FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

March 6 to March 12, 2016 (Week 10)

Overall Summary

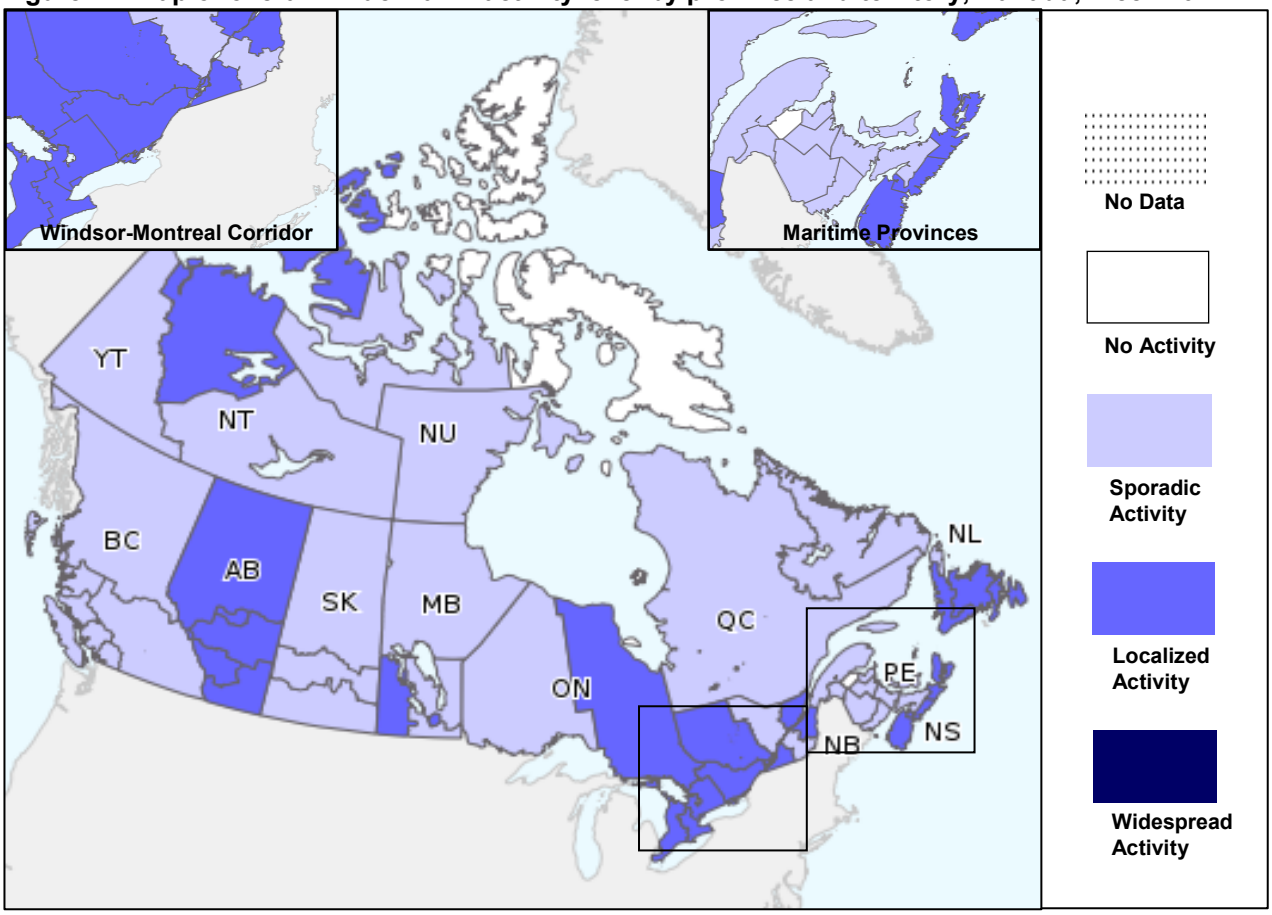
- Influenza activity continues to increase and is typical of peak season levels. The Eastern provinces of Canada accounted for the majority of influenza activity nationally.
- Nearly all regions in Canada are reporting sporadic or localized influenza activity.
- In week 10, 46 outbreaks were reported and the majority of outbreaks were in long-term care facilities.
- Adults greater than 45 years of age accounted for the majority of hospitalizations in week 10.
- Hospitalizations and ICU admissions among the pediatric population continue to be above typical peak season levels.
- A Canadian study reported an interim estimate of vaccine effectiveness of 64% against influenza A(H1N1) in Canada. This estimate suggests that the 2015-16 northern hemisphere vaccine has provided good protection against the influenza A(H1N1) virus, the most common circulating influenza virus.
- For more information on the flu, see our Flu(influenza) web page.

Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2015-16 influenza season? Contact us at FluWatch@phac-aspc.gc.ca

Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

In week 10, influenza activity was present in almost every region in Canada. A total of 24 regions reported localized activity levels with the majority in the eastern regions of Canada. Sporadic influenza/ILI activity was reported in 27 regions across Canada.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 10

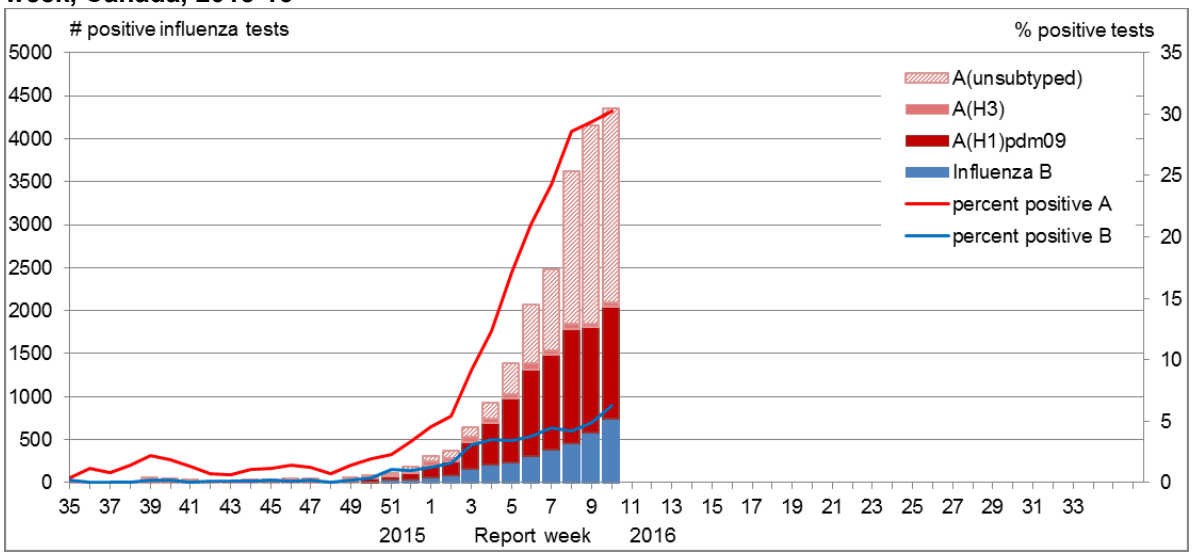


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Laboratory Confirmed Influenza Detections

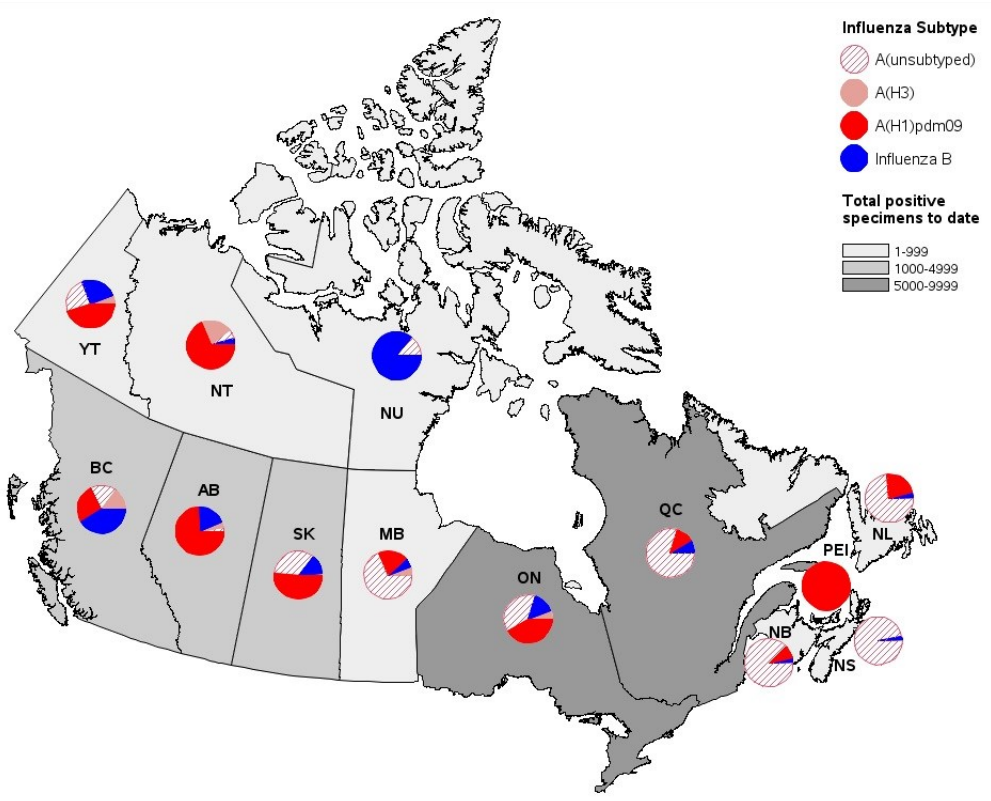
The percent positive for influenza increased slightly from the previous week [from 34% in week 09 to 36% in week 10 (Figure 2)]. This small increase from the previous week may suggest that the influenza season is near its peak. Compared to the previous five seasons, the percent positive (36%) reported in week 10 was above the five year average for that week and exceeded the expected levels (range 12.8%-18.3%). With the late start to the 2015-16 influenza season, these above normal levels are not unexpected and are typical of peak season levels.

Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2015-16



In week 10, there were 4,359 positive influenza tests reported. The Atlantic provinces reported the greatest percent increase (37%) in the number of positive influenza tests compared to the previous week. To date, 84% of influenza detections have been influenza A and among those subtyped, the vast majority have been influenza A(H1N1) [90% (7818/8679)].

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province, Canada, 2015-16



Note: Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data include updates to previous weeks.

To date this season, detailed information on age and type/subtype has been received for 18,729 cases. Adults aged 20-44 years accounted for the greatest proportion of influenza cases, followed closely by adults aged 45-64 (Table 1). Adults aged 20-44 and 45-64 years accounted for 55% of reported influenza A(H1N1) cases. Children 5-19 years and adults 20-44 years accounted for 57% of all influenza B cases reported.

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2015-16

Age groups (years)	Weekly (Mar. 6, 2016 to Mar. 12, 2016)					Cumulative (Aug. 30, 2015 to Mar. 12, 2016)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	#	%
<5	489	118	0	371	106	2973	1392	52	1529	457	3430	18%
5-19	169	44	<5	x	167	1671	851	77	743	901	2572	14%
20-44	587	180	<5	x	133	4112	2175	130	1807	809	4921	26%
45-64	722	211	<5	x	61	4087	1963	159	1965	385	4472	24%
65+	549	140	18	391	81	2899	1085	354	1460	435	3334	18%
Total	2516	693	29	1794	548	15742	7466	772	7504	2987	18729	100%
Percentage[2]	82%	28%	1%	71%	18%	84%	47%	5%	48%	16%		

