

February 23 to February 29, 2020 (week 09)

Overall Summary

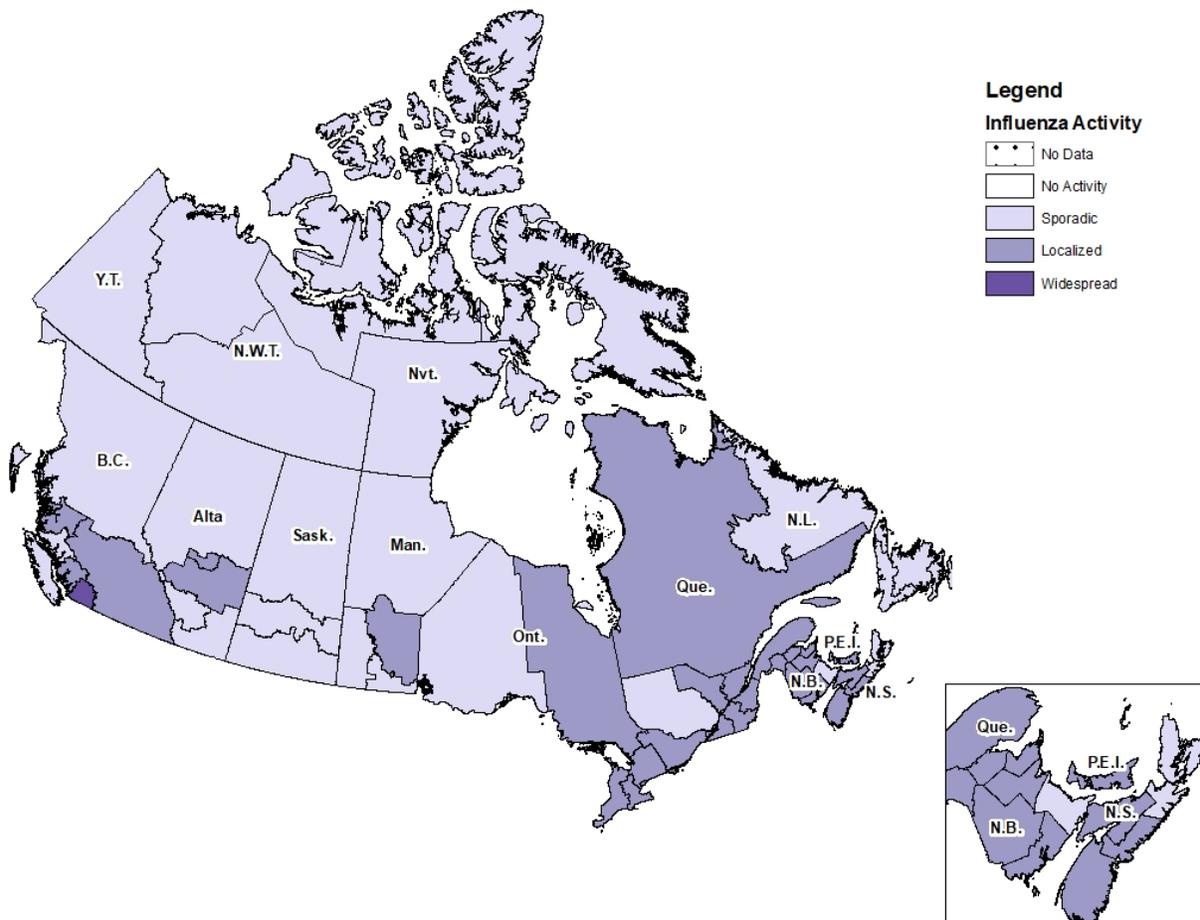
- Influenza activity remained high in week 09; however, several indicators of influenza activity decreased compared to the previous week.
- Influenza A(H1N1) is currently the dominant influenza A subtype circulating in Canada, representing 85% of subtyped influenza A specimens in week 09.
- The highest cumulative hospitalization rates are among children under 5 years of age and adults 65 years of age and older. Hospitalizations among adults are predominantly due to influenza A, while those among children are due to a mix of influenza A and B.
- The World Health Organization (WHO) has released the [recommended composition](#) of the influenza vaccine for use in the 2020-2021 northern hemisphere influenza season. The recommended strain was changed for each of the A(H1N1), A(H3N2) and B/Victoria components compared to this year's vaccine.

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

During week 09, influenza activity was reported in all regions in all provinces and territories. Among these regions, 49% reported sporadic activity, 49% reported localized activity, and 2% reported widespread activity (Figure 1).

Figure 1 – Map of influenza/ILI activity by province and territory, Canada, week 2019-09

Number of Regions Reporting in Week 09: 53 out of 53



Laboratory-Confirmed Influenza Detections

In week 09, the percentage of laboratory tests positive for influenza decreased slightly compared to the previous five weeks to 26%. Influenza A circulation remains high, while influenza B circulation has decreased in recent weeks.

The following results were reported from sentinel laboratories across Canada (Figures 2 and 3):

- The percentage of tests positive for influenza A was 17% in week 09, which is similar to the previous eight weeks.
- Among subtyped influenza A detections, influenza A(H1N1) accounted for 85% of detections, a slight increase in proportion compared to the previous four weeks.
- The percentage of tests positive for influenza B continued to decrease to 9% in week 09. This continues to be higher than average for this time of year.

To date this season (weeks 35 to 08), all influenza types and subtypes have circulated. Among the 46,038 laboratory detections of influenza reported:

- 58% (26,571) were influenza A.
- Among subtyped influenza A detections (6,124), A(H1N1) is the predominant subtype this season (65%).

