

- Week 35 marked the start of the 2009-2010 Influenza Season.
- The overall trend of influenza activity remains similar to the previous week. However, the national ILI consultation rate increased to 23 consultations per 1 000 this week which is within the range of expected level at this time of the year. The peak period of Pandemic (H1N1) 2009 occurred in the first three weeks of June.
- The intensity of Pandemic (H1N1) infection 2009 in the population is low to moderate with a small number of hospitalizations (n=15) and two deaths reported this week. As of September 12, 2009, a total of 1,459 hospitalized cases, 288 cases admitted to an intensive care unit (ICU) and 76 deaths had been reported since the beginning of the pandemic.
- While the Pandemic (H1N1) 2009 has spread to all provinces and territories, approximately 90% of hospitalized cases and more than 85% of deaths are reported from 4 provinces (AB, MB, ON, QC). Hospitalized cases were reported from BC, AB, ON, QC and NT this week.
- Children under 2 years of age, pregnant women, persons under 65 years of age with underlying medical conditions and Aboriginal populations have higher rates of hospitalization and greater risk of severe outcomes (ICU admission and death). Aboriginal communities have more pregnant women, young children, and underlying chronic disease than the general Canadian population, which may explain the disproportionate number of severe cases in this population.

**Pandemic (H1N1) 2009 virus Surveillance and Epidemiology**

A total of 1,459 hospitalized cases, 288 (19.7%) cases admitted to ICU, 150 (10.3%) cases required ventilation and 76 deaths of Pandemic (H1N1) 2009 have been reported to PHAC as of September 12, 2009. The proportion of females affected, the median age and the proportion of cases with underlying medical conditions increased with severity of illness (see Characteristics table). Aboriginals were over-represented amongst those who were hospitalized or admitted to ICU. They account for 3% of the national population; however, 18% of hospitalizations, 15% of cases admitted to ICU and 12% of deaths were in this group. Pregnant women also had a higher burden of morbidity and mortality. Assuming 1% of the population is pregnant in a given year, approximately 5% of hospitalized cases and 5% of deaths have occurred in this group.

The national hospitalization rate was 4.4 per 100,00 population with the highest rates in children aged less than 15 years of age (10.4 per 100,000). In comparison, the national mortality rate was 0.23 per 100,000 population; those 45 and older had the highest mortality rate (0.33 per 100,000). ICU admission rate and ventilation rate were also elevated in the population under five years of age.

Amongst all laboratory-confirmed hospitalized cases, 255 (17.5%) were Aboriginal (ie. First Nations, Inuit or Metis). Among 153 First Nations cases, 92 were from MB, 41 from QC, 11 from AB, 4 from BC, 4 from NWT and one from SK. The 66 lab-confirmed hospitalized cases from Nunavut were assumed to be persons of Inuit ethnicity since the majority (85%) of the population in this territory is Inuit. Other Inuit cases were reported from QC (10), AB (2) and NWT (1). Metis (18) were from MB (13) and AB (5). Ethnicity was unknown for 5 hospitalized Aboriginals from SK. Approximately 46% of the First Nations hospitalized cases are living on a reserve. Cases from Nunavut and those who were Inuit had higher hospitalization rates compared to the First-Nations population (156.5 vs. 21.9 per 100,000) and higher mortality rates (4.0 vs 0.7 per 100,000). Because of small numbers reported, this should be interpreted with caution. However, hospitalized cases from Nunavut and those that were Inuit were younger (median age 4 vs. 19), admitted to ICU less frequently (11.4% vs. 21.9%) and had fewer underlying medical conditions (19.0% vs. 64.4%) than those First Nations hospitalized cases.

