hospitalizations (804 vs. 1,554) declined significantly. Since August 30, 2009, all provinces and territories except MB and NU had cumulative crude hospitalization rates that surpassed the respective hospitalization rates in the period before August 29, 2009.

The proportion of severe cases (ICU admissions and deaths) among all hospitalized cases was lower in the second wave than in the first wave. Slightly more men were hospitalized, admitted to ICU and died than women during the period from August 30 to November 28, 2009 compared to the first wave. All age groups had many fold higher hospitalization, ICU and mortality rates in the second wave compared to the first wave. In particular, people over 45 years of age and children between 1 and 4 years of age had hospitalization rates in the second wave that were five times higher than their respective hospitalization rates in the first wave. Mortality rates among the people over 45 years of age and among children under 1 year of age were three to four times higher in the second wave as compared to their respective mortality rates in the first wave. The under 20 year olds continued to have the highest hospitalization rates while those 45 years of age and older and children under 1 year of age had the highest mortality rates per 100,000 population. Children under 1 year of age also had the highest ICU admission rate. Comparing the rates of hospitalization, ICU admissions and deaths between those with underlying medical conditions and those without during the period from August 30 to November 28, 2009, those with underlying medical conditions were 5 times more likely to be hospitalized, nearly 8 times more likely to be admitted to ICU and 10 times more likely to die compared to those without underlying medical conditions (data not shown). Please note that with the increased number of cases reported in the last few weeks, important changes in the trends and characteristics of the populations affected may be seen.

Weekly and cumulative numbers of hospitalized cases, ICU admissions and deaths among Pandemic (H1N1) 2009 confirmed cases, Canada, to November 28, 2009

Province/ Territory	This week (Nov. 22-28, 2009)*			From August 30, 2009 to November 28, 2009**			Up to August 29, 2009**†		
	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU admissions	Deaths
BC ¹	99	14	8	906	117	37	51	19	5
AB	93	6	7	1067	196	50	129	29	7
SK	8	7	1	27	23	8	23	12	4
MB ²	0	0	0	35	5	2	224	43	7
ON	216	46	16	1161	169	70	380	68	25
QC	299	42	13	2355	322	62	572	104	27
NB ¹	31	7	1	160	24	7	2	1	0
NS	46	10	2	250	39	5	18	9	1
PE	1	2	0	47	9	0	1	0	0
NL ¹	10	5	8	245	44	15	3	1	0
YT	0	0	0	14	3	2	0	0	0
NT	1	0	0	45	6	1	6	0	0
NU ³	0	0	0	2	0	0	72	6	1
Canada	804	139	56	6314	957	259	1481	292	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. ³The total number of hosp. cases decreased for NU this week due to a duplicate count.

† Note that due to reporting delays, some PTs are reporting retrospectively on first wave's 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 November 28, 2009†

	From April to August 29, 2009			From Aug. 30, 2009 to Nov. 28, 2009			Cumulative: From April to Nov. 28, 2009		
	Hospitalized cases (n=1,481)	ICU-admitted (n=292)	Deaths (n=77)	Hospitalized cases (n=5,577)	ICU-admitted (n=913)	Deaths (n=242)	Hospitalized cases (n=7,058)	ICU-admitted (n=1,205)	Deaths (n=319)
Females, %	51.5	57.5	62.3	49.4	49.1	48.3	49.9	51.1	51.7
Median age	23.0	37.0	51.0	28.0	47.0	53.0	27.0	45.0	52.0
Aboriginal status,	20.3	16.1	11.7	3.8	6.4	7.0	7.3	8.7	8.2
Underlying medical conditions ¹ , %	47.0 (646/1,374)	57.3 (157/274)	65.3 (49/75)	52.2 (1,295/2,480)	61.0 (426/698)	66.7 (110/165)	50.4 (1,941/3,854)	60.0 (583/972)	66.3 (159/240)
Pregnancy ² , %	28.3 (78/276)	20.8 (16/77)	28.6 (4/14)	16.4 (139/847)	9.1 (13/142)	0.0	19.3 (217/1,123)	13.2 (29/219)	9.3 (4/43)

