

January 17 to January 23, 2010 (Week 3)

- On January 27, 2010, the Public Health Agency of Canada announced that the second wave of pandemic H1N1 2009 has tapered off.
- During week 3, all influenza indicators continued to be either at baseline levels or considerably under the expected levels for this time of the year.
- Only 0.04% of the specimens tested were positive for influenza and the pandemic H1N1 2009 strain still accounted for 100% of the positive influenza A subtyped specimens this week. Only one specimen tested positive for influenza B.
- While influenza activity was very low, the respiratory syncytial virus transmission continued to increase.
- The three influenza outbreaks reported this week were all in schools and occurred in BC (1) and NB (2).
- Thirty-nine hospitalized cases, 14 ICU admissions and 3 deaths were reported during week 3. All deaths were from ON.

**Pandemic H1N1 2009 virus Surveillance and Epidemiology**

A total of 8,582 hospitalized cases including 1,448 (16.9%) cases admitted to ICU and 425 (5.0%) deaths of pandemic H1N1 2009 were reported to PHAC since the beginning of the pandemic. Among the 1,099 ICU cases who had detailed information regarding ventilation status, 59% (n=643) required ventilation. Core data was available for 8,160 (95.1%) hospitalizations, 1,448 (100%) ICU admissions and 421 (99.1%) deaths. Among the 421 deaths for whom we have detailed information, only 2 occurred in 2010. Six of the 13 provinces and territories continued to report severe cases with pandemic H1N1 2009. The number of hospitalized cases (39) and ICU admissions (14) were slightly higher, while the number of deaths (3) was similar to those reported in the previous weeks. Almost all new reported cases occurred in 2009. The peak periods of reported laboratory-confirmed hospitalizations and deaths occurred from weeks 22 to 24 (May 31, 2009 to June 20, 2009) for the first wave and from weeks 43 to 45 (October 25, 2009 to November 14, 2009) for the second wave.

The cumulative crude hospitalization, ICU admission and mortality rates showed that men and women have been equally affected since the beginning of the pandemic (data not presented). Since the beginning of the pandemic, 265 pregnant women have been hospitalized with pandemic H1N1 2009 among 1,294 hospitalized women aged between 15 and 44 years of age. One death has been reported during the second wave compared to 4 deaths during the first one. Information on pregnancy trimester was available for 70 out of 265 (26.4%) hospitalized pregnant women reported since the beginning of the pandemic and approximately 2/3 of these cases (65.7%) were in the third trimester. 24.3% of hospitalized pregnant women reported at least one underlying medical condition compared to 45.3% among non pregnant hospitalized women of childbearing age. The most frequently reported underlying medical conditions among hospitalized pregnant women were chronic pulmonary disease (including asthma) (20.6%) and diabetes (6.7%).

From April 12, 2009 to January 23, 2010, 606 reported hospitalized cases were among people of Aboriginal origin (435 First Nations, 101 Inuit, 48 Metis and 14 with unknown Aboriginal subgroup). Among 435 First Nations cases, 177 were from MB, 133 from AB, 53 from QC, 32 from BC, 21 from NT, 8 from YT, 7 from SK and 4 from NB. The 80 lab-confirmed hospitalized cases from Nunavut were assumed to be persons of Inuit ethnicity as the majority of the population in this territory is Inuit. Other Inuit cases were reported from QC (12), NT (10), AB (4), MB (1), NL (1) and YT (1). Métis cases were from AB (29), MB (16), BC (1), NL (1) and NT (1). Since Aboriginal status was not reported by two provinces (which comprise 23% of the Aboriginal population), two methods were used to calculate proportions. Depending on the methods, the proportions of hospitalized people of Aboriginal origin among all hospitalized cases were 7.4% and 10.0%, while the proportions of those admitted to ICU and died were between 7.9%-10.6% and 7.1%-10.3%, respectively. The true proportion of Aboriginal peoples affected lies between those two estimates.

**Weekly and cumulative numbers of hospitalized cases, ICU admissions and deaths among pandemic H1N1 2009 confirmed cases, Canada, to January 23, 2010†**

Province/ Territory	Week 3 (From January 17-23, 2010)*			From August 30, 2009 to January 23, 2010**			From April 12 to August 29, 2009**		
	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU admissions	Deaths
BC <sup>1</sup>	0	4	0	980	136	50	52	20	6
AB	2	2	0	1146	210	64	129	29	7
SK	1	1	0	44	40	11	23	12	4
MB <sup>2</sup>	0	0	0	155	18	4	222	43	7
ON	29	6	3	1443	245	101	400	69	25
QC	6	1	0	2489	361	81	572	104	27
NB <sup>1</sup>	1	0	0	162	33	8	2	1	0
NS	0	0	0	272	42	6	17	8	1
PE	0	0	0	49	9	0	1	0	0
NL	0	0	0	274	51	18	3	1	0
YT	0	0	0	15	3	3	0	0	0
NT	0	0	0	46	7	1	6	0	0
NU†	0	0	0	6	0	0	74	6	1
Canada	39	14	3	7081	1155	347	1501	293	78

\*Based on reporting date. \*\*Based on epidemiological date, hospitalization date, death date and reporting date. <sup>1</sup>These provinces reported aggregate counts this week.