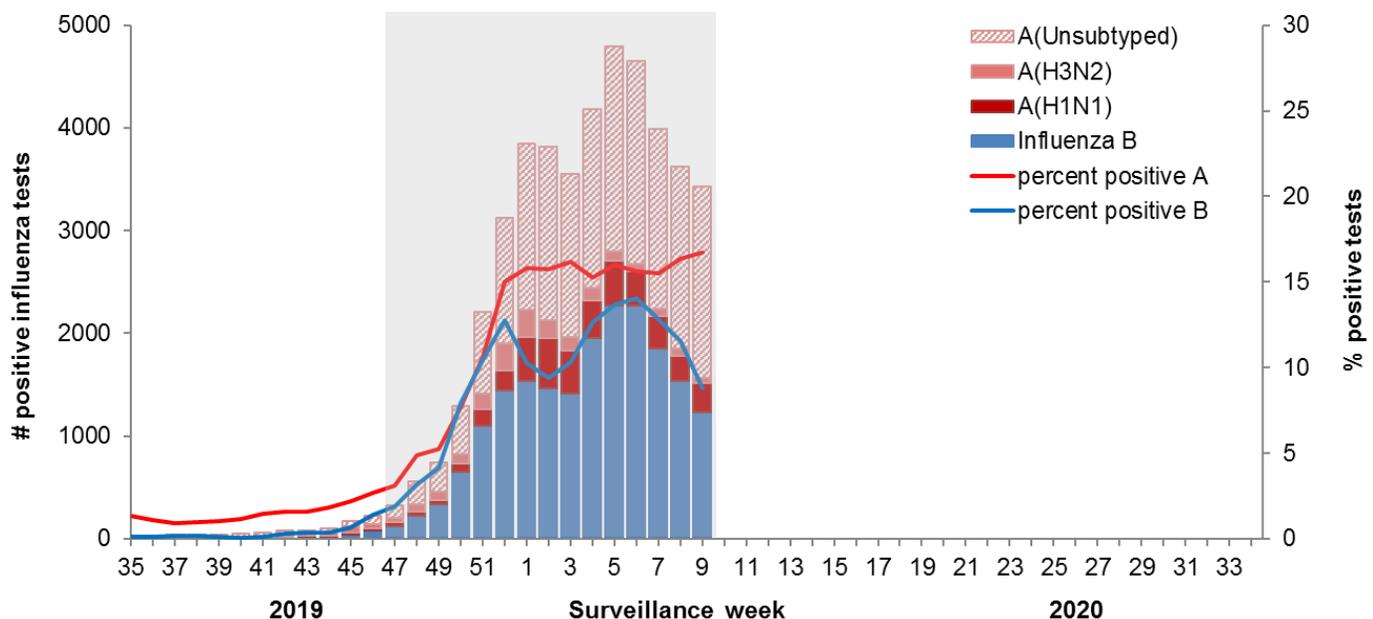
Detailed information on age and type/subtype has been received for 35,356 laboratory-confirmed influenza cases (Table 1). To date this season (weeks 35 to 09):

- Cases of influenza A(H1N1) (2,851) were primarily in adults; 25% in adults 20-44 years, 26% in adults 45-64 years and 30% of cases in adults 65 years of age and older.
- Among cases of influenza A(H3N2) (1,868), the largest proportion was in adults 65 years of age and older (47%).
- Cases of influenza B (15,761) were primarily in younger age groups; 58% under 19 years of age and 29% 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](#).

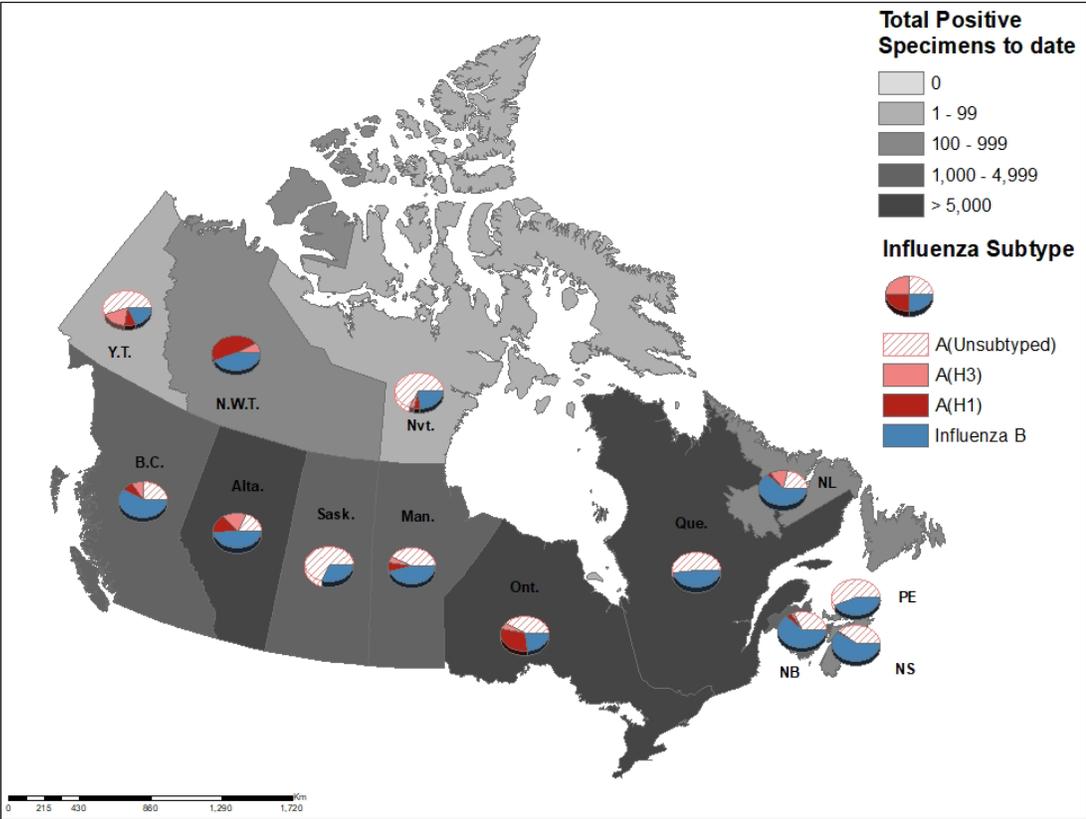
Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, weeks 2019-35 to 2020-09

Number of Laboratories Reporting in Week 09: 33 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 2020-09



* Specimens from NWT, YT, and Nvt are sent to reference laboratories in other provinces.