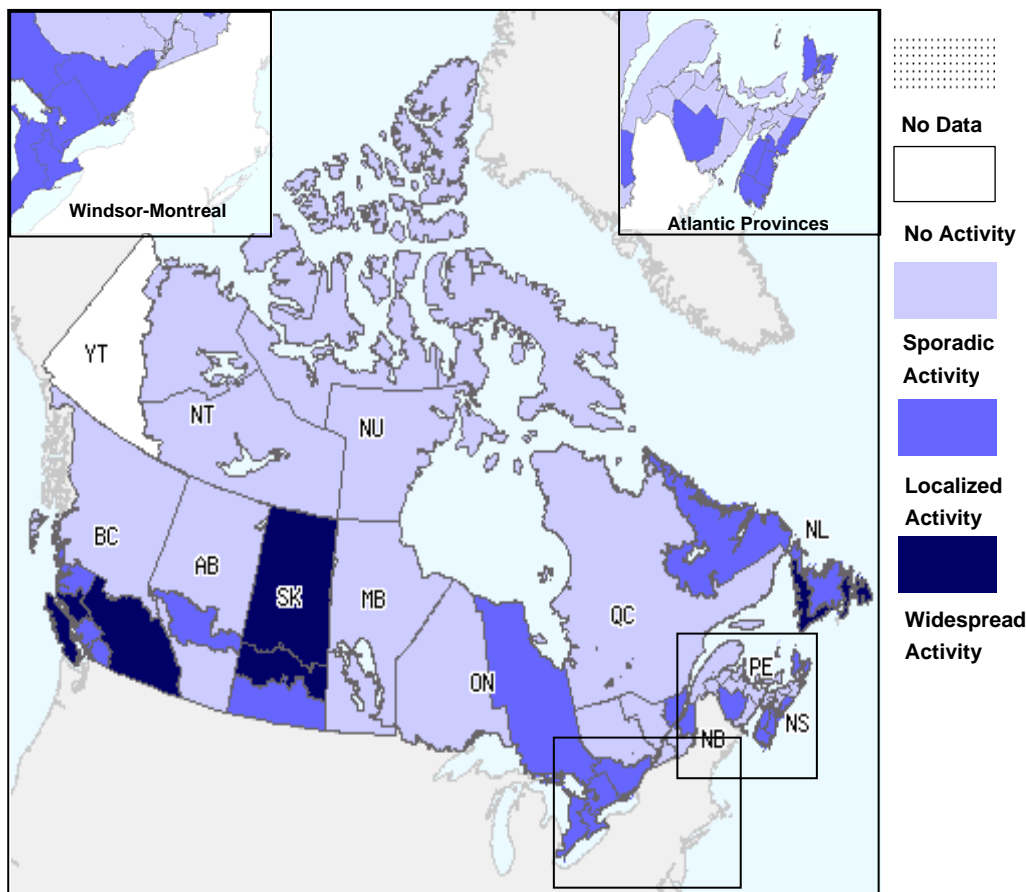
¹ Proportion of cases with at least one underlying medical condition (excluding pregnancy) among those for whom the information was available. Missing/unknown information has been removed from all calculations except for data reported on underlying condition from MB and ON, where it was not possible 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. ² Percent of pregnant women among women 15 to 44 years of age. † Note that due to reporting delays, some PTs are reporting

Overall Influenza Summary - Week 47 (November 22 to November 28, 2009)

