

March 1 to 7, 2020 (week 10)

Overall Summary

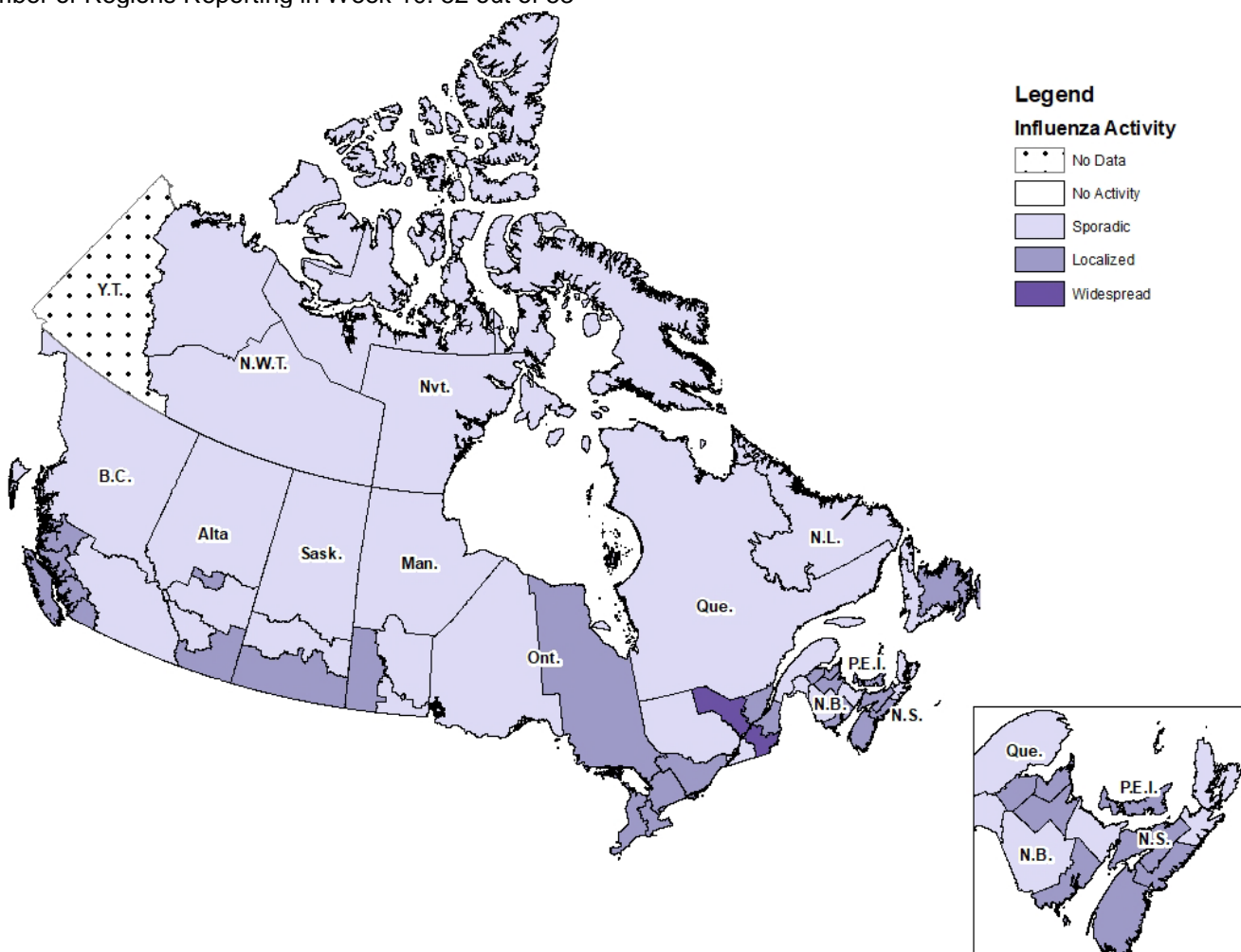
- Influenza activity remained elevated in week 10; however, several indicators of influenza activity continued to decrease compared to the previous week.
- In week 10, two thirds of influenza detections were influenza A, and among those subtyped, A(H1N1) continues to be the dominant subtype circulating in Canada.
- 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.

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

During week 10, influenza activity was reported in all regions in all reporting provinces and territories (52 of 53). Among these regions, 52% reported sporadic activity, 46% reported localized activity, and 2% reported widespread activity (Figure 1).

Figure 1 – Map of influenza/ILI activity by province and territory, Canada, week 2019-10

Number of Regions Reporting in Week 10: 52 out of 53



Laboratory-Confirmed Influenza Detections

In week 10, the percentage of laboratory tests positive for influenza decreased for the second week in a row, to 20%. Both influenza A and B circulation decreased in week 10.

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

- The percentage of tests positive for influenza A was 14% in week 10, which is a decrease compared to plateau over the previous eight weeks.
- Among subtyped influenza A detections, influenza A(H1N1) accounted for 83% of detections, which is similar to the previous week.
- Following the high levels of influenza B circulation earlier this year, the percentage of tests positive for influenza B in week 10 is at the average for this time of year at 6%.

To date this season (weeks 35 to 10), all influenza types and subtypes have circulated. Among the 49,501 laboratory detections of influenza reported:

- 58% (28,871) were influenza A.
- Among subtyped influenza A detections (6,576), A(H1N1) is the predominant subtype this season (67%).

