

October 18, 2009 to October 24, 2009 (Week 42)

- Striking increases in overall influenza activity were reported this week. All indicators (proportion of positive influenza tests, national ILI consultation rate, number of regions reporting widespread activity and number of influenza outbreaks) were considerably higher this week compared to the previous weeks. There is increased influenza activity across the country, particularly in the West (BC, AB, SK, NT) and in NL.
- This week, 99.7% of the positive influenza A subtyped specimens were Pandemic (H1N1) 2009.
- The intensity of Pandemic (H1N1) 2009 in the population was moderate with 175 hospitalizations and 9 deaths reported this week. Hospitalized cases were reported from BC, AB, ON, QC, NB and NT while the deaths were from BC, AB and ON. As of October 24, 2009, a total of 1,779 hospitalized cases including 351 cases admitted to an intensive care unit (ICU) and 185 cases required ventilation as well as 92 deaths had been reported since the beginning of the pandemic. Numbers of new hospitalizations, ICU admissions and deaths reported this week were approximately three times higher than last week.
- Compared to other prescriptions filled in Canada, the sale of antivirals suggested pronounced increases in ON and Western NL.
- The Minister of Health announced on October 23, 2009, that Canada has officially entered the second wave of Pandemic (H1N1) 2009.

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

A total of 1,779 hospitalized cases including 351 (19.7%) cases admitted to ICU and 185 (10.4%) cases required ventilation as well as 92 deaths of Pandemic (H1N1) 2009 were reported to PHAC as of October 24, 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; 74.5% vs. 70.4% of ICU admissions and 83.3% vs. 74.1% 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 5.3 per 100,000 population with the highest rates in children under 15 years of age (12.1 per 100,000). The national crude mortality rate was 0.28 per 100,000 population; those 45 years and older had the highest mortality rate (0.40 per 100,000). ICU admission rate and ventilation rate were also elevated in children under one year of age (3.6 and 3.0 per 100,000, respectively).

There were 93 (26.6%) hospitalized pregnant women out of 350 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 44 hospitalized women: 33 (75%) of these 44 pregnant women were in their third trimester and one woman was in postpartum. Pregnant women, who represent 1% of the population in a given year, are presenting with a higher burden of morbidity and mortality: 5% of hospitalized cases and 4% of deaths occurred among pregnant women. However, hospitalized pregnant women were admitted to ICU less frequently (18.3% vs. 29.2%), required ventilation less frequently (5.4% vs. 15.2%) and had less underlying medical conditions (33.3% vs. 57.2%) 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 24, 2009**

Province/Territory	This week (Oct. 18-24, 2009)*			From August 30, 2009 to October 24, 2009**			First wave (up to August 29, 2009)**		
	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU admissions	Deaths	Hospitalized cases	ICU admissions	Deaths
BC	88	21	3	145	30	7	54	21	5
AB	44	7	4	53	9	4	130	30	8
SK	0	0	0	1	0	1	23	12	4
MB	0	0	0	0	0	0	227	43	7
ON	32	8	2	65	13	4	374	67	23
QC	2	1	0	13	2	1	574	104	26
NB	1	1	0	1	1	0	2	1	0
NS	0	0	0	0	0	0	17	8	1
PE	0	0	0	0	0	0	1	0	0
NL	0	0	0	0	0	0	3	1	0
YT	0	0	0	0	0	0	0	0	0
NT	8	1	0	21	3	0	9	0	0
NU	0	0	0	0	0	0	66	6	1
Canada	175	39	9	299	58	17	1480	293	75

\*Based on reporting date. \*\* Based on epidemiological date.

**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 24, 2009**

	Hospitalized cases (n=1,779)	Cases admitted to ICU (n=351)	Deaths (n=92)
Females, %	51.8	56.4	60.9
Median age	24.0	37.5	50.0
Aboriginal status, %	16.5	13.4	10.9
Underlying medical conditions <sup>1</sup> , %	61.9 (735/1,187)	72.7 (181/249)	79.7 (55/69)
Pregnancy <sup>2</sup> , %	26.6 (93/350)	18.5 (17/92)	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.

