

February 10 to 16, 2019 (Week 07)

## Overall Summary

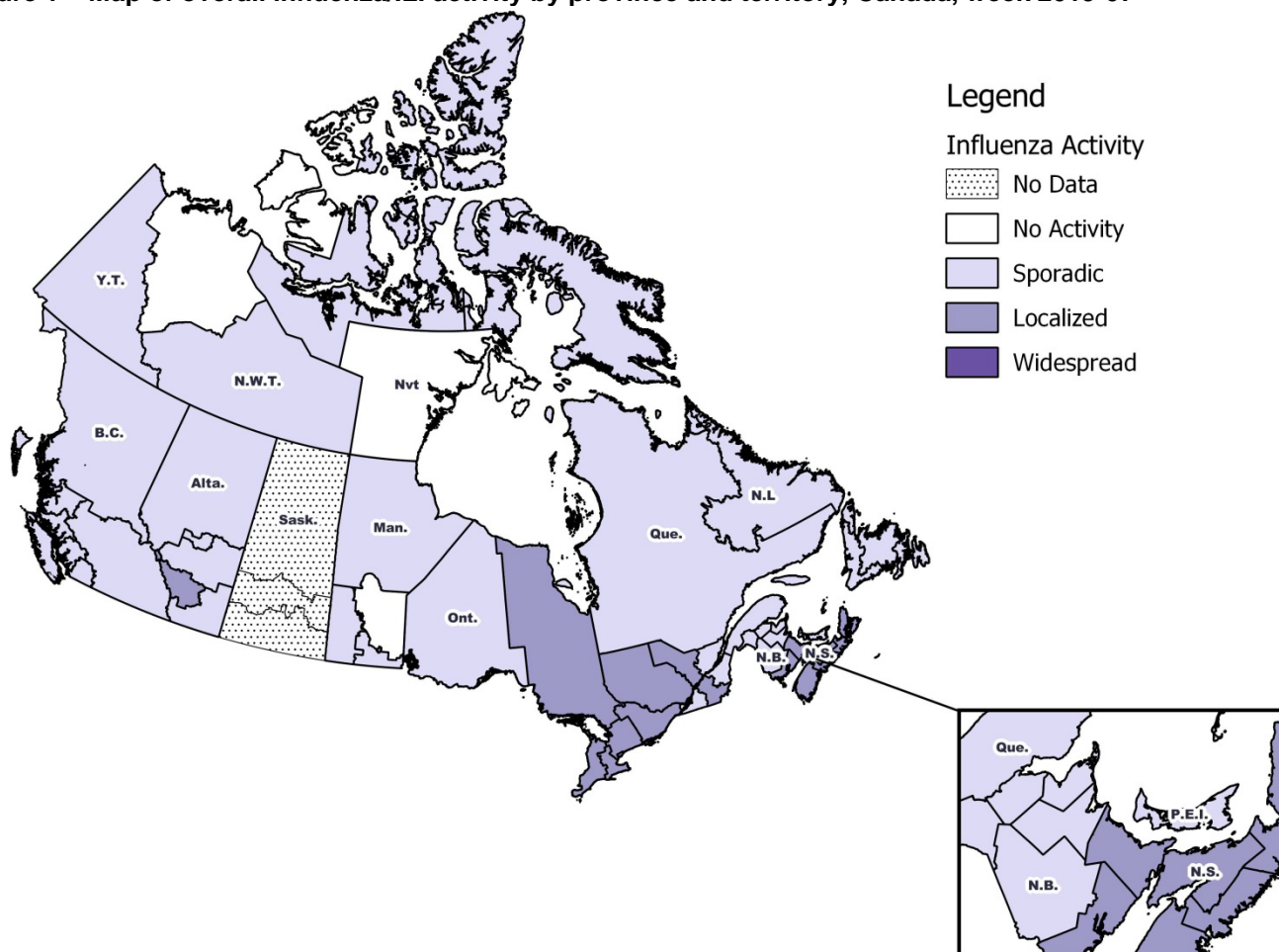
- Influenza activity in Canada continues to decline slowly. Influenza activity is past the peak in most regions in western Canada, but continues to circulate in eastern regions.
- At the national level, most indicators of influenza activity declined in week 07.
- Influenza A(H1N1)pdm09 continues to be the most common influenza virus circulating in Canada. There is currently very little influenza B circulation compared to previous seasons.

