FluWatch

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

December 17 to 30, 2017 (Weeks 51 and 52)

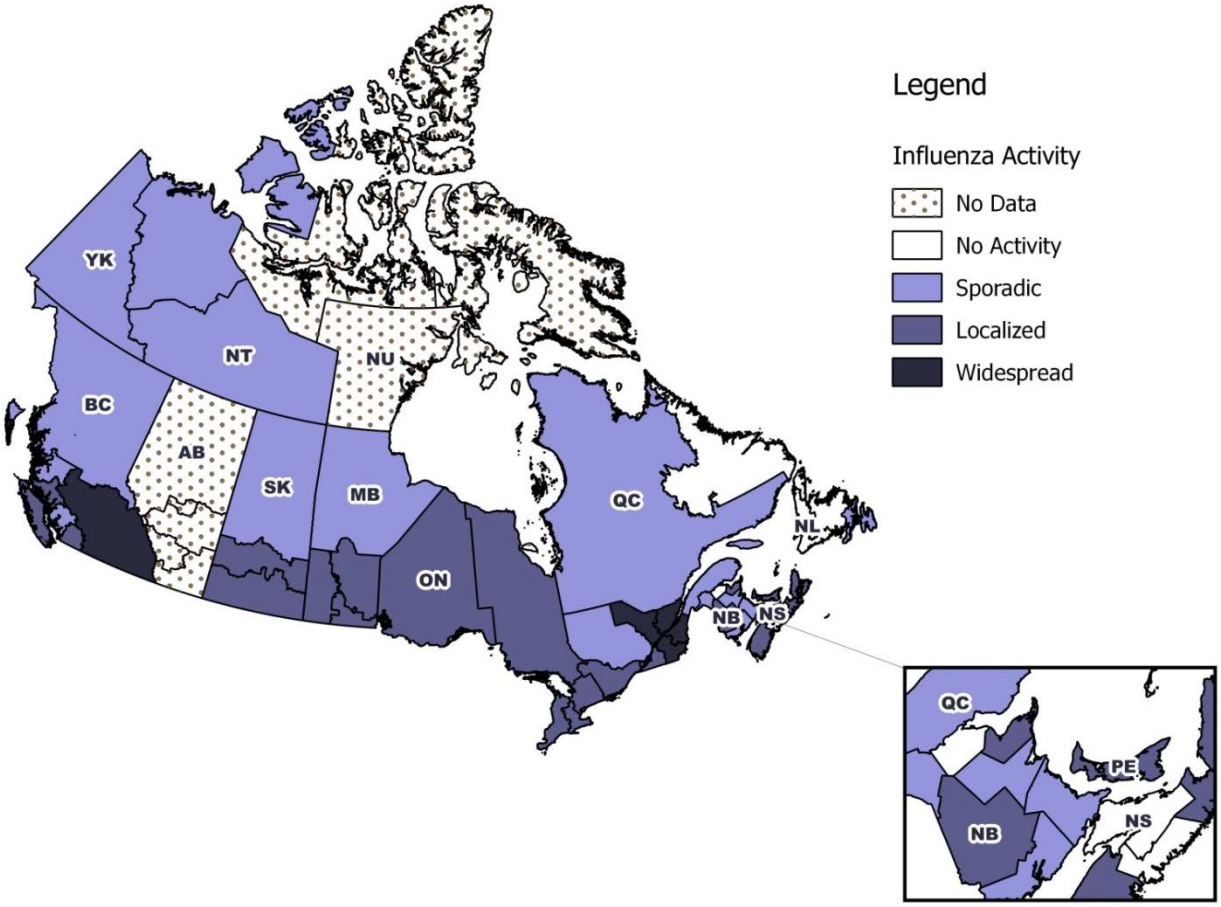
Overall Summary

- Overall, influenza activity continues to increase across Canada. All indicators of influenza activity increased in weeks 51 and 52, but are within the range of expected levels for this time of year.
- The majority of influenza detections continue to be A(H3N2), although the proportion of detections that are influenza B has been increasing steadily.
- Influenza B is circulating much earlier than usual this season.The number of influenza B detections remains substantially greater this season compared to previous years.
- To date this season, the majority of lab confirmations, hospitalizations and deaths have been among adults 65 years of age and older.
- For more information on the flu, see our Flu(influenza) web page.

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

In weeks 51 and 52, an increasing number of regions reported localized or widespread influenza activity. Among the 45 regions for which data was available in week 52, three regions (BC(1), QC(2)) reported widespread activity, and 22 regions (BC(2), SK(2), MB (4), ON(7), QC(2), NB(2), NS(2) and PE(1)) reported localized activity. Sporadic activity was reported across most of the country.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, week 2017-52