**Weekly and cumulative numbers of deaths among Pandemic (H1N1) 2009 confirmed cases, Canada, to 12 September, 2009**

Province/ Territory	This week			Cumulative		
	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU-admitted cases	Deaths <sup>1</sup>
BC	4	2	1	48	20	5
AB	1	0	0	129	30	8
SK	0	0	0	23	12	4
MB	0	0	0	220	42	7
ON	5	0	0	370	64	23
QC	3	1	1	574	104	27
NB	0	0	0	2	1	0
NS	0	0	0	17	8	1
PE	0	0	0	1	0	0
NL	0	0	0	33	1	0
YT	0	0	0	0	0	0
NT	2	0	0	6	0	0
NU	0	0	0	66	6	1
Canada	15	3	2	1459	288	76

**Descriptive characteristics of laboratory-confirmed Canadian Pandemic (H1N1) 2009 hospitalized cases, ICU-admitted cases and deaths with core information available, reported to the Public Health Agency of Canada as of September 12, 2009**

	Hospitalized cases (n=1,459)	Cases admitted to ICU (n=288)	Deaths (n=76)
Females, %	51.4	56.3	60.5
Median age	23	37	50
Aboriginal status, %	17.5	15.3	11.8
Underlying medical conditions <sup>1</sup> , %	58.5 (576/988)	68.6 (151/220)	78.9 (45/57)
Pregnancy <sup>2</sup> , %	28.1 (77/274)	19.7 (15/76)	28.6 (4/14)

<sup>1</sup> Proportion of cases with at least one underlying medical condition (excluding pregnancy) among those for whom the information was available

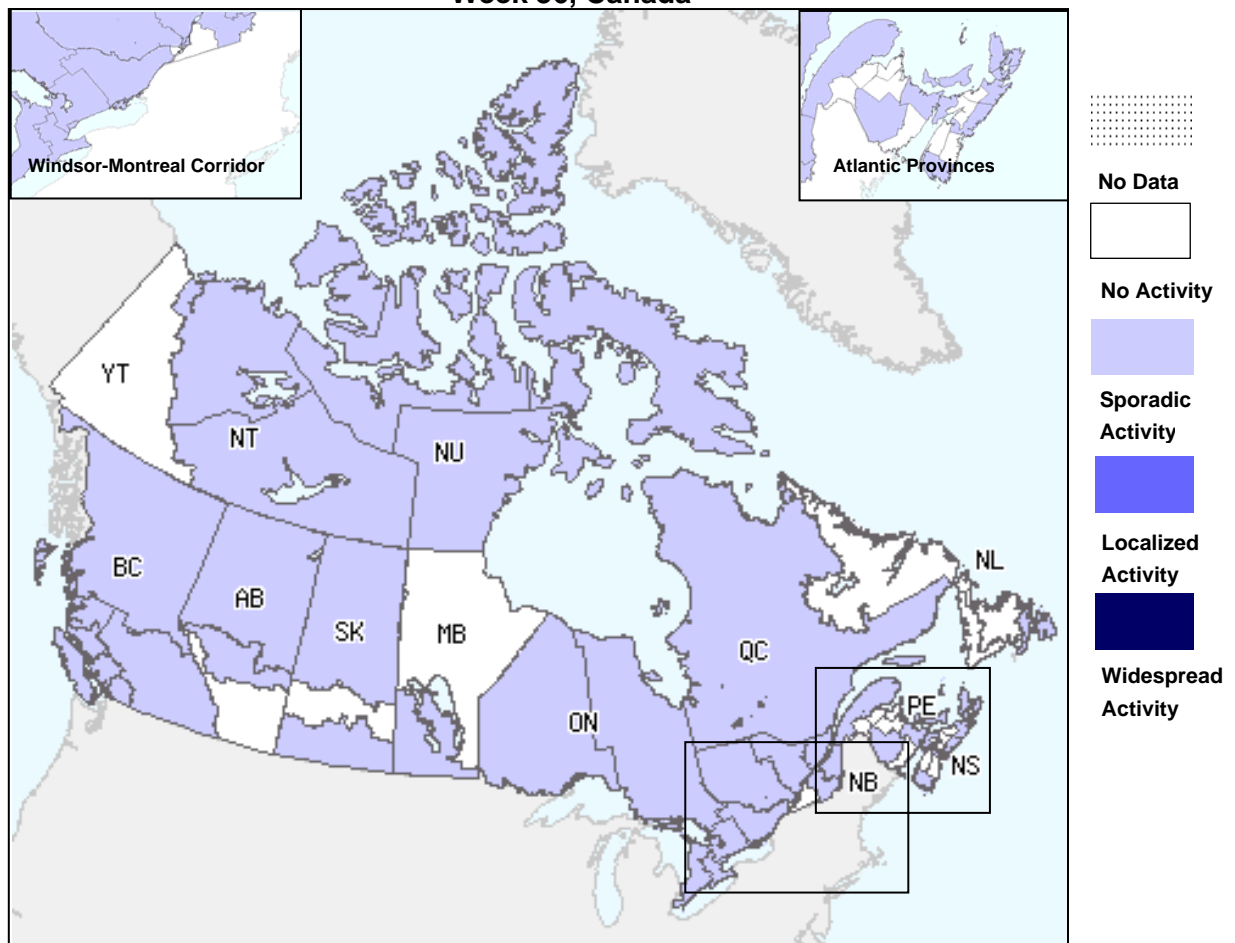
<sup>2</sup> Percent of pregnant women among women aged between 15 and 44.