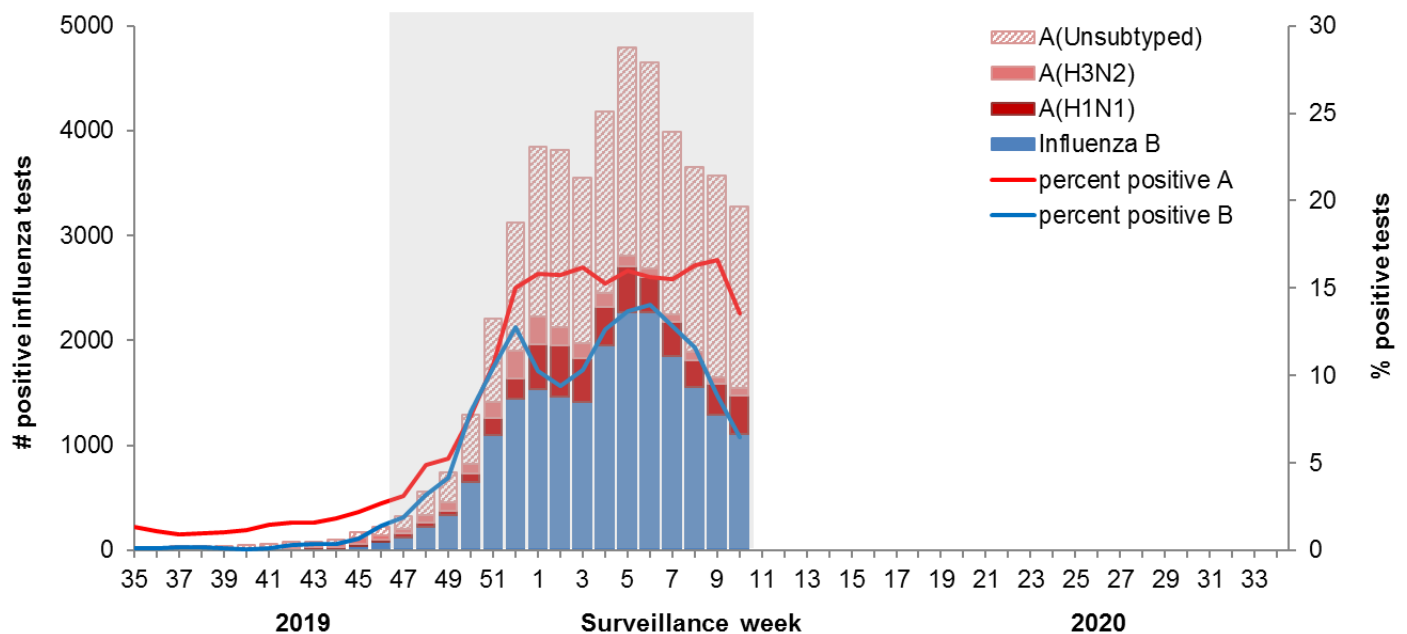
Detailed information on age and type/subtype has been received for 37,972 laboratory-confirmed influenza cases (Table 1). To date this season (weeks 35 to 10):

- Cases of influenza A(H1N1) (3,164) were primarily in adults; 25% 20-44 years, 26% 45-64 years and 29% 65 years of age and older.
- Among cases of influenza A(H3N2) (1,934), the largest proportion of cases was in adults 65 years of age and older (46%).
- Cases of influenza B (16,591) were primarily in younger age groups; 57% under 19 years of age and 30% 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](#).

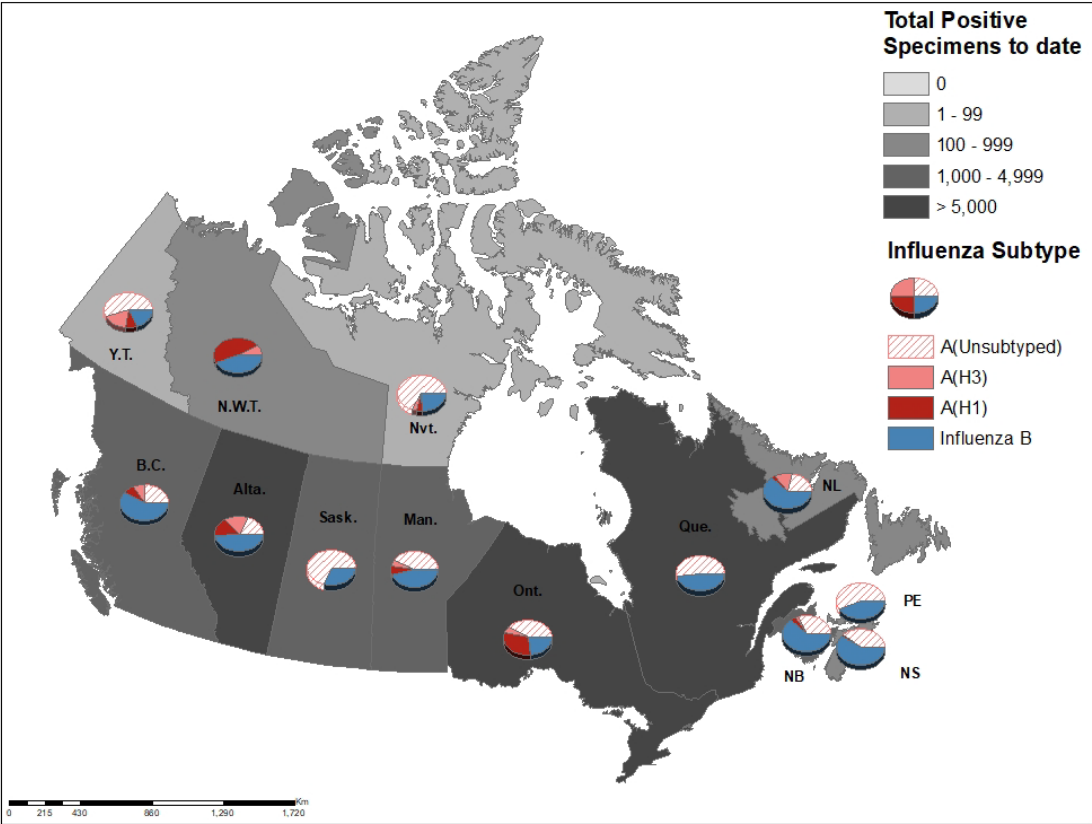
Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, weeks 2019-35 to 2020-10