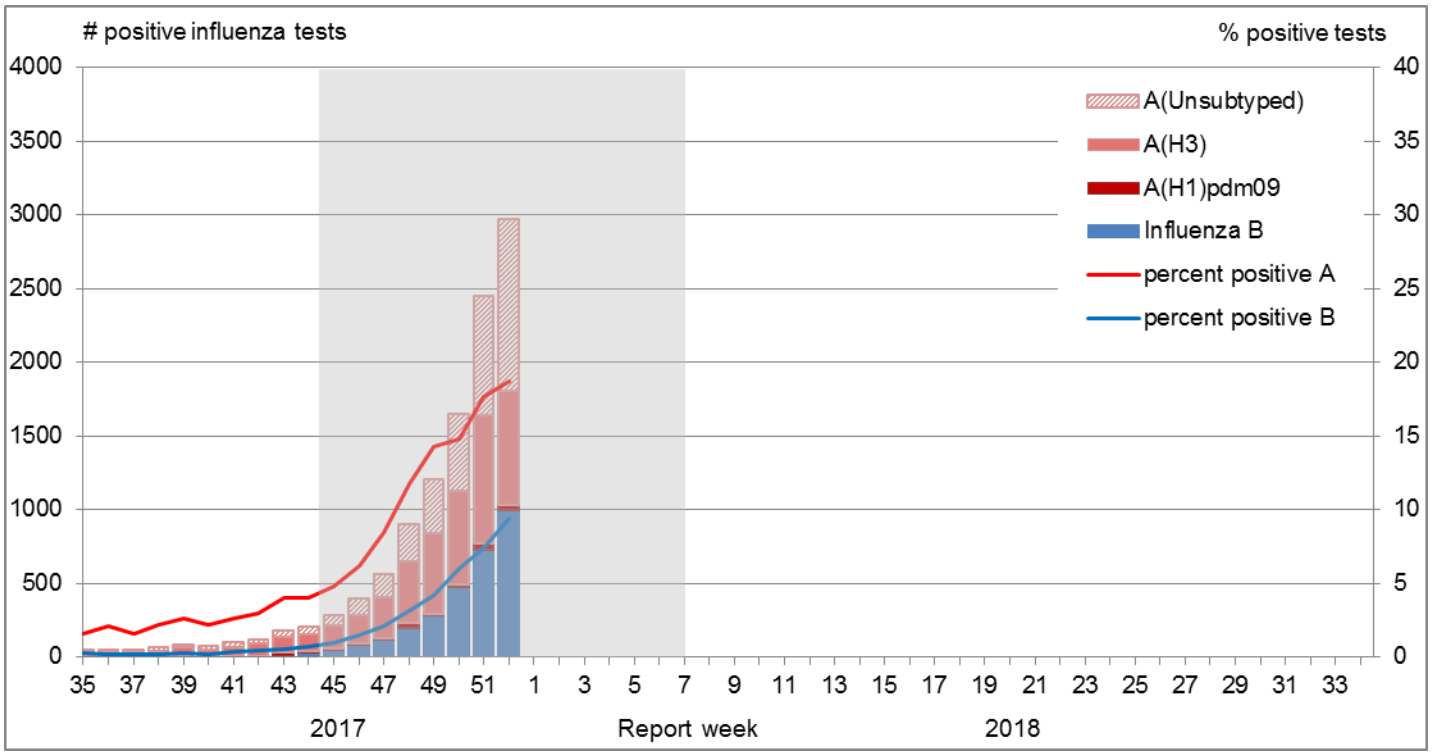


Laboratory-Confirmed Influenza Detections

In weeks 51 and 52, both influenza A and B detections continued to increase. The proportion of tests positive for influenza increased to 25% in week 51 and 28% in week 52. The proportion of influenza detections that are influenza B has been increasing steadily since week 42. In week 52, 66% of detections were influenza A and 34% influenza B.

The number (1,968) and percentage (18.7%) of influenza A detections for week 52 are close to the seasonal average for this time of year. The number (994) and percentage of tests (9.4%) positive for influenza B in week 52 are well above expected levels. Influenza B is circulating much earlier than usual this season. Current levels of tests positive for influenza B are not typically seen until March. More than 15 times the number of influenza B detections have been reported this season compared to the same period during the past seven seasons. For data on other respiratory virus detections, see the Respiratory Virus Detections in Canada Report.