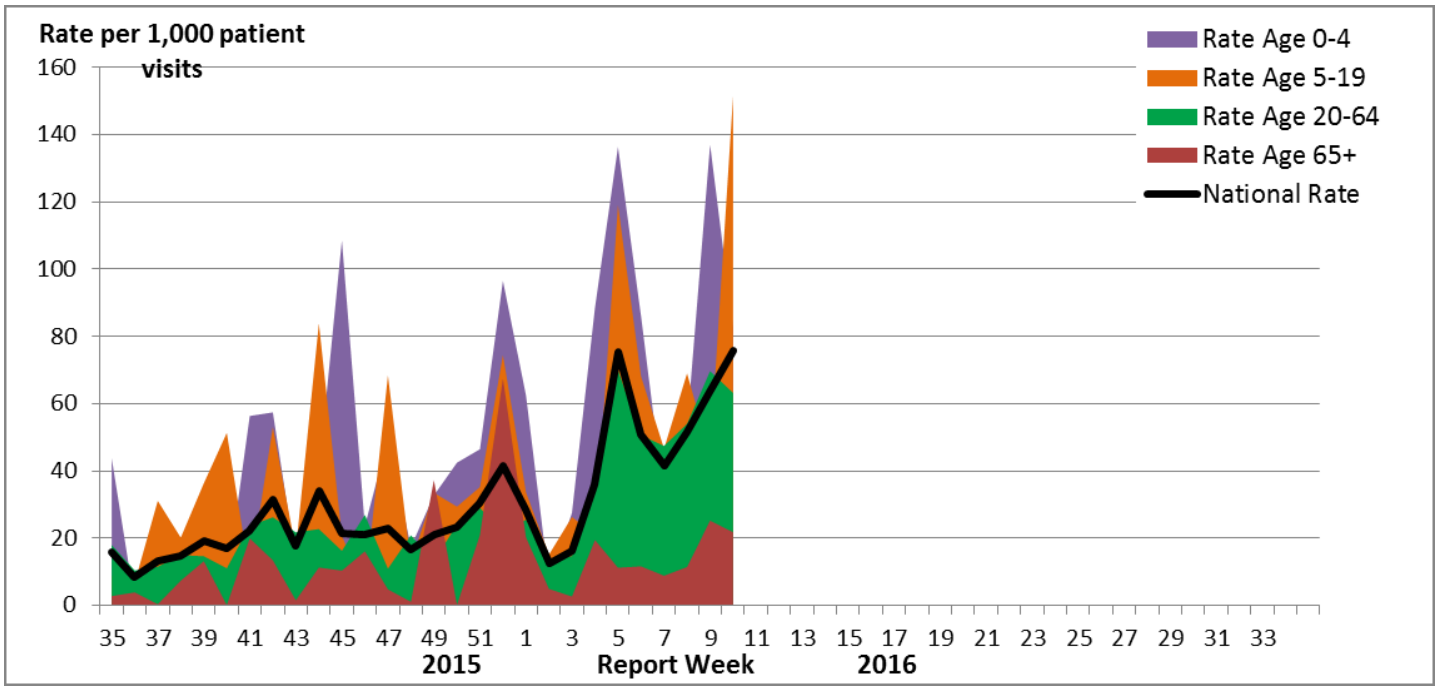
[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
x - Suppressed to prevent residual disclosure.

For data on other respiratory virus detections see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada website.

Influenza-like Illness Consultation Rate

The national ILI consultation rate increased from the previous week from 63.3 per 1,000 patient visits in week 09, to 75.6 per 1,000 patient visits in week 10.The highest ILI consultation rate was found in the 5-19 years of age group (151.5 per 1,000) and the lowest was found in the ≥65 years age group (21.8 per 1,000) (Figure 4).

Figure 4 – Influenza-like illness (ILI) consultation rates by age group and week, Canada, 2015-16

