

January 13 to January 19, 2019 (Week 03)

## Overall Summary

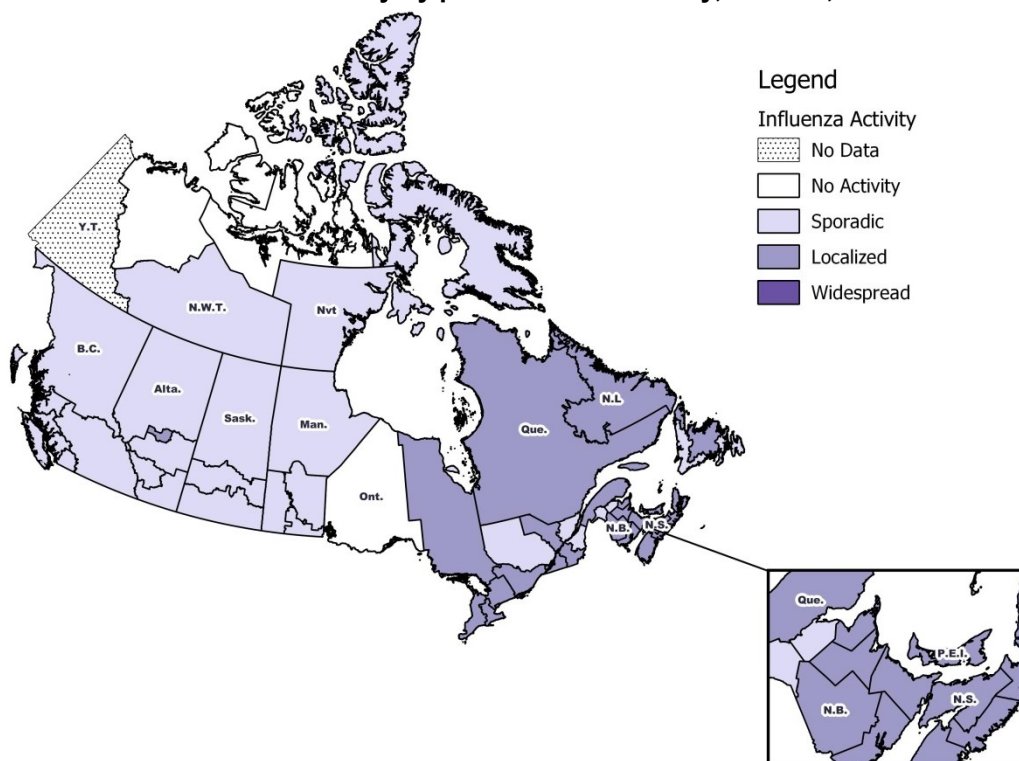
- In week 03, laboratory detections continued to decline from the previous week. Overall, influenza continues to circulate across Canada but the Eastern region is reporting higher levels of influenza activity than the rest of the country.
- Influenza A is the most common influenza virus circulating in Canada, and the majority of these viruses are A(H1N1)pdm09.
- The majority of lab confirmations and hospitalizations have been among individuals under the age of 65.
- Based on a recently published [Canadian influenza vaccine effectiveness study](#), mid-season vaccine effectiveness estimates indicate that this year's flu shot is approximately 72% effective against the predominant circulating strain. The study confirmed that significant protection was observed in all age groups, especially young children who have been disproportionately affected by influenza this season.

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

During week 03, the following influenza activity levels were reported (Figure 1):

- 23 regions reported localized activity: in Alta.(1), Ont.(6), Que.(4), N.L.(2) N.S.(4) P.E.I.(1) and N.B.(5).
- 26 regions reported sporadic activity: in B.C.(5), Alta.(4), Sask.(3), Man.(5), Que.(2), N.B.(2), N.L.(2), Nvt.(2), and N.W.T.(1).
- Three regions reported no activity: in Ont.(1), N.W.T.(1) and Nvt.(1).
- No data was reported by one region.

Figure 1 – Map of overall influenza/ILI activity by province and territory, Canada, week 2019-03



## Laboratory-Confirmed Influenza Detections

In week 03, the following results were reported from sentinel laboratories across Canada (Figure 2):

- The percentage of tests positive for influenza decreased to 20.8% in week 03.
- A total 2,313 laboratory detections of influenza were reported, of which 98% were influenza A.