<sup>2</sup>The cumulative number of hospitalizations has decreased as it was determined some cases were out patients.

†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 January 23, 2010†**

	From April 12 to August 29, 2009			From Aug. 30, 2009 to Jan. 23, 2010			Cumulative (From Apr. 12, 2009 to Jan. 23, 2010)		
	Hospitalized cases (n=1501)	ICU-admitted (n=293)	Deaths (n=78)	Hospitalized cases (n=6659)	ICU-admitted (n=1155)	Deaths (n=343)	Hospitalized cases (n=8160)	ICU-admitted (n=1448)	Deaths (n=421)
Females, %	51.5	57.2	62.8	49.7	49.7	46.6	50.0	51.2	49.6
Median age	23.0	37.0	51.0	30.0	47.0	54.0	28.0	46.0	53.0
Aboriginal status <sup>1</sup> , %	20.1-27.9	16.0-21.8	11.5-17.3	4.6-6.1	5.9-7.8	6.1-8.8	7.4-10.0	7.9-10.6	7.1-10.3
Underlying medical conditions <sup>2</sup> , %	46.6 (648/1392)	57.8 (159/275)	71.1 (54/76)	53.2 (1748/3285)	62.9 (569/904)	76.0 (218/287)	51.2 (2396/4677)	61.7 (728/1179)	74.9 (272/363)
Pregnancy <sup>3</sup> , %	28.0 (77/275)	19.7 (15/76)	28.6 (4/14)	18.4 (188/1,019)	8.4 (15/179)	2.8 (1/36)	20.5 (265/1,294)	11.8 (30/255)	10.0 (5/50)

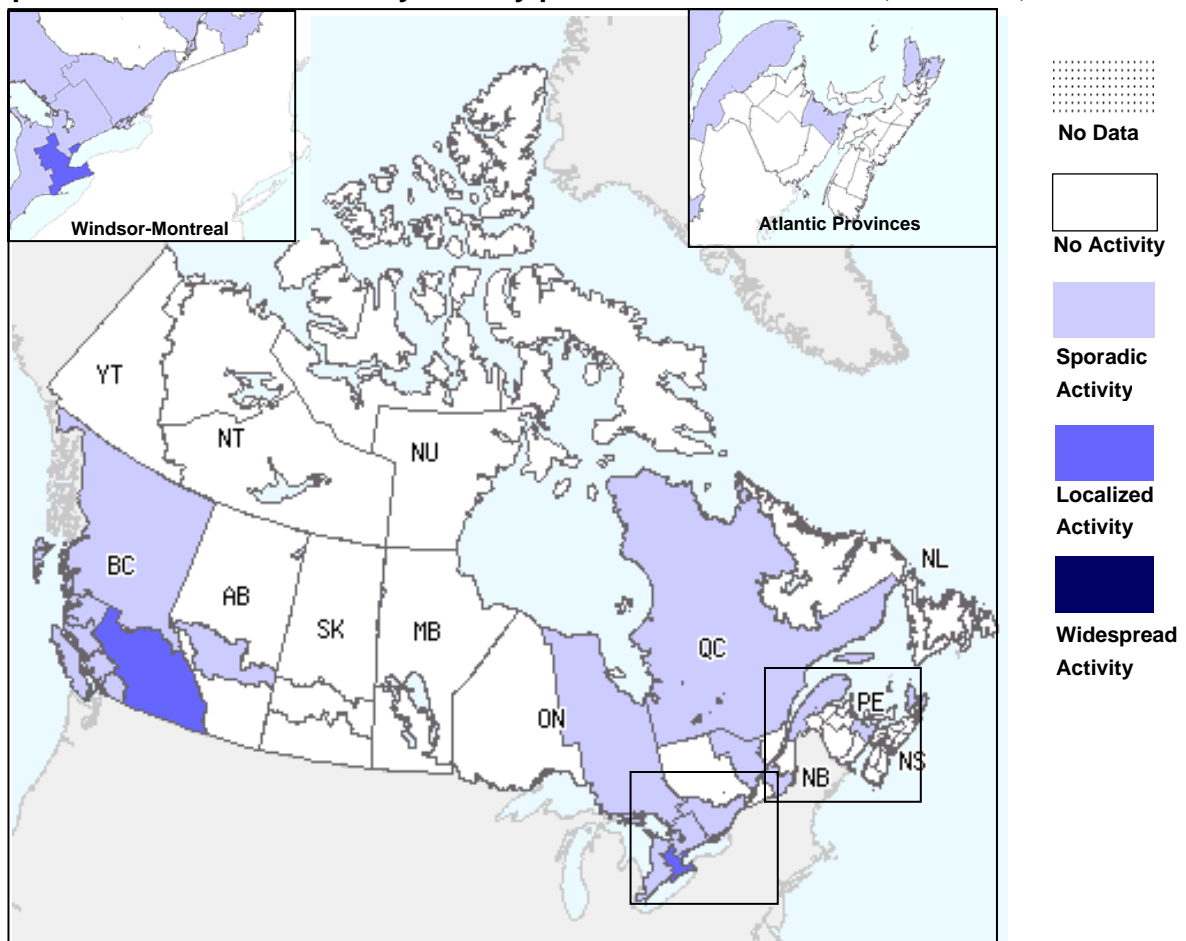
<sup>1</sup>Since Aboriginal status is not reported by two provinces (which comprise 23% of the Aboriginal population) two methods were used to calculate proportions: one proportion was calculated by including ON and NS cases in the denominator (which is an underestimate of the true proportion); while the other proportion was calculated by excluding ON and NS cases in the denominator (which is an overestimate). <sup>2</sup>Proportion of cases with at least one underlying medical condition (excluding pregnancy) among those for whom the information was available. <sup>3</sup>Percent of pregnant women among women 15 to 44 years of age. †All cases admitted to ICU are included in the hospitalization count; however, not all the fatal cases have been hospitalized before dying.

