

January 19 to 25, 2020 (week 04)

Overall Summary

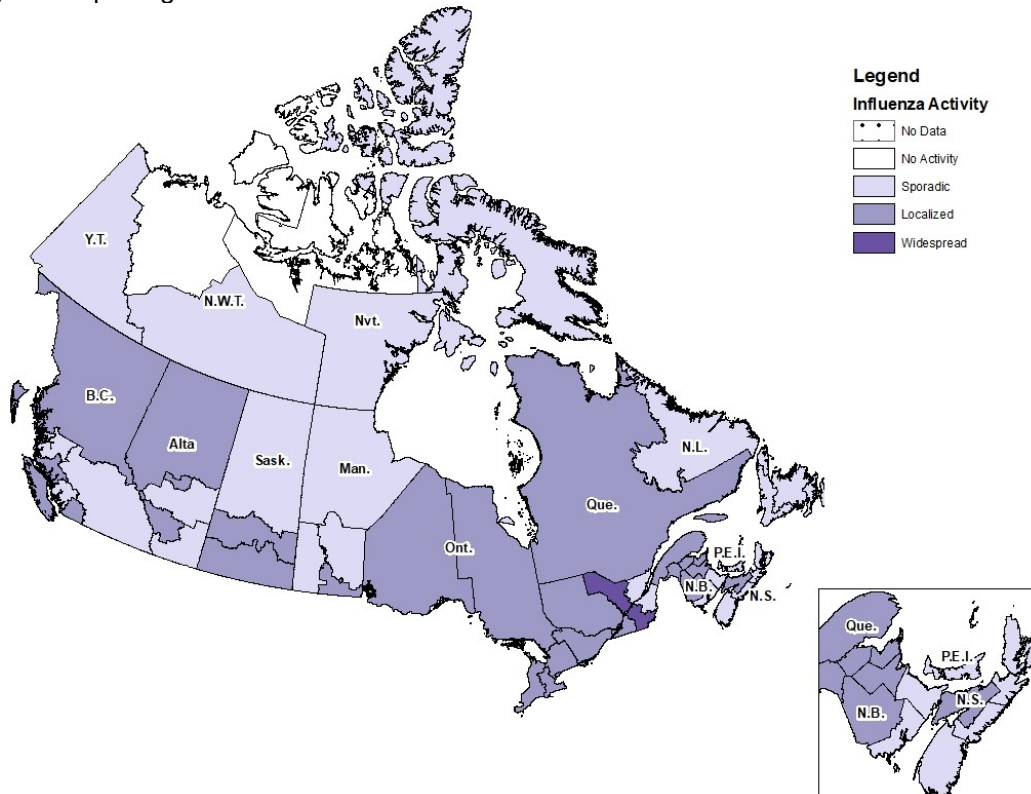
- Influenza activity remained high in week 04, with many indicators similar to or slightly higher than the previous week.
- Influenza A and B continue to co-circulate. The proportion of laboratory tests positive for influenza A has been stable in recent weeks, while the proportion of tests positive for influenza B has increased over the past two weeks.
- Influenza A(H1N1) is currently the dominant influenza A circulating in Canada, representing 75% of subtyped influenza A specimens in week 04.
- The highest cumulative hospitalization rates are among children under 5 years of age and adults 65 years of age and older.

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

During week 04, influenza activity was reported in all provinces and territories and in almost all regions (51). Among these regions, 45% reported sporadic activity, 53% reported localized activity, and 2% reported widespread activity (Figure 1). Elevated influenza activity (localized and widespread activity) is being reported in many regions in provinces across the country. Sporadic influenza activity is being reported in the territories.

Figure 1 – Map of influenza/ILI activity by province and territory, Canada, week 2019-04

Number of Regions Reporting in Week 04: 53 out of 53



Laboratory-Confirmed Influenza Detections

In week 04, the percentage of laboratory tests positive for influenza increased compared to recent weeks. Influenza A and B continue to co-circulate, with an increased proportion of influenza B detections.

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

- Following a plateau around 26% over the previous three weeks the percentage of tests positive for influenza increased to 28% in week 04. This is slightly higher than the average (23%) for week 04 over the past five seasons, and consistent with the usual period of high influenza activity in Canada.
- The percentage of tests positive for influenza A has remained similar over the past four weeks, and was 15% in week 04.
- The percentage of tests positive for influenza B increased from 10% in week 03 to 13% in week 04. This continues to be three times greater than the average (3.7%) for this time of year.
- Among subtyped influenza A detections, the proportion of A(H1N1) has been similar over the past 3 weeks, at approximately 75%.

To date this season (weeks 35 to 04), 24,448 laboratory detections of influenza were reported:

- 59% (14,344) were influenza A.
- Among subtyped influenza A detections (3 957), A(H1N1) is now the predominant subtype overall this season (59%), due to the increase in A(H1N1) detections in recent weeks.

