

British Columbia Influenza Surveillance Bulletin

Influenza Season 2018-19, Number 3, Week 46

November 11 to November 17, 2018

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Low-level, but increasing, influenza activity in BC

Influenza activity remains at low but increasing levels in BC, generally consistent with historical averages.

At the BC provincial laboratory, 15.9% of patients tested positive for influenza in week 46. Influenza A has predominated thus far this season, although 2 influenza B cases were detected in the last few weeks. Among subtyped influenza A viruses since week 40, 45/69 (65%) have been A(H1N1)pdm09.

Cumulatively between weeks 35 and 46, influenza detections overall have been lower in 2018 (n=88) compared to the same periods in 2017 (n=164), and 2016 (n=261), with less A(H3N2) and more A(H1N1)pdm09.

Since our last bulletin, 3 school influenza-like illness outbreaks - of unknown etiology - have been reported. There were no further laboratory-confirmed influenza outbreaks in a long term care facility (LTCF) since the single report in week 42. In contrast, between weeks 40 and 46 of the 2016-17 and 2017-18 seasons, 9 and 2 confirmed LTCF outbreaks, respectively, had been reported.

Cases of acute flaccid myelitis (AFM) continue to rise in the US, possibly associated with enterovirus D68 (EV-D68) infection. Whilst low-level EV-D68 activity has been detected in BC this autumn, we are not aware of any cases with neurological manifestations. To date, no AFM cases have been reported in BC.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

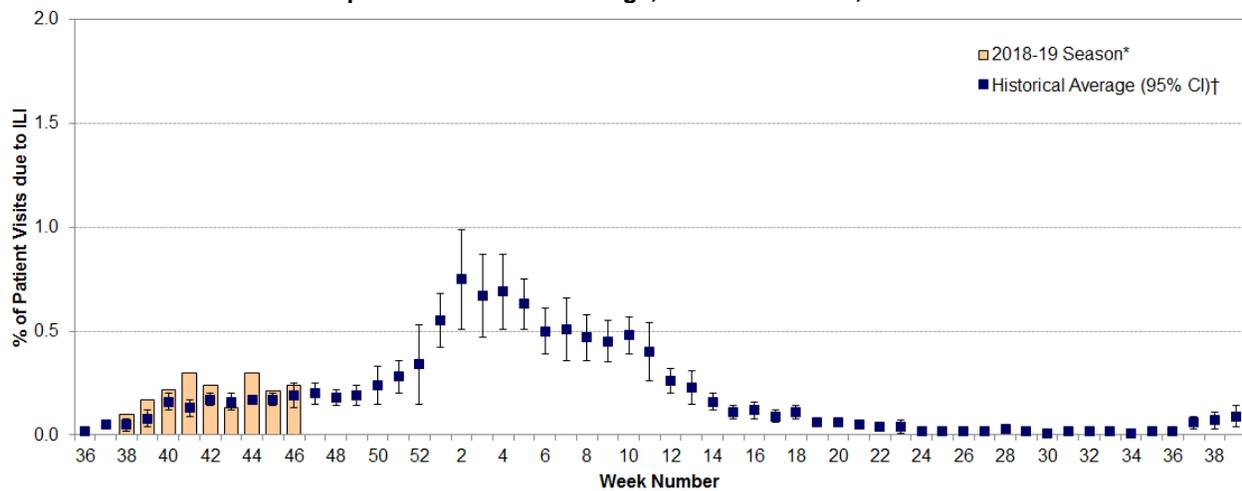
Report Disseminated: November 22, 2018

British Columbia

Sentinel Physicians

In the last 2 weeks, influenza-like illness (ILI) rates among patients presenting to sentinel sites have fallen back in line with the 10-year historical average, after being slightly elevated in weeks 41 and 44 (**Figure 1**). Rates are subject to change as reporting becomes more complete. Thirteen (48%) of sentinel sites have reported data for week 46.

Figure 1: Percent of patient visits to sentinel physicians due to influenza-like illness (ILI) compared to historical average, British Columbia, 2018-19



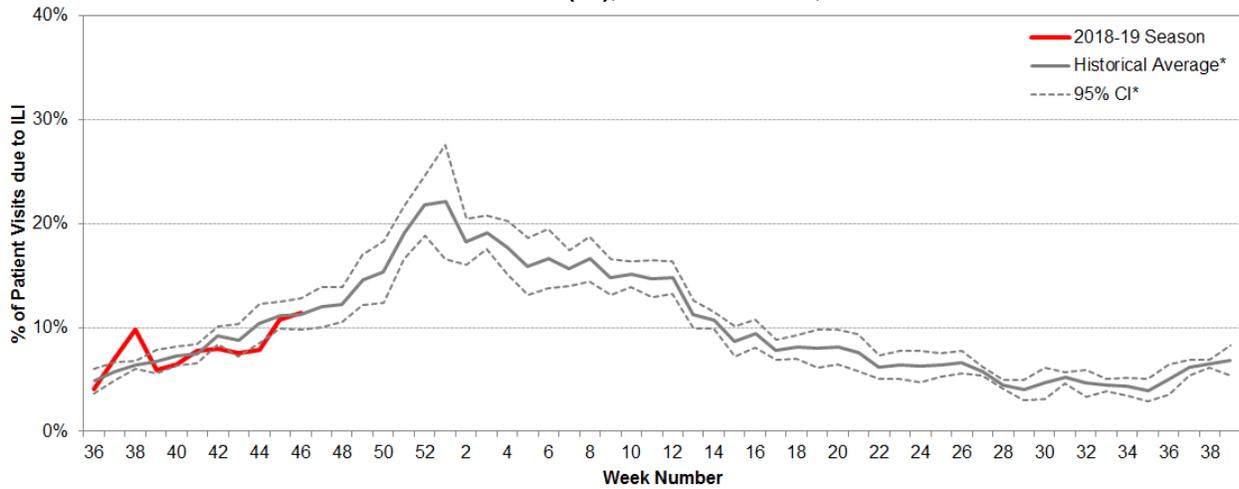
* Data are subject to change as reporting becomes more complete.

† 10-year historical average for 2018-19 season based on 2005-06 to 2017-2018 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children’s Hospital Emergency Room

In week 46, the proportion of visits to BC Children’s Hospital Emergency Room (ER) attributed to ILI remains generally consistent with the historical average for the past 5 seasons (**Figure 2**).