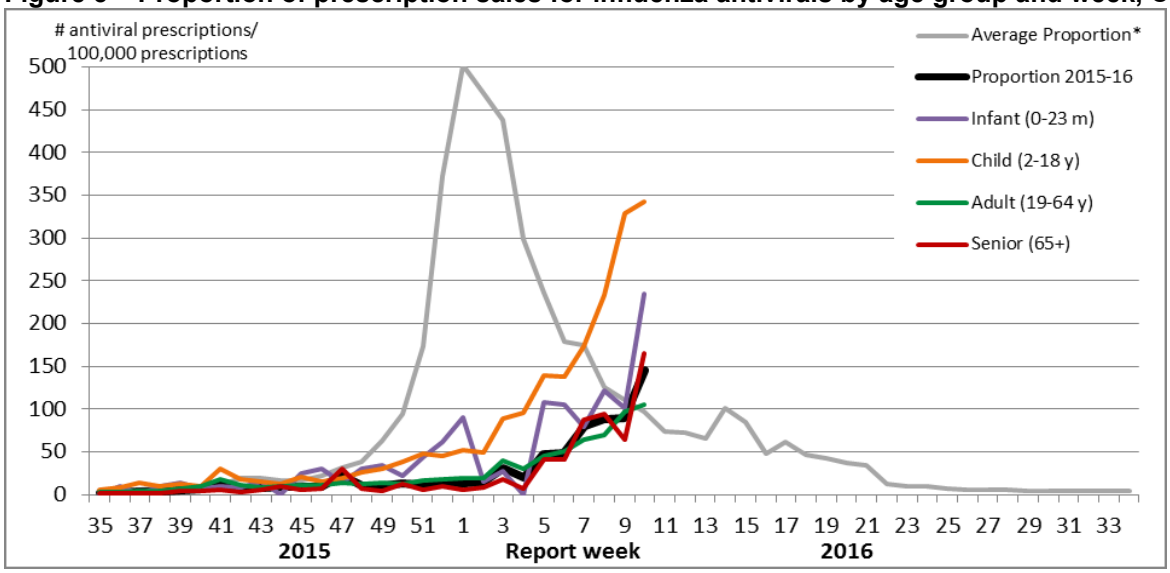


Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Pharmacy Surveillance

During week 10, the proportion of prescriptions for antivirals increased to 144.7 antiviral prescriptions per 100,000 total prescriptions, which is higher than the five year historical average for week 10. The proportion of antiviral prescriptions among infants and seniors more than doubled from week 09. The highest proportion of prescriptions for antivirals remains highest among children. In week 10, the proportion reported among children was 341.8 per 100,000 total prescriptions.

Figure 5 – Proportion of prescription sales for influenza antivirals by age group and week, Canada, 2015-16



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 3,000 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu [oseltamivir] and Relenza [zanamivir]) and the total number of new prescriptions dispensed by Province/Territory and age group.

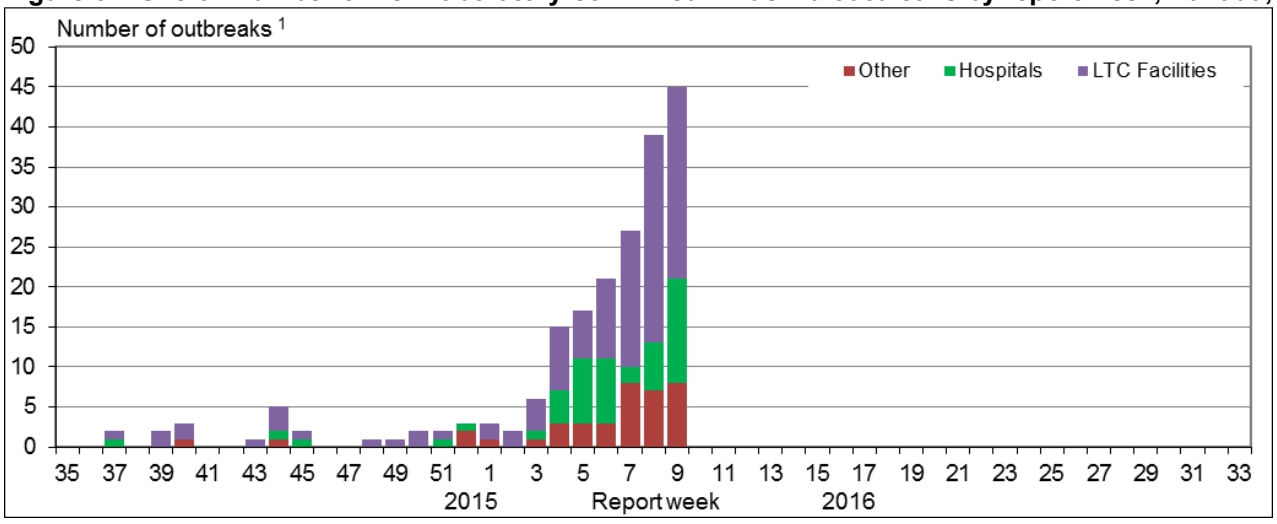
*The average weekly proportion includes data from April 2011 to March 2015.

Influenza Outbreak Surveillance

In week 10, 46 new laboratory confirmed influenza outbreaks were reported: 23 in long-term care facilities (LTCF), nine in hospitals and 14 in institutions or community settings. Of the reported LTCF outbreaks, 13 were due to influenza A(UnS), six due to influenza A(H1N1), one due to influenza A(H3N2) and three due to influenza B. For the remaining outbreaks in hospitals and community settings: two were due to influenza A(H3N2), one due to influenza A(H1N1), seven due to influenza A(UnS) and three due to influenza B. Additionally, three ILI outbreaks were reported in schools.

To date this season, 274 outbreaks have been reported. At week 10 in the 2014-15 season, 1,376 outbreaks were reported and in the 2013-14 season,147 outbreaks were reported.

Figure 6 – Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2015-2016



[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Sentinel Hospital Influenza Surveillance

Pediatric Influenza Hospitalizations and Deaths

In week 10, 134 hospitalizations were reported by the the Immunization Monitoring Program Active (IMPACT) network, down slightly from the previous two weeks (Figure 7). The largest proportion of hospitalizations were in children aged 6-23 months (34%) and the majority of hospitalizations were due to influenza A (72%).

