

December 2 to 8, 2018 (Week 49)

Overall Summary

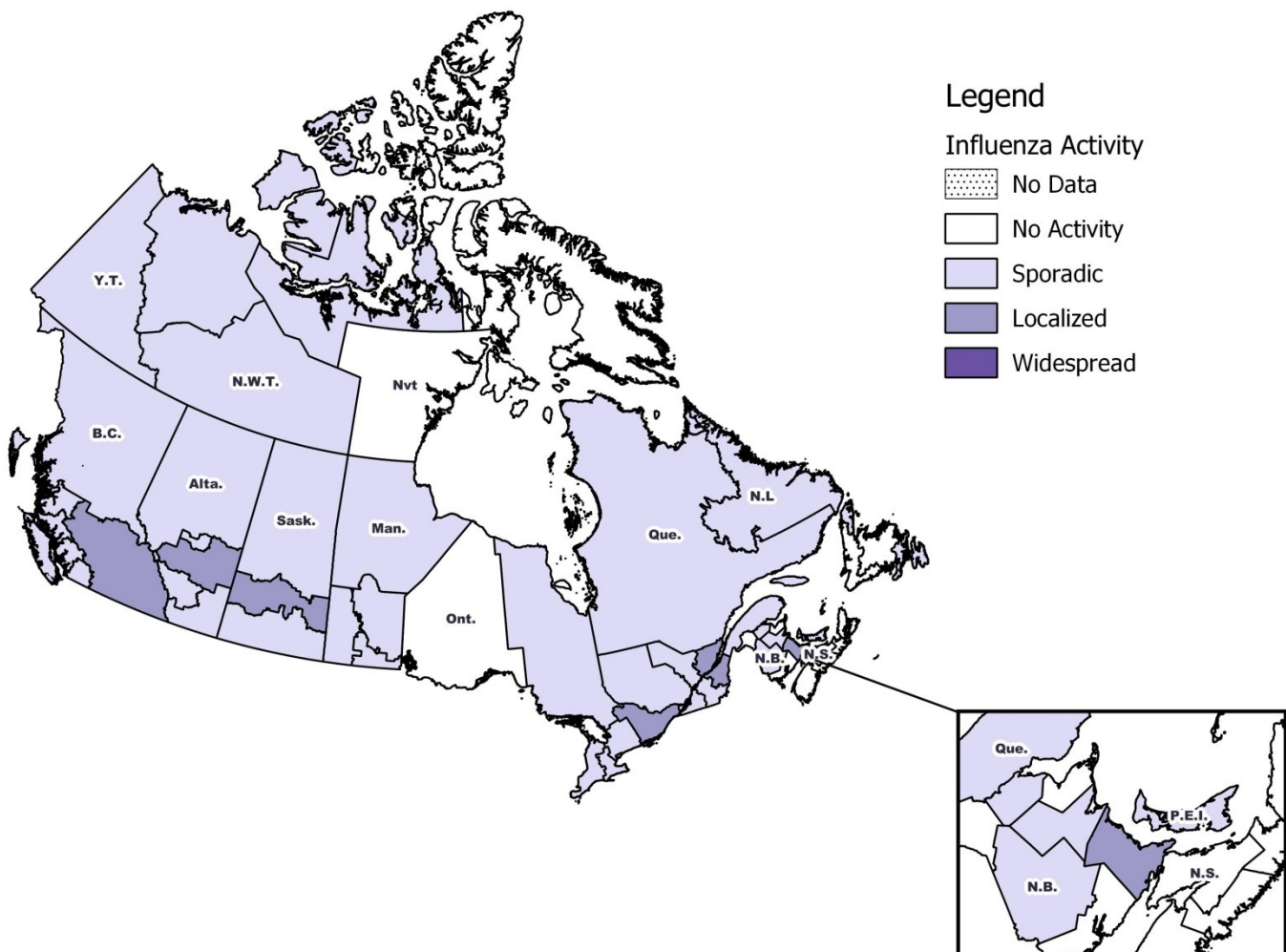
- Influenza activity continued to increase in week 49.
- Influenza A is the most common influenza virus circulating in Canada, and the majority of these viruses are A(H1N1)pdm09.
- The majority of lab confirmations and hospitalizations have been among individuals under the age of 65.

