FluWatch

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

December 1 to 7, 2019 (week 49)

Overall Summary

- Influenza activity continued to increase across multiple indicators, with regions throughout the country reporting influenza activity.
- In week 49, the majority of laboratory detections continued to be influenza A, although the proportion that were influenza B increased (44%). Among influenza A detections, 65% were A(H3N2).
- This season, the majority of hospitalizations reported by participating provinces and territories have been associated with influenza A(H3N2). Among sentinel pediatric hospitalizations with influenza, approximately 50% of cases were associated with influenza B.

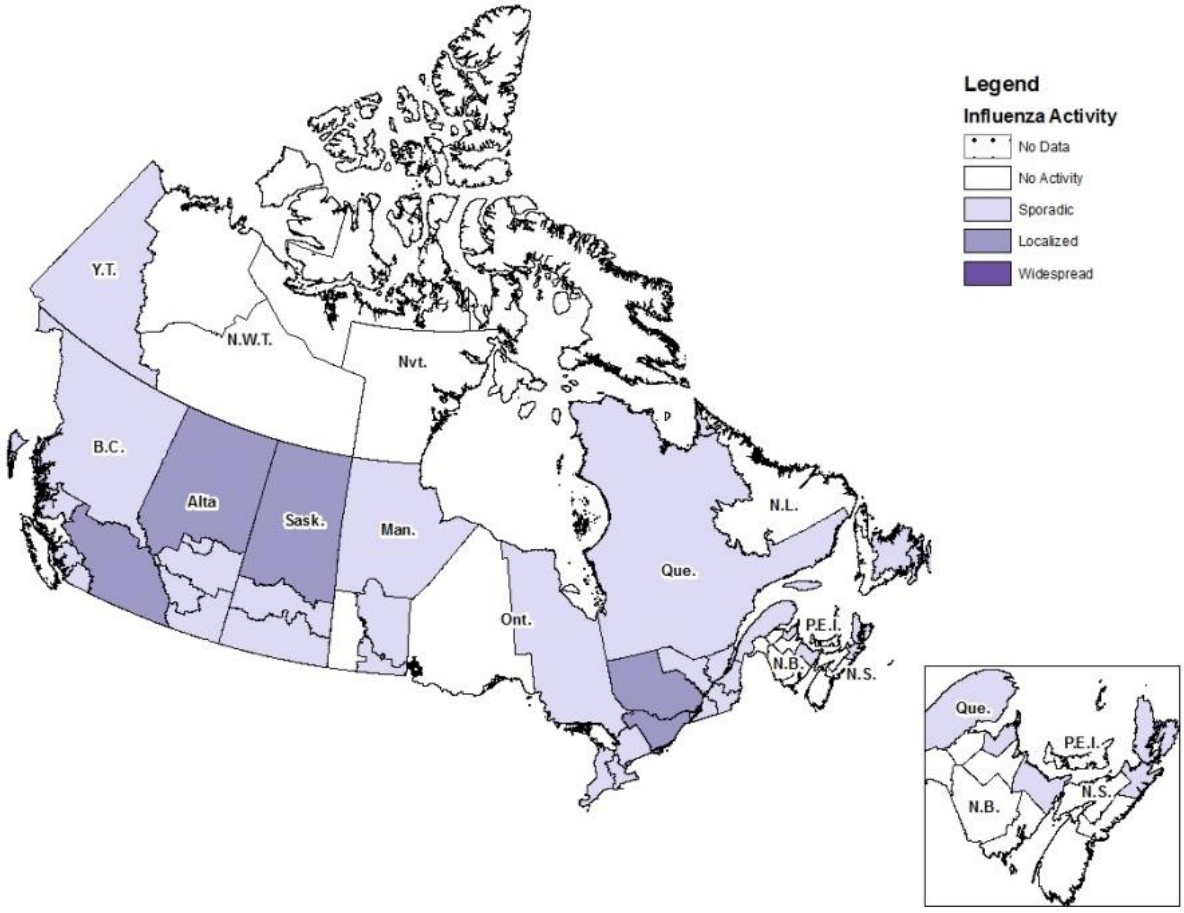
Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

During week 49, the number of regions reporting influenza activity and the level of activity reported both increased compared to the previous week (Figure 1).

- Activity was reported across the country, in 10 provinces and territories.
- 64% of regions reported influenza activity; among these 76% reporting sporadic activity and 24% reported localized activity

Figure 1 – Map of influenza/ILI activity by province and territory, Canada, week 2019-49

Number of Regions Reporting in Week 49: 53 out of 53



Laboratory-Confirmed Influenza Detections

In week 49, the number of detections of influenza continued to increase. The following results were reported from sentinel laboratories across Canada (Figures 2 and 3):

- The percentage of tests positive for influenza was 9.1%. This is slightly below the average (13.7%) for week 49 over the past five seasons.
- A total of 724 laboratory detections of influenza were reported, of which 56.5% (409) were influenza A. The proportion of detections that are influenza B has been increasing over the past four weeks, to 43.5% in week 49.
- The percentage of tests positive for influenza B (4.0%) is higher than the average (1.1%) for this time of year. The current level of influenza B activity is not normally seen until January or February.
- Among subtyped influenza A detections, a mix of A(H1N1) and A(H3N2) were detected; 65% (60 out of 93) were influenza A(H3N2).