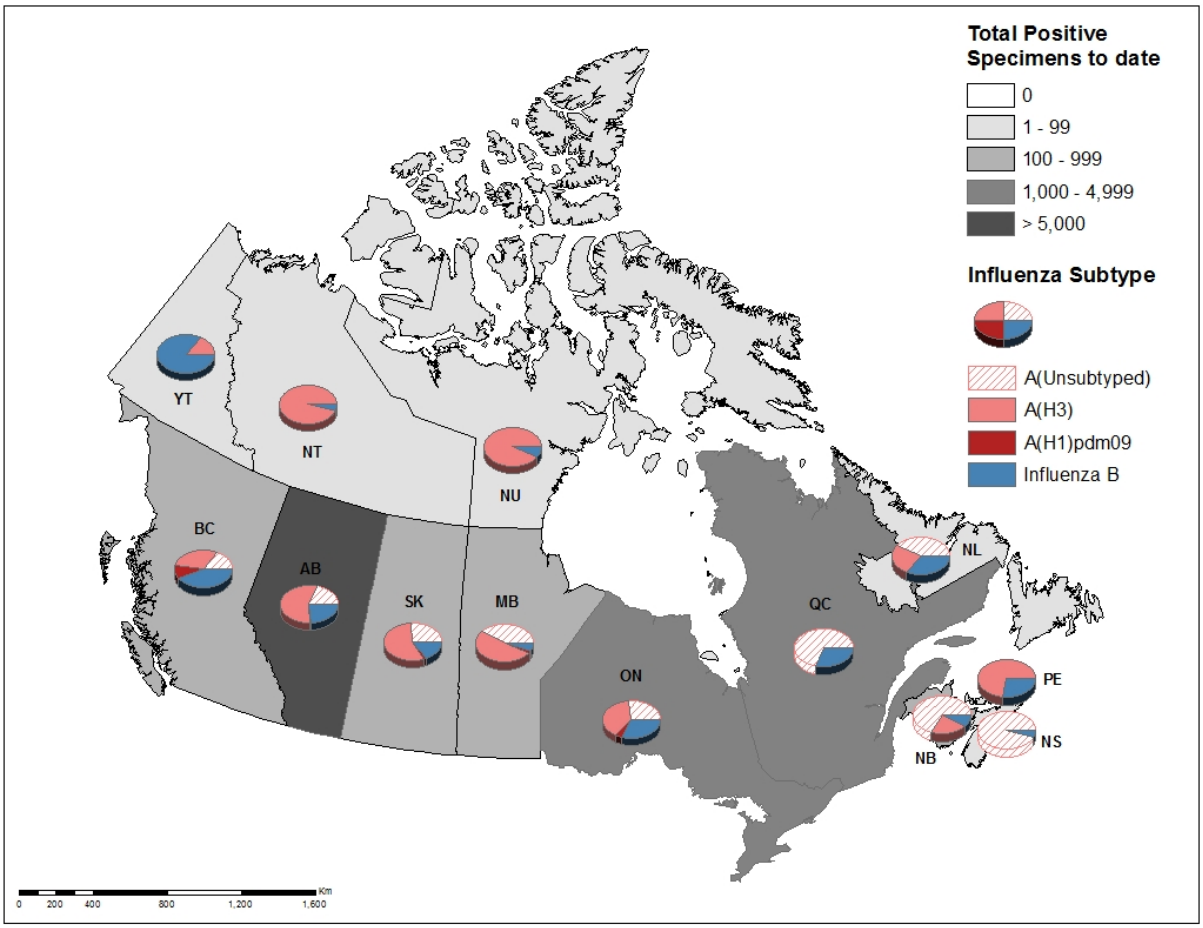
Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, weeks 2017-35 to 2017-52



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.

To date this season, 11,275 laboratory-confirmed influenza detections have been reported, of which 74% have been influenza A. Influenza A(H3N2) has been the most common subtype detected this season, representing 95% of subtyped influenza A 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, weeks 2017-35 to 2017-52



To date this season, detailed information on age and type/subtype has been received for 10,336 laboratory-confirmed influenza cases (Table 1). Among all influenza cases with reported age and type/subtype information, 44% have been reported in adults 65 years of age and older. Among cases of influenza A(H3N2), adults 65 years of age and older represented 51% of cases, compared to 39% and 54% of cases reported in the same period in the 2016-17 and 2014-15 season, respectively. Cases of influenza B this season were distributed more evenly across all age-groups, with 36% of cases in adults 65 years of age and older, 23% of cases in adults 45-64 years of age, and 23% in children and adults under 20 years of age.

Table 1 – Cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting, Canada, weeks 2017-35 to 2017-52

Age groups (years)	Cumulative (August 27, 2017 to December 30, 2017)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[1]	Total	#	%
0-4	629	40	325	264	140	769	7%
5-19	764	38	387	339	462	1226	12%
20-44	1363	55	676	632	468	1831	18%
45-64	1351	47	682	622	610	1961	19%
65+	3588	17	2165	1406	961	4549	44%
Total	7695	197	4235	3263	2641	10336	100%

[1]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available;