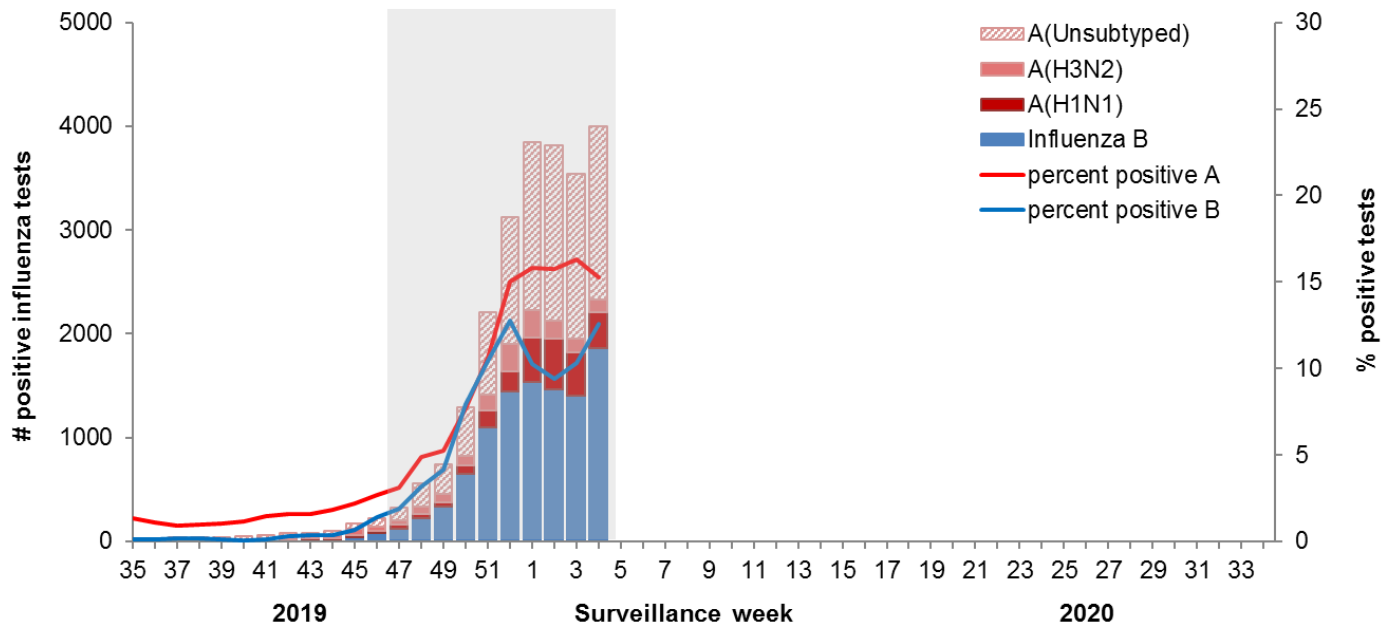
Detailed information on age and type/subtype has been received for 18,766 laboratory-confirmed influenza cases (Table 1). To date this season (weeks 35 to 04):

- Among cases of influenza A(H3N2) (1,446), the largest proportion were in adults 65 years of age and older (47%).
- Cases of influenza B (8,470) were primarily in younger age groups; 56% of cases were under 20 years of age and 32% between 20 and 44 years of age.
- Among cases of influenza A(H1N1) (1,531), 32% of cases were in adults 65 years of age and older, with equal proportions in adults 20-44 years and 45-64 years (25%).

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](#).

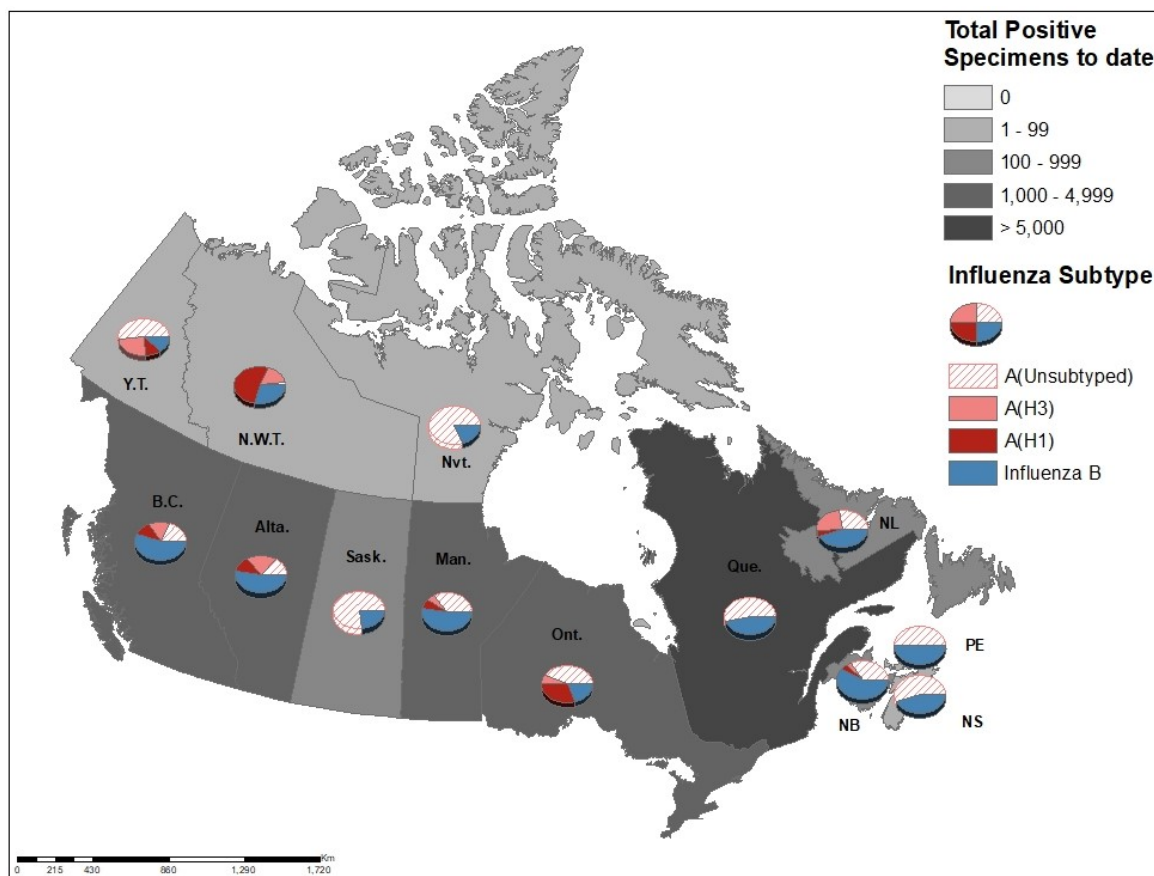
Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, weeks 2019-35 to 2020-04

