

January 5 to 11, 2020 (week 02)

## Overall Summary

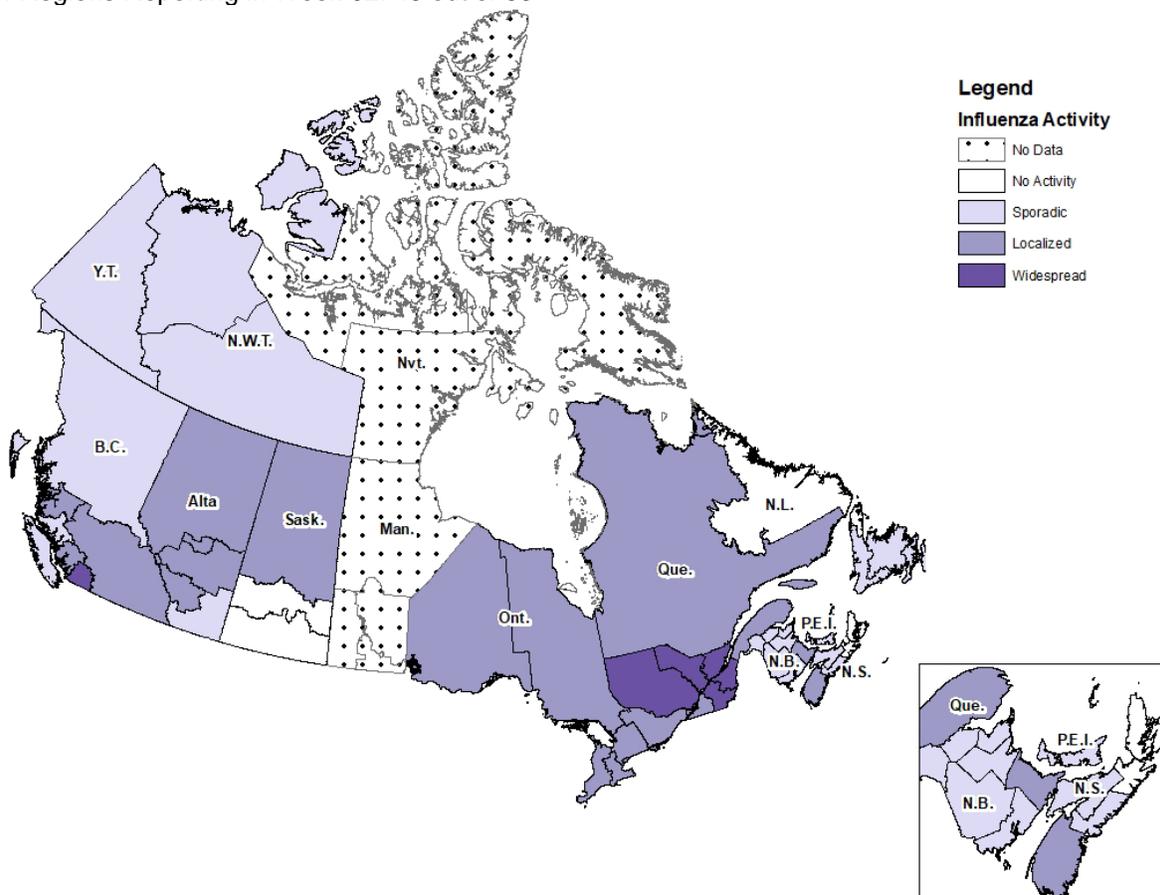
- Influenza activity decreased across multiple indicators this week. This suggests that Canada may have reached peak influenza activity at the national level. Elevated activity is expected to continue in the coming weeks.
- Influenza A(H3N2), A(H1N1) and B continue to co-circulate.
- Influenza A remains the predominant circulating type and influenza B continues to circulate at higher levels than usual.
- A(H1N1) and A(H3N2) are circulating in almost equal proportions. For the season to date, there is a slight majority (53%) of A(H1N1), due to an increase in detections in recent weeks.
- 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 02, 41 regions within 11 province/territories reported influenza activity; among these regions 44% reported sporadic activity, 46% reported localized activity, and 10% reported widespread activity (Figure 1).

**Figure 1 – Map of influenza/ILI activity by province and territory, Canada, week 2019-02**

Number of Regions Reporting in Week 02: 45 out of 53



## Laboratory-Confirmed Influenza Detections

In week 02, the percentage of laboratory tests positive for influenza decreased slightly. Laboratory tests positive for influenza B declined but continue to be above average for this time of year. Among detections, the proportion that are influenza A continued to increase, and among subtyped influenza A detections, the proportion of A(H1N1) continued to increase.

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

- The percentage of tests positive for influenza decreased slightly from 26% in week 01 to 25% in week 02. While this is slightly higher than the average (23%) for week 02 over the past five seasons, the decline may suggest that we are near the peak of laboratory detections.
- The percentage of tests positive for influenza A has been stable at approximately 15% since week 52.
- The percentage of tests positive for influenza B declined for the second week in a row, from 13% in week 52 to 9% in week 02, but continues to be almost 5 times greater than the average (2.8%) for this time of year. The current level of circulation of influenza B is normally not observed until late March or early April.
- The proportion of detections that were influenza A has increased in recent weeks, from 50% in week 51 to 63% in week 02.
- Among subtyped influenza A detections, a mix of A(H1N1) and A(H3N2) continues to be detected. In week 02, the proportion of A(H1N1) increased from 62% in week 01 to 76%.