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

During week 07, levels of influenza activity were similar to the previous week. The following influenza activity levels were reported (Figure 1):

- 15 regions reported localized activity: in Alta.(1), Ont.(6), Que.(2), N.S.(4) and N.B.(2).
- 32 regions reported sporadic activity: in B.C.(5), Alta.(4), Man.(4), Ont.(1), Que.(4), N.B.(5), N.L.(4), P.E.I.(1), Nvt.(2), N.W.T.(1), and Y.T.(1).
- Three regions: in Man.(1), N.W.T.(1), and Nvt.(1) reported no activity.

**Figure 1 – Map of overall influenza/ILI activity by province and territory, Canada, week 2019-07**



## Laboratory-Confirmed Influenza Detections

In week 07, the following results were reported from sentinel laboratories across Canada (Figures 2 and 3):

- The percentage of tests positive for influenza was similar to the previous week at 17.9%.
- A total 1,565 laboratory detections of influenza were reported, of which 98% were influenza A.

To date this season, 30,981 laboratory-confirmed influenza detections have been reported:

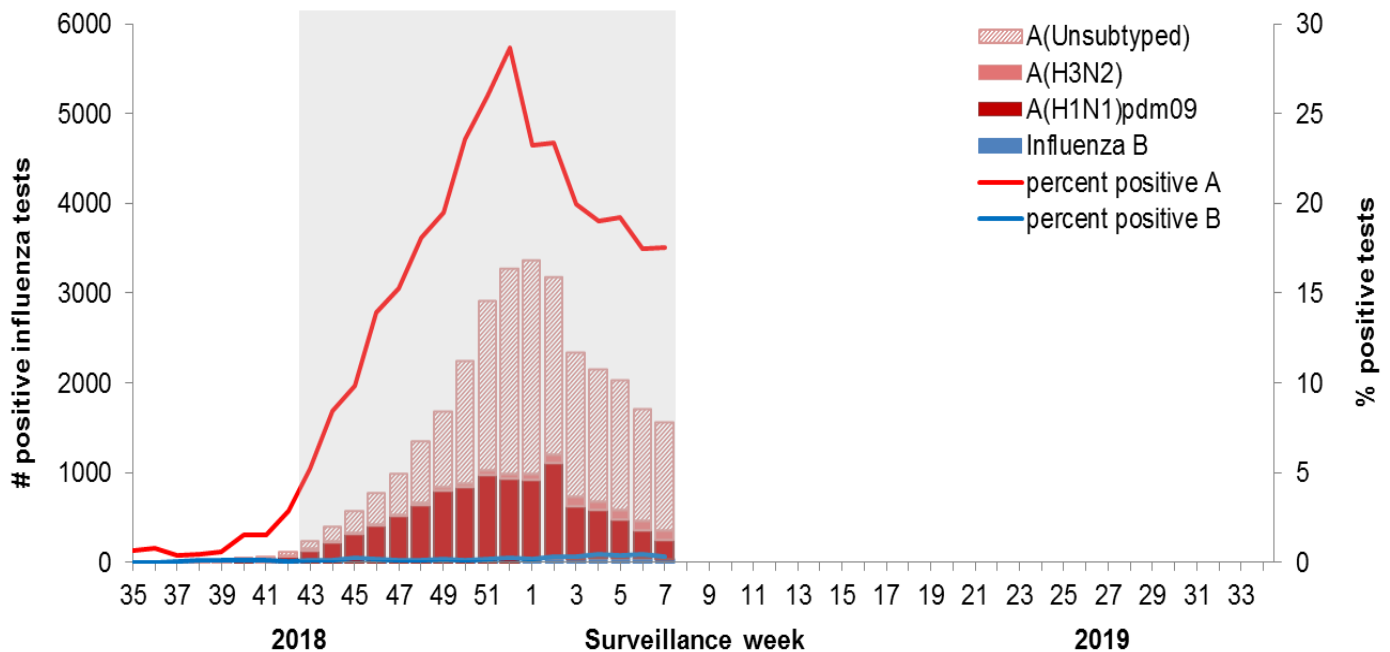
- 99% have been influenza A.
- Among the 10,778 influenza A viruses subtyped, 91% have been A(H1N1)pdm09.
- Influenza B often circulates later in the season in Canada (Feb-Apr). Fewer influenza B detections have been reported this season compared to recent seasons at this time of year.

