

- The overall influenza activity has increased for a fifth consecutive week. All indicators (proportion of positive influenza tests, national ILI consultation rate, number of regions reporting widespread and localized activity and number of influenza outbreaks) were higher this week compared to the previous weeks. There is increased influenza activity across the country, particularly in the West (BC, AB, SK, NT).
- This week, 99.9% of the positive influenza A subtyped specimens were Pandemic (H1N1) 2009.
- The intensity of Pandemic (H1N1) 2009 in the population was moderate with sixty-four hospitalizations and three deaths reported this week. Hospitalized cases were reported from BC, AB, MB, ON and NT while the deaths were from BC and SK. As of October 17, 2009, a total of 1,604 hospitalized cases including 312 cases admitted to an intensive care unit (ICU) and 164 cases required ventilation as well as 83 deaths had been reported since the beginning of the pandemic.
- The Minister of Health announced on October 21, 2009, that Health Canada has approved AREPANRIX, a vaccine against the Pandemic (H1N1) 2009 virus.

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

A total of 1,604 hospitalized cases including 312 (19.5%) cases admitted to ICU and 164 (10.2%) cases required ventilation as well as 83 deaths of Pandemic (H1N1) 2009 were reported to PHAC as of October 17, 2009. The proportion of females affected, the median age and the proportion of cases with underlying medical conditions was still increasing with severity of illness this week (see Characteristics table). While women and men had similar hospitalization rates, more females were admitted to ICU, required ventilation and died compared to men (approximately 60% females vs. 40% for males for all these outcomes). As well, for those with severe outcomes, females had more underlying medical conditions than males; 74.2% vs. 68.4% of ICU admissions and 81.6% vs. 71.8% of deaths. In the Canadian population, there are more females than males in older age groups which may partially explain the differences observed.

The national crude hospitalization rate was 4.8 per 100,000 population with the highest rates in children under 15 years of age (11.2 per 100,000). The national crude mortality rate was 0.25 per 100,000 population; those 45 years and older had the highest mortality rate (0.36 per 100,000). ICU admission rate and ventilation rate were also elevated in children under five years of age (1.7 and 1.1 per 100,000, respectively).

There were 85 (27.8%) hospitalized pregnant women out of 306 hospitalized women between 15 and 44 years of age for whom the information on pregnancy was available. The median age among all pregnant cases was 28 years (range 16 to 42 years). Information on pregnancy trimester was available for 39 hospitalized women: 28 (71.8%) of these 39 pregnant women were in their third trimester. Pregnant women 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 occurred in this group. However, hospitalized pregnant women were admitted to ICU less frequently (18.8% vs. 30.3%), required ventilation less frequently (5.9% vs. 16.7%) and had less underlying medical conditions (36.7% vs. 58.0%) compared to hospitalized non-pregnant women between 15 and 44 years of age. The main underlying medical conditions reported by hospitalized pregnant women were pulmonary disease (including asthma) (11) and diabetes (5). Four pregnant cases resulted in death and three of these women were in their third trimester (the trimester was unknown for one case).

**Weekly and cumulative numbers of hospitalized cases, ICU admissions and deaths among Pandemic (H1N1) 2009 confirmed cases, Canada, to October 17, 2009**

Province/ Territory	This week (Oct. 11-17, 2009)			Cumulative		
	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU-admitted cases	Deaths
BC	33	6	2	111	30	9
AB	6	1	0	139	32	8
SK	0	0	1	24	12	5
MB	1 <sup>a</sup>	0	0	227	43	7
ON	20	6	0	407	72	25
QC	0	0	0	585 <sup>b</sup>	105	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	3	1	0
YT	0	0	0	0	0	0
NT	4	0	0	22	2	0
NU	0	0	0	66	6	1
Canada	64	13	3	1604	312	83

<sup>a</sup> The new numbers reflect the situation since week 39.

<sup>b</sup> Quebec confirmed that one previously reported hospitalized case was excluded which explains the lower cumulative hospitalization number for this week.

**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 October 17, 2009**

	Hospitalized cases (n=1,604)	Cases admitted to ICU (n=312)	Deaths (n=83)
Females, %	51.4	56.4	61.0
Median age	23.0	37.0	49.5
Aboriginal status, %	17.7	15.1	12.0
Underlying medical conditions <sup>1</sup> , %	61.9 (657/1,062)	71.7 (157/219)	77.4 (48/62)
Pregnancy <sup>2</sup> , %	27.8 (85/306)	19.3 (16/83)	23.5 (4/17)

<sup>1</sup> Proportion of cases with at least one underlying medical condition (excluding pregnancy) among those for whom the information was available. Note that P/T are now reporting or three additional underlying medical conditions : chronic liver disease, chronic neurological disease and anemia or hemoglobinopathy.

