

January 20 to January 26, 2019 (Week 04)

Overall Summary

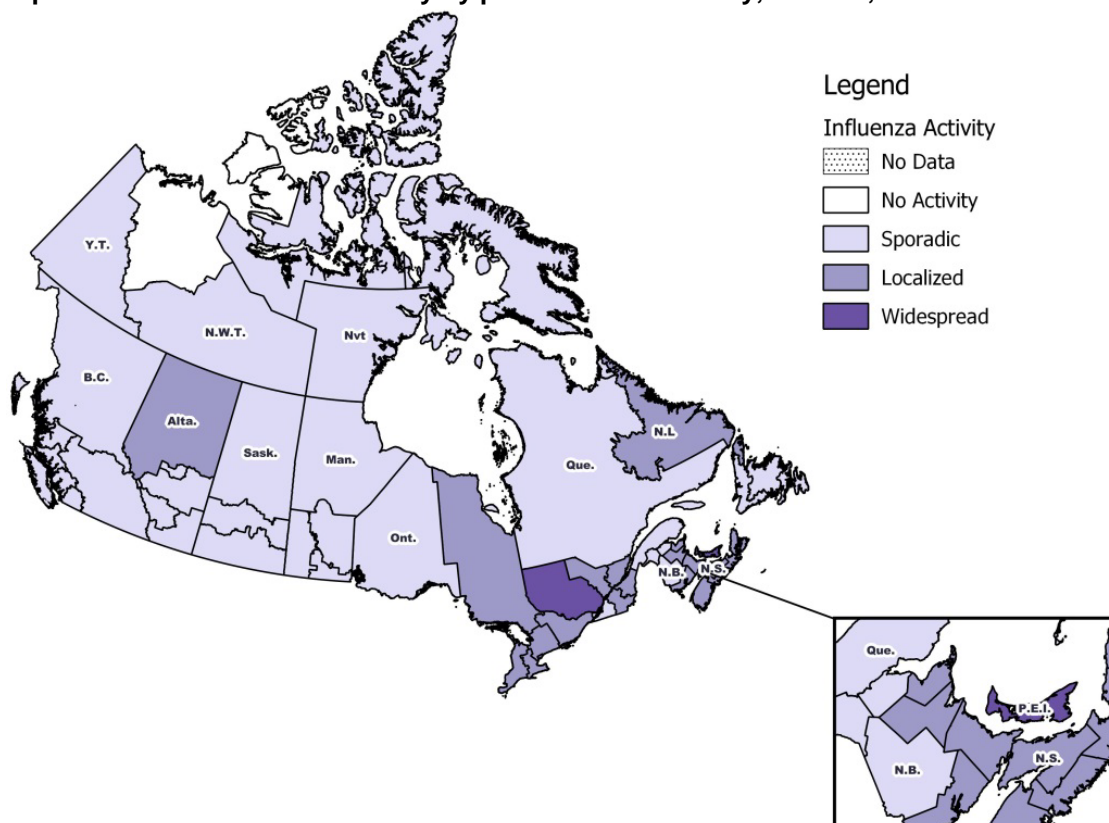
- Influenza continues to circulate across Canada with eastern regions reporting higher levels of influenza activity compared to western regions.
- At the national level, the influenza season appears to be past the peak of activity, with most indicators showing stable or downward trends in week 04.
- Influenza A is the most common influenza virus circulating in Canada, and the majority of these viruses are A(H1N1)pdm09.
- 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. 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 04, the following influenza activity levels were reported (Figure 1):

- 2 regions reported widespread activity: in Que.(1) and P.E.I.(1).
- 19 regions reported localized activity: in Alta.(1), Ont.(6), Que.(3), N.L.(1) N.S.(4) and N.B.(4).
- 31 regions reported sporadic activity: in B.C.(5), Alta.(4), Sask.(3), Man.(5), Que.(3), N.B.(3), N.L.(3), Nvt.(3), N.W.T.(1) and Y.T.(1).
- One region reported no activity: in N.W.T.(1).

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



Laboratory-Confirmed Influenza Detections

In week 04, the following results were reported from sentinel laboratories across Canada (Figure 2):

- The percentage of tests positive for influenza was similar to the previous week at 20.7%.
- A total 2,270 laboratory detections of influenza were reported, of which 98% were influenza A.