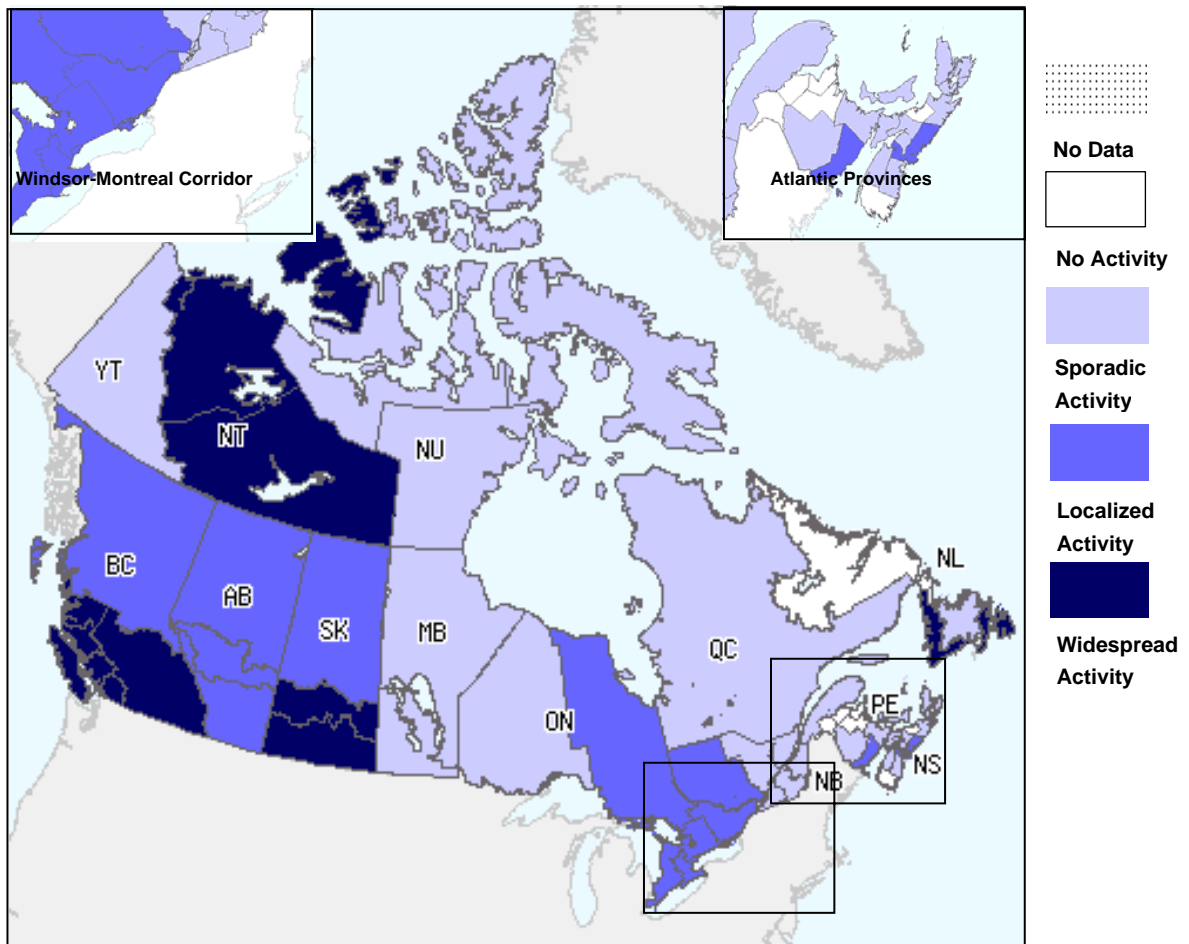
<sup>2</sup> Percent of pregnant women among women 15 to 44 years of age.