To date this season (weeks 35 to 02), 16,438 laboratory detections of influenza were reported:

- 59% (9,622) were influenza A.
- Among subtyped influenza A detections (2,932), A(H1N1) is now the predominant subtype overall this season by a slight majority (53%), due to the increase in A(H1N1) detections in recent weeks.

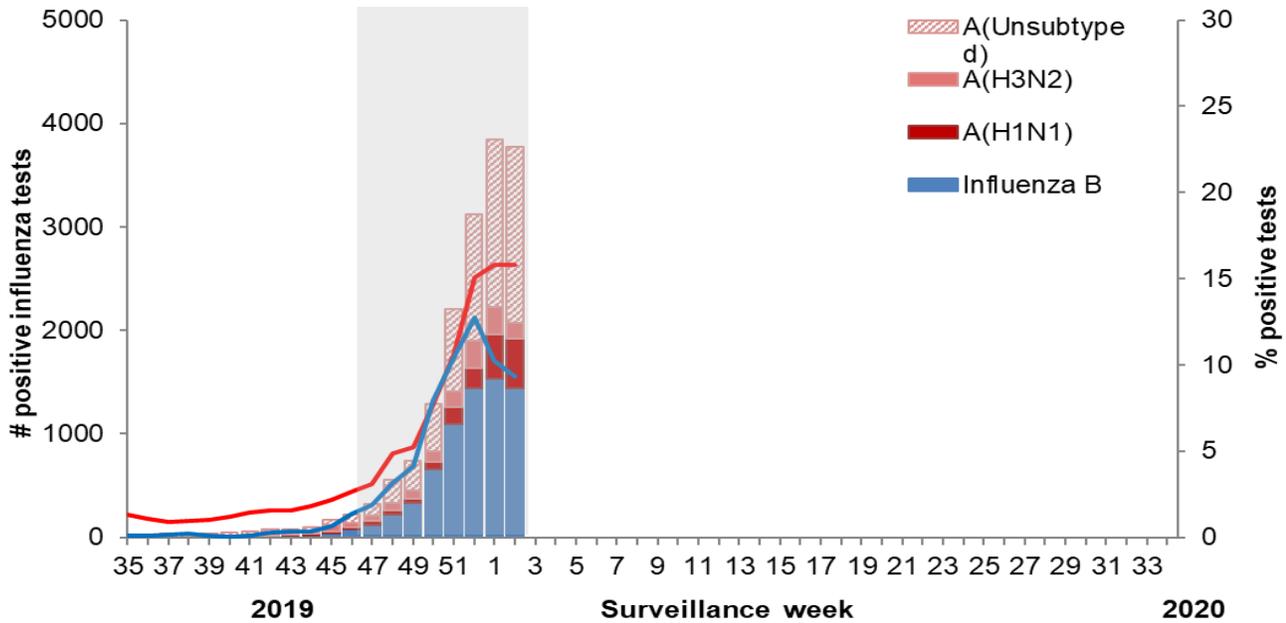
Detailed information on age and type/subtype has been received for 12,168 laboratory-confirmed influenza cases (Table 1). To date this season (weeks 35 to 02):

- Among cases of influenza A(H3N2) (1,204), the largest proportion were in adults 65 years of age and older (46%).
- Cases of influenza B (5,508) were primarily in younger age groups; 55% of cases were under 20 years of age and 33% between 20 and 44 years of age.
- Among cases of influenza A(H1N1) (911), nearly equal proportions of cases were in adults 20-44 years, 45-64 years, and 65 years of age and older (between 26 and 28% of cases were in each age-group).

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](#).

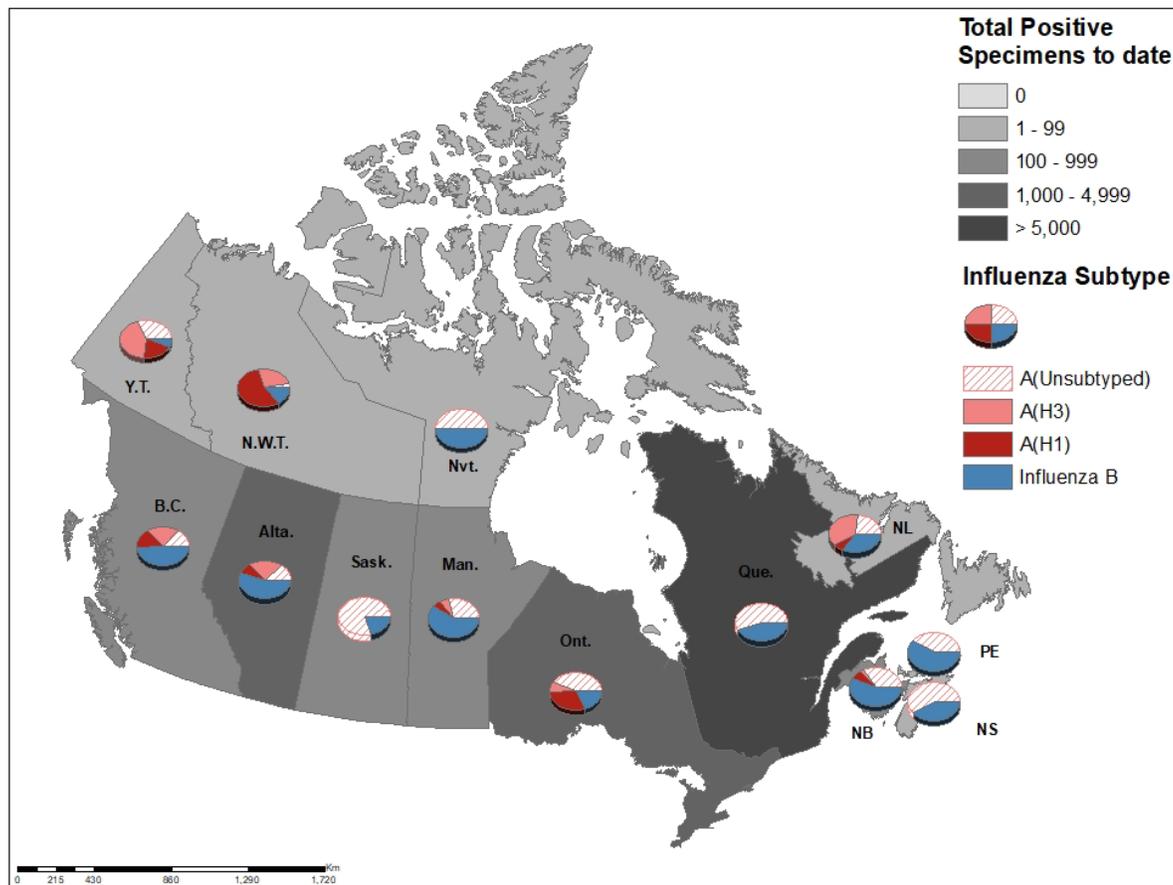
**Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, weeks 2019-35 to 2020-02**