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 2020-09

Age groups (years)	Cumulative (August 25, 2019 to February 29, 2020)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1)	A(H3N2)	A (Unsubtyped) ¹	Total	#	%
0-4	3222	343	191	2688	3689	6911	20%
5-19	2248	213	240	1795	5432	7680	22%
20-44	4039	708	293	3038	4604	8643	24%
45-64	3794	731	269	2794	887	4681	13%
65+	6292	856	875	4561	1149	7441	21%
Total	19595	2851	1868	14876	15761	35356	100%

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

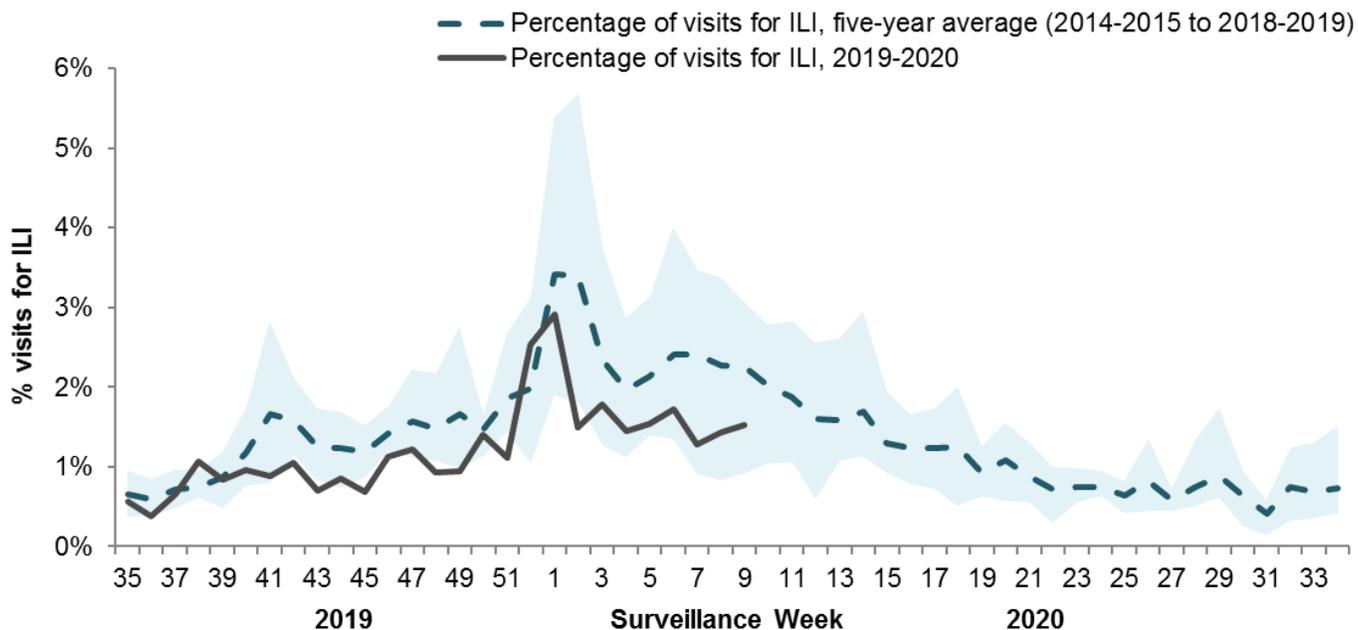
Syndromic / Influenza-like Illness Surveillance

Healthcare Practitioners Sentinel Syndromic Surveillance

In week 09, 1.5% of visits to healthcare professionals were due to influenza-like illness (ILI) which remains below the average for this time of year (Figure 4).

Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, weeks 2019-35 to 2020-09

Number of Sentinels Reporting in Week 09: 85



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

FluWatchers

The proportion of FluWatchers participants reporting symptoms of cough and fever decreased in week 09 compared to the previous week. In week 09, 3,032 participants reported to FluWatchers, of which 2.4% (73) reported symptoms of cough and fever (Figure 5).

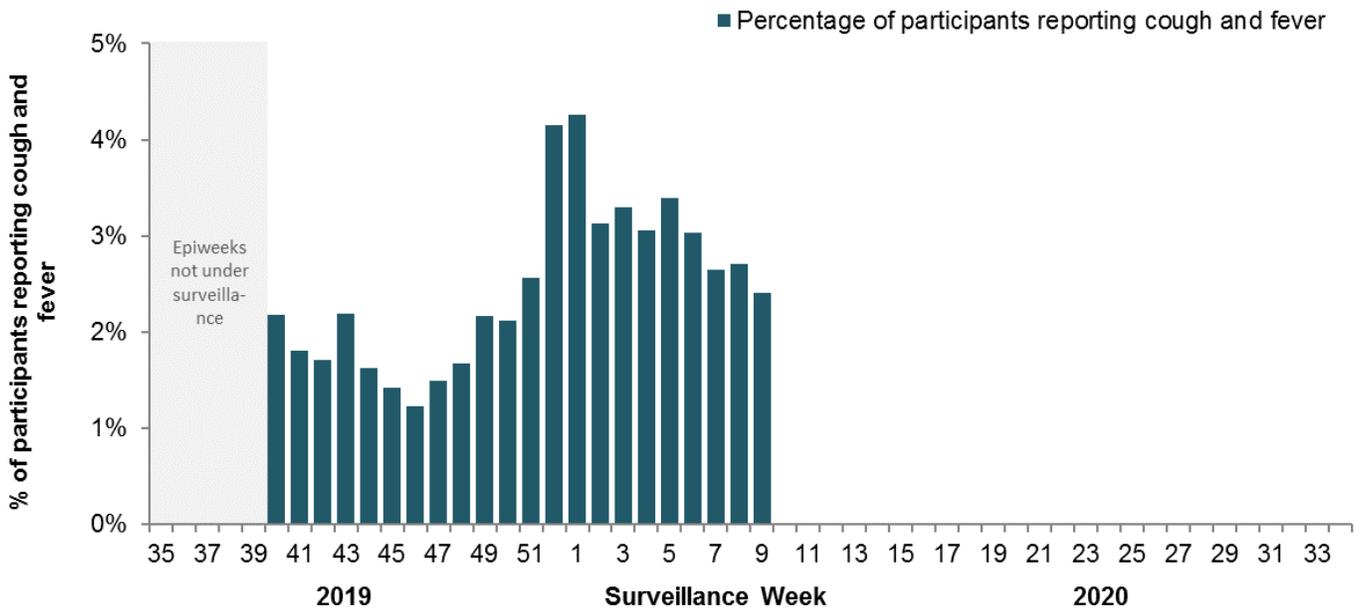
Among the 73 participants who reported cough and fever:

- 27% consulted a healthcare professional;
- 78% reported days missed from work or school, resulting in a combined total of 182 missed days of work or school.

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 2020-09

Number of Participants Reporting in Week 09: 3,032



Online Figure – Geographic distribution of FluWatchers participants reporting cough and fever, Canada, week 2020-09

Click on the map to access the link



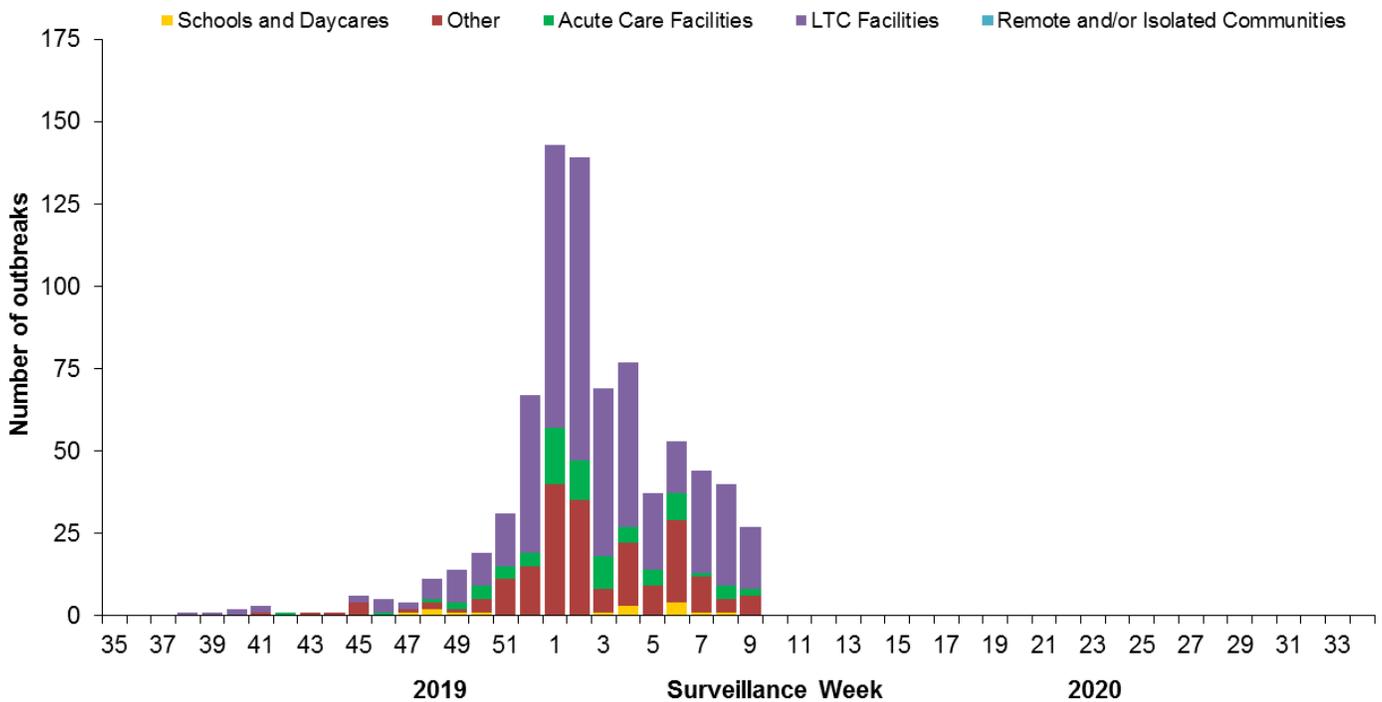
Influenza Outbreak Surveillance

In week 09, a total of 27 outbreaks were reported: 19 in long term care facilities, six in facilities [categorized as 'other'](#), which includes facilities such as private personal care homes, correctional facilities, and colleges/universities, and two in acute care facilities (Figure 6). In addition, six ILI outbreaks were reported in schools/daycares.

To date this season, a total of 796 laboratory-confirmed influenza outbreaks have been reported; 63% (503) in long-term care facilities, 25% (197) in facilities categorized as 'other', 10% (81) in acute care facilities, and 2% (15) in schools/daycares. Of the 752 outbreaks where influenza type was reported, 88% (659) were due to influenza A. Among the 284 outbreaks for which the influenza A subtype was reported, 51% were associated with A(H1N1) and 49% with A(H3N2). To date this season, 146 ILI outbreaks have also been reported; 98% (143) in schools/daycares and 2% (3) in facilities categorized as 'other'.

Figure 6 – Number of new outbreaks of laboratory-confirmed influenza by report week, Canada, weeks 2019-35 to 2020-09

Number of provinces and territories reporting in week 09: 13 out of 13



Severe Outcomes Influenza Surveillance

Provincial/Territorial Influenza Hospitalizations and Deaths

To date this season, 1,986 influenza-associated hospitalizations were reported by participating provinces and territories¹.