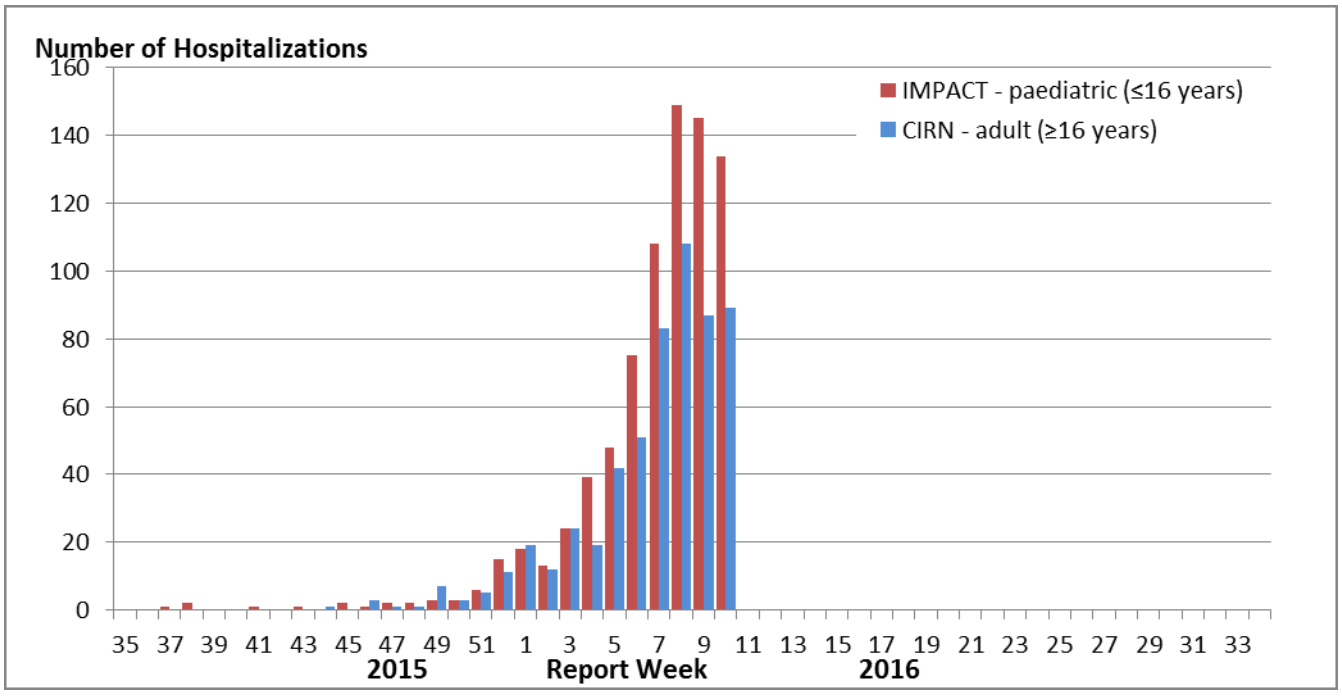
To date this season, 792 laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations have been reported by the IMPACT network: 641 hospitalized cases were due to influenza A and 151 cases were due to influenza B. The greatest proportion of hosptalizations cases were in children aged 6-23 months and children 2-4 years, each accounting for 28% of hospitalizations. To date, 136 intensive care unit (ICU) admissions have been reported. Children aged 2 to 4 years accounted for 28% of ICU admissions. A total of 71 ICU cases (52%) reported to have at least one underlying condition or comorbidity. Less than five influenza-associated deaths have been reported.

Table 2 – Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, Canada, 2015-16

Age Groups	Cumulative (Aug. 30, 2015 to Mar. 12, 2016)					
	Influenza A				Influenza B	Influenza A and B (#(%))
	A Total	A(H1) pdm09	A(H3)	A (UnS)	B Total	
0-5m	85	27	<5	x	11	96 (12%)
6-23m	186	59	7	120	35	221 (28%)
2-4y	188	68	<5	x	37	225 (28%)
5-9y	135	42	<5	x	47	182 (23%)
10-16y	47	16	<5	x	21	68 (9%)
Total	641	212	19	410	151	792 (100%)

x - Suppressed to prevent residual disclosure

Figure 7 – Number of hospitalized cases of influenza reported by sentinel hospital networks, by week, Canada, 2015-16, pediatric and adult hospitalizations (≤16 years of age, IMPACT; ≥16 years of age, CIRN-SOS)



*Not included in Table 2 and Figure 6 are two IMPACT cases that were due to co-infections of influenza A and B.