To date this season, 25,764 laboratory-confirmed influenza detections have been reported:

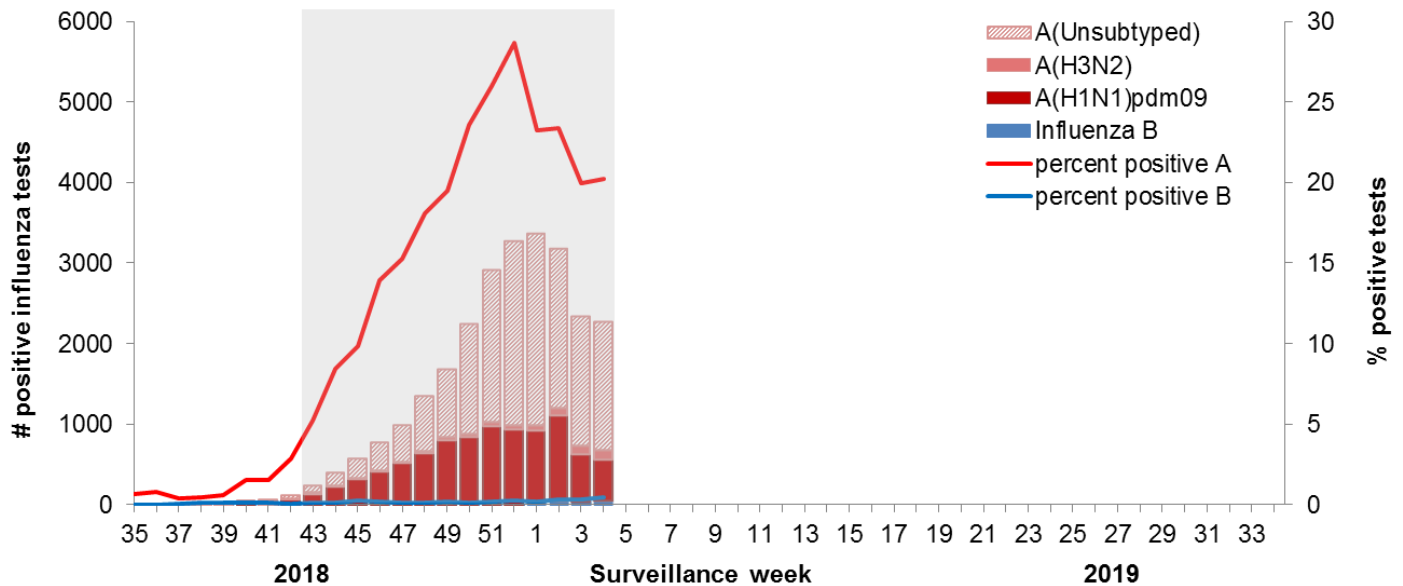
- 99% have been influenza A.
- Among the 9,479 influenza A viruses subtyped, 93% have been A(H1N1)pdm09.
- Provincial and territorial differences in influenza type/subtype distribution are observed (Figure 3).

To date this season, detailed information on age and type/subtype has been received for 20,254 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 2019-04