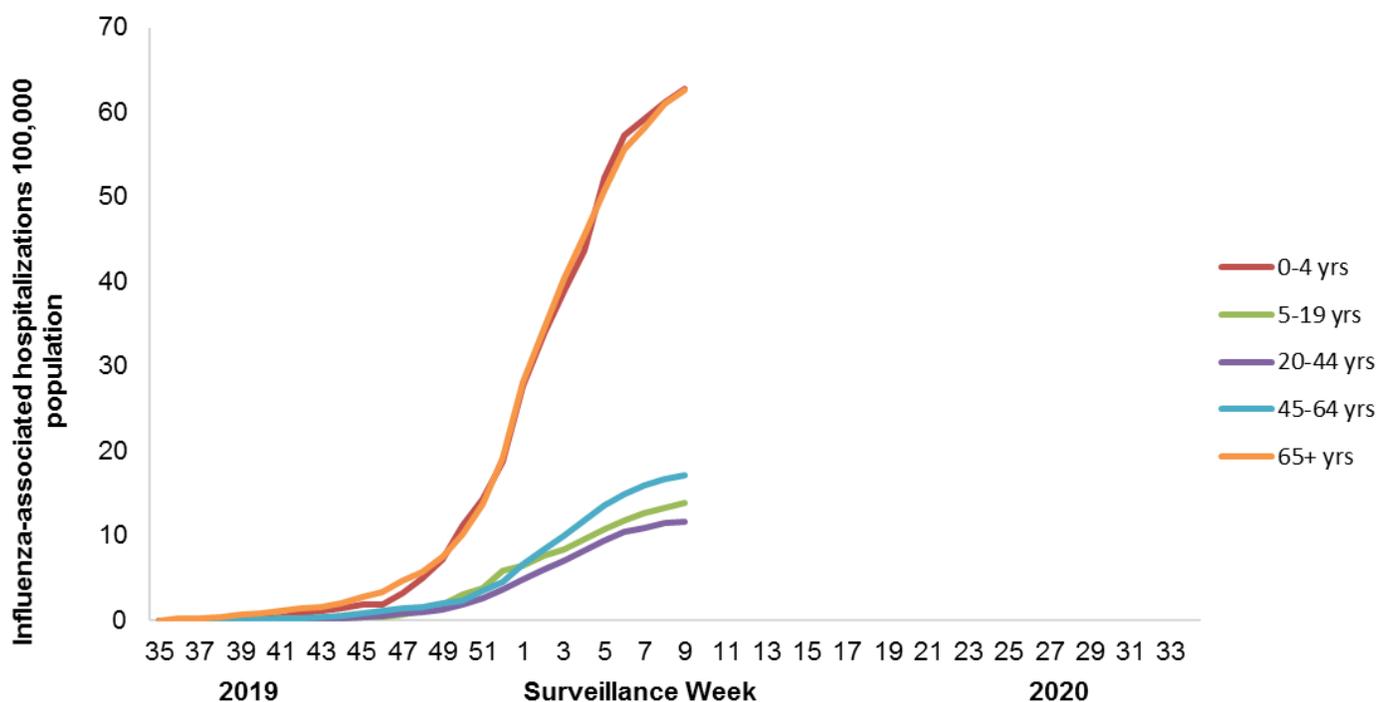
- 67% of the cases were associated with influenza A.
- Of the 902 cases for which subtype was reported, 58% were associated with influenza A(H3N2).
- The highest cumulative hospitalization rates up to week 09 were among children under 5 years of age and adults 65 years of age and older (63/100,000 population).

240 ICU admissions and 81 deaths have been reported.

- 67% of the ICU admissions and 68% of the deaths were associated with influenza A.

Figure 7 – Cumulative rates of influenza-associated hospitalization by age group and epidemiological week, Canada, participating provinces and territories¹ weeks 2019-35 to 2020-09

Number of provinces and territories reporting in week 09: 9 out of 9



¹Influenza-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.

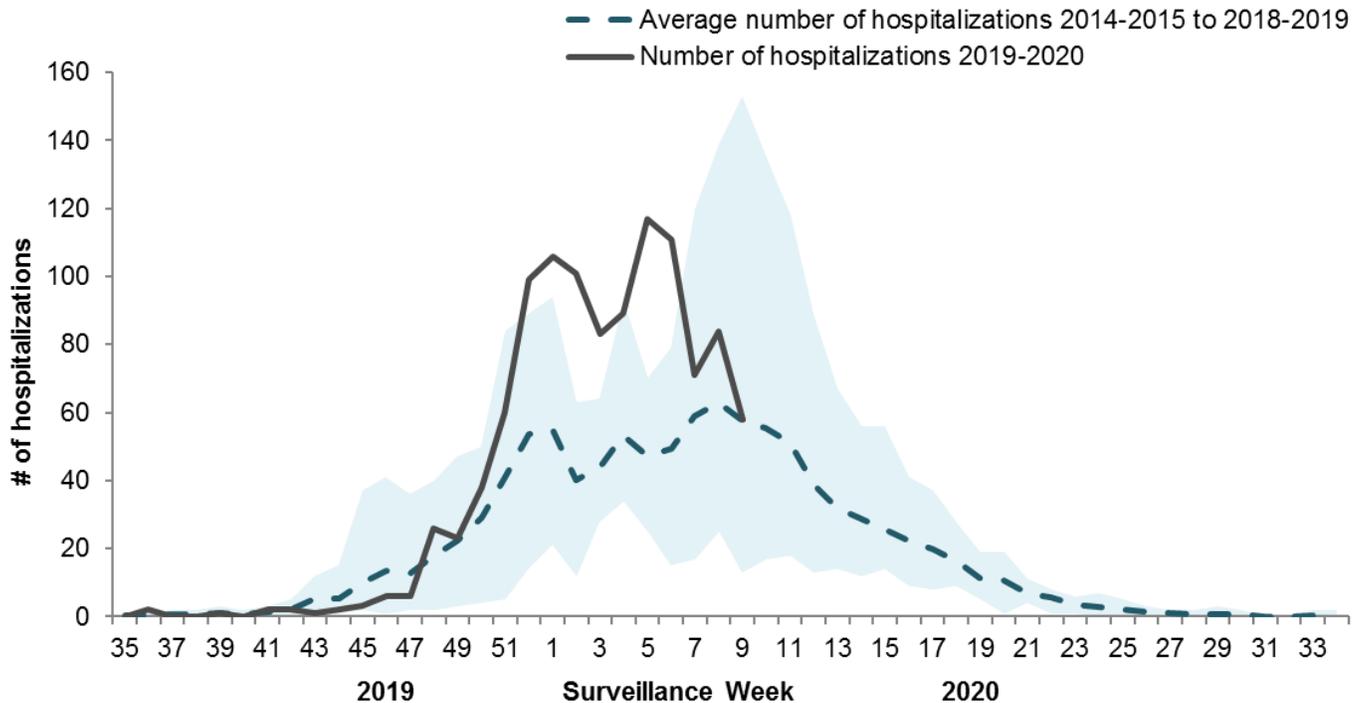
Pediatric Influenza Hospitalizations and Deaths