Number of Laboratories Reporting in Week 02: 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 2020-02**



\* 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 2020-02**

Age groups (years)	Cumulative (August 25, 2019 to January 11, 2020)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1)	A(H3N2)	A (Un subtyped) <sup>1</sup>	Total	#	%
0-4	939	102	124	713	1105	2044	17%
5-19	637	61	146	430	1930	2567	21%
20-44	1261	255	186	820	1792	3053	25%
45-64	1268	239	191	838	301	1569	13%
65+	2555	254	557	1744	380	2935	24%
<b>Total</b>	<b>6660</b>	<b>911</b>	<b>1204</b>	<b>4545</b>	<b>5508</b>	<b>12168</b>	<b>100%</b>

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

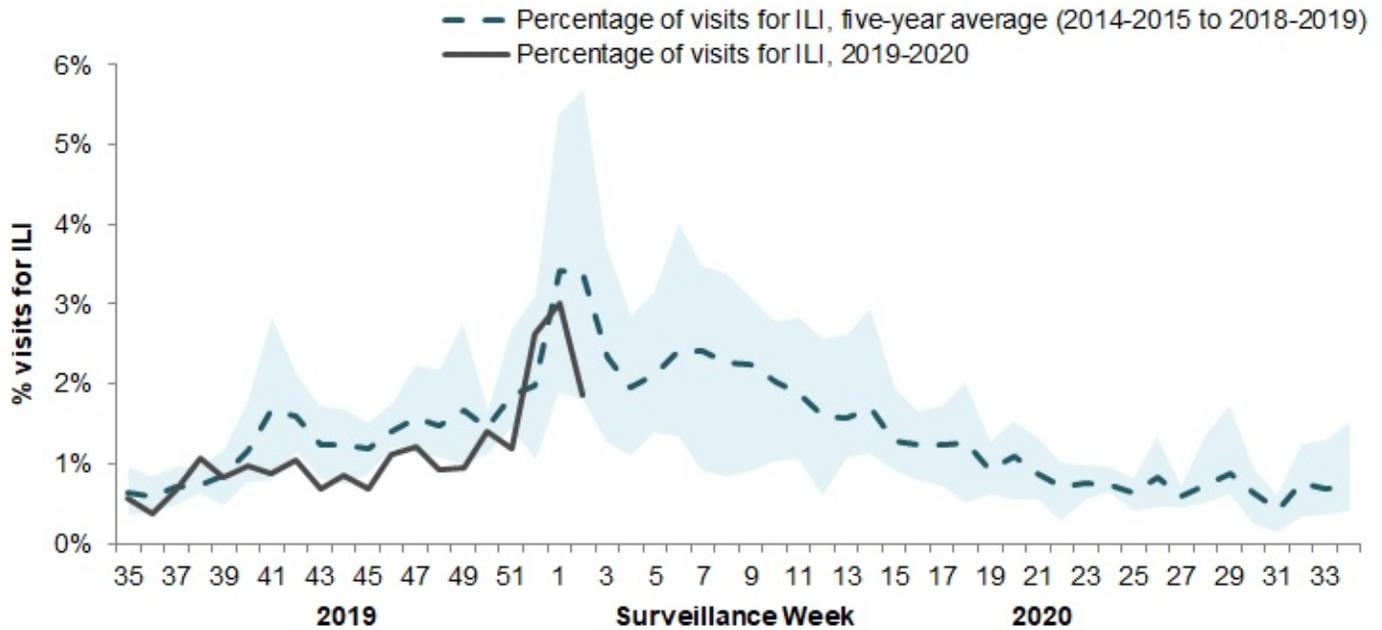
## Syndromic / Influenza-like Illness Surveillance

### Healthcare Practitioners Sentinel Syndromic Surveillance

In week 02, 1.8% 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 2020-02**

Number of Sentinels Reporting in Week 02: 95



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 02 compared to the previous week. In week 02, 3,127 participants reported to FluWatchers, of which 3.0% (94) reported symptoms of cough and fever (Figure 5).