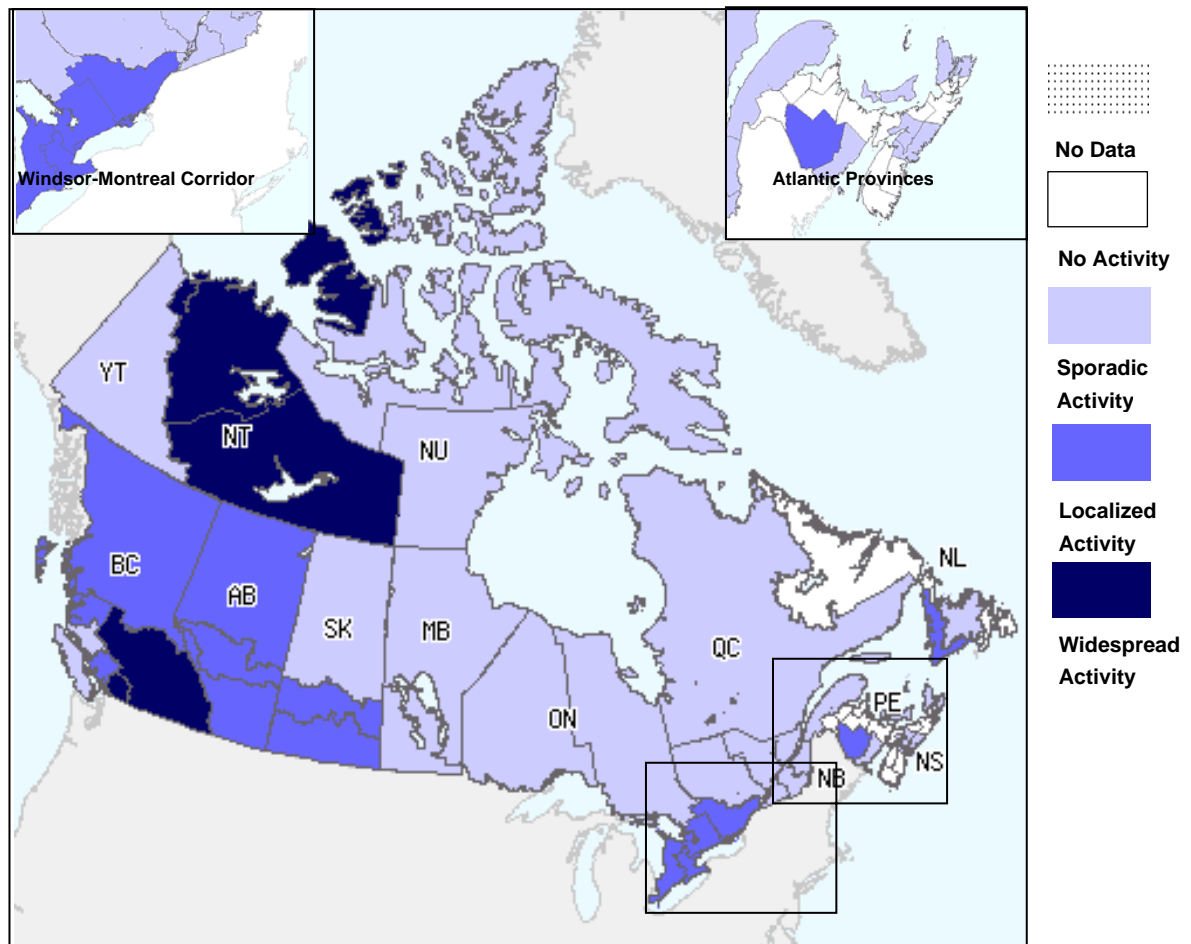
<sup>2</sup> Percent of pregnant women among women 15 to 44 years of age.