To date this season (weeks 35 to 49), 2,494 laboratory detections of influenza were reported:

- 67% (1,673) were influenza A. The percentage of tests positive for influenza B to date this season is following a similar trend to the 2017-18 season, when influenza A and B circulated in almost equal proportions.
- Among subtyped influenza A detections (612), 70% were influenza A(H3N2).

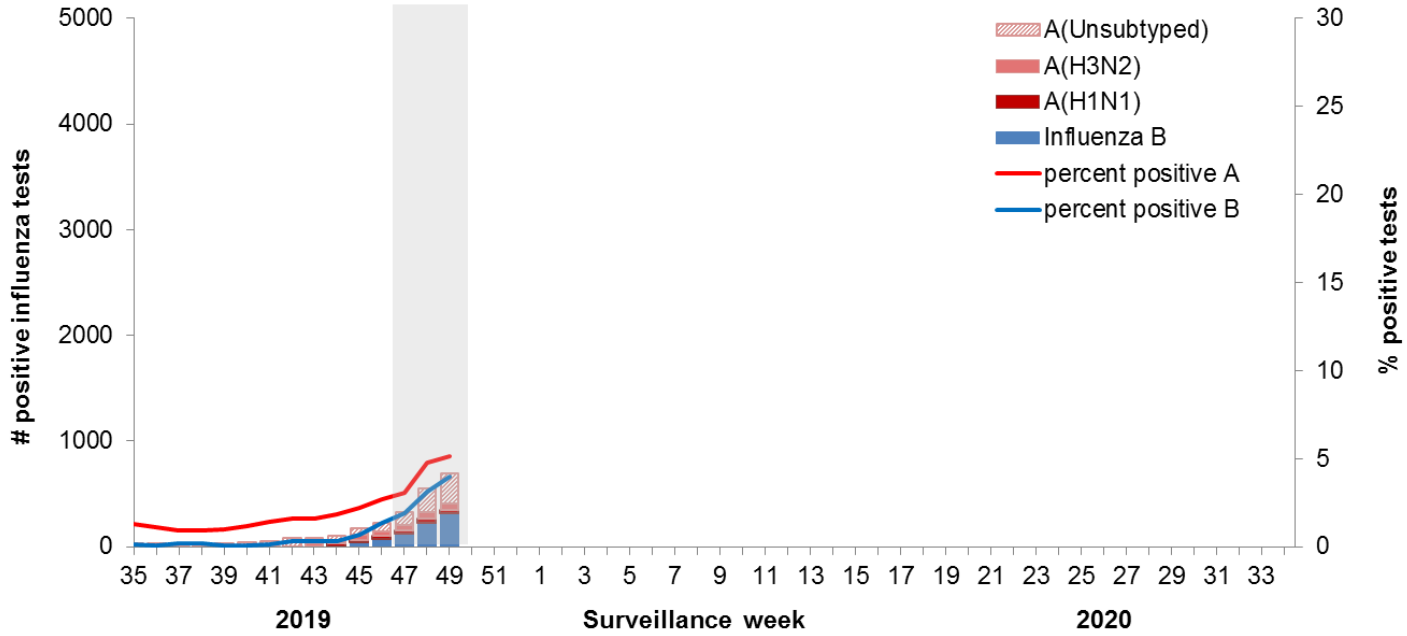
Detailed information on age and type/subtype has been received for 2,104 laboratory-confirmed influenza cases (Table 1). To date this season (weeks 35 to 49):

- Among cases of influenza A(H3N2) (397), the largest proportion were in adults 65 years of age and older (44%).
- Cases of influenza B (753) were primarily in younger age groups; 61% of cases were under 20 years of age and 31% between 20 and 44 years of age.
- Among cases of influenza A(H1N1) (161), 34% of cases were in adults between 45 and 64 years of age, and 23% between 20 and 44 years of age.

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.