To date this season 20,753 laboratory-confirmed influenza detections have been reported:

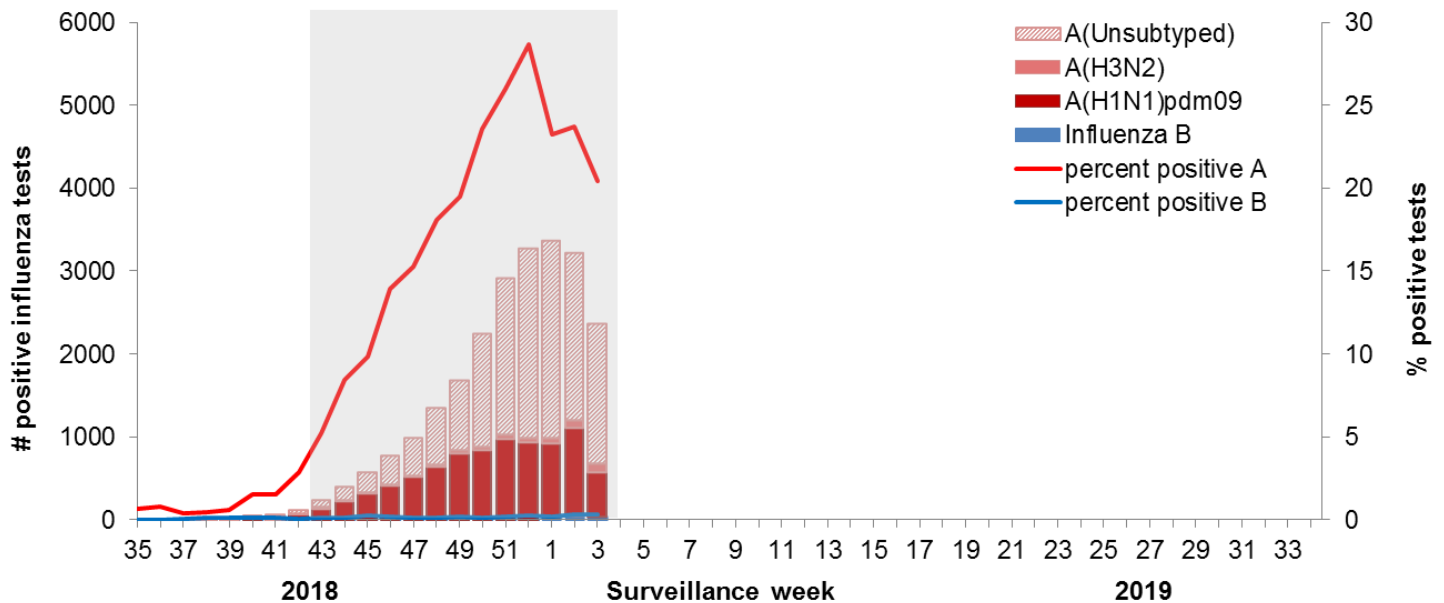
- 99% have been influenza A.
- Among the 7,565 influenza A viruses subtyped, 94% have been A(H1N1)pdm09.
- Provincial and territorial differences in influenza type/subtype distribution are observed (Figure 3).

To date this season, detailed information on age and type/subtype has been received for 18,923 laboratory-confirmed influenza cases (Table 1):

- 86% of all influenza A(H1N1)pdm09 detections have been reported in individuals younger than 65 years of age.
- 62% of all influenza A(H3N2) detections have been reported in adults 65 years of age and older.