Number of Laboratories Reporting in Week 10: 35 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 2020-10



* 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 2020-10

Age groups (years)	Cumulative (August 25, 2019 to March 7, 2020)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1)	A(H3N2)	A (Unsubtyped) ¹	Total	#	%
0-4	3496	378	197	2921	3851	7347	19%
5-19	2434	243	246	1945	5619	8053	21%
20-44	4480	799	310	3371	4909	9389	25%
45-64	4232	828	287	3117	966	5198	14%
65+	6739	916	894	4929	1246	7985	21%
Total	21381	3164	1934	16283	16591	37972	100%

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

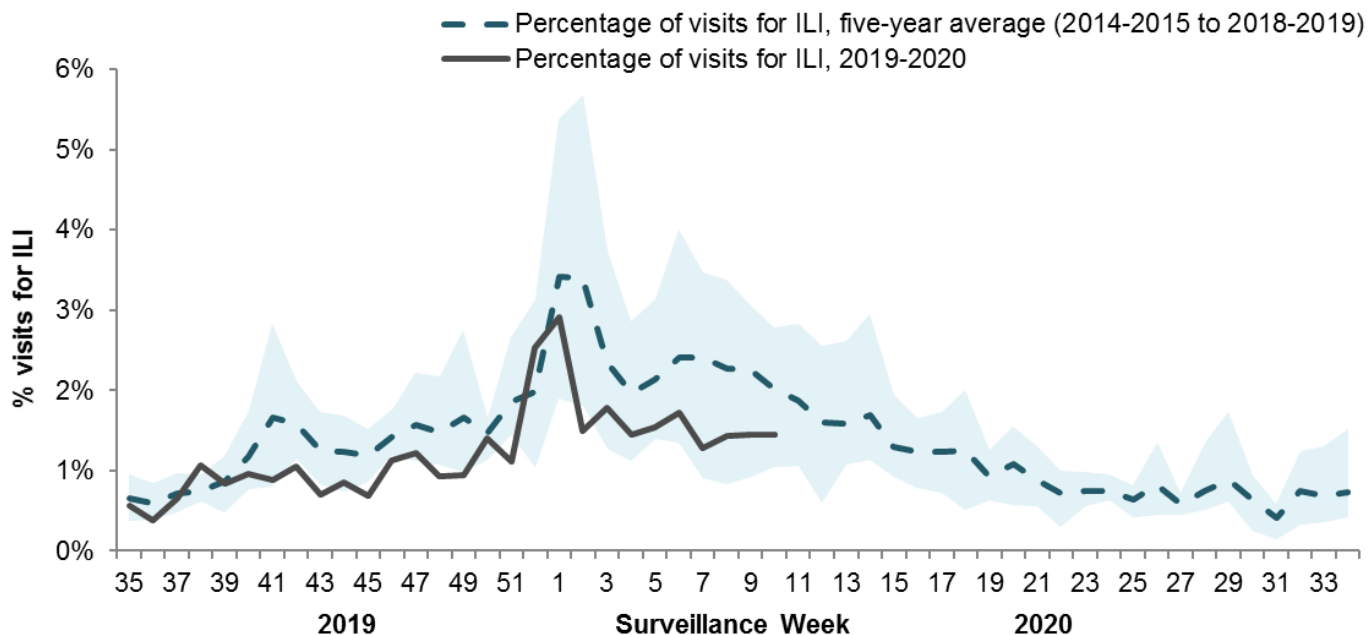
Syndromic / Influenza-like Illness Surveillance

Healthcare Practitioners Sentinel Syndromic Surveillance

In week 10, 1.5% of visits to healthcare professionals were due to influenza-like illness (ILI) which is the same as the previous week and 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 2020-10

Number of Sentinels Reporting in Week 10: 82



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 10 compared to the previous week. In week 10, 3,174 participants reported to FluWatchers, of which 2.1% (67) reported symptoms of cough and fever (Figure 5).