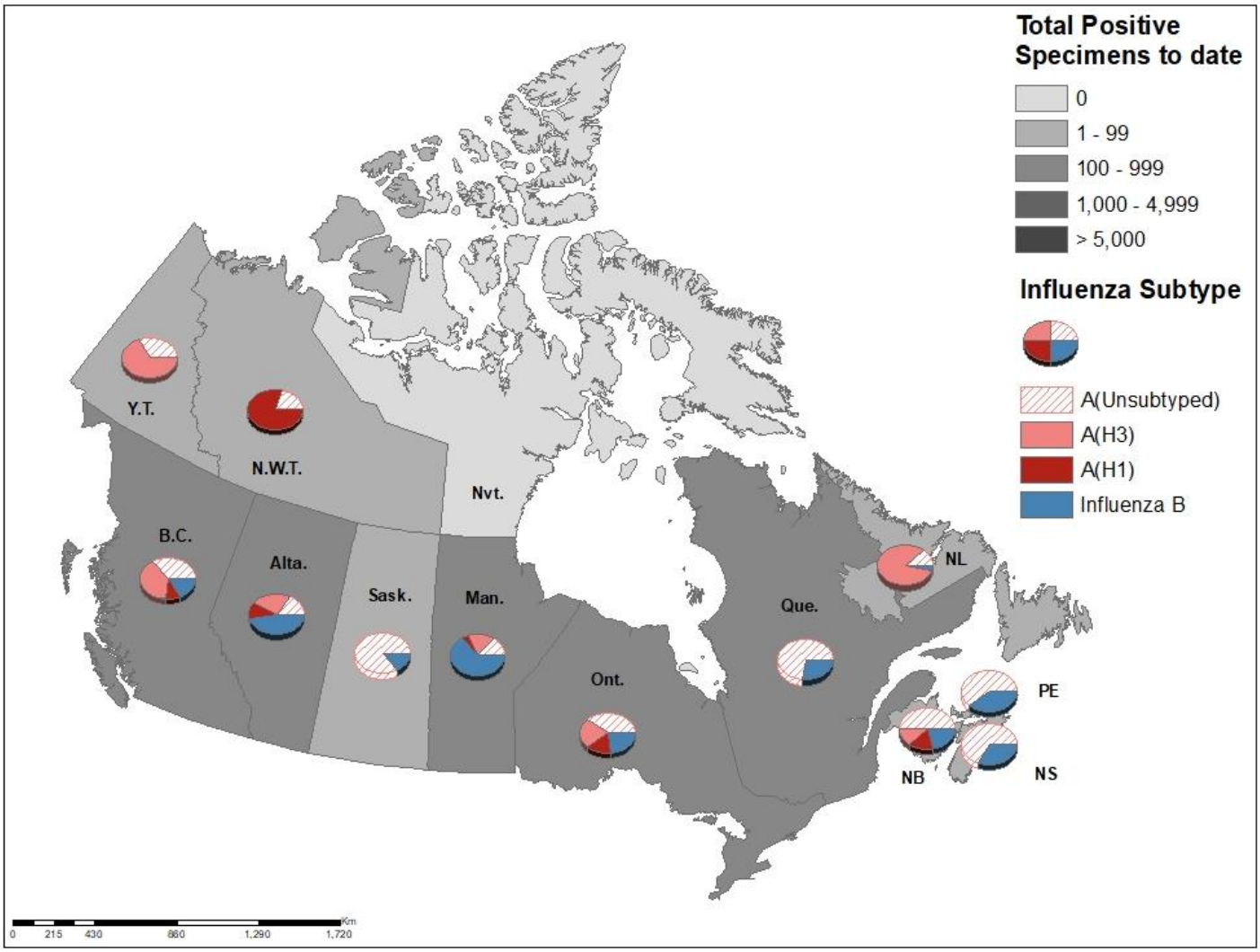
Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, weeks 2019-35 to 2019-49

Number of Laboratories Reporting in Week 49: 36 out of 36



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.

Figure 3 – Distribution of positive influenza specimens by type/subtype and province/territory*, Canada, weeks 2019-35 to 2019-49



* Specimens from NWT, YT, and Nvt are sent to reference laboratories in other provinces. However, data on laboratory-confirmed detections of influenza from Nunavut are not currently available.

Table 1 – Cumulative number of positive influenza specimens by type, subtype and age group reported through case-based laboratory reporting, Canada, weeks 2019-35 to 2019-49

Age groups (years)	Cumulative (August 25, 2019 to December 7, 2019)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1)	A(H3N2)	A (Un subtyped)[1]	Total	#	%
0-4	185	32	46	107	127	312	15%
5-19	158	10	50	98	331	489	23%
20-44	241	37	61	143	236	477	23%
45-64	272	55	67	150	32	304	14%
65+	495	27	173	295	27	522	25%
Total	1351	161	397	793	753	2104	100%

