FluWatch

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

June 19 to July 16, 2016 (Weeks 25-28)

Overall Summary

- Overall, influenza activity is at interseasonal levels and continues to decrease across Canada.
- For the first time since week 15, influenza A accounted for the majority of influenza detections.
- Sporadic activity is being reported in some parts of Canada; however, the majority of regions are reporting no influenza activity.
- No laboratory-confirmed influenza outbreaks have been reported since week 22 (beginning of June).
- Influenza-associated hospitalizations continue to decrease. Two hospitalizations were reported in week 28.
- For more information on the flu, see our Flu(influenza) web page.

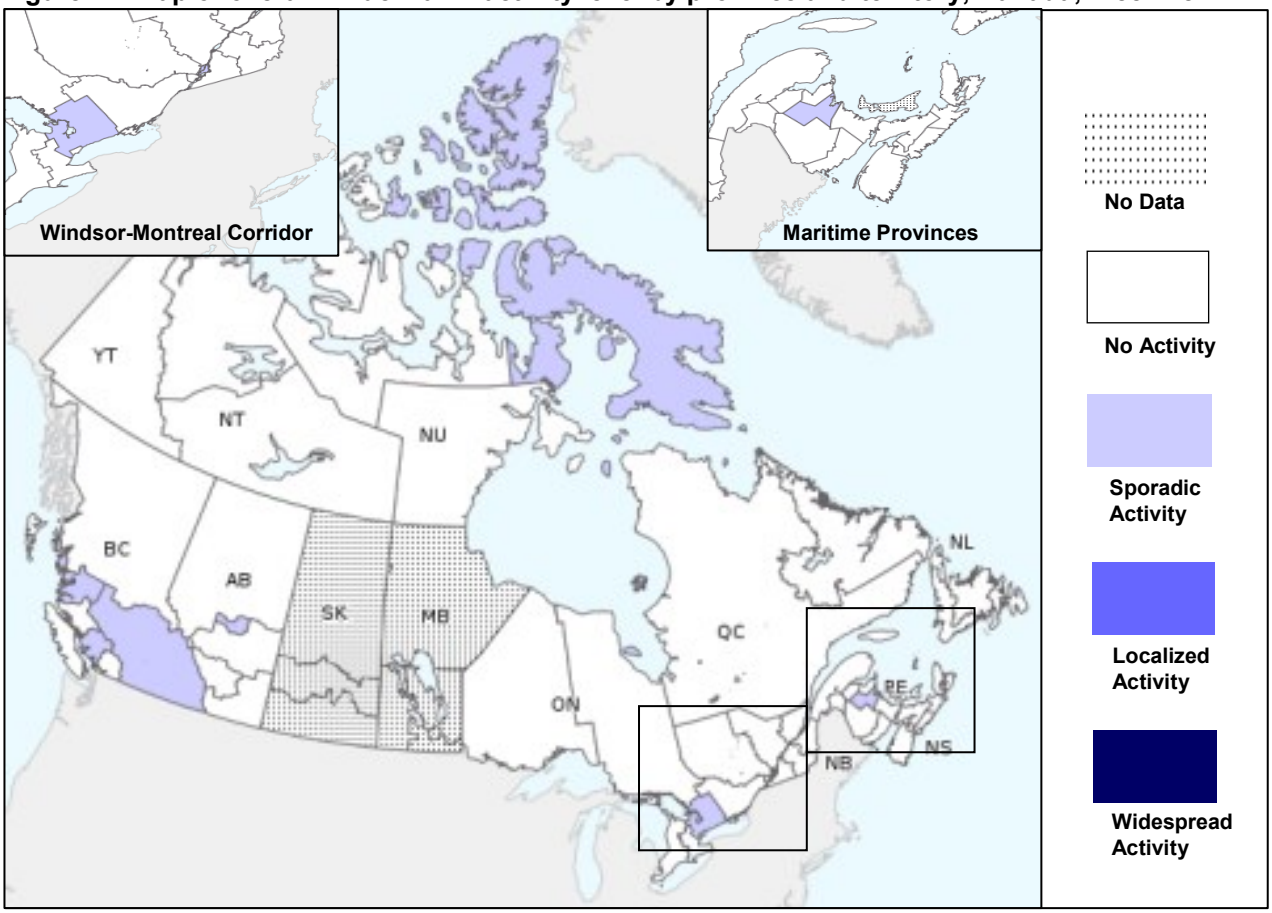
Many thanks to all the sentinels participating in our influenza-like illness surveillance network. Your hard work is greatly appreciated!