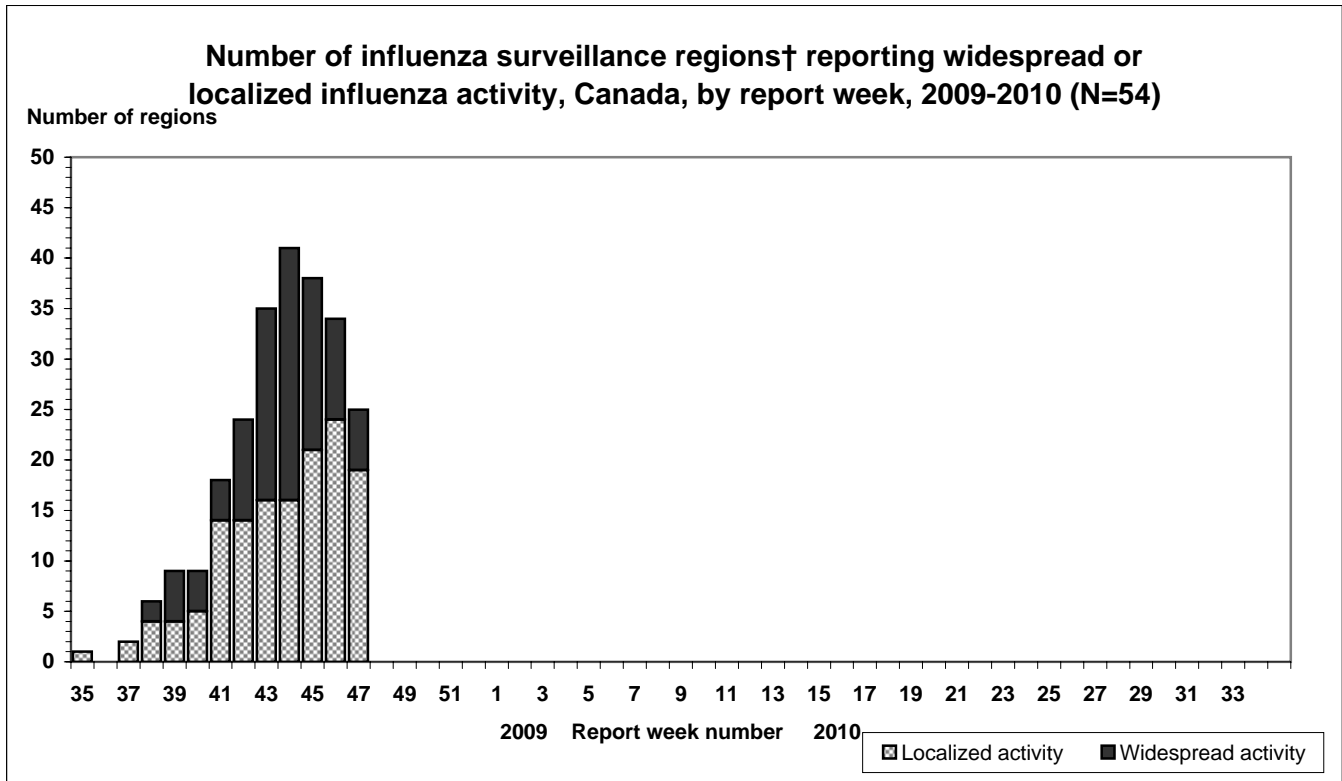
Nationally, the activity levels reported this week continued to decrease compared to the previous week. All influenza indicators declined during week 47.

Six regions reported widespread activity in BC, SK, & NL and nineteen regions in BC, AB, SK, ON, QC, NB, NS & NL reported localized activity, while twenty-eight regions reported sporadic activity in BC, AB, MB, ON, QC, NB, NS, PE, NT & NU and one region in YT reported no activity. The 78 influenza outbreaks reported this week were all in schools except 1 in a long term care facility (SK) and 1 in an unspecified location (SK). The schools outbreaks were in QC (47), BC (10), NS (9), AB (7), and NB (3). 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.