[1]Unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

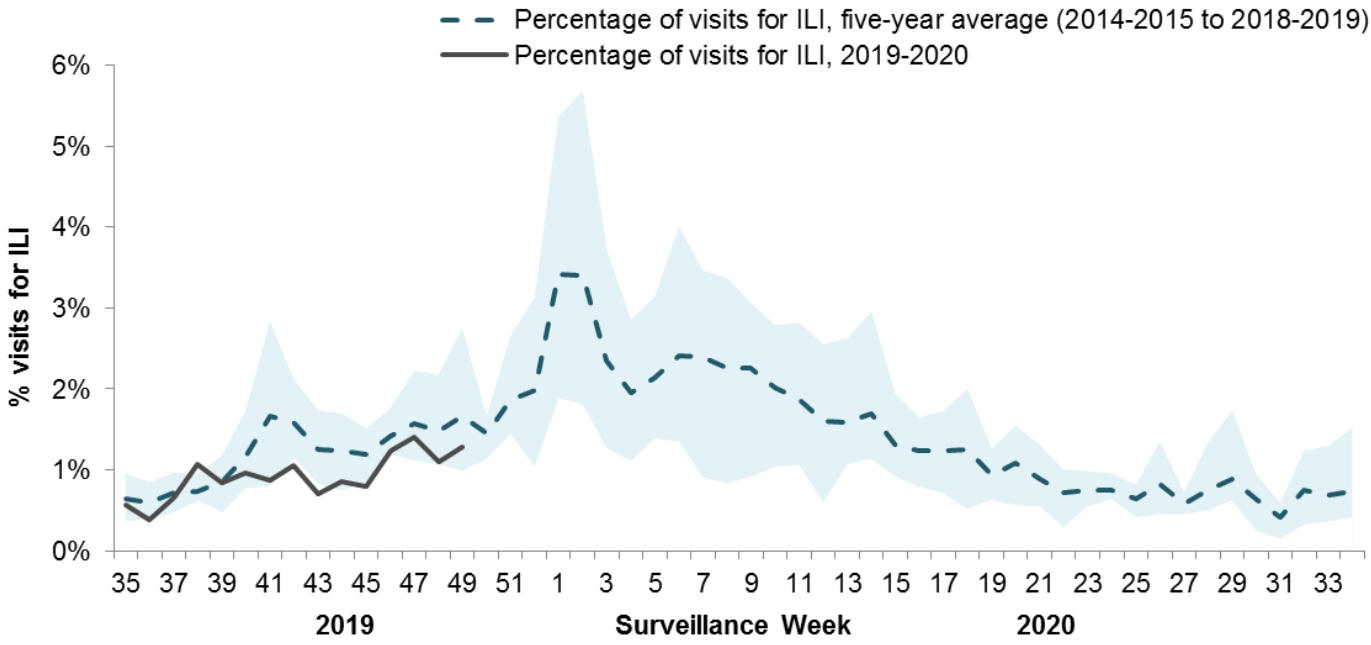
Syndromic / Influenza-like Illness Surveillance

Healthcare Practitioners Sentinel Syndromic Surveillance

In week 49, 1.3% of visits to healthcare professionals were due to influenza-like illness (ILI) which is slightly below the average for this time of year (1.5%) (Figure 4).

Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, weeks 2019-35 to 2019-49

Number of Sentinels Reporting in Week 49: 81



The shaded area represents the maximum and minimum percentage of visits for ILI reported by week from seasons 2014-2015 to 2018-2019

FluWatchers

In week 49, 3,092 participants reported to FluWatchers, of which 2.0% (62) reported symptoms of cough and fever (Figure 5).

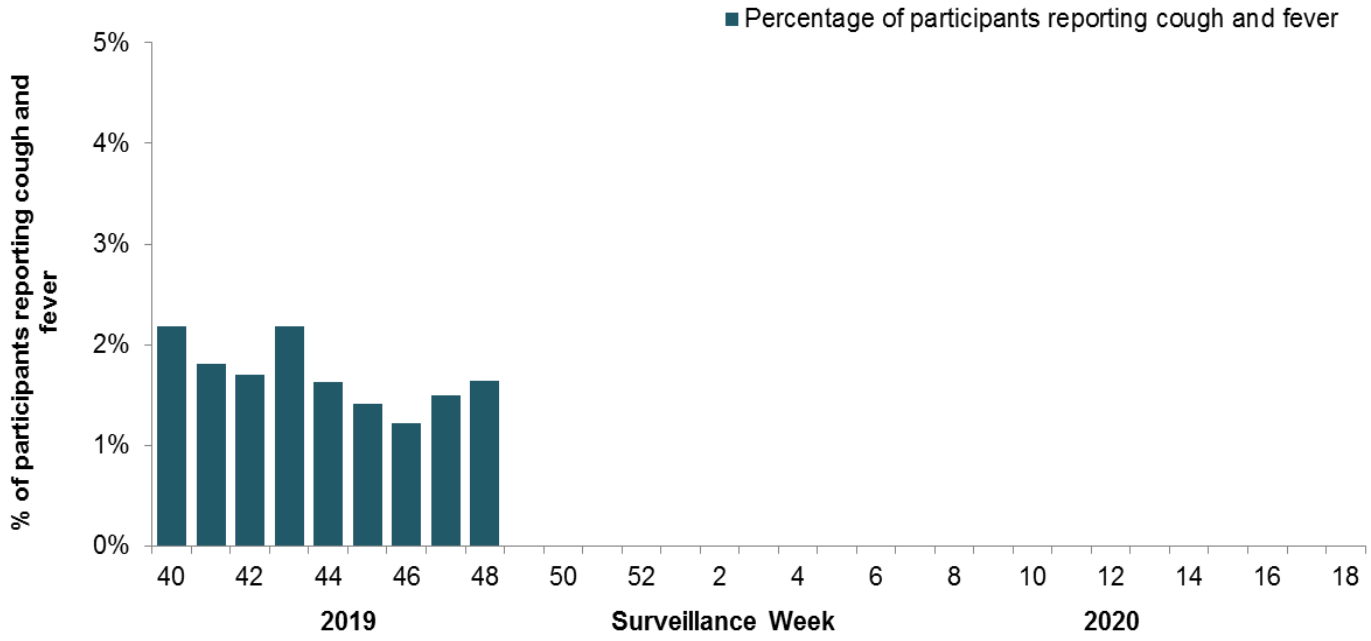
Among the 62 participants who reported cough and fever:

- 31% consulted a healthcare professional;
- 79% reported days missed from work or school, resulting in a combined total of 136 missed days of work or school.
- 68% reported having been vaccinated for influenza this season.