If you are a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2016-17 influenza season, please contact us at FluWatch@phac-aspc.gc.ca

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

In weeks 25 to 28, influenza activity declined. Sporadic activity was reported in seven regions across six provinces (BC, AB, ON, QC, NB and NU). A total of 37 regions reported no influenza activity.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 28

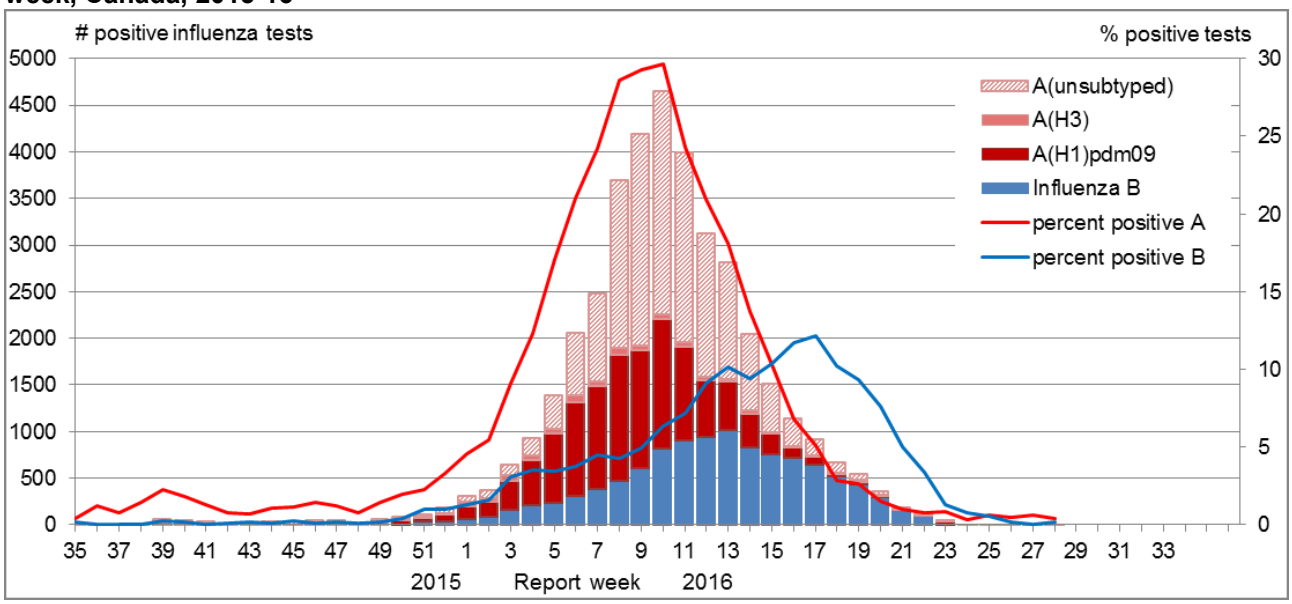


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous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