Figure 2: Percent of patients presenting to BC Children’s Hospital ER attributed to influenza-like illness (ILI), British Columbia, 2018-19

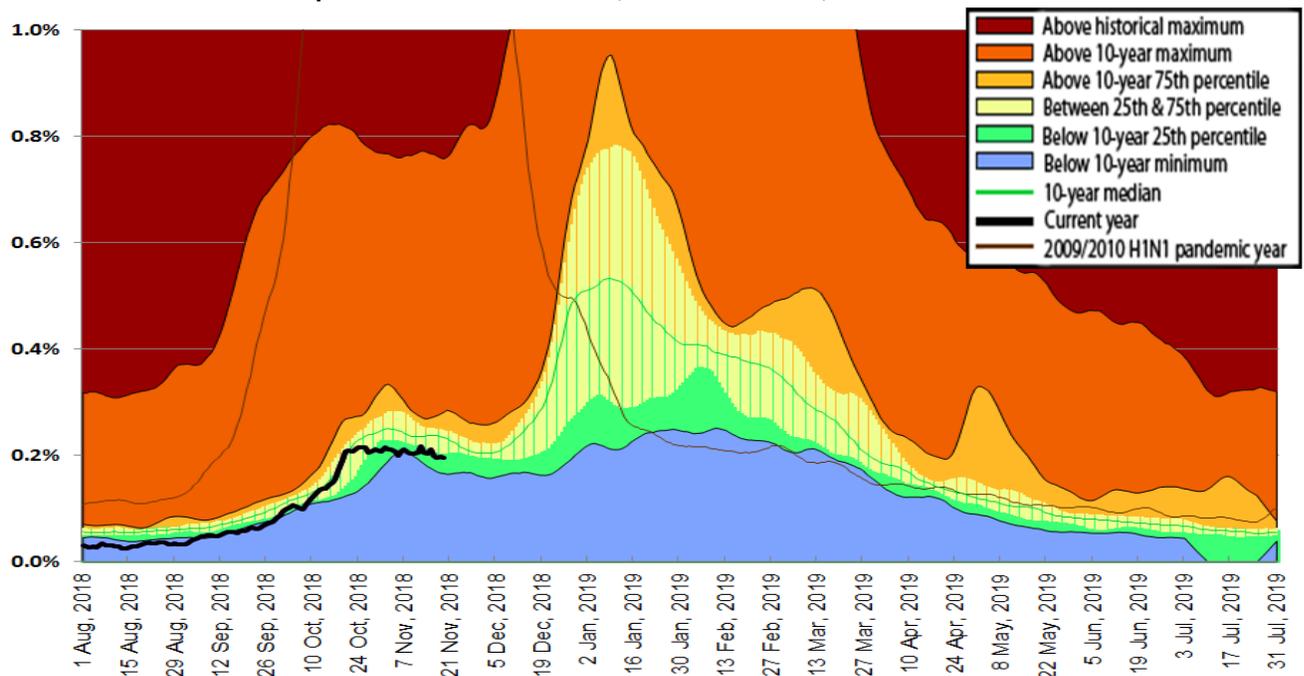


Source: BCCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2018-19 season based on 2012-13 to 2017-18 seasons; CI=confidence interval.

Medical Services Plan

In week 46, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, remains within expected levels overall for the province (Figure 3). Some regional variation has been observed (Figure 4), notably a recent spike in the Northern Health Authority which will require further monitoring.

Figure 3: Service claims submitted to MSP for influenza illness (II)* as a proportion of all submitted general practitioner service claims, British Columbia, 2018-19

