FluWatch

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

December 11 to December 17, 2016 (Week 50)

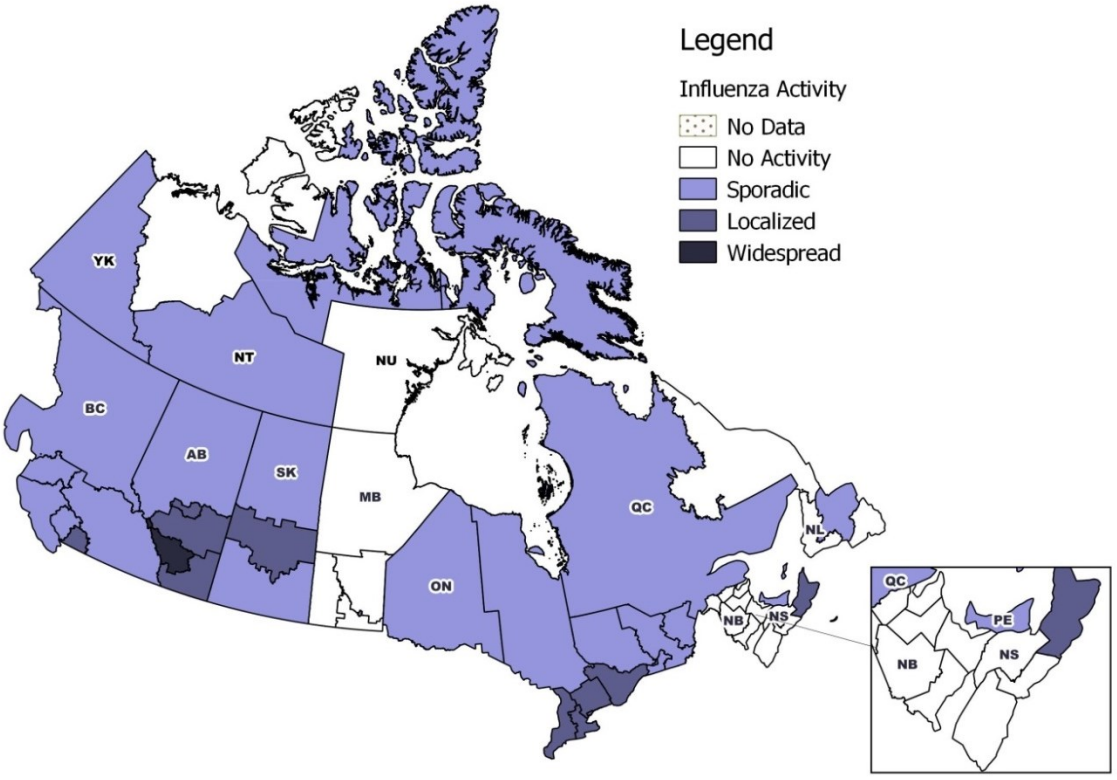
Overall Summary

- Seasonal influenza activity continues to increase in Canada, with greater numbers of influenza detections, hospitalizations and outbreaks being reported in week 50.
- A total of 692 positive influenza detections were reported in week 50. Influenza A(H3N2) continues to be the most common subtype detected.
- Eighteen laboratory-confirmed influenza outbreaks were reported in week 50, with the majority occurring in long-term care facilities.
- Adults aged 65+ years accounted for the largest proportion of hospitalizations and deaths reported from adult sentinel networks and participating Provinces and Territories.
- The current FluWatch report is the last report for the 2016 calendar year. The next FluWatch report will be published on Friday, January 6 2017 and will contain data for weeks 51 and 52.
- For more information on the flu, see our Flu(influenza) web page.