**Overall Influenza Summary - Week 36 (September 6 to September 12, 2009)**

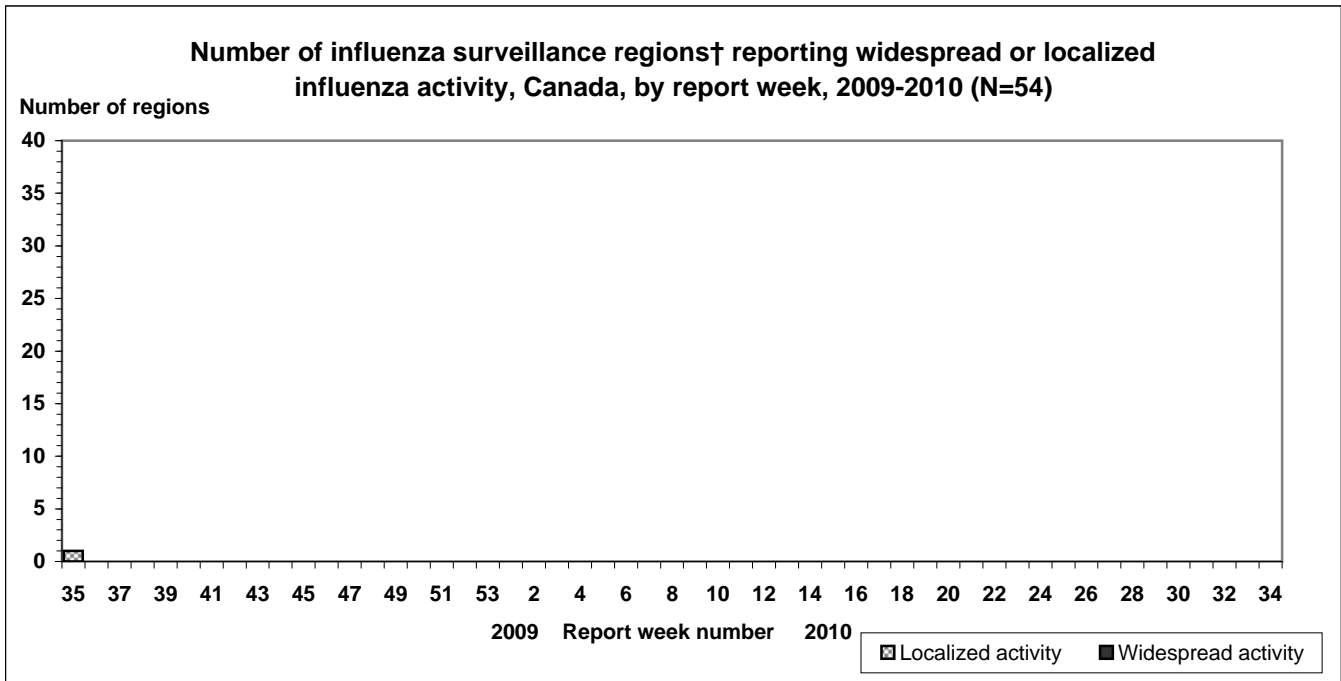
The overall influenza activity remains similar this week relative to the previous week; the percentage of positive tests and the overall activity level decreased slightly this week. One influenza outbreak was also reported. However, the national ILI consultation rate increased compared to last week.

Thirty-seven regions reported sporadic activity in BC, AB, SK, MB, ON, QC, NB, NS, PEI, NL, NT & NU and 17 regions in AB, SK, MB, QC, NB, NS, NL & YK reported no activity. One new influenza outbreak was reported in a school in NS this week.