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

During week 49, influenza activity levels continued to increase (Figure 1):

- Eight regions reported localized activity: in B.C.(1), Alta.(1), Sask.(1), Man.(1), Ont.(2), Que.(1), and N.B.(1)
- Sporadic activity was reported by 34 regions: in B.C.(4), Alta.(4), Sask.(2), Man.(5), Ont.(4), Que.(5), N.B.(3), N.L.(2), P.E.I.(1), N.W.T.(2), Nvt.(1) and Yt.(1).
- No activity was reported by 12 regions.

Figure 1 – Map of overall influenza/ILI activity by province and territory, Canada, week 2018-49



Laboratory-Confirmed Influenza Detections

In week 49, the following results were reported from sentinel laboratories across Canada (Figure 2):

- The percentage of tests positive for influenza continued to 19.3%.
- 1,500 laboratory detections of influenza were reported, of which 99% were influenza A.

To date this season 6,158 laboratory-confirmed influenza detections have been reported (Figure 3):

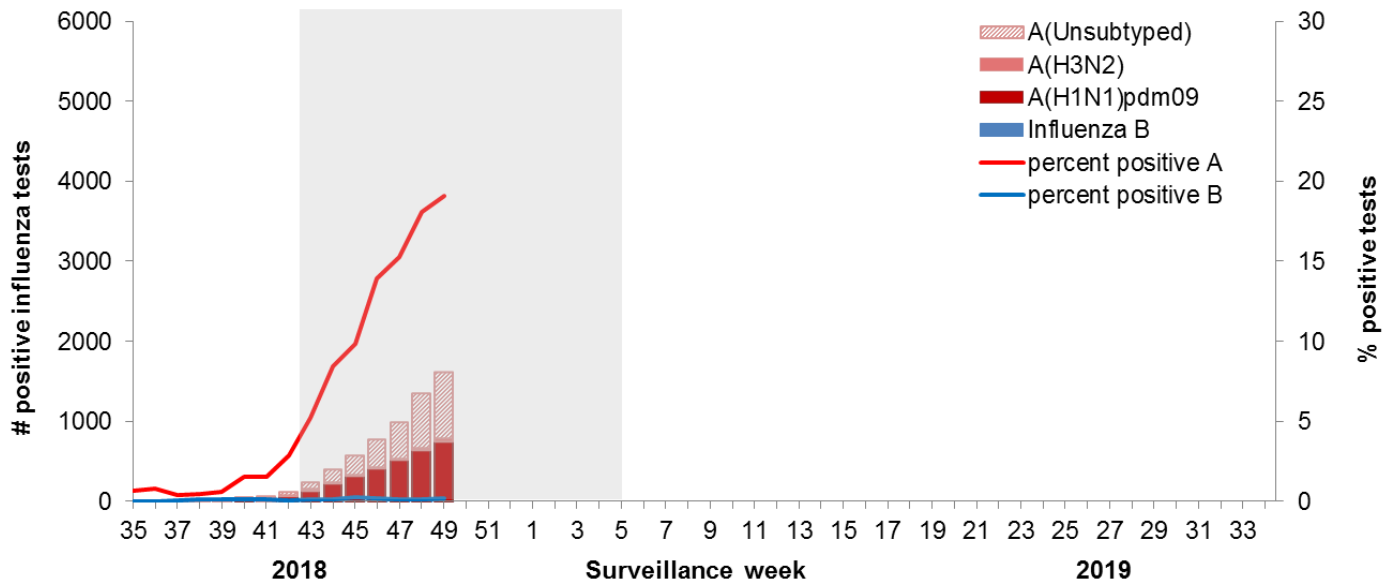
- 99% have been influenza A.
- Among the 3,209 influenza A viruses subtyped, 94% have been A(H1N1)pdm09.
- Provincial and territorial differences in influenza type/subtype distribution are observed.