**Overall Influenza Summary - Week 41 (October 11 to October 17, 2009)**

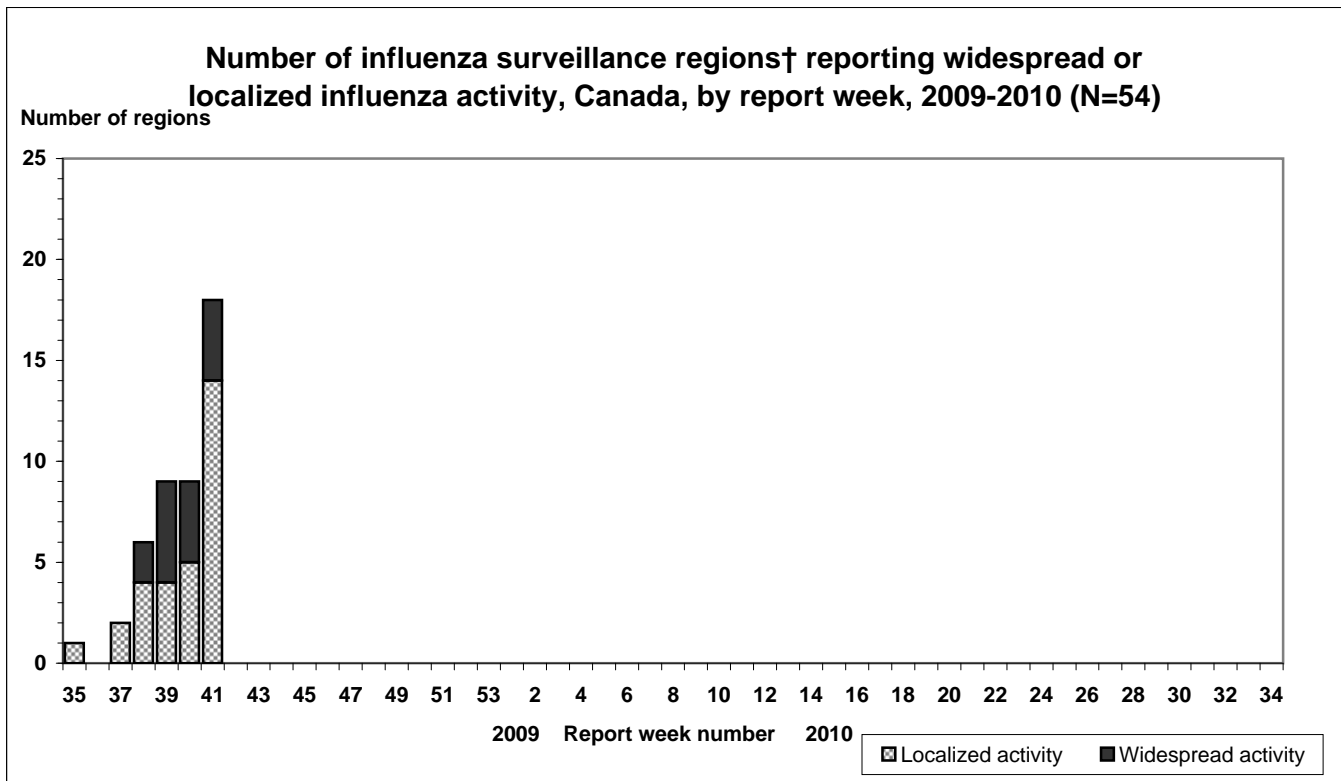
The overall influenza activity has increased for a fifth consecutive week. All indicators (proportion of positive influenza tests, national ILI consultation rate, number of regions reporting widespread and localized activity and number of influenza outbreaks) were higher this week compared to the previous weeks.

Four regions reported widespread activity in BC & NT and fourteen regions in BC, AB, SK, ON, NB & NL reported localized activity, while twenty-three regions reported sporadic activity in BC, SK, MB, ON, QC, NB, PEI, NS, NL, YK & NU and thirteen regions in NB, NS & NL reported no activity. The fifty-eight influenza outbreaks reported this week were all in schools except 1 in a long-term care facility (BC), 1 in an unspecified location (AB) and 1 in a workplace (NB). The schools outbreaks were in BC (38), AB (9), NT (5), SK (1), NS (1) and NL (1). Note that this is the first year that all the provinces and territories are reporting on influenza outbreak 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 the previous years.

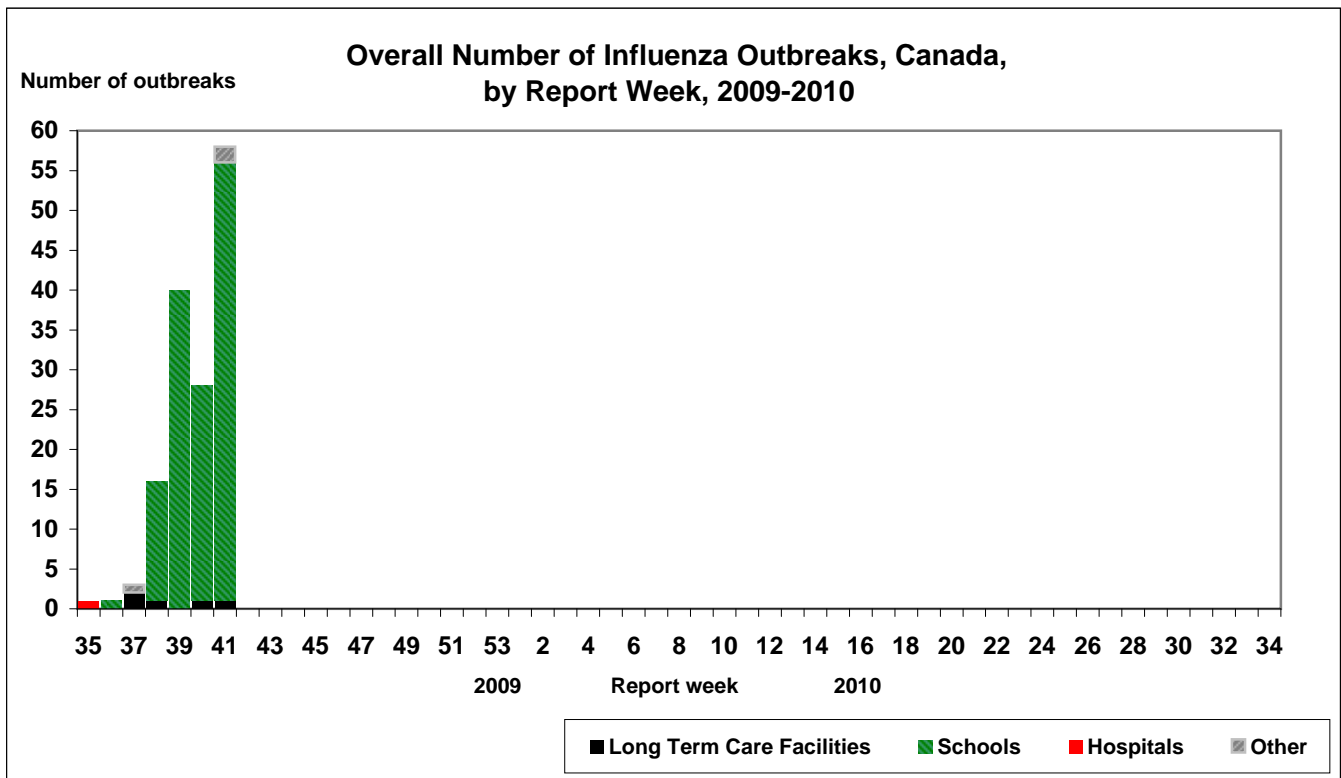
**Map of overall Influenza activity level by provinces and territories, Week 41, Canada**