To date this season, detailed information on age and type/subtype has been received for 24,187 laboratory-confirmed influenza cases (Table 1):

- 85% 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.

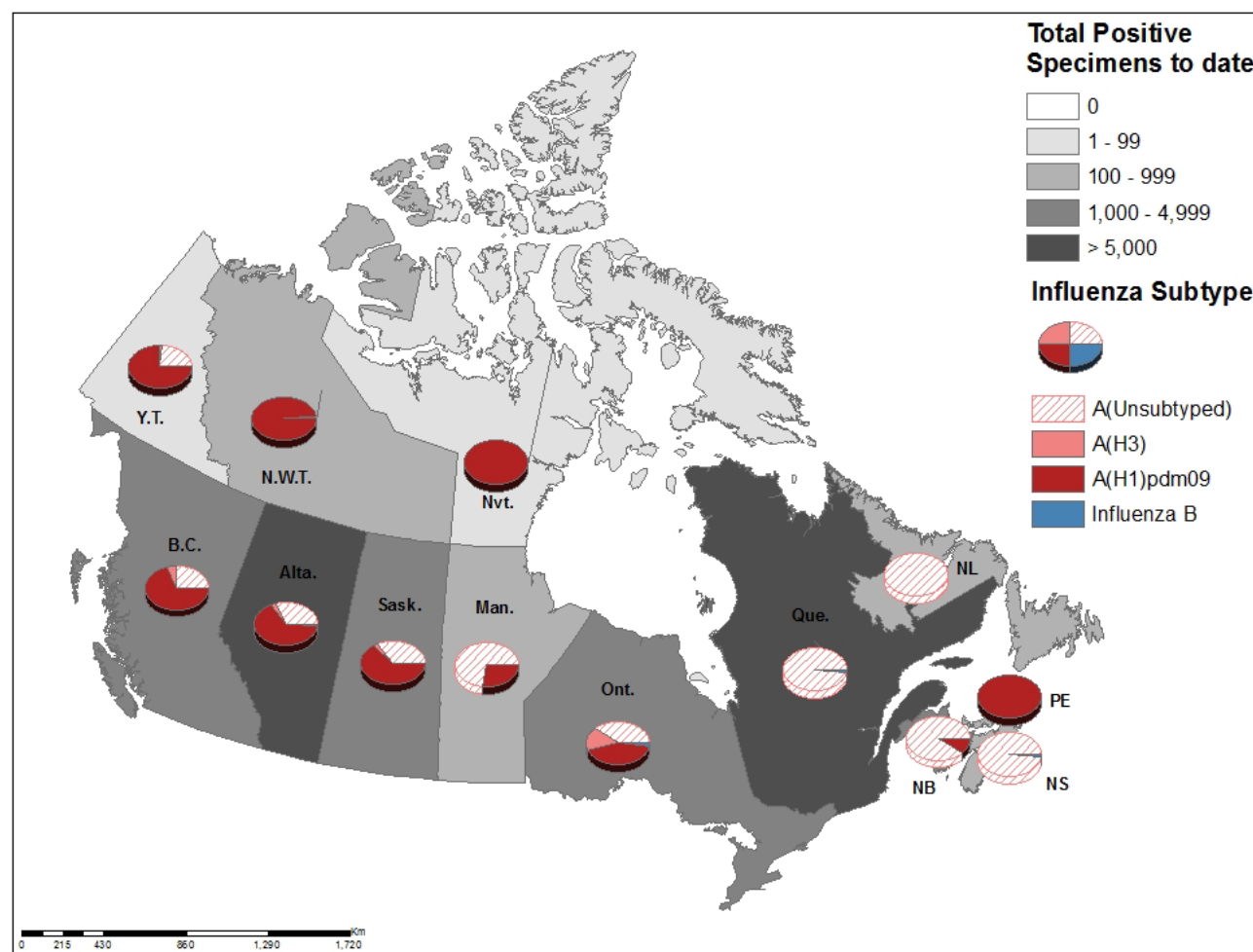
For more detailed weekly and cumulative influenza data, see the text descriptions for [Figures 2 and 3](#) or the [Respiratory Virus Detections in Canada Report](#).

**Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, weeks 2018-35 to 2019-07**



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 2019-07**



**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 2019-07**

Age groups (years)	Cumulative (August 26, 2018 to February 16, 2019)						
	Influenza A				B	Influenza A and B	
	A Total	A(H1N1) pdm09	A(H3N2)	A (UnS) <sup>1</sup>	Total	#	%
0-4	5269	1552	36	3681	54	5323	22%
5-19	3575	1284	38	2253	63	3638	15%
20-44	4859	1655	110	3094	49	4908	20%
45-64	4808	1541	118	3149	48	4856	20%
65+	5327	1062	487	3778	135	5462	23%
<b>Total</b>	<b>23838</b>	<b>7094</b>	<b>789</b>	<b>15955</b>	<b>349</b>	<b>24187</b>	<b>100%</b>

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

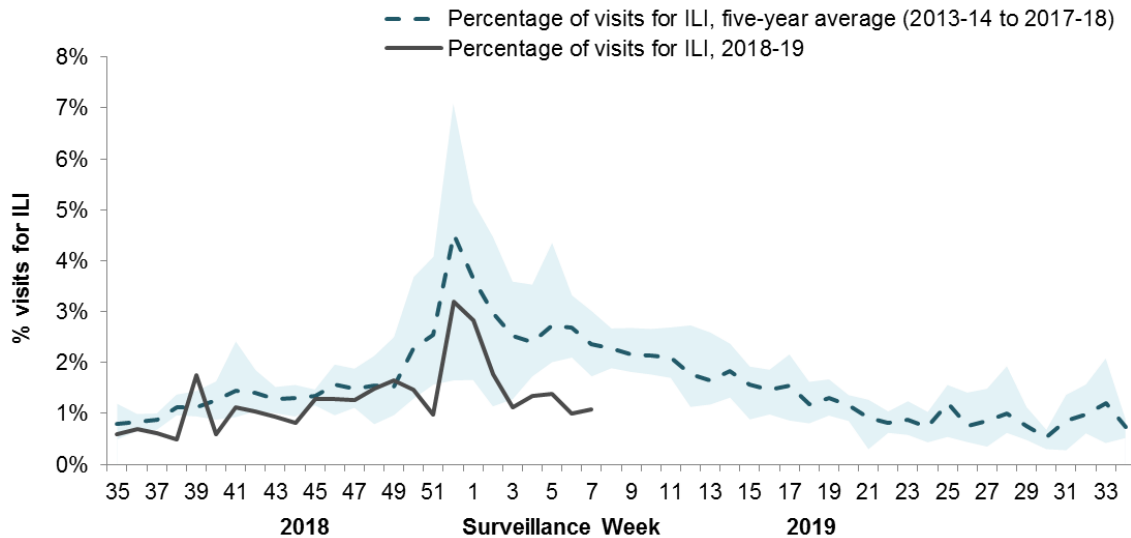
## Syndromic / Influenza-like Illness Surveillance

### Healthcare Practitioners Sentinel Syndromic Surveillance

In week 07, 1.1% of visits to healthcare professionals were due to influenza-like illness (ILI) (Figure 4). The percentage of visits for ILI is low compared to previous seasons.

**Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, weeks 2018-35 to 2019-07**

Number of Sentinels Reporting in Week 07: 81



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

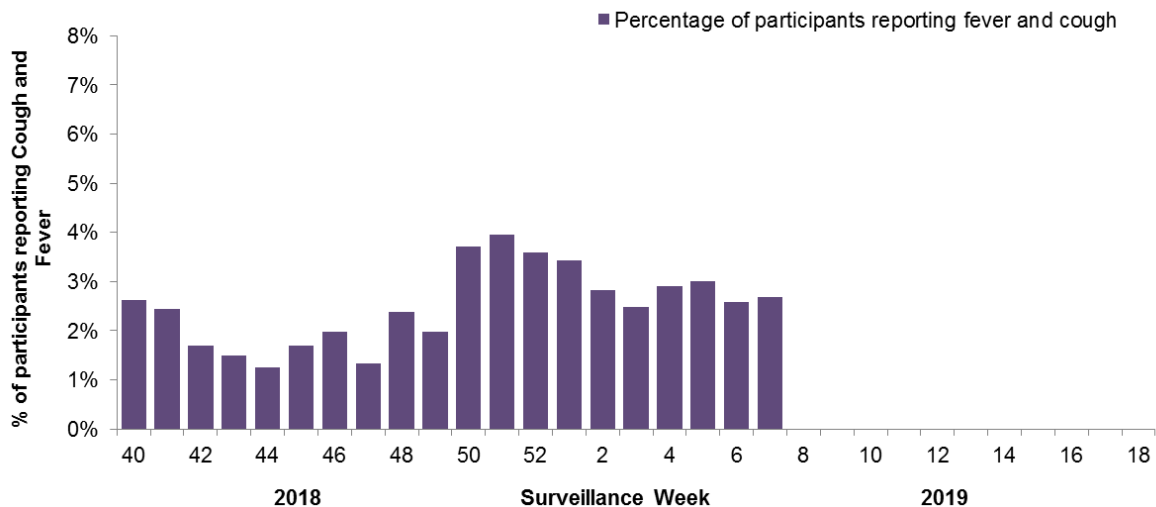
In week 07, 2,131 participants reported to FluWatchers, of which 57 (2.7%) reported symptoms of cough and fever (Figure 5).

Among the 57 participants who reported fever and cough:

- 19% consulted a healthcare professional;
- 68% reported days missed from work or school, resulting in a combined total of 102 missed days of work or school.
- 69% reported having been vaccinated for influenza this season.

**Figure 5 – Percentage of participants reporting cough and fever, Canada, weeks 2018-40 to 2019-07**

Number of Participants Reporting in Week 07: 2,131



## Influenza Outbreak Surveillance

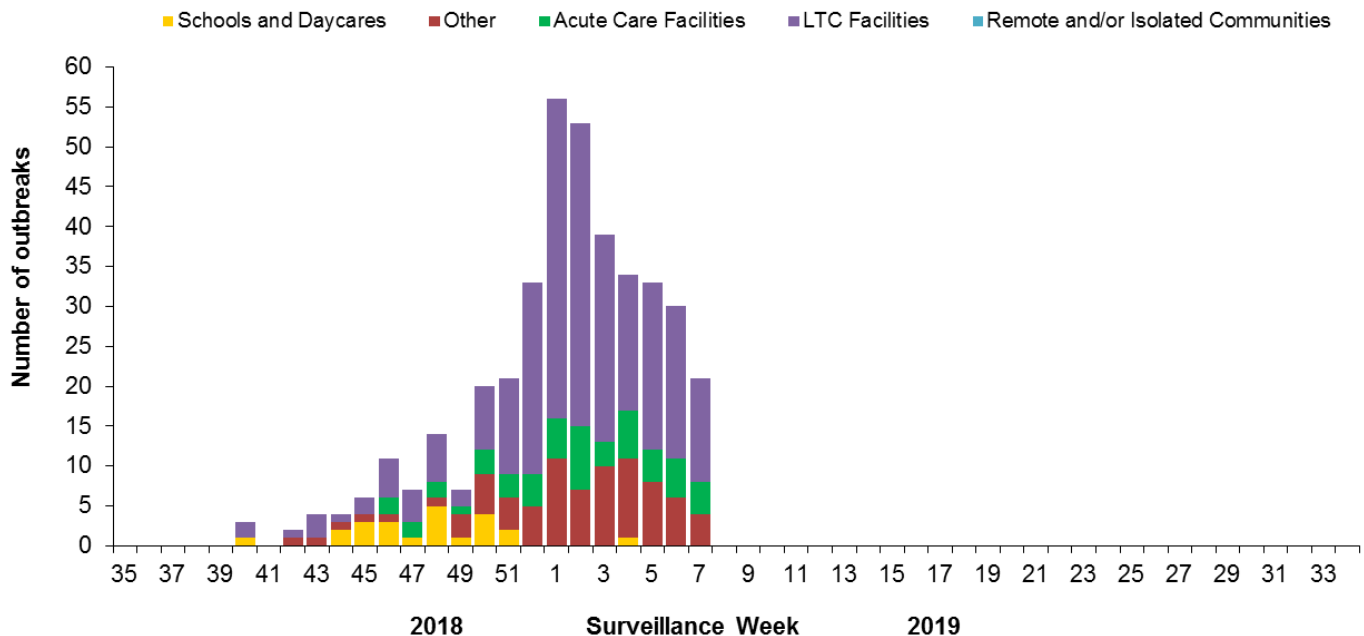
In week 07, 21 new laboratory-confirmed influenza outbreaks were reported: long-term care facilities (LTCF) (13), acute care facilities (4), and other settings (4). Four new ILI outbreaks in schools/daycares were also reported in week 07. The number of new outbreaks reported each week continues to decline from the peak in week 01.