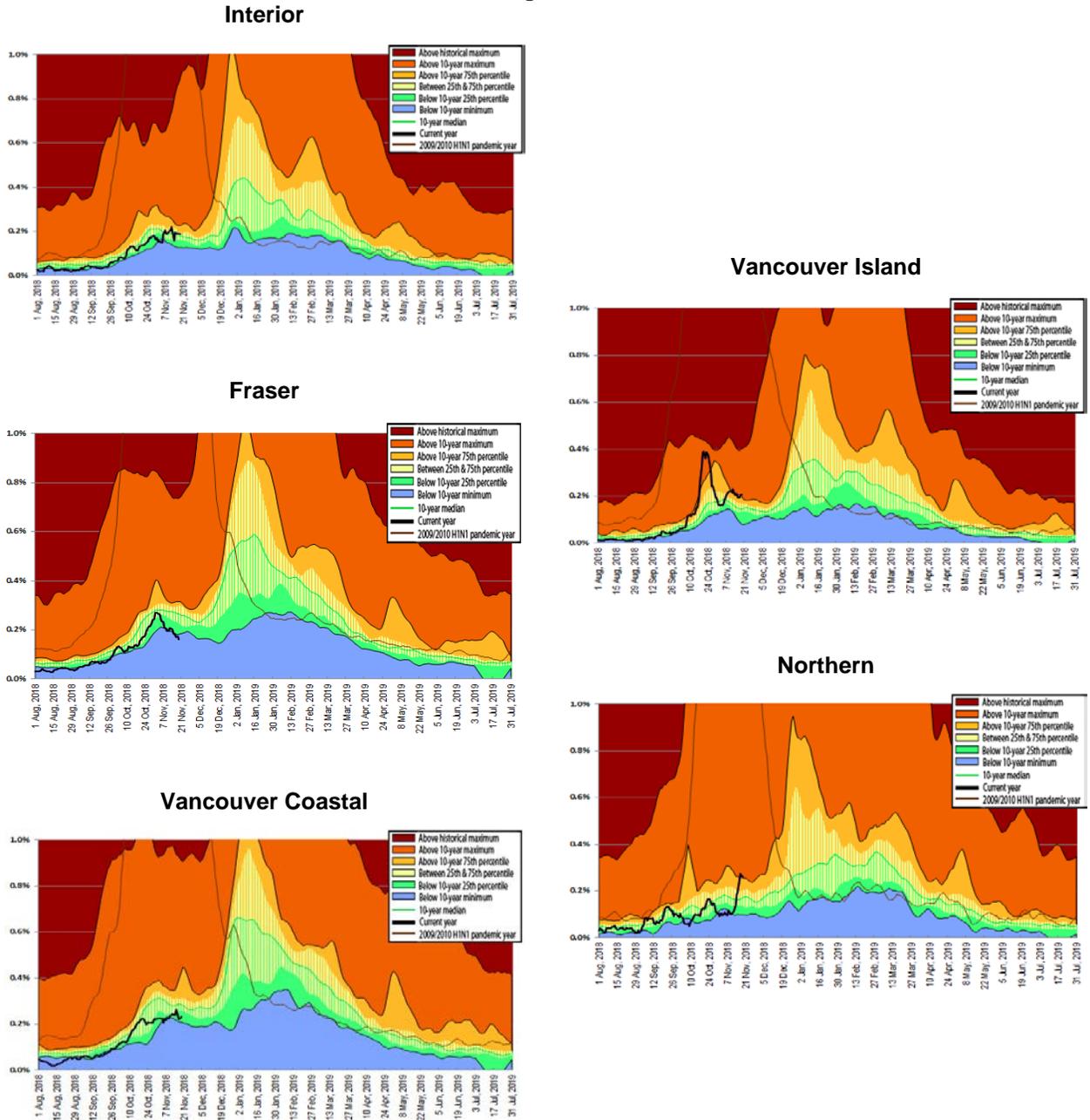


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP data beginning August 1, 2018 corresponds to sentinel ILI week 31; data are current to November 19, 2018.

Data provided by Population Health Surveillance and Epidemiology, BC Ministry of Health Services.

Figure 4



Laboratory Reports

BCCDC Public Health Laboratory

Cumulatively, during the 2018-19 season (since week 40, starting October 1, 2018), 76/1110 (6.8%) patients tested positive for influenza at the BCCDC Public Health Laboratory (PHL), of which 74 had influenza A [24 A(H3N2), 45 A(H1N1)pdm09, 5 subtype unknown] and 2 had influenza B (**Figure 5**).

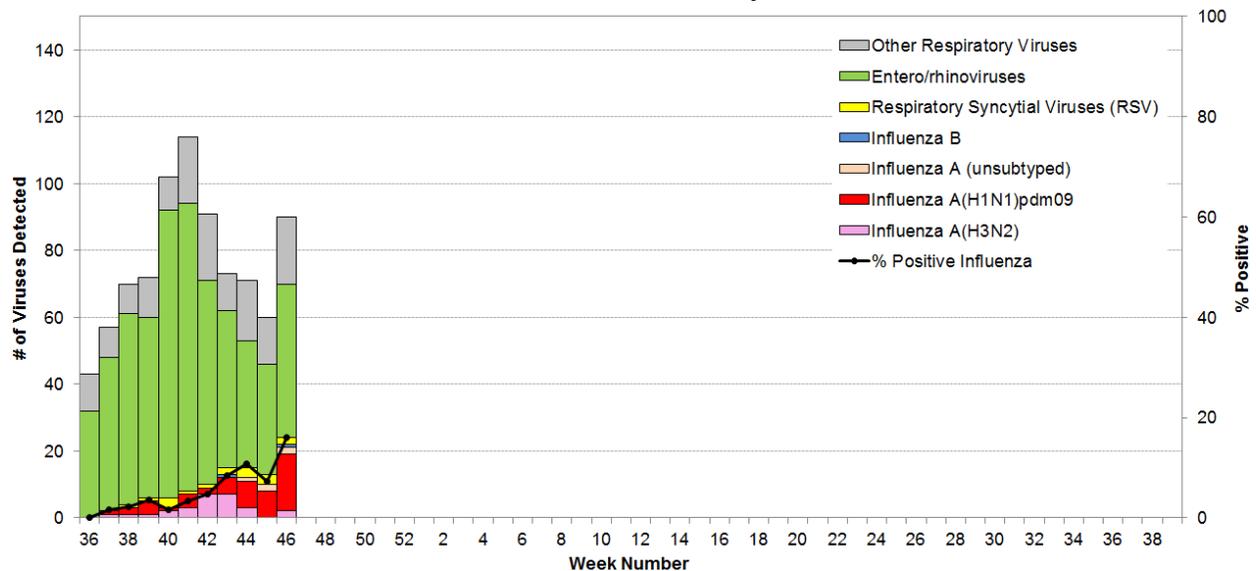
In week 46, 138 patients were tested for respiratory viruses at the BCCDC PHL. Of these, 22 (15.9%) tested positive for influenza: 21 for influenza A [2 A(H3N2), 17 A(H1N1)pdm09, and 2 subtype unknown] and 1 for influenza B (**Figure 5**), suggesting A(H1N1)pdm09 predominance with lesser A(H3N2) and influenza B contribution.

Of the seventeen A(H1N1)pdm09 detections in week 46, the age distribution included 6, 8, 2, and 1 detections among 1-9, 20-49, 50-64, and 65+ year olds, respectively, while the two A(H3N2) detections were among 20-49 year olds. The two A(subtype unknown) were detected among 1-9 and 20-49 year olds. The single influenza B detection in week 46 was in a 50-64 year old (**Figures 6 and 7**).

Overall, from the last week of August to mid-November (weeks 35-46), the total number of influenza detections (n=88) is substantially lower than for the same periods in 2017 (n=164), 2016 (n=261), 2015 (n=127) and 2014 (n=100), with notably fewer A(H3N2) detections and more A(H1N1)pdm09, than during the four prior seasons (**Figure 8**).