Adult Influenza Hospitalizations and Deaths

In week 10, 79 hospitalizations were reported by the Canadian Immunization Research Network Serious Outcome Surveillance (CIRN-SOS) (Figure 7). The largest proportion of hospitalizations were in adults 65+ years of age (56%) and due to influenza A (88%).

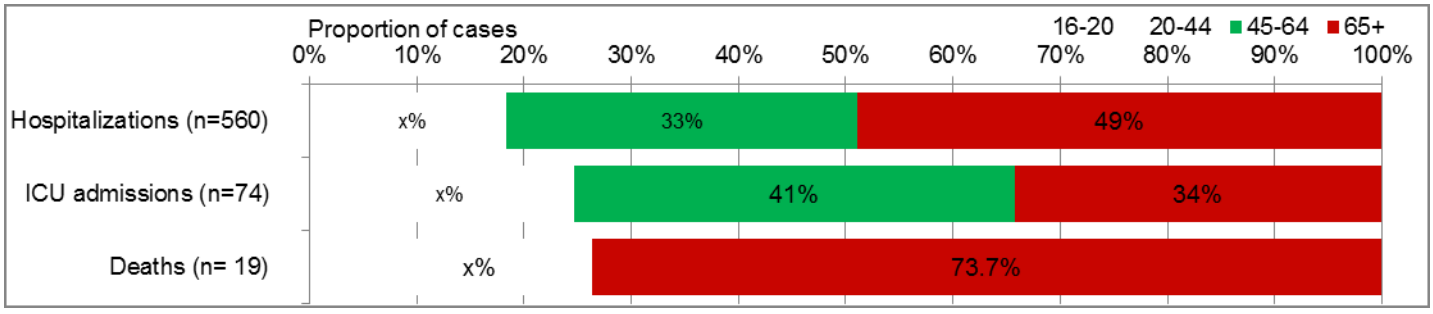
To date this season, 566 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations have been reported by CIRN-SOS (Table 3). The majority of hospitalized cases were due to influenza A (88%) and the largest reported proportion were among adults ≥65 years of age (48%). Seventy-four intensive care unit (ICU) admissions have been reported and among those, 64 (86%) were due to influenza A. A total of 38 ICU cases (51%) reported to have at least one underlying condition or comorbidity. Nineteen deaths have been reported this season.

Table 3 – Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza reported by CIRN-SOS, Canada, 2015-16

Age groups (years)	Cumulative (Nov. 1, 2015 to Mar. 12 , 2016)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	<5	<5	0	<5	0	<5 (x%)
20-44	81	22	<5	x	18	99 (17%)
45-64	166	37	<5	x	17	183 (32%)
65+	240	40	17	183	34	274 (48%)
Unknown	x	<5	0	<5	0	<5 (x%)
Total	497	105	21	371	69	566
%	88%	21%	4%	75%	12%	100%

x - Suppressed to prevent residual disclosure

Figure 8 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age group (≥16 year of age), CIRN-SOS, Canada 2015-16



Note: The number of hospitalizations reported through CIRN-SOS and IMPACT represents a subset of all influenza-associated adult and pediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

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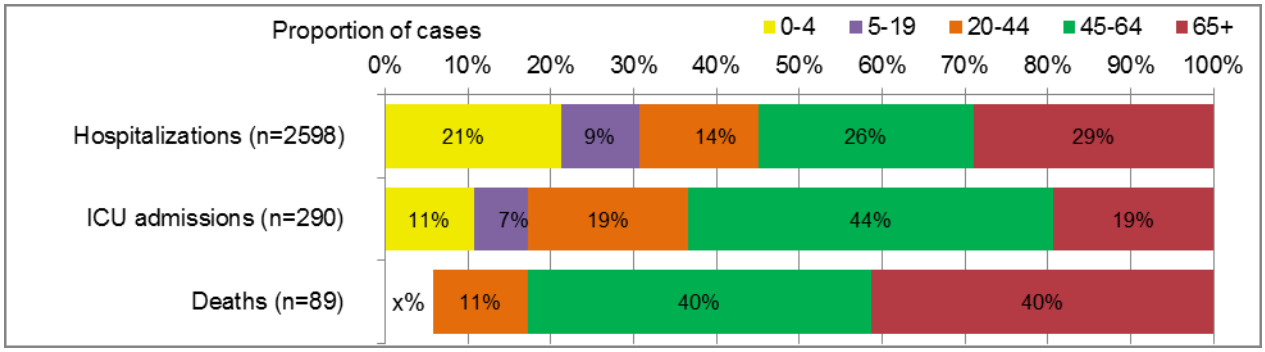
Provincial/Territorial Influenza Hospitalizations and Deaths

In week 10, 399 hospitalizations were reported from participating provinces and territories*. The majority of hospitalizations were due to influenza A (89%). The largest proportion of cases reported in week 10 were in adults 65+ years of age (32%).

