

British Columbia Influenza Surveillance Bulletin

Influenza Season 2017-18, Number 7, Weeks 51-52

December 17 to 30, 2017

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Spike in Influenza Activity over Holiday Period: Mix of Influenza A and B

During weeks 51-52 (December 17 to 30, 2017), influenza activity continued to increase, consistent with expected seasonal trends.

Influenza positivity at the BCCDC Public Health Laboratory increased to above 40% in week 52 and included a mix of influenza A and B. Influenza B detections remain higher than usual for this time of year, comprising >50% of all influenza detections during this period. Among influenza A detections, A(H3N2) remains the dominant subtype.

Since our last bulletin, 23 new lab-confirmed outbreaks were reported; 22 from long-term care facilities (LTCFs) and one in an acute care hospital. Of the 23 outbreaks, 11 had influenza A detected, 11 had influenza B detected, and 1 had influenza A and B detected; all 3 of the influenza A outbreaks with subtype information available were A(H3N2). Additionally, two school ILI outbreaks were reported during week 51.

Other influenza-like illness (ILI) surveillance indicators also showed increasing activity over the holiday period but were consistent with expected levels for this time of year.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

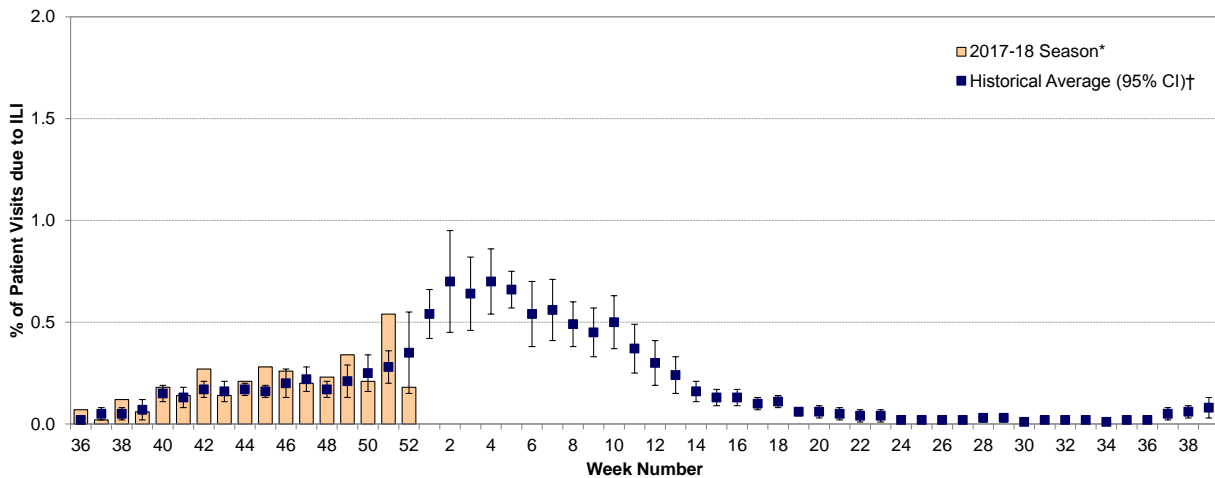
Report Disseminated: January 4, 2018

British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI), among those presenting to sentinel sites, was above the 10-year historical average for week 51 and consistent with the 10-year historical average for week 52. Rates are subject to change as reporting becomes more complete in particular during the holiday period due to delayed reporting. To date, only 38% of sentinel sites have reported data for week 52 compared to 76% for week 51.