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 2019-04

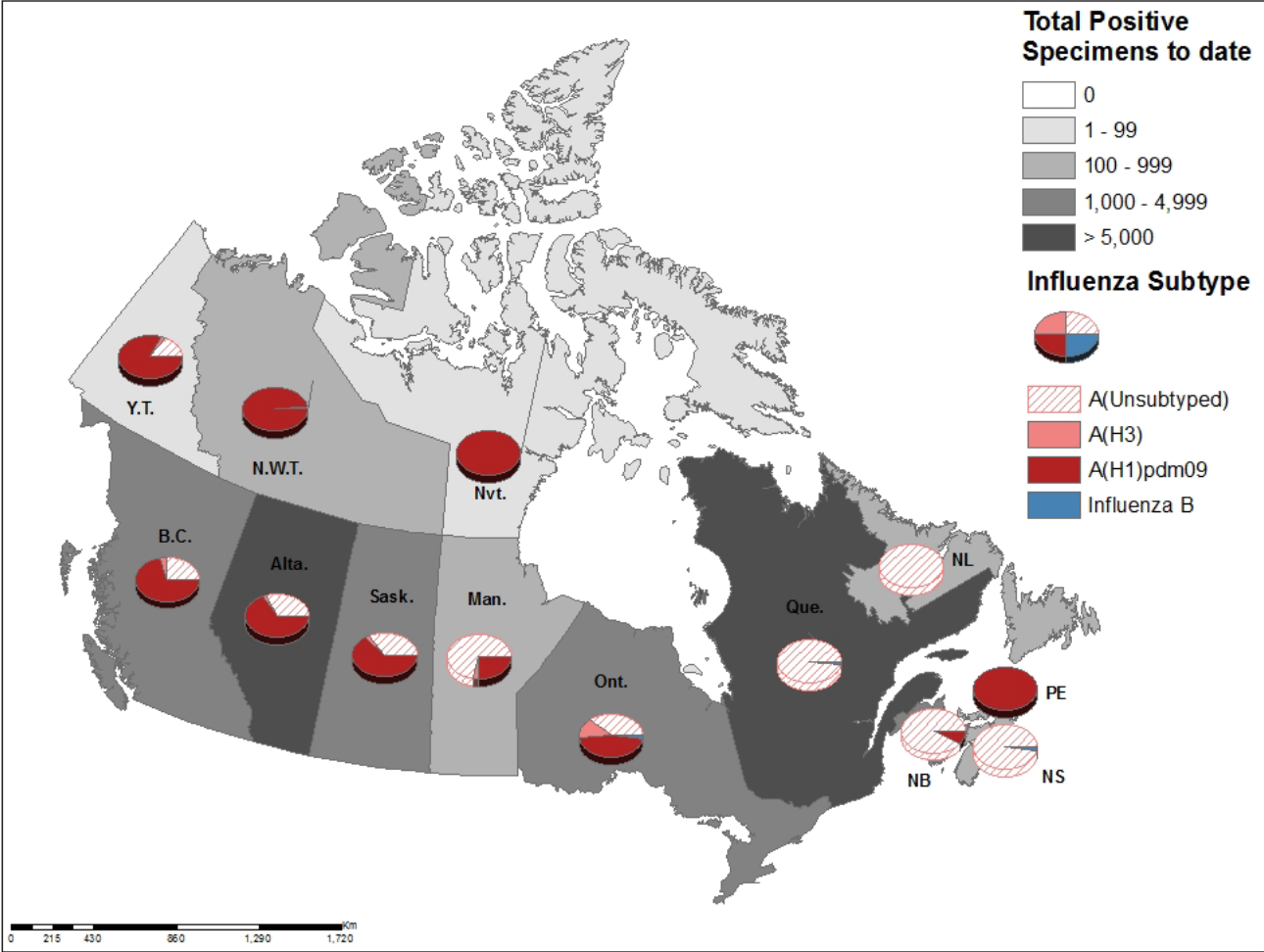


Table 1 – Cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting, Canada, weeks 2018-35 to 2019-04

Age groups (years)	Cumulative (August 26, 2018 to January 26, 2019)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1) pdm09	A(H3N2)	A (UnS) ¹	Total	#	%
0-4	4446	1444	23	2979	34	4480	22%
5-19	3035	1220	21	1794	40	3075	15%
20-44	4204	1512	77	2615	28	4232	21%
45-64	4110	1364	89	2657	39	4149	20%
65+	4213	911	338	2964	105	4318	21%
Total	20008	6451	548	13009	246	20254	100%

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

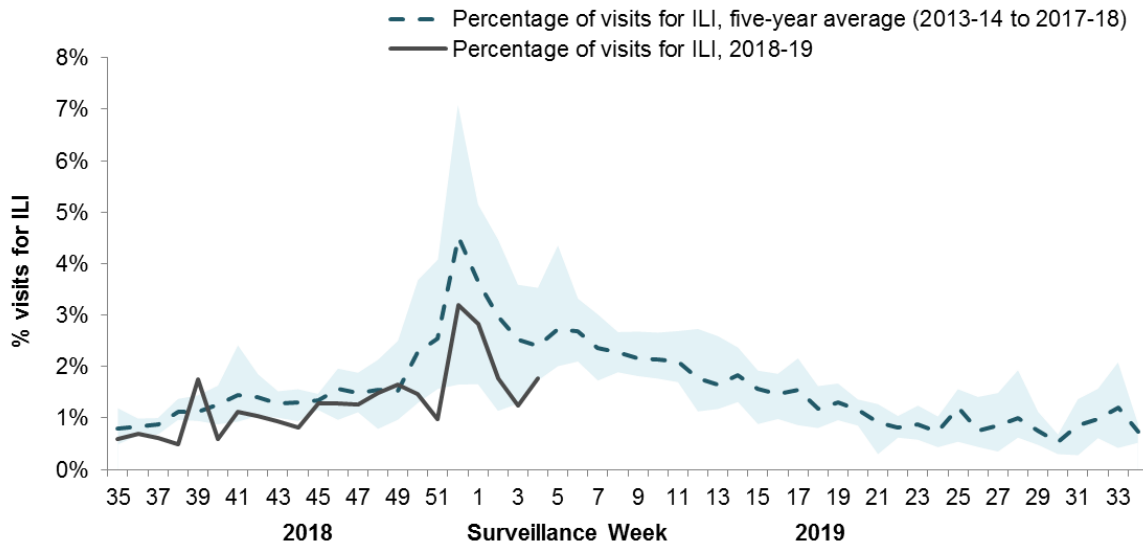
Syndromic / Influenza-like Illness Surveillance