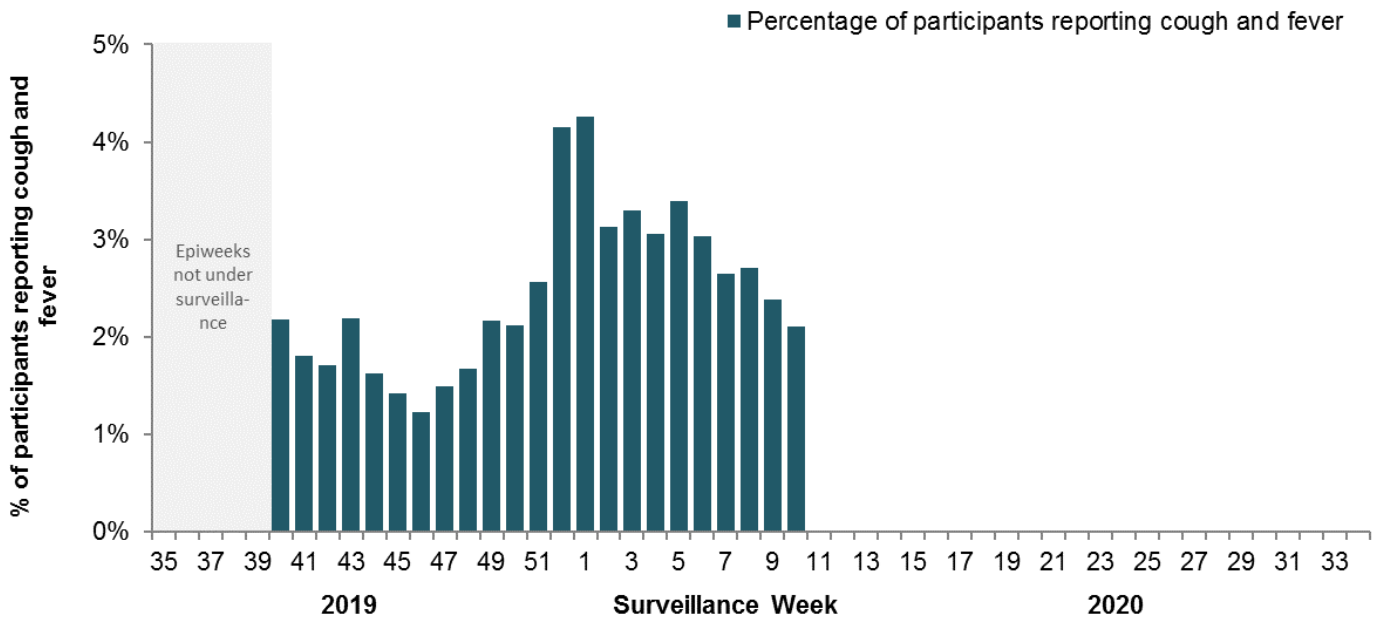
Among the 67 participants who reported cough and fever:

- 21% consulted a healthcare professional;
- 73% reported days missed from work or school, resulting in a combined total of 164 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 2020-10

Number of Participants Reporting in Week 10: 3,174



Online Figure – Geographic distribution of FluWatchers participants reporting cough and fever, Canada, week 2020-10