Since the start of the 2015-16 season, 2,598 laboratory-confirmed influenza-associated hospitalizations have been reported. A total of 2,291 hospitalizations (88%) were due to influenza A and 307 (12%) were due to influenza B. Among cases for which the subtype of influenza A was reported, 92% (1166/1270) were influenza A(H1N1). The largest proportion (29%) of hospitalized cases were ≥65 years of age, followed closely by adults 45-64 years of age (26%). Two hundred and ninety ICU admissions have been reported of which 181 (62%) were due to influenza A(H1N1) and 128 (44%) were in the 45-64 age group. A total of 89 deaths have been reported, all but two were due to influenza A. Adults 45-64 and ≥65 years of age each represented 40% of reported deaths.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age group, Canada 2015-16



* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. Data may also include cases reported by the IMPACT and CIRN-SOS networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from ON that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

x - Suppressed to prevent residual disclosure

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2011-12 to 2015-16 on the Public Health Agency of Canada website.

Influenza Strain Characterizations

During the 2015-16 influenza season, the National Microbiology Laboratory (NML) has characterized 994 influenza viruses [140 A(H3N2), 611 A(H1N1) and 243 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assays, 29 H3N2 virus were antigenically characterized as A/Switzerland/9715293/2013-like using antiserum raised against cell-propagated A/Switzerland/9715293/2013.

Sequence analysis was done on 111 H3N2 viruses. All viruses belonged to a genetic group for which most viruses were antigenically related to A/Switzerland/9715293/2013. A/Switzerland/9715293/2013 is the A(H3N2) component of the 2015-16 Northern Hemisphere's vaccine.

Influenza A (H1N1): A total of 611 H1N1 viruses characterized were antigenically similar to A/California/7/2009, the A(H1N1) component of the 2015-16 influenza vaccine.

Influenza B: A total of 77 influenza B viruses characterized were antigenically similar to the vaccine strain B/Phuket/3073/2013. A total of 166 influenza B viruses were characterized as B/Brisbane/60/2008-like, one of the influenza B components of the 2015-16 Northern Hemisphere quadrivalent influenza vaccine.

The recommended components for the 2015-2016 Northern Hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A/Switzerland/9715293/2013(H3N2)-like virus, and a B/Phuket/3073/2013 -like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus (Victoria lineage) is recommended.
The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition testing compared to the reference influenza strains recommended by WHO.

Antiviral Resistance

During the 2015-16 season, the National Microbiology Laboratory (NML) has tested 729 influenza viruses for resistance to oseltamivir, 730 for resistance to zanamivir and 604 influenza viruses for resistance to amantadine. All but six tested viruses were sensitive to oseltamivir. The six H1N1 viruses resistant to oseltamivir had a H275Y mutation. All viruses tested for resistance were sensitive to zanamivir. A total of 603 influenza A viruses were resistant to amantadine (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2015-16

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	126	0	126	0	141	140 (99.3%)
A (H1N1)	415	6 (1.4%)	416	0	463	463 (100%)
B	188	0	188	0	NA[1]	NA[1]
TOTAL	729	6 (0.8%)	730	0	604	603 (99.8%)

[1]NA: Not Applicable

International Influenza Reports

World Health Organization influenza update
World Health Organization FluNet
WHO Influenza at the human-animal interface
Centers for Disease Control and Prevention seasonal influenza report
European Centre for Disease Prevention and Control - epidemiological data
South Africa Influenza surveillance report
New Zealand Public Health Surveillance
Australia Influenza Report
Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2015-2016 Season

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).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.
Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.
Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported
2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†
3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region†**
4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region†**

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.
** More than just sporadic as determined by the provincial/territorial epidemiologist.*
† Influenza surveillance 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 Government of Canada Influenza webpage under Weekly influenza reports.
Ce rapport est disponible dans les deux langues officielles.