Number of Laboratories Reporting in Week 04: 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 2020-04



* 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 2020-04

Age groups (years)	Cumulative (August 25, 2019 to January 25, 2020)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1)	A(H3N2)	A (Un subtyped) ¹	Total	#	%
0-4	1561	170	142	1249	1850	3411	18%
5-19	997	99	183	715	2852	3849	21%
20-44	2021	397	216	1408	2685	4706	25%
45-64	1923	392	224	1307	466	2389	13%
65+	3794	503	681	2610	617	4411	24%
Total	10296	1561	1446	7289	8470	18766	100%

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

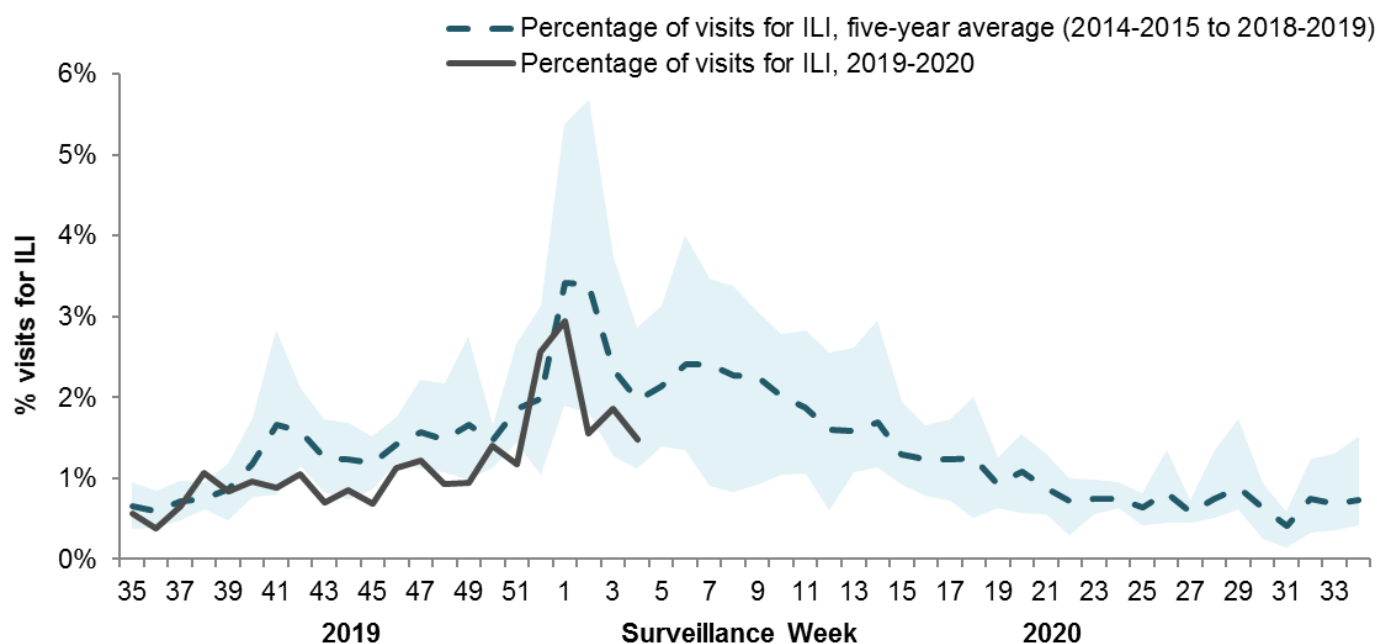
Syndromic / Influenza-like Illness Surveillance

Healthcare Practitioners Sentinel Syndromic Surveillance

In week 04, 1.5% of visits to healthcare professionals were due to influenza-like illness (ILI) which is 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 2020-04

Number of Sentinels Reporting in Week 04: 109



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 slightly in week 04 compared to the previous week. In week 04, 3,190 participants reported to FluWatchers, of which 3.0% (97) reported symptoms of cough and fever (Figure 5).