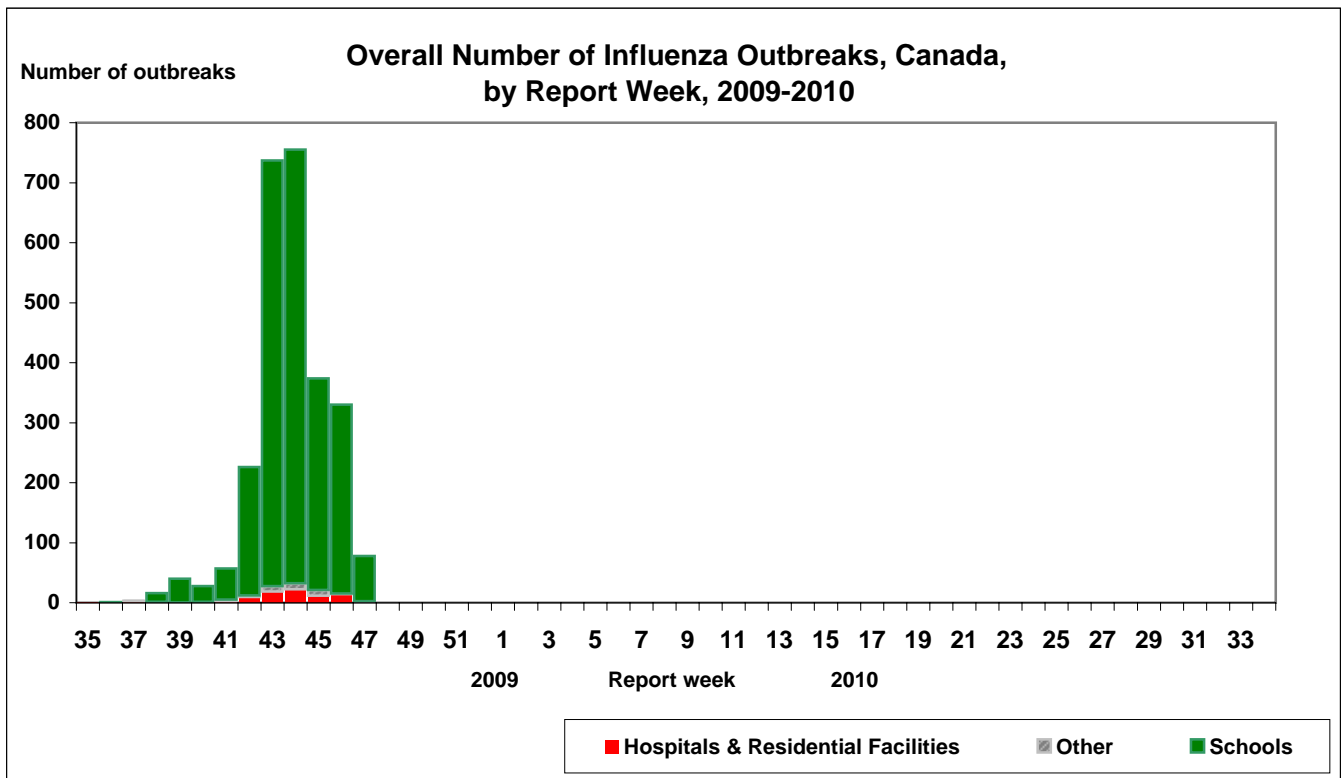
Map of overall Influenza activity level by provinces and territories, Week 47, Canada



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.