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.

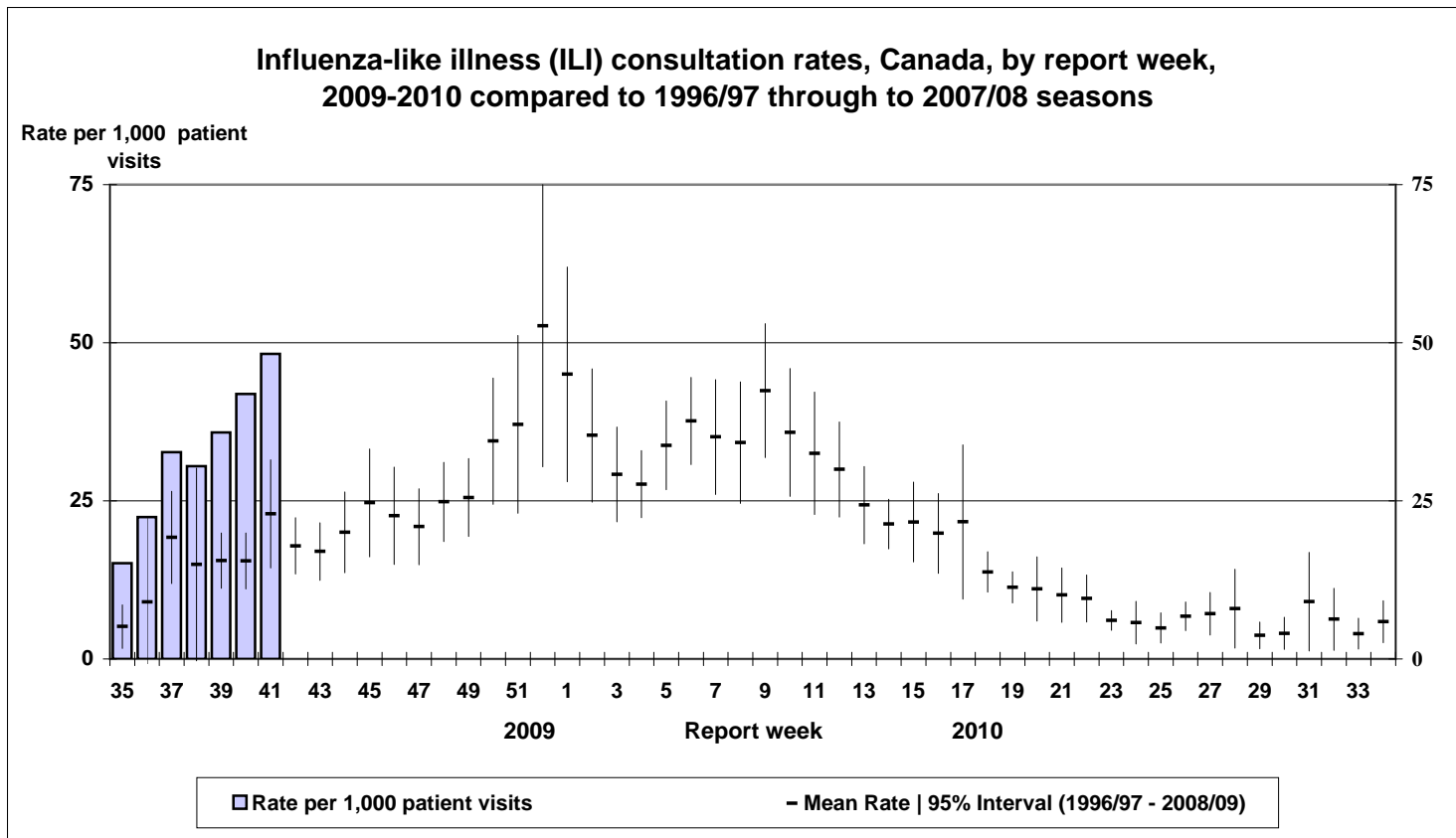


† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.