To date this season, detailed information on age and type/subtype has been received for 6,024 laboratory-confirmed influenza cases (Table 1):

- 70% of all influenza A(H1N1)pdm09 detections have been reported in individuals younger than 45 years of age.
- 68% 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 2018-49



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 2018-49

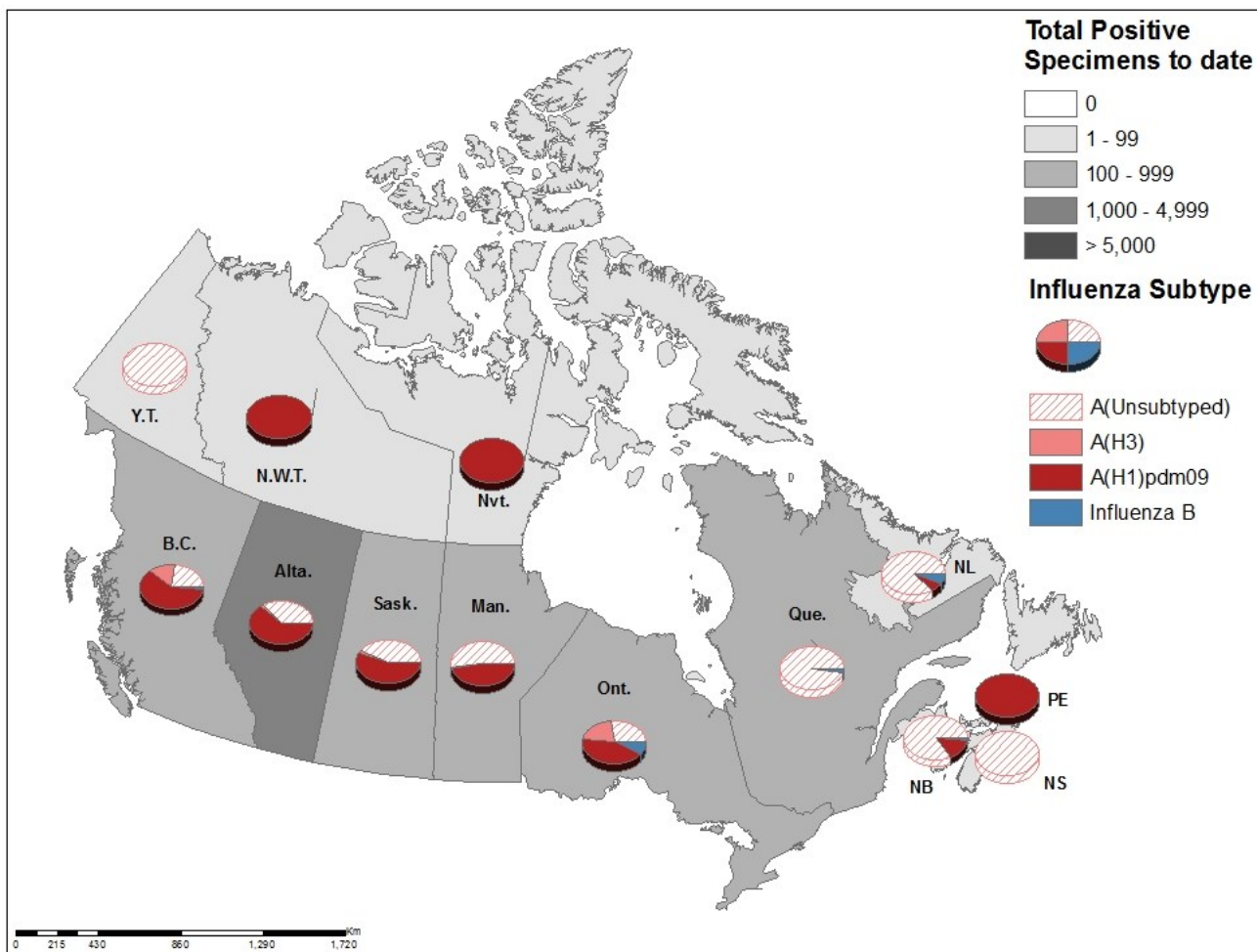


Table 1 – Cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting, Canada, weeks 2018-35 to 2018-49

Age groups (years)	Cumulative (August 26, 2018 to December 8, 2018)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1) pdm09	A(H3N2)	A (UnS) ¹		Total	#
0-4	1277	698	4	575	10	1287	21%
5-19	1247	637	5	605	15	1262	21%
20-44	1490	724	27	739	13	1503	25%
45-64	1131	555	43	533	9	1140	19%
65+	813	331	167	315	19	832	14%
Total	5958	2945	246	2767	66	6024	100%

