

December 4 to December 10, 2016 (Week 49)

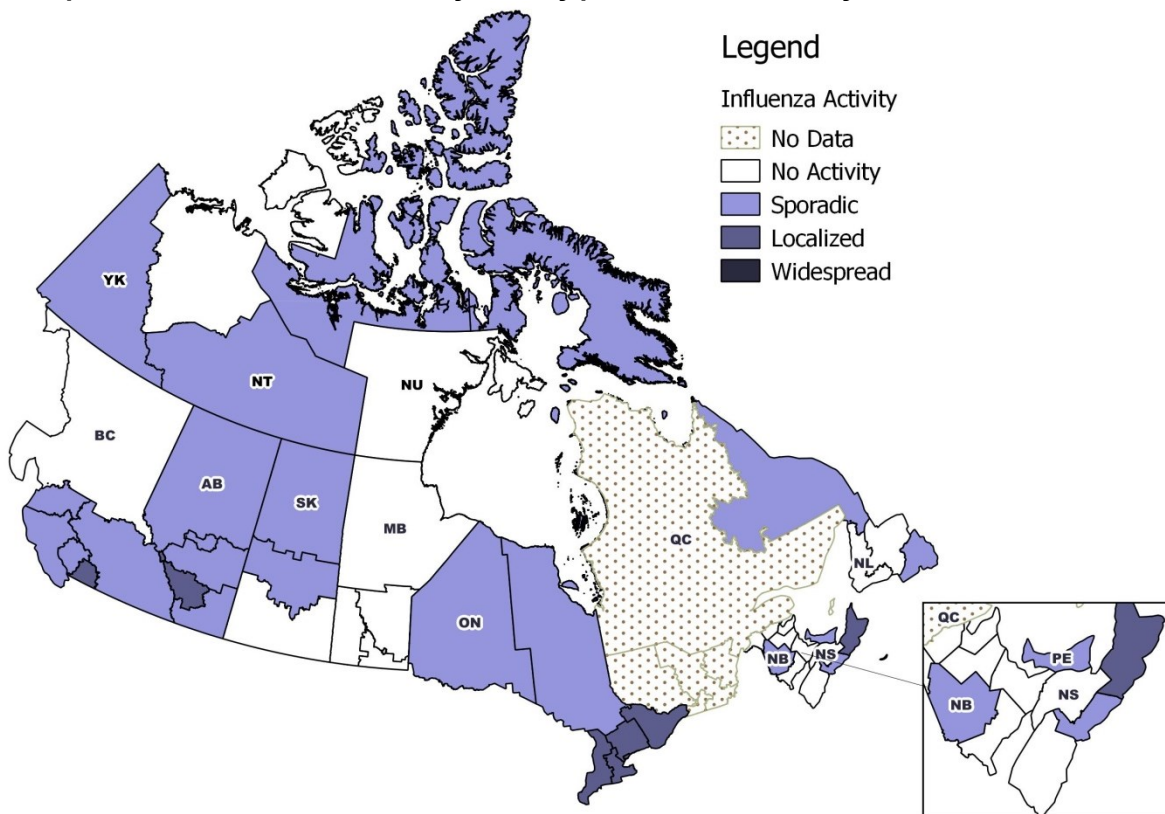
Overall Summary

- Seasonal influenza activity is increasing in Canada, with greater numbers of influenza detections, hospitalizations and outbreaks being reported in week 49.
- A total of 554 positive influenza detections were reported in week 49. Influenza A(H3N2) continues to be the most common subtype detected.
- In week 49, 1.1% of visits to sentinel healthcare professionals were due to influenza-like symptoms.
- Sixteen laboratory-confirmed influenza outbreaks were reported in week 49, with the majority occurring in long-term care facilities.
- Sentinel hospital networks and participating provinces and territories all reported an increased number of hospitalizations in week 49.
- For more information on the flu, see our [Flu\(influenza\)](#) web page.