## **ILI consultation rate**

This week, the national ILI consultation rate was 48 consultations per 1,000 patient visits (see ILI graph) which is higher compared to the previous weeks and still above the expected range for this time of the year. Four provinces (AB, SK, ON and NT) had higher ILI consultation rates compared to their ILI rates in previous weeks. The ILI rates of these four provinces were also higher than the national level this week. People under 20 years of age had the highest consultations rates with 98.3 and 88.9 per 1,000 patient visits among children under 4 years of age and among those 5 and 19 years of age, respectively.



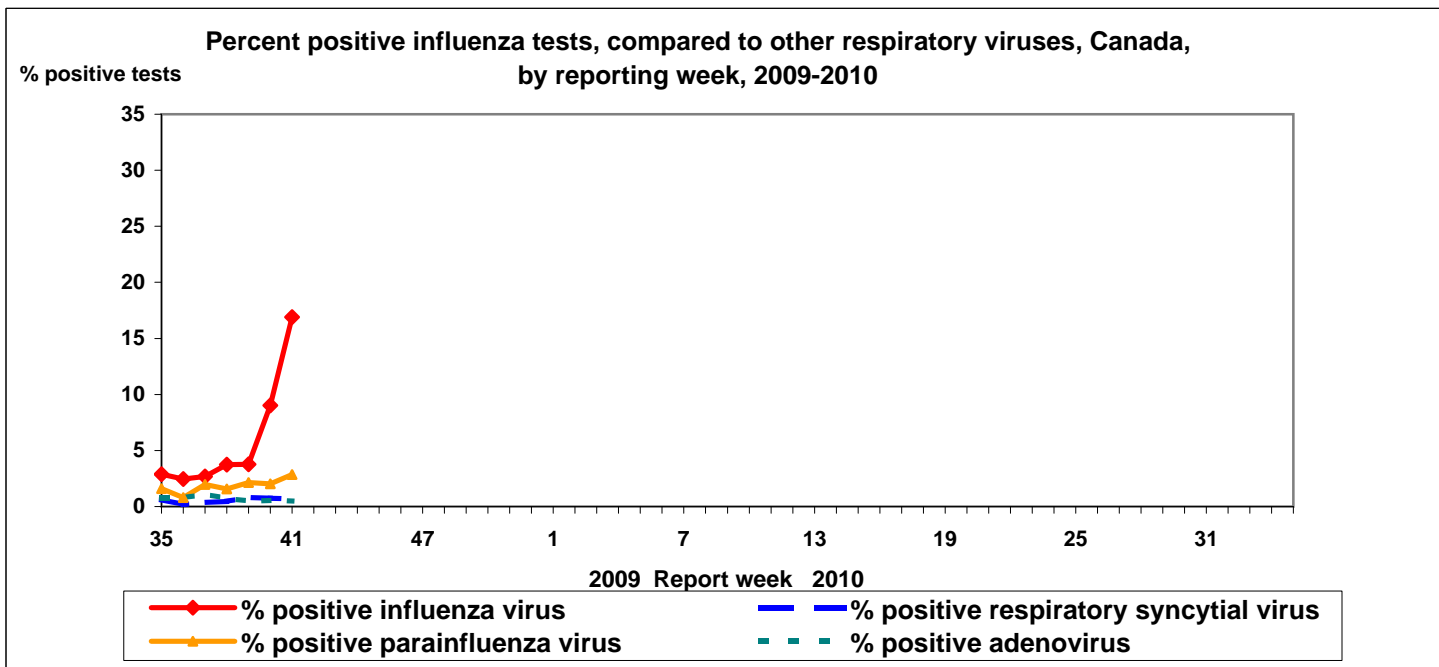
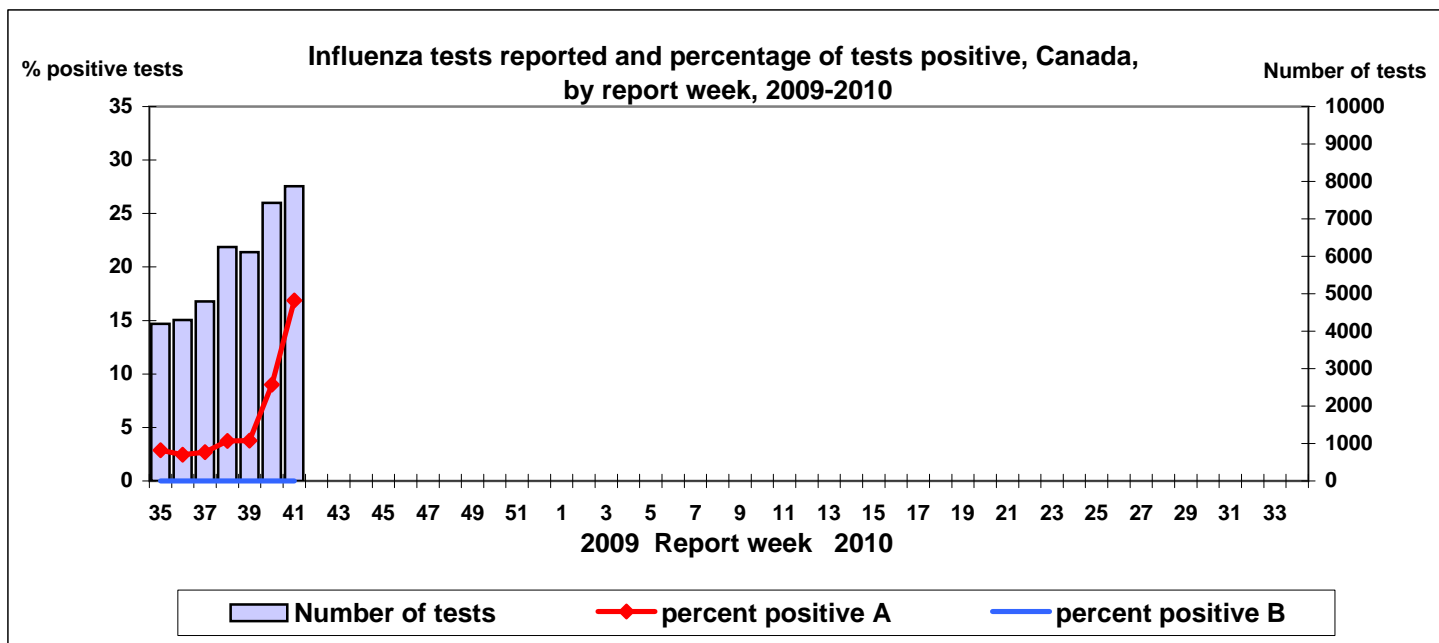
Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