**Overall Influenza Summary - Week 42 (October 18 to October 24, 2009)**

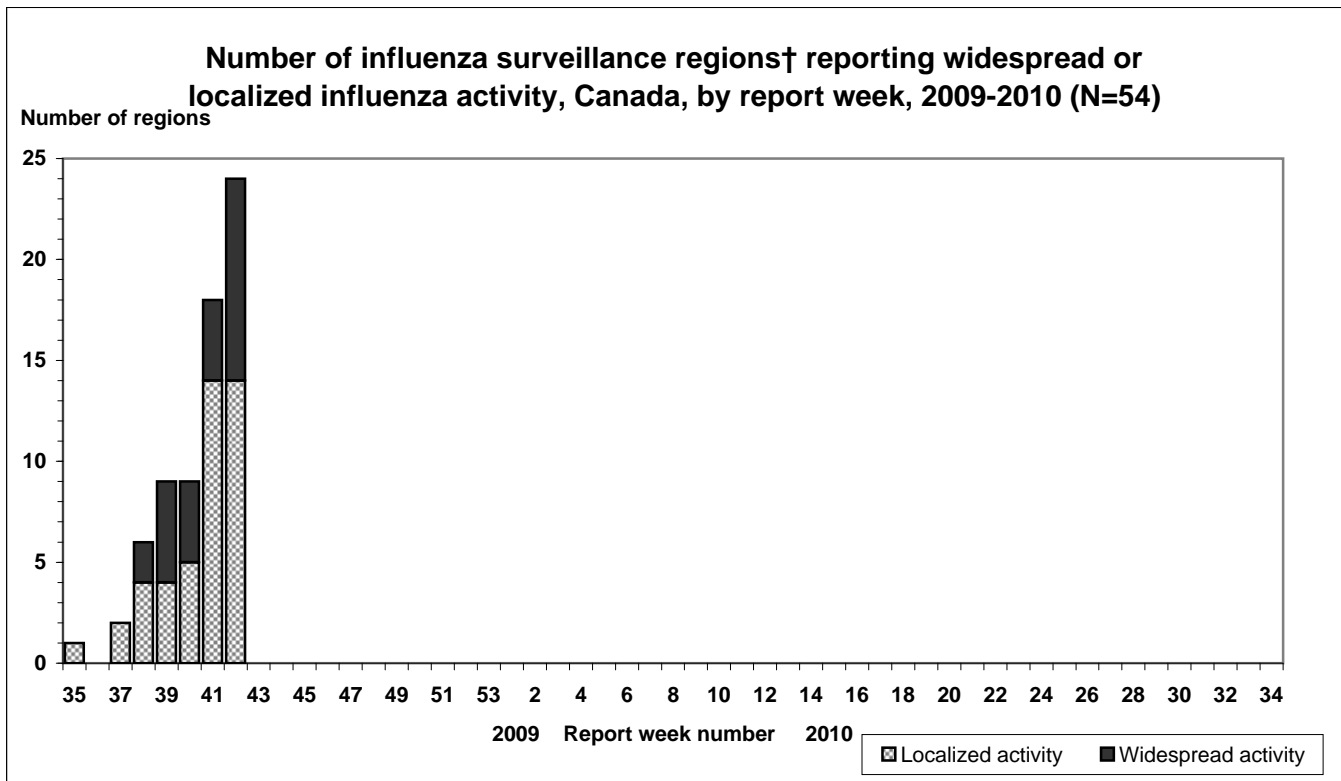
Striking increases in overall influenza activity were reported this week. All indicators (proportion of positive influenza tests, national ILI consultation rate, number of regions reporting widespread activity and number of influenza outbreaks) were considerably higher this week compared to the previous weeks.

Ten regions reported widespread activity in BC, SK, NL & NT and fourteen regions in BC, AB, SK, ON, QC, NB & NS reported localized activity, while twenty-three regions reported sporadic activity in MB, ON, QC, NB, PEI, NS, NL, YK & NU and seven regions in NB, NS & NL reported no activity. The 226 influenza outbreaks reported this week were all in schools except 6 in hospitals (ON, NL), 3 in long-term care facility (BC, QC) and 3 in an unspecified location (AB, ON). The schools outbreaks were in BC (100), AB (87), NT (16), SK (4), NS (4), NL (2) and NB (1). 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 the previous years.