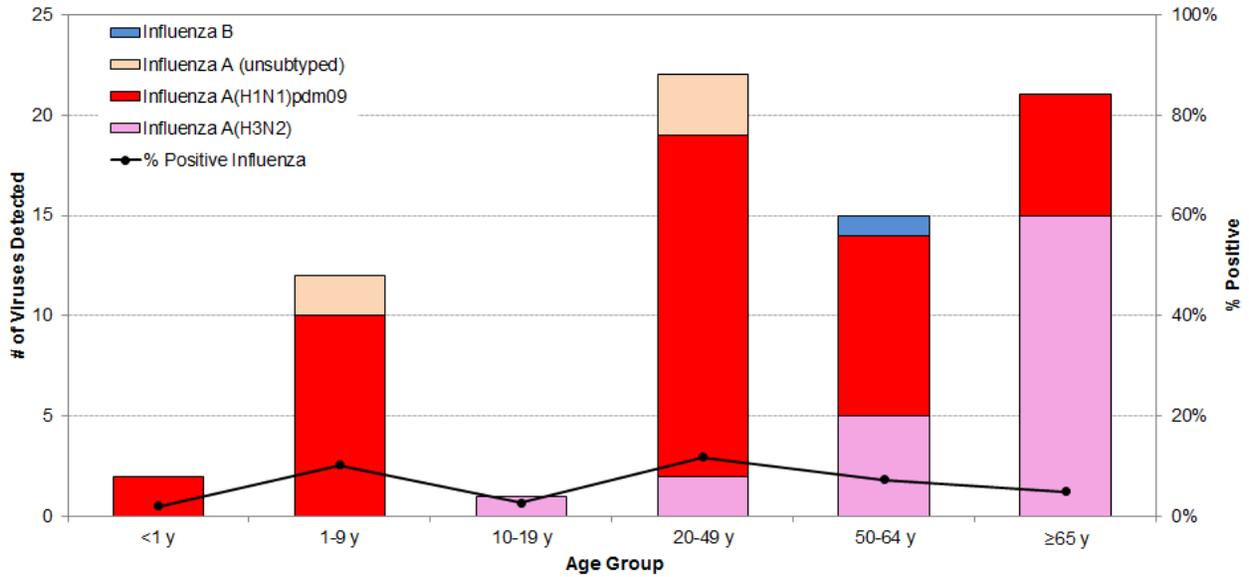
Enteroviruses (n=46) were the most commonly detected respiratory virus in week 46; these detections have increased slightly compared to recent weeks (**Figure 5**).

Figure 5: Influenza and other virus detections among respiratory specimens submitted to BCCDC Public Health Laboratory, 2018-19



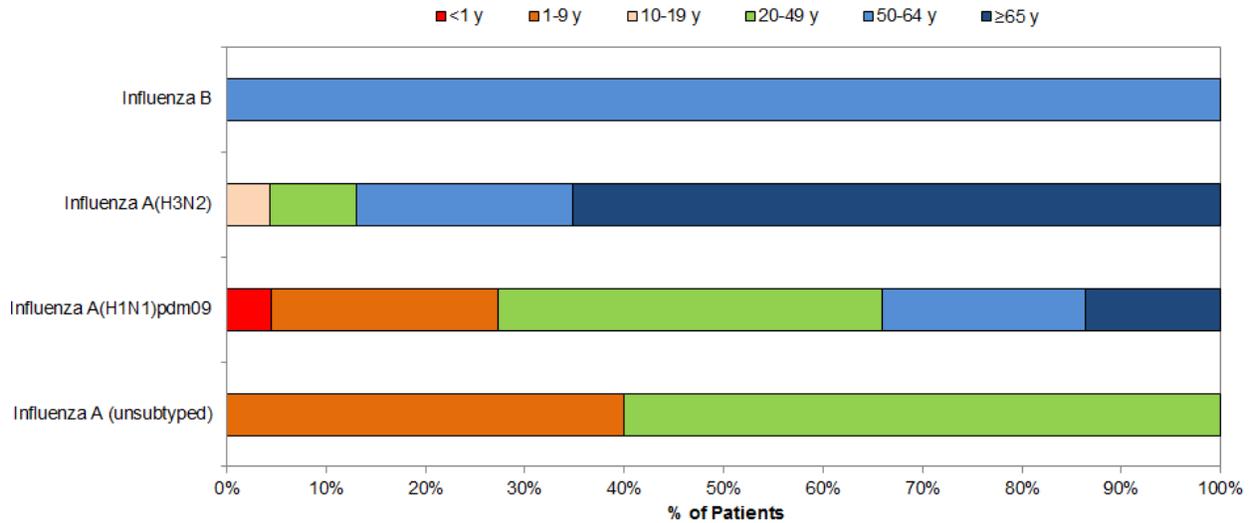
Source: BCCDC Public Health Laboratory (PHDRW); Data are current to November 22, 2018.

Figure 6: Cumulative number (since week 40) of influenza detections by type, subtype, and age group, BCCDC Public Health Laboratory, 2018-19



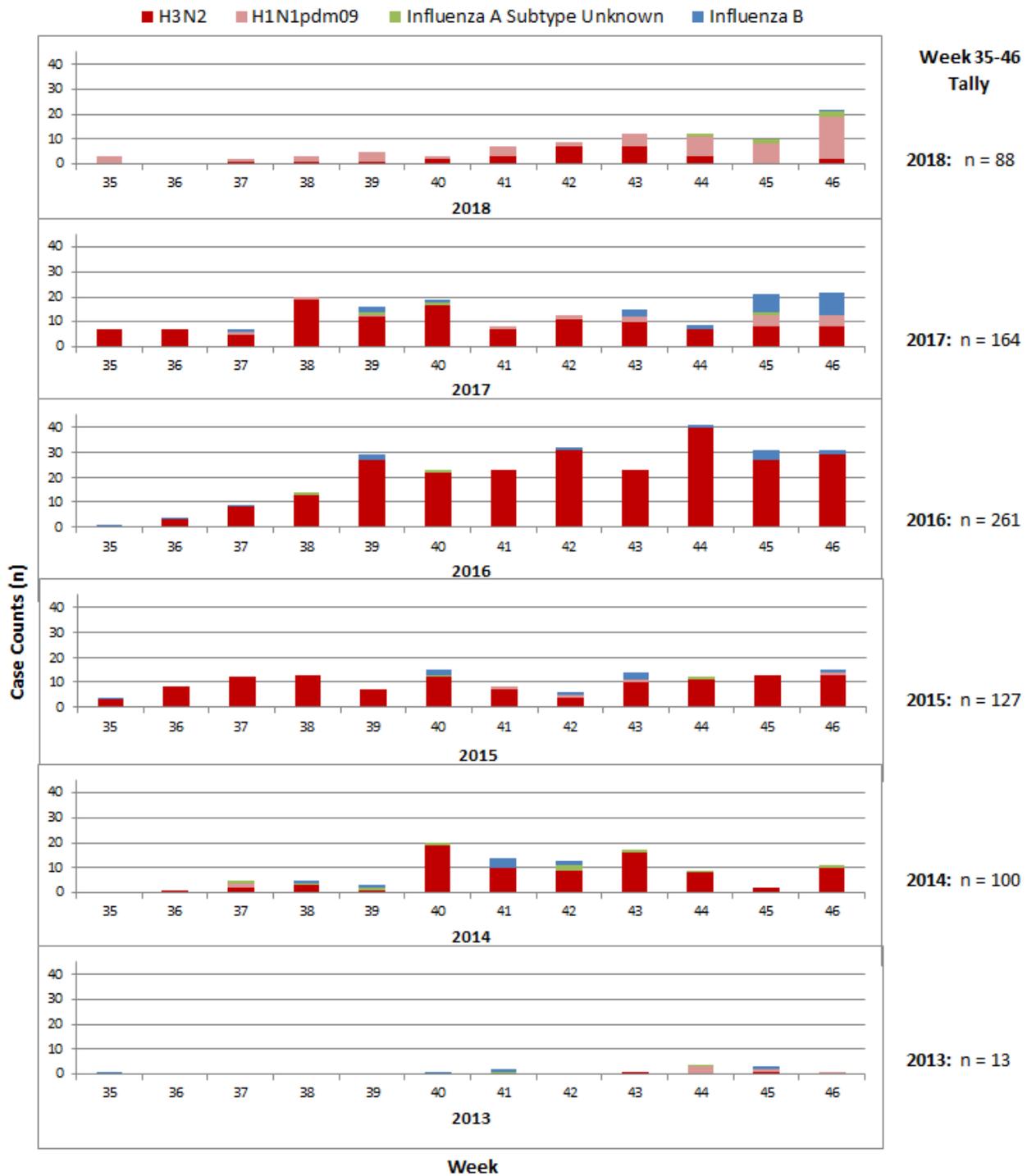
Source: BCCDC Public Health Laboratory (PHDRW); Data are current to November 22, 2018; figure includes cumulative influenza detections for specimens collected since week 40.