Healthcare Practitioners Sentinel Syndromic Surveillance

In week 04, 1.8% 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 2019-04

Number of Sentinels Reporting in Week 04: 93



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

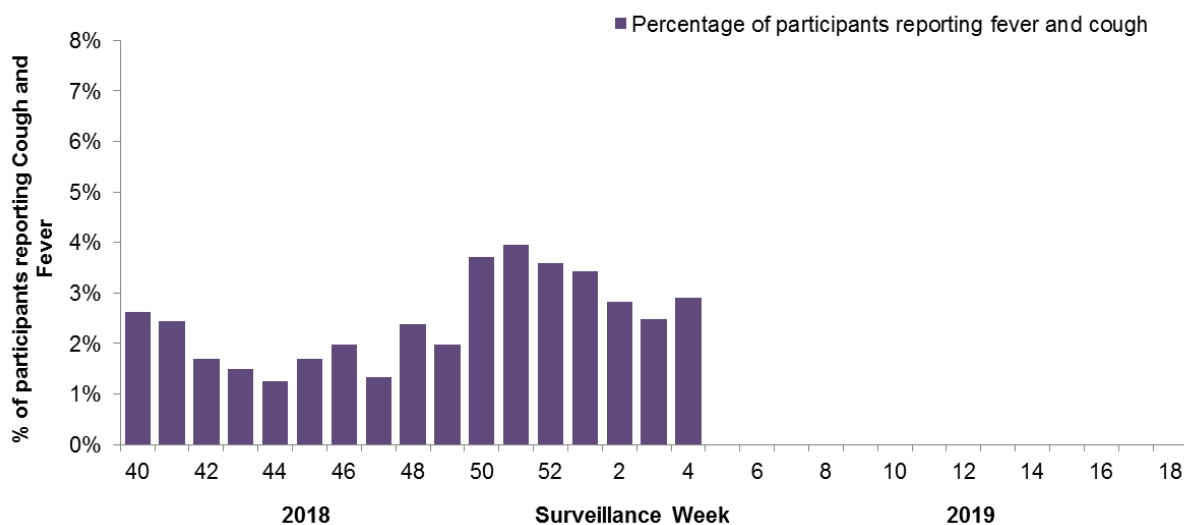
In week 04, 2,207 participants reported to FluWatchers, of which 64 (2.9%) reported symptoms of cough and fever (Figure 5).

Among the 64 participants who reported fever and cough:

- 25% consulted a healthcare professional;
- 75% reported days missed from work or school, resulting in a combined total of 147 missed days of work or school.

Figure 5 – Percentage of participants reporting cough and fever, Canada, weeks 2018-40 to 2019-04

