

November 4 to 10, 2018 (Week 45)

## Overall Summary

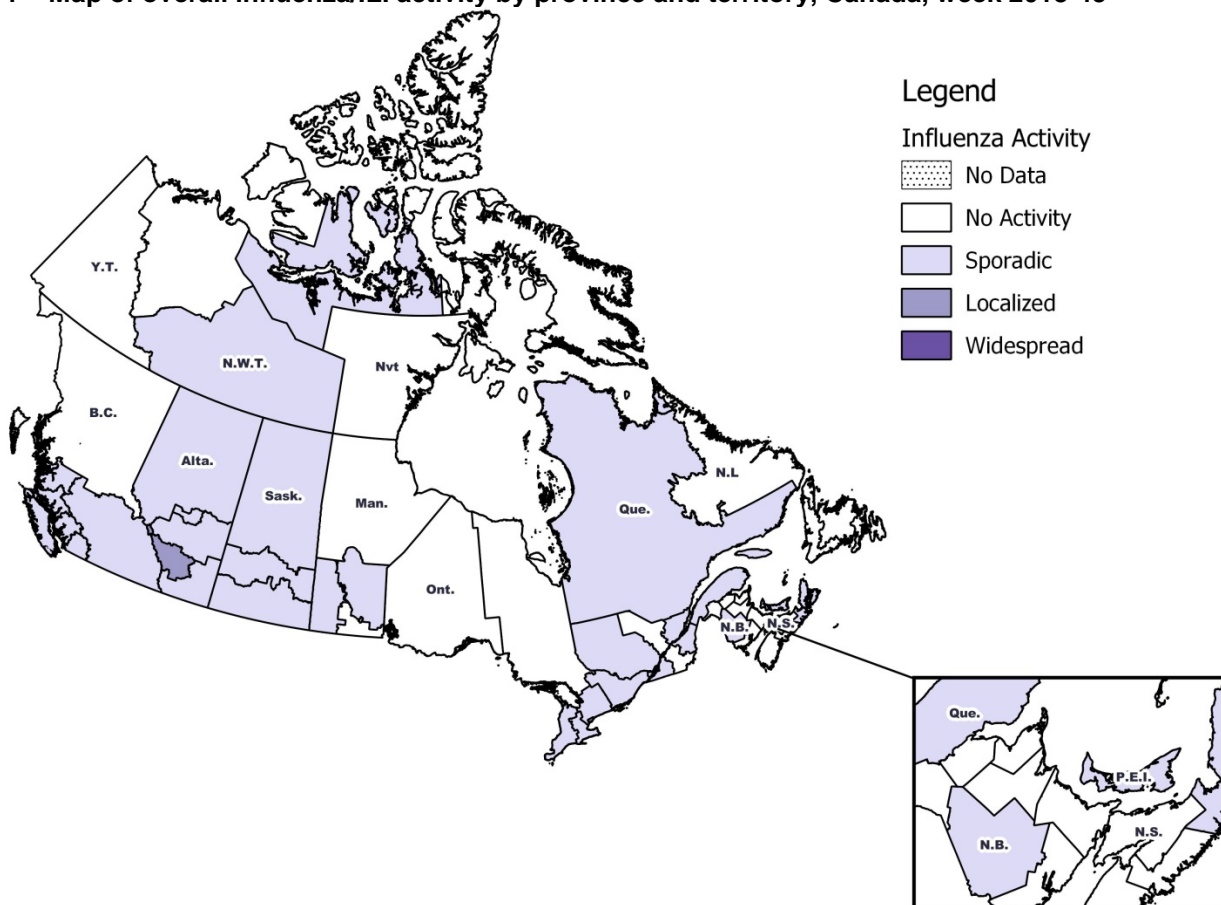
- Influenza activity continued to increase in week 45. The influenza season has started earlier than in recent years. The number of regions in Canada reporting sporadic or localized influenza activity in week 45 increased slightly compared to the previous week.
- Influenza A is the most common influenza virus circulating in Canada, and the majority of these viruses are A(H1N1)pdm09.
- The number of influenza-associated hospitalizations continued to increase in week 45. In particular, the number of pediatric hospitalizations is significantly higher than in recent years.
- The number of influenza outbreaks remains within expected levels. However, the settings in which outbreaks have been reported this season suggests that younger age-groups are being affected more than in previous seasons.