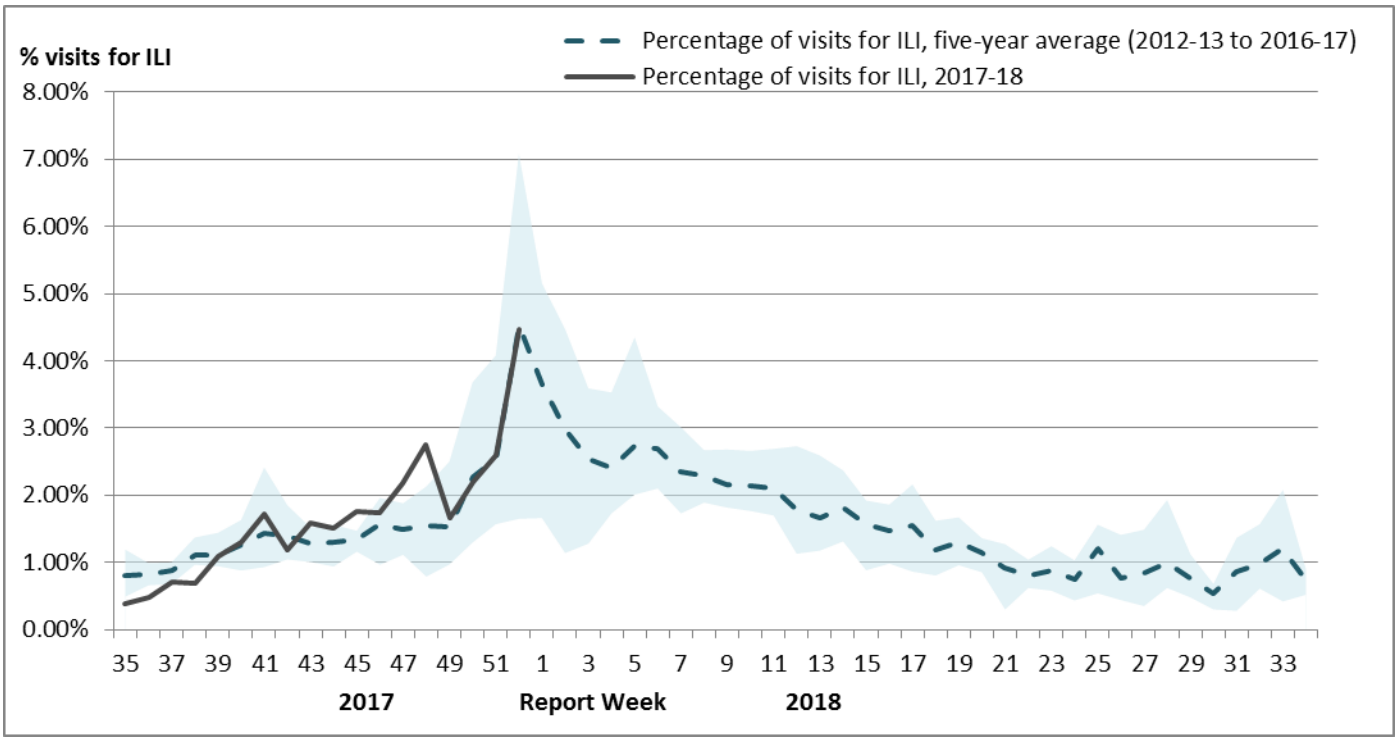
Syndromic / Influenza-like Illness Surveillance

Healthcare Practitioners Sentinel Syndromic Surveillance

In week 52, 4.5% of visits to healthcare professionals were due to influenza-like illness (ILI); an increase compared to the previous week. Since week 49, the weekly proportion of healthcare visits for ILI has been similar to the 5-year average.

Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, weeks 2017-35 to 2017-52

Number of Sentinels Reporting in Week 52: 72



The shaded area represents the maximum and minimum percentage of visits for ILI reported by week from seasons 2012-13 to 2016-17

Participatory Syndromic Surveillance

FluWatchers is a participatory ILI surveillance system that relies on weekly voluntary submissions of syndromic information from Canadians across Canada.

In week 52, 1,202 participants reported to FluWatchers, of which 6% reported symptoms of cough and fever, and 10% of these consulted a healthcare professional. Among participants who reported cough and fever, 78% reported days missed from work or school, resulting in a combined total of 180 missed days of work or school.

Table 2 – Summary of influenza-like illness symptoms reported by participating Canadians, Canada, week 2017-52