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

In week 49, a total of 19 regions in Canada reported no influenza activity. Sporadic influenza activity was reported in 20 regions across 11 provinces and territories (BC, AB, SK, ON, NS, NB, PE, NF, NT, YT and NU). Localized activity was reported in eight regions across four provinces (BC, AB, ON and NS). 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 49

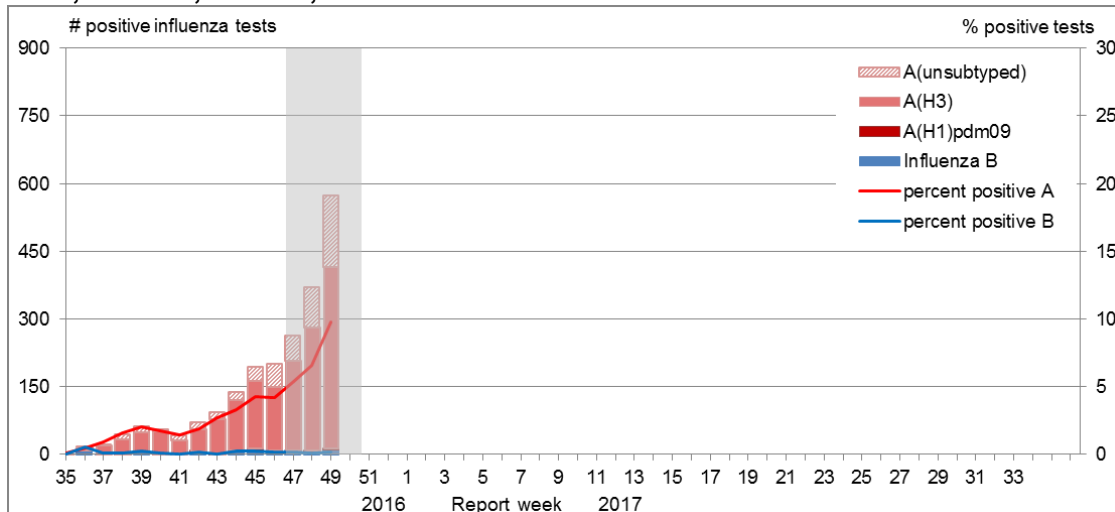


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous 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 10.0% of tests positive for influenza in week 49. Compared to the previous influenza A(H3N2)-predominant season in 2014-15, the percent positive (10.0%) was lower than the percent positive reported in week 49 of the 2014-15 season (19.2%). For data on other respiratory virus detections, see the [Respiratory Virus Detections in Canada Report](#) on the Public Health Agency of Canada (PHAC) website.

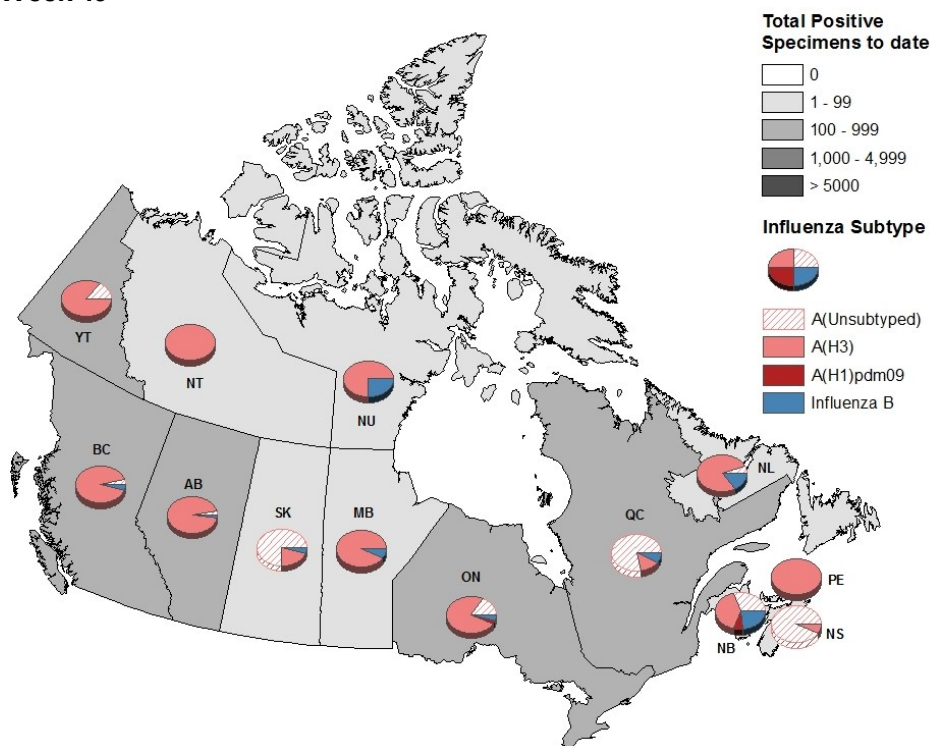
Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2016-17, Week 49