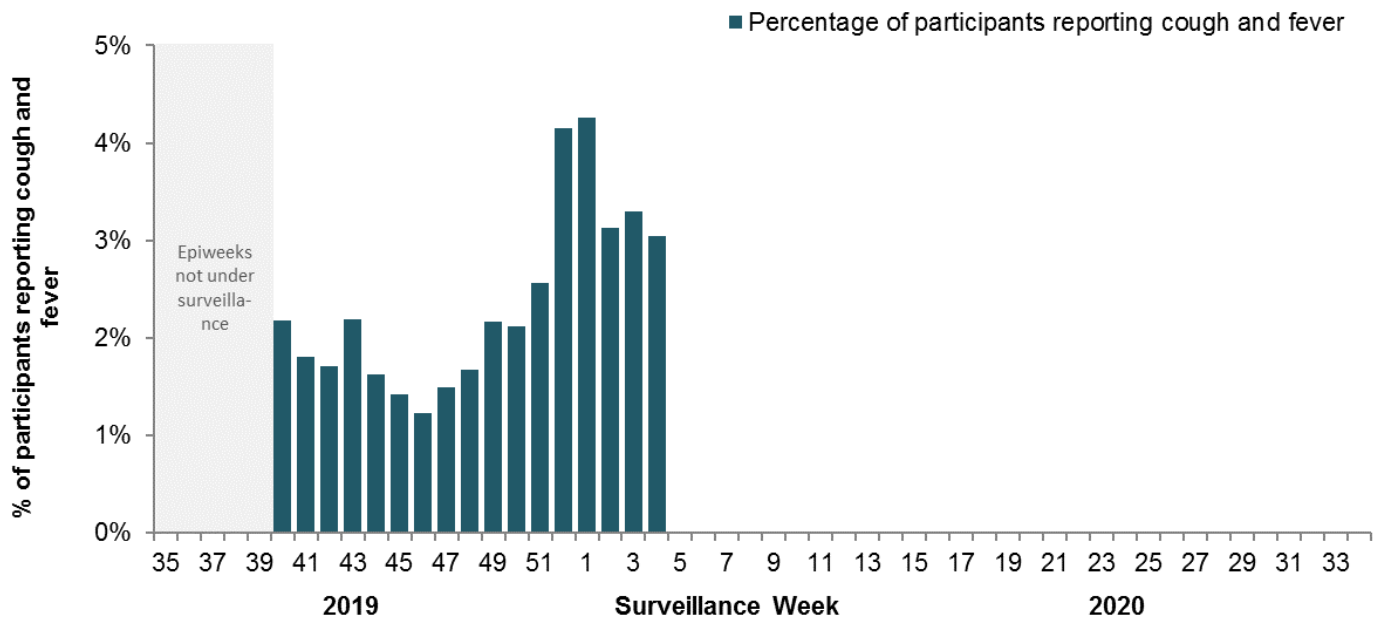
Among the 97 participants who reported cough and fever:

- 20% consulted a healthcare professional;
- 77% reported days missed from work or school, resulting in a combined total of 256 missed days of work or school.
- 72% 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 2020-04

Number of Participants Reporting in Week 04: 3,190



Online Figure – Geographic distribution of FluWatchers participants reporting cough and fever, Canada, week 2020-04

Click on the map to access the link



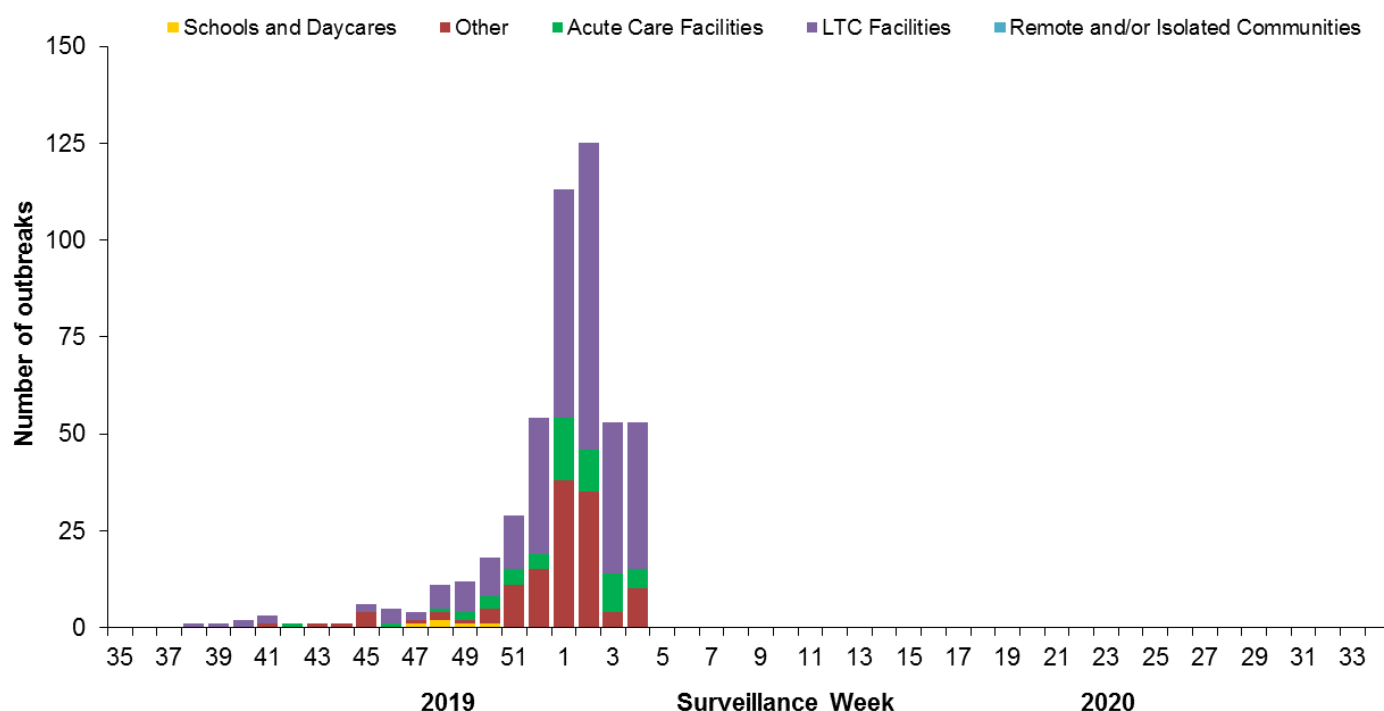
Influenza Outbreak Surveillance

In week 04, the number of new laboratory-confirmed influenza outbreaks was the same as the previous week. A total of 53 outbreaks were reported: 38 in long term care facilities, 5 in acute care facilities, and 10 in facilities [categorized as 'other'](#), which includes facilities such as private personal care homes, correctional facilities, and colleges/universities (Figure 6). In addition, 26 ILI outbreaks in schools/daycares were reported.