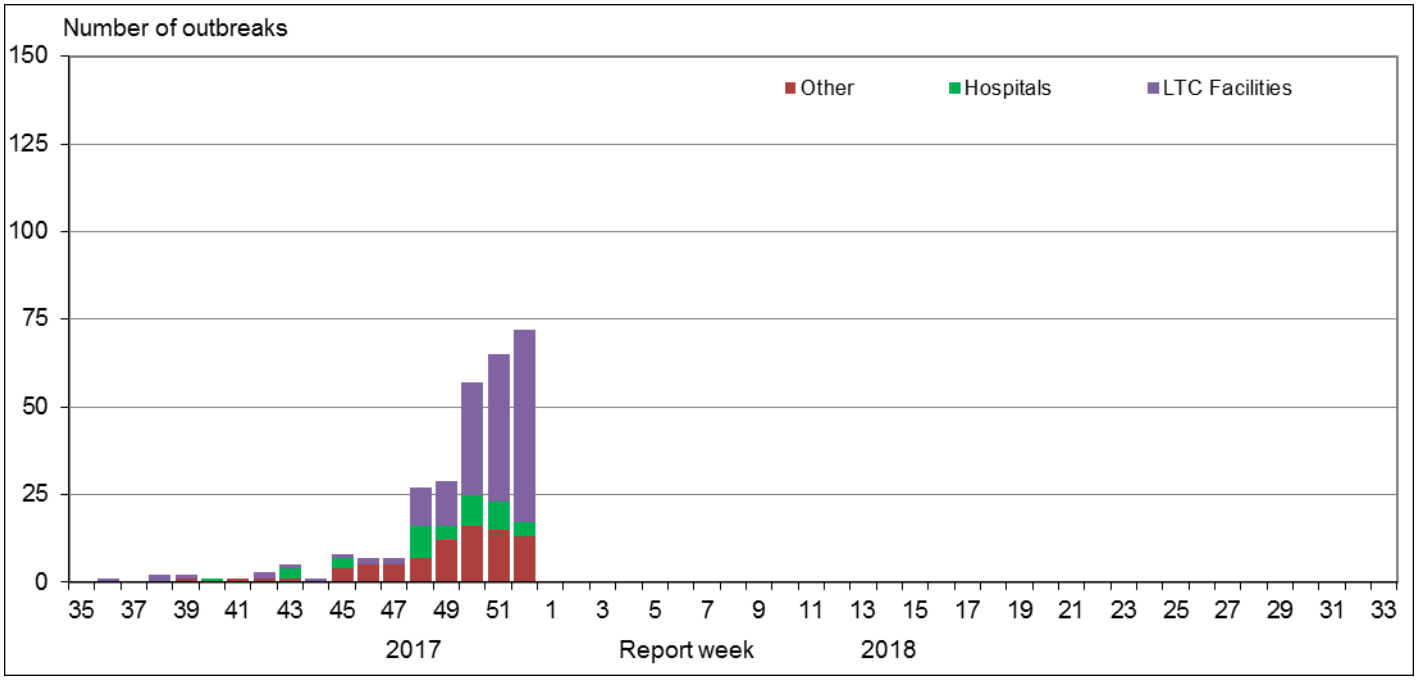
Number of Participants Reporting	Percentage participants reporting Cough and Fever	Percentage of participants with cough and fever who consulted a healthcare professional	Percentage of participants with cough and fever who reported missed days from work or school	Number of missed days from work or school
1202	6%	10%	78%	180

Influenza Outbreak Surveillance

In weeks 51 and 52, the number of reported laboratory-confirmed outbreaks of influenza increased. During this period, 137 new influenza outbreaks were reported: 97 in long-term care facilities, 12 in hospitals, and 28 in other settings. Among the 102 outbreaks with influenza type/subtype reported, 27 were associated with influenza B, and 69 were associated with influenza A, of which 21 were influenza A(H3N2) and 48 influenza A(unsubtyped). Six outbreaks were associated with a mix of influenza A and B.

To date this season, 293 influenza/ILI outbreaks have been reported, of which 166 (57%) occurred in LTC facilities. Among the 239 outbreaks for which the influenza type/subtype was reported, 179 were associated with influenza A (of which 99 were A(H3N2)), 51 were associated with influenza B, and nine were associated with a mix of A and B. Compared to recent influenza A(H3N2) seasons at week 52 or 53, the number of cumulative outbreaks reported this season has been slightly greater than during the 2016-17 and 2012-13 seasons, and lower compared to the 2014-15 season.

Figure 5 – Number of new outbreaks of laboratory-confirmed influenza by report week, Canada, weeks 2017-35 to 2017-52



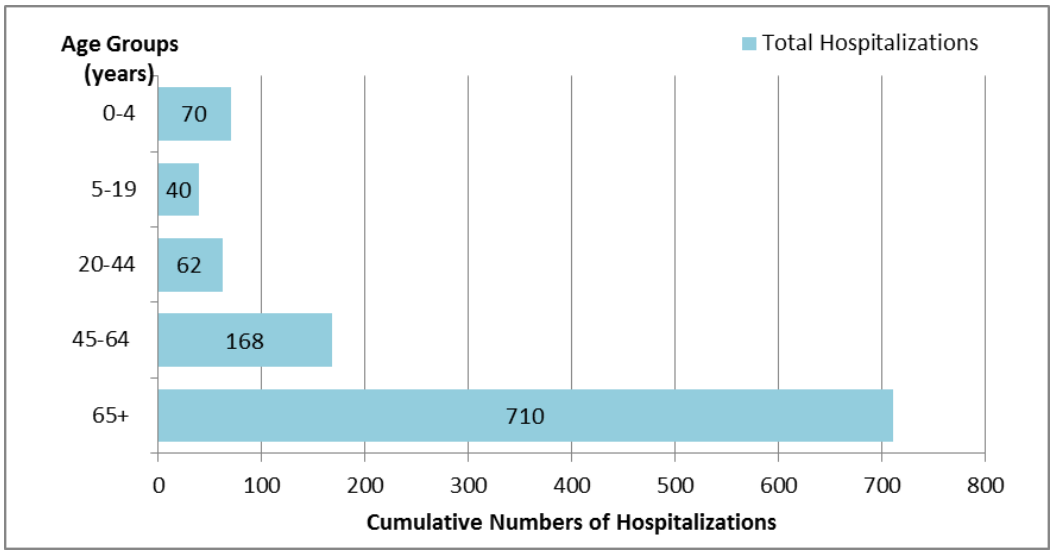
Severe Outcomes Influenza Surveillance

Provincial/Territorial Influenza Hospitalizations and Deaths

In weeks 51 and 52, 94 influenza-associated hospitalizations were reported by participating provinces and territories[1]. However, this is an underrepresentation of the number of hospitalizations for this period, due to gaps in reporting. Retrospective updates will be included in the next FluWatch report.