If you are interested in becoming a FluWatcher, sign up today.

Figure 5 – Percentage of FluWatchers participants reporting cough and fever, Canada, weeks 2019-40 to 2019-49

Number of Participants Reporting in Week 49: 3,092



Online Figure – Geographic distribution of FluWatchers participants reporting cough and fever, Canada, week 2019-49

Click on the map to access the link

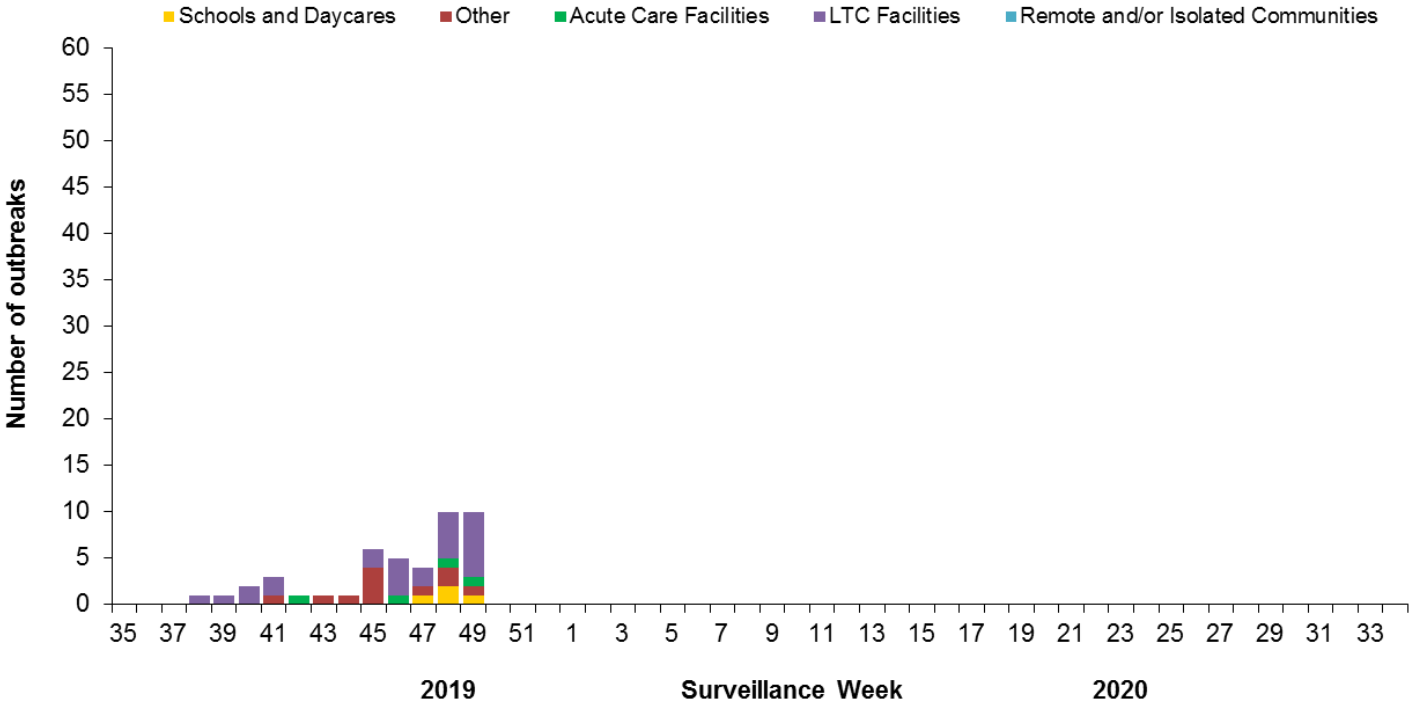
Influenza Outbreak Surveillance

In week 49, ten new laboratory-confirmed outbreaks were reported: seven in long term care facilities, one in an acute care facility, one in a school/daycare and one in a facility categorized as 'other', which includes facilities such as private personal care homes, correctional facilities, and colleges/universities (Figure 6).Two new ILI outbreaks in schools were reported.

To date this season, a total of 45 laboratory-confirmed influenza outbreaks have been reported; 26 in long-term care facilities, four in schools/daycares, four in acute care facilities and 11 in a facilities categorized as 'other'. Of the outbreaks where influenza type was reported (42), 86%(36) were due to influenza A. Among the 18 outbreaks for which the influenza A subtype was reported, all were associated with A(H3N2). Three ILI outbreaks in schools/daycares have also been reported.

Figure 6 – Number of new outbreaks of laboratory-confirmed influenza by report week, Canada, weeks 2019-35 to 2019-49

Number of provinces and territories reporting in week 49: 13 out of 13



Severe Outcomes Influenza Surveillance

Provincial/Territorial Influenza Hospitalizations and Deaths

To date this season, 200 influenza-associated hospitalizations were reported by participating provinces and territories[1].