To date this season, 398 laboratory-confirmed influenza outbreaks have been reported (Figure 6):

- 244 (61%) outbreaks were in LTCF, 23 were in schools, 52 in acute care facilities, and 79 were in other settings.
- Among the 369 outbreaks for which the influenza type was available 98% (363) were associated with influenza A.
- Among the 163 outbreaks for which the influenza A subtype was available, 67% (110) were associated with influenza A(H1N1)pdm09;

To date this season, 94 ILI outbreaks have been reported; 44 occurred in LTCF, 47 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 2019-07**



## Severe Outcomes Influenza Surveillance

### Provincial/Territorial Influenza Hospitalizations and Deaths

To date this season, 2,004 influenza-associated hospitalizations have been reported by participating provinces and territories<sup>1</sup>.

#### Hospitalizations (Table 2):

- 99.7% (1,997) 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 368 ICU admissions and 87 deaths have been reported.
  - 43% (157) of reported ICU admissions were in adults aged 45-64 years.
  - All the ICU admissions, and all but one of the 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 2019-07**

Age Groups (years)	Cumulative (August 26, 2018 to February 16, 2019)		
	Influenza A	Influenza B	Rate per 100,000 population
0-4	307	2	64.92
5-19	177	1	12.83
20-44	274	0	9.63
45-64	558	1	25.69
65+	681	3	56.22
<b>Total</b>	<b>1997</b>	<b>7</b>	
	99.7%	0.3%	

<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 07, 44 pediatric ( $\leq 16$  years of age) hospitalizations with influenza have been reported by the Immunization Monitoring Program Active (IMPACT) network (Figure 7).