To date this season, 1,050 influenza-associated hospitalizations have been reported, 87% of which were associated with influenza A, and 710 cases (68%) were in adults 65 years of age or older. To date, 93 ICU admissions and 34 deaths have been reported.

Figure 6 - Cumulative numbers of hospitalizations by age-group reported by participating provinces and territories[1], weeks 2017-35 to 2017-52



[1]Influenza-associated hospitalizations are reported by NL, PE, NS, NB, MB, AB, YT and NT. Only hospitalizations that require intensive medical care are reported by SK.

Pediatric Influenza Hospitalizations and Deaths

In weeks 51 and 52, the number of laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations reported by the Immunization Monitoring Program Active (IMPACT) network continued to increase. A total of 84 hospitaliations were reported in this two-week period, of which 54 (64%) were due to influenza A. After several weeks above average, the number of hospitalizations reported in week 52 was similar to the seven-season weekly average.

To date this season, 195 pediatric hospitalizations have been reported by the IMPACT network, 144 (74%) of which were associated with influenza A. Thirty-five ICU admissions and fewer than five deaths have been reported. Compared to recent influenza A(H3N2) seasons at week 52, the number of hospitalizations reported this season have been greater than the 2016-17 season, but below the 2014-15 and 2012-13 seasons.

Figure 7 - Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza by type and age-group reported by the IMPACT network, Canada, weeks 2017-35 to 2017-52

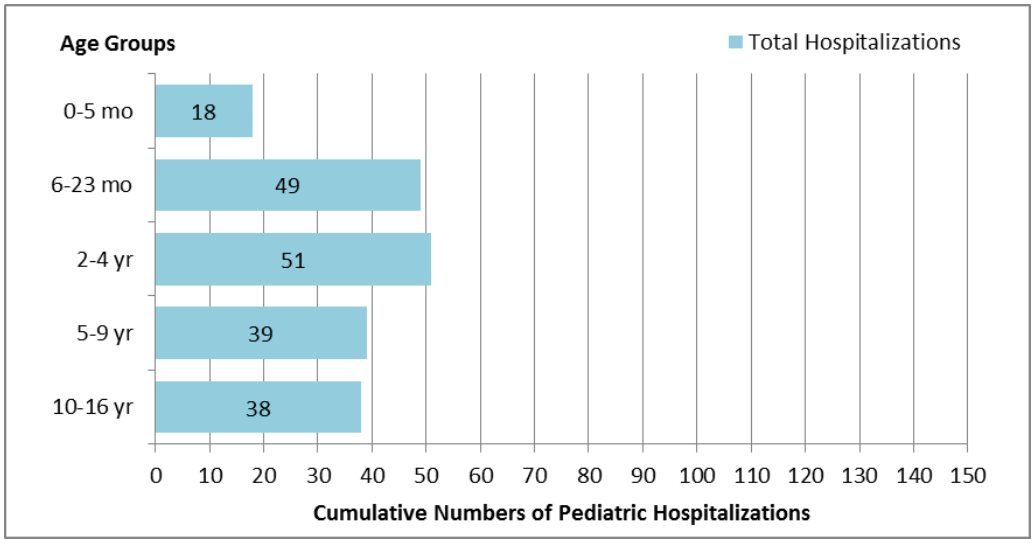
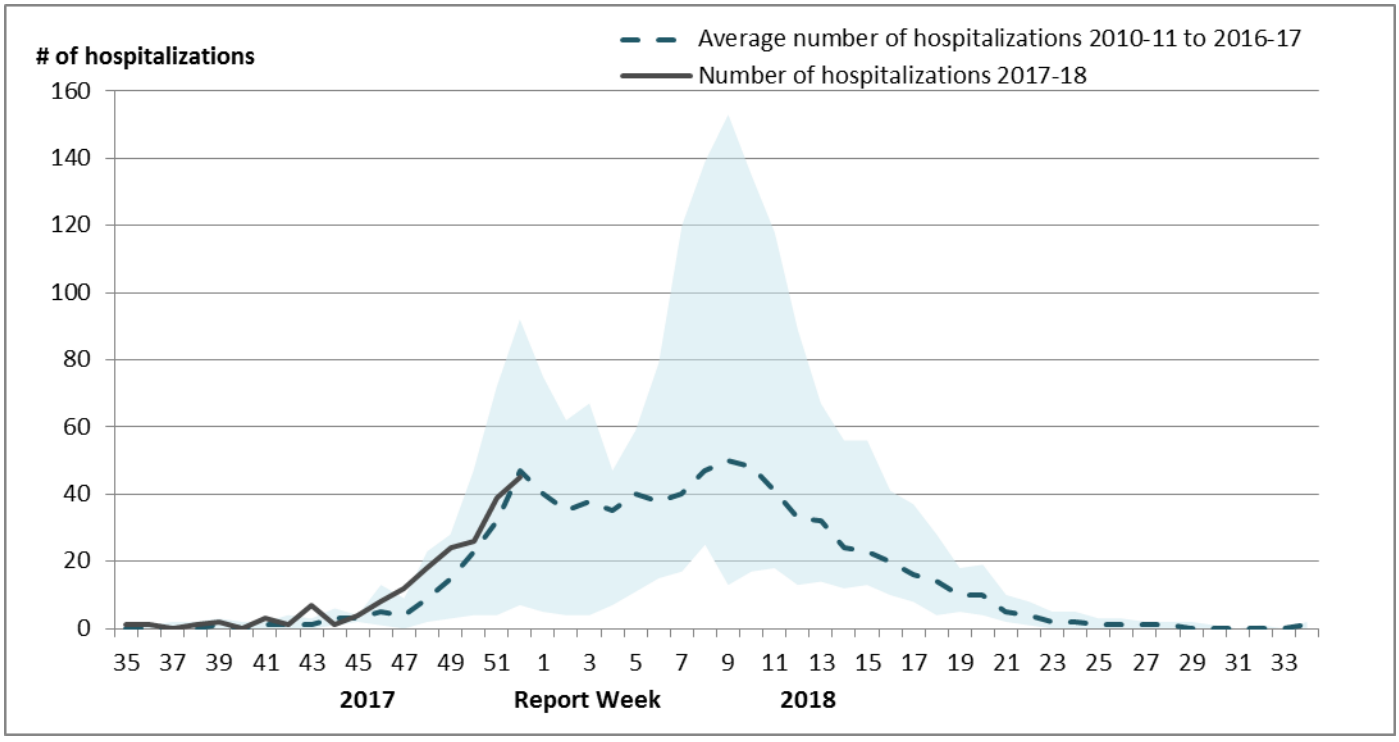