Percent of patient visits to sentinel physicians due to influenza-like illness (ILI) compared to historical average, British Columbia, 2017-18



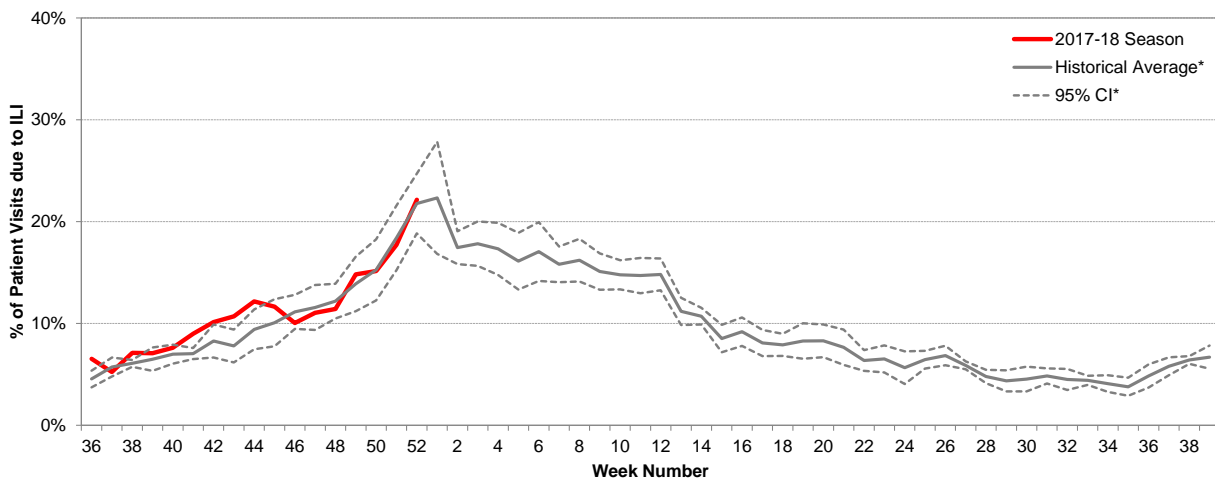
* Data are subject to change as reporting becomes more complete.

† 10-year historical average for 2017-18 season based on 2005-06 to 2016-2017 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children's Hospital Emergency Room

In weeks 51-52, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI continued to increase and was consistent with the historical average for the past 5 seasons.

Percent of patients presenting to BC Children's Hospital ER attributed to influenza-like illness (ILI), British Columbia, 2017-18



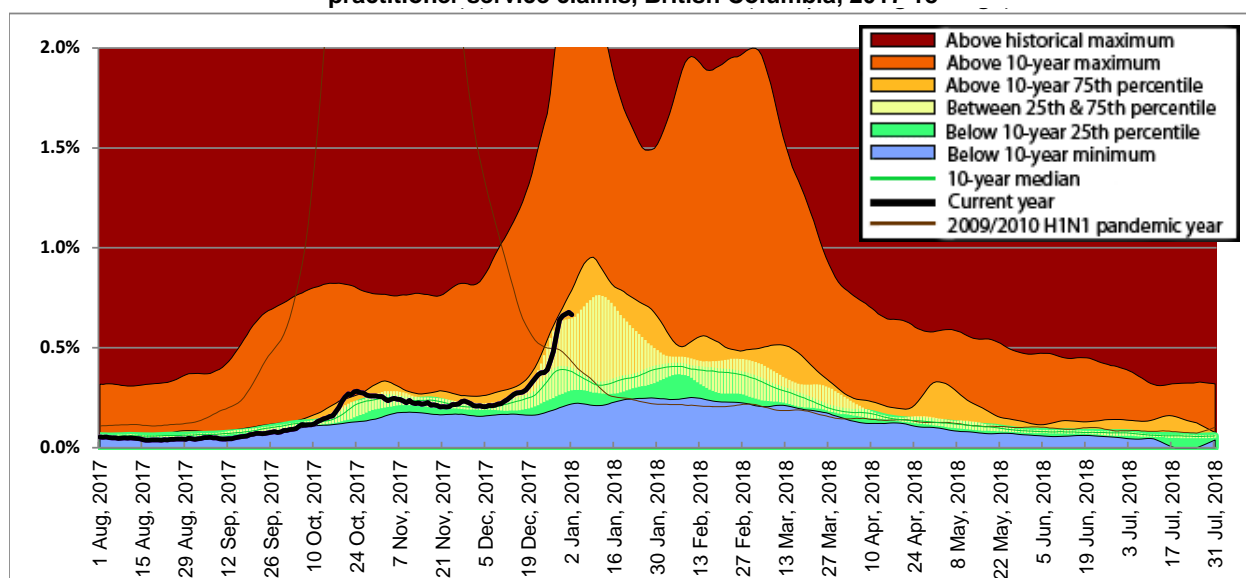
Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."