**Overall Influenza Summary - Week 3 (January 17 to January 23, 2010)**

During week 3, all influenza indicators continued to be either at baseline levels or considerably under the expected levels for this time of the year. Only 0.04% of the specimens tested were positive for influenza and the pandemic H1N1 2009 strain still accounted for 100% of the positive influenza A subtyped specimens this week. Only one specimen tested positive for influenza B. While influenza activity was very low, the respiratory syncytial virus transmission continued to increase.

In week 3, only three regions (BC, ON) reported localized activity. Fourteen regions in BC, AB, ON, QC, NB & NS reported sporadic activity, while thirty-two regions reported no activity in AB, SK, MB, ON, QC, NB, PE, NS, NL, YT, NT & NU. The 3 influenza outbreaks reported this week were all in schools and occurred in BC (1) and NB (2).

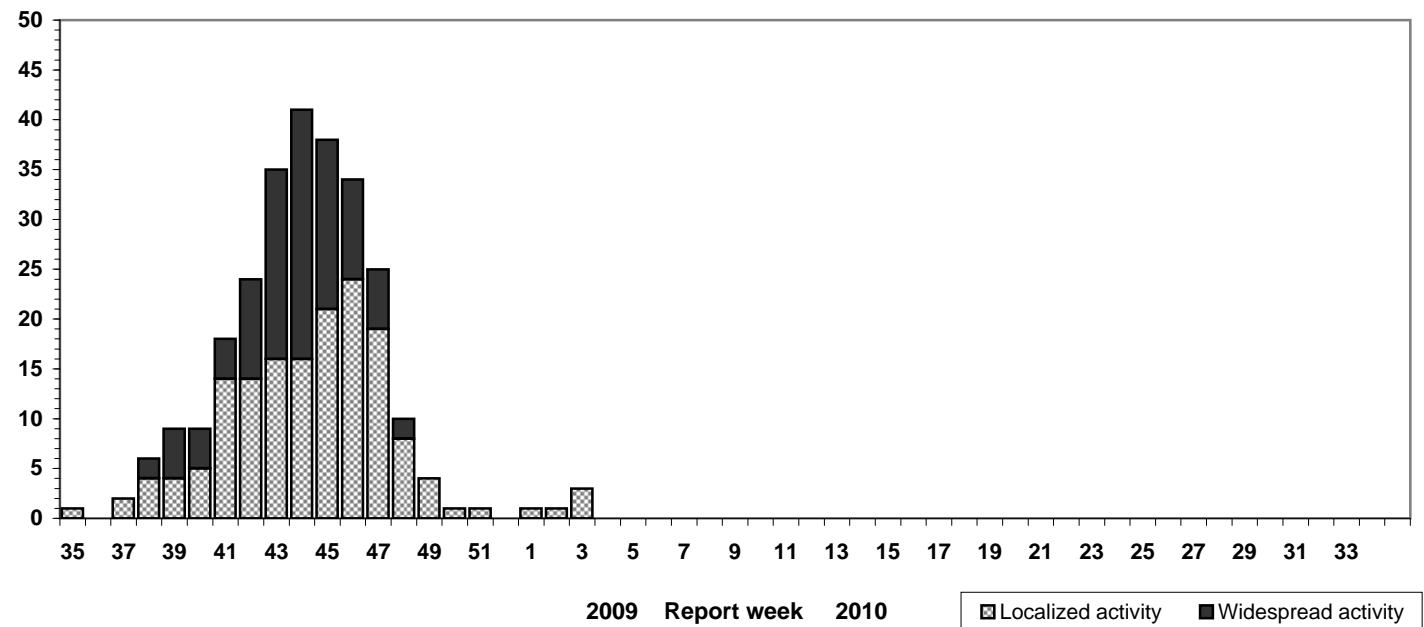
**Map of overall Influenza activity level by provinces and territories, Week 03, Canada**



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)