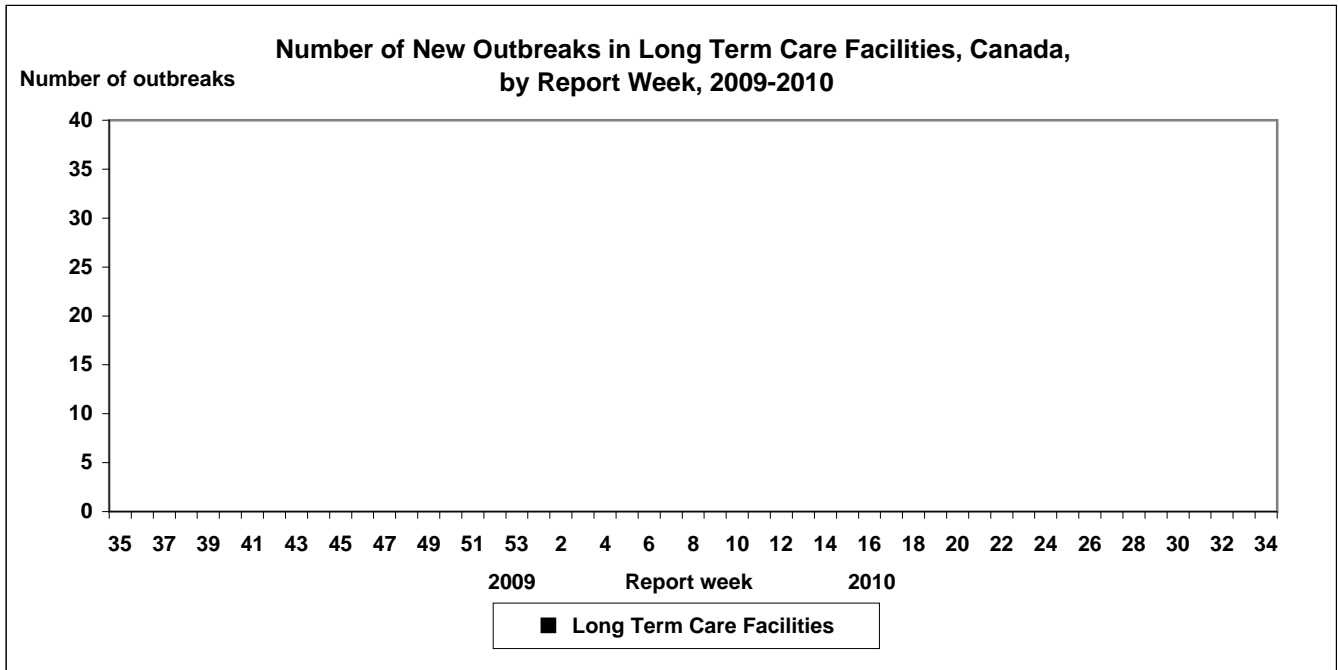
**Map of overall Influenza activity level by provinces and territories, Week 36, Canada**



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.