* 5-year historical average for 2017-18 season based on 2012-13 to 2016-17 seasons; CI=confidence interval.

Medical Services Plan

In weeks 51-52, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims continued to increase in all regions of the province as expected for this time of year. In week 52, rates were above the 10-year 75th percentile for the province overall and in FHA and NHA. In contrast, rates in IHA were above the 10-year maximum; whereas, rates in VCHA and VIHA were generally within expected levels for this time of year.

Service claims submitted to MSP for influenza illness (II)* as a proportion of all submitted general practitioner service claims, British Columbia, 2017-18

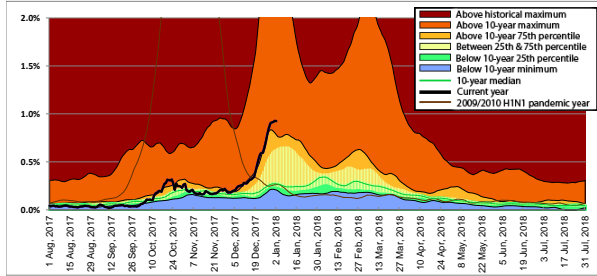


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

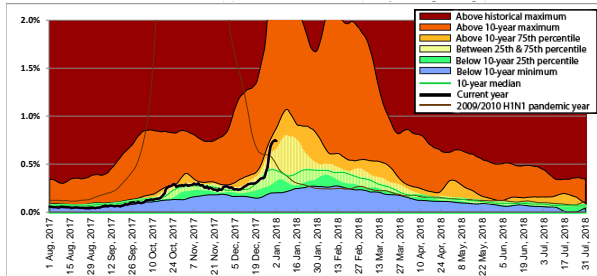
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP data beginning August 1, 2017 corresponds to sentinel ILI week 31; data are current to January 2, 2018.