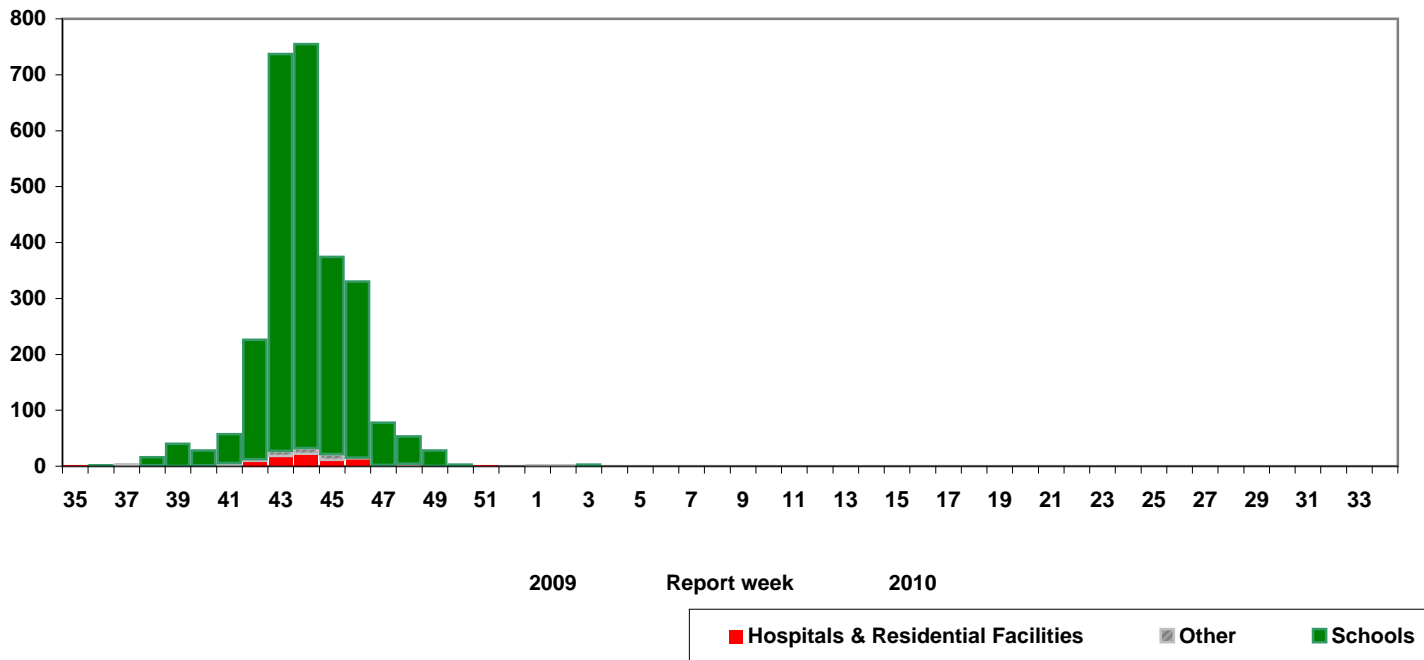
Number of regions



† 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

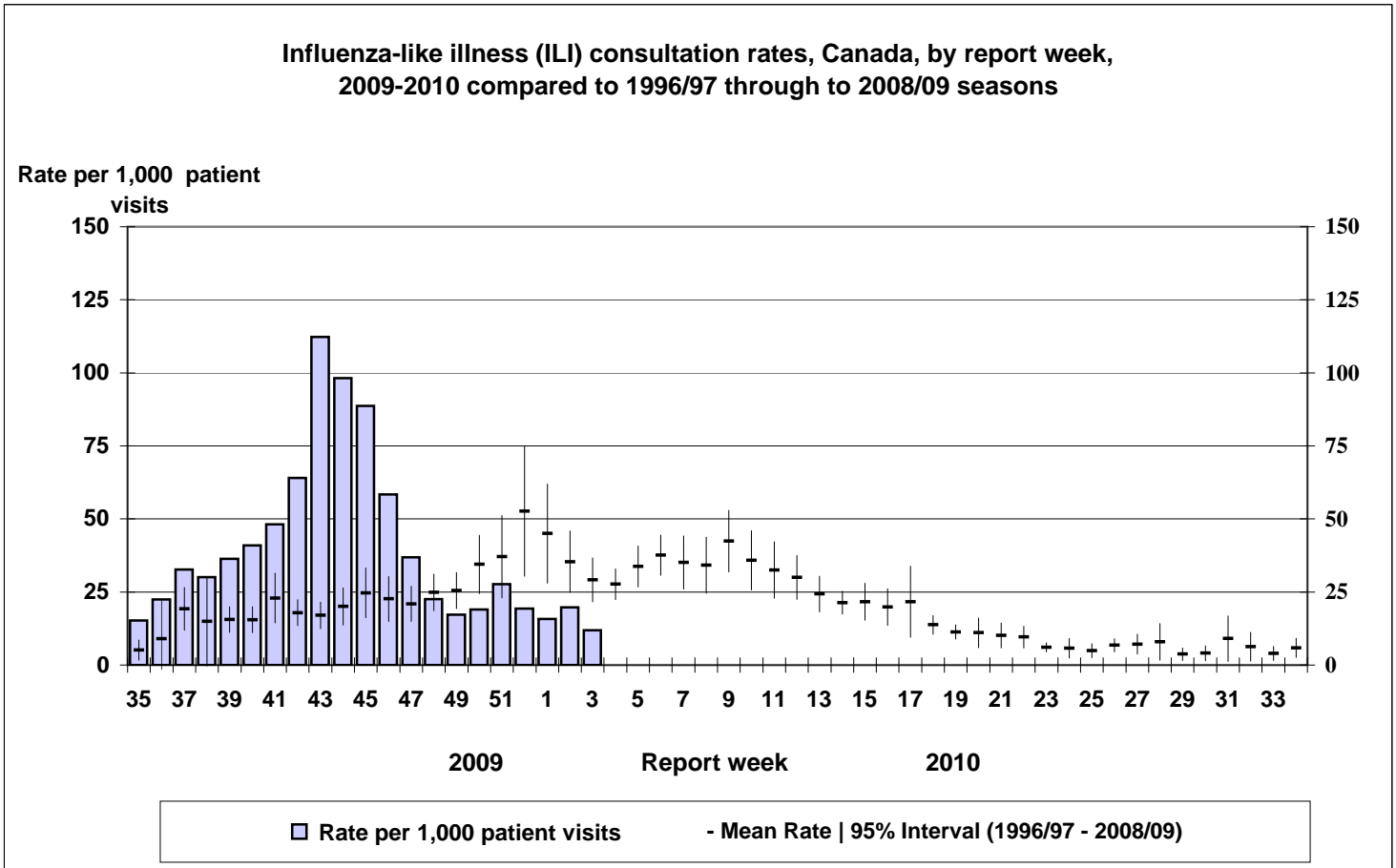
Number of outbreaks



Note that this was the first year that all the provinces and territories were reporting on influenza outbreaks in schools (greater than 10% absenteeism on any day most likely due to ILI) which has increased considerably the total number of outbreaks reported compared to previous years.

## ILI consultation rate

During week 3, the national ILI consultation rate was 12 consultations per 1,000 patient visits (see ILI graph) which was similar to the previous weeks and still significantly below the expected range for this time of the year. All provinces and territories had