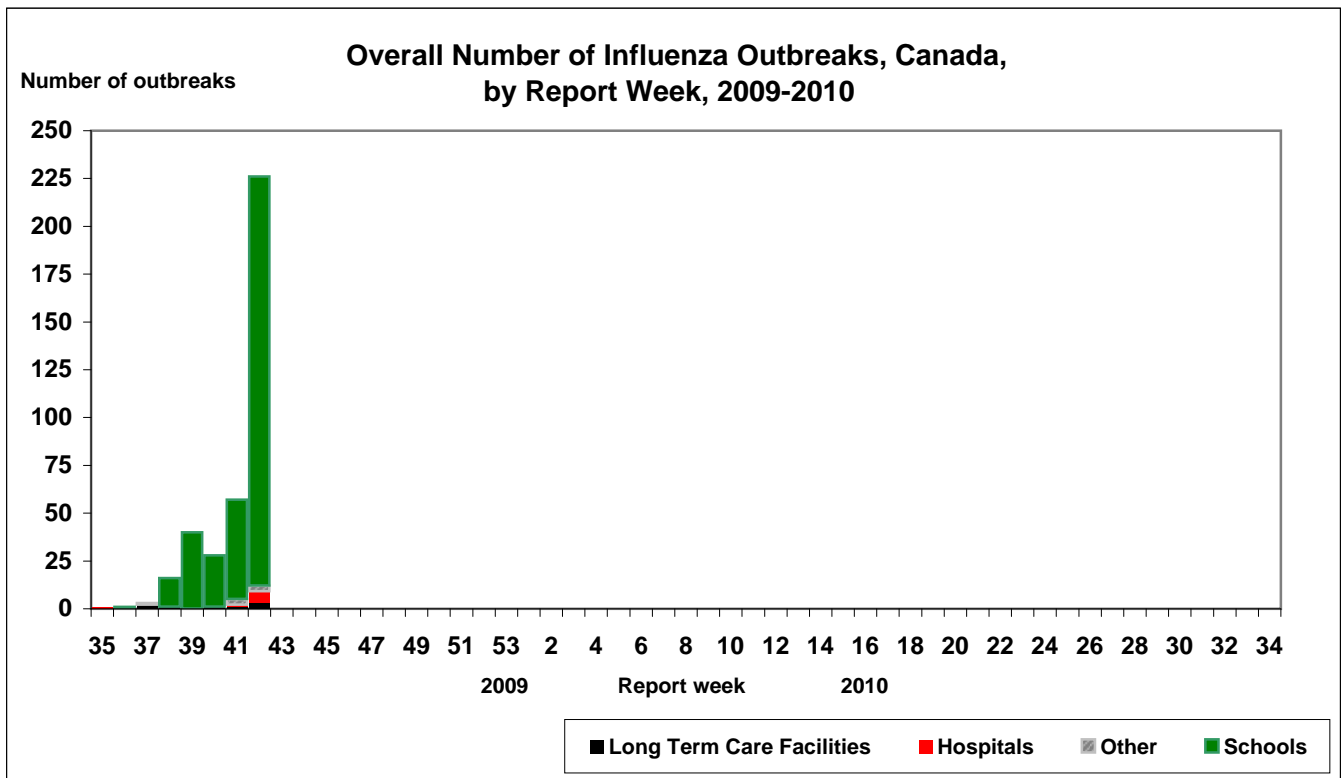
**Map of overall Influenza activity level by provinces and territories, Week 42, Canada**



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.