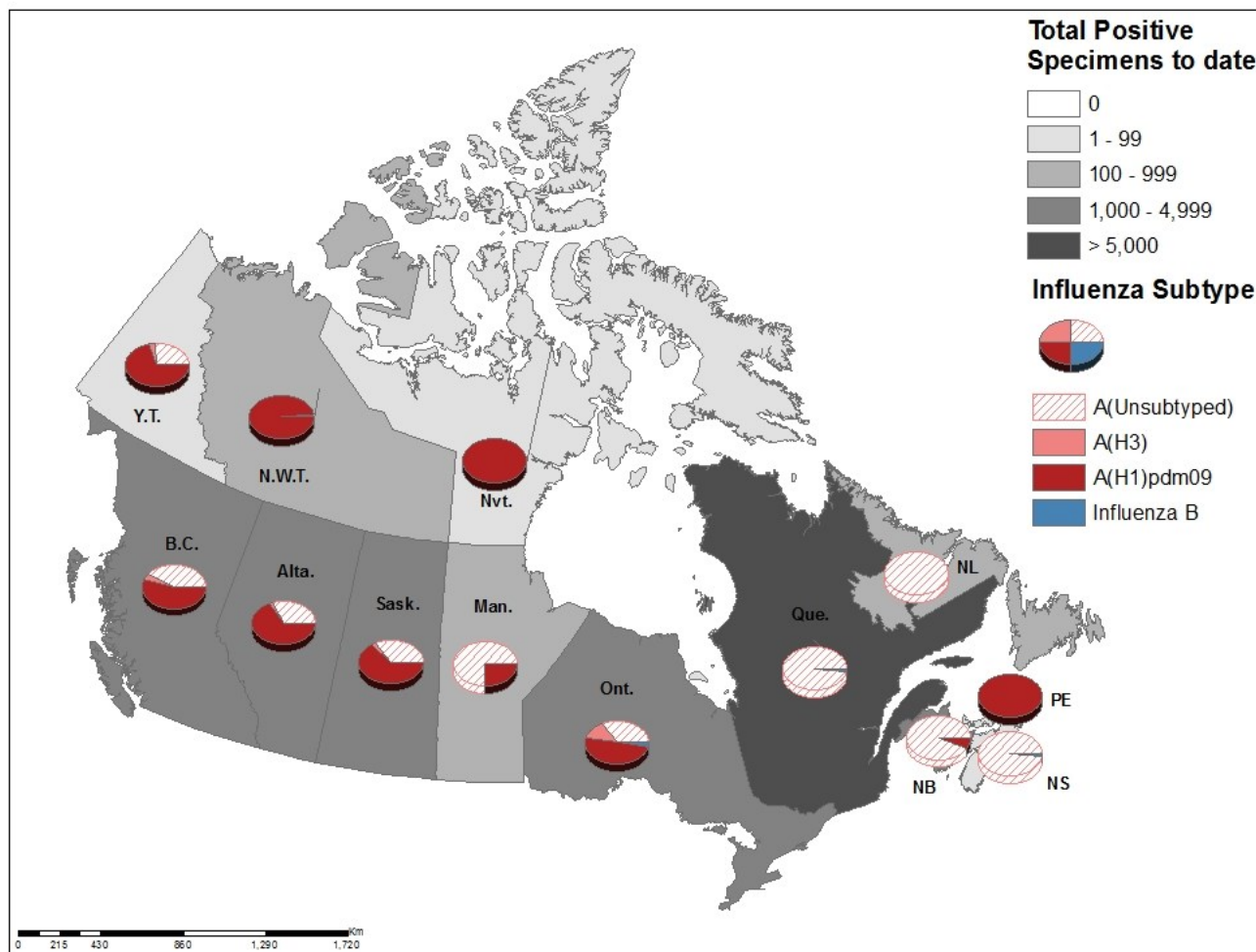
For more detailed weekly and cumulative influenza data, see the text descriptions for [Figures 2 and 3](#) or the [Respiratory Virus Detections in Canada Report](#).

**Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, weeks 2018-35 to 2019-03**



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 – Cumulative numbers of positive influenza specimens by type/subtype and province/territory, Canada, weeks 2018-35 to 2019-03**



**Table 1 – Cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting, Canada, weeks 2018-35 to 2019-03**

Age groups (years)	Cumulative (August 26, 2018 to January 19, 2019)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1)pdm09	A(H3N2)	A (UnS) <sup>1</sup>	Total	#	%
0-4	4072	1412	22	2638	32	4104	22%
5-19	2884	1198	21	1665	34	2918	15%
20-44	3975	1482	73	2420	26	4001	21%
45-64	3887	1325	85	2477	33	3920	21%
65+	3896	883	334	2679	84	3980	21%
<b>Total</b>	18714	6300	535	11879	209	18923	100%