Click on the map to access the link



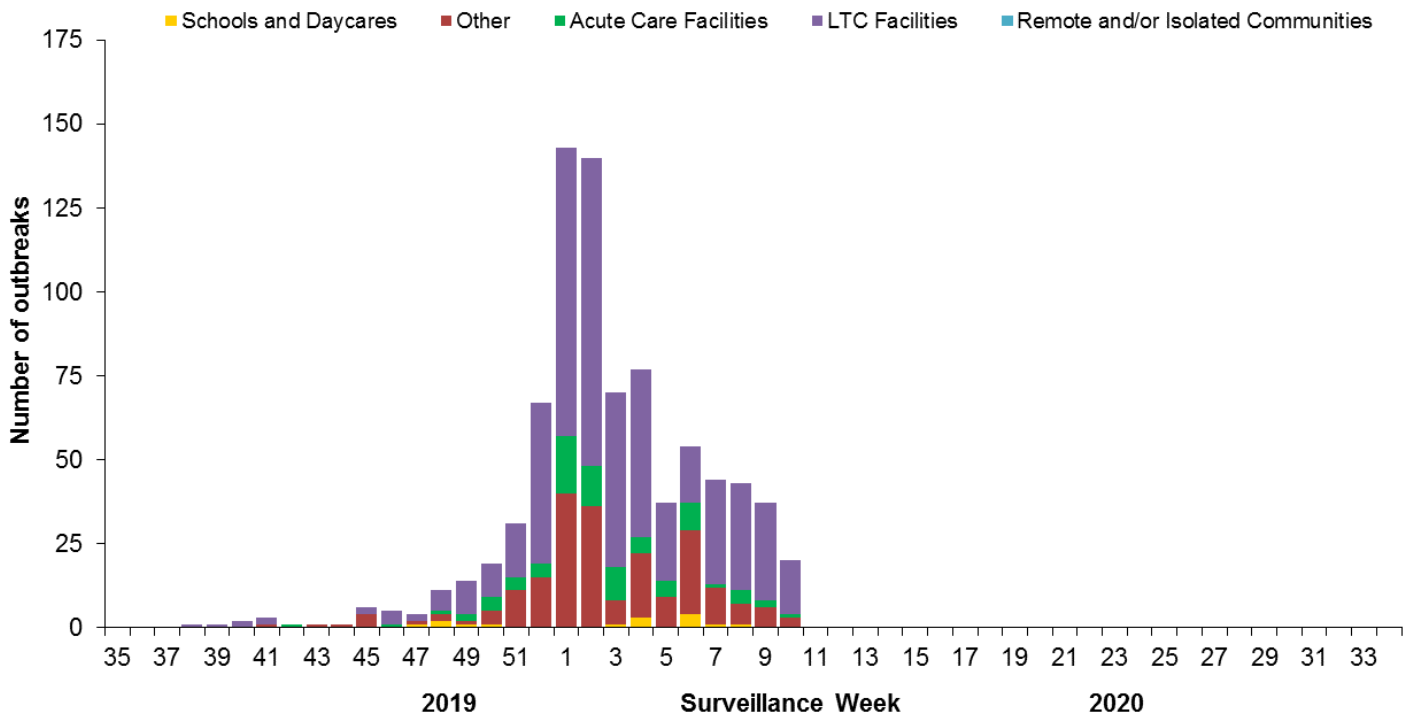
Influenza Outbreak Surveillance

In week 10, a total of 20 outbreaks were reported: 16 in long term care facilities, three in facilities [categorized as 'other'](#), which includes facilities such as private personal care homes, correctional facilities, and colleges/universities, and one in an acute care facility (Figure 6). In addition, 16 ILI outbreaks were reported, 15 in schools/daycares and one in a facility categorized as 'other'.

To date this season, a total of 832 laboratory-confirmed influenza outbreaks have been reported; 64% (532) in long-term care facilities, 24% (203) in facilities categorized as 'other', 10% (82) in acute care facilities, and 2% (15) in schools/daycares. Of the 786 outbreaks where influenza type was reported, 88% (690) were due to influenza A. Among the 290 outbreaks for which the influenza A subtype was reported, 52% were associated with A(H1N1) and 48% with A(H3N2). To date this season, 162 ILI outbreaks have also been reported; 98% (158) in schools/daycares and 2% (4) in facilities categorized as 'other'.

Figure 6 – Number of new outbreaks of laboratory-confirmed influenza by report week, Canada, weeks 2019-35 to 2020-10

Number of provinces and territories reporting in week 10: 12 out of 13



Severe Outcomes Influenza Surveillance

Provincial/Territorial Influenza Hospitalizations and Deaths

To date this season, 2,136 influenza-associated hospitalizations were reported by participating provinces and territories¹.

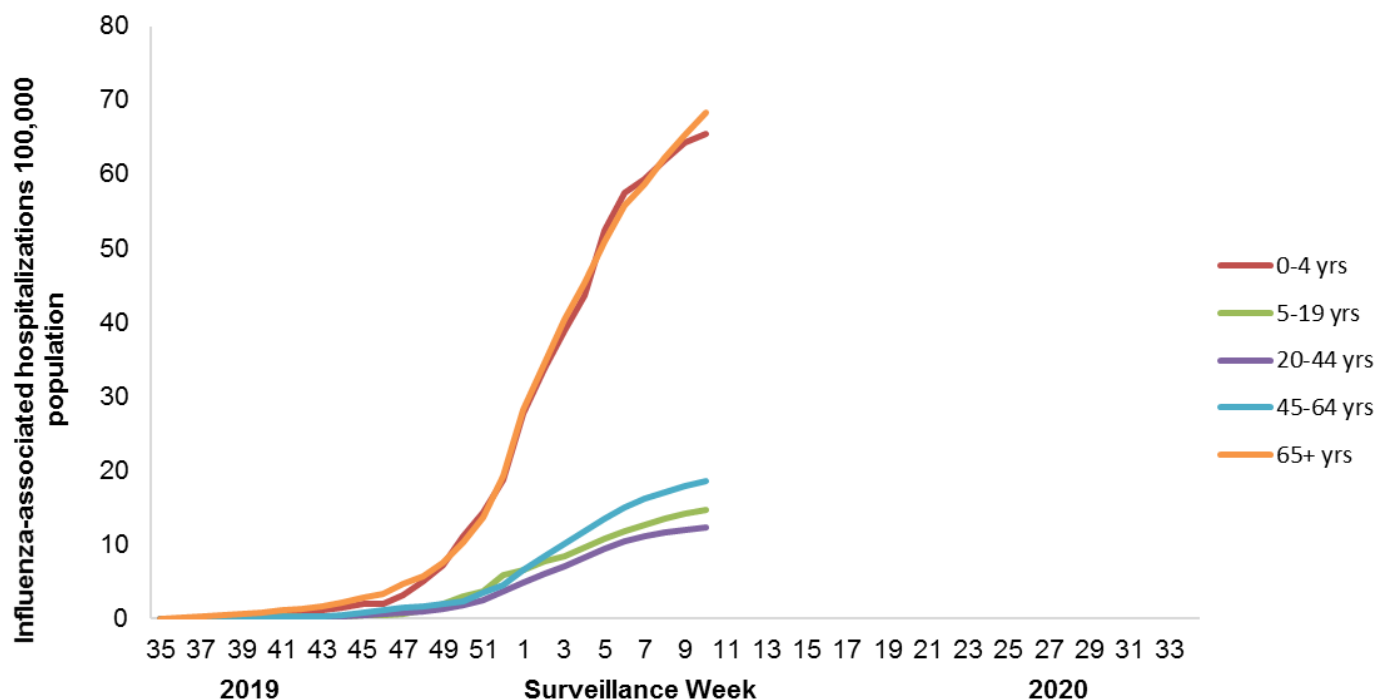
- 67% of the cases were associated with influenza A.
- Of the 949 cases for which subtype was reported, 56% were associated with influenza A(H3N2).
- The highest cumulative hospitalization rates up to week 10 were among adults 65 years of age and older (68/100,000 population) and children under 5 years of age (65/100,000 population).