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 49, there were 554 positive influenza tests. To date, a total of 2,114 laboratory confirmed influenza detections have been reported. Influenza A(H3N2) is the most common subtype detected, representing 77% 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 49



To date this season, detailed information on age and type/subtype has been received for 1,833 laboratory confirmed influenza cases. Adults aged 65+ accounted for over 37% of reported influenza cases. Among cases of influenza A(H3N2), adults aged 65+ accounted for 38% of cases. Compared to the cases reported in the 2014-15 season at week 49, adults aged 65+ account for a smaller proportion of cases this season (approximately 37% in 2016-17 compared to 52% in 2014-15).

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting¹, Canada, 2016-17, Week 49

Age groups (years)	Week (Dec. 4, 2016 to Dec. 10, 2016)					Cumulative (Aug. 28, 2016 to Dec. 10, 2016)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm 09	A(H3)	A (UnS) ³	Total	A Total	A(H1) pdm 09	A(H3)	A (UnS) ³	Total	#	%
0-4	>23	<5	13	10	<5	>126	<5	89	37	19	>145	x%
5-19	65	0	44	21	6	276	0	214	62	12	288	16%
20-44	63	0	49	14	<5	343	5	272	66	16	359	20%
45-64	58	0	36	22	0	344	7	255	82	9	353	19%
65+	145	0	94	51	<5	>675	<5	517	158	10	>685	x%
Total	>354	<5	236	118	11	1767	15	1347	405	66	1833	100%
Percentage²	97%	x%	x%	x%	3%	96%	1%	76%	23%	4%		

¹Table 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.

²Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.

³UnS: unsubtype: The specimen was typed as influenza A, but no result for subtyping was available.

x: Suppressed to prevent residual disclosure

Specimens from NT, YT, and NU are sent to reference laboratories in the provinces

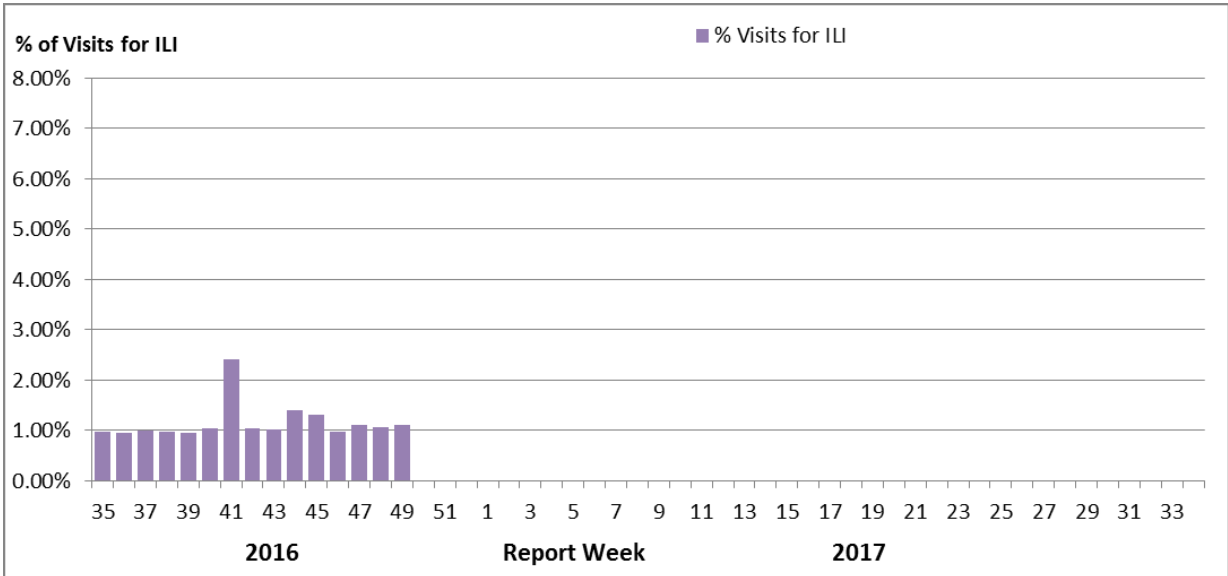
Syndromic/Influenza-like Illness Surveillance