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

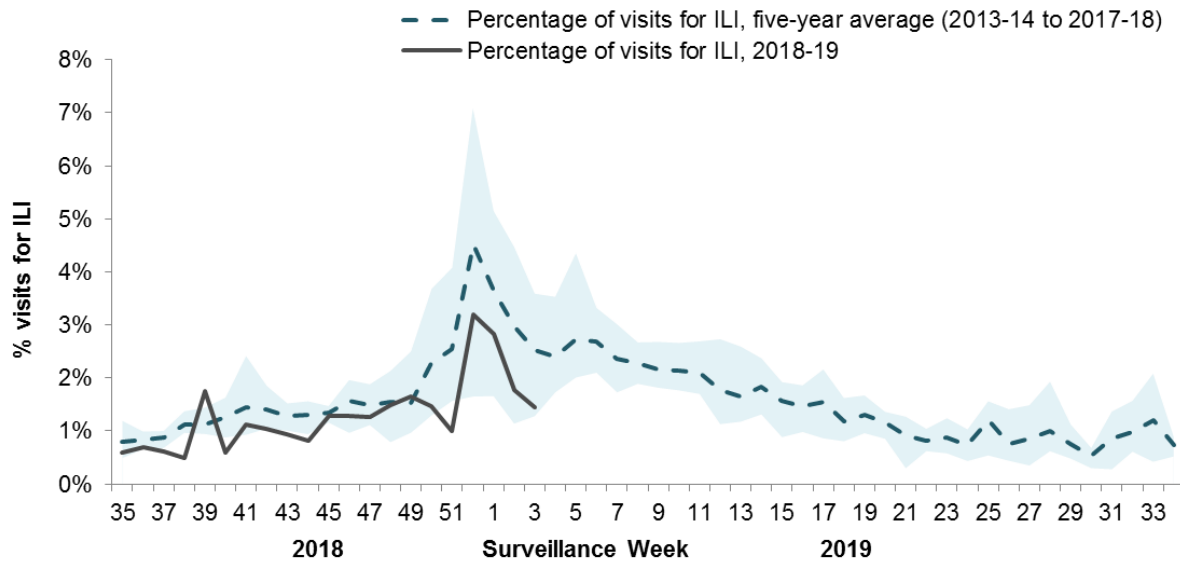
## Syndromic / Influenza-like Illness Surveillance

### Healthcare Practitioners Sentinel Syndromic Surveillance

In week 03, 1.4% of visits to healthcare professionals were due to influenza-like illness (ILI) (Figure 4). The percentage of visits for ILI is within expected levels.

**Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, weeks 2018-35 to 2019-03**

Number of Sentinels Reporting in Week 03: 99



The shaded area represents the maximum and minimum percentage of visits for ILI reported by week from seasons 2013-14 to 2017-18

### Participatory Syndromic Surveillance

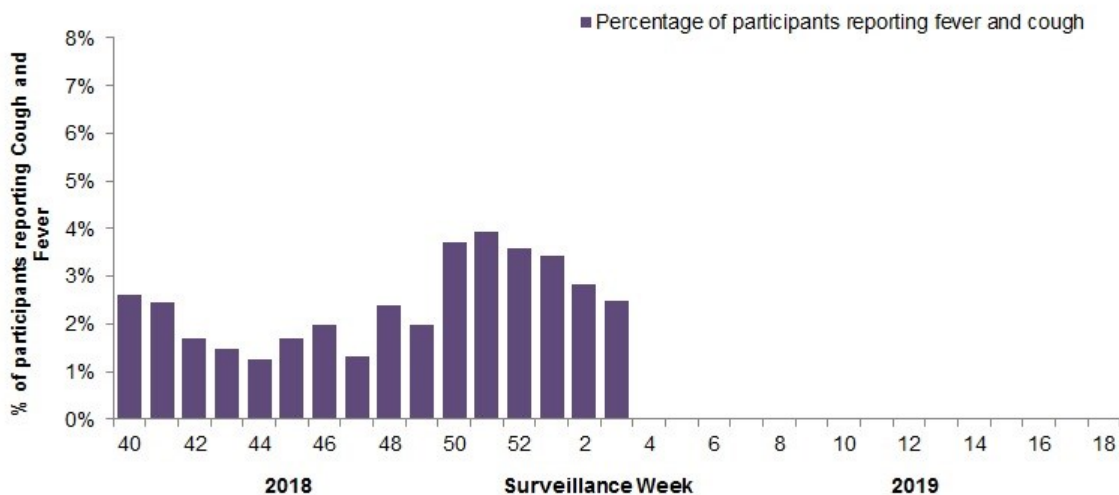
In week 03, 2,211 participants reported to FluWatchers, of which 55 (2.5%) reported symptoms of cough and fever (Figure 5).

Among the 55 participants who reported fever and cough:

- 13% consulted a healthcare professional;
- 73% reported days missed from work or school, resulting in a combined total of 108 missed days of work or school.