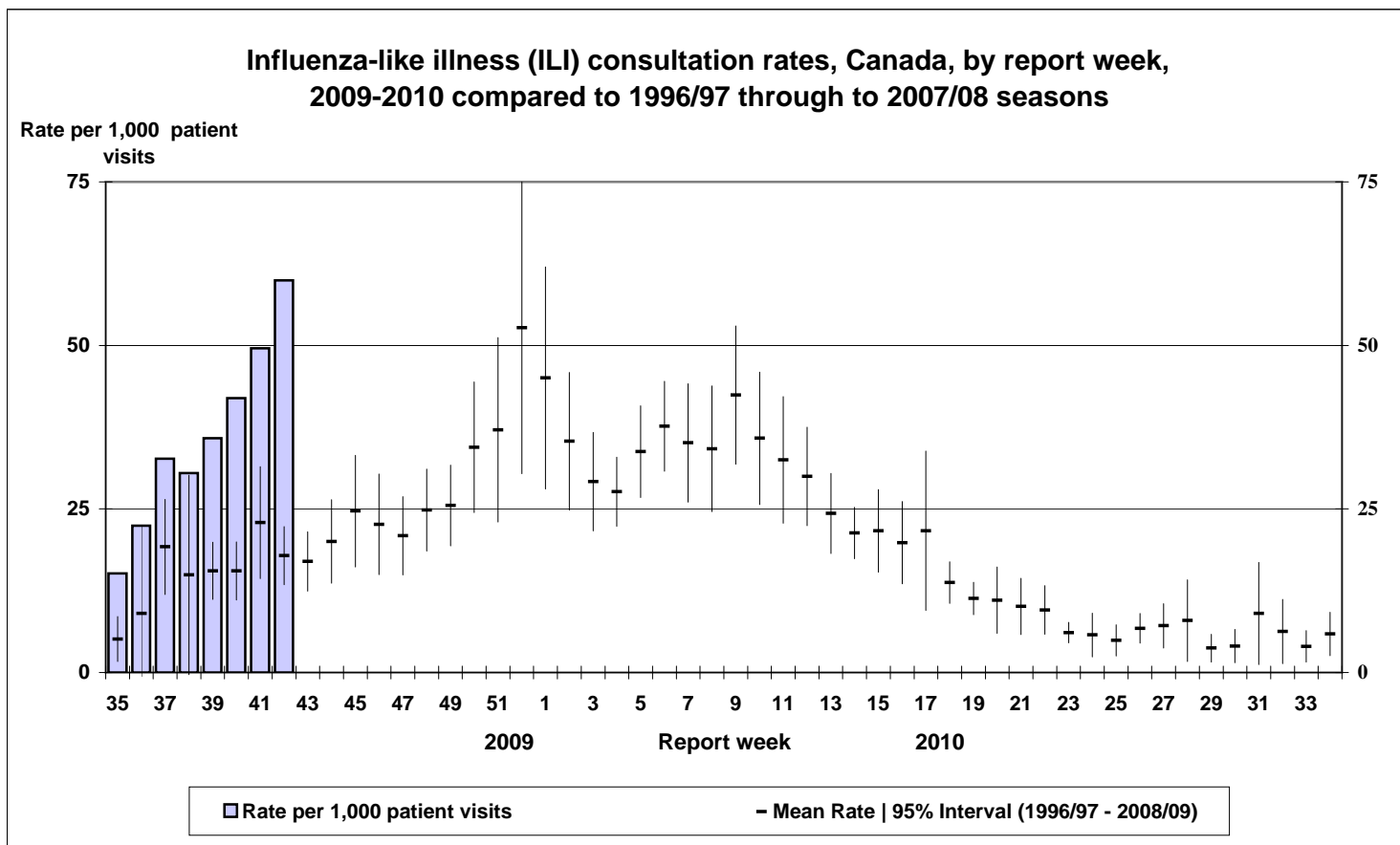


† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.



## **ILI consultation rate**

This week, the national ILI consultation rate was 59 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 (ON, NL, YK & NT) had higher ILI consultation rates than the national level this week. People under 20 years of age had the highest consultations rates with 131 and 150 per 1,000 patient visits among children under 5 years of age and among those 5 and 19 years of age, respectively.



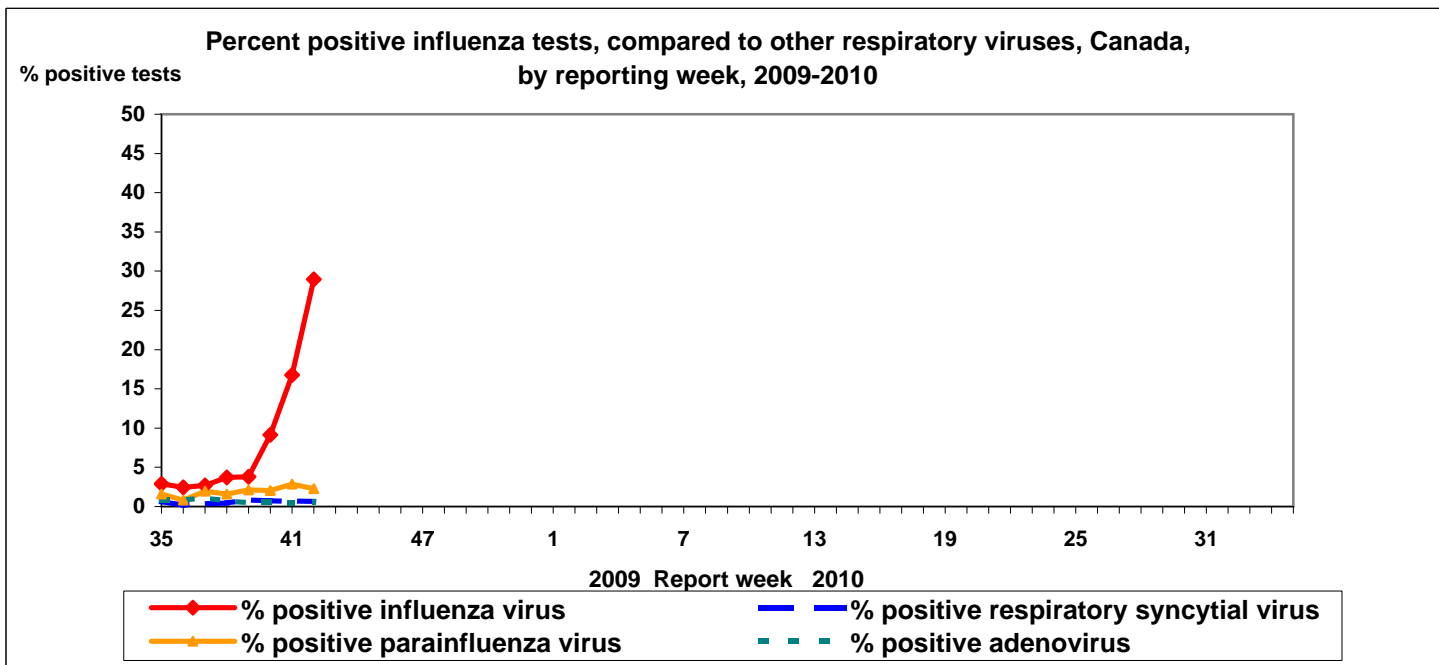
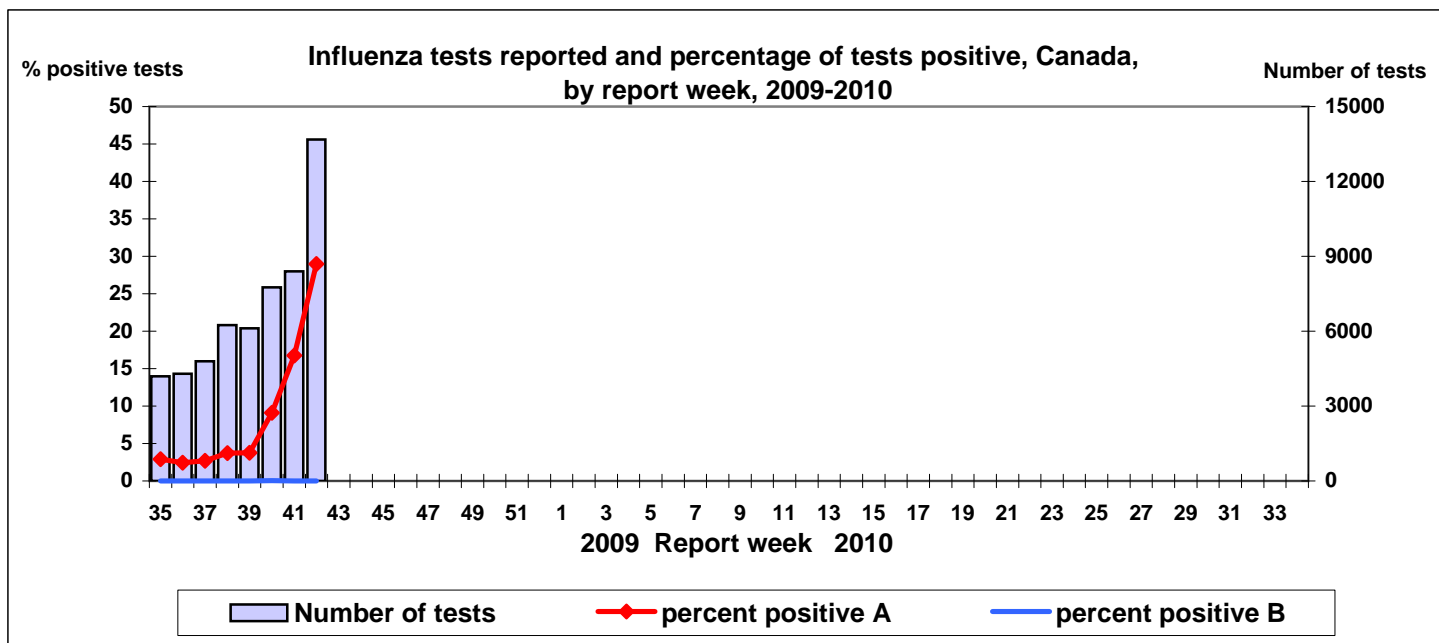
Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons).  
Delays in the reporting of data may cause data to change retrospectively.