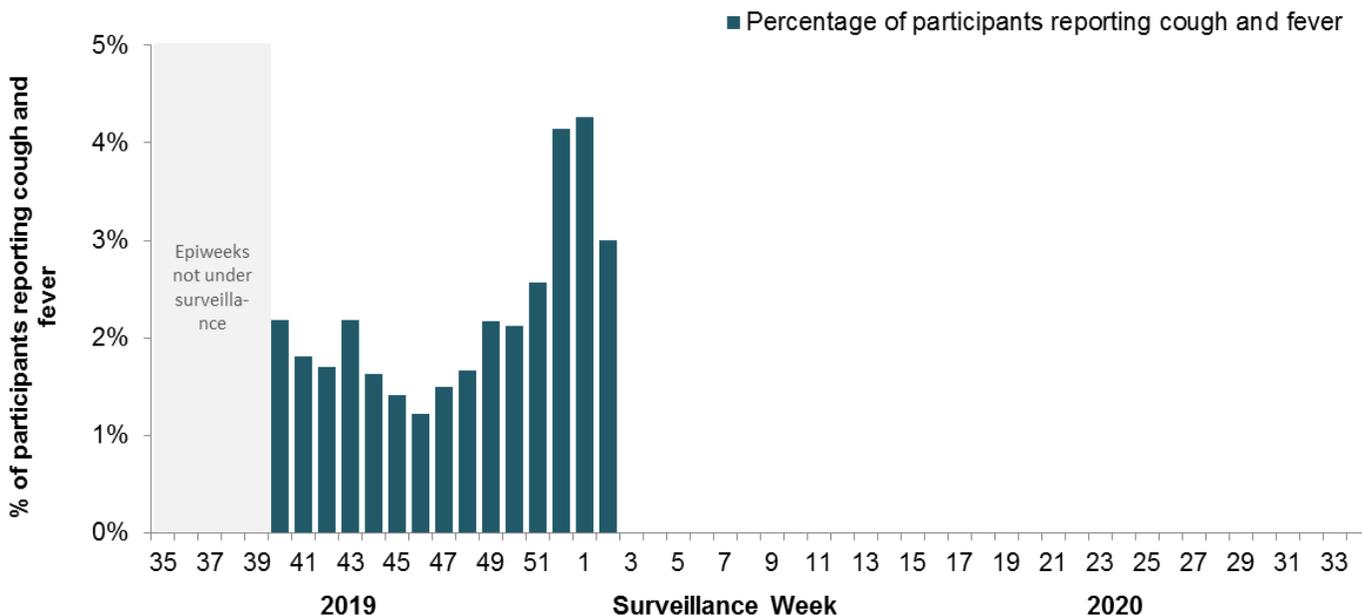
Among the 94 participants who reported cough and fever:

- 27% consulted a healthcare professional;
- 83% reported days missed from work or school, resulting in a combined total of 246 missed days of work or school.
- 71% 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 2020-02**