## **Paediatric Influenza Hospitalizations and Deaths**

In week 41, no laboratory-confirmed influenza-associated paediatric hospitalizations or deaths were reported through the Immunization Monitoring Program Active (IMPACT) network. 379 hospitalizations had been reported since week 17 (April 26); 93.7% of these hospitalizations were due to Pandemic (H1N1) 2009. Since the beginning of the pandemic, four deaths due to Pandemic (H1N1) 2009 had been 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 16.9% which is a significant increase compared to the previous weeks (see Tests table). All provinces and territories had a high proportion of positive tests for influenza this week, especially British Columbia with more than 42% of positive tests for influenza. This week, a total of 1,328 specimens tested positive for influenza this week (all A except 1 B) and 99.9% of the positive influenza A subtyped specimens were Pandemic (H1N1) 2009.



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

Reporting provinces	Weekly (Oct. 11-17, 2009)						Cumulative (Aug. 30 to Oct. 17, 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	668	0	0	617	51	0	1472	0	0	921	551	0
AB	318	0	0	148	170	0	635	0	0	231	404	0
SK	58	0	1	46	11	0	86	0	1	70	15	0
MB	12	0	0	11	1	0	19	0	0	15	4	0
ON	175	0	0	87	88	1	347	1	0	147	199	1
QC	84	0	0	84	0	0	219	34	1	117	67	0
NB	0	0	0	0	0	0	5	0	1	2	2	1
NS	4	0	0	3	1	0	20	0	0	14	6	0
PE	3	0	0	3	0	0	5	0	0	5	0	0
NL	6	0	0	6	0	0	8	0	0	8	0	0
<b>Canada</b>	<b>1328</b>	<b>0</b>	<b>1</b>	<b>1005</b>	<b>322</b>	<b>1</b>	<b>2816</b>	<b>35</b>	<b>3</b>	<b>1530</b>	<b>1248</b>	<b>2</b>