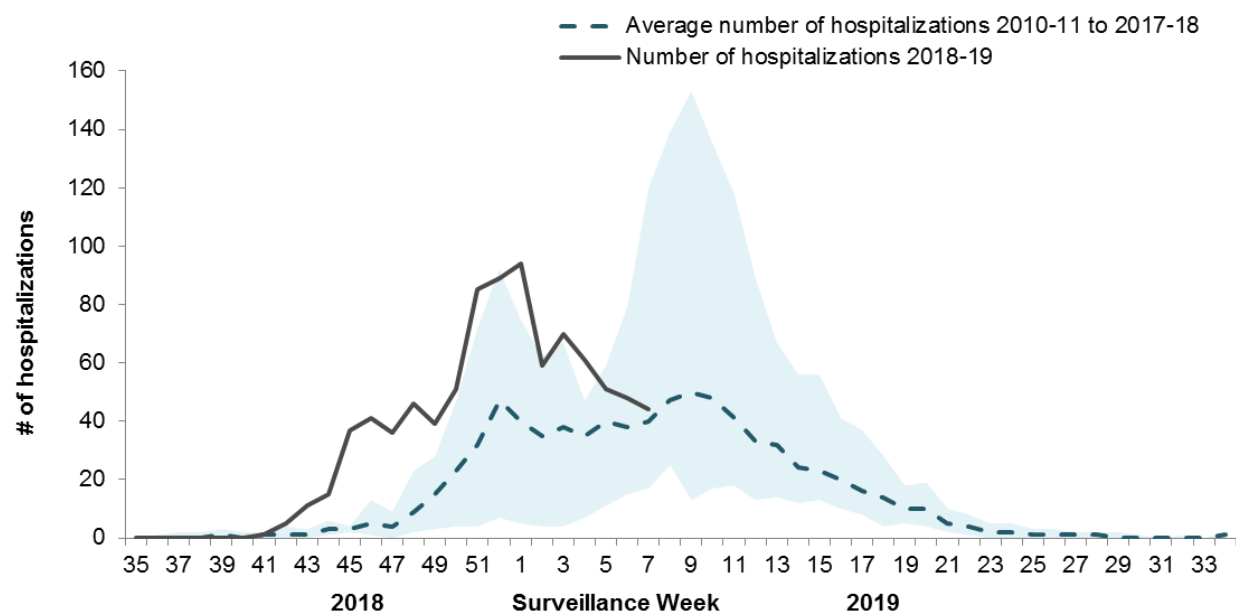
To date this season, 884 pediatric hospitalizations have been reported (Figure 8):

- 69% of cases were in children under 5 years of age.
- 99% (874) of cases have been associated with influenza A.
- Among the 290 cases for which the influenza subtype was available, 276 (95%) were associated with A(H1N1)pdm09.

To date this season, 147 ICU admissions, and 10 deaths have been reported.

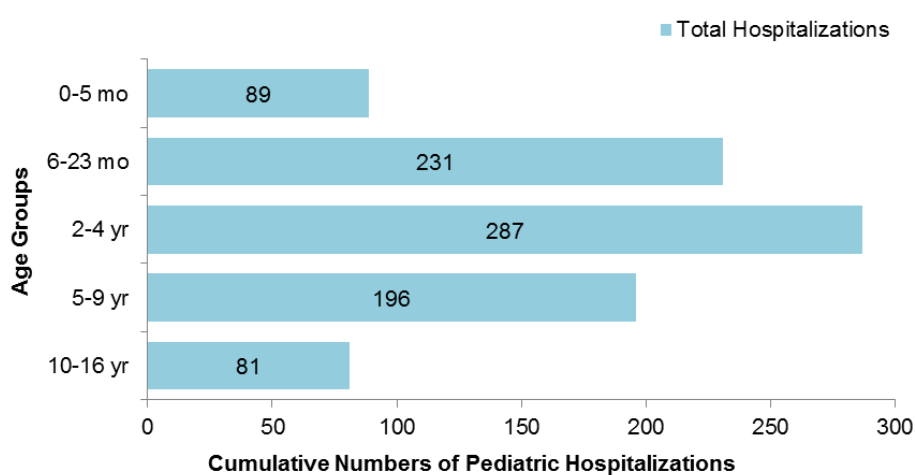
- 63% (93) of ICU admissions were in children under 5 years of age.
- All but one of the ICU admissions have been associated with influenza A.
- 80% (8) of deaths occurred in children 2 to 4 years of age.
- All deaths have been associated with influenza A.