Number of Participants Reporting in Week 02: 3,127



**Online Figure – Geographic distribution of FluWatchers participants reporting cough and fever, Canada, week 2020-02**

Click on the map to access the link



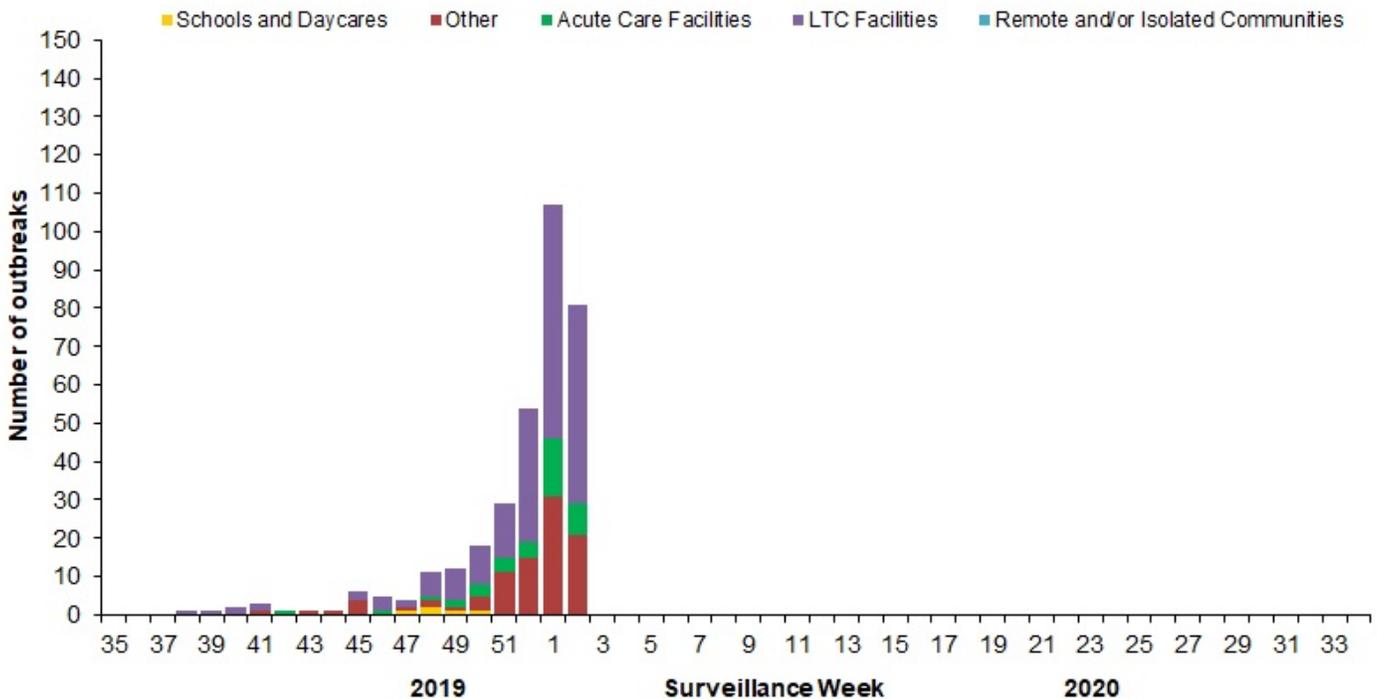
## Influenza Outbreak Surveillance

In week 02, the number of new laboratory-confirmed influenza outbreaks decreased. A total of 81 outbreaks were reported: 52 in long term care facilities, 8 in acute care facilities, and 21 in facilities [categorized as 'other'](#), which includes facilities such as private personal care homes, correctional facilities, and colleges/universities (Figure 6).

To date this season, a total of 336 laboratory-confirmed influenza outbreaks have been reported; 59% (200) in long-term care facilities, 27% (92) in facilities categorized as 'other', 12% (39) in acute care facilities, and 2% (5) in schools/daycares. Of the outbreaks where influenza type was reported (324), 91% (295) were due to influenza A. Among the 146 outbreaks for which the influenza A subtype was reported, 62% (91) were associated with A(H3N2). Four 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 2020-02**

Number of provinces and territories reporting in week 02: 12 out of 13



## Severe Outcomes Influenza Surveillance

### Provincial/Territorial Influenza Hospitalizations and Deaths

To date this season, 802 influenza-associated hospitalizations were reported by participating provinces and territories<sup>1</sup>.

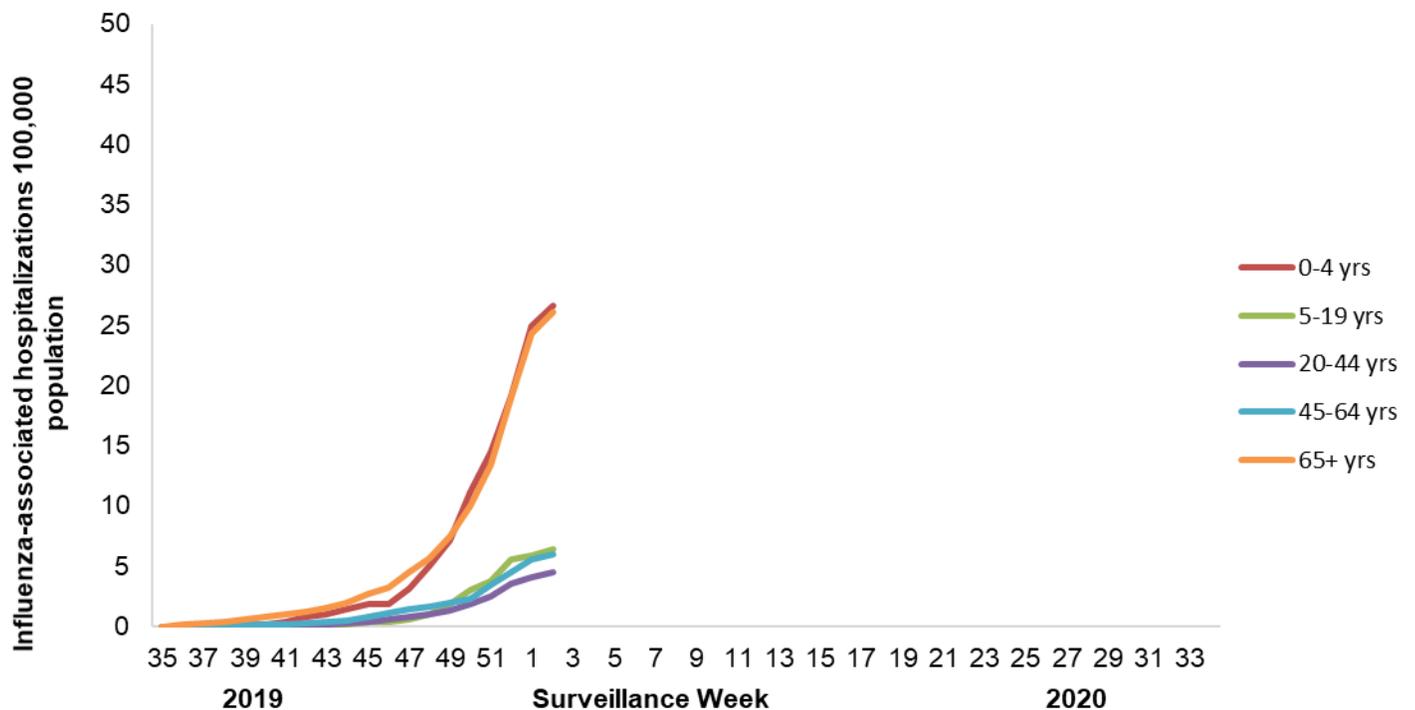
- 65% of the cases were associated with influenza A.
- Of the cases for which subtype was reported (427), 78% were associated with influenza A(H3N2).
- The highest cumulative hospitalization rates up to week 02 were among children under 5 years of age (27/100,000 population) and adults 65 years of age and older (26/100,000 population).