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

In week 50, a total of 19 regions in Canada reported no influenza activity. Sporadic influenza activity was reported in 22 regions across all provinces and territories (excluding NB). Localized activity was reported in 11 regions across five provinces (BC, AB, SK, ON and NS). Widespread activity was reported in one region of Alberta. For more details on a specific region, click on the map. For more details on a specific region, click on the map.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 50

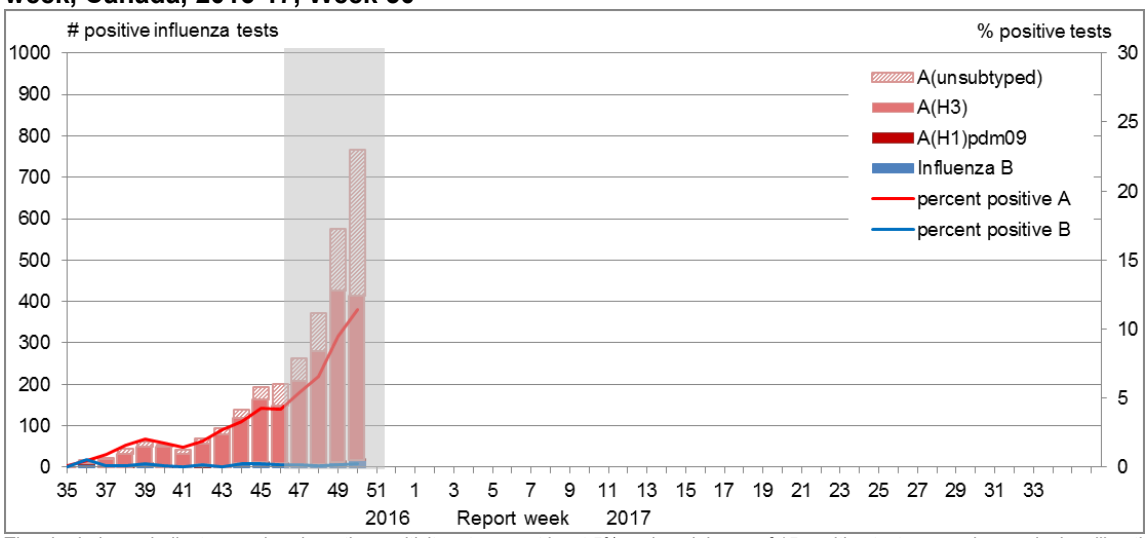


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous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

Laboratory Confirmed Influenza Detections

The percentage of tests positive for influenza continues to increase with 11.7% of tests positive for influenza in week 50. Compared to the previous influenza A(H3N2)-predominant season in 2014-15, the percent positive (11.7%) was lower than the percent positive reported in week 50 of the 2014-15 season (25.9%). For data on other respiratory virus detections, see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada (PHAC) website.

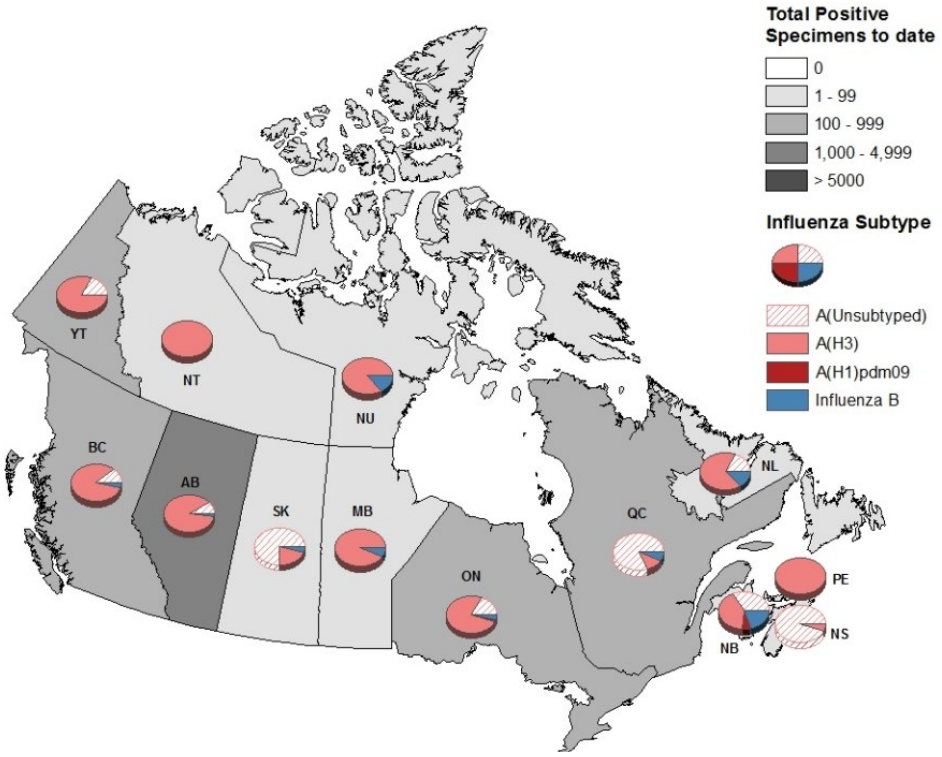
Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2016-17, Week 50