- 75% of the cases were influenza A.
- Of the cases for which subtype was reported (129), 77% were associated with influenza A(H3N2).
- The greatest proportion of hospitalizations (42%) were among adults ≥ 65 years of age.

Twenty-eight ICU admissions and one death have been reported.

Number of provinces and territories reporting in week 49: 9 out of 9

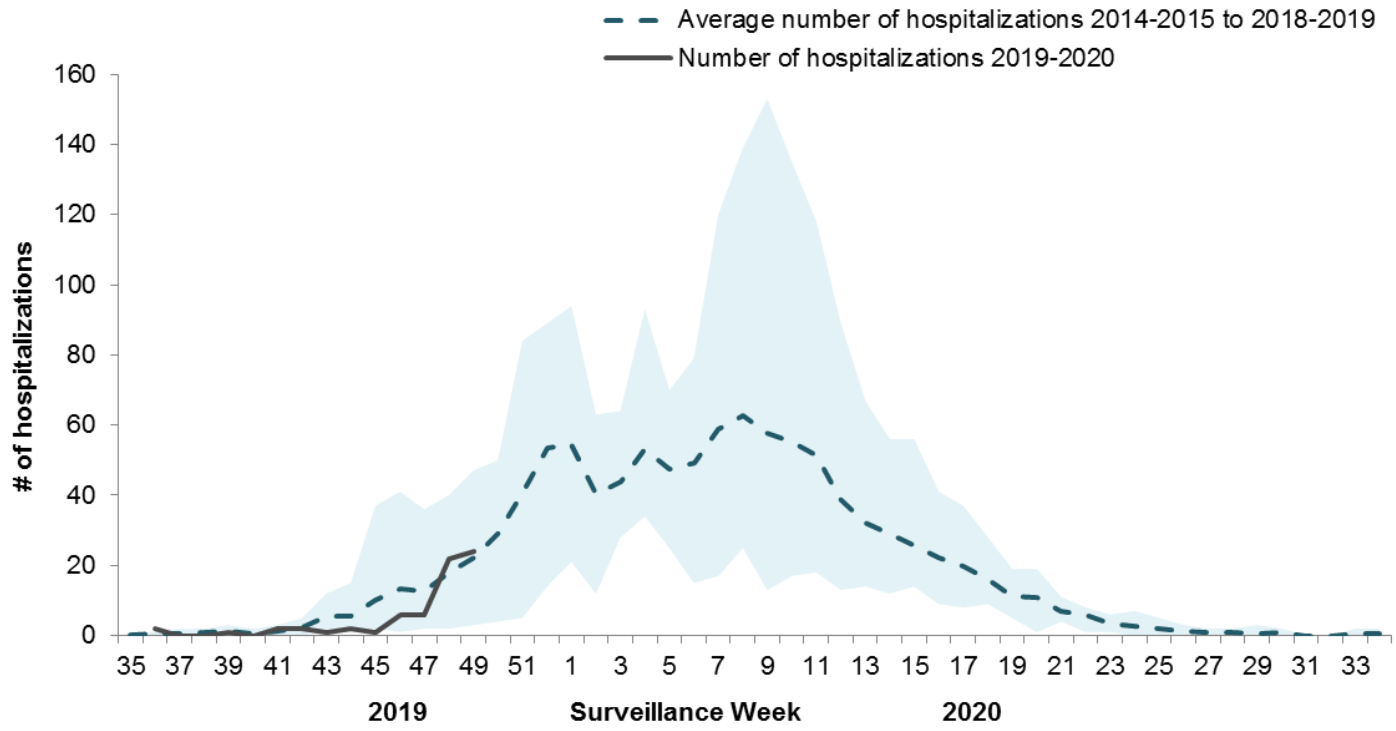
[1]Influenza-associated hospitalizations are reported by Alberta, Manitoba, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Prince Edward Island and Yukon. Only hospitalizations that require intensive medical care are reported by Saskatchewan.

Pediatric Influenza Hospitalizations and Deaths

In week 49, 24 pediatric (≤16 years of age) laboratory-confirmed influenza-associated hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 7). This is close to the average (22) for week 49 over the previous five seasons.

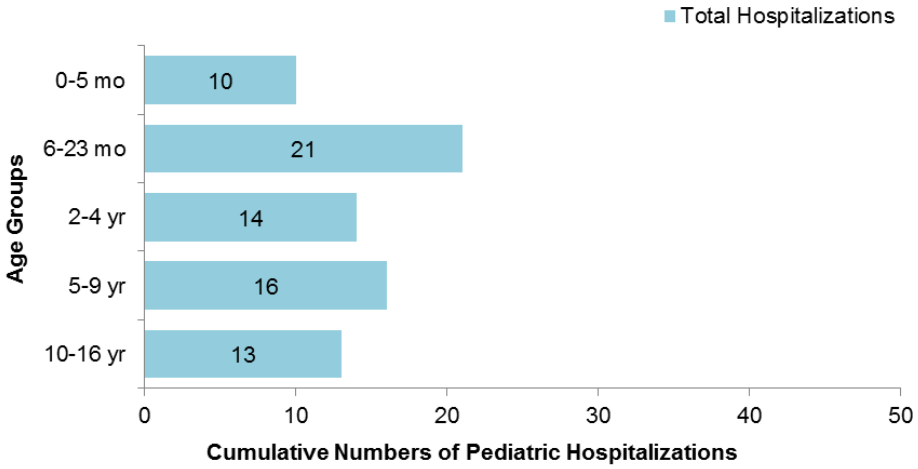
To date this season, 69 pediatric hospitalizations have been reported by the IMPACT network; 51% (35) of cases were associated with influenza A and 49 % (34) with influenza B. Among the 13 cases for which the influenza A subtype was reported, 54% (7) were associated with A(H1N1). The largest proportion of hospitalizations (61%) were among children under 5 years of age (Figure 8).