Eighty-one ICU admissions and thirteen deaths have been reported.

- 57% of the ICU admissions and 77% 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 territories<sup>1</sup> weeks 2019-35 to 2020-02**

Number of provinces and territories reporting in week 02: 9 out of 9



<sup>1</sup>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

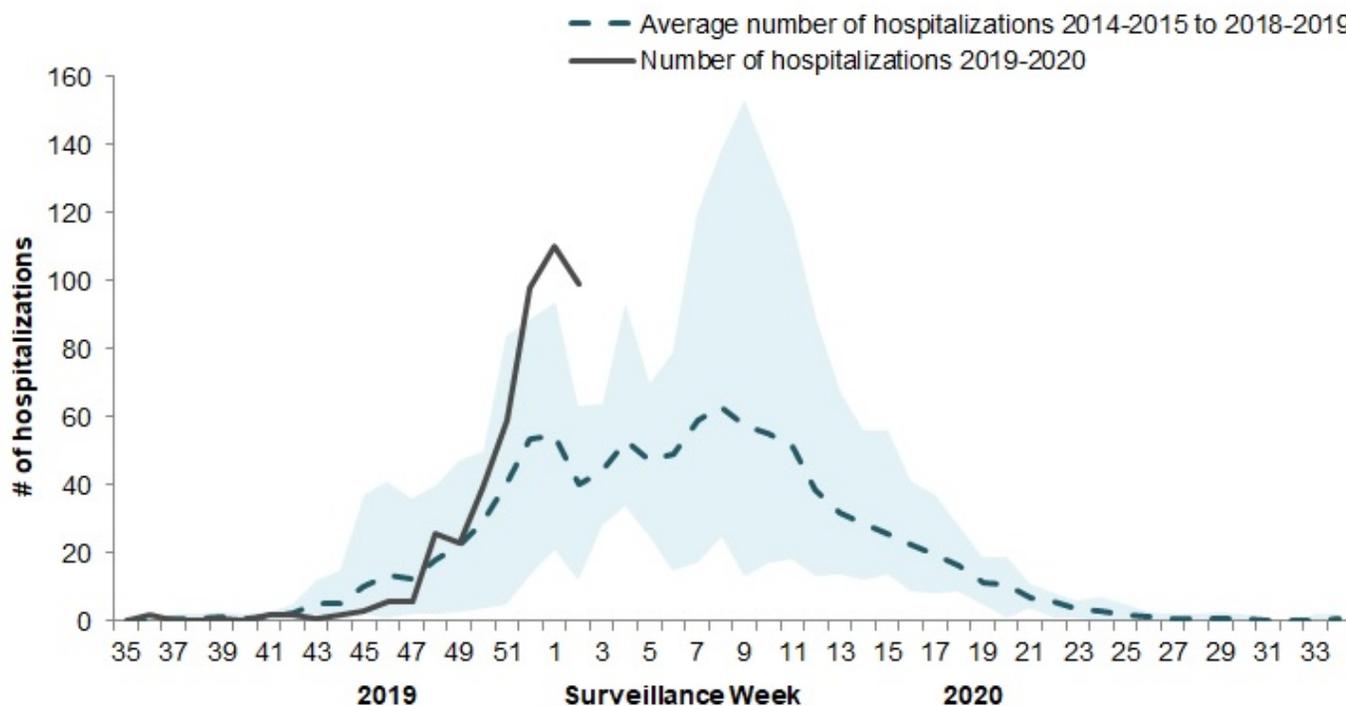
In week 02, 99 pediatric ( $\leq 16$  years of age) laboratory-confirmed influenza-associated hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 8). The weekly number of cases in this period above the 5-year maximum in week 02.

The sharp increase in the 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 similar to the average for this time of year. Influenza B usually circulates later in the season, in February or March. However, this season, 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 02):

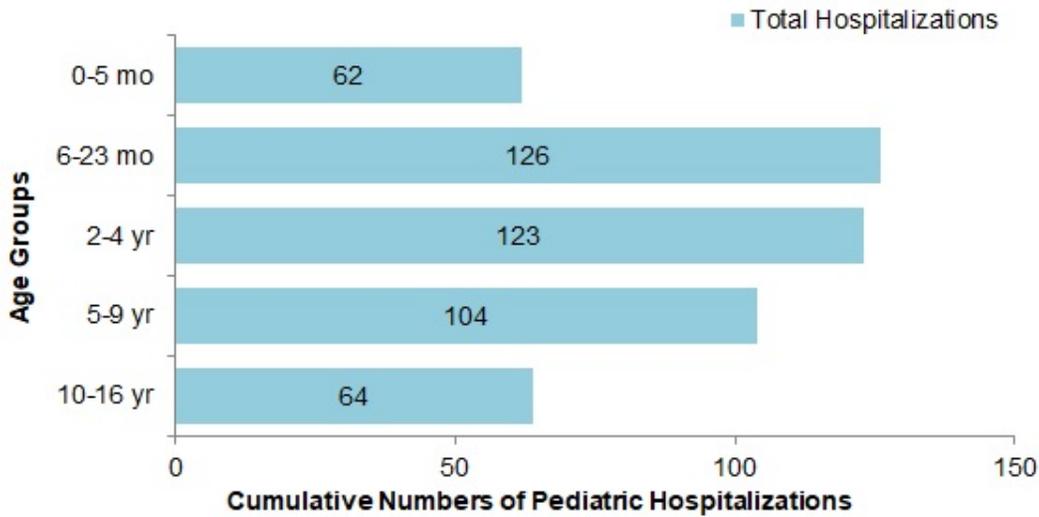
- 479 pediatric hospitalizations have been reported by the IMPACT network, of which 53% (254) were associated with influenza B and 47% (225) with influenza A.
- The largest proportion of hospitalizations (65%) were among children under 5 years of age (Figure 9).
- Among cases in children under 5 years of age (311), 53% of cases were associated with influenza A, compared to cases in children 5 to 16 years of age (168), among whom 64% of cases were associated with influenza B.
- 61 ICU admissions were reported, of which 52% (32) were associated with influenza A.
- No pediatric deaths have been reported.