The shaded area indicates weeks where the positivity rate was at least 5% and a minimum of 15 positive tests were observed, signalling the period of seasonal influenza activity.

Nationally in week 50, there were 692 positive influenza tests. To date, a total of 2,809 laboratory confirmed influenza detections have been reported. Influenza A(H3N2) is the most common subtype detected, representing 72% of detections. For more detailed weekly and cumulative influenza data, see the text descriptions for Figures 2 and 3 or the Respiratory Virus Detections in Canada Report.

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province/territory, Canada, 2016-17, Week 50



To date this season, detailed information on age and type/subtype has been received for 2,389 laboratory confirmed influenza cases. Adults aged 65+ were the age group that accounted for the largest proportion of reported influenza cases (>37%) and the largest proportion of influenza A (H3N2) cases. Compared to the cases reported in the 2014-15 season at week 50, adults aged 65+ account for a smaller proportion of cases this season (approximately 37% in 2016-17 compared to 56% in 2014-15).

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2016-17, Week 50

Age groups (years)	Week (Dec. 10, 2016 to Dec. 17, 2016)					Cumulative (Aug. 28, 2016 to Dec. 17, 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	#	%
0-4	32	0	13	19	<5	>163	<5	107	56	22	>185	x%
5-19	79	0	31	48	6	>373	<5	266	107	19	>392	x%
20-44	101	0	47	54	<5	>445	<5	330	115	17	>462	x%
45-64	70	0	30	40	0	429	6	307	116	9	442	18%
65+	182	0	69	113	<5	>894	<5	629	265	13	>907	x%
Total	464	0	190	274	13	2309	11	1639	659	80	2389	100%
Percentage[2]	97%	0%	41%	59%	3%	97%	0%	71%	29%	3%		

[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Cumulative data include updates to previous weeks.
[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: Supressed to prevent residual disclosure
Specimens from NT, YT, and NU are sent to reference laboratories in the provinces

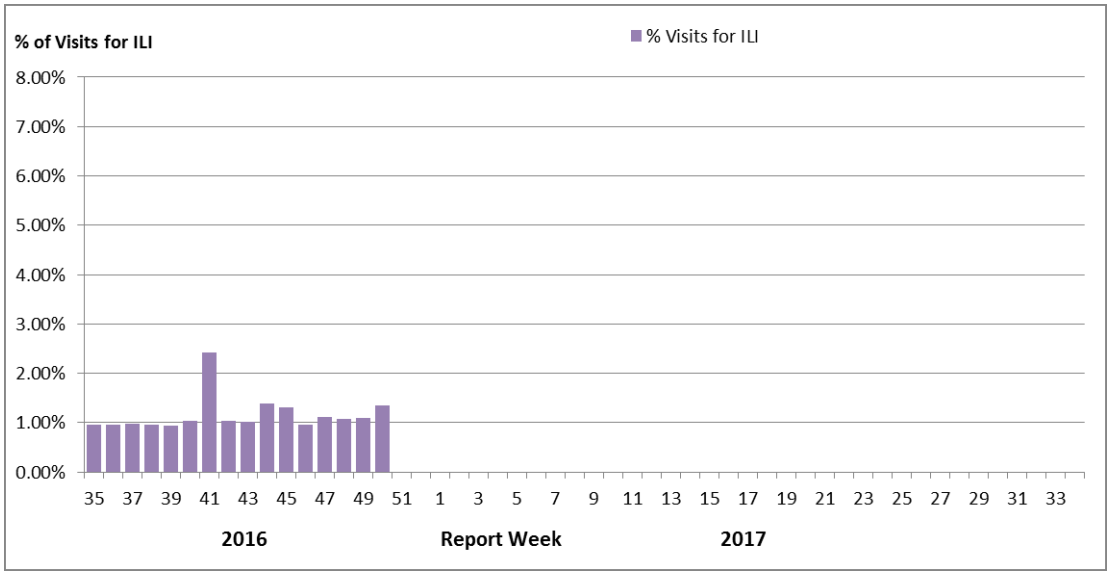
Syndromic/Influenza-like Illness Surveillance