Figure 7 – Number of pediatric (≤16 years of age) hospitalizations reported by the IMPACT network, by week, Canada, weeks 2019-35 to 2019-49



The shaded area represents the maximum and minimum number of cases reported by week from seasons 2014-15 to 2018-19

Figure 8 – Cumulative number of pediatric hospitalizations (≤16 years of age) with influenza by age-group reported by the IMPACT network, Canada, weeks 2019-35 to 2019-49



Adult Influenza Hospitalizations and Deaths

Surveillance of laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations by the Canadian Immunization Research Network (CIRN) Serious Outcomes Surveillance (SOS) network began on November 1st for the 2019-20 season. To date this season, 24 hospitalizations, no ICU admissions, and less than 5 deaths have been reported.

Influenza Strain Characterizations

From September 1 to December 12, 2019, the National Microbiology Laboratory (NML) has characterized 133 influenza viruses (65 A(H3N2), 35 A(H1N1) and 33 influenza B) that were received from Canadian laboratories.

Influenza A(H3N2)

Over recent years, circulating strains of A(H3N2) have evolved, and are increasingly difficult to characterize by hemagglutination inhibition (HI) assay. Genetic characterization is established by sequencing the hemagglutinin (HA) gene of the influenza viruses to compare their genetic properties.

Antigenic Characterization:

Among the 18 influenza A(H3N2) viruses antigenically characterized to date, the majority (83%) showed reduced titer by HI assay to A Kansas/14/2017 using antiserum raised against egg-propagated A Kansas/14/2017 (Figure 9a).

Genetic Characterization:

Nearly all (95%) of the 64 A(H3N2) viruses genetically characterized this season belonged to genetic group 3C.2a1b based on sequence analysis of the HA gene. Three viruses belonged to the genetic group 3C.3a (Figure 10).

Group 3C.2a1b viruses analysed represent:

- 82% (14 out of 17) viruses that were also antigenically characterized. Sequence is pending for one isolate.
- 100% (47 out of 47) viruses which did not grow to sufficient hemagglutination titer for antigenic characterization by HI assay.

A/Kansas/14/2017 belongs to genetic group 3C.3a and is the influenza A(H3N2) component of the 2019-20 Northern Hemisphere influenza vaccine.

Influenza A(H1N1)

Among the 35 A(H1N1) viruses characterized to date, all were antigenically similar to A/Brisbane/02/2018 by HI testing using antiserum raised against egg-propagated A/Brisbane/02/2018 (Figure 9b).

A/Brisbane/02/2018 is the influenza A(H1N1) component of the 2019-20 Northern Hemisphere influenza vaccine.

Influenza B

Among the 33 influenza B viruses antigenically characterized this season, all belonged to the B/Victoria lineage, and the majority (79%) showed reduced titer by HI assay to B/Colorado/06/2017 using antiserum raised against cell culture-propagated B/Colorado/06/2017 (Figure 9c).

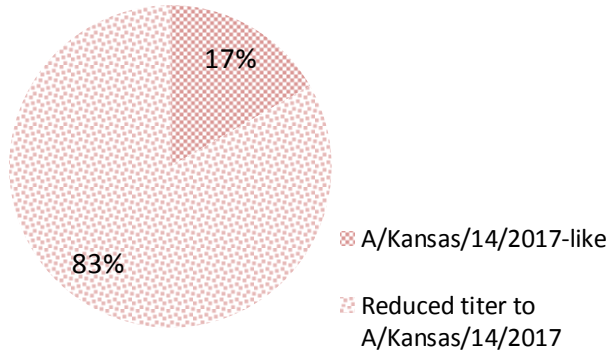
Sequence analysis showed that 100% (25) of the viruses showing reduced titre had a three amino acid deletion (162-164) in the HA gene. Sequence is pending for one isolate.

The recommended influenza B components for the 2019-20 Northern Hemisphere influenza vaccine are B/Colorado/06/2017 (Victoria lineage) and B/Phuket/3073/2013 (Yamagata lineage). B/Phuket/3073/2013 is included in the quadrivalent influenza vaccine.