265 ICU admissions and 85 deaths have been reported.

- 68% 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 2020-10

Number of provinces and territories reporting in week 10: 8 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

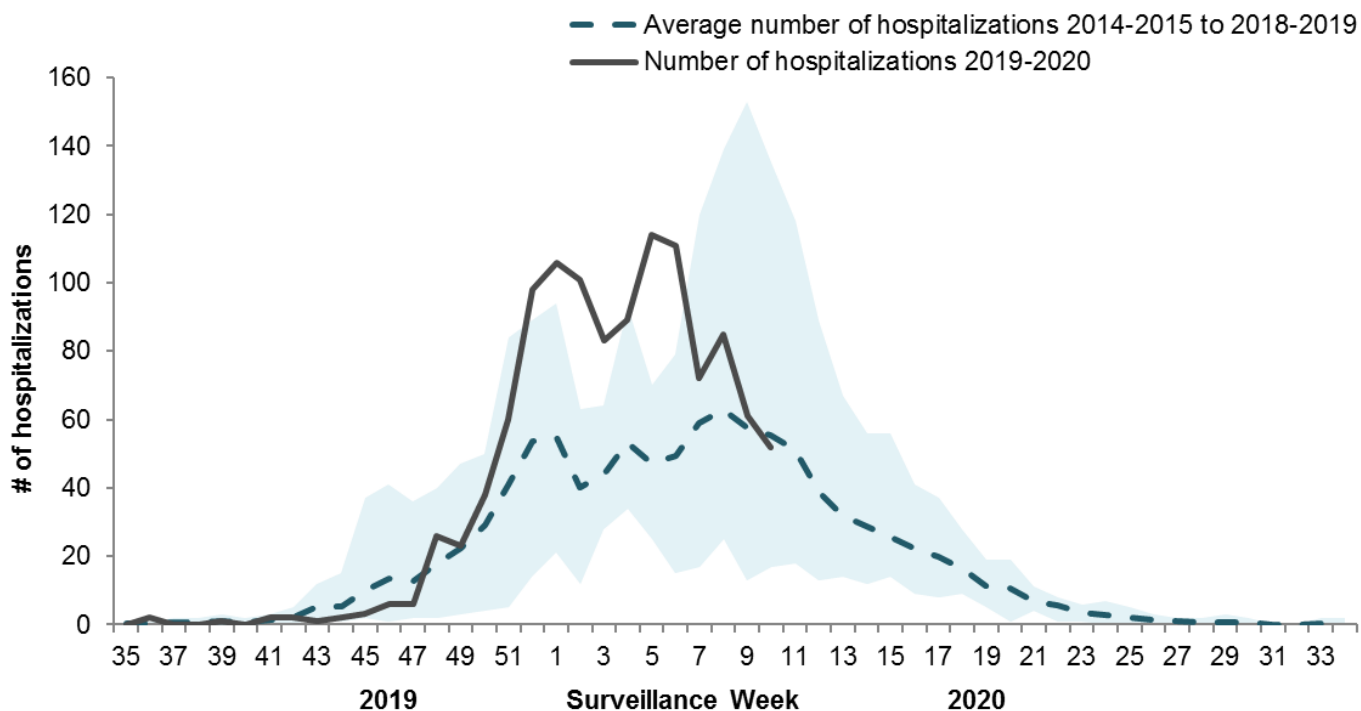
In week 10, 52 pediatric (≤ 16 years of age) laboratory-confirmed influenza-associated hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 8). After high numbers of cases reported since late-December, the weekly number of cases has been approximately equal to the 5-year average over the past two weeks. An approximately equal proportion of cases of influenza A and B continues to be observed.

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 10):

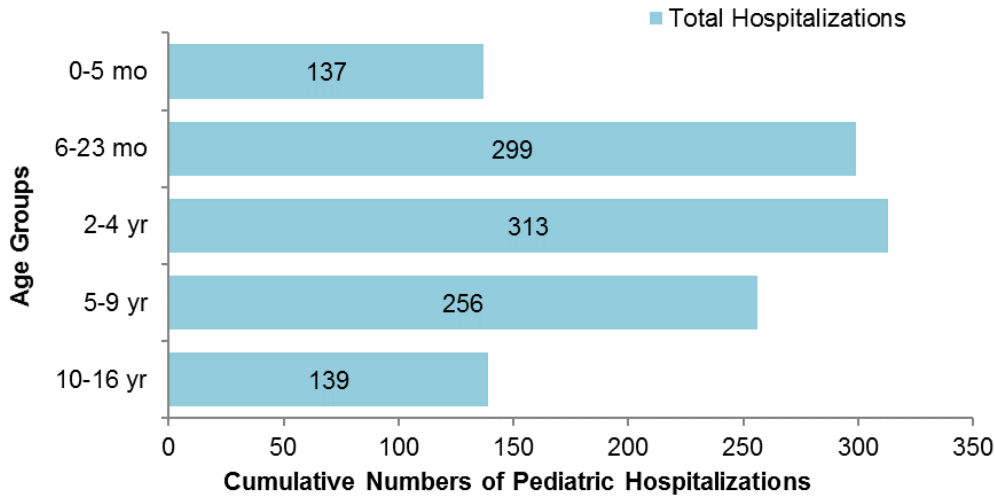
- 1,144 pediatric hospitalizations have been reported by the IMPACT network, of which 52% (591) were associated with influenza A and 48% (553) with influenza B.
- The largest proportion of hospitalizations (65%) were among children under 5 years of age (Figure 9).
- 174 ICU admissions were reported, of which 56% 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 2020-10



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 2020-10



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. In week 10, the number of cases declined compared to the previous week.