**Figure 5 – Percentage of participants reporting cough and fever, Canada, weeks 2018-40 to 2019-03**

Number of Participants Reporting in Week 03: 2,211



## Influenza Outbreak Surveillance

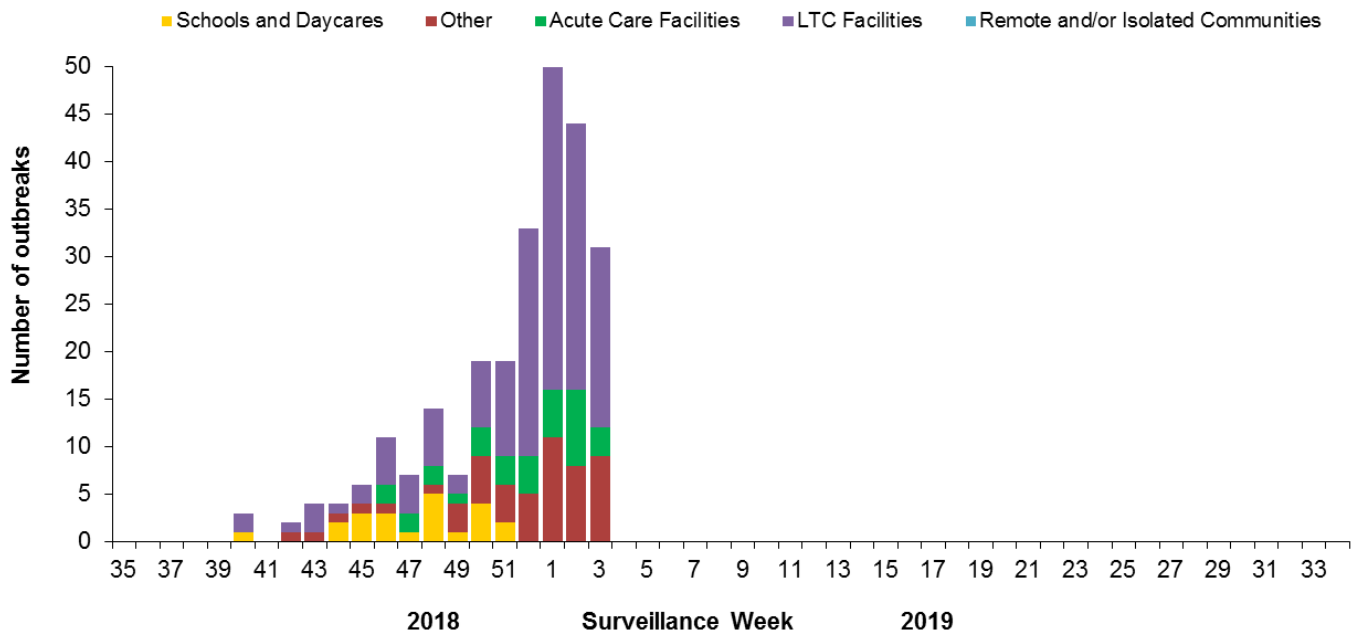
In week 03, 31 new laboratory-confirmed influenza outbreaks were reported: long-term care facilities (LTCF) (19), acute care facilities (3), and other settings (9). Thirteen new ILI outbreaks in long-term care facilities (5) and schools (8) were also reported in week 03.

To date this season, 254 laboratory-confirmed influenza outbreaks have been reported (Figure 6):

- 148 outbreaks were in LTCF, 22 were in schools, 33 in acute care facilities, and 51 were in other settings.
- Among the 239 outbreaks for which the influenza type was available 99% (236) were associated with influenza A.
- Among the 115 outbreaks for which the influenza A subtype was available:
  - 77% (89) were associated with influenza A(H1N1)pdm09;
  - 23% (26) were associated with A(H3N2),

To date this season, 58 ILI outbreaks have been reported; 38 occurred in LTCF, 17 in schools, and three in acute care facilities.

**Figure 6 – Number of new outbreaks of laboratory-confirmed influenza by report week, Canada, weeks 2018-35 to 2019-03**



## Severe Outcomes Influenza Surveillance

### Provincial/Territorial Influenza Hospitalizations and Deaths

To date this season, 1,637 influenza-associated hospitalizations have been reported by participating provinces and territories<sup>1</sup>.

#### Hospitalizations (Table 2):

- 99.6% (1,512) were associated with influenza A
- The highest estimated rate of hospitalization is among children under 5 years of age.

#### Intensive Care Unit (ICU) cases and deaths:

- To date this season 262 ICU admissions and 56 deaths have been reported.
  - 43% (113) of reported ICU admissions were in adults aged 45-64 years.
  - All reported deaths were associated with influenza A.

**Table 2 – Cumulative number and estimated rate of hospitalizations by age-group reported by participating provinces and territories<sup>1</sup>, Canada, weeks 2018-35 to 2019-03**

Age Groups (years)	Cumulative (August 26, 2018 to January 19, 2019)		
	Influenza A	Influenza B	Rate per 100,000 population
0-4	274	3	58.20
5-19	156	0	11.24
20-44	228	0	8.01
45-64	444	0	20.40
65+	529	3	43.73
<b>Total</b>	1631	6	
	99.6%	0.4%	

<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. The cumulative rate of hospitalizations is calculated using the total population by age-group in participating provinces and territories.