Figure 7: Age distribution of influenza detections (cumulative since week 40), BCCDC Public Health Laboratory, 2018-19



Source: BCCDC Public Health Laboratory (PHDRW); Data are current to November 22, 2018; figure includes cumulative influenza detections for specimens collected since week 40.

Figure 8: Influenza detections by week, virus subtype, and season, BCCDC Public Health Laboratory, weeks 35 to 46 (end-August to mid-November), 2013 to 2018

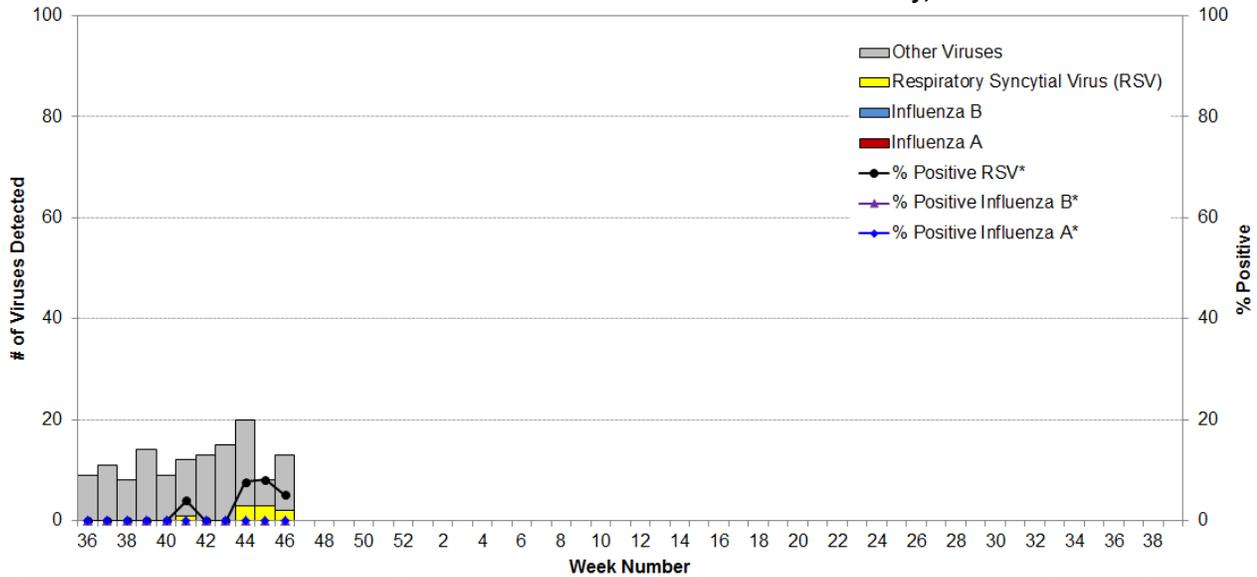


Source: BCCDC Public Health Laboratory (PHDRW); Data are current to November 22, 2018.

BC Children’s and Women’s Health Centre Laboratory

In week 46, 29 tests for influenza and 39 tests for respiratory syncytial virus (RSV) were conducted at the BC Children’s and Women’s Health Centre laboratory. Of these, none were positive for influenza, and two were positive for RSV. In week 46, rhinoviruses were the most commonly detected respiratory viruses, as expected at this time of year (**Figure 9**).

Figure 9: Influenza and other virus detections among respiratory specimens submitted to BC Children’s and Women’s Health Centre Laboratory, 2018-19



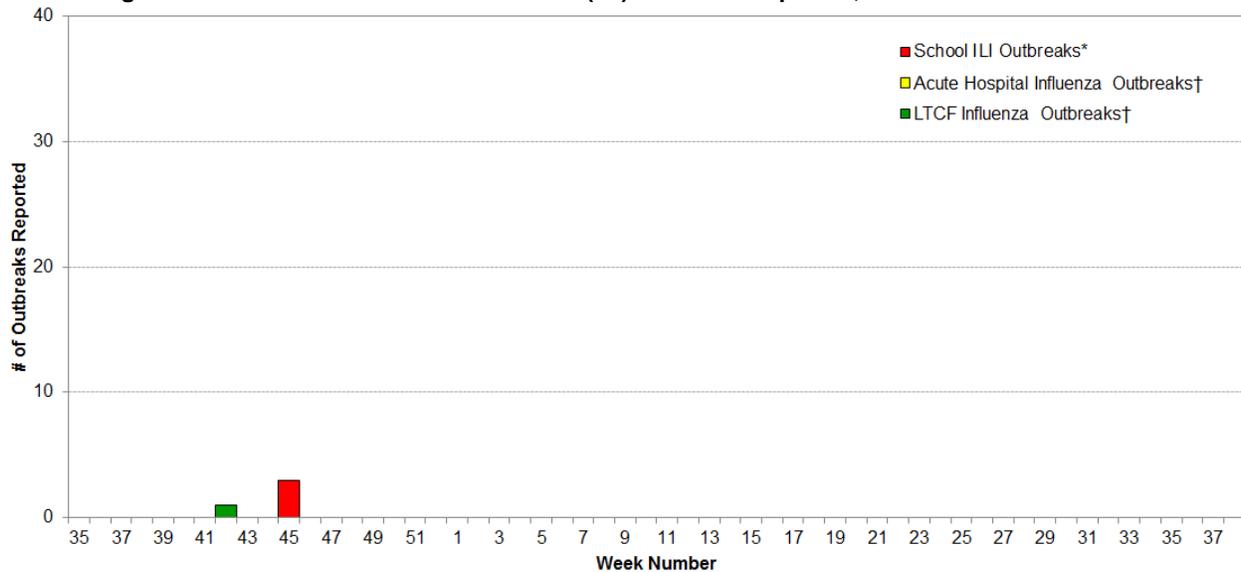
* Positive rates were calculated using aggregate data. The denominators for each rate represent the total number of tests; multiple tests may be performed for a single specimen and/or patient.