Laboratory Confirmed Influenza Detections

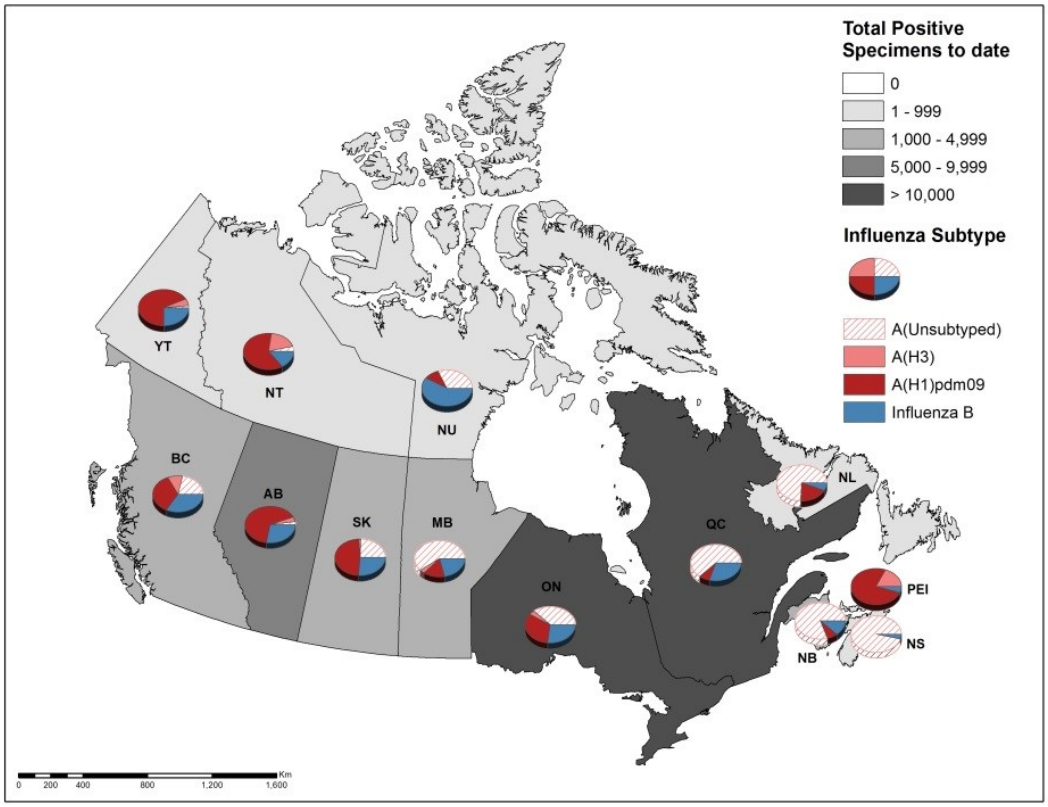
In weeks 25-28, the percentage of tests positive for influenza continued to decrease [from 1.2% in week 25 to 0.6% in week 28]. Compared to the previous five seasons, the percent positive (0.6%) reported in week 28 was within expected levels (confidence interval 0.4-0.7%) and remains at interseasonal levels.

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



Nationally in weeks 25-28, there were 59 positive influenza tests reported. Influenza A accounted for the majority of influenza detections, representing 68% of detections in weeks 25-28. To date, 72% of influenza detections have been influenza A and among those subtyped, the vast majority have been influenza A(H1N1) [91% (11074/12213)].

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 33,479 cases. Children and teenagers (0-19yrs) accounted for 48% of influenza B cases and approximately one third of all influenza cases. Children and teenagers (0-19yrs), young adults (20-44yrs) and middle-aged adults (45-64yrs) accounted for approximately an equal proportion of influenza A(H1N1) cases.

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)	Weeks (June 19, 2016 to July 16, 2016)					Cumulative (August 30, 2015 to July 16, 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						4541	1718	76	2747	1772	6313	19%
5-19			Supressed due to small values			2409	1026	102	1281	2703	5112	15%
20-44						5827	2763	167	2897	2205	8032	24%
45-64						6414	2808	203	3403	1108	7522	22%
65+						4888	1633	452	2803	1612	6500	19%
Total						24079	9948	1000	13131	9400	33479	100%
Percentage[2]						72%	41%	4%	55%	28%		