### Pediatric Influenza Hospitalizations and Deaths

In week 03, 68 pediatric ( $\leq 16$  years of age) hospitalizations with influenza have been reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 7).

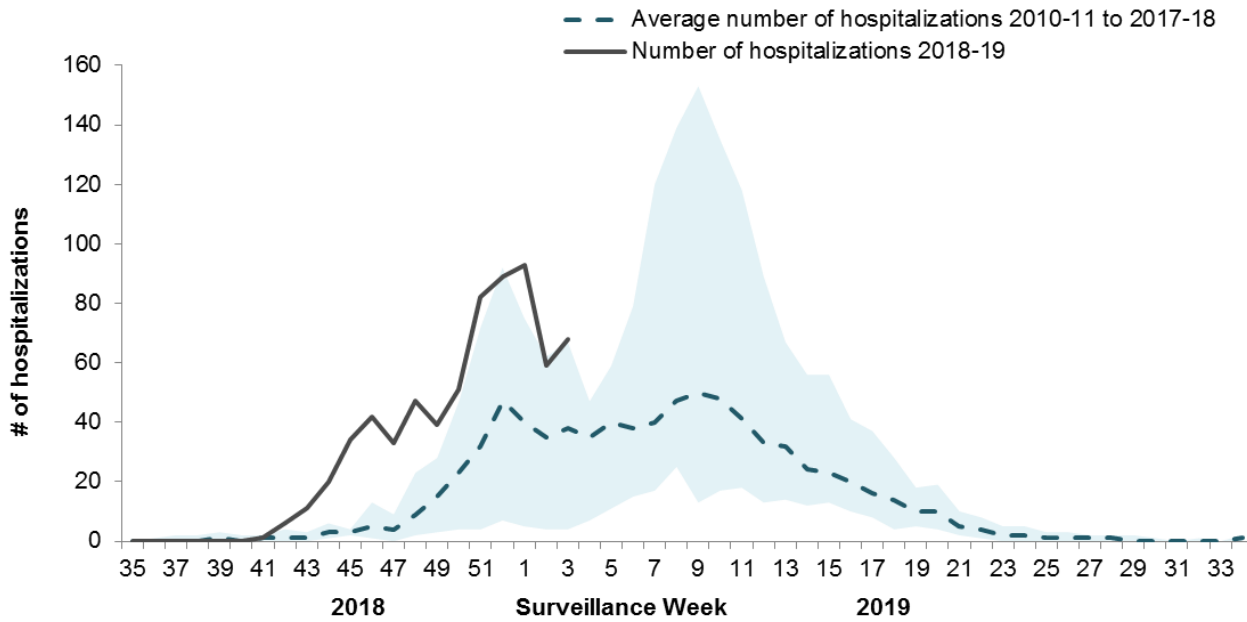
To date this season, 677 pediatric hospitalizations have been reported (Figure 8):

- 81% (551) of cases were in children 6 months to 9 years of age.
- 99% (670) of cases have been associated with influenza A.
- Among the 256 cases for which the influenza subtype was available, 250 (98%) were associated with A(H1N1)pdm09.

To date this season, 98 ICU admissions, and 10 deaths have been reported.

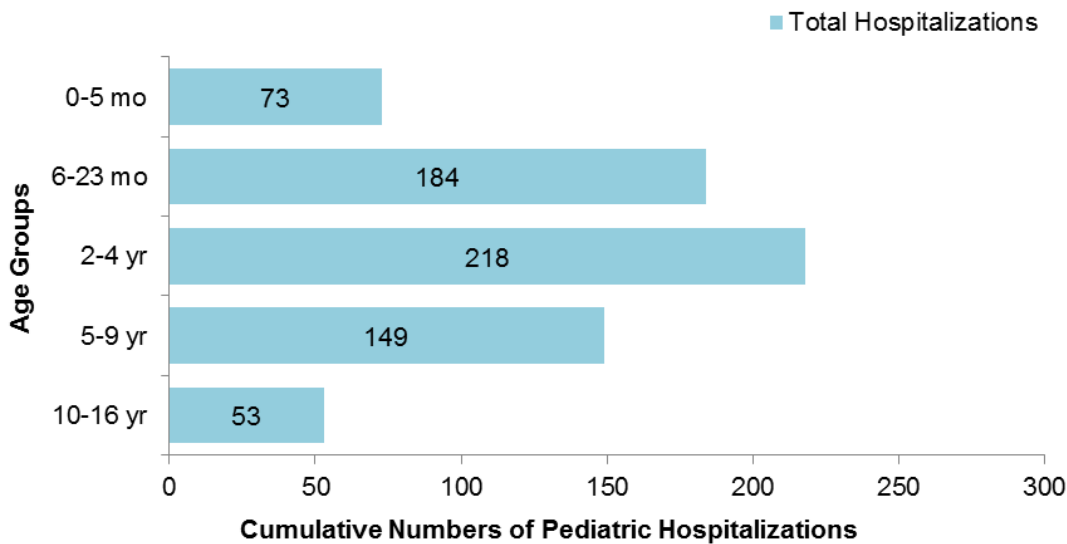
- 87% (100) of ICU admissions were in children 6 months to 9 years of age.
- 99% (114) of ICU admissions have been associated with influenza A.
- 80% (8) of deaths occurred in children 2 to 4 years of age.
- All deaths have been associated with influenza A.