Healthcare Professionals Sentinel Syndromic Surveillance

In week 49, 1.1% of visits to healthcare professionals were due to ILI. The proportion of ILI visits has remained constant for the past three weeks.

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

Number of Sentinels Reporting Week 49: 106



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.

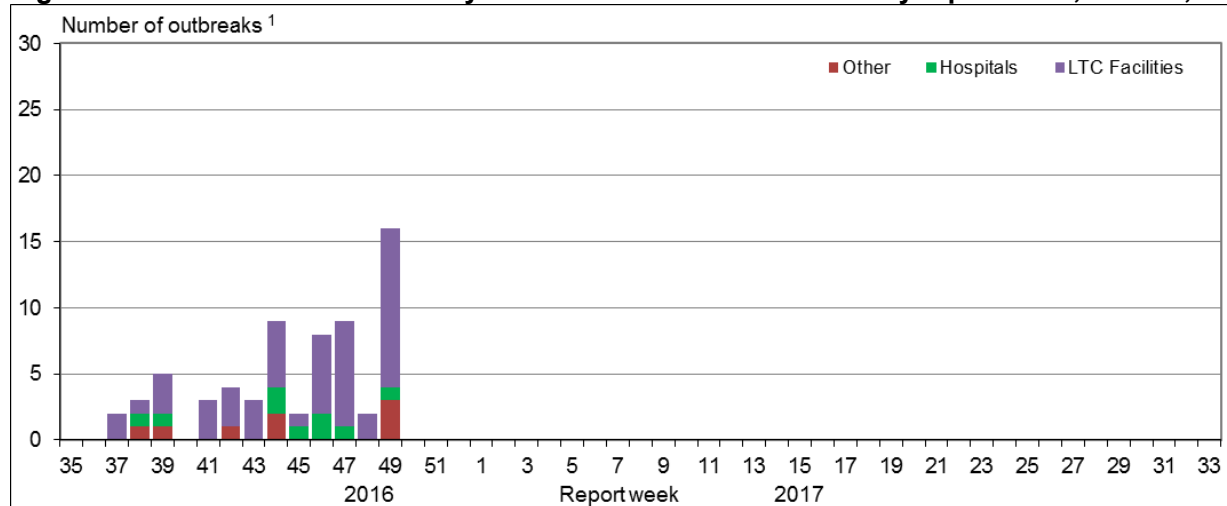
Are you a primary healthcare practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel? Please visit our [Influenza Sentinel page](#) for more details.

Influenza Outbreak Surveillance

In week 49, 16 laboratory confirmed influenza outbreaks were reported: 12 in long-term care (LTC) facilities, one in a hospital and three in institutional or community settings. Of the outbreaks with known strains or subtypes: five outbreaks were due to influenza A of which two were due to influenza A(H3N2) (one in a LTC facility and one in an institutional or community setting) and three were due to influenza A(UnS) (all reported in LTC facilities).