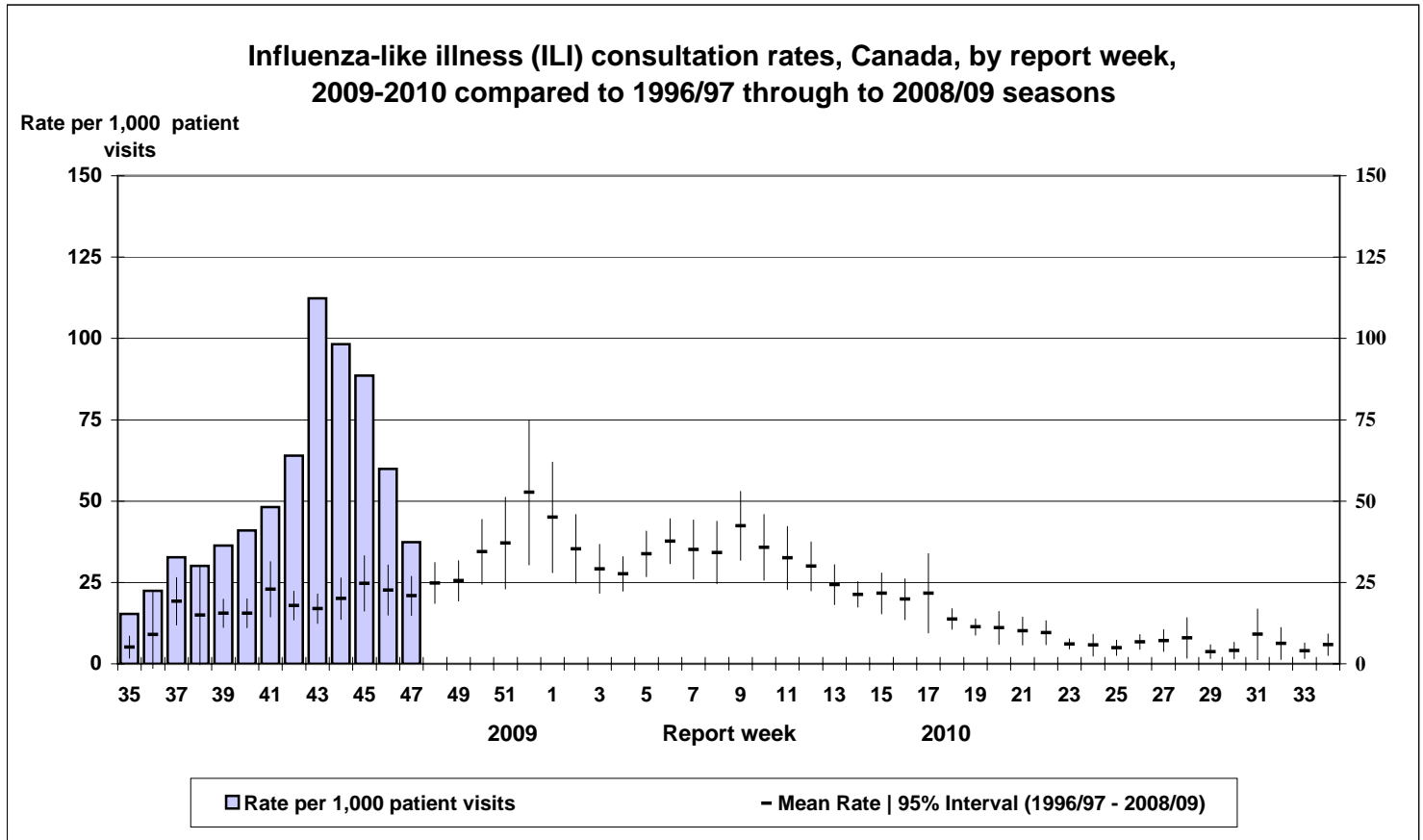


† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.



ILI consultation rate

This week, the national ILI consultation rate was 37 consultations per 1,000 patient visits (see ILI graph) which was significantly lower compared to the previous weeks. Provinces and territories that had lower ILI consultations rates compared to their ILI rates in previous weeks included NL, PE, ON, MB, AB and YK. Those under 20 years of age still had the highest consultation rates, with 96 and 107 per 1,000 patient visits among children under 5 years of age and among those 5 and 19 years of age, respectively.