either similar or slightly lower ILI consultation rates compared to their respective ILI rates in the previous week except SK which had a slightly higher rate this week. Those under 20 years of age still had the highest consultation rates, with 16 and 21 per 1,000 patient visits among children under 5 years of age and among those 5 to 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.

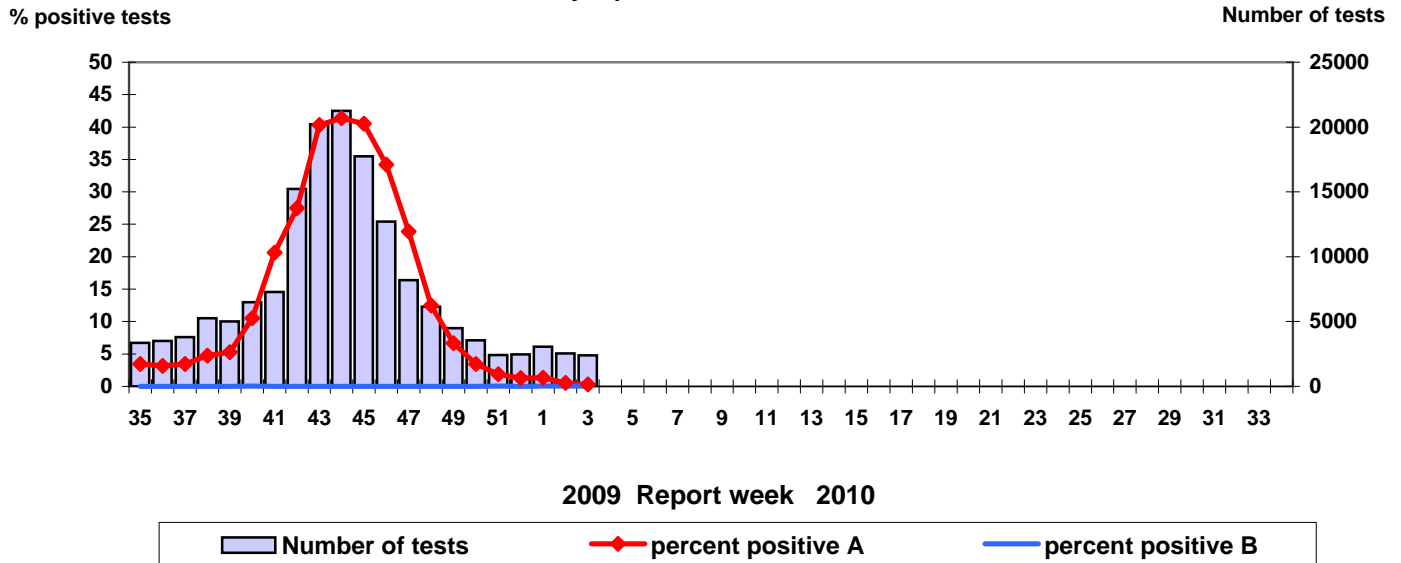
## Paediatric Influenza Hospitalizations and Deaths

In week 3, no laboratory-confirmed influenza-associated paediatric hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. 1328 hospitalizations have been reported since week 17 (April 26): 97.1% 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 16 years of age or under.