To date this season, 68 outbreaks have been reported and the majority (72%) have occurred in LTC facilities. In comparison at week 49 in the 2014-15 season, the previous influenza A(H3N2)-predominant season, 105 outbreaks were reported, of which 80% occurred in LTC facilities.

Figure 5 – Number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2016-17, Week 49



¹All 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 49, 104 influenza-associated hospitalizations were reported by participating provinces and territories*. Influenza A accounted for all of the reported hospitalizations, of which 56 (54%) were influenza A(H3N2) and the remainder were influenza A(UnS). Adults aged 65+ accounted for the largest proportion of hospitalizations (65%).

To date this season, 327 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 (238/239) were influenza A(H3N2). Adults 65+ accounted for approximately 62% of the hospitalizations. Ten ICU admissions and less than five deaths have been reported.

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 49

Age Groups (years)	Cumulative (Aug. 28, 2016 to Dec. 10, 2016)						
	Hospitalizations			ICU Admissions		Deaths	
	Influenza A Total	Influenza B Total	Total [# (%)]	Influenza A and B Total	%	Influenza A and B Total	%
0-4	23	<5	>23 (x%)	0	0%	0	0%
5-19	23	<5	>23 (x%)	<5	x%	<5	x%
20-44	25	<5	>25 (x%)	0	0%	0	0%
45-64	49	<5	>49 (x%)	<5	x%	0	0%
65+	199	<5	>199 (x%)	<5	x%	<5	x%
Total	319	8	327 (100%)	10	100%	5	100%

x: Suppressed 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, 50 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 30% of hospitalizations. Influenza A accounted for 84% (n=41) of the reported hospitalizations, of which 48% (n=24) were influenza A(H3N2) and the remainder were A(UnS). Additionally, five intensive care unit (ICU) admissions have been reported, all in children older than 5 years.

Compared to the 2014-15, the previous influenza A(H3N2)-predominant season, there have been approximately half the number of cases reported to date compared to the 2014-15 season, where 95 cases were reported as of week 49.