Figure 9 – Distribution of antigenic phenotypes among characterized influenza viruses, Canada, September 1 to December 12, 2019

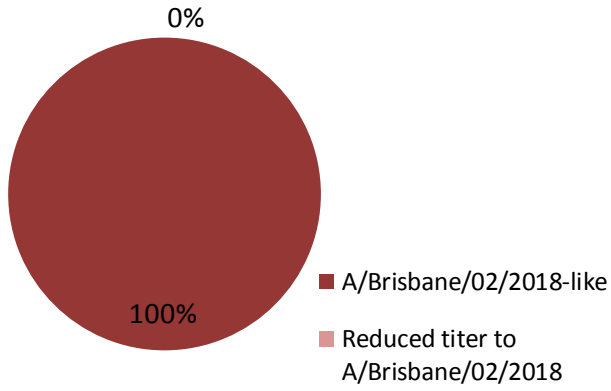
A) A(H3N2) viruses

Number of viruses characterized: 18



B) A(H1N1) viruses

Number of viruses characterized: 35



C) B viruses

Number of viruses characterized: 33

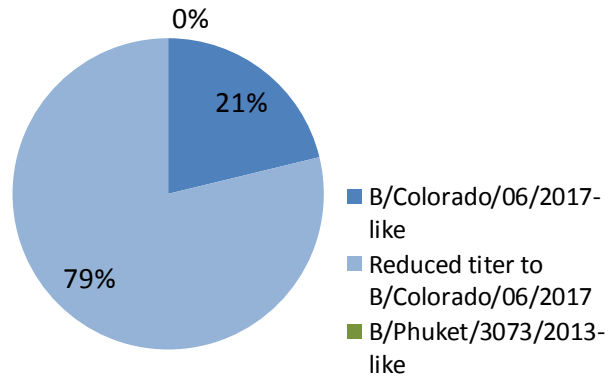
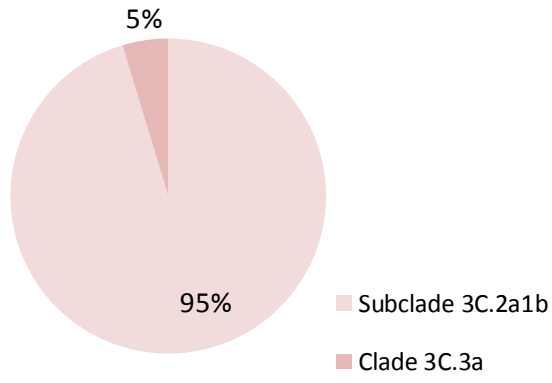


Figure 10 – Distribution of genetic clades among characterized A(H3N2) influenza viruses, Canada, September 1 to December 12, 2019



Antiviral Resistance

The National Microbiology Laboratory (NML) also tests influenza viruses received from Canadian laboratories for antiviral resistance.

Oseltamivir:

123 influenza viruses (63 A(H3N2), 28 A(H1N1) and 32 B) were tested for resistance to oseltamivir:

- All influenza viruses tested were sensitive to oseltamivir.

Zanamivir:

123 influenza viruses (63 A(H3N2), 28 A(H1N1) and 32 B) were tested for resistance to zanamivir:

- All influenza viruses tested were sensitive to zanamivir.

Amantadine:

High levels of resistance to amantadine persist among influenza A(H1N1) and influenza A(H3N2) viruses. All viruses tested this season were resistant.

Vaccine Monitoring

Vaccine monitoring refers to activities related to the monitoring of influenza vaccine coverage and effectiveness.

Vaccine Coverage

Influenza vaccine coverage estimates for the 2019-20 season are anticipated to be available in February or March 2020.

Vaccine Effectiveness

Influenza vaccine effectiveness estimates for the 2019-20 season are anticipated to be available in February or March 2020.

Provincial and International Surveillance Links

- British Columbia – Influenza Surveillance; Vaccine Effectiveness Monitoring
- Alberta – Respiratory Virus Surveillance
- Saskatchewan – Influenza Reports
- Manitoba – Seasonal Influenza Reports
- Ontario – Ontario Respiratory Pathogen Bulletin
- Québec – Système de surveillance de la grippe *(available in French only)*
- New Brunswick – Influenza Surveillance Reports
- Prince Edward Island – Influenza Summary
- Nova Scotia – Respiratory Watch Report
- Newfoundland and Labrador – Surveillance and Disease Reports
- Yukon – Information on Pandemic, Influenza, Seasonal Flu, Avian Flu and H1N1
- Northwest Territories – Influenza/ Flu Information
- Nunavut – Influenza Information
- World Health Organization – FluNet (Global Influenza Surveillance Network)
- Pan American Health Organization – Influenza situation report
- U.S. Centers for Disease Prevention & Control (CDC) - Weekly Influenza Summary Update
- ECDC – Surveillance reports and disease data on seasonal influenza
- United Kingdom – Weekly Influenza Activity Reports
- Hong Kong Centre for Health Protection - Flu Express
- Australia – Influenza Surveillance Report and Activity Updates
- New Zealand – Influenza Weekly Update

Notes

The data in the FluWatch report represent surveillance data available at the time of writing. All data are preliminary and may change as more reports are received.

To learn more about the FluWatch program, see the Overview of influenza monitoring in Canada page.

For more information on the flu, see our Flu (influenza) web page.

We would like to thank all the Fluwatch surveillance partners 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.