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

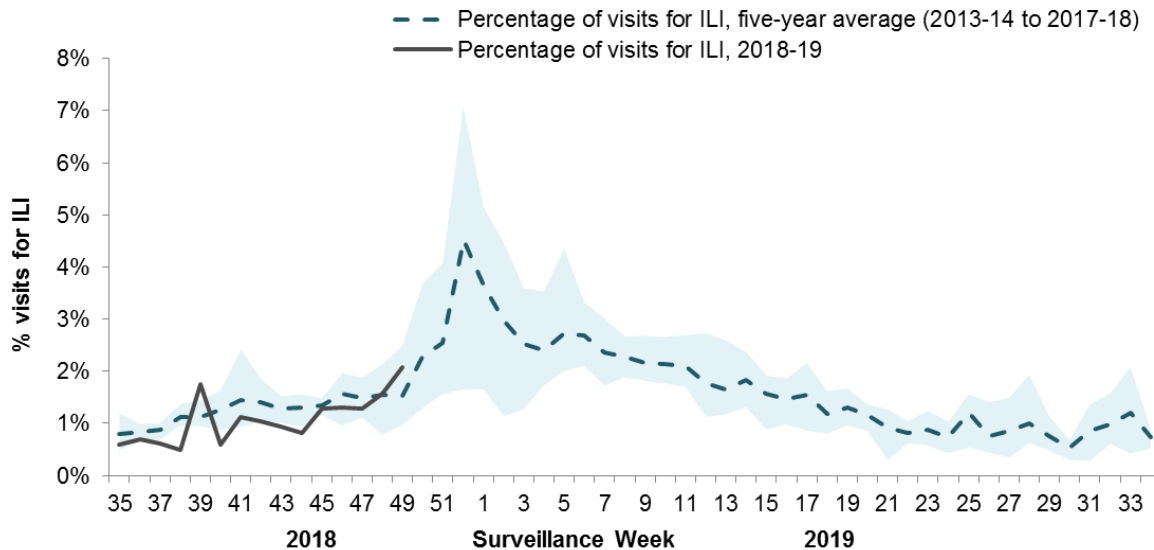
Syndromic / Influenza-like Illness Surveillance

Healthcare Practitioners Sentinel Syndromic Surveillance

In week 49, 2.1% 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 2018-49

Number of Sentinels Reporting in Week 49: 102



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

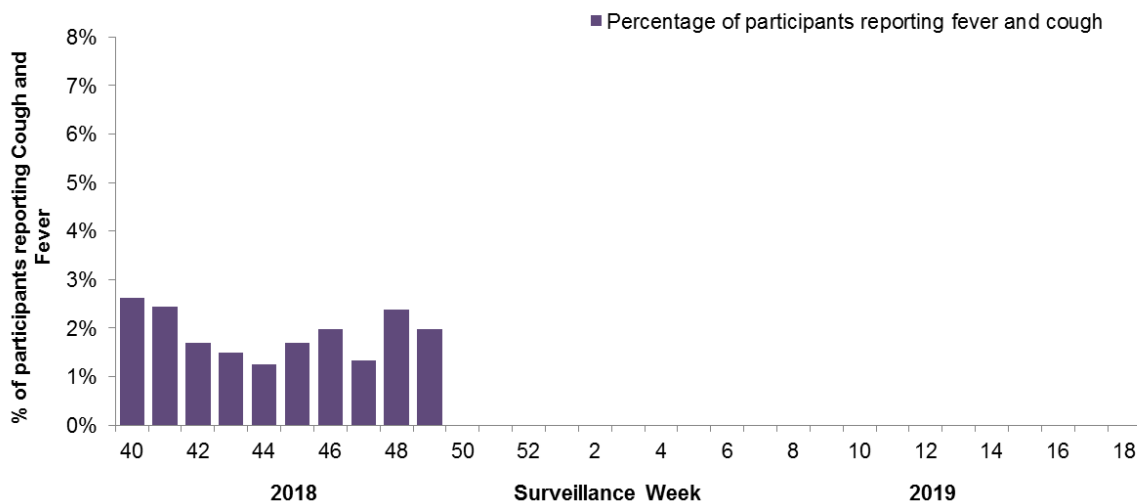
In week 49, 2,218 participants reported to FluWatchers, of which 44 (2.0%) reported symptoms of cough and fever (Figure 5).