To date this season, 738 hospitalizations, 74 intensive care unit admissions, and 35 deaths have been reported (Figure 10).

- The majority of hospitalizations have been due to influenza A (80%), and among those subtyped (166) 92% were influenza A(H1N1).
- Among the 592 cases with influenza A, the largest proportion of hospitalizations were in adults 65 years of age and older (67%). Among the 143 cases with influenza B, 52% were in adults 65 years of age and older, and 28% of cases were between 16 and 34 years of age (Figure 11).
- 87% 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 2020-10

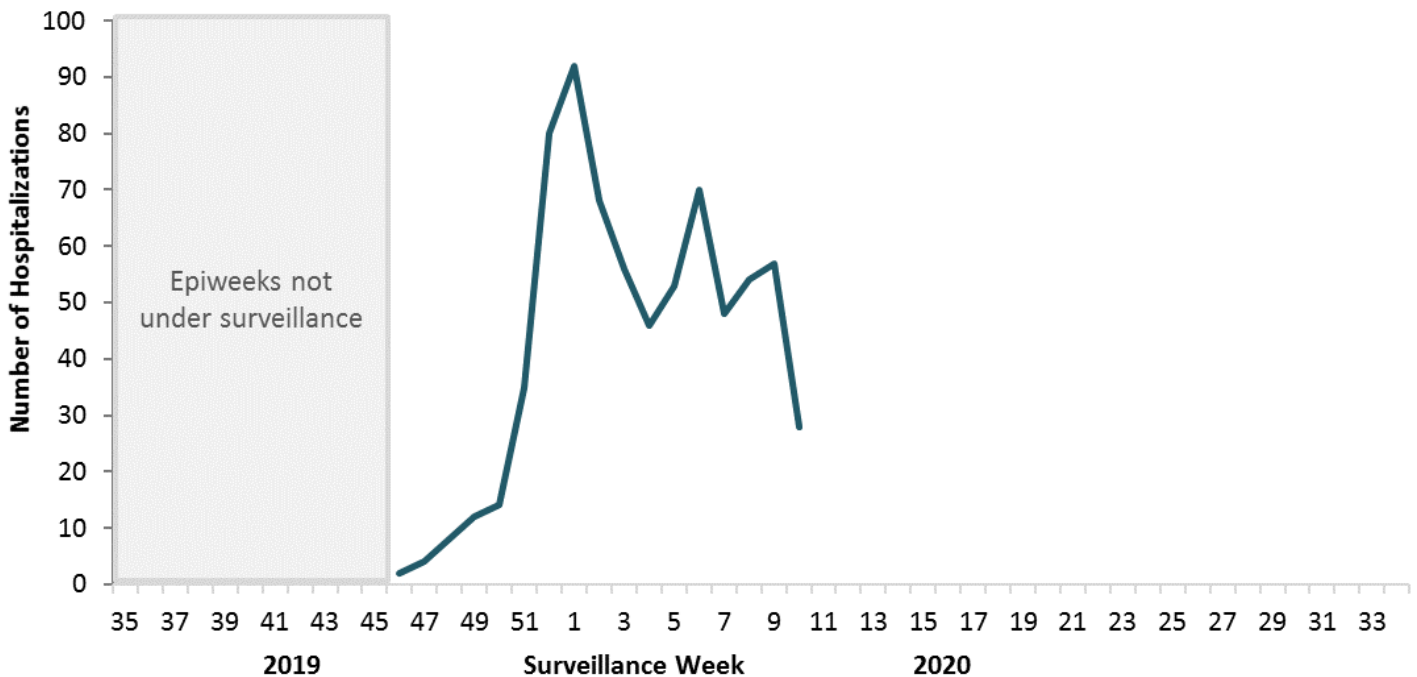
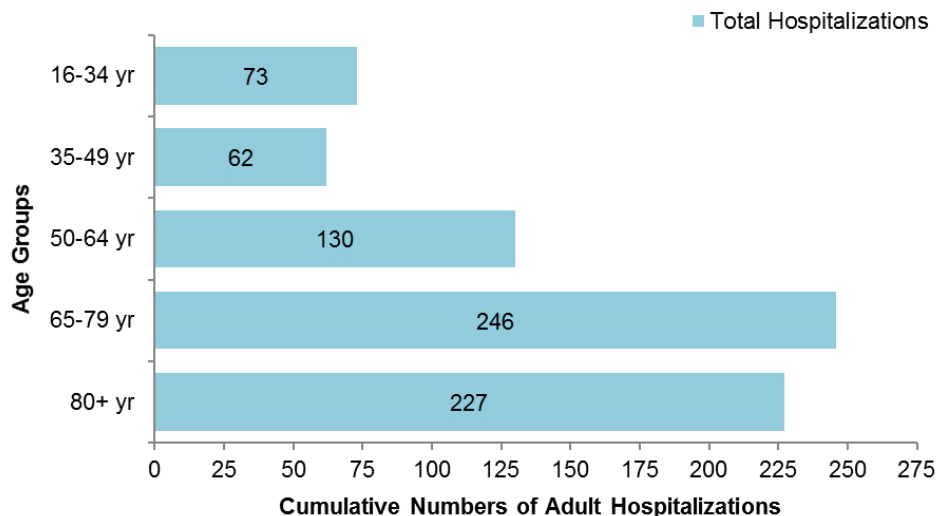