Figure 8 – Number of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, by week, Canada, weeks 2017-35 to 2017-52



The shaded area represents the maximum and minimum number of cases reported by week from seasons 2010-11 to 2016-17

Influenza Strain Characterizations

During the 2017-18 influenza season, the National Microbiology Laboratory (NML) has characterized 273 influenza viruses [190 A(H3N2), 20 A(H1N1)pdm09 and 63 B viruses] that were received from Canadian laboratories.

Antigenic Characterization

Among influenza viruses characterized by hemagglutination inhibition assay during the 2017-18 season, most viruses were antigenically similar to the cell-culture propagated reference strains recommended by WHO.

Table 3 – Influenza antigenic strain characterizations, Canada, weeks 2017-35 to 2017-52

Strain Characterization Results	Count	Description
Influenza A (H3N2)		
A/Hong Kong/4801/2014-like	52	Viruses antigenically similar to A/Hong Kong/4801/2014, the A(H3N2) component of the 2017-18 Northern Hemisphere's trivalent and quadrivalent vaccine.
Influenza A (H1N1)		
A/Michigan/45/2015-like	20	Viruses antigenically similar to A/Michigan/45/2015, the A(H1N1) component of the 2017-18 Northern Hemisphere's trivalent and quadrivalent influenza vaccine.
Influenza B		
B/Brisbane/60/2008-like (Victoria lineage)	1	Viruses antigenically similar to B/Brisbane/60/2008. B/Brisbane/60/2008 is the influenza B component of the 2017-18 Northern Hemisphere's **trivalent** and **quadrivalent** influenza vaccine.
Reduced titer to B/Brisbane/60/2008 (Victoria lineage)	5	These B/Victoria lineage viruses reacted poorly with antisera raised against cell-propagated B/Brisbane/60/2008, suggesting some antigenic differences
B/Phuket/3073/2013-like (Yamagata lineage)	57	Viruses antigenically similar to B/Phuket/3073/2013, the additional influenza B component of the 2017-18 Northern Hemisphere **quadrivalent** influenza vaccine.

Genetic Characterization of A(H3N2) viruses

During the 2017-18 season, 138 A(H3N2) viruses did not grow to sufficient titers for antigenic characterization by HI assay. Therefore, genetic characterization was performed to determine to which genetic group they belong. Sequence analysis showed that 111 A(H3N2) viruses belonged to genetic group 3C.2a and 27 viruses belonged to subclade 3C.2a1.

Additionally, of the 52 influenza A(H3N2) viruses that were characterized antigenically as similar to A/Hong Kong/4801/2014, 29 belonged to genetic group 3C.2a and four viruses belonged to subclade 3C.2a1. Sequencing is pending for the remaining 19 viruses.

A/Hong Kong/4801/2014-like virus belongs to genetic group 3C.2a and is the influenza A/H3N2 component of the 2017-18 Northern Hemisphere influenza vaccine.

Genetic Characterization of Influenza B viruses

Among the viruses characterized antigenically as having reduced titer to ferret antisera produced against cell-propagated B/Brisbane/60/2008, sequence analysis showed that all five viruses had a two amino acids deletion in the HA gene.