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

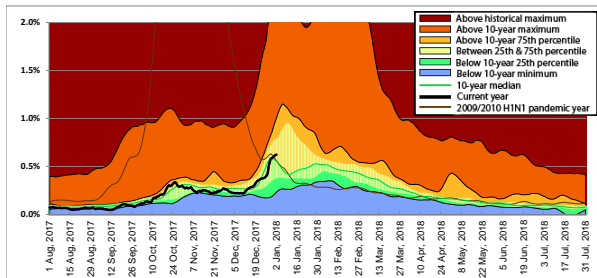
Interior



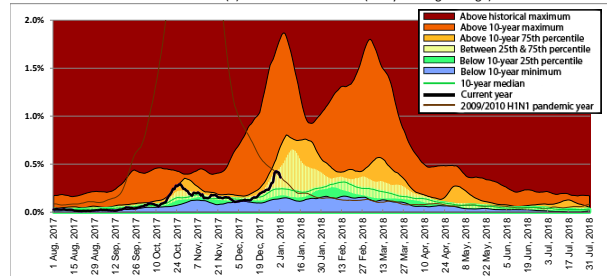
Fraser



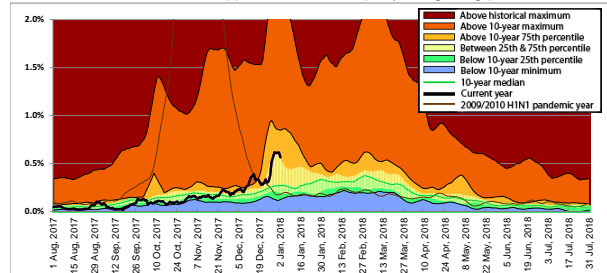
Vancouver Coastal



Vancouver Island



Northern



Laboratory Reports

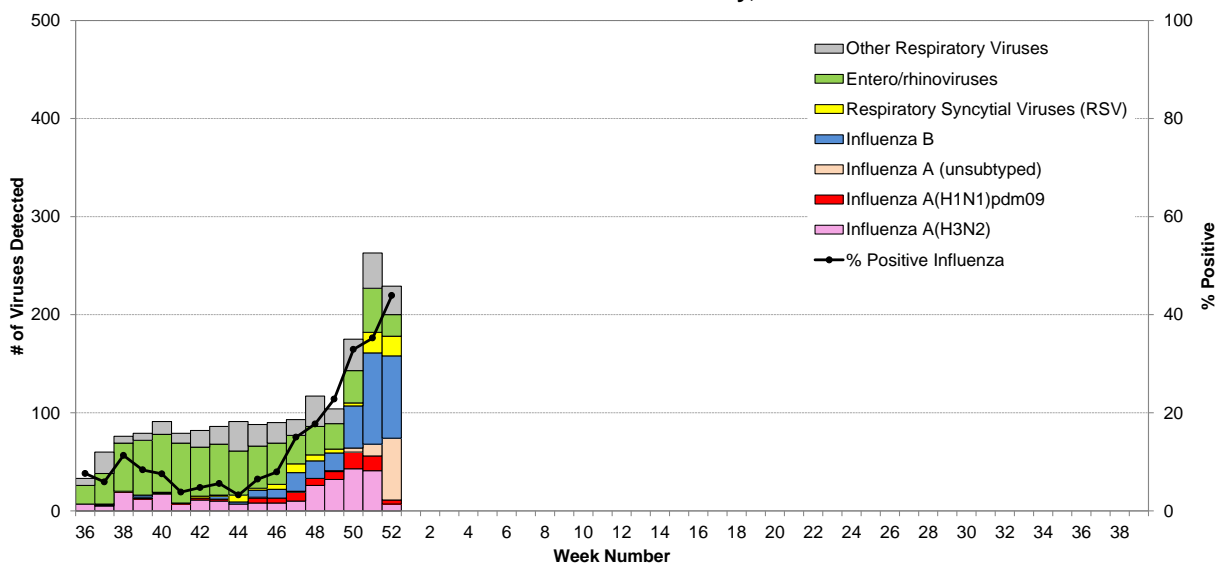
BCCDC Public Health Laboratory

In weeks 51-52, 817 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 317 (39%) tested positive for influenza; 140 (45%) had influenza A detected [47 A(H3N2), 19 A(H1N1)pdm09 and 74 subtype pending], 175 (56%) had influenza B detected, and two patients had both influenza A and B detected. Among influenza A detections, A(H3N2) remained the dominant subtype during this period. Influenza B positivity remains greater than in previous years for this period, comprising >50% of all influenza detections in weeks 51-52. Influenza positivity at the BCCDC PHL increased from 35% in week 51 to 44% in week 52, continuing an increasing trend since week 44 and concurrent with increasing test volumes.

Cumulatively during the 2017-18 season, more than half (52%) of A(H3N2) cases have been detected among elderly adults ≥ 65 years old, with 10% <20, 17% 20-49, and 21% 50-64 years old. Conversely, 38% of influenza B cases have been detected among elderly adults ≥ 65 years old, with 17% <20, 23% 20-49, and 22% 50-64 years old.