## **Paediatric Influenza Hospitalizations and Deaths**

In week 42, 48 laboratory-confirmed influenza-associated paediatric hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. 18 hospitalizations reported this week were due to seasonal influenza A and 30 Pandemic (H1N1) 2009. 472 hospitalizations had been reported since week 17 (April 26); 89.8% 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 29.0% 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 52% of positive tests for influenza. This week, a total of 3,962 specimens tested positive for influenza this week (all A) and 99.7% 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. 18-24, 2009)						Cumulative (Aug. 30 to Oct. 24, 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	1176	0	0	1170	6	0	2648	0	0	2091	557	0
AB	1212	0	0	538	674	0	1847	0	0	769	1078	0
SK	127	0	0	92	35	0	213	0	1	162	50	0
MB	21	0	0	19	2	0	40	0	0	34	6	0
ON	818	0	0	467	351	0	1280	1	0	724	555	2
QC	457	0	8	449	0	0	676	34	9	566	67	0
NB	8	1	0	7	0	0	13	1	1	9	2	1
NS	67	0	0	63	4	0	87	0	0	77	10	0
PE	7	0	0	6	1	0	12	0	0	11	1	0
NL	69	0	0	69	0	0	77	0	0	77	0	0
<b>Canada</b>	<b>3962</b>	<b>1</b>	<b>8</b>	<b>2880</b>	<b>1073</b>	<b>0</b>	<b>6893</b>	<b>36</b>	<b>11</b>	<b>4520</b>	<b>2326</b>	<b>3</b>