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 49

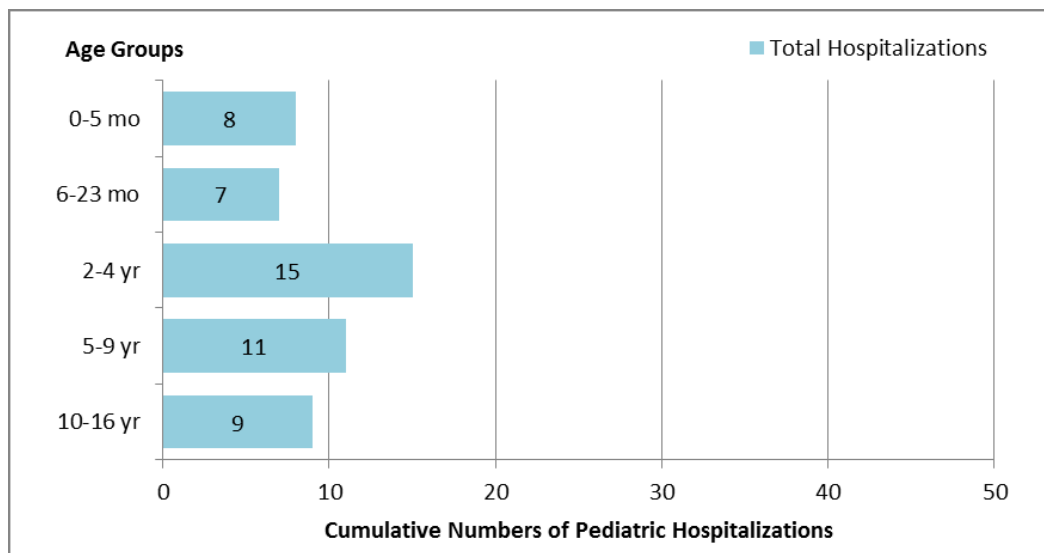
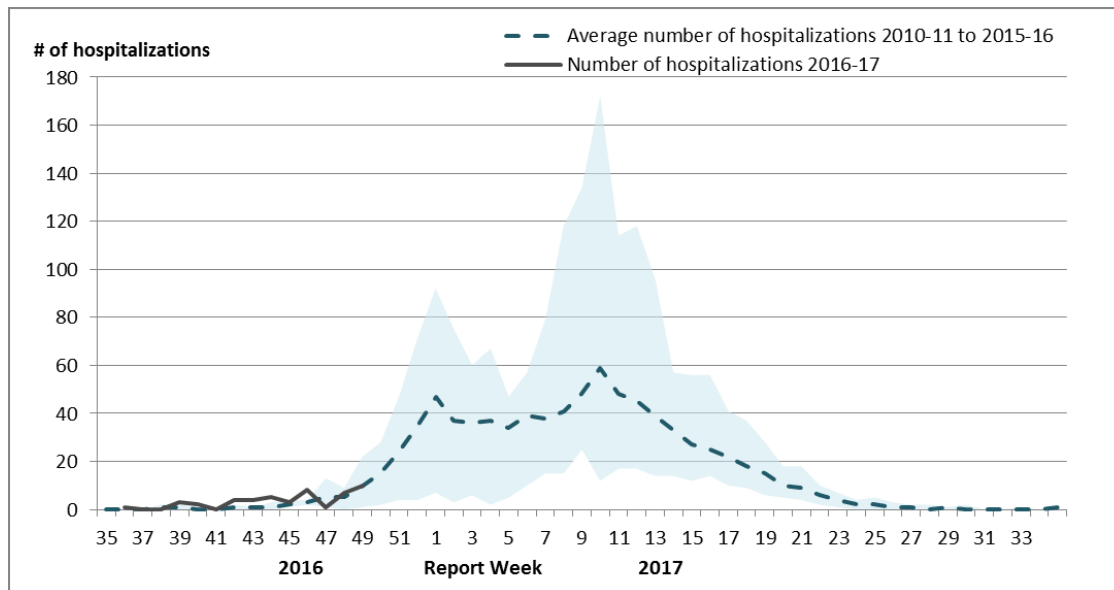


Figure 7 – Number of pediatric (≤ 16 years of age) hospitalizations reported by the IMPACT network, by week, Canada, 2016-17, Week 49



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 49, 25 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 (72%) were in adults aged 65+.

To date this season, greater than 40 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 71% of hospitalizations. To date, less than five ICU admissions and deaths have been reported.