Among the 44 participants who reported fever and cough:

- 27% consulted a healthcare professional;
- 80% reported days missed from work or school, resulting in a combined total of 118 missed days of work or school.

Figure 5 – Percentage of participants reporting cough and fever, Canada, weeks 2018-40 to 2018-49

Number of Participants Reporting in Week 49: 2,218



Influenza Outbreak Surveillance

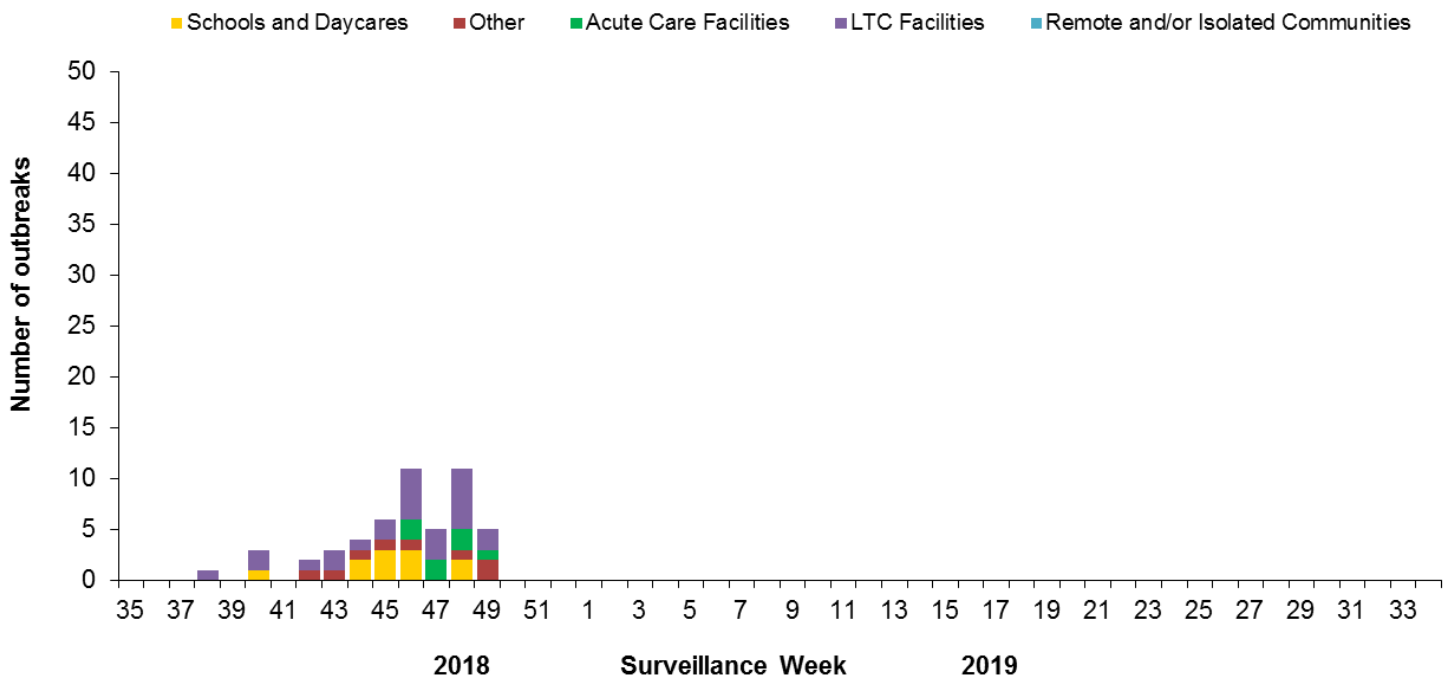
In week 49, five new laboratory-confirmed influenza outbreaks were reported in long-term care (2), acute care facilities (1) and other settings (2). Four new ILI outbreaks were also reported in week 49.