Number of Participants Reporting in Week 04: 2,207



Influenza Outbreak Surveillance

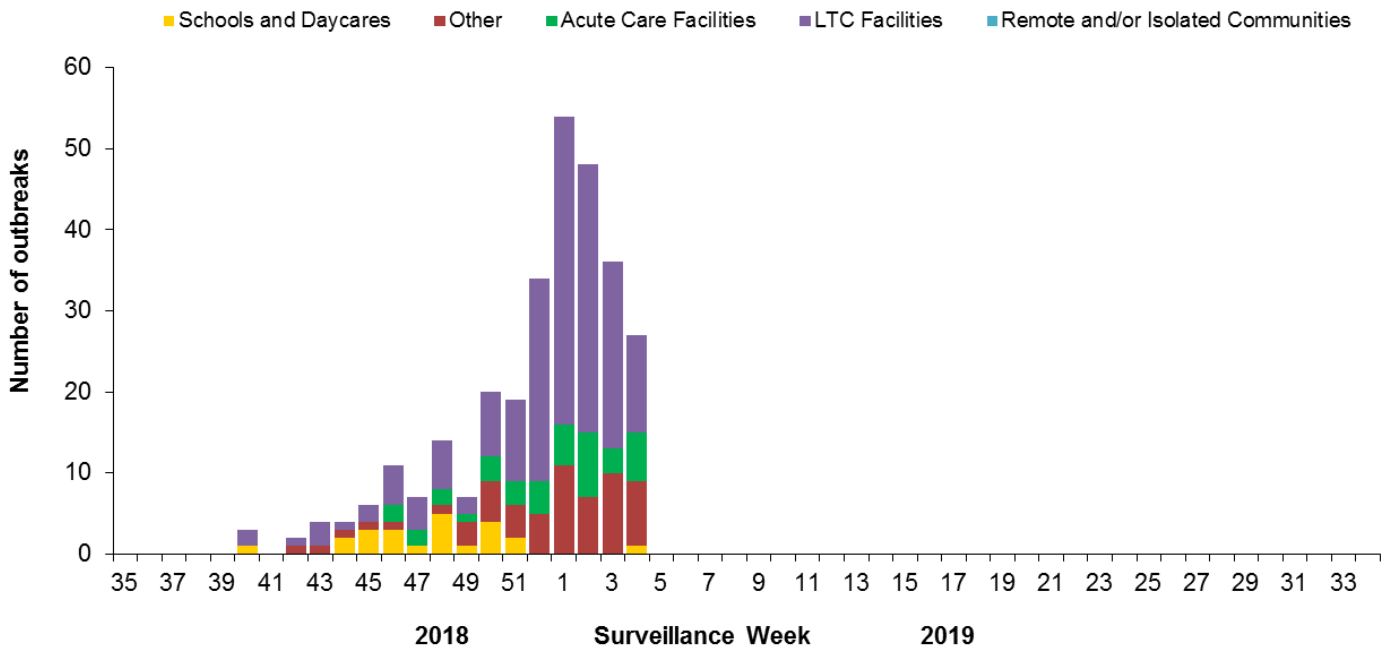
In week 04, 27 new laboratory-confirmed influenza outbreaks were reported: long-term care facilities (LTCF) (12), acute care facilities (6), schools/daycares (1) and other settings (8). Fourteen new ILI outbreaks in long-term care facilities (3) and schools/daycares (11) were also reported in week 04.

To date this season, 296 laboratory-confirmed influenza outbreaks have been reported (Figure 6):

- 175 outbreaks were in LTCF, 23 were in schools, 39 in acute care facilities, and 59 were in other settings.
- Among the 278 outbreaks for which the influenza type was available 99% (274) were associated with influenza A.
- Among the 131 outbreaks for which the influenza A subtype was available:
 - 76% (99) were associated with influenza A(H1N1)pdm09;
 - 24% (32) were associated with A(H3N2),

To date this season, 72 ILI outbreaks have been reported; 41 occurred in LTCF, 28 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 2019-04



Severe Outcomes Influenza Surveillance

Provincial/Territorial Influenza Hospitalizations and Deaths

To date this season, 1,761 influenza-associated hospitalizations have been reported by participating provinces and territories¹.

Hospitalizations (Table 2):

- 99.7% (1,755) 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 319 ICU admissions and 75 deaths have been reported.
 - 43% (137) of reported ICU admissions were in adults aged 45-64 years.
 - All but one of the reported deaths were associated with influenza A.

Table 2 – Cumulative number and estimated rate of hospitalizations by age-group reported by participating provinces and territories¹, Canada, weeks 2018-35 to 2019-04

Age Groups (years)	Cumulative (August 26, 2018 to January 26, 2019)		
	Influenza A	Influenza B	Rate per 100,000 population
0-4	290	2	61.35
5-19	161	0	11.60
20-44	243	0	8.54
45-64	483	1	22.24
65+	578	3	47.75
Total	1755	6	
	99.7%	0.3%	

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 04, 65 pediatric (≤ 16 years of age) hospitalizations with influenza have been reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 7).