In week 09, 58 pediatric (≤ 16 years of age) laboratory-confirmed influenza-associated hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 8). The number of cases has been following a downward trend since week 5, with an approximately equal proportion of cases of influenza A and B. A greater number of total pediatric hospitalizations with influenza have been reported this season compared to the same period during the past 9 seasons. The elevated number of cases this season compared to previous seasons is likely due to the concurrent circulation of influenza A and B in the early part of the influenza season, as well as an above average number of hospitalizations with influenza B. In addition, the number of influenza A-associated pediatric hospitalizations is above the average for this time of year, which is expected when A(H1N1) is the predominant circulating virus.

To date this season (weeks 35 to 09):

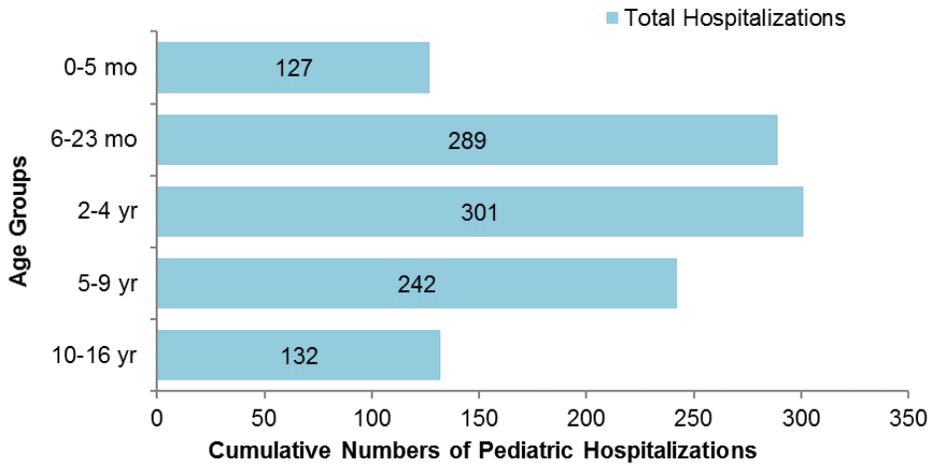
- 1,091 pediatric hospitalizations have been reported by the IMPACT network, of which 51% (561) were associated with influenza A and 49% (530) with influenza B.
- The largest proportion of hospitalizations (66%) were among children under 5 years of age (Figure 9).
- 164 ICU admissions were reported, of which 52% were associated with influenza A, and 64% were among children under 5 years of age.
- Less than five pediatric deaths have been reported.

Figure 8 – Number of pediatric (≤ 16 years of age) hospitalizations reported by the IMPACT network, by week, Canada, weeks 2019-35 to 2020-09



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

Figure 9 – Cumulative number of pediatric hospitalizations (≤16 years of age) with influenza by age-group reported by the IMPACT network, Canada, weeks 2019-35 to 2020-09



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, 690 hospitalizations, 71 intensive care unit admissions, and 32 deaths have been reported (Figure 10).

- The majority of hospitalizations have been due to influenza A (80%), and among those subtyped (163) 91% were influenza A(H1N1).
- Among the 555 cases with influenza A, the largest proportion of hospitalizations were in adults 65 years of age and older (67%). Among the 132 cases with influenza B, 49% were in adults 65 years of age and older, and 30% of cases were between 16 and 34 years of age (Figure 11).
- 89% of hospitalized cases reported at least one type of comorbid condition.

Figure 10 - Number of adult hospitalizations (≥16 years of age) with influenza reported by the CIRN-SOS network, by week, Canada, weeks 2019-45 to 2020-09