Influenza-like Illness (ILI) Outbreaks

No outbreaks were reported in week 46. The first laboratory-confirmed influenza outbreak of the 2018-19 season was reported in a long-term care facility (LTCF) in week 42, attributed to A(H3N2), and three school ILI outbreaks of unknown etiology were identified in week 45 (Figures 10 and 11).

By way of comparison, between weeks 40 and 46 of the 2016-17 and 2017-18 seasons, 9 and 2 confirmed LTCF outbreaks, respectively, had been reported.

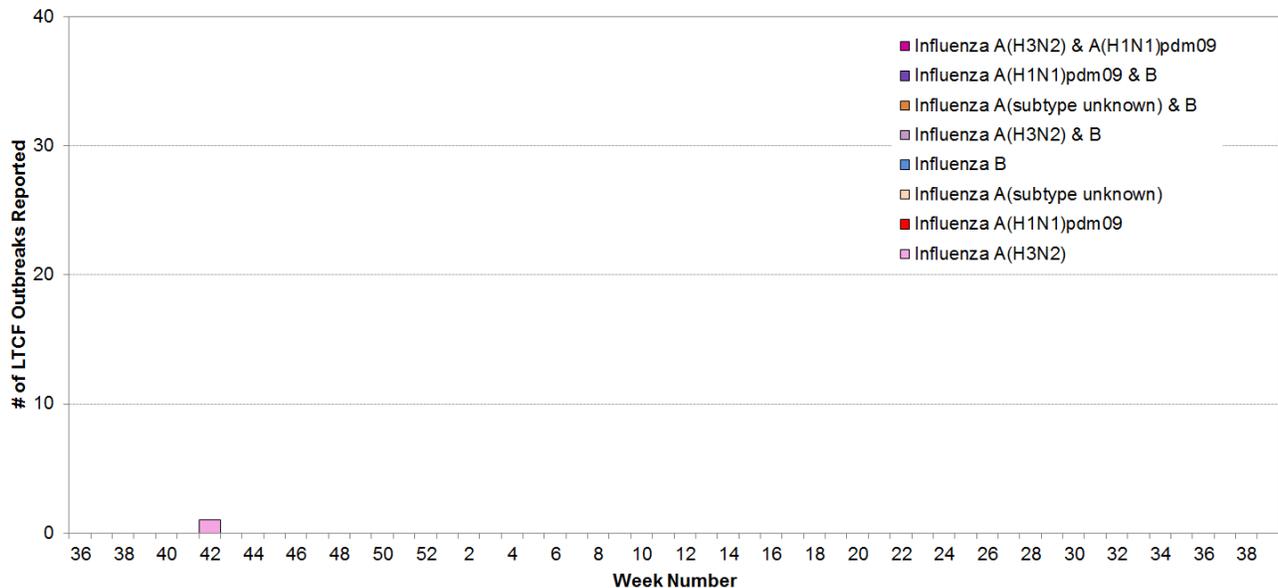
Figure 10: Number of influenza-like illness (ILI) outbreaks reported, British Columbia 2018-19



* School-based ILI outbreak defined as >10% absenteeism on any day, most likely due to ILI. Onset

† Facility-based influenza outbreaks defined as 2 or more ILI cases within 7-day period, with at least one laboratory-confirmed case of influenza.

Figure 11: Number of influenza outbreaks by type/subtype in long-term care facilities (LTCF), British Columbia 2018-19†



† Facility-based influenza outbreaks defined as 2 or more ILI cases within 7-day period, with at least one laboratory-confirmed case of influenza.

Emerging Respiratory Viruses

Acute flaccid myelitis (AFM) cases – possibly associated with enterovirus D68 (EV-D68) - continue to rise in the US

Since September, the US CDC has reported an increase in paediatric cases of acute flaccid myelitis (AFM), a subset of acute flaccid paralysis (AFP) (often referred to as “polio-like illness” in the media). As of November 16th 2018, the CDC has confirmed 106 cases of AFM across 29 states – predominantly affecting children under 5 years of age. Patients have presented with neurological features, specifically single or multi-limb weakness, with most requiring hospitalization. More than 90% of AFM cases reported a mild respiratory illness or fever - consistent with a viral infection - in the weeks preceding symptom onset. AFM has a variety of possible causes, including non-polio enterovirus infection. Among 71 confirmed cases tested, just over half (54%) tested positive for enterovirus or rhinovirus at the time of AFM diagnosis (37% for enterovirus D68 (EV-D68), 29% for enterovirus A71 (EV-A71)); however, a clear and consistent etiology has not yet been identified.

These reports indicate that 2018 may represent another biennial peak, similar to that observed during EV-D68 epidemics in 2014 and 2016. The latter EV-D68 epidemics were noteworthy for including cases with severe respiratory manifestations (less prominently noted in 2018); however, neurological complications were also identified. Accordingly, the US CDC has escalated its response by establishing an AFM task force to aid investigation efforts.

To date, no AFM cases have been reported to the BCCDC. Whilst low-level EV-D68 activity has been detected in BC this autumn, as may be expected at this time of the year, we are not aware of any cases presenting with neurological manifestations. Elsewhere in Canada, a possible uptick in reports of AFP has been noted; however, thus far, the number of confirmed cases falls below the annual expected range. The number of cases of sudden onset muscle weakness in children reported to the Public Health Agency of Canada in 2018 can be found at the link below.