**Figure 7 – Number of pediatric ( $\leq 16$  years of age) hospitalizations reported by the IMPACT network, by week, Canada, weeks 2018-35 to 2019-03**



The shaded area represents the maximum and minimum number of cases reported by week from seasons 2010-11 to 2017-18

**Figure 8 - Cumulative numbers of pediatric hospitalizations ( $\leq 16$  years of age) with influenza by age-group reported by the IMPACT network, Canada, weeks 2018-35 to 2019-03**



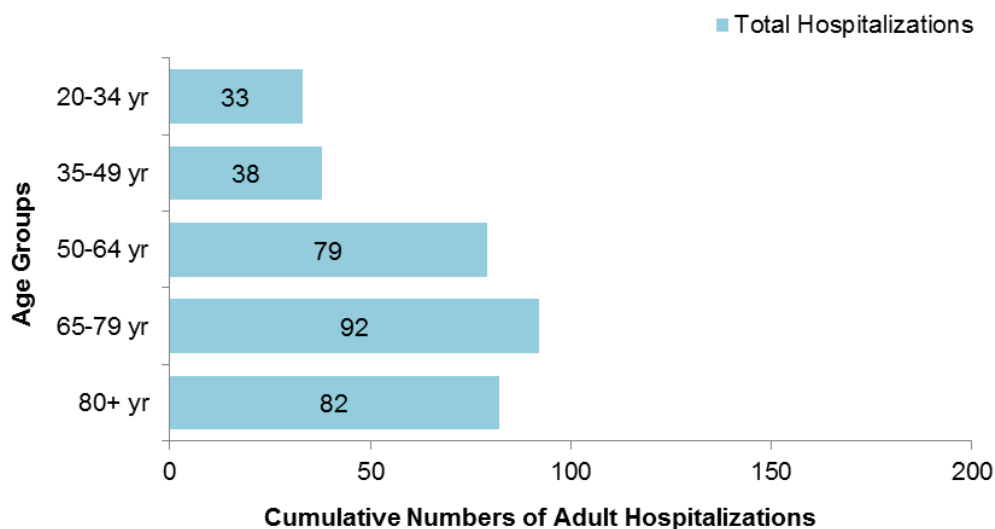
### Adult Influenza Hospitalizations and Deaths

Surveillance of laboratory-confirmed influenza-associated adult ( $\geq 16$  years of age) hospitalizations by the Canadian Immunization Research Network (CIRN) Serious Outcomes Surveillance (SOS) network began on November 1<sup>st</sup> for the 2018-19 season.

To date this season, 324 hospitalizations have been reported (Figure 9):

- 299 (92%) were associated with influenza A.
- A similar proportion of hospitalizations are reported among adults  $< 65$  years of age and adults  $\geq 65$  years of age
- The most commonly reported comorbidity among hospitalized cases was endocrine disorders, which were reported in 68% of hospitalized cases.

**Figure 9 - Cumulative numbers of adult hospitalizations (>20 years of age) with influenza by age-group reported by CIRN, Canada, 2018-19, weeks 2018-44 to 2019-03**



## Influenza Strain Characterizations

Since September 1, 2018, the National Microbiology Laboratory (NML) has characterized 728 influenza viruses (57 A(H3N2), 654 A(H1N1) and 17 B) that were received from Canadian laboratories.