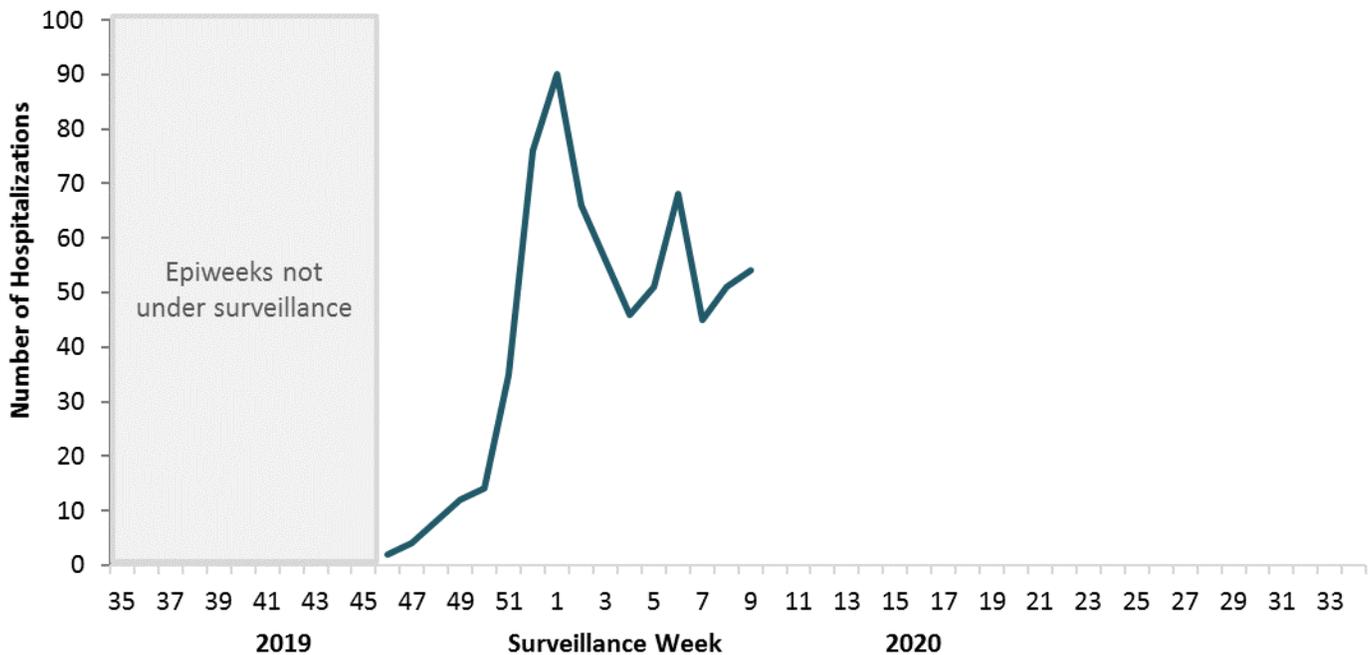
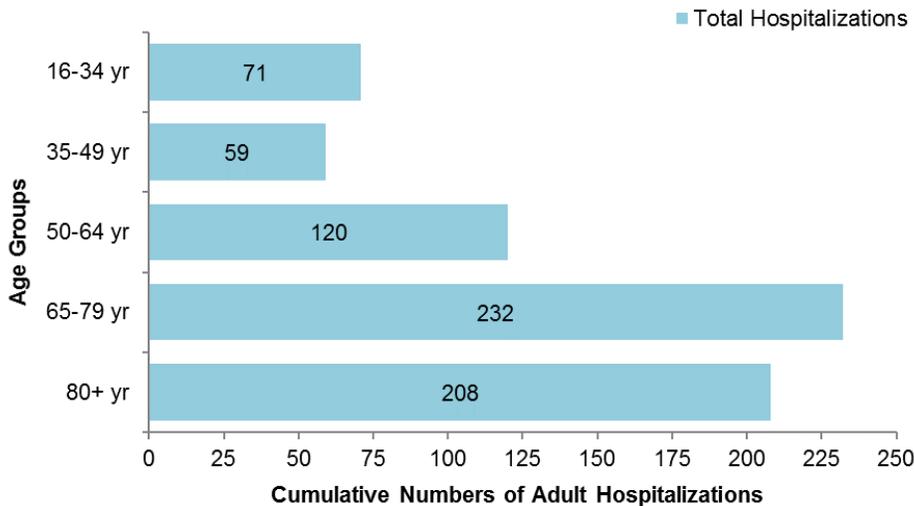


Figure 11 - Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza by age-group reported by the CIRN-SOS network, Canada, weeks 2019-45 to 2020-09



Influenza Strain Characterizations

From September 1, 2019 to March 5, 2020, the National Microbiology Laboratory (NML) has characterized 1,087 influenza viruses (474 A(H1N1), 177 A(H3N2) and 436 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 55 influenza A(H3N2) viruses antigenically characterized to date, the majority (80%) showed reduced titer by HI assay to A Kansas/14/2017 using antiserum raised against egg-propagated A Kansas/14/2017. Eleven viruses were characterized as A Kansas/14/2017-like (Figure 12a).

Genetic Characterization:

Nearly all (98%) of the 160 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 13).

Group 3C.2a1b viruses analysed represent:

- 92% (35 out of 38) viruses that were also antigenically characterized.
- 100% (122 out of 122) 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 474 A(H1N1) viruses characterized to date, 53% were antigenically similar to A/Brisbane/02/2018 by HI testing using antiserum raised against egg-propagated A/Brisbane/02/2018 (Figure 12b).

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

Influenza B

Antigenic Characterization:

Among the 182 influenza B viruses antigenically characterized this season, the vast majority (180) belonged to the B/Victoria lineage. Two viruses were antigenically characterized as similar to B/Phuket/3073/2013 (B/Yamagata lineage).

The majority (89%, 161) of B/Victoria lineage viruses showed reduced titer by HI assay to B/Colorado/06/2017 using antiserum raised against cell culture-propagated B/Colorado/06/2017 (Figure 12c).

Sequence analysis of 150 B/Victoria lineage viruses with reduced titre to B/Colorado/06/2017 showed that 100% had a three amino acid deletion (162-164) in the HA gene and belong to the genetic subclade V1A.3 (3Del). Sequencing is pending for the remaining viruses.

Genetic Characterization:

Genetic characterization was also performed on 254 B/Victoria lineage viruses. All of these viruses had a three amino acid deletion (162-164) in the HA gene and belong to the genetic subclade V1A.3 (3Del).

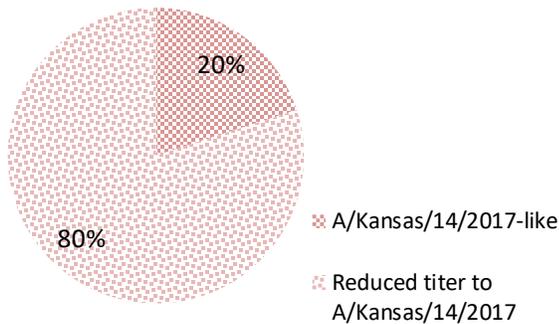
To date, 100% (404) of influenza B/Victoria viruses genetically characterized belong to the genetic subclade V1A.3 (3Del) (Fig 13b). Viruses in this genetic subclade are antigenically distinct from the vaccine strain B/Colorado/06/2017, which belongs to genetic subclade V1A.1 (2Del).