To date this season, a total of 493 laboratory-confirmed influenza outbreaks have been reported; 61% (302) in long-term care facilities, 26% (128) in facilities categorized as 'other', 12% (58) in acute care facilities, and 1% (5) in schools/daycares. Of the 464 outbreaks where influenza type was reported, 89% (413) were due to influenza A. Among the 217 outbreaks for which the influenza A subtype was reported, 55% (119) were associated with A(H3N2). To date this season, 34 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 2020-04

Number of provinces and territories reporting in week 04: 13 out of 13



Severe Outcomes Influenza Surveillance

Provincial/Territorial Influenza Hospitalizations and Deaths

To date this season, 1,115 influenza-associated hospitalizations were reported by participating provinces and territories¹.

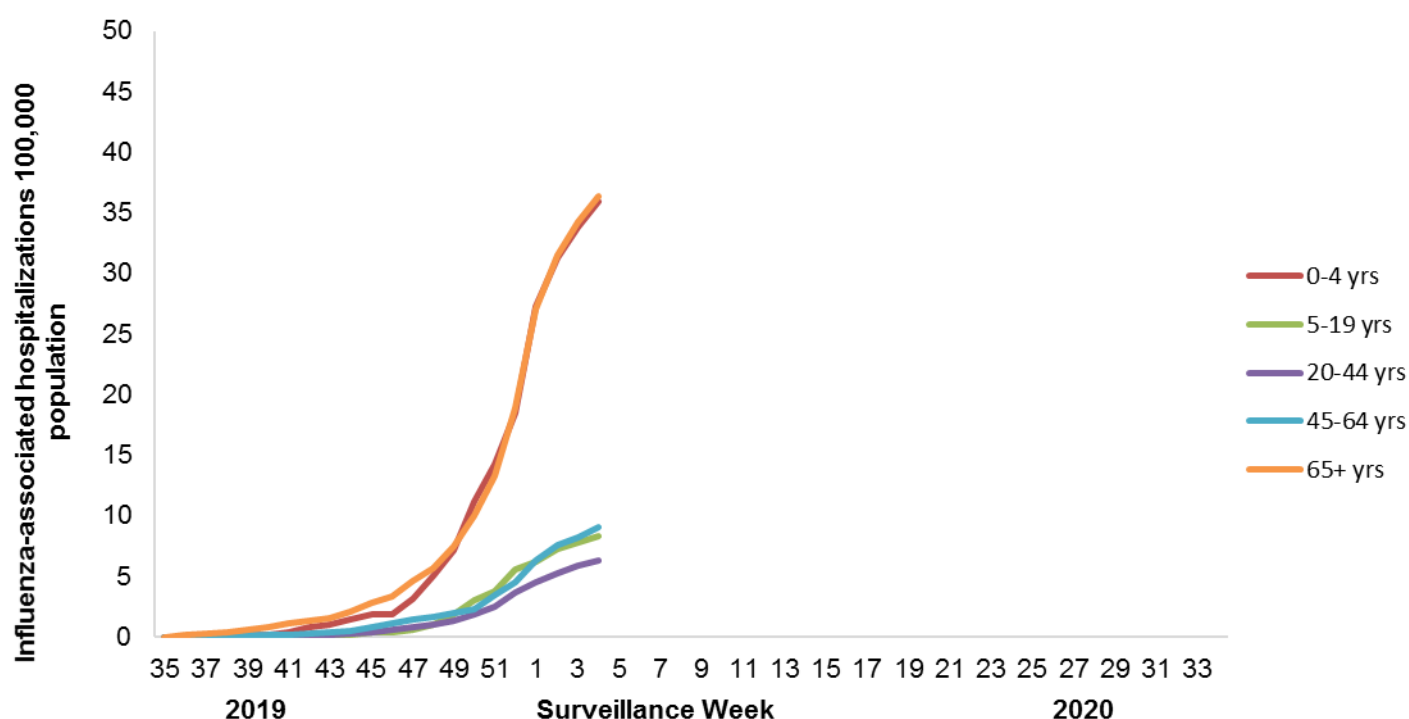
- 66% of the cases were associated with influenza A.
- Of the 568 cases for which subtype was reported, 71% were associated with influenza A(H3N2).
- The highest cumulative hospitalization rates up to week 04 were adults 65 years of age and older (36/100,000 population) and among children under 5 years of age (36/100,000 population).