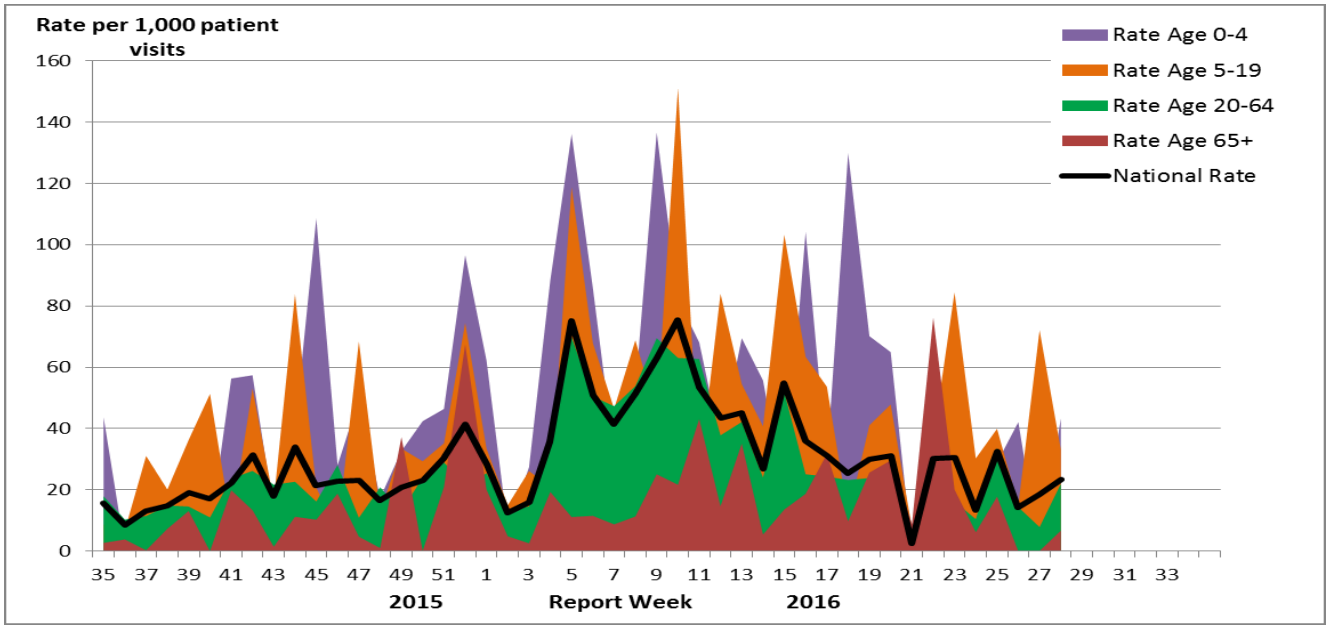
[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.

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 between weeks 25 and 28 fluctuated but remained within the same range as the previous report. In week 28, the ILI consultation rate was 23.4 per 1,000 patient visits compared to 13.4 in week 24. In week 28, the highest ILI consultation rate was found in the 0-4 years age group (43.4 per 1,000) and the lowest was found in the ≥65 years of age group (6.7 per 1,000) (Figure 4).