Figure 8 - 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 49

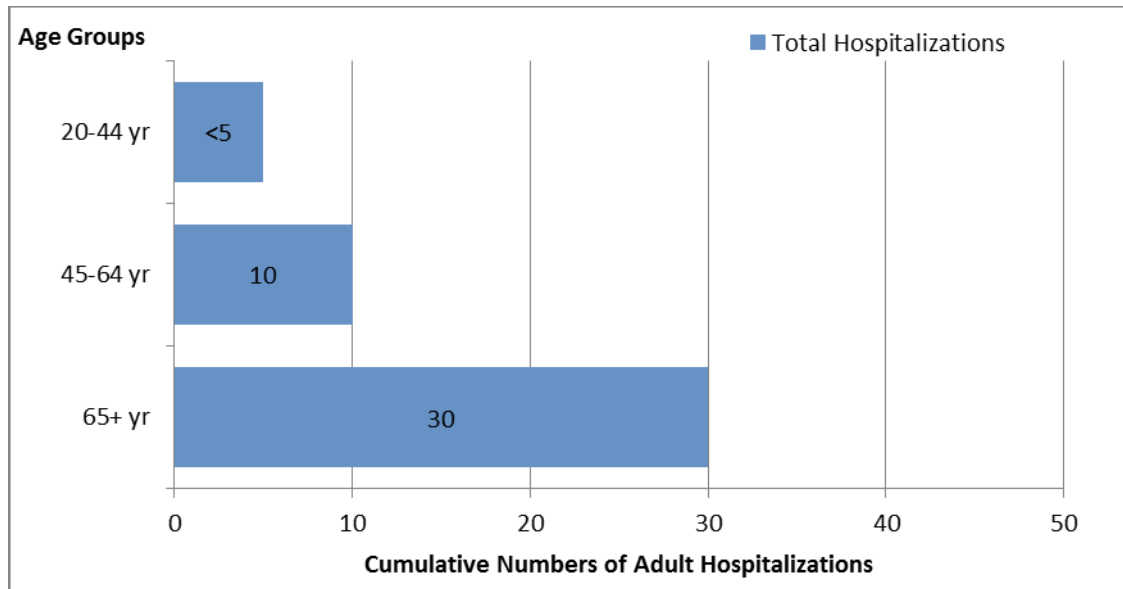
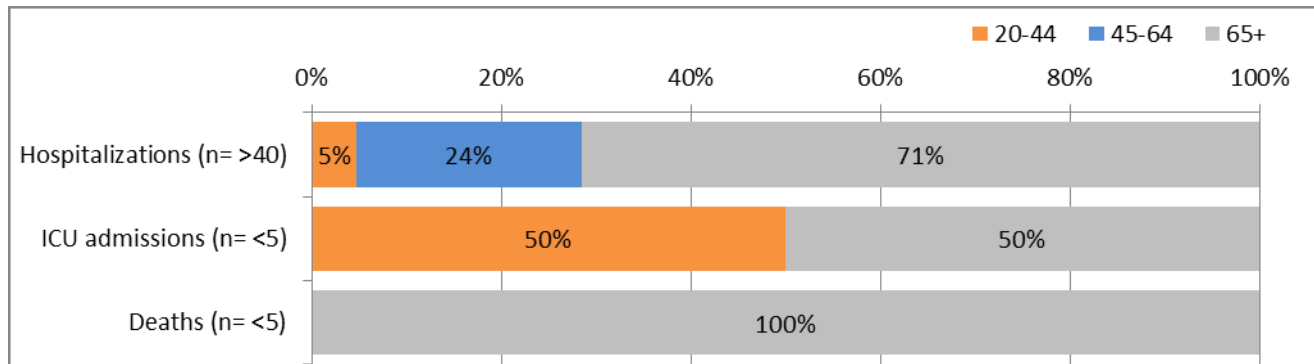


Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group (≥ 16 year of age), Canada 2015-16, Week 49



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 144 influenza viruses [125 A(H3N2), 7 A(H1N1), 12 influenza B]. All influenza A viruses (n=125) and 8 influenza B viruses characterized were antigenically or genetically similar to the vaccine strains included in both the trivalent and quadrivalent vaccines. Four influenza B viruses were similar to the strain which is included only in the quadrivalent vaccine.

Table 3 – Influenza strain characterizations, Canada, 2016-17, Week 49

Strain Characterization Results ¹	Count	Description
Influenza A (H3N2)		
Antigenically A/Hong Kong/4801/2014-like	47	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	78	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 47 influenza A (H3N2) viruses that underwent HI testing, determined that 41 viruses belonged to genetic group 3C.2a and six viruses belonged to genetic group 3C.3a. The majority of viruses belonging to genetic group 3C.3a are inhibited by antisera raised against A/Hong Kong/4801/2014 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)	4	Viruses antigenically similar to B/Phuket/3073/2013, the additional influenza B component of the 2016-17 Northern Hemisphere quadrivalent influenza vaccine.

¹The 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](#).

²Determined 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 134 influenza viruses for resistance to oseltamivir and zanamivir and 51 influenza viruses for resistance to amantadine. All viruses were sensitive to oseltamivir and zanamivir. All 51 influenza A viruses were resistant to amantadine (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2016-17, Week 49

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	117	0 (0%)	117	0 (0%)	45	45 (100%)
A (H1N1)	6	0 (0%)	6	0 (0%)	6	6 (100%)
B	11	0 (0%)	11	0 (0%)	NA ¹	NA ¹
TOTAL	134	0 (0%)	134	0 (0%)	51	51 (100%)

¹NA: 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.