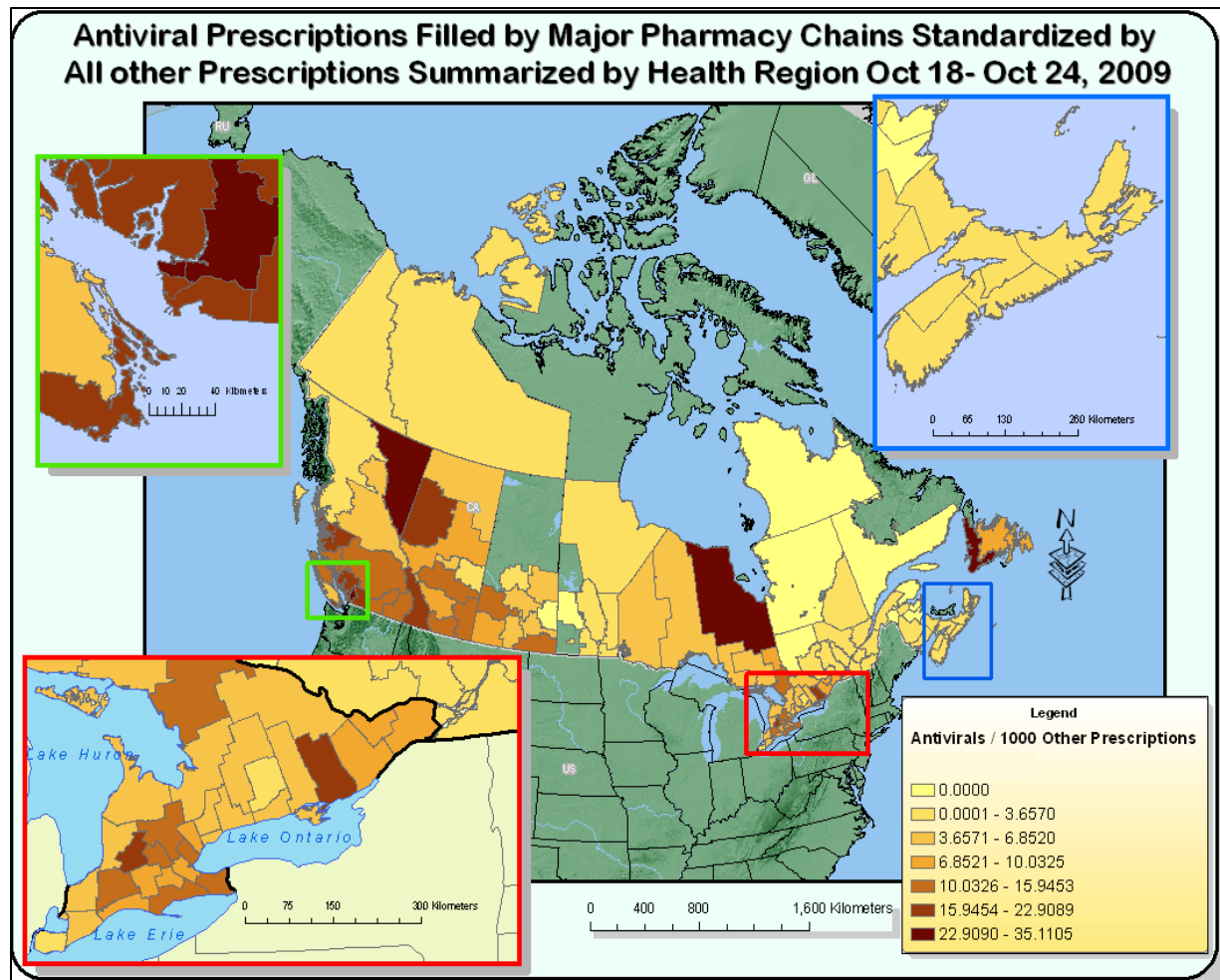
*Specimens from NT, YT, and NU are sent to reference laboratories in other provinces.*

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 42, 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 Ontario and Western Newfoundland and Labrador.



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

## Canadian situation

### Antigenic Characterization

Since September 1, 2009, NML has antigenically characterized 52 Pandemic (H1N1) 2009 viruses and two seasonal influenza viruses (one influenza A/H1N1 and one B virus) that were received from Canadian laboratories. All 52 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:** 39 Pandemic (H1N1) 2009 viruses tested so far have been sensitive to zanamivir but resistant to amantadine. 35 Pandemic (H1N1) 2009 viruses were sensitive to oseltamivir and one virus was resistant to oseltamivir with the H275Y mutation. The resistance was 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.