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

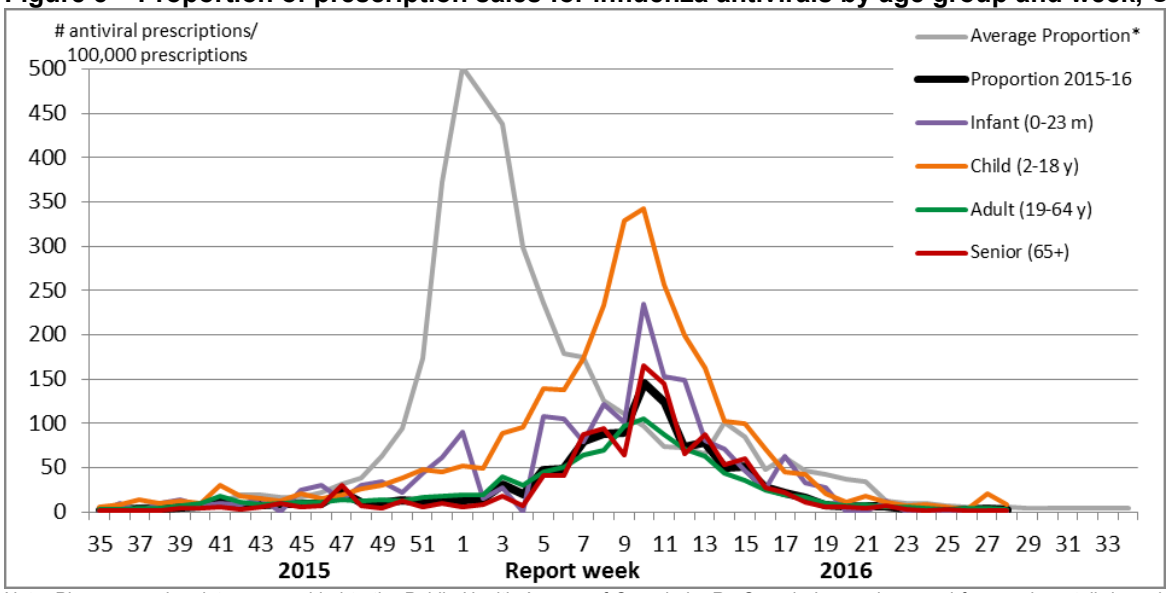


Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

Pharmacy Surveillance

In the period of weeks 25-28, the proportion of prescriptions for antivirals continued to decrease steadily to 2.5 antiviral prescriptions per 100,000 total prescriptions in week 28. This rate is lower than the five year historical average for week 28. The proportion of prescriptions for antivirals remains highest among children. In week 28, the proportion reported among children was 8.4 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.

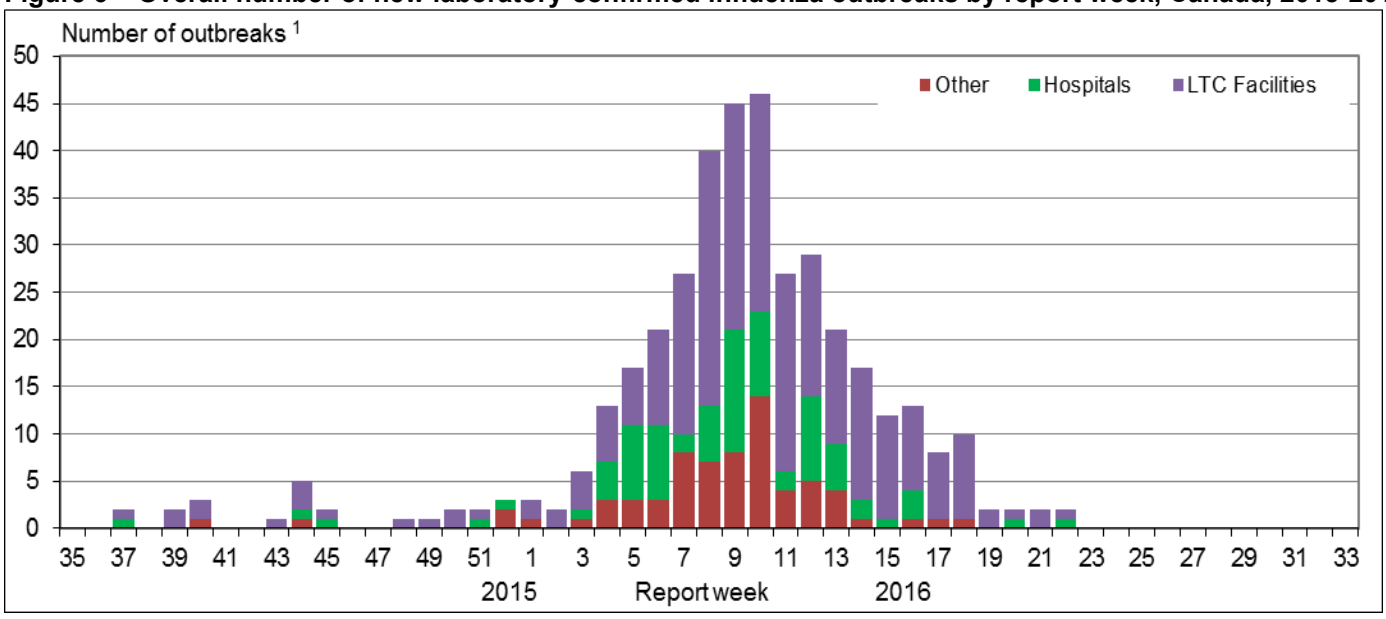
*The average weekly proportion includes data from April 2011 to March 2015.