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

During week 45, influenza activity levels increased slightly compared to the previous week (Figure 1):

- Two regions in Alta. and Ont. reported localized activity.
- Sporadic activity was reported by 28 regions, in B.C.(4), Alta.(4), Sask.(3), Man.(3), Ont.(4), Que.(5), N.S.(1), N.B.(1), P.E.I.(1), N.W.T.(1) and Nvt.(1).
- No activity was reported by 23 regions.

**Figure 1 – Map of overall influenza/ILI activity by province and territory, Canada, week 2018-45**



## Laboratory-Confirmed Influenza Detections

In week 45, the following results were reported from sentinel laboratories across Canada (Figure 2):

- The percentage of tests positive for influenza continued to increase to 9.6% of tests positive .
- The percentage of tests positive for influenza A is higher for this time of year compared to the same period during the previous eight seasons. Laboratory detections of influenza have entered seasonal levels three weeks earlier than the median over the previous eight seasons.
- In week 45, 509 laboratory detections of influenza were reported, of which 97% were influenza A.

To date this season 1,523 laboratory-confirmed influenza detections have been reported (Figure 3):

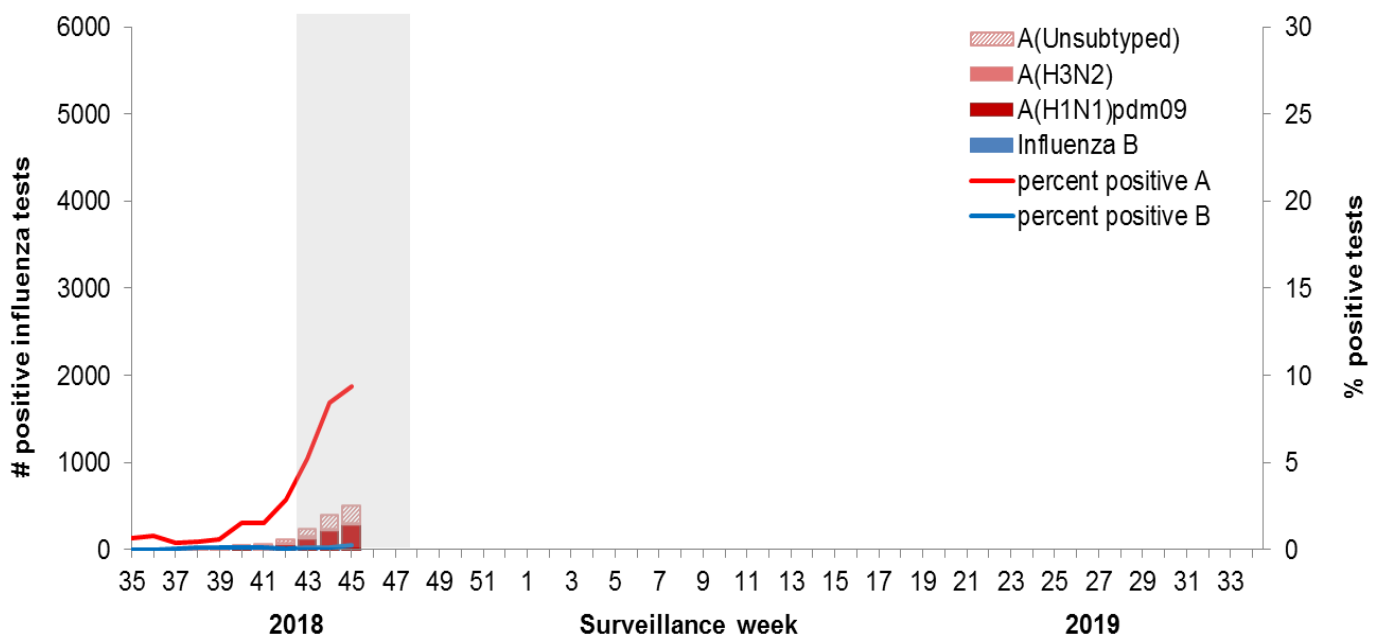
- 97% have been influenza A
- Among the 922 influenza A viruses subtyped, 80% have been A(H1N1)pdm09

To date this season, detailed information on age and type/subtype has been received for 1,457 laboratory-confirmed influenza cases (Table 1):

- Adults 20-44 years of age represent the largest proportion of cases (25%), followed by adults >65 years of age (20%).