Additional information is available from the following sources:

US CDC AFM webpage: <https://www.cdc.gov/acute-flaccid-myelitis/index.html>

US CDC factsheet on EV-D68: <https://www.cdc.gov/non-polio-enterovirus/about/ev-d68.html>

PHAC information sheet on AFM in Canada: <https://www.canada.ca/en/public-health/services/diseases/acute-flaccid-myelitis.html>

A summary of the 2014 experience in BC was published in Euro Surveillance, available from: <https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2015.20.43.30047>

National

FluWatch (week 45, November 4 to 10, 2018)

At the national level, influenza activity has increased in week 45 compared to previous weeks. Influenza A is the most common influenza virus circulating, and the majority of detections continue to be A(H1N1)pdm09. The percentage of laboratory tests positive for influenza increased slightly, from 1.58% in week 40, to 9.6% in week 45. Details are available at: <https://www.canada.ca/en/public-health/services/diseases/flu-influenza/influenza-surveillance/weekly-influenza-reports.html>.

National Microbiology Laboratory (NML): Strain Characterization

From September 1, 2018 to November 22, 2018, the National Microbiology Laboratory (NML) has antigenically characterized fifty influenza viruses [1 A(H3N2), 48 A(H1N1)pdm09 and 1 B] received from Canadian laboratories.

Influenza A(H3N2): The one influenza A(H3N2) virus was considered antigenically similar to A/Singapore/INFIMH-16-0019/2016, the WHO-recommended A(H3N2) component of the 2018-19 northern hemisphere influenza vaccine. The characterized virus belonged to genetic group 3C.2a1.

Influenza A(H1N1)pdm09: All of the 48 A(H1N1)pdm09 viruses characterized were antigenically similar to the A/Michigan/45/2015 virus: the WHO-recommended influenza A(H1N1) component of the 2018-19 northern hemisphere influenza vaccine.

Influenza B: The one influenza B virus characterized was antigenically similar to the B/Phuket/3073/13 virus, which belongs to the B Yamagata lineage: the WHO-recommended influenza B component of the 2018-19 northern hemisphere *quadrivalent* influenza vaccine. Of note, the WHO-recommended influenza B component of the *trivalent* vaccine is a B/Colorado/06/2017-like virus of the B Victoria lineage.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1, 2018 to November 22, 2018, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 11 influenza A(H3N2) and 48 A(H1N1)pdm09 viruses tested against amantadine, all were resistant.

Oseltamivir: Of the 59 influenza viruses [10 A(H3N2), 48 A(H1N1)pdm09, and 1 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 59 influenza viruses [10 A(H3N2), 48 A(H1N1)pdm09, and 1 B] tested against zanamivir, all were sensitive.

International

USA (week 45, November 4 to 10, 2018)

During week 45, influenza activity increased slightly but remained at low levels in the United States. Since week 40, the most frequently identified influenza subtype reported by public health laboratories was influenza A(H1N1)pdm09. The proportion of deaths attributed to pneumonia and influenza was below the system-specific epidemic threshold. No influenza-associated pediatric deaths were reported during week 45. The proportion of outpatient visits for ILI increased slightly but remained low at 1.9%; below the national baseline of 2.2%. The US CDC has posted a summary of influenza activity in the US and elsewhere for week 45, available at: <https://www.cdc.gov/flu/weekly/index.htm>

WHO (November 12, 2018, based on data up to October 28, 2018)

In the temperate zone of the northern hemisphere, influenza detections remained at inter-seasonal levels. Some countries in South and South-East Asia reported increased influenza activity. Influenza activity in the temperate zones of the southern hemisphere has returned to nearly inter-seasonal levels. Worldwide, influenza A(H1N1)pdm09 viruses have predominated.

From October 15 to October 28, 2018, the WHO GISRS laboratories tested more than 84,313 specimens. Of these, 2,145 were positive for influenza viruses, of which 1,845 (86%) were typed as influenza A [905 (64.5%) A(H1N1)pdm09; 499 (35.5%) A(H3N2)] and 300 (14%) as influenza B [54 (52.4%) B(Yamagata); 49 (47.6%) B(Victoria)].

The full report is available at: www.who.int/influenza/surveillance_monitoring/updates/en/.

WHO Recommendations for Influenza Vaccines

WHO Recommendations for 2018-19 Northern Hemisphere Influenza Vaccine

On February 22, 2018, the WHO announced the recommended strain components for the 2018-19 northern hemisphere trivalent influenza vaccine (TIV)*:

- an A/Michigan/45/2015 (H1N1)pdm09-like virus;
- an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus; †
- a B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage) ‡.

It is recommended that quadrivalent influenza vaccines (QIV) containing two influenza B viruses contain the above three viruses and a B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage).

* Recommended strains represent a change for two of the three components used for the 2017-18 northern hemisphere TIV

† Recommended strain represents a change from the 2017-18 season vaccine which contained an A/Hong Kong/4801/2014 (H3N2)-like virus

‡ Recommended strain represents a change from the 2017-18 season vaccine which contained a B/Brisbane/60/2008-like virus.

For further details: http://www.who.int/influenza/vaccines/virus/recommendations/2018_19_north/en/

WHO Recommendations for the 2019 Southern Hemisphere Influenza Vaccine

On September 27, 2018, the WHO announced recommended strain components for the 2019 southern hemisphere trivalent influenza vaccine (TIV):*

- an A/Michigan/45/2015 (H1N1)pdm09-like virus;
- an A/Switzerland/8060/2017 (H3N2)-like virus; ‡
- a B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage).§

It is recommended that quadrivalent influenza vaccines (QIV) containing two influenza B viruses contain the above three viruses and a B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage).

* Recommended strains represent a change for two of the three components used for the 2018 southern hemisphere TIV.

‡ Recommended strain represents a change from the 2018 season vaccine which contained an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus

§ Recommended strain for the influenza B component represents a lineage-level change from a B(Yamagata)-lineage virus in the 2018 vaccine to a B(Victoria)-lineage virus in the 2019 vaccine.