### Genetic Characterization of Influenza A(H3N2):

40 influenza A(H3N2) viruses did not grow to sufficient hemagglutination titer for antigenic characterization by hemagglutination inhibition (HI) assay. Therefore, NML has performed genetic characterization to determine the genetic group identity of these viruses.

Sequence analysis of the HA gene of the viruses showed that:

- Six viruses belonged to genetic group 3C.2a.
- 33 viruses belonged to subclade 3C.2a1.
- One isolate could not be sequenced.

A/Singapore/INFIMH-16-0019/2016-like virus belongs to genetic group 3C.2a1 and is the influenza A(H3N2) component of the 2018-19 Northern Hemisphere influenza vaccine.

### Antigenic Characterization:

#### Influenza A (H3N2):

- 17 influenza A(H3N2) viruses were antigenically characterized as A/Singapore/INFIMH-16-0019/2016-like by HI testing using antiserum raised against egg-propagated A/Singapore/INFIMH-16-0019/2016.
- A/Singapore/INFIMH-16-0019/2016-like virus is the influenza A(H3N2) component of the 2018-19 Northern Hemisphere influenza vaccine.
- 13 influenza A (H3N2) viruses characterized belonged to genetic group 3C.2a1. Two viruses belonged to genetic group 3C.2a and two to 3C.3a.

#### Influenza A(H1N1):

- 641 A(H1N1) viruses characterized were antigenically similar to A/Michigan/45/2015, which is the influenza A(H1N1) component of the 2018-19 Northern Hemisphere influenza vaccine.
- 13 viruses showed reduced titer with ferret antisera raised against cell culture-propagated A/Michigan/45/2015



## Influenza B:

Influenza B viruses can be divided into two antigenically distinct lineages represented by B/Yamagata/16/88 and B/Victoria/2/87 viruses. The recommended influenza B components for the 2018-19 Northern Hemisphere influenza vaccine are B/Colorado/06/2017 (Victoria lineage) and B/Phuket/3073/2013 (Yamagata lineage).

- Three influenza B viruses were characterized as B/Colorado/06/2017, which belong to the Victoria lineage and are included as an influenza B component of the 2018-19 Northern Hemisphere influenza vaccine
- 14 influenza B viruses were characterized as B/Phuket/3073/2013-like, which belongs to the Yamagata lineage and is included as an influenza B component of the 2018-19 Northern Hemisphere **quadrivalent** influenza vaccine.

## Antiviral Resistance

### Antiviral Resistance – Amantadine:

304 influenza A (42 A(H3N2) and 262 A(H1N1)) viruses were tested for resistance to amantadine and it was found that:

- All 304 influenza A viruses were resistant to amantadine.

### Antiviral Resistance – Oseltamivir:

539 influenza viruses (48 A(H3N2), 475 A(H1N1) and 16 B) were tested for resistance to oseltamivir and it was found that:

- All 539 influenza viruses were sensitive to oseltamivir

### Antiviral Resistance – Zanamivir:

537 influenza viruses (48 A(H3N2), 473 H1N1 and 16 B) were tested for resistance to zanamivir and it was found that:

- All 537 influenza viruses were sensitive to zanamivir.

## Provincial and International Surveillance Links

- Alberta – [Influenza Surveillance](#)
- British Columbia – [Influenza Surveillance](#)
- Manitoba - [Seasonal Influenza Reports](#)
- New Brunswick – [Influenza Surveillance Reports](#)
- Newfoundland and Labrador – [Surveillance and Disease Reports](#)
- Nova Scotia – [Respiratory Watch Report](#)
- Ontario – [Ontario Respiratory Pathogen Bulletin](#)
- Prince Edward Island – [Influenza Summary](#)
- Saskatchewan – [Influenza Reports](#)
- Québec – [Système de surveillance de la grippe](#)
- Australia – [Influenza Surveillance Report and Activity Updates](#)
- European Centre for Disease Prevention and Control – [Surveillance reports and disease data on seasonal influenza](#)
- New Zealand – [Influenza Weekly Update](#)
- United Kingdom -- [Weekly Influenza Activity Reports](#)
- Pan-American Health Organization – [Influenza Situation Report](#)
- United States Centres for Disease Control and Prevention – [Weekly Influenza Summary Update](#)
- World Health Organization – [FluNet](#)

## Notes

To learn more about definitions, descriptions and the FluWatch program in general, see the [Overview of influenza monitoring in Canada](#) page. For more information on the flu, see our [Flu \(influenza\)](#) web page.

This [report](#) is available on the Government of Canada Influenza webpage.  
Ce [rapport](#) est disponible dans les deux langues officielles.

*We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.*