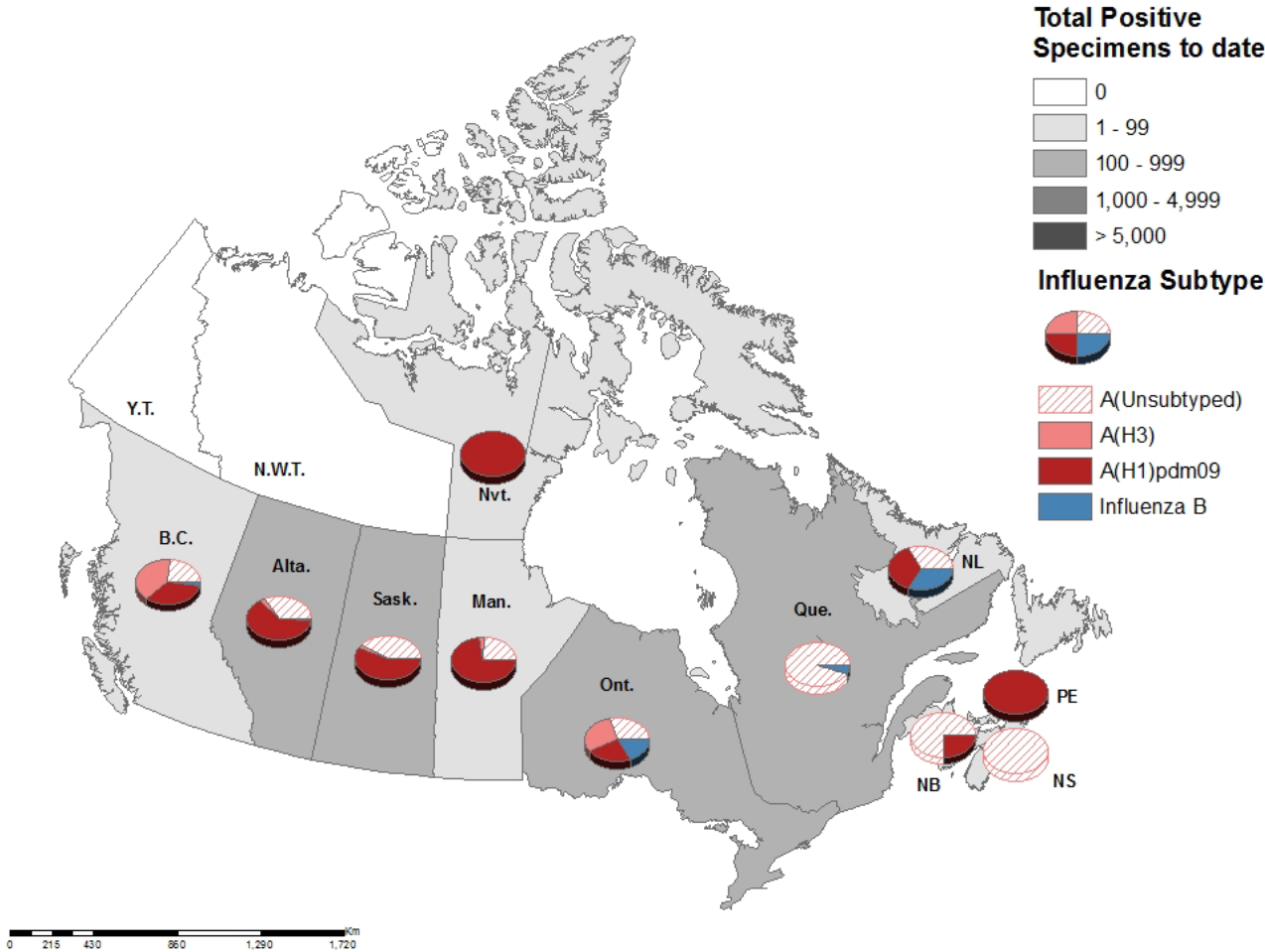
For more detailed weekly and cumulative influenza data, see the text descriptions for [Figures 2 and 3](#) or the [Respiratory Virus Detections in Canada Report](#).

**Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, weeks 2018-35 to 2018-45**



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 2018-45**



**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 2018-45**

Age groups (years)	Cumulative (August 26, 2018 to November 10, 2018)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1) pdm09	A(H3N2)	A (UnS) <sup>1</sup>	Total	#	%
0-4	>241	150	<5	91	<5	248	-
5-19	>266	159	<5	107	5	>271	-
20-44	365	193	12	160	8	373	-
45-64	263	137	25	101	6	269	-
65+	282	106	116	60	10	292	-
<b>Total</b>	<b>&gt;1264</b>	<b>745</b>	<b>&gt;153</b>	<b>519</b>	<b>&gt;29</b>	<b>&gt;1293</b>	<b>-</b>

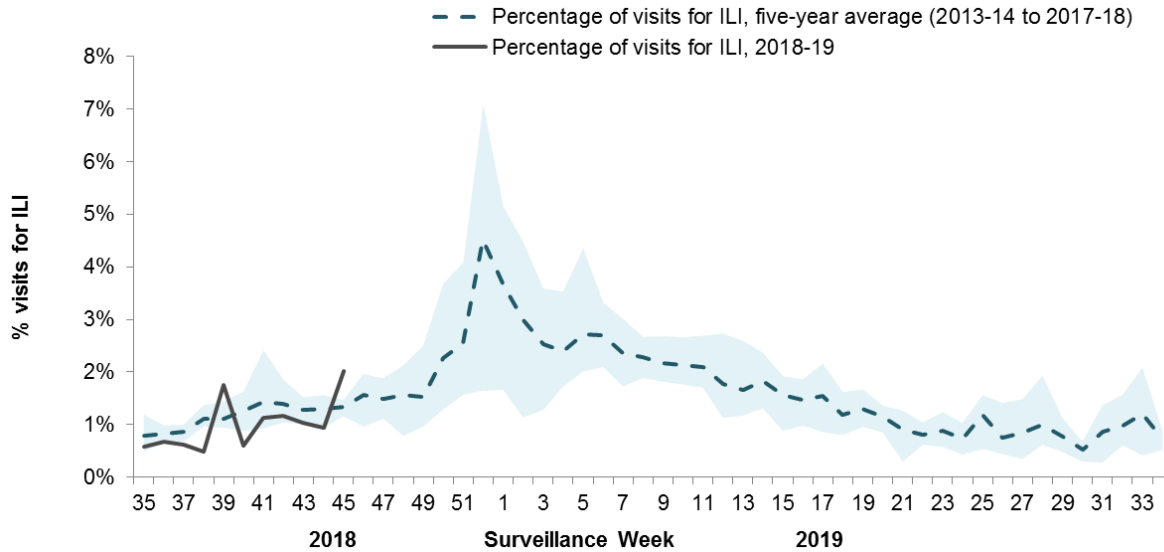
<sup>1</sup>UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

# Syndromic / Influenza-like Illness Surveillance

## Healthcare Practitioners Sentinel Syndromic Surveillance

In week 45, 2.0% 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 2018-45**  
 Number of Sentinels Reporting in Week 45: 90