## Laboratory Surveillance Summary

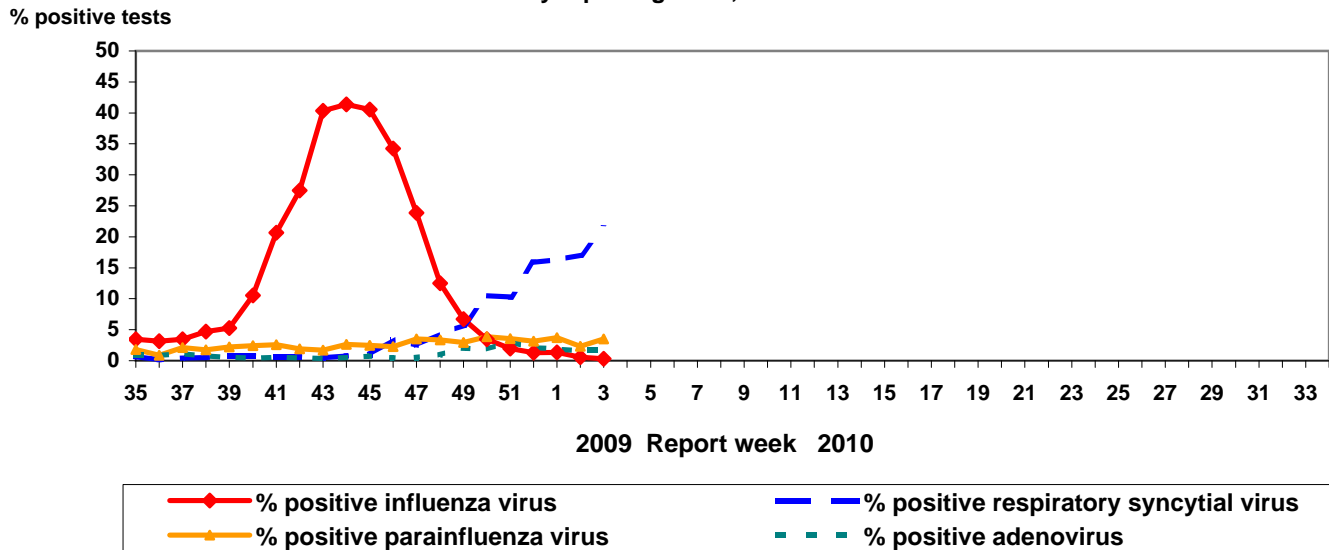
The proportion of tests that were positive for influenza was 0.04% during week 3 which remained at very low level for a fifth consecutive week (see Tests table). All provinces had a lower proportion of positive tests for influenza compared to the previous week except ON and NB which had similar proportions. During week 3, a total of 8 specimens tested positive for influenza (7 A and 1 B) and 100% of the positive influenza A subtyped specimens were pandemic H1N1 2009. Note that QC reported 44 positive specimen for A/H3N2 and 7 specimen for influenza B while ON reported 6 specimen for influenza B since August 30, 2009. The proportion of positive respiratory syncytial virus tests increased to 21.4% during week 3. Positive specimens were reported from all provinces (data not shown).

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



Number of tests
  percent positive A
  percent positive B

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



% positive influenza virus
  % positive respiratory syncytial virus  
 % positive parainfluenza virus
  % positive adenovirus

**Weekly & Cumulative numbers of positive influenza specimens  
by Provincial Laboratories**

Reporting provinces	Weekly (Jan. 17 to Jan. 23, 2010)						Cumulative (Aug. 30, 2009 to Jan. 23, 2010)					
	Influenza A					B	Influenza A					B
	A Total	A(H1)	A(H3)	Pand H1N1	A (NS)*		A Total	A(H1)	A(H3)	Pand H1N1	A (NS)*	
BC	0	0	0	0	0	0	6369	0	1	5803	565	0
AB	0	0	0	0	0	0	5860	2	5	5755	98	0
SK	0	0	0	0	0	0	2598	0	1	2298	299	0
MB	0	0	0	0	0	0	1914	0	0	1787	127	0
ON	6	0	0	6	0	1	7890	2	0	3545	4343	6
QC	0	0	0	0	0	0	10688	1	44	10643	0	7
NB	1	0	0	1	0	0	1856	1	1	1835	19	1
NS	0	0	0	0	0	0	783	0	0	751	32	0
PE	0	0	0	0	0	0	97	0	0	96	1	0
NL	0	0	0	0	0	0	951	0	0	951	0	0
<b>Canada</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>39006</b>	<b>6</b>	<b>52</b>	<b>33464</b>	<b>5484</b>	<b>14</b>