Influenza Outbreak Surveillance

In weeks 25-28, no new laboratory confirmed influenza outbreaks were reported. One ILI outbreak was reported in week 25.

To date this season, 428 outbreaks have been reported. At week 28 in the 2014-15 season, 1,732 outbreaks were reported and in the 2013-14 season, 268 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 this report.

Sentinel Hospital Influenza Surveillance

Pediatric Influenza Hospitalizations and Deaths

In weeks 25-28, three laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 7). One new ICU admission was reported in week 27.

A total of 225 intensive care unit (ICU) admissions have been reported to date. Children aged 2 to 4 and 5 to 9 years eachaccounted for 27% of ICU admissions . A total of 158 ICU cases (70%) reported at least one underlying condition or comorbidity. Eight influenza-associated deaths have been reported.

To date this season, 1,364 hospitalizations have been reported by the IMPACT network: 903 cases (66%) were due to influenza A and 461 cases (34%) were due to influenza B. This season's count of pediatric hospitalizations is nearly double that reported up to week 28 in the 2014-15 season (N=713). The total number of cases for the current season also exceeds the total number of cases reported in the past five seasons.

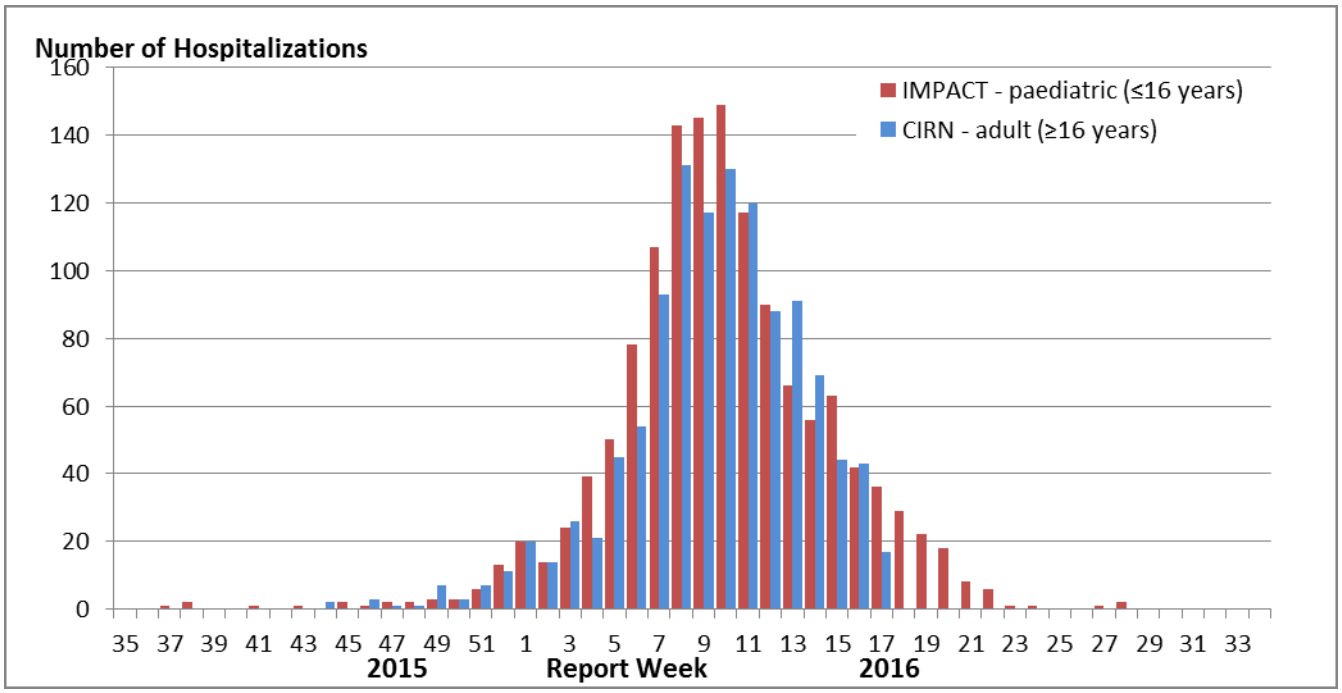
Table 2 – Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, Canada, 2015-16*