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

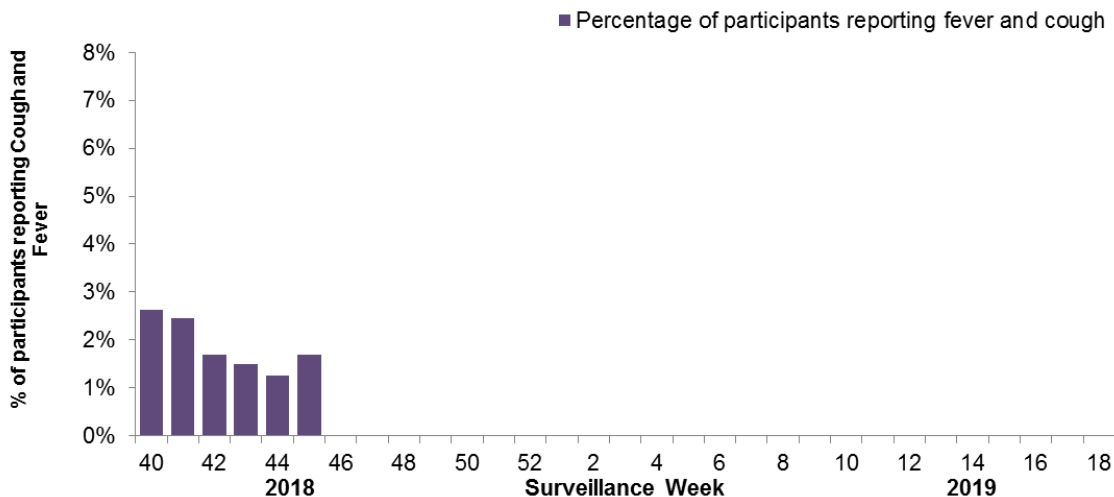
## Participatory Syndromic Surveillance

In week 45, 2,069 participants reported to FluWatchers, of which 35 (1.7%) reported symptoms of cough and fever (Figure 5).

Among the 35 participants who reported fever and cough:

- 20% consulted a healthcare professional
- 63% reported days missed from work or school, resulting in a combined total of 55 missed days of work or school.

**Figure 5 – Percentage of participants reporting cough and fever, Canada, weeks 2018-40 to 2018-45**  
 Number of Participants Reporting in Week 45: 2,069



## Influenza Outbreak Surveillance

In week 45, five new laboratory-confirmed influenza outbreaks were reported in a long-term care facility (LTCF) (1), schools (3), and another type of facility (1).

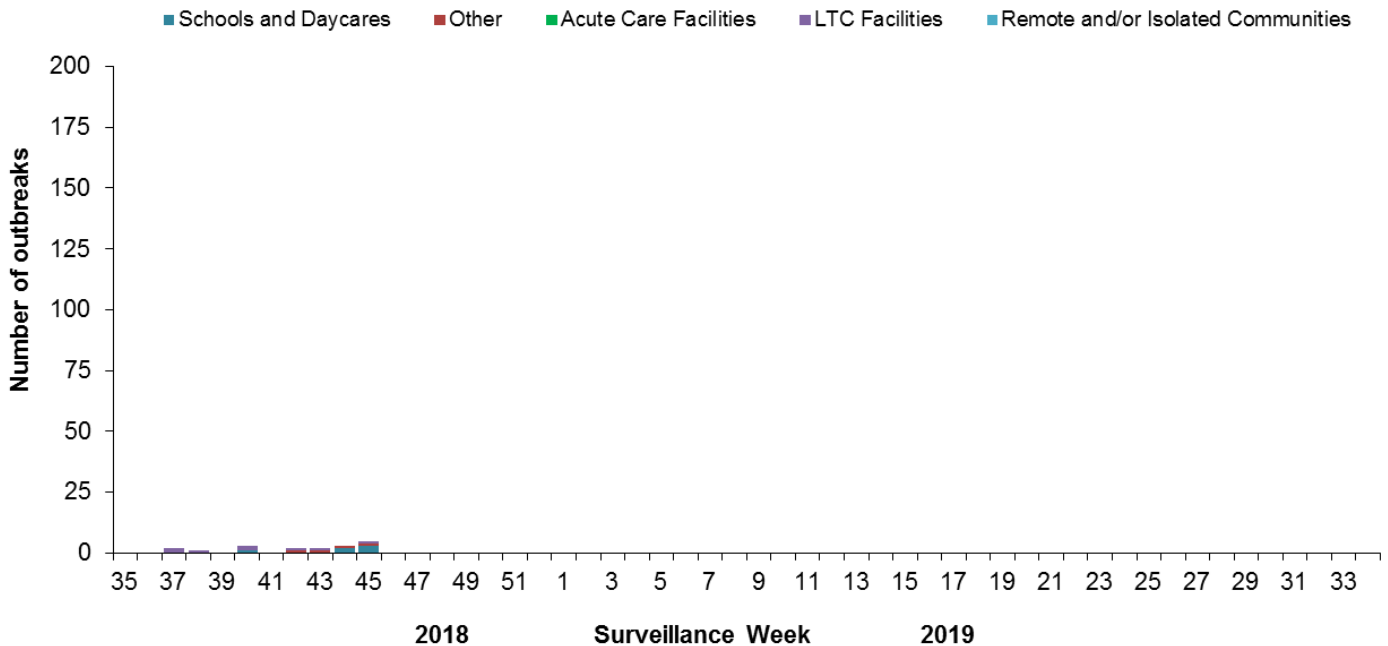
To date this season, 18 influenza outbreaks have been reported (Figure 6):