For further details: http://www.who.int/influenza/vaccines/virus/recommendations/2019_south/en/

Additional Information

Explanatory Note:

The surveillance period for the 2018-19 influenza season is defined starting in week 40. Weeks 36-39 of the 2017-18 season are shown on graphs for comparison purposes.

List of Acronyms:

ACF: Acute Care Facility

AI: Avian influenza

FHA: Fraser Health Authority

HBoV: Human bocavirus

HMPV: Human metapneumovirus

HSDA: Health Service Delivery Area

IHA: Interior Health Authority

ILI: Influenza-Like Illness

LTCF: Long-Term Care Facility

MSP: BC Medical Services Plan

NHA: Northern Health Authority

NML: National Microbiological Laboratory

A(H1N1)pdm09: Pandemic H1N1 influenza (2009)

RSV: Respiratory syncytial virus

VCHA: Vancouver Coastal Health Authority

VIHA: Vancouver Island Health Authority

WHO: World Health Organization

Current AMMI Canada Guidelines on the Use of Antiviral Drugs for Influenza:

www.ammi.ca/?ID=122&Language=ENG

Web Sites:

BCCDC Emerging Respiratory Pathogen Updates:

www.bccdc.ca/health-professionals/data-reports/emerging-respiratory-virus-updates

Influenza Web Sites

Canada – Influenza surveillance (FluWatch): <https://www.canada.ca/en/public-health/services/diseases/flu-influenza/influenza-surveillance.html>

Washington State Flu Updates: <http://www.doh.wa.gov/portals/1/documents/5100/420-100-fluupdate.pdf>

USA Weekly Surveillance Reports: www.cdc.gov/flu/weekly/

Joint ECDC – WHO/Europe weekly influenza update (Flu News Europe): flunewseurope.org

WHO – Weekly Epidemiological Record: www.who.int/wer/en/

WHO Collaborating Centre for Reference and Research on Influenza (Australia): www.influenzacentre.org/

Australian Influenza Report:

www.health.gov.au/internet/main/publishing.nsf/content/cda-surveil-ozflu-flucurr.htm

New Zealand Influenza Surveillance Reports: www.surv.esr.cri.nz/virology/influenza_weekly_update.php

Avian Influenza Web Sites

WHO – Influenza at the Human-Animal Interface: www.who.int/csr/disease/avian_influenza/en/

World Organization for Animal Health: www.oie.int/eng/en_index.htm

Contact Us:

Tel: (604) 707-2510

Fax: (604) 707-2516

Email: InfluenzaFieldEpi@bccdc.ca

Communicable Disease Prevention and Control Services (CDPACS)

BC Centre for Disease Control

655 West 12th Ave, Vancouver BC V5Z 4R4

Online: www.bccdc.ca/health-professionals/data-reports/influenza-surveillance-reports

Link to fillable Facility Outbreak Report Form: [http://www.bccdc.ca/resource-](http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Forms/Epid/Influenza%20and%20Respiratory/OutbreakReportForm_2018.pdf)

[gallery/Documents/Guidelines%20and%20Forms/Forms/Epid/Influenza%20and%20Respiratory/OutbreakReportForm_2018.pdf](http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Forms/Epid/Influenza%20and%20Respiratory/OutbreakReportForm_2018.pdf)

Influenza-Like Illness (ILI) Outbreak Summary Report Form

Please complete and email to ilioutbreak@bccdc.ca

**Note: This form is for provincial surveillance purposes.
 Please notify your local health unit per local guidelines/requirements.**

ILI: Acute onset of respiratory illness with fever and cough and with one or more of the following: sore throat, arthralgia, myalgia, or prostration which *could* be due to influenza virus. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.
Schools and work site outbreak: greater than 10% absenteeism on any day, most likely due to ILI.
Residential institutions (facilities) outbreak: two or more cases of ILI within a seven-day period.

A	<u>Reporting Information</u>	
	Person Reporting:	Title:
	Contact Phone:	Email:
	Health Authority:	HSDA:
	Full Facility Name:	
	Is this report:	First Notification (<i>complete section B below; section D if available</i>) Outbreak Over (<i>complete section C and section D below</i>)
	Report Date (dd/mm/yyyy):	

B	<u>First Notification</u>	
	Type of facility*:	Long Term Care Facilities, Nursing Homes Acute Care Facility
		Other Setting:
	<i>If ward or wing, please specify name/number:</i>	
	Date of onset of first case of ILI (dd/mm/yyyy):	
	Date outbreak declared (dd/mm/yyyy):	
<small>*Long Term Care Facilities, Nursing Homes: Facilities that provide living accommodation for people who require on-site delivery of 24 hour, 7 days a week supervised care, including professional health services, personal care and services such as meals, laundry and housekeeping or other residential care facilities where provincial/territorial public health is responsible for outbreak management under provincial legislation; Acute Care Facility: Publicly funded facilities providing medical and/or surgical treatment and acute nursing care for sick or injured people, through inpatient services. (i.e. hospitals including inpatient rehabilitation and mental facilities); Other Setting: Any locations not otherwise specified here in which outbreaks of influenza or ILI may occur (e.g. retirement homes, assisted living or hospice settings, private hospitals/clinics, correctional facilities, colleges/universities, adult education centres, shelters, group homes, and workplaces).</small>		

C	<u>Outbreak Declared Over</u>										
	Date of onset for last case of ILI (dd/mm/yyyy):										
	Date outbreak declared over (dd/mm/yyyy):										
	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th style="width: 50%;">Numbers to date</th> <th style="width: 50%;">Residents</th> </tr> </thead> <tbody> <tr> <td>Total</td> <td></td> </tr> <tr> <td>With ILI</td> <td></td> </tr> <tr> <td>Hospitalized*</td> <td></td> </tr> <tr> <td>Died*</td> <td></td> </tr> </tbody> </table>		Numbers to date	Residents	Total		With ILI		Hospitalized*		Died*
Numbers to date	Residents										
Total											
With ILI											
Hospitalized*											
Died*											
<small>*suspected to be linked to case of ILI</small>											

D	<u>Laboratory Information</u>			
	Specimen(s) submitted?	<input type="checkbox"/> Yes (location: _____)	No	<input type="checkbox"/> Don't know
	If yes, organism identified?	Yes	No	Don't know
	Please specify organism/subtype:	Influenza A (subtype: _____)	Influenza B	
		Parainfluenza Enterovirus Coronavirus RSV HMPV Adenovirus Other:		