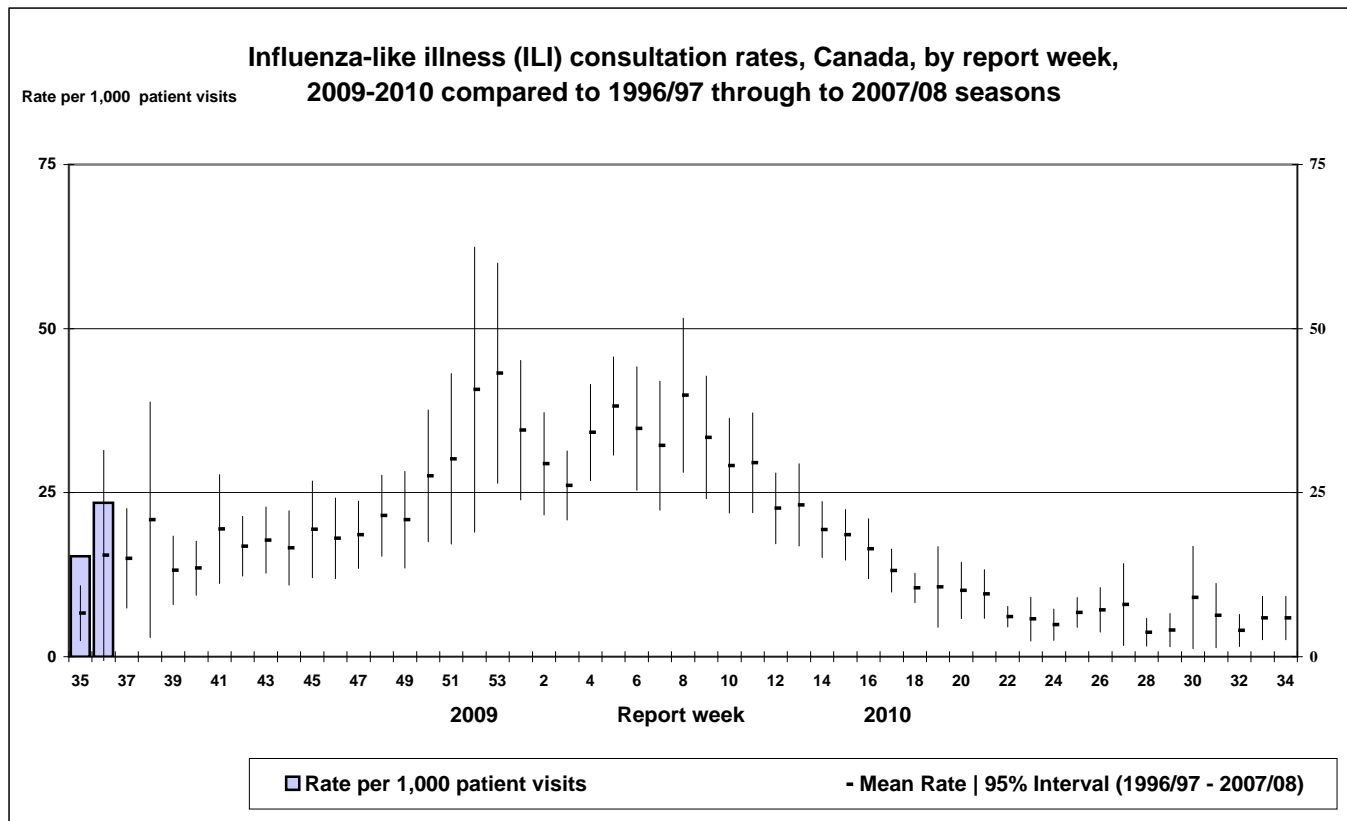


† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.



### ILI consultation rate

The national ILI consultation rate increased to 23 consultations per 1,000 patient visits (see ILI graph) this week which is within the expected range for this time of year. The sentinel response rate was 76,6%.



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.