- Eight outbreaks were in LTCF, six were in schools, and four were in other settings.
- 15 of the 18 outbreaks were associated with influenza A.
- Among the outbreaks for which the influenza A subtype was available:
  - Six were associated with influenza A(H1N1)pdm09, reported from schools and other settings;
  - Four were associated with A(H3N2), reported from LTCF and other settings;
  - Two were associated with both A(H1N1)pdm09 and A(H3N2), reported from LTCF.
- Compared to previous seasons, a greater proportion of outbreaks have been reported in settings other than LTCF, suggesting an increased burden of disease in younger age-groups.

One new ILI outbreak in a LTCF was reported in week 45.

To date this season, 22 ILI outbreaks have been reported; 20 occurred in LTCF, one in a school, and one in a hospital.

**Figure 6 – Number of new outbreaks of laboratory-confirmed influenza by report week, Canada, weeks 2018-35 to 2018-45**



## Severe Outcomes Influenza Surveillance

### Provincial/Territorial Influenza Hospitalizations and Deaths

In week 45, 65 influenza-associated hospitalizations were reported, which is an increase compared to the previous week.

To date this season, 218 influenza-associated hospitalizations have been reported by participating provinces and territories<sup>1</sup>.

#### Hospitalizations (Table 2):

- 99% (216) were associated with influenza A
- Adults 65 years of age and older represent the largest proportion of hospitalizations (29%), followed by adults 45-64 years of age (24%).

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

- To date this season 28 ICU admissions and <5 deaths have been reported.

**Table 2 – Cumulative number of hospitalizations by age-group reported by participating provinces and territories<sup>1</sup>, Canada, weeks 2018-35 to 2018-45**

Age Groups (years)	Cumulative (August 26, 2018 to November 10, 2018)	
	Total	%
0-4	37	17%
5-19	32	15%
20-44	34	16%
45-64	52	24%
65+	63	29%
<b>Total</b>	<b>218</b>	<b>100%</b>