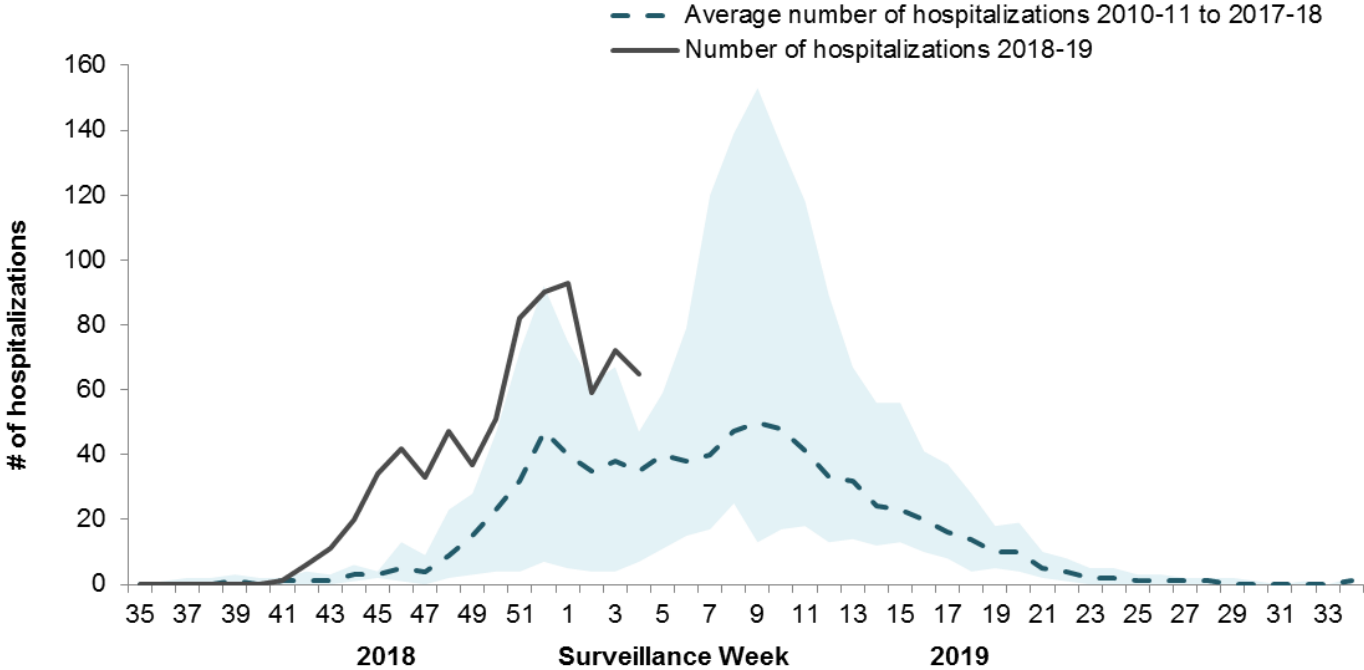
To date this season, 747 pediatric hospitalizations have been reported (Figure 8):

- 70% of cases were in children under 5 years of age.
- 99% (740) of cases have been associated with influenza A.
- Among the 266 cases for which the influenza subtype was available, 259 (97%) were associated with A(H1N1)pdm09.

To date this season, 126 ICU admissions, and 10 deaths have been reported.

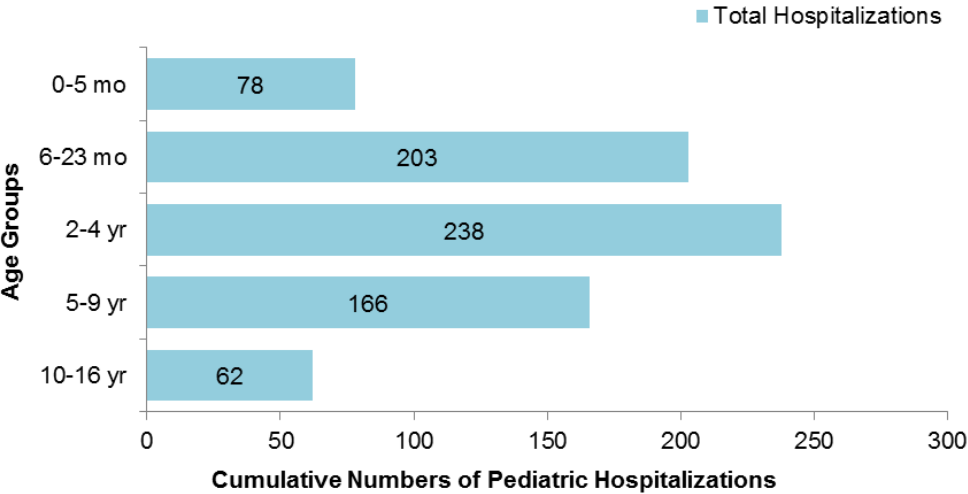
- 63% (80) of ICU admissions were in children under 5 years of age.
- 99% (125) of ICU admissions have been associated with influenza A.
- 80% (8) of deaths occurred in children 2 to 4 years of age.
- All deaths have been associated with influenza A.