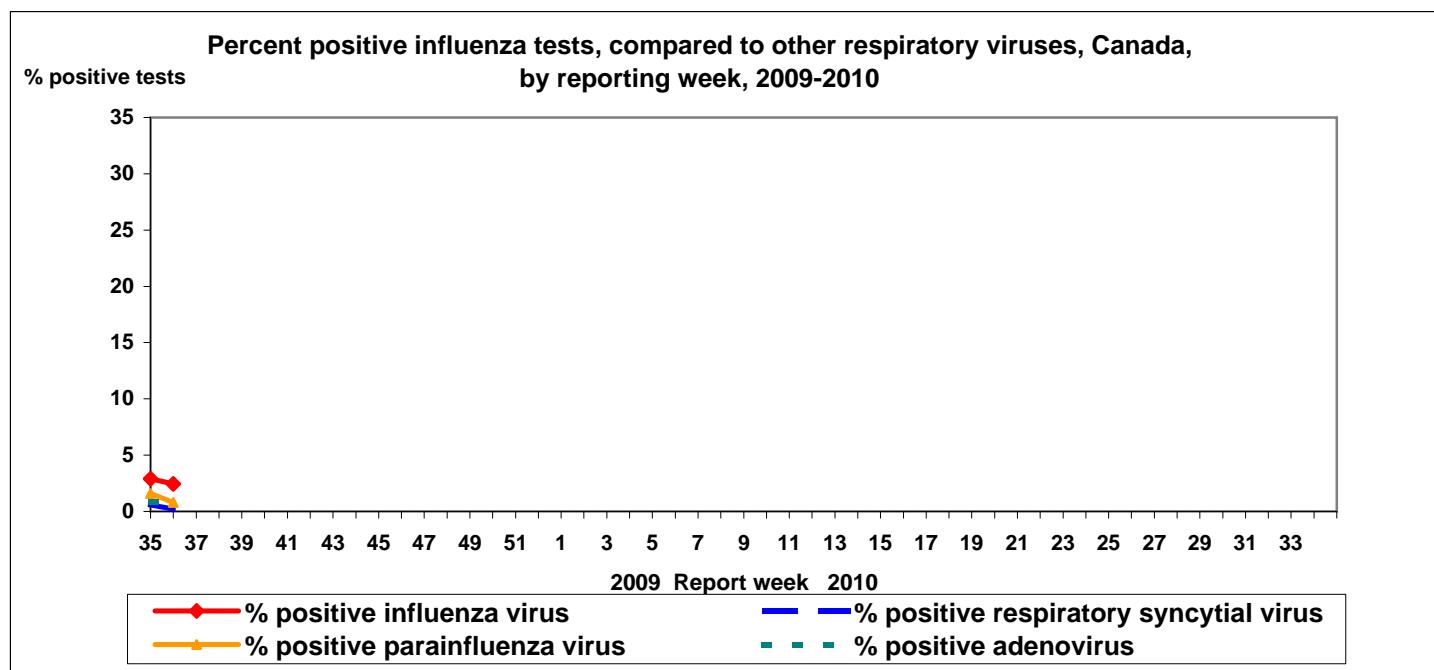
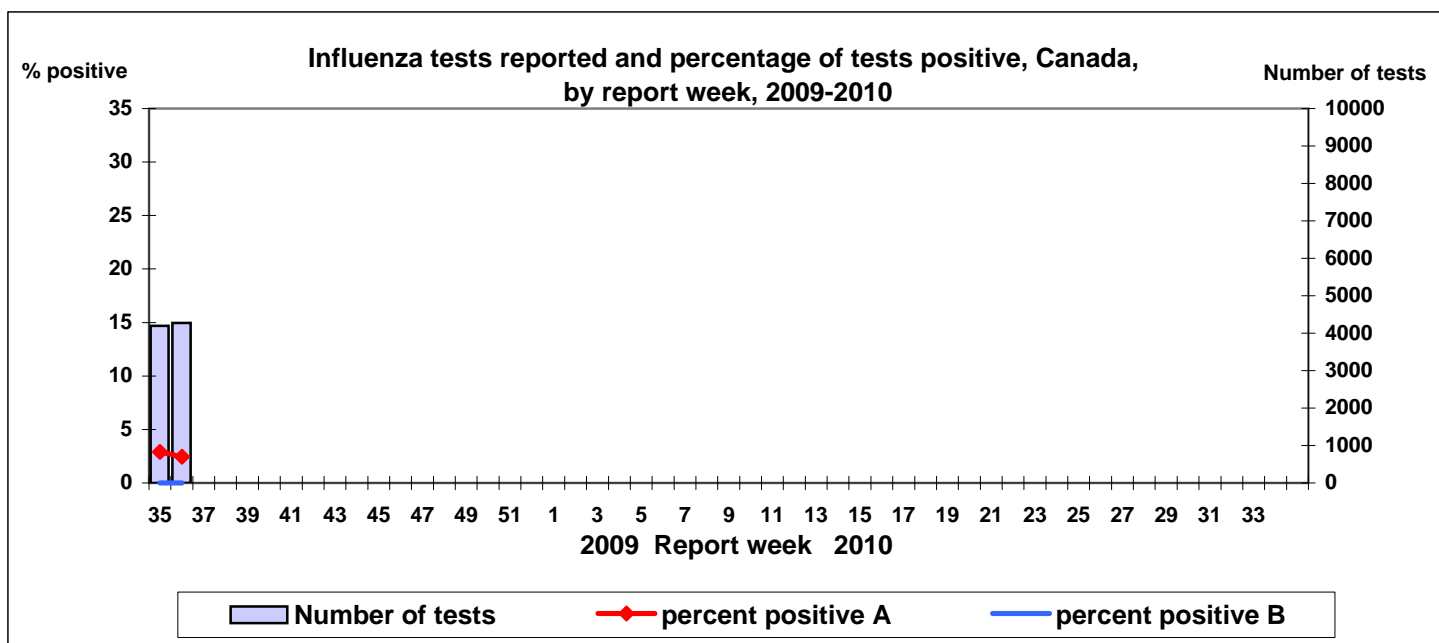
### Paediatric Influenza Hospitalizations and Deaths