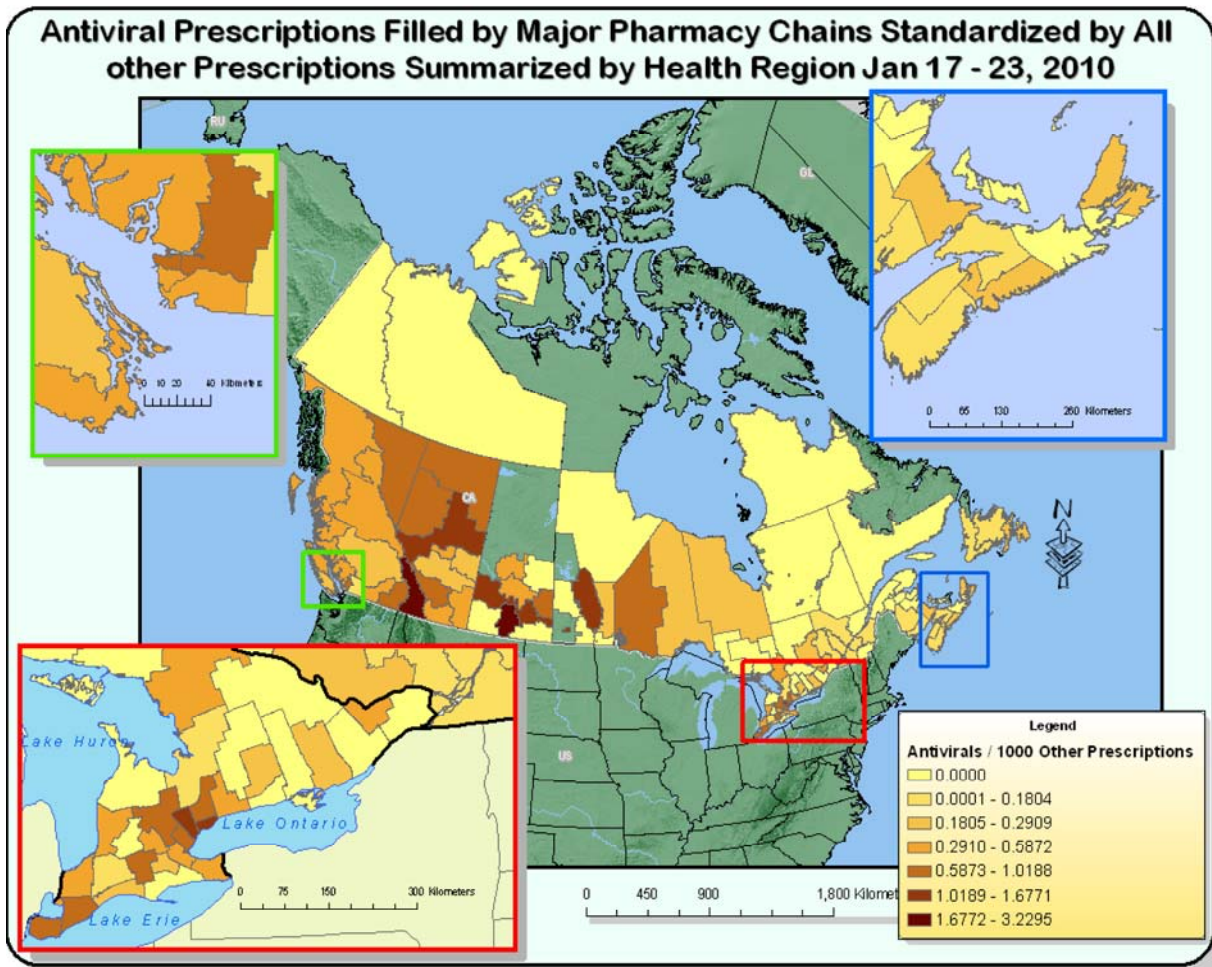
*Specimens from NT, YT, and NU are sent to reference laboratories in other provinces.*

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 3, antiviral prescriptions monitoring results demonstrated a levelling-off in antiviral prescriptions among most provinces and territories. An analysis of antiviral data at the Health Region level demonstrated low antiviral prescription rates among all Health Regions for the week of January 17, 2010 to January 23, 2010. Only one Health Region reported an antiviral rate greater than 2.5 antivirals/1000 other prescriptions.



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 734 pandemic H1N1 2009 viruses and 10 seasonal influenza viruses (2 influenza A/H1N1, 7 H3N2, and 1 B virus) that were received from Canadian laboratories. Of the 734 pandemic H1N1 2009 viruses characterized, 730 (99.5%) were antigenically related to A/California/7/2009, which is the pandemic reference virus selected by WHO as the Pandemic (H1N1) 2009 vaccine. Four viruses (0.5%) tested showed reduced titer with antisera produced against A/California/7/09. Of the seven 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 six 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 (926 samples) but resistant to amantadine (968 samples).

**NML/Provinces:** Eleven cases of oseltamivir resistant pandemic H1N1 2009 were reported to date in Canada: three in Alberta, one in Manitoba, four in Ontario, two in Quebec, and one in New Brunswick. Ten of the eleven resistant cases were associated with oseltamivir treatment. One case (NB) appeared to be the result of infection with an antiviral-resistant strain of H1N1.