Figure 11 - Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza by age-group reported by the CIRN-SOS network, Canada, weeks 2019-45 to 2020-10



Influenza Strain Characterizations

From September 1, 2019 to March 12, 2020, the National Microbiology Laboratory (NML) has characterized 1,224 influenza viruses (474 A(H1N1), 177 A(H3N2) and 573 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 391 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).

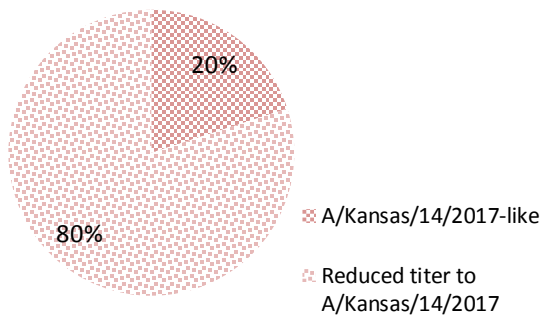
To date, 100% (541) of influenza B/Victoria viruses genetically characterized belong to the genetic subclade V1A.3 (3Del) (Fig 13b). Viruses in this genetic subclade are antigenically distinct from the vaccine strain B/Colorado/06/2017, which belongs to genetic subclade V1A.1 (2Del).

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 12, 2020

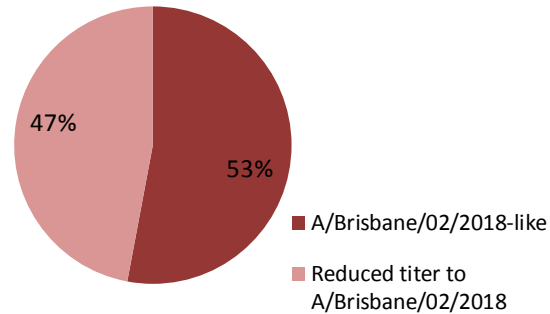
A) A(H3N2) viruses

Number of viruses characterized: 55



B) A(H1N1) viruses

Number of viruses characterized: 474



C) B viruses

Number of viruses characterized: 182

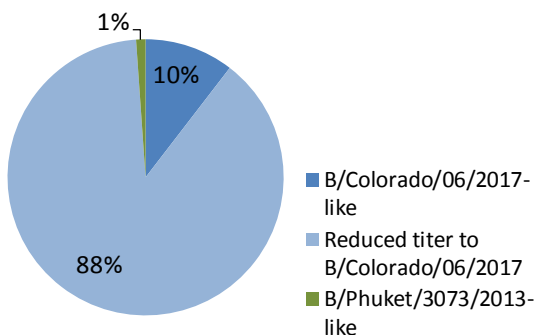
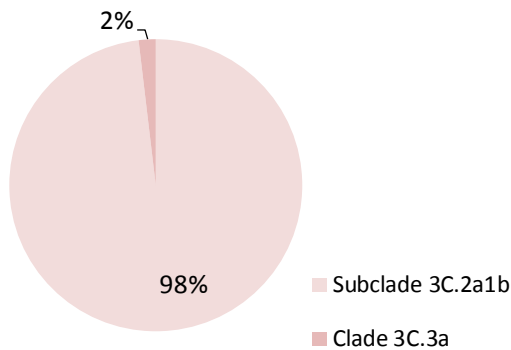


Figure 13 – Distribution of genetic clades among characterized influenza viruses, Canada, September 1, 2019 to March 12, 2020

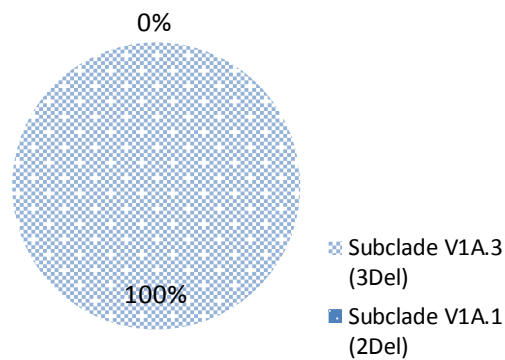
A) A(H3N2) viruses

Number of viruses sequenced: 160



B) B/Victoria viruses

Number of viruses sequenced: 541



Antiviral Resistance

The National Microbiology Laboratory (NML) also tests influenza viruses received from Canadian laboratories for antiviral resistance. From September 1, 2019 to March 12, 2020, the following results were reported:

Oseltamivir:

669 influenza viruses (155 A(H3N2), 251 A(H1N1) and 263 B) were tested for resistance to oseltamivir:

- All influenza A(H3N2) and B viruses were sensitive to oseltamivir.
- Among the A(H1N1) viruses tested, 250 (99.6%) were sensitive to oseltamivir and one virus was resistant to oseltamivir with the H275Y mutation in the neuraminidase gene.

Zanamivir:

669 influenza viruses (155 A(H3N2), 251 A(H1N1) and 263 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.