Figure 7 – Number of pediatric (≤16 years of age) hospitalizations reported by the IMPACT network, by week, Canada, weeks 2018-35 to 2019-04



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 (≤16 years of age) with influenza by age-group reported by the IMPACT network, Canada, weeks 2018-35 to 2019-04



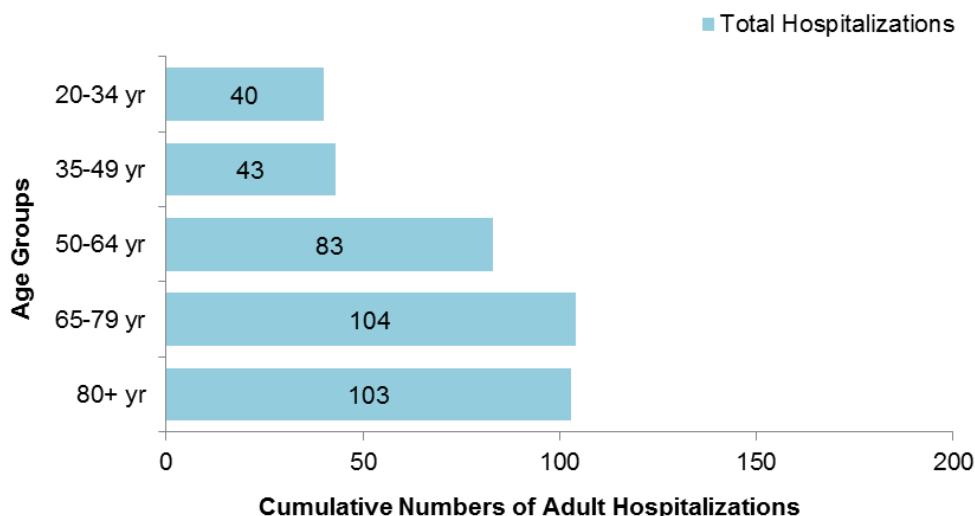
Adult Influenza Hospitalizations and Deaths

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 2018-19 season.

To date this season, 373 hospitalizations have been reported (Figure 9):

- 336 (90%) were associated with influenza A.
- A similar proportion of hospitalizations are reported among adults <65 years of age (45.5%) and adults ≥65 years of age (55.5%).
- The most commonly reported comorbidity among hospitalized cases was endocrine disorders, which were reported in 70% 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 2019-04



Influenza Strain Characterizations

Since September 1, 2018, the National Microbiology Laboratory (NML) has characterized 785 influenza viruses (66 A(H3N2), 701 A(H1N1) and 18 B) that were received from Canadian laboratories.

Genetic Characterization of Influenza A(H3N2):

42 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:

- Seven viruses belonged to genetic group 3C.2a.
- 34 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):

- 20 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.
- Four viruses showed reduced titer with ferret antisera 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.
- 16 influenza A (H3N2) viruses characterized belonged to genetic group 3C.2a1. Two viruses belonged to genetic group 3C.2a and five to 3C.3a. Sequencing is pending for the remaining isolate.

Influenza A(H1N1):

- 686 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.
- 15 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
- 15 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:

311 influenza A (44 A(H3N2) and 267 A(H1N1)) viruses were tested for resistance to amantadine and it was found that:

- All 311 influenza A viruses were resistant to amantadine.

Antiviral Resistance – Oseltamivir:

601 influenza viruses (52 A(H3N2), 533 A(H1N1) and 16 B) were tested for resistance to oseltamivir and it was found that:

- All 601 influenza viruses were sensitive to oseltamivir

Antiviral Resistance – Zanamivir:

601 influenza viruses (52 A(H3N2), 533 H1N1 and 16 B) were tested for resistance to zanamivir and it was found that:

- All 601 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.