Healthcare Professionals Sentinel Syndromic Surveillance

In week 50, 1.3% of visits to healthcare professionals were due to ILI. The proportion of ILI visits slightly increased since the previous week.

Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, 2016-17

Number of Sentinels Reporting Week 50: 111



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.

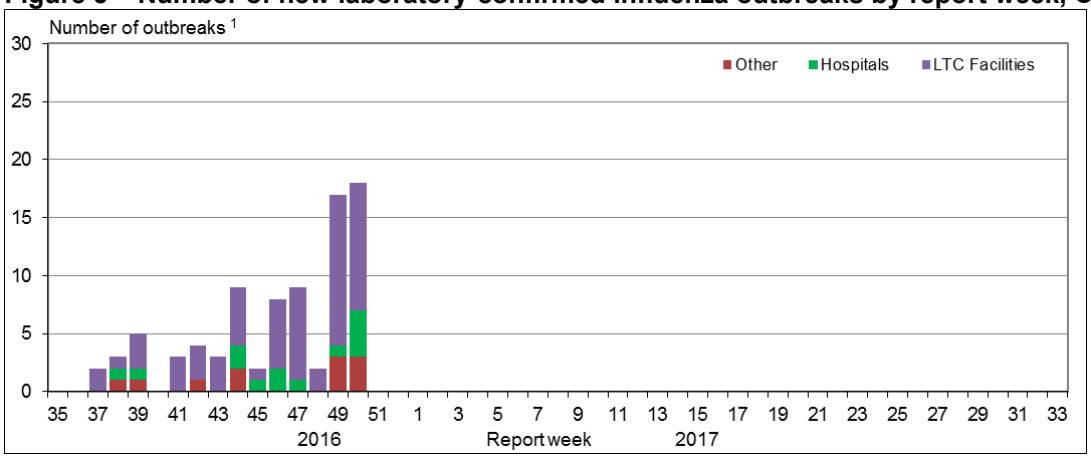
Are you a primary healthcare practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel? Please visit our Influenza Sentinel page for more details.

Influenza Outbreak Surveillance

In week 50, 18 laboratory confirmed influenza outbreaks were reported: 11 in long-term care (LTC) facilities, four in hospitals and three in institutional or community settings. Additionally, one ILI outbreak was reported in a school. Of the outbreaks with known strains or subtypes: 11 outbreaks were due to influenza A of which four were due to influenza A(H3N2) (two in LTC facilities and two in institutional or community settings) and seven were due to influenza A(UnS) (four in LTC facilities, two in hospitals and one in an institutional or community setting).

To date this season, 88 outbreaks have been reported and the majority (70%) have occurred in LTC facilities. In comparison at week 50 in the 2014-15 season, the previous influenza A(H3N2)-predominant season, 183 outbreaks were reported, of which 77% occurred in LTC facilities.

Figure 5 – Number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2016-17, Week 50



[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.

Provincial/Territorial Influenza Hospitalizations and Deaths

In week 50, 98 influenza-associated hospitalizations were reported by participating provinces and territories*. Influenza A accounted for all of the reported hospitalizations, of which 54 (56%) were influenza A(H3N2). Adults aged 65+ accounted for the largest proportion of hospitalizations (69%).