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. The vaccine strain B/Colorado/06/2017 belongs to genetic subclade V1A.1 (2Del).

Figure 12 – Distribution of antigenic phenotypes among characterized influenza viruses, Canada, September 1, 2019 to March 5, 2020

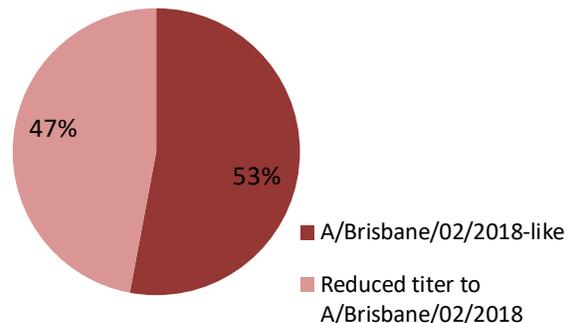
A) A(H3N2) viruses

Number of viruses characterized: 55



B) A(H1N1) viruses

Number of viruses characterized: 474



C) B viruses

Number of viruses characterized: 182

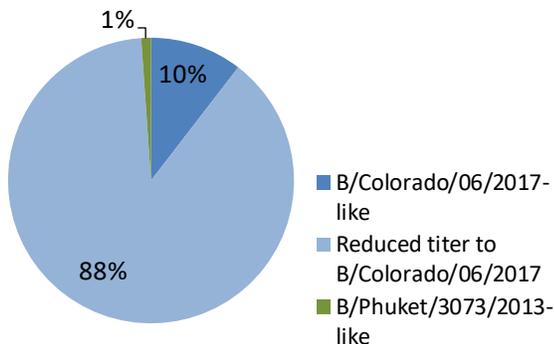
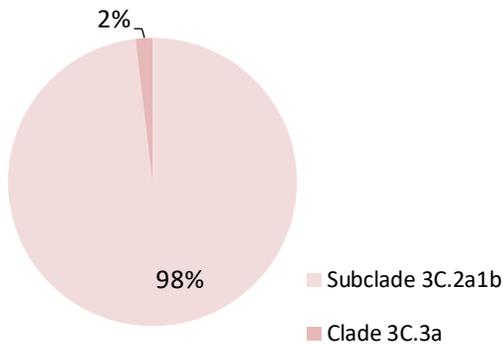


Figure 13 – Distribution of genetic clades among characterized influenza viruses, Canada, September 1, 2019 to March 5, 2020

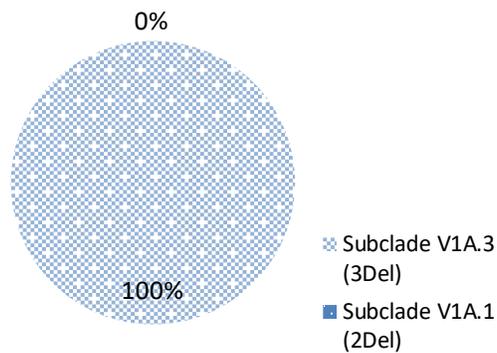
A) A(H3N2) viruses

Number of viruses sequenced: 160



B) B/Victoria viruses

Number of viruses sequenced: 404



Antiviral Resistance

The National Microbiology Laboratory (NML) also tests influenza viruses received from Canadian laboratories for antiviral resistance. From September 1, 2019 to February 27, 2020, the following results were reported:

Oseltamivir:

554 influenza viruses (148 A(H3N2), 192 A(H1N1) and 214 B) were tested for resistance to oseltamivir:

- All influenza A(H3N2) and B viruses were sensitive to oseltamivir.
- Among the A(H1N1) viruses tested, 191 (99%) were sensitive to oseltamivir and one virus was resistant to oseltamivir with the H275Y mutation in the neuraminidase gene.

Zanamivir:

553 influenza viruses (147 A(H3N2), 192 A(H1N1) and 214 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 Effectiveness

The Canadian Sentinel Practitioner Surveillance Network (SPSN) provides estimates of the effectiveness of the seasonal influenza vaccine in preventing medically-attended illness due to laboratory-confirmed influenza among Canadians.

Based on data collected between November 1, 2019 and February 1, 2020, vaccine effectiveness (VE) was estimated to be 58% for any influenza, 44% for influenza A(H1N1), 62% for influenza A(H3N2), and 69% for influenza B. Substantial protection was observed among children 1 to 19 years of age against both influenza A and B. A good level of protection was also observed among working age adults (20-64 yrs) across all influenza types (Table 2). VE among adults 65 years and older, although imprecise due to small numbers, was lower at 18% (95% CI -59 to 58). The SPSN interim estimates are published and [available online](#).

More information on the network and past VE findings can be viewed on [the SPSN website](#).

Updated influenza vaccine effectiveness estimates will be published at the end of the 2019/2020 influenza season. At that time, sufficient data will likely be available to estimate VE by age-group, including adults 65 years and older with greater precision, as well as for influenza A subtypes.

Table 2 – Vaccine effectiveness estimates against medically-attended influenza illness, SPSN, November 1, 2019, to February 1, 2020

	All ages		1-19 years	20-64 years
	VE(%) (95% CI)*	N	VE(%) (95% CI)*	VE(%) (95% CI)*
All Influenza	58 (47, 66)	2808	74 (59, 84)	55 (41, 66)
Influenza A	49 (34, 60)	2128	70 (44, 84)	45 (25, 59)
Influenza A(H1N1)	44 (26, 58)	1948		
Influenza A(H3N2)	62 (37, 77)	1561		
Influenza B	69 (57, 77)	2080	77 (59, 87)	68 (51, 79)

CI: 95% confidence interval

*adjusted for age group, province, specimen collection interval and calendar time

Vaccine Coverage

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