Age Groups	Cumulative (30 Aug. 2015 to 16 Jul. 2016)					
	Influenza A				Influenza B	Influenza A and B (#(%))
	A Total	A(H1) pdm09	A(H3)	A (UnS)	B Total	
0-5m	124	33	<5	x	40	164 (12%)
6-23m	282	81	7	194	99	381 (28%)
2-4y	256	80	5	171	117	373 (27%)
5-9y	182	50	<5	x	146	328 (24%)
10-16y	59	18	<5	x	59	118 (9%)
Total	903	262	21	620	461	1364 (100%)

x - Suppressed to prevent residual disclosure

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

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 Figure 7 are two IMPACT cases that were due to co-infections of influenza A and B.

Adult Influenza Hospitalizations and Deaths

Surveillance for the 2015-2016 influenza season ended on April 30th, 2016 (week 20).

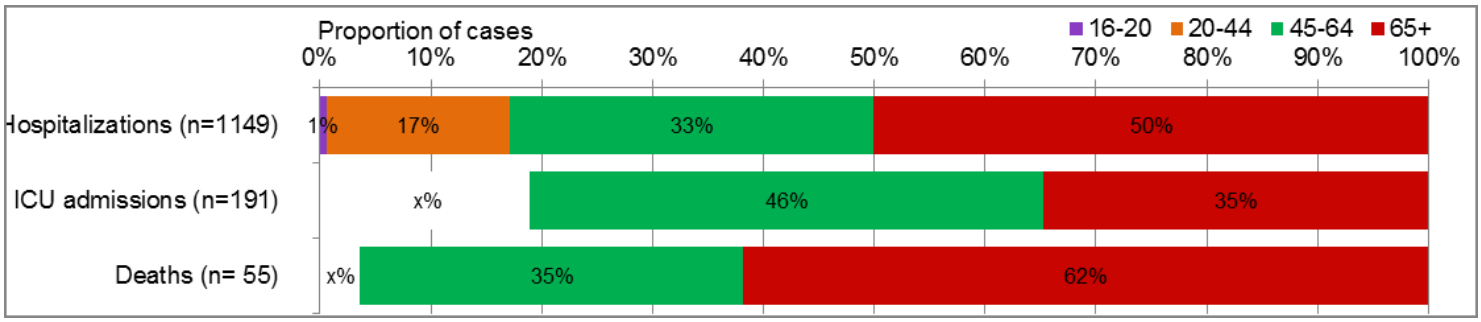
For the 2015-16 season, 1,153 hospitalizations have been reported by CIRN-SOS (Table 3). The majority of hospitalized cases were due to influenza A (81%) and the largest reported proportion was among adults ≥65 years of age (50%). One hundred and ninety-one intensive care unit (ICU) admissions have been reported of which 132 cases reported at least one underlying condition or comorbidity. A total of 55 deaths have been reported this season with the majority of deaths reported in adults ≥65 years of age (62%).

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 Apr. 30, 2016)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	x	<5	0	<5	<5	x
20-44	144	50	<5	x	46	190 (16%)
45-64	331	105	<5	x	46	377 (33%)
65+	452	125	24	303	123	575 (50%)
Unknown	<5	x	0	<5	<5	<5
Total	934	285	28	621	219	1153
%	81%	31%	3%	66%	19%	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.