To date this season, 454 hospitalizations have been reported, of which 98% were due to influenza A. Among cases for which the subtype of influenza A was reported, almost all (319/320) were influenza A(H3N2). Adults 65+ accounted for approximately 64% of the hospitalizations. Fifteen ICU admissions and greater than seven deaths have been reported. The majority of deaths were reported in adults aged 65+ years.

Table 2 – Cumulative number of hospitalizations, ICU admissions and deaths by age and influenza type reported by participating provinces and territories, Canada, 2016-17, Week 50

Age Groups (years)	Cumulative (Aug. 28, 2016 to Dec. 17, 2016)						
	Hospitalizations			ICU Admissions		Deaths	
	Influenza A Total	Influenza B Total	Total [# (%)]	Influenza A and B Total	%	Influenza A and B Total	%
0-4	32	<5	>32 (x%)	0	0%	0	0%
5-19	28	<5	>28 (x%)	<5	x%	<5	x%
20-44	33	<5	>33 (x%)	<5	x%	0	0%
45-64	66	<5	>66 (x%)	5	33%	0	0%
65+	285	<5	>285 (x%)	7	47%	7	88%
Total	444	10	454 (100%)	15	100%	>7	100%

x: Supressed to prevent residual disclosure

*Note: Influenza-associated hospitalizations are not reported to PHAC by 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. The hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

Sentinel Hospital Influenza Surveillance

Pediatric Influenza Hospitalizations and Deaths

To date this season, 67 laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network. Children aged 0-2 years and 2-4 years, each accounted for approximately 30% of hospitalizations. Influenza A accounted for 85% (n=56) of the reported hospitalizations, of which 46% (n=31) were influenza A(H3N2) and the remainder were A(UnS). Additionally, six intensive care unit (ICU) admissions have been reported. No deaths have been reported this season.

Compared to the 2014-15, the previous influenza A(H3N2)-predominant season, where 139 cases were reported as of week 50, there have been approximately half the number of cases reported to date in the current season,.

Figure 6 – Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza by age-group reported by the IMPACT network, Canada, 2016-17, Week 50