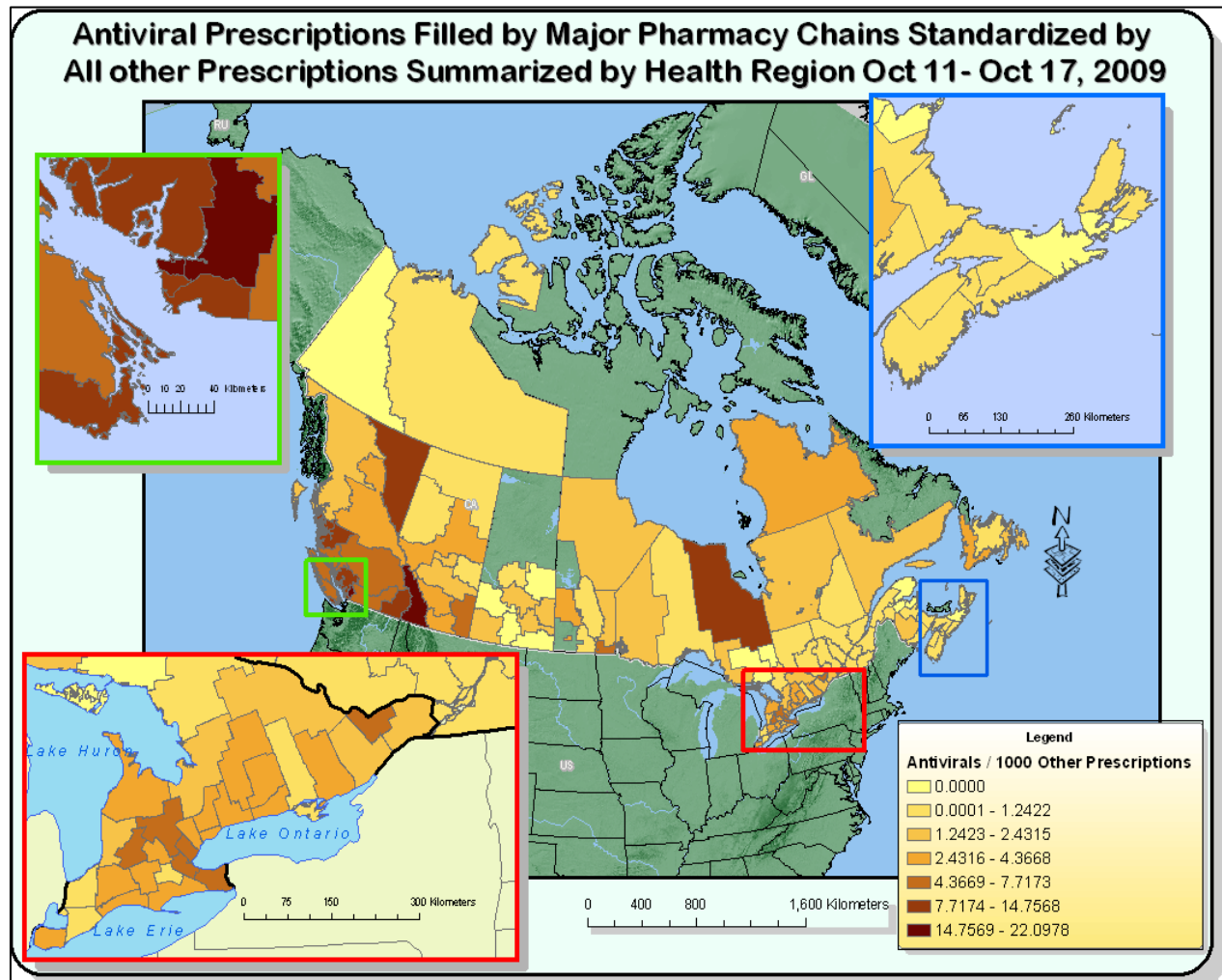
*Specimens from NT, YT, and NU are sent to reference laboratories in other provinces.*

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 41, compared to other prescriptions filled in Canada, the sale of AV suggested continued increases in most provinces and territories. The most pronounced increases were among children (between 2 and 17 years of age) and in the province of British Columbia.



Reference: H1N1 Antiviral and OTC Surveillance Weekly Report. For more information including a copy of the report, please contact Frank Pollari 519-826-2184, Frank\_Pollari@phac-aspc.gc.ca.

## Canadian situation

### Vaccination

The Minister of Health announced on October 21, 2009, that Health Canada has approved AREPANRIX, a vaccine against the Pandemic (H1N1) 2009 virus. Health Canada and the Public Health Agency of Canada are currently working with provincial and territorial governments to deliver the A/H1N1 flu vaccine to health care facility sites to begin immunization programs.

### Antigenic Characterization

Since September 1, 2009, NML has antigenically characterized 40 Pandemic (H1N1) 2009 viruses and two seasonal influenza viruses (one influenza A/H1N1 and one B virus) that were received from Canadian laboratories. All 40 Pandemic influenza A (H1N1) viruses characterized were antigenically related to A/California/7/2009, which is the pandemic reference virus selected by WHO as Pandemic (H1N1) 2009 vaccine. The one seasonal influenza A/H1N1 virus characterized was related to A/Brisbane/59/07, which is the influenza A/H1N1 component recommended for the 2009-10 influenza vaccine. The one influenza B virus characterized was antigenically related to B/Brisbane/60/08, which is the recommended influenza B component for the 2009-10 influenza vaccine.

## **Antiviral Resistance**

**NML:** The 40 Pandemic (H1N1) 2009 specimens were tested for resistance to neuraminidase inhibitors (oseltamivir and zanamivir) by phenotypic assay and/or sequencing. The testing results showed that the virus was sensitive to zanamivir and resistant to amantadine. One out of 21 Pandemic (H1N1) 2009 isolates tested for oseltamivir resistance was found to be resistant.