**Figure 8 – Number of pediatric ( $\leq 16$  years of age) hospitalizations reported by the IMPACT network, by week, Canada, weeks 2019-35 to 2020-02**



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 2020-02**

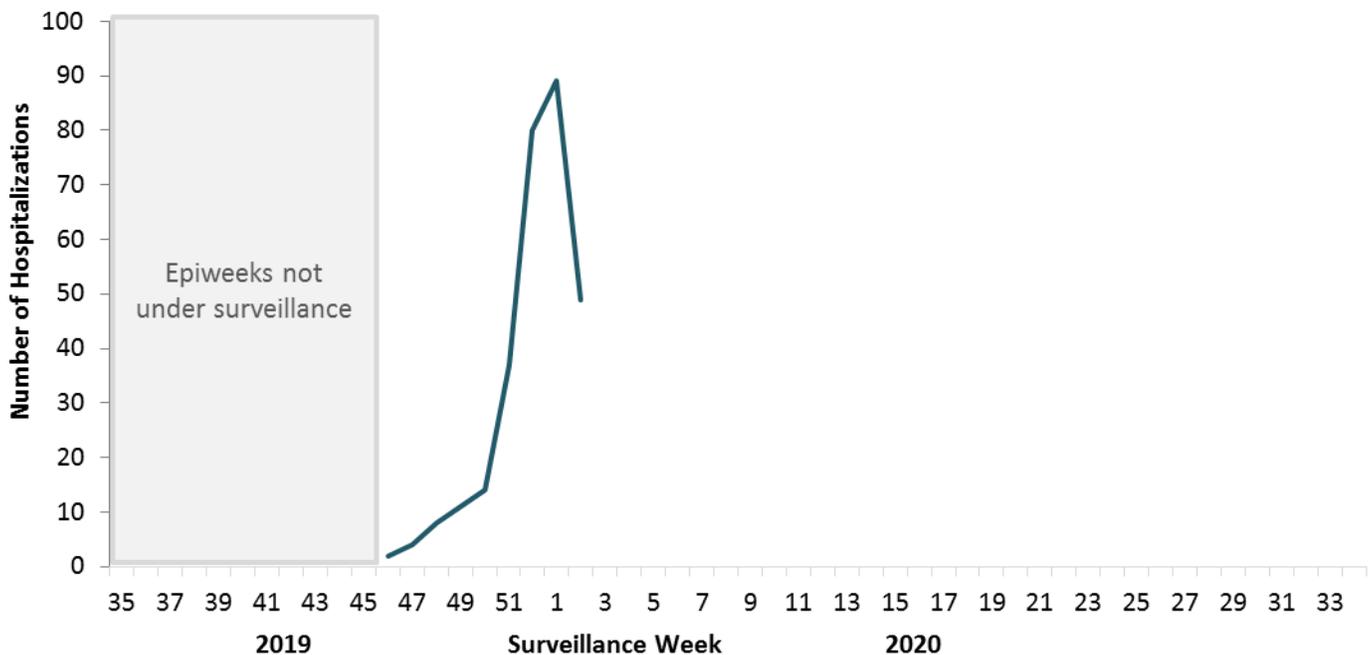


### Adult Influenza Hospitalizations and Deaths

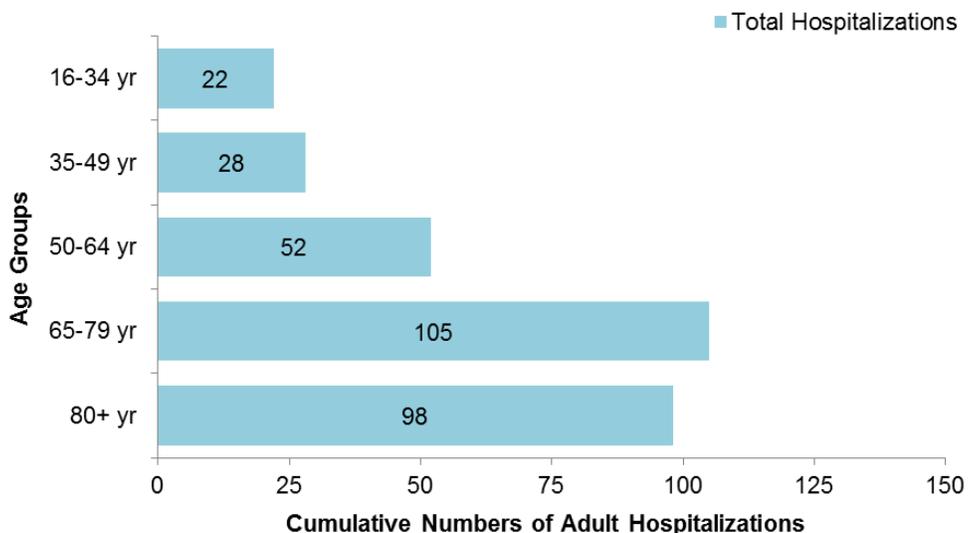
Surveillance of laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations by the Canadian Immunization Research Network (CIRN) Serious Outcomes Surveillance (SOS) network began on November 1st for the 2019-20 season. In week 02, the number of cases decreased compared to the previous week.