## **International update**

### **Global information**

**WHO:** Worldwide more than 209 countries and overseas territories or communities reported laboratory-confirmed cases of pandemic H1N1 2009, including at least 14,142 deaths as of January 17, 2010. The overall global situation was largely unchanged since last week. The most intense transmission of pandemic H1N1 2009 continued to occur in North Africa (Libya, Egypt), South Asia (northern and western India, Nepal), and in limited areas of Eastern Europe (Poland, Austria, Estonia, Romania, Hungary, Moldova). Overall pandemic influenza activity in the temperate northern hemisphere peaked between late October and late November 2009 and has continued to decline since. In temperate regions of the southern hemisphere, sporadic cases of pandemic H1N1 2009 continued to be reported without evidence of sustained community transmission. For the week of January 3 to 9, 2010, pandemic H1N1 2009 accounted for 97.2% of all subtyped influenza A viruses detected in both northern and southern hemispheres. A few countries reported sporadic detections of seasonal A(H1N1), A(H3N2) and influenza B viruses. The majority of seasonal influenza detections were reported by China where increased influenza B detections were observed in relation to previous weeks. <[http://www.who.int/csr/don/2010\\_01\\_22/en/index.html](http://www.who.int/csr/don/2010_01_22/en/index.html)> and <[http://www.who.int/csr/disease/swineflu/laboratory22\\_01\\_2010/en/index.html](http://www.who.int/csr/disease/swineflu/laboratory22_01_2010/en/index.html)>

**Antiviral resistance:** To date, 206 pandemic H1N1 2009 isolates worldwide have been found to be resistant to oseltamivir, all with the same H275Y mutation.

<[http://www.who.int/csr/disease/swineflu/laboratory22\\_01\\_2010/en/index.html](http://www.who.int/csr/disease/swineflu/laboratory22_01_2010/en/index.html)>

### **Geographic update**

**United States:** During week 2 (January 10-16, 2010), influenza activity decreased slightly in the United States. No states reported widespread influenza activity; seven states reported regional influenza activity; Puerto Rico and 10 states reported local influenza activity; the District of Columbia, Guam, and 32 states reported sporadic influenza activity; and the U.S. Virgin Islands and one state reported no influenza activity. ILI outpatient visits were below the national baseline with only one of the 10 regions reporting higher than baseline levels. Cumulative hospitalization rates leveled off in all age groups and very few laboratory-confirmed pandemic H1N1 2009 hospitalizations were reported during week 2. The proportion of deaths attributed to pneumonia and influenza was above the epidemic threshold and was higher than expected for this time of year. This increase was thought to result from an increase reported pneumonia-associated deaths in older people which are not necessarily related to flu illness. Nine influenza-associated pediatric deaths were reported during week 2: three were associated with pandemic H1N1 2009 infection; four were associated with an influenza A virus for which the subtype was undetermined, one was associated with an influenza A (H3) virus infection, and one was associated with an influenza B virus infection. The influenza A(H3) and B deaths occurred during the 2008-09 influenza season. Of the subtyped influenza A viruses reported to CDC, 98% were pandemic (H1N1) 2009 viruses.

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

**Europe:** For week 2/2010 (January 11-17, 2010), of the 23 countries reporting, only four reported medium ILI activity (Bulgaria, Malta, Poland and Romania) while all other countries reported low activity. Regarding geographic spread, Greece reported widespread activity while Austria, Bulgaria and Romania reported regional activity, while the remaining countries reported local or sporadic activity. Trends across influenza indicators among countries who reported above baseline levels were either stable (Bulgaria, Malta) or decreasing (Poland, Romania). Since week 40/2009, influenza activity was above baseline levels and in most countries activity peaks were observed between weeks 46 and 49 except for Iceland and Ireland where peaks were observed in week 43. Where information on the age of patients is collected, individuals younger than 15 years have been the most affected age group. Of 684 sentinel samples tested during week 2, 18.1% were positive for influenza of which more than 99% were pandemic H1N1 2009 virus. As of 25 January 2010, the cumulative number of reported deaths since the beginning of the pandemic in EU/EFTA Member States has totalled 2,452.

<[http://ecdc.europa.eu/en/healthtopics/Documents/100125\\_Influenza\\_A\(H1N1\)\\_Weekly\\_Executive\\_Update.pdf](http://ecdc.europa.eu/en/healthtopics/Documents/100125_Influenza_A(H1N1)_Weekly_Executive_Update.pdf)> and

<[http://ecdc.europa.eu/en/publications/Publications/100122\\_EISN\\_Weekly\\_Influenza\\_Surveillance\\_Overview.pdf](http://ecdc.europa.eu/en/publications/Publications/100122_EISN_Weekly_Influenza_Surveillance_Overview.pdf)>

**Asia:** Northern and western parts of south Asia continued to experience active influenza transmission; however, overall activity has recently peaked. Influenza activity in India was largely confined to the northern and western states with activity peaking in mid December 2009 and early January 2010, respectively. Active transmission persisted in Nepal and trends in activity levels remained unchanged since the previous week. In west Asia, limited data suggested pandemic influenza virus transmission remained geographically widespread however during December and January overall activity declined in most places. In east Asia, influenza activity remained widespread but continued to decline overall. In early January 2010, very high intensity levels have been reported in Mongolia but were now below the peak levels. Overall influenza activity continued to decline in Japan since peaking at the end of November 2009, however regional increases in activity were observed during late December on the southern island of Okinawa. In China, Hong Kong SAR, and Chinese Taipei pandemic influenza activity remained widespread but continued to decline or remain stable. Pandemic H1N1 continued to be the predominant circulating virus in the region but seasonal H3N2 viruses continued to circulate in very small numbers in northern China.

**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.