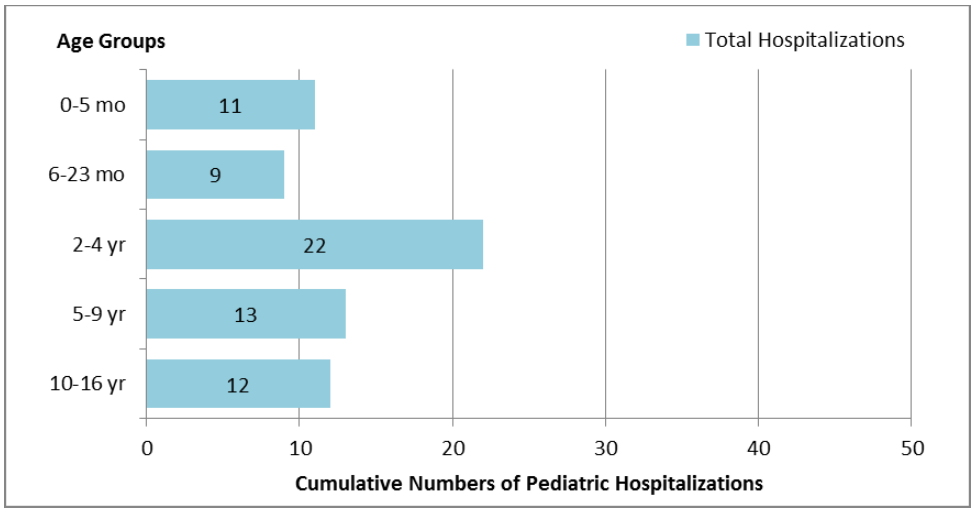
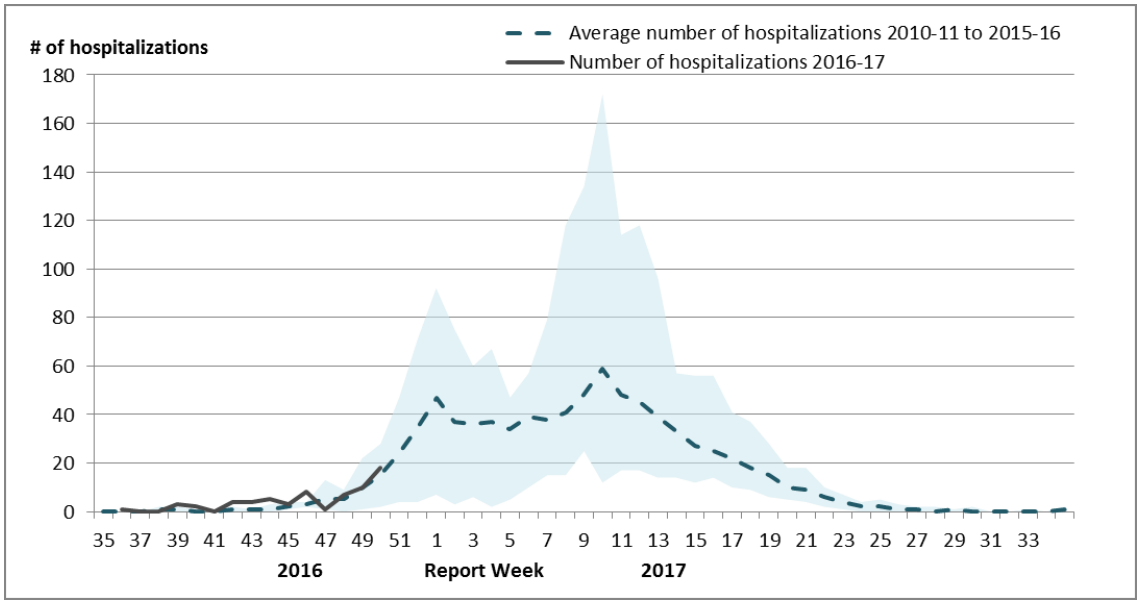


Figure 7 – Number of pediatric (≤16 years of age) hospitalizations reported by the IMPACTnetwork, by week, Canada, 2016-17, Week 50



The shaded area represents the maximum and minimum number of cases reported by week from seasons 2010-11 to 2015-16

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

Adult Influenza Hospitalizations and Deaths

In week 50, 13 laboratory-confirmed influenza-associated adult (≥20 years of age) hospitalizations were reported by the Canadian Immunization Research Network (CIRN). All cases were due to influenza A and the majority (77%) were in adults aged 65+.

To date this season, greater than 55 laboratory-confirmed influenza-associated adult (≥20 years of age) hospitalizations have been reported by CIRN. All hospitalized cases were due to influenza A. Adults aged 65+ accounted for approximately 74% of hospitalizations. To date, less than five ICU admissions and deaths have been reported.

Figure 8 - Cumulative numbers of adult hospitalizations (≥20 years of age) with influenza by type and age-group reported by the CIRN network, Canada, 2016-17, Week 50