<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

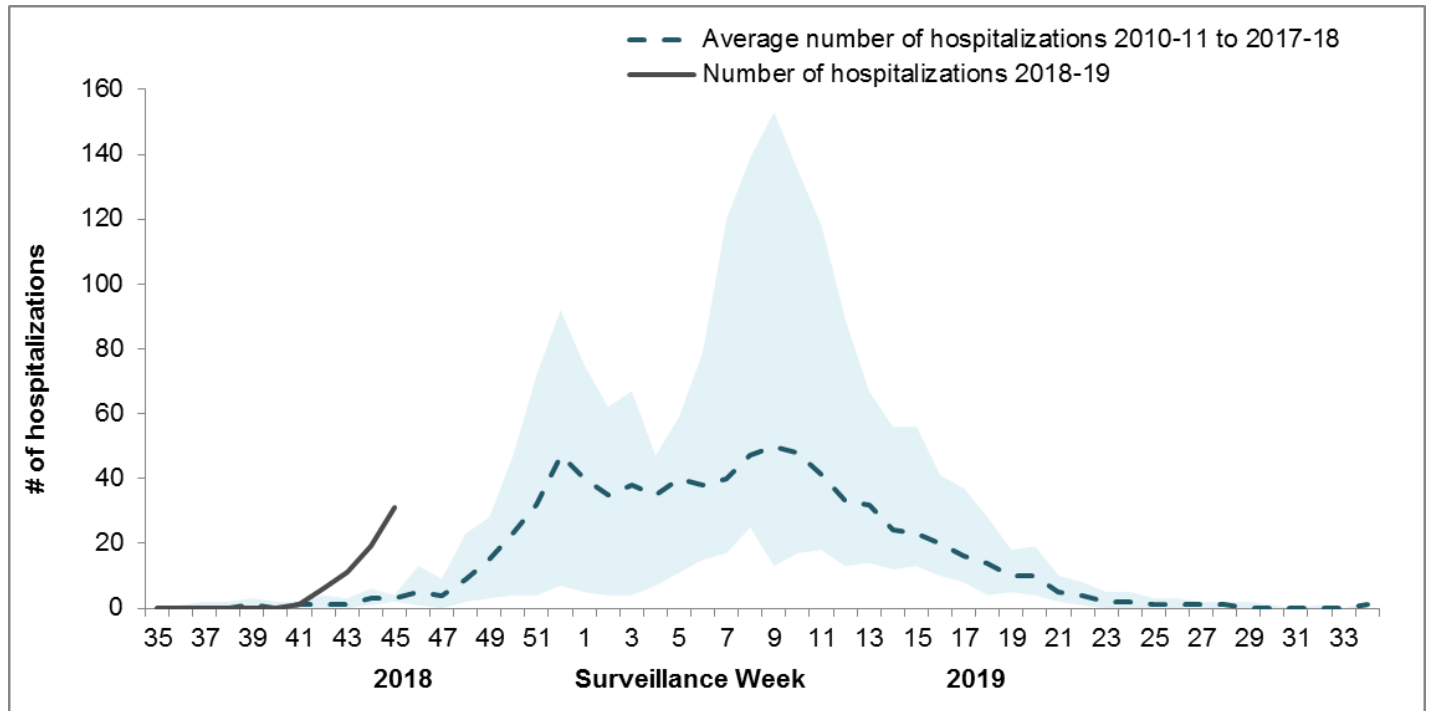
In week 45, 31 pediatric ( $\leq 16$  years of age) hospitalizations with influenza have been reported by the Immunization Monitoring Program Active (IMPACT) network. Pediatric hospitalizations reported by IMPACT are at levels not normally seen until late December (4-6 weeks earlier than in recent seasons).

To date this season, 68 pediatric hospitalizations have been reported:

- All 68 cases have been associated with influenza A.
- Among the 51 for which the influenza subtype was available, 50 were associated with A(H1N1)pdm09.
- 56 of the 68 cases (82%) were between 6 months and 9 years of age.

To date this season, 7 ICU admissions, and no deaths have been reported.

**Figure 7 – Number of pediatric ( $\leq 16$  years of age) hospitalizations reported by the IMPACT network, by week, Canada, weeks 2018-35 to 2018-45**



### 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, six hospitalizations have been reported, of which five were associated with influenza A and one with influenza B.

### Influenza Strain Characterizations

Since September 1, 2018, the National Microbiology Laboratory (NML) has characterized 43 influenza viruses (4 A(H3N2), 38 A(H1N1) and one B) that were received from Canadian laboratories.

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

Three 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:

- One virus belonged to genetic group 3C.2a.
- Two viruses belonged to subclade 3C.2a1.

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):**

- One influenza A(H3N2) virus was 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.
- The influenza A (H3N2) virus characterized belonged to genetic group 3C.2a1.

### **Influenza A(H1N1):**

- 38 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.

### **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).

- One influenza B virus was 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:**

23 influenza A (4 A(H3N2) and 19 A(H1N1)) viruses were tested for resistance to amantadine and it was found that:

- The four A(H3N2) viruses tested were resistant to amantadine.
- The 19 A(H1N1) viruses tested were resistant to amantadine.

### **Antiviral Resistance – Oseltamivir:**

49 influenza viruses (9 A(H3N2), 39 A(H1N1) and 1 B) were tested for resistance to oseltamivir and it was found that:

- The 9 A(H3N2) viruses tested were sensitive to oseltamivir
- The 39 A(H1N1) viruses tested were sensitive to oseltamivir
- The B virus was sensitive to oseltamivir

### **Antiviral Resistance – Zanamivir:**

48 influenza viruses (9 A(H3N2), 38 H1N1 and 1 B) were tested for resistance to zanamivir and it was found that:

- The 9 A(H3N2) viruses were sensitive to zanamivir.
- The 38 A(H1N1) viruses were sensitive to zanamivir.
- The B virus was 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.*