To date this season, 52 laboratory-confirmed influenza outbreaks have been reported (Figure 6):

- 25 outbreaks were in LTCF, 11 were in schools, seven in acute care facilities, and eight were in other settings.
- All of the 43 outbreaks for which the influenza type was available were associated with influenza A.
- Among the 33 outbreaks for which the influenza A subtype was available:
 - 25 were associated with influenza A(H1N1)pdm09;
 - 8 were associated with A(H3N2),

To date this season, 35 ILI outbreaks have been reported; 26 occurred in LTCF, six 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 2018-49



Severe Outcomes Influenza Surveillance

Provincial/Territorial Influenza Hospitalizations and Deaths

To date this season, 705 influenza-associated hospitalizations have been reported by participating provinces and territories¹.

Hospitalizations (Table 2):

- 99% (702) 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 90 ICU admissions and 16 deaths have been reported.

Table 2 – Cumulative number and estimated rate of hospitalizations by age-group reported by participating provinces and territories¹, Canada, weeks 2018-35 to 2018-49

Age Groups (years)	Cumulative (August 26, 2018 to December 8, 2018)		
	Influenza A	Influenza B	Rate per 100,000 population
0-4	131	0	27.52
5-19	88	0	6.34
20-44	115	0	4.04
45-64	182	0	8.36
65+	186	3	15.53
Total	702	3	
%	100%	0%	

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. 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 49, 37 pediatric (≤ 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 (Figure 7).

To date this season, 228 pediatric hospitalizations have been reported (Figure 8):

- All but three cases have been associated with influenza A.
- Among the 154 cases for which the influenza subtype was available, 152 (98.7%) were associated with A(H1N1)pdm09.

To date this season, 33 ICU admissions, and no deaths have been reported.

Figure 7 – Number of pediatric (≤16 years of age) hospitalizations reported by the IMPACT network, by week, Canada, weeks 2018-35 to 2018-49