To date this season, 305 hospitalizations, 15 intensive care unit admissions, and less than five deaths have been reported (Figure 10). The majority of hospitalizations have been due to influenza A (88%), and among those subtyped (81) 89% 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 (32%) (Figure 11).

**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 2020-02**



**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 2020-02**



## Influenza Strain Characterizations

From September 1, 2019 to January 16, 2020, the National Microbiology Laboratory (NML) has characterized 384 influenza viruses (139 A(H3N2), 140 A(H1N1) and 105 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 35 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:

- 89% (31 out of 35) 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 140 A(H1N1) viruses characterized to date, 71% 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 105 influenza B viruses antigenically characterized this season, the vast majority (103) belonged to the B/Victoria lineage. Two viruses were antigenically characterized as similar to B/Phuket/3073/2013 (B/Yamagata lineage).

The majority (87%) 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).

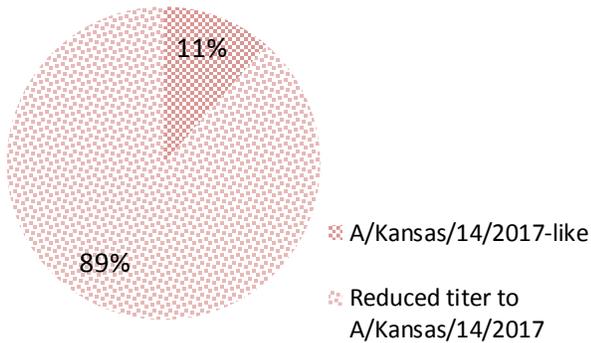
Sequence analysis showed that 100% (87) of the 90 B/Victoria lineage viruses showing reduced titre to B/Colorado/06/2017 had a three amino acid deletion (162-164) in the HA gene.

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 16, 2020**

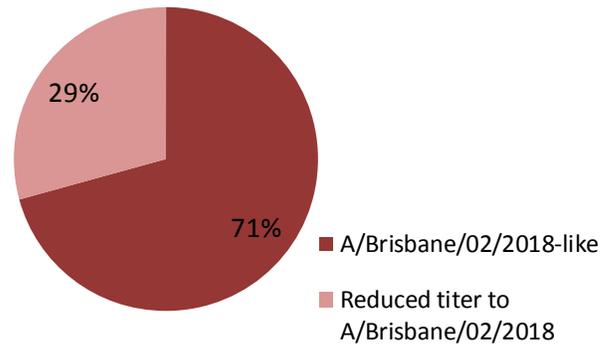
### A) A(H3N2) viruses

Number of viruses characterized: 35



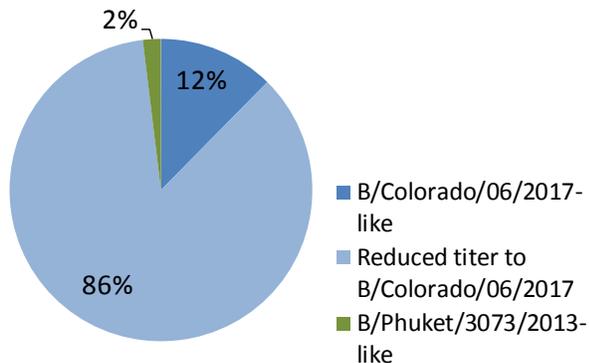
### B) A(H1N1) viruses

Number of viruses characterized: 140



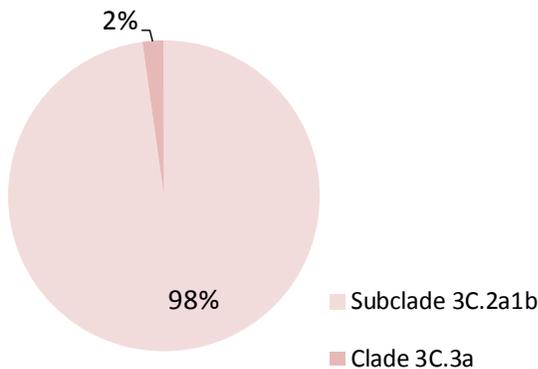
### C) B viruses

Number of viruses characterized: 105



**Figure 13 – Distribution of genetic clades among characterized A(H3N2) influenza viruses, Canada, September 1, 2019 to January 16, 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 16, 2020, the following results were reported:

### **Oseltamivir:**

228 influenza viruses (104 A(H3N2), 52 A(H1N1) and 72 B) were tested for resistance to oseltamivir:

- All influenza viruses tested were sensitive to oseltamivir.

### **Zanamivir:**

228 influenza viruses (104 A(H3N2), 52 A(H1N1) and 72 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.