112 ICU admissions and 26 deaths have been reported.

- 58% of the ICU admissions and 65% 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 2020-04

Number of provinces and territories reporting in week 04: 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

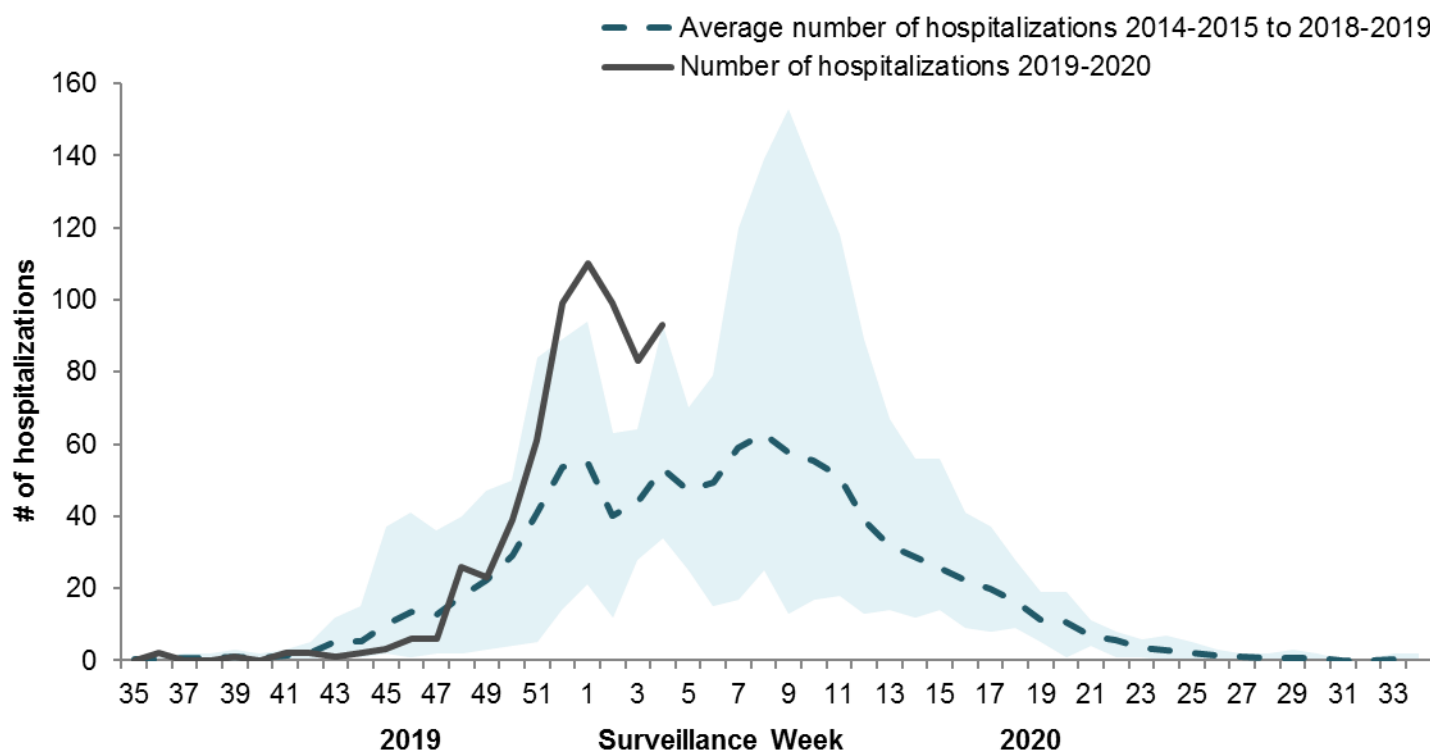
In week 04, 93 pediatric (≤ 16 years of age) laboratory-confirmed influenza-associated hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 8). The weekly number of cases increased compared to the previous week which is the same as the 5-year maximum in week 04.

The elevated number of cases in recent weeks is likely due to the concurrent circulation of influenza A and B this season. The number of influenza A-associated pediatric hospitalizations is slightly above the average for this time of year. The number of hospitalizations with influenza B is well above average compared to previous seasons, and occurring earlier in the season.

To date this season (weeks 35 to 04):

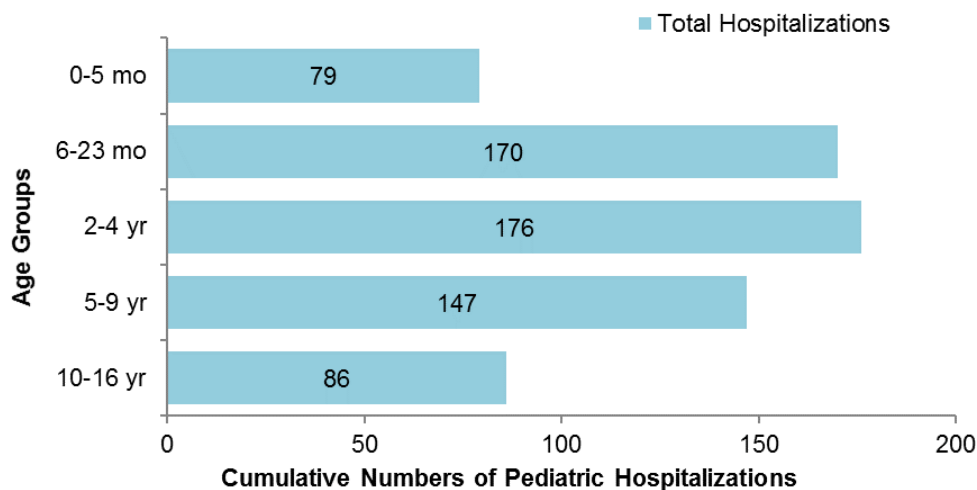
- 658 pediatric hospitalizations have been reported by the IMPACT network, of which 51% (338) were associated with influenza B and 49% (320) with influenza A.
- The largest proportion of hospitalizations (65%) were among children under 5 years of age (Figure 9).
- Among cases in children under 5 years of age (425), 54% were associated with influenza A, compared to cases in children 5 to 16 years of age (233), among whom 62% of cases were associated with influenza B.
- 87 ICU admissions were reported, of which 51% (47) were associated with influenza A.
- 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 2020-04



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 2020-04



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 04, the number of cases decreased for the third consecutive week.