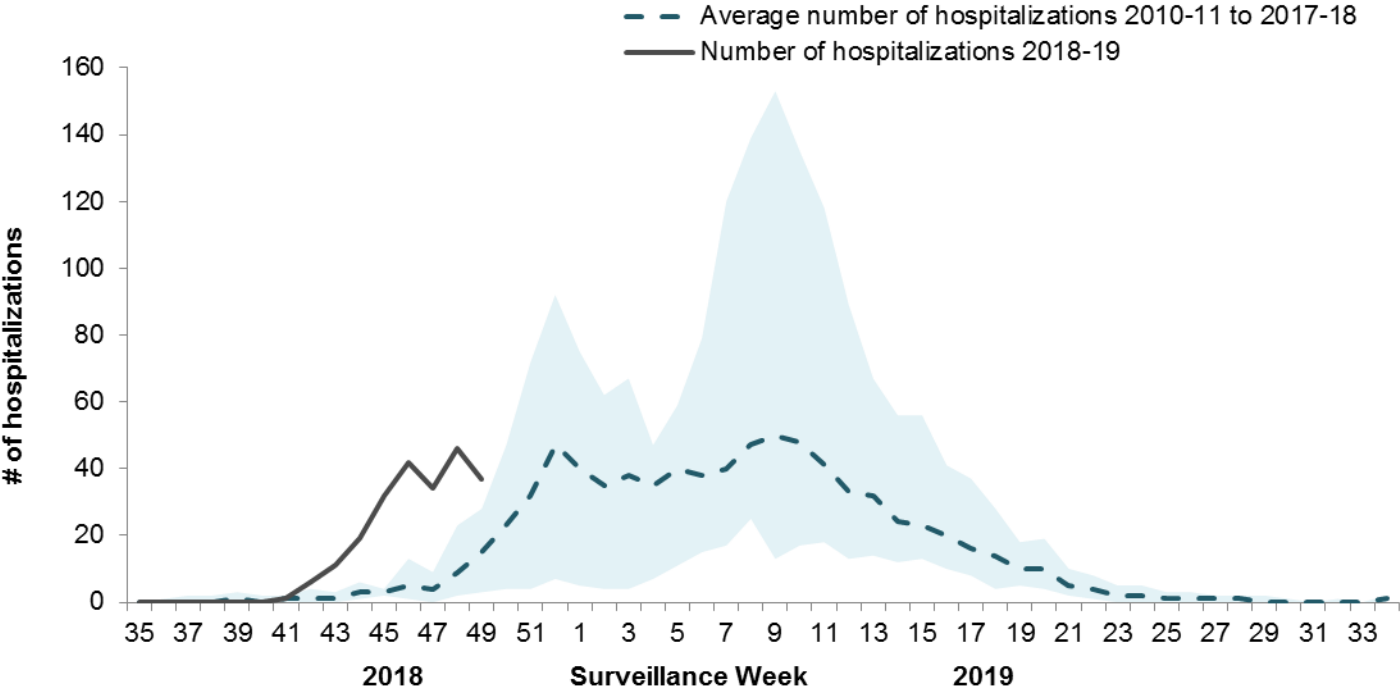
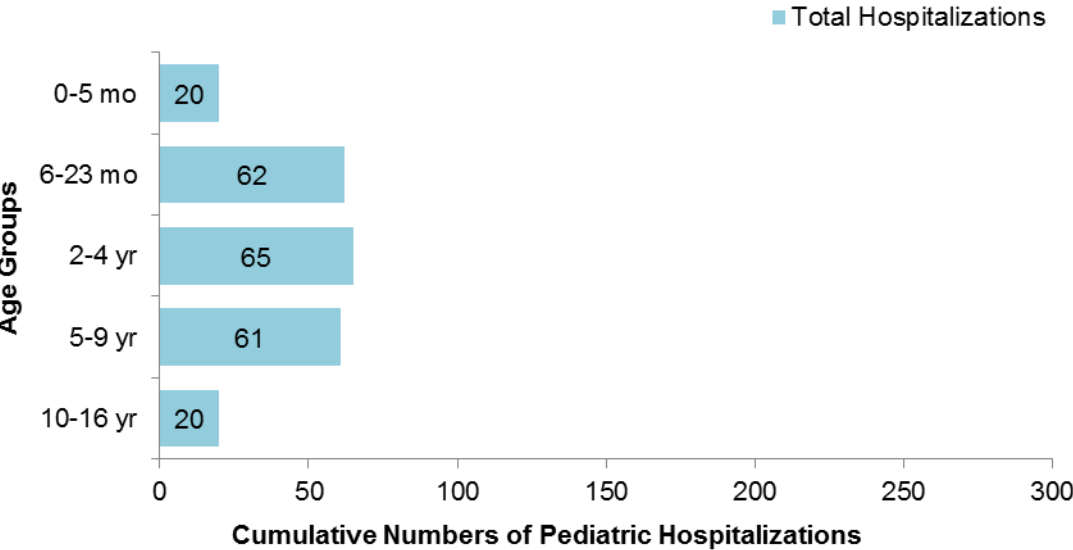


Figure 8 - Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza by age-group reported by the IMPACT network, Canada, weeks 2018-35 to 2018-49



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 2018-19 season.

To date this season, 38 hospitalizations have been reported:

- 33 (87%) were associated with influenza A and 5 with influenza B.
- 20 of the 38 cases (53%) were adults 65 years of age and older.

Influenza Strain Characterizations

Since September 1, 2018, the National Microbiology Laboratory (NML) has characterized 182 influenza viruses (25 A(H3N2), 144 A(H1N1) and 13 B) that were received from Canadian laboratories.

Genetic Characterization of Influenza A(H3N2):

23 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:

- Three viruses belonged to genetic group 3C.2a.
- 20 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):

- Two 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 two influenza A (H3N2) viruses characterized belonged to genetic group 3C.2a1.

Influenza A(H1N1):

- 144 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).

- 13 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:

132 influenza A (20 A(H3N2) and 112 A(H1N1)) viruses were tested for resistance to amantadine and it was found that:

- All 132 influenza A viruses were resistant to amantadine.

Antiviral Resistance – Oseltamivir:

185 influenza viruses (22 A(H3N2), 150 A(H1N1) and 13 B) were tested for resistance to oseltamivir and it was found that:

- All 185 influenza viruses were sensitive to oseltamivir

Antiviral Resistance – Zanamivir:

185 influenza viruses (22 A(H3N2), 150 H1N1 and 13 B) were tested for resistance to zanamivir and it was found that:

- All 185 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.