In week 36, no laboratory-confirmed influenza-associated paediatric hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. 364 hospitalizations have been reported since week 17 (April 26); 92.3% of these hospitalizations have been due to Pandemic (H1N1) 2009. To date, 768 hospitalizations and six deaths have been reported this season. Three of the deaths were due to Pandemic (H1N1) 2009.

Note that delays in the reporting of data may cause data to change retrospectively.

### Laboratory Surveillance Summary

This week, the proportion of tests that were positive for influenza was 2.5% (see Tests table). The overall trend of the proportion of positive tests has been decreasing since the peak observed during week 23. A total of 105 specimen tested positive for influenza this week (all A). This week, 95.8% of the positive influenza A subtyped specimens were Pandemic (H1N1) 2009.



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

Reporting provinces	Weekly						Cumulative					
	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	66	0	0	13	53	0	96	0	0	22	74	0
AB	16	0	0	4	12	0	62	0	0	12	50	0
SK	3	0	0	3	0	0	11	0	0	10	1	0
MB	1	0	0	0	1	0	3	0	0	1	2	0
ON	11	1	0	0	10	0	25	1	0	3	21	0
QC	4	0	0	0	4	0	23	0	0	0	23	0
NB	1	0	0	1	0	0	1	0	0	1	0	0
NS	3	0	0	2	1	0	3	0	0	2	1	0
PE	0	0	0	0	0	0	2	1	0	1	0	0
NL	0	0	0	0	0	0	1	0	0	1	0	0
<b>Canada</b>	<b>105</b>	<b>1</b>	<b>0</b>	<b>23</b>	<b>81</b>	<b>0</b>	<b>227</b>	<b>2</b>	<b>0</b>	<b>53</b>	<b>172</b>	<b>0</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

## **Canadian situation \*No update received from NML this week.**

### **Antigenic Characterization**

NML has antigenically characterized 296 Pandemic (H1N1) 2009 isolates by HI assay. The results reveal that these viruses are antigenically related to A/California/7/2009 (H1N1), which is the variant reference virus selected by WHO as a potential candidate for Pandemic (H1N1) 2009 vaccine. Antigenic characterization also indicates that these viruses are antigenically and genetically unrelated to seasonal influenza A (H1N1) viruses, which suggests that there is little or no protection to be expected from vaccination with seasonal influenza vaccine.

### **Antiviral Resistance**

**NML:** All Pandemic (H1N1) 2009 viruses tested so far by NML have been sensitive to oseltamivir (527 samples) and zanamivir (280 samples) but resistant to amantadine (361 samples). However, one case of oseltamivir resistant Pandemic (H1N1) 2009 was reported by the province of Quebec on July 21, 2009.

### **International update**

**WHO:** As of 6 September 2009, WHO reports 3,205 deaths with Pandemic (H1N1) 2009. In the temperate regions of the southern hemisphere influenza activity continues to decrease or return to baseline. Active transmission persists in tropical regions of the Americas and Asia. In the temperate regions of the northern hemisphere activity is variable. Regional increases in influenza activity are being reported in the US, most notably in the south eastern states. Parts of Eastern Europe are beginning to report increases in activity. Pandemic (H1N1) 2009 is the predominant influenza strain worldwide.

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

**Antiviral resistance:** 21 isolated cases of oseltamivir-resistant virus have been reported worldwide from different countries. Two recent US cases have been epidemiologically linked, two campers who shared a cabin and both received oseltamivir prophylaxis. The most recent cases are from the US, Australia, Israel and Canada.

**Zoonotic transmission:** To date, 8 outbreaks of Pandemic (H1N1) 2009 have been identified in swine herds and one in turkey flocks. There have been no new reports this week.

### **Southern hemisphere**

**Australia:** As of September 15, 2009, Australia has 36,138 confirmed cases and 171 deaths. As of September 4, national influenza activity appears to be decreasing. The overall hospitalisation rate is 14.2 per 100,000 population with the highest rates in children aged less than 5 years of age. Indigenous Australians are approximately 8 times more likely than non-Indigenous Australians to be hospitalised. Of 111 children hospitalised with severe complications of influenza, 61% had no underlying medical conditions.