To date this season, 411 hospitalizations, 22 intensive care unit admissions, and nine deaths have been reported (Figure 10).

- The majority of hospitalizations have been due to influenza A (87%), and among those subtyped (98) 91% were influenza A(H1N1).
- The largest proportion of hospitalizations are in adults 65-79 years of age (34%) and adults 80 years of age and older (31%) (Figure 11).
- 65% 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 2019-35 to 2020-04

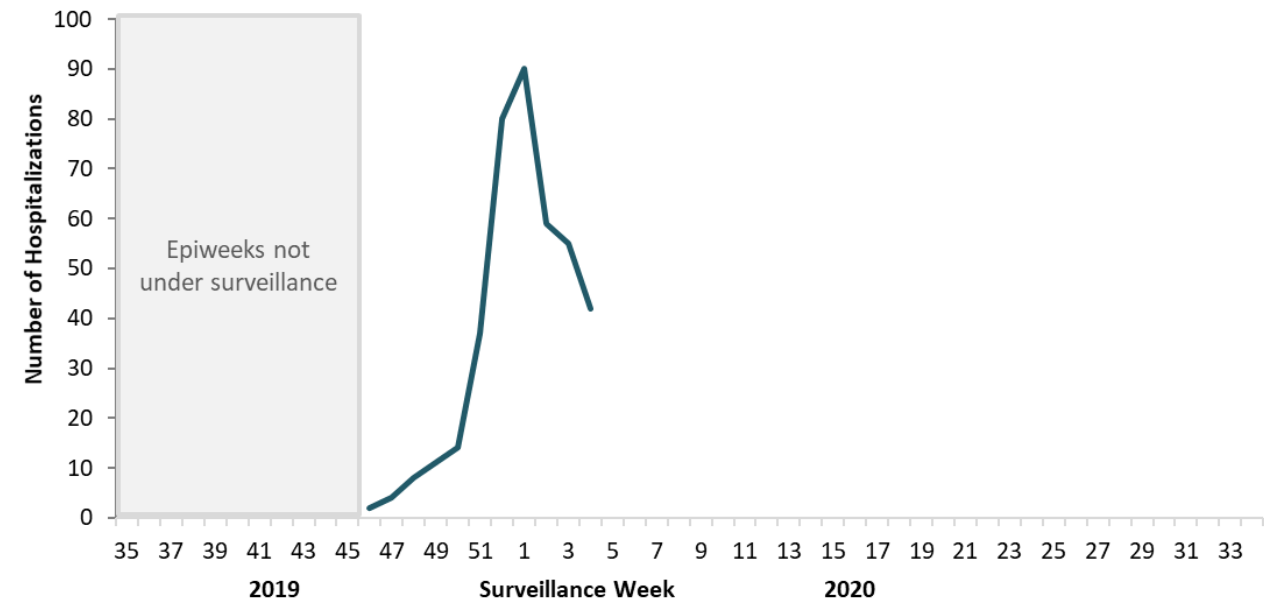
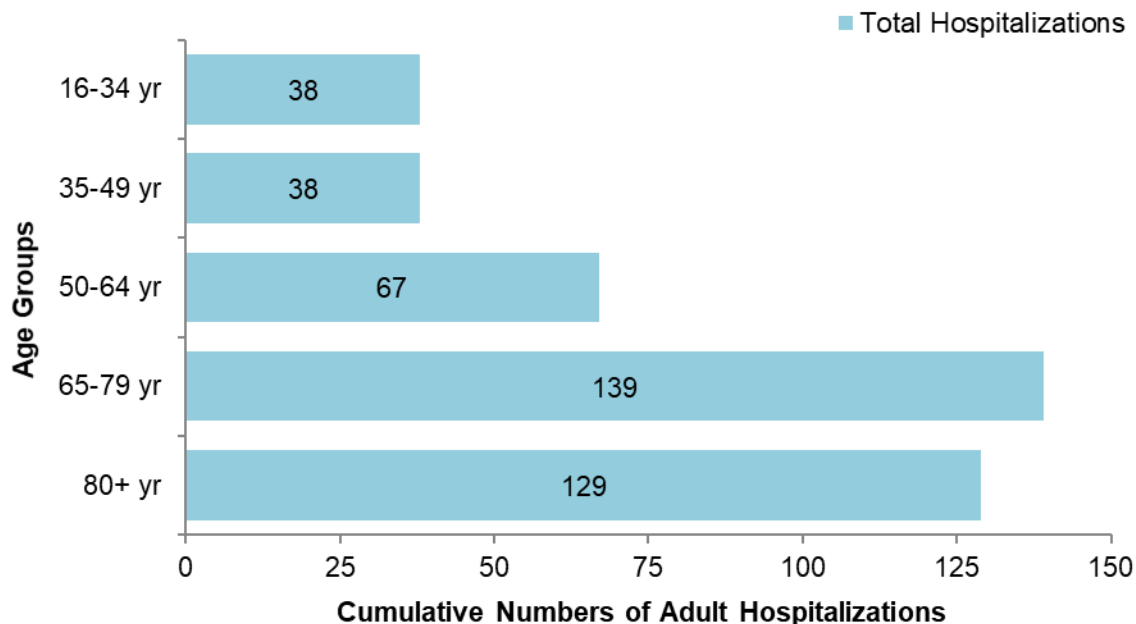


Figure 11 - Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza by age-group reported by the CIRN-SOS network, Canada, weeks 2019-35 to 2020-04



Influenza Strain Characterizations

From September 1, 2019 to January 23, 2020, the National Microbiology Laboratory (NML) has characterized 456 influenza viruses (142 A(H3N2), 190 A(H1N1) and 124 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 38 influenza A(H3N2) viruses antigenically characterized to date, the majority (89%) showed reduced titer by HI assay to A Kansas/14/2017 using antiserum raised against egg-propagated A Kansas/14/2017. Four viruses were characterized as A Kansas/14/2017-like (Figure 12a).