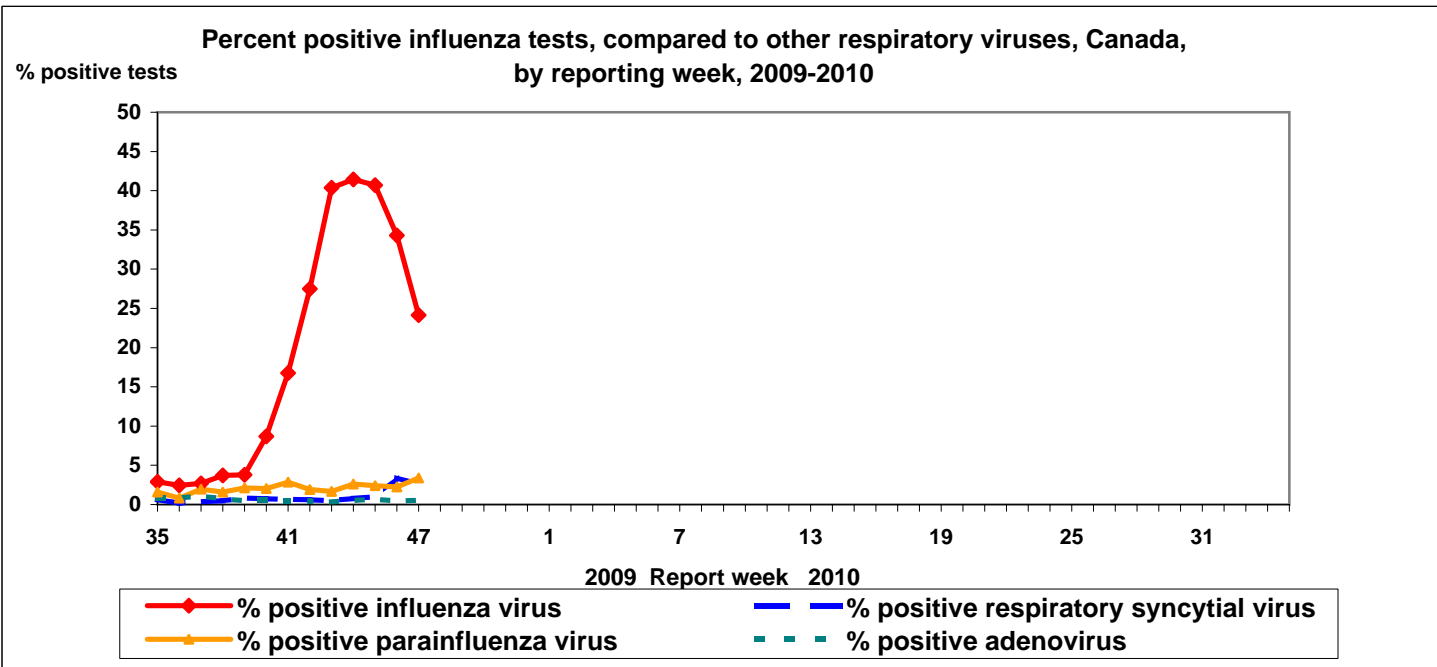
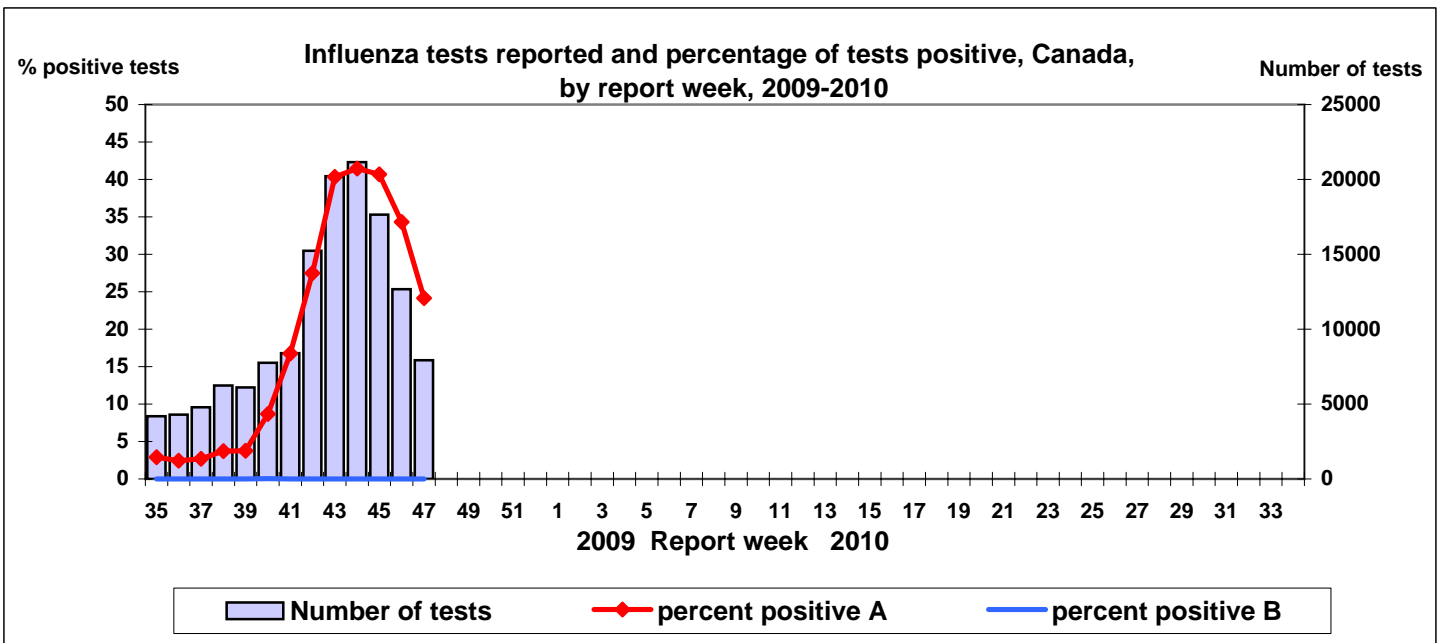
Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

Paediatric Influenza Hospitalizations and Deaths

In week 47, 21 laboratory-confirmed influenza-associated paediatric hospitalizations and 1 death (QC) were reported through the Immunization Monitoring Program Active (IMPACT) network. All of these cases were reported as Pandemic (H1N1) 2009. 1,278 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, nine deaths due to Pandemic (H1N1) 2009 had been reported through the IMPACT network among children under 16 years of age. The death reported this week was in a 10-16 year old who had multiple underlying medical conditions.