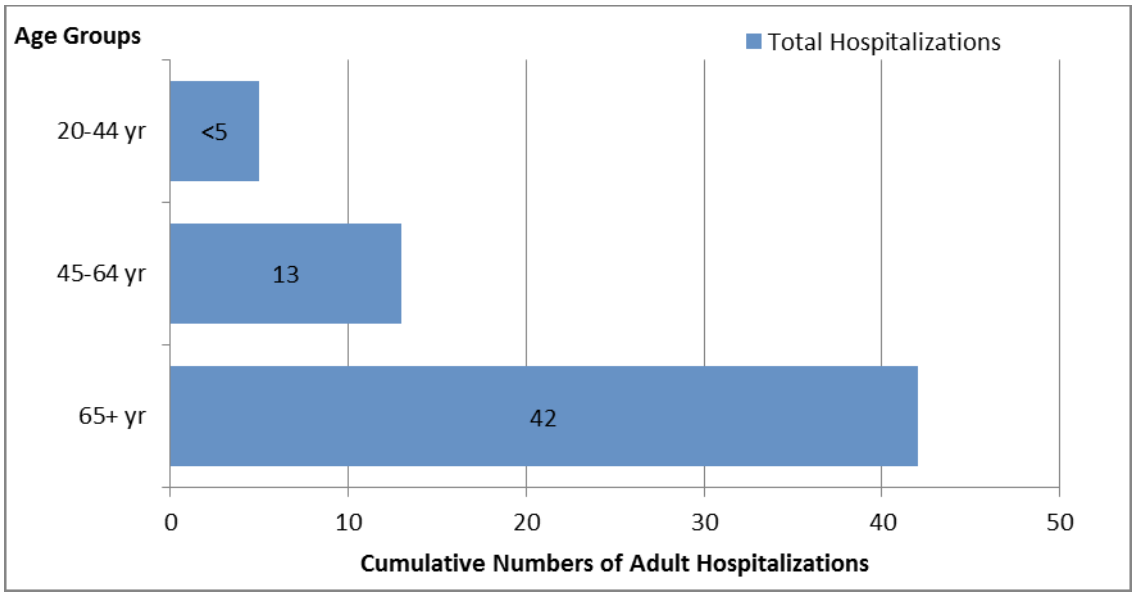
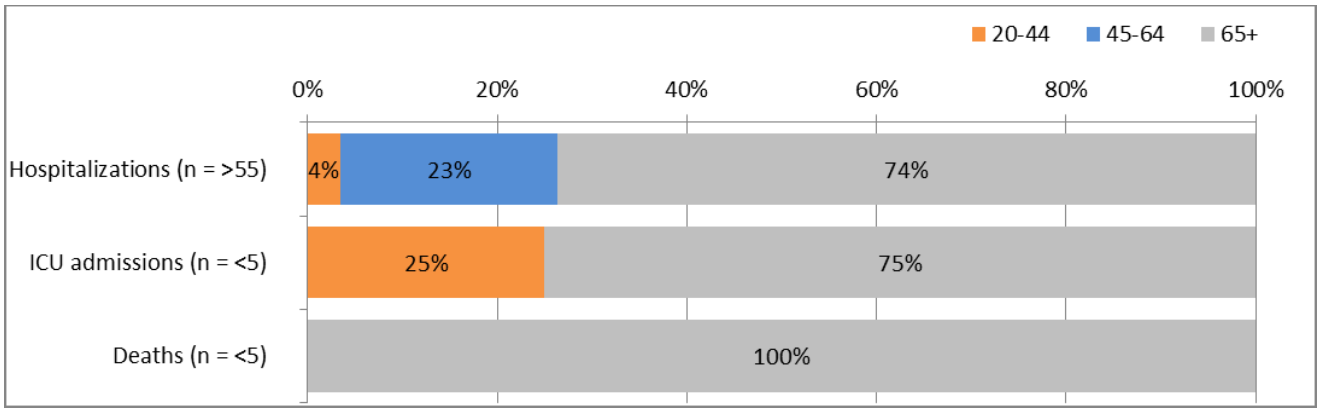


Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group (≥16 year of age), Canada 2015-16, Week 50



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

Influenza Strain Characterizations

During the 2016-17 influenza season, the National Microbiology Laboratory (NML) has characterized 158 influenza viruses [136 A(H3N2), 7 A(H1N1), 15 influenza B]. All but one influenza A virus (n=135) and all 8 influenza B viruses characterized were antigentically or genetically similar to the vaccine strains included in both the trivalent and quadrivalent vaccines. Seven influenza B viruses were similar to the strain which is included only in the quadirvalent vaccine.