Genetic Characterization:

Nearly all (98%) of the 135 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:

- 74% (28 out of 31) viruses that were also antigenically characterized.
- 100% (104 out of 104) 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 190 A(H1N1) viruses characterized to date, 62% 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

Among the 124 influenza B viruses antigenically characterized this season, the vast majority (122) belonged to the B/Victoria lineage. Two viruses were antigenically characterized as similar to B/Phuket/3073/2013 (B/Yamagata lineage).

The majority (89%, 108) 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).

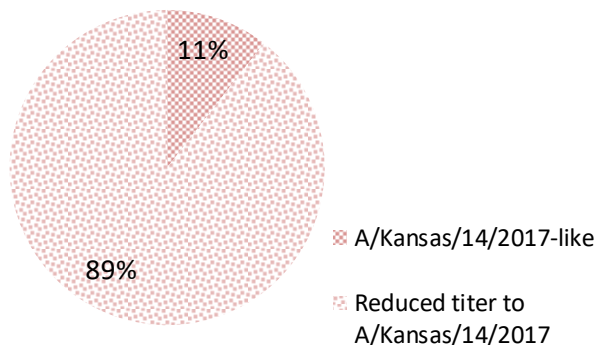
Sequence analysis showed that 100% of the 105 B/Victoria lineage viruses showing reduced titre to B/Colorado/06/2017 had a three amino acid deletion (162-164) in the HA gene. Sequencing is pending for the remaining three viruses.

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 12 – Distribution of antigenic phenotypes among characterized influenza viruses, Canada, September 1, 2019 to January 23, 2020

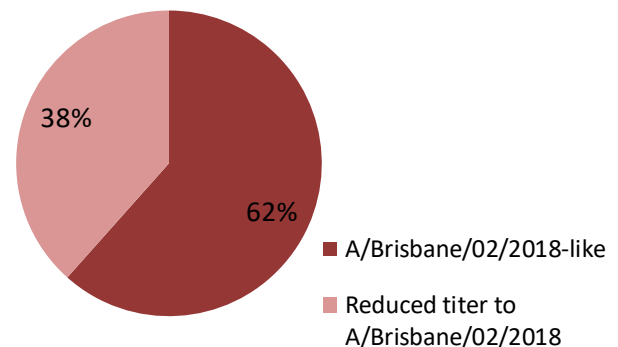
A) A(H3N2) viruses

Number of viruses characterized: 38



B) A(H1N1) viruses

Number of viruses characterized: 190



C) B viruses

Number of viruses characterized: 124

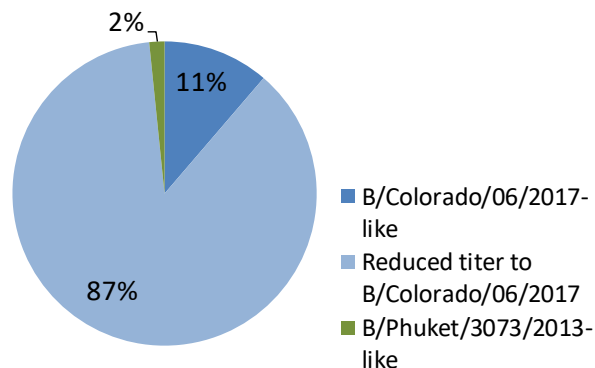
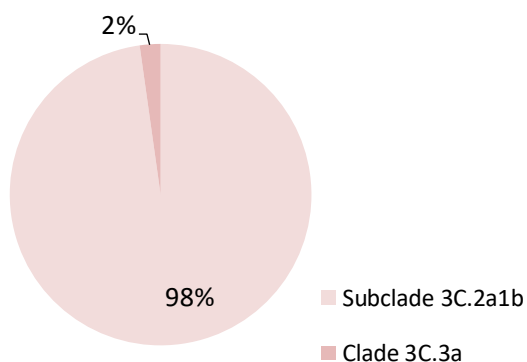


Figure 13 – Distribution of genetic clades among characterized A(H3N2) influenza viruses, Canada, September 1, 2019 to January 23, 2020

Number of viruses sequenced: 135



Antiviral Resistance

The National Microbiology Laboratory (NML) also tests influenza viruses received from Canadian laboratories for antiviral resistance. From September 1, 2019 to January 23, 2020, the following results were reported:

Oseltamivir:

277 influenza viruses (118 A(H3N2), 72 A(H1N1) and 87 B) were tested for resistance to oseltamivir:

- All influenza A(H3N2) and B viruses were sensitive to oseltamivir.
- Among the A(H1N1) viruses tested, 71 (99%) were sensitive to oseltamivir and one virus was resistant to oseltamivir with the H275Y mutation in the neuraminidase gene.

Zanamivir:

277 influenza viruses (118 A(H3N2), 72 A(H1N1) and 87 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.