Laboratory Surveillance Summary

This week, the proportion of tests that were positive for influenza was 24.2% which is lower than the four 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. This week, a total of 1,915 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 since August 30, 2009.



Weekly & Cumulative numbers of positive influenza specimens by Provincial Laboratories

Reporting provinces	Weekly (Nov. 22-28, 2009)						Cumulative (Aug. 30 to Nov. 28, 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	154	0	0	153	1	0	6262	0	1	5698	563	0
AB	74	0	0	63	11	0	5528	1	1	5044	482	0
SK	188	0	0	170	18	0	2485	0	1	2199	285	0
MB	377	0	0	360	17	0	1708	0	0	1603	105	0
ON	187	0	0	86	101	0	7636	1	0	3376	4259	4
QC	774	0	1	773	0	0	10218	1	40	10177	0	4
NB	121	0	0	121	0	0	1808	1	1	1787	19	1
NS	22	0	0	20	2	0	759	0	0	735	24	0
PE	1	0	0	1	0	0	98	0	0	96	2	0
NL	17	0	0	17	0	0	942	0	0	942	0	0
Canada	1915	0	1	1764	150	0	37444	4	44	31657	5739	9

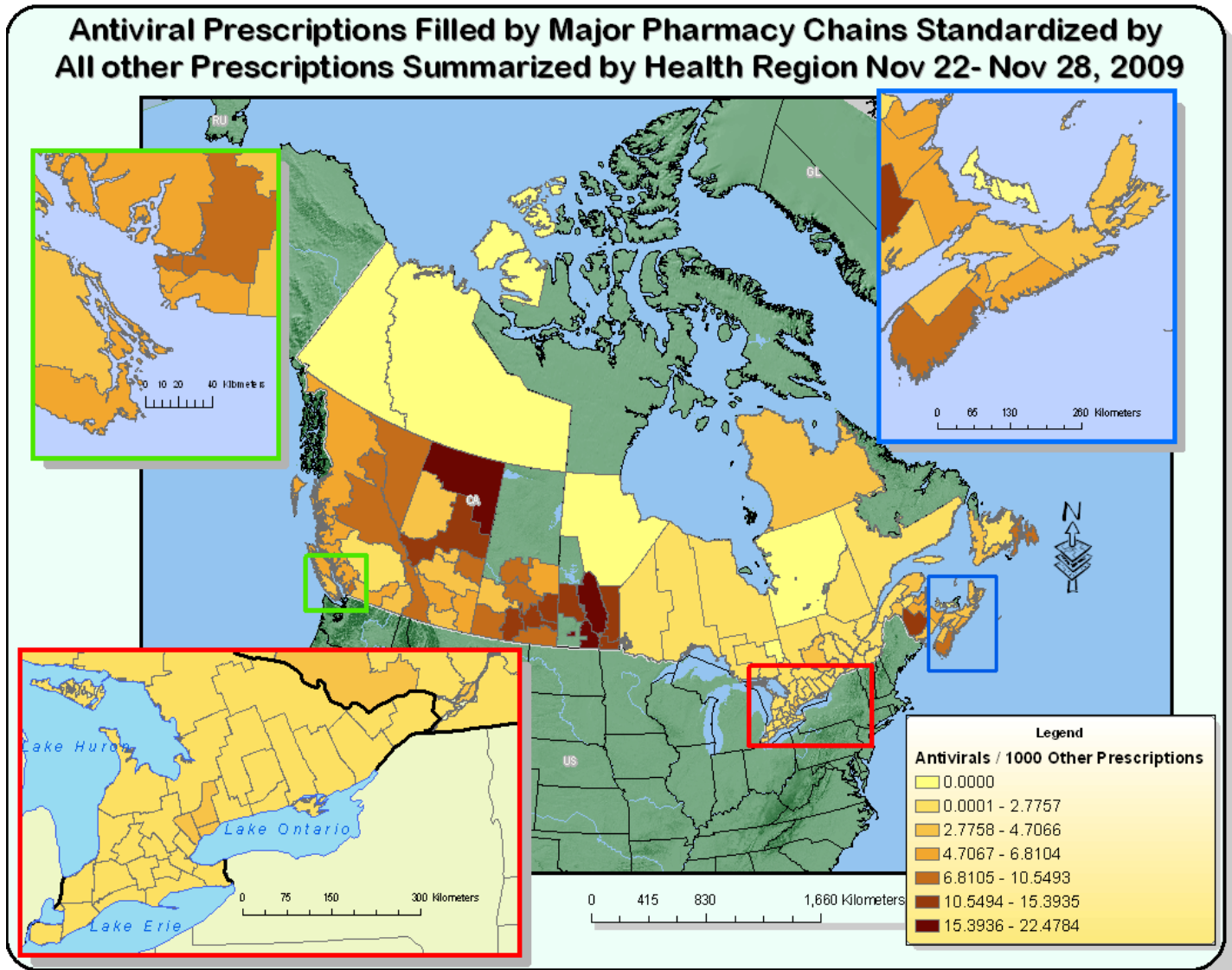
Specimens from NT, YT, and NU are sent to reference laboratories in other provinces.