**Figure 7 – Number of pediatric (≤16 years of age) hospitalizations reported by the IMPACT network, by week, Canada, weeks 2018-35 to 2019-07**



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 2019-07**



### Adult Influenza Hospitalizations and Deaths

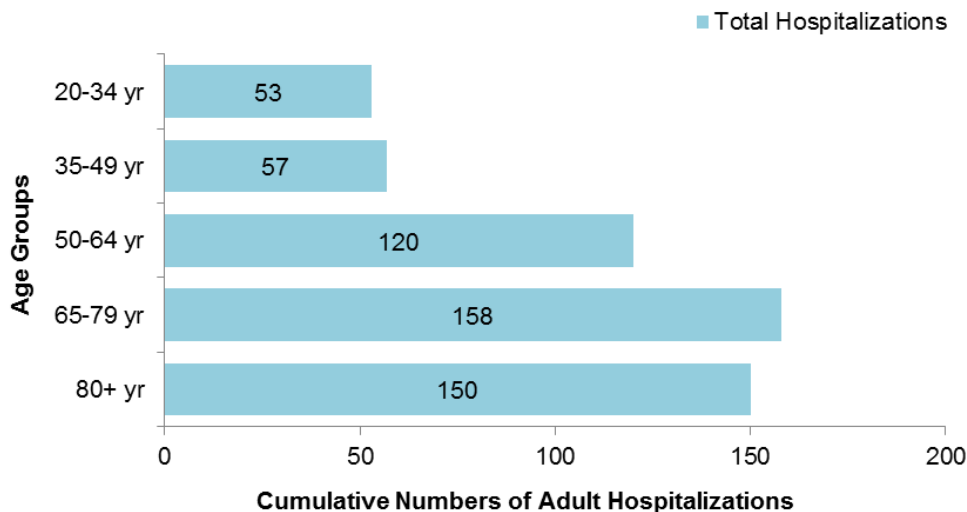
Surveillance of laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations by the Canadian Immunization Research Network (CIRN) Serious Outcomes Surveillance (SOS) network began on November 1<sup>st</sup> for the 2018-19 season.

To date this season, 538 hospitalizations, 59 ICU admissions and 18 deaths have been reported (Figure 9):

- 493 (92%) hospitalizations were associated with influenza A.
- A greater proportion of hospitalizations have been reported among adults ≥65 years of age (57.3%) compared to adults <65 years of age (42.8%).
- Hospitalizations among adults peaked in week 01 then declined to week 04, and have increased in weeks 05 to 07.
- Among hospitalized cases with available information (481), the most commonly reported comorbidity was endocrine disorders, which were reported in 78% of hospitalized cases. However, 84% of cases reported more than one type of comorbid condition.



**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 2019-07**



## Influenza Strain Characterizations

Since September 1, 2018, the National Microbiology Laboratory (NML) has characterized 1,287 influenza viruses (119 A(H3N2), 1,142 A(H1N1) and 26 B) that were received from Canadian laboratories.

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

61 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:

- 10 viruses belonged to genetic group 3C.2a.
- 50 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):

- 43 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.
- 15 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.
- 27 influenza A(H3N2) viruses characterized belonged to genetic group 3C.2a1. Nine viruses belonged to genetic group 3C.2a and nine to 3C.3a. Sequencing is pending for the remaining isolates.

#### Influenza A(H1N1):

- 1,112 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.
- 30 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).

- Eight 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.
- One virus showed reduced titer with ferret antisera raised against cell culture-propagated B/Colorado/06/2017.
- 17 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:

351 influenza A (51 A(H3N2) and 300 A(H1N1)) viruses were tested for resistance to amantadine and it was found that:

- All 351 influenza A viruses were resistant to amantadine.

### Antiviral Resistance – Oseltamivir:

793 influenza viruses (71 A(H3N2), 697 A(H1N1) and 25 B) were tested for resistance to oseltamivir and it was found that:

- All 71 A(H3N2) viruses were sensitive to oseltamivir.
- Of the 697 A(H1N1) viruses tested, 696 were sensitive to oseltamivir and one virus was resistant to oseltamivir with a H275Y mutation.
- All 25 B viruses were sensitive to oseltamivir.

### Antiviral Resistance – Zanamivir:

794 influenza viruses (71 A(H3N2), 698 H1N1 and 25 B) were tested for resistance to zanamivir and it was found that:

- All 794 influenza viruses were sensitive to zanamivir.

## Provincial and International Surveillance Links

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

## 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.*