In epidemiological week 50 the National Microbiology Laboratory detected a human case of influenza A(H3N2) variant virus (H3N2v), the virus was detected as part of routine virological surveillance for influenza. Genetic analysis of the virus revealed that it is closely related to the influenza A(H3N2) swine viruses currently circulating in swine in North America. Antigenic characterization of this virus showed that it is antigenically closely related to the candidate H3N2v vaccine virus A/Indiana/10/2011. Testing of the H3N2v virus for resistance to neuraminidase inhibitors (oseltamivir and zanamivir) using a functional assay and sequence analysis showed that the specimen was sensitive to oseltamivir and zanamivir. M gene sequencing of the virus revealed that it had a mutation known to confer resistance to amantadine.

Table 3 – Influenza strain characterizations, Canada, 2016-17, Week 50

Strain Characterization Results[1]	Count	Description
Influenza A (H3N2)		
Antigenically A/Hong Kong/4801/2014-like	51	Viruses antigenically similar to A/Hong Kong/4801/2014, the A(H3N2) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent vaccine.
Genetically[2] A/Hong Kong/4801/2014-like	84	Viruses belonging to genetic group 3C.2a. A/Hong Kong/4801/2014-like virus belongs to genetic group 3C.2a and is the influenza A(H3N2) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent vaccine. Additionally, genetic characterization of the 51 influenza A (H3N2) viruses that underwent HI testing, determined that 43 viruses belonged to genetic group 3C.2a and six viruses belonged to genetic group 3C.3a. Sequencing is pending for the remaining two isolates.The majority of viruses belonging to genetic group 3C.3a are inhibited by antisera raised against A/Hong Kong/4801/2014[3].
Antigenically A/Indiana/10/2011-like	1	Viruses antigenically similar to A/Indiana/10/2011, a candidate H3N2v vaccine virus[3].
Influenza A (H1N1)		
A/California/7/2009-like	7	Viruses antigenically similar to A/California/7/2009, the A(H1N1) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent vaccine influenza vaccine.
Influenza B		
B/Brisbane/60/2008-like (Victoria lineage)	8	Viruses antigenically similar to B/Brisbane/60/2008, the influenza B component of the 2016-17 Northern Hemisphere's **trivalent** and **quadrivalent** influenza vaccine
B/Phuket/3073/2013-like (Yamagata lineage)	7	Viruses antigenically similar to B/Phuket/3073/2013, the additional influenza B component of the 2016-17 Northern Hemisphere **quadrivalent** influenza vaccine.

[1]The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Strain characterization data reflect the results of hemagglutination inhibition (HI) testing compared to the reference influenza strains recommended by WHO.
[2]Determined by sequence analysis
[3] WHO - Recommended composition of the influenza virus vaccines for use in the 2016-17 northern hemisphere influenza season.

Antiviral Resistance

During the 2016-17 season, the National Microbiology Laboratory (NML) has tested 170 influenza viruses for resistance to oseltamivir and zanamivir and 57 influenza viruses for resistance to amantadine. All viruses were sensitive to oseltamivir and zanamivir. All 57 influenza A viruses were resistant to amantadine (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2016-17, Week 50

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	148	0 (0%)	148	0 (0%)	50	50 (100%)
A (H3N2v)	1	0 (0%)	1	0 (0%)	1	1 (100%)
A (H1N1)	6	0 (0%)	6	0 (0%)	6	6 (100%)
B	15	0 (0%)	15	0 (0%)	NA[1]	NA[1]
TOTAL	170	0 (0%)	170	0 (0%)	57	57 (100%)

[1]NA: Not Applicable

Provincial and 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
- Alberta Health – Influenza Surveillance Report
- BC - Centre for Disease Control (BCCDC) - Influenza Surveillance
- New Brunswick – Influenza Surveillance Reports
- Newfoundland and Labrador – Surveillance and Disease Reports
- Nova Scotia - Flu Information
- Public Health Ontario – Ontario Respiratory Pathogen Bulletin
- Quebec - Système de surveillance de la grippe
- Manitoba – Epidemiology and Surveillance – Influenza Reports
- Saskatchewan – influenza Reports
- PEI – Influenza Summary

FluWatch Definitions for the 2016-2017 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. Ce rapport est disponible dans les deux langues officielles.