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 47, antiviral prescriptions monitoring results demonstrated decreases in antiviral prescriptions among all Provinces/Territories.



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

Canadian situation

Antigenic Characterization

Since September 1, 2009, National Microbiology Laboratory (NML) has antigenically characterized 374 Pandemic (H1N1) 2009 viruses and five seasonal influenza viruses (two influenza A/H1N1, two H3N2, and one B virus) that were received from Canadian laboratories. Of the 374 pandemic influenza A (H1N1) viruses characterized, 372 (99.5%) were antigenically related to A/California/7/2009, which is the pandemic reference virus selected by WHO as the 2009 H1N1 vaccine. Two viruses (0.5%) 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. CDC also reported that of the 348 Pandemic (H1N1) 2009 viruses tested, one virus showed reduced titer with antisera produced against A/California/7/09.

Antiviral Resistance

NML: Pandemic (H1N1) 2009 viruses tested so far have been sensitive to zanamivir (351 samples) but resistant to amantadine (369 samples). Of the 361 Pandemic (H1N1) 2009 viruses tested, 358 were sensitive to oseltamivir and three viruses were resistant to oseltamivir with the H275Y mutation. The three resistant cases, 2 from Ontario and 1 from Quebec, were associated with oseltamivir treatment.

Provinces: Three cases of oseltamivir resistant Pandemic (H1N1) 2009 were reported to date in Canada from the province of Quebec on July 21, 2009, from Alberta on September 15, 2009 and from Ontario on October 13, 2009.

International update

Global information

WHO: In temperate regions of the northern hemisphere, the early arriving winter influenza season continues across parts of North America and much of Europe. North America, the Caribbean islands and a limited number of European countries show signs that disease activity peaked.

Virus mutation: Pandemic (H1N1) isolates with the D222G mutation which may play a role in receptor binding of the virus have been observed in France, Norway, Brazil, China, Japan, Mexico, Ukraine, US, and Finland. The virus was isolated from the first 2 fatal cases in Norway, and a case of severe illness. However, it has been detected in both mild and severe cases in other countries. The clinical or public health significance of this mutation is not yet clear, although the WHO has tentatively stated that the mutation does not represent a major change in the nature of the pandemic.

Antiviral resistance: To date, 75 resistant pandemic H1N1 influenza viruses have been detected and characterized worldwide, 23 in the United States. All of these viruses show the same H275Y mutation that confers resistance to the antiviral oseltamivir.

<<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>>

Ireland: Influenza activity remains at higher levels than recorded in previous seasons, but all indicators continued to decrease. All laboratory tested cases were Pandemic (2009) H1N1, and 80.6% of cases are less than 35 years of age.

<<http://www.hpsc.ie/hpsc/A-Z/EmergencyPlanning/AvianPandemicInfluenza/SwineInfluenza/Surveillance%20Reports/>>

Asia: In East Asia, influenza transmission remains active. Intense influenza activity continues to be observed in Mongolia but has peaked already. In Japan, influenza activity remains elevated and stable, but may be decreasing slightly in populated urban areas. ILI activity in India, Nepal and Sri Lanka has increased.

<<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.

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