Antiviral Resistance

During the 2017-18 season, the National Microbiology Laboratory (NML) has tested 287 influenza viruses for resistance to oseltamivir, and 226 for resistance to zanamivir. All viruses were sensitive to these neuraminidase inhibitors (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada,weeks 2017-35 to 2017-52

Virus type and subtype	Oseltamivir		Zanamivir	
	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	206	0 (0%)	168	0 (0%)
A (H1N1)	20	0 (0%)	12	0 (0%)
B	61	0 (0%)	46	0 (0%)
TOTAL	287	0 (0%)	226	0 (0%)

Note: Since the 2009 pandemic, all circulating influenza A viruses have been resistant to amantadine, and it is therefore not currently recommended for use in the treatment of influenza. During the 2017-18 season, the subset of influenza A viruses that were tested for resistance to amantadine were resistant.

Provincial and International Influenza Reports

- Alberta – Influenza Surveillance Report
- British Columbia – Influenza Surveillance
- Manitoba - Manitoba – Seasonal Influenza Reports
- New Brunswick – Influenza Surveillance Reports
- Newfoundland and Labrador – Surveillance and Disease Reports
- Nova Scotia – Respiratory Watch Report
- Ontario – Respiratory Pathogen Bulletin
- Prince Edward Island – Weekly Influenza Summary
- Saskatchewan – Influenza Reports
- Québec – Flash Grippe
- Australia – Influenza Surveillance Report
- European Centre for Disease Prevention and Control – Surveillance reports and disease data on seasonal influenza
- New Zealand – Influenza Weekly Update
- Public Health England – Weekly national flu reports
- Pan-American Health Organization – Influenza Situation Report
- United States Centres for Disease Control and Prevention – Weekly Influenza Surveillance Report
- World Health Organization – Influenza update
- World Health Organization – FluNet

FluWatch Surveillance for the 2017-2018 Season – Notes and Definitions

The FluWatch report is compiled from a number of data sources. Surveillance information contained in this report is a reflection of the surveillance data available to FluWatch at the time of production. Delays in reporting of data may cause data to change retrospectively

Influenza/Influenza-like Illness (ILI) Activity

Influenza/ILI activity levels, as represented on the map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, primary care consultations for ILI and reported outbreaks. ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls, and the detemination of an increase is based on the assessment of the provincial/territorial epidemiologist. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Influenza/ILI Activity Level definitions

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**†;
* 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

Laboratory-Confirmed Influenza Detections

Provincial, regional and some hospital laboratories report the weekly number of tests and detections of influenza and other respiratory viruses. Provincial public health laboratories submit demographic information for cases of influenza. This case-level data represents a subset of influenza detections reported through aggregate reporting. Specimens from NT, YT, and NU are sent to reference laboratories in the provinces for testing. Cumulative data includes updates to previous weeks. Discrepancies in values in Figures 2 and 3 may be attributable to differing data sources.

Syndromic/Influenza-like Illness Surveillance

FluWatch maintains a network of primary care practitioners who report the weekly proportion of ILI cases seen in their practice. Independent sentinel networks in BC, AB, and SK compile their data for reporting to FluWatch. Not all sentinel physicians report every week.

Definition of 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 years of age, gastrointestinal symptoms may also be present. In patients under 5 or 65 years and older, fever may not be prominent.

Influenza Outbreak Surveillance

Outbreaks of influenza or ILI are reported from all provinces and territories, according to the definitions below. However, reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions. All provinces and territories with the exception of NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals.

Outbreak definitions:

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.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory-confirmed case of influenza. Residential institutions include but are 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 of influenza; i.e. closed communities.

Serious Outcome Influenza Surveillance

Provincial/Territorial Influenza Hospitalizations and Deaths

Influenza-associated hospitalizations and deaths are reported by 8 Provincial and Territorial Ministries of Health (excluding BC, NU, ON and QC). The hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Only hospitalizations that require intensive medical care are reported by SK.

Due to changes in participating provinces and territories, comparisons to previous years should be done with caution.

Pediatric Influenza Hospitalizations and Deaths

The Immunization Monitoring Program Active (IMPACT) network reports the weekly number of hospitalizations with influenza among children admitted to one of the 12 participating paediatric hospitals in 8 provinces. These represent a subset of all influenza-associated pediatric hospitalizations in Canada.

Influenza Strain Characterizations and Antiviral Resistance

Provincial public health laboratories send a subset of influenza virus isolates to the National Microbiology Laboratory for strain characterization and antiviral resistance. These represent a subset of all influenza detections in Canada and the proportion of isolates of each type and subtype is not necessarily representative of circulating viruses.

Antigenic strain characterization data reflect the results of hemagglutination inhibition (HI) testing compared to the reference influenza strains recommended by WHO. Genetic strain characterization data are based on analysis of the sequence of the viral hemagglutinin (HA) gene.

Antiviral resistance testing is conducted by phenotypic and genotypic methods on influenza virus isolates submitted to the National Microbiology Laboratory. All isolates are tested for oseltamivir and zanamivir and a subset are tested for resistance to amantadine.

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).

This report is available on the Government of Canada Influenza webpage.
Ce rapport est disponible dans les deux langues officielles.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.