<<http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/updates>, and [Content/ozflu2009.htm](http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/ozflu2009.htm)>

**New Zealand:** As of September 11, 2009, the total number of confirmed cases in New Zealand is 3,151 and 17 deaths. New Zealand ICUs have reported that between 12 - 15% of patients admitted to hospital with Pandemic (H1N1) 2009 require treatment in an intensive care unit and this is similar to the rates experienced in other countries. The number of ILI consultations continues to decrease, but is still higher than in previous years.

<<http://www.moh.govt.nz/moh.nsf/indexmh/influenza-a-h1n1-news-media>, and [http://www.surv.esr.cri.nz/virology/influenza\\_weekly\\_update.php](http://www.surv.esr.cri.nz/virology/influenza_weekly_update.php)>

**Argentina:** As of September 5, Argentina reports 8,851 confirmed cases of Pandemic (H1N1) 2009, a total of 9,480 cases of severe acute respiratory infection requiring hospitalization, and 514 Pandemic (H1N1)-associated deaths. As of week 35, Pandemic (H1N1) 2009 and untyped influenza A represent 92.9% of respiratory virus detections in patients >5 years old. In contrast, in children <5 years old, Pandemic (H1N1) 2009 and untyped influenza A represents only 23.5% of detections, and RSV accounts for 70%. <<http://www.msal.gov.ar/html/site/default.asp>>

**Chile:** As of September 9, the number of laboratory-confirmed cases in Chile is 12,205 (rate 21.4/100,000 population). In week 35, ILI activity was mild. 1,561 confirmed cases have required hospitalization, representing a rate of 9.2 cases of acute infection per 100,000 population. The median age of severe cases is 33 years and 47% have underlying chronic disease. Of 132 deaths, the median age was 49 years and 64.3% had underlying illness. Since week 30, RSV is the predominant respiratory virus. <<http://www.minsal.cl/>>

**South Africa:** As of September 14, South Africa reported a total of 11,253 laboratory-confirmed cases (3,647 new in the past week) and 47 deaths from Pandemic (H1N1) 2009. The incidence of confirmed cases is reported to be 22.82 / 100,000 population. The age distribution of cases shows a predominance of young ages, with 75% of cases under 25 years old.

<<http://www.nicd.ac.za/>, and <http://www.afro.who.int/ddc/influenzaa/index.html>>

## **Northern Hemisphere**

**United States:** The CDC is now reporting weekly on hospitalizations and deaths in two categories which encompass more than just Pandemic (H1N1) 2009: 1) Influenza and pneumonia syndrome, which may be based on syndromic, admission or discharge data; 2) Any laboratory-confirmed influenza. As of September 10, 2009, for Influenza and Pneumonia Syndrome the CDC reports 1,097 hospitalizations and 168 deaths; for laboratory-confirmed influenza, 263 hospitalizations and 28 deaths; (total hospitalizations: 1,380; total deaths: 196). From Aug 30 – Sep 6, eleven states (mostly southern and south eastern) and Guam were reporting widespread influenza activity. <<http://www.cdc.gov/h1n1flu/update.htm>, and <http://www.cdc.gov/flu/weekly/>>

**Mexico:** As of September 15, 2009, Mexico reports 25,214 confirmed cases of Pandemic (H1N1) 2009, and 217 deaths. The majority (65.2%) of confirmed cases were in patients 5 to 29 years of age. However, the largest proportion of all deaths was observed in the older age groups, with 71.4% of all fatal cases in patients 20 to 54 years old. <<http://portal.salud.gob.mx/>>

**United Kingdom:** As of September 10, 2009, pandemic influenza activity continues to decrease across most regions of the UK. GP consultation rates decreased in England and Wales, stayed stable in Northern Ireland, but increased slightly in Scotland. HPA modelling gives an estimate of 3000 (range 1500 – 6500) new cases in England in week 36. The cumulative number of deaths reported due to pandemic (H1N1) 2009 in the UK is 75. <<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 and work sites: greater than 10% absenteeism on any day most likely due to ILI

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

### **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