## Other Canadian information

### Vaccination

All the provinces and territories have started their vaccination campaigns except Nunavut that will start as of November 1, 2009.

## **International update**

### **Global information**

**WHO:** As of 17 October 2009, worldwide there have been more than 414,000 laboratory confirmed cases of Pandemic (H1N1) 2009 and nearly 5,000 deaths reported to WHO. In temperate regions of the northern hemisphere, there continues to be increased influenza and respiratory disease activity. Influenza-like illness (ILI) and acute respiratory illness (ARI) rates have increased above baseline levels in several European countries. Children are reported to be most affected by current ILI activity. The proportion of cases in Asia that are related to seasonal influenza A(H3N2) continues to decline globally as the proportion related to Pandemic (H1N1) 2009 increases. Temperate regions of the southern hemisphere have had no significant Pandemic (H1N1) 2009 influenza activity in the past week. <[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, 39 resistant pandemic H1N1 influenza viruses have been detected and characterized worldwide. 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:** From October 11 to 17, 2009, nationwide rates of ILI are above the seasonal baseline in a steep increase over the previous week. Forty-six states report widespread influenza activity this week. In addition, a high proportion (nearly 30%) of clinical laboratory specimens was positive for influenza A, with these nearly all Pandemic (H1N1) 2009. Influenza hospitalization rates continue to increase and are higher than expected for this time of year. From August 30-October 17, 2009, 8,204 hospitalizations and 411 deaths were reported to CDC for laboratory-confirmed influenza. Since April 2009, there have been 95 confirmed paediatric Pandemic (H1N1) 2009 deaths; 53 of these have been reported to CDC since August 30, 2009. Eleven paediatric influenza-related deaths were reported in the past week. <<http://www.cdc.gov/flu/weekly/> and <http://www.cdc.gov/h1n1flu/update.htm>> The American College Health Association reports a surge in ILI on college campuses compared to the previous week. <[http://www.acha.org/ILI\\_Surveillance.cfm](http://www.acha.org/ILI_Surveillance.cfm)>

**Mexico:** As of October 19, 2009, Mexico reported 50,234 confirmed cases of Pandemic (H1N1) 2009, and 328 deaths. The peak of Pandemic (H1N1) 2009 cases reported since September has been larger than those observed during the spring and summer. The majority (66.0%) 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 68.9% of all fatal cases in patients 20 to 54 years old. <<http://portal.salud.gob.mx/>>

**UK:** Pandemic influenza activity continues to increase with the main burden of disease remaining in school-aged children and young adults. At least 86 schools have reported outbreaks of ILI (with at least one case of Pandemic (H1N1) 2009 confirmed in 65 outbreaks). There were a total of 884 new patients hospitalized in England with suspected pandemic influenza in the week from 15-21 October (increased from 667 in the previous week). Health Protection Agency modelling gave an estimate of 53,000 (range 27,000 – 115,000) new cases in England in week 42.

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

**France:** From October 19 to 25, Pandemic (H1N1) 2009 circulation increased to 15% of consultations for acute respiratory illness. Rhinovirus circulation is decreasing, while Pandemic (H1N1) 2009 activity is increasing, particularly in large metropolitan centres. The Groupes Régionaux d'Observation de la Grippe (GROG) estimate that the number of cases of influenza in France has increased from 41,000 at the beginning of October to 167,000 last week. <<http://www.invs.sante.fr/>>

**Spain:** For the week of October 11-17, the estimated rate of influenza in primary care was 101.2 cases per 100,000 population. The estimated number of cases of Pandemic (H1N1) 2009 is 42,387 cases. To date, the cumulative number of deaths reported due to Pandemic (H1N1) 2009 in Spain is 54. The mortality rate from week 27 is 0.16 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. The number of people with Pandemic (H1N1) 2009 requiring hospitalization continues to decrease. Six jurisdictions reported no new hospitalizations in the week ending October 16, 2009. In total, 4,831 people have been hospitalized, with 13% admitted to Intensive Care Units. The overall hospitalization rate is 22.6 per 100,000 population with the highest rates in children aged less than 5 years of age. Pregnant women represent 23% of all hospitalizations for Pandemic (H1N1) 2009 of women aged between 20-39 years.

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

**New Zealand:** Influenza activity continues to decline with GP consultations for ILI and influenza-related calls to the Healthline only a little above the expected seasonal levels. For the second consecutive week, no persons were hospitalized with Pandemic (H1N1) 2009 or its complications.

<<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	19	4,315,800	0.44
Mexico	328	111,211,789	0.29
UK	119	61,383,000	0.19

\* 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