*Age was unknown for <5 cases.

x - Suppressed to prevent residual disclosure

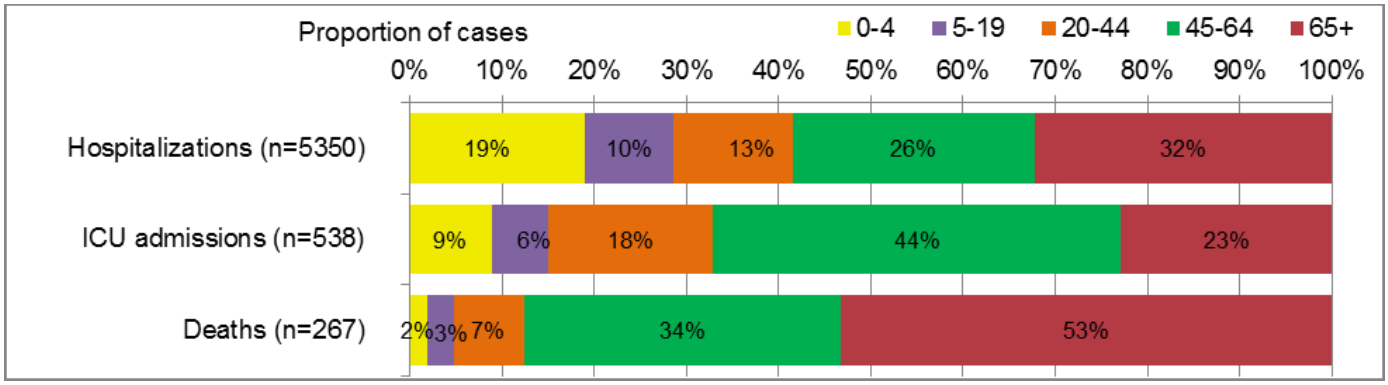
Provincial/Territorial Influenza Hospitalizations and Deaths

In week 28, two hospitalizations were reported by participating provinces and territories*. In total, 33 hospitalizations were reported in weeks 25-28, with the number of cases decreasing each week. No new ICU admissions were reported during the week 25-28 period.

Since the start of the 2015-16 season, 5,350 laboratory-confirmed influenza-associated hospitalizations have been reported. A total of 4,151 hospitalizations (78%) were due to influenza A and 1,199 (22%) were due to influenza B. Of the 538 ICU admissions reported, 475 (88%) were due to influenza A. A total of 267 deaths have been reported; all but 42 were associated with influenza A.

Overall this season, hospitalizations have been reported more frequently among adults ≥65 years of age. The largest proportion of ICU admissions was reported in adults 45-64years of age and the highest proportion of fatal cases was reported in adults ≥65 years of age (Figure 9). Pediatric (0-19 years) accounted for 29% of all hospitalizations and 5% of all deaths reported to date this season. Similar to findings from the IMPACT network, there have been more pediatric hospitalizations reported to date compared to the year-end totals in each of the previous four influenza seasons.

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.

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 2,977 influenza viruses [249 A(H3N2), 1,484 A(H1N1) and 1,244 influenza B].

Influenza A (H3N2): When tested by hemagglutination inhibition (HI) assays, 79 A(H3N2) viruses were antigenically characterized as A/Switzerland/9715293/2013-like using antiserum raised against cell-propagated A/Switzerland/9715293/2013.

Sequence analysis was done on 170 A(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): All of the 1,484 A(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 260 influenza B viruses characterized were antigenically similar to the vaccine strain B/Phuket/3073/2013. A total of 984 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 NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results HI testing compared to the reference influenza strains recommended by WHO.

Antiviral Resistance

During the 2015-16 season, the National Microbiology Laboratory (NML) has tested 2,103 influenza viruses for resistance to oseltamivir and zanamivir and 1,749 influenza viruses for resistance to amantadine. All but 10 tested viruses were sensitive to oseltamivir. The 10 H1N1 viruses resistant to oseltamivir had a H275Y mutation. All viruses tested for resistance were sensitive to zanamivir. All but two 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)	192	0 (0%)	192	0 (0%)	253	252 (99.6%)
A (H1N1)	1126	10 (0.9%)	1126	0 (0%)	1496	1495 (99.9%)
B	785	0 (0%)	785	0 (0%)	NA[1]	NA[1]
TOTAL	2103	10 (0.5%)	2103	0 (0%)	1749	1747 (99.9%)

[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.