**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:** As of 11 October, 2009, over 4,735 deaths with Pandemic (H1N1) 2009 were reported to WHO. Influenza rates in the temperate zones of the Southern Hemisphere have all returned to below baseline levels and very few detections of Pandemic (H1N1) 2009 virus are being reported. Influenza activity continues to increase in the northern temperate zones across the world. The tropical zones continue to have transmission that is mixed as some countries have now peaked and are declining, while others are experiencing increases. Pandemic (H1N1) 2009 is the predominant influenza strain worldwide. However, nearly half of the influenza viruses detected in China are seasonal influenza A (H3N2) virus, which appeared prior to and is co-circulating with Pandemic (H1N1) 2009 virus. <[http://www.who.int/csr/don/2009\\_10\\_16/en/index.html](http://www.who.int/csr/don/2009_10_16/en/index.html)>

**Antiviral resistance:** To date, 35 resistant Pandemic (H1N1) 2009 influenza viruses have been detected and characterized worldwide. All of these viruses show the same H275Y mutation that confers resistance to the antiviral oseltamivir. Sporadic incidents of Pandemic (H1N1) 2009 viruses with resistance to the antiviral oseltamivir continue to be detected. <<http://www.who.int/csr/disease/swineflu/updates/en/index.html>>

### **Northern Hemisphere**

**United States:** During the week of October 4-10, 2009, influenza activity continued to increase in the U.S. Outpatient visits for influenza-like illness (ILI) were above the national baseline. Forty-one states reported geographically widespread influenza activity. From August 30 to October 10, 2009, 4,958 hospitalizations and 292 deaths were reported to CDC as laboratory-confirmed influenza. The proportion of deaths attributed to pneumonia and influenza (P&I) has increased and exceeds what is normally expected at this time of year. In addition, 11 flu-related pediatric deaths were reported this week. Since April 2009, there have been 86 confirmed pediatric Pandemic (H1N1) 2009 deaths; 39 of these have been reported to CDC since August 30, 2009. <<http://www.cdc.gov/flu/weekly/> and <http://www.cdc.gov/h1n1flu/update.htm>>

**Mexico:** As of October 19, 2009, Mexico reported 45,809 confirmed cases of Pandemic (H1N1) 2009, and 271 deaths. The peak of cases reported in September has been larger than those observed during the spring & summer. The majority (66.4%) of confirmed cases were in patients 5 to 29 years of age. However, the largest proportion of all deaths were observed in the older age groups, with 68.5% of all fatal cases in patients 20 to 54 years old. <<http://portal.salud.gob.mx/>>

**UK:** As of October 15, 2009, pandemic influenza activity continues to increase across the UK, particularly in school-aged children and young adults. Health Protection Agency modelling gave an estimate of 27,000 (range 13,000 – 58,000) new cases in England in week 40. At least 70 schools throughout England have reported outbreaks of ILI since the beginning of the autumn term with virological confirmation of pandemic influenza in at least one case in 48 of the schools. The majority of pandemic influenza cases continue to be mild. The cumulative number of deaths reported due to Pandemic (H1N1) 2009 in the UK is 105. <<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1242949541993?p=1242949541993>>

**France:** From October 12 to 18, 2009 the ILI consultation rate remained stable but above the expected rate (159 cases per 100,000 compared to threshold of 114 cases per 100,000). The proportion of positive pandemic (H1N1) influenza detections increased from weeks 40 to 41 but remains low at 9%. <<http://www.invs.sante.fr>>

**Spain:** There were an estimated 42,001 new Pandemic (H1N1) cases over the last seven days. To date, the cumulative number of deaths reported due to Pandemic (H1N1) 2009 in Spain is 45. The mortality rate from week 27 is 0.15 deaths per 1,000 persons affected by Pandemic (H1N1) 2009. <<http://www.msc.es/servCiudadanos/alertas/informesGripeA/home.htm>>

## Southern hemisphere

**Australia:** National influenza activity continues to decrease. ILI consultations to GPs and emergency departments as well as absenteeism rates are stable or decreasing. As of October 16, 2009, Australia reported 185 deaths with Pandemic (H1N1) 2009. The overall hospitalization rate is 22.7 per 100,000 population with the highest rates in children aged less than 5 years of age (67.9 for males and 54.1 for females per 100,000 population). The Australian Paediatric Surveillance Unit (APSU) completed reporting on 30 September 2009. This season there were a total of 124 notifications of children hospitalized with severe complications of influenza. Sixty percent had no underlying medical conditions.

<<http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/ozflu2009.htm>>

**New Zealand:** Influenza activity continues to decline with reductions in GP consultations for ILI, influenza-related calls to the Healthline, and number of people hospitalized with Pandemic (H1N1) 2009. No new deaths were reported this week, leaving the total at 18. <<http://www.moh.govt.nz/moh.nsf/indexmh/influenza-a-h1n1-news-media>>

**Population based cumulative crude mortality rate\***

Country	No. Pandemic (H1N1) deaths	Estimated population	Mortality rate per 100,000
Australia	185	22,025,795	0.84
New Zealand	18	4,315,800	0.42
US	847	304,059,724	0.28
Mexico	271	111,211,789	0.24
UK	105	61,383,000	0.17

\* Note that these cumulative crude mortality rates are estimates.

**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.

### **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