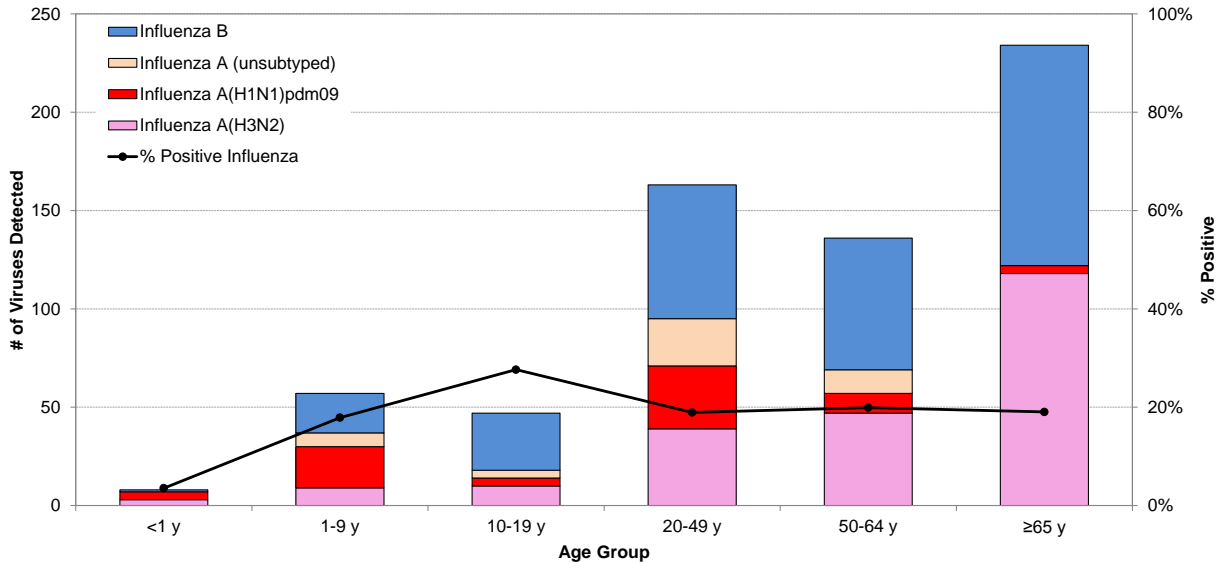
Enteroviruses were the most commonly detected non-influenza respiratory virus during this period but with increasing detection of respiratory syncytial virus (RSV).

Influenza and other virus detections among respiratory specimens submitted to BCCDC Public Health Laboratory, 2017-18



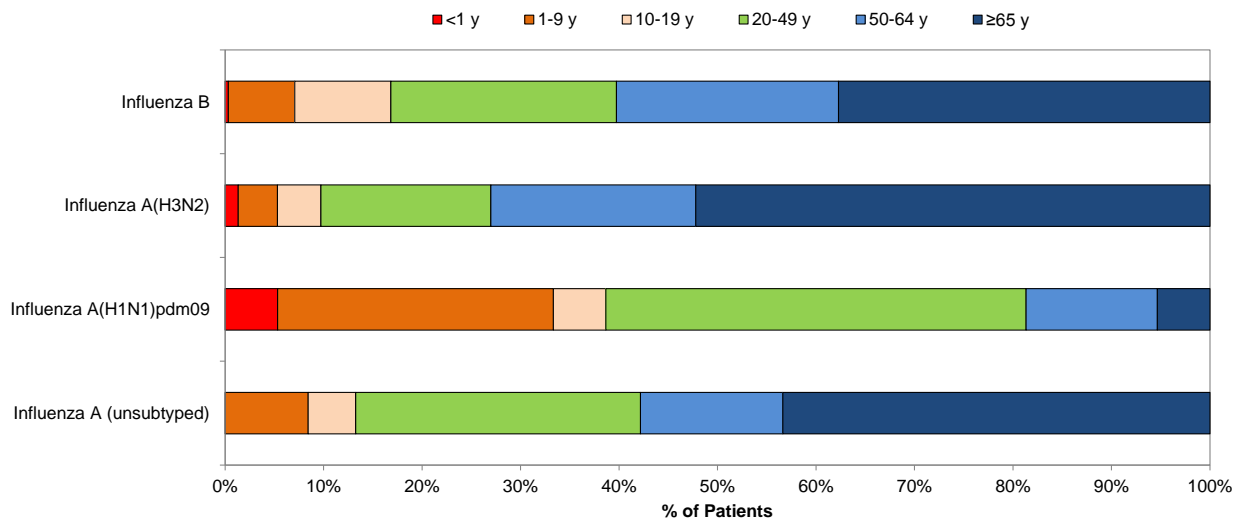
Data are current to January 3, 2018.

Cumulative number (since week 40) of influenza detections by type subtype and age group, BCCDC Public Health Laboratory, 2017-18



Data are current to January 3, 2018; figure includes cumulative influenza detections for specimens collected from weeks 40-52.

Age distribution of influenza detections (cumulative since week 40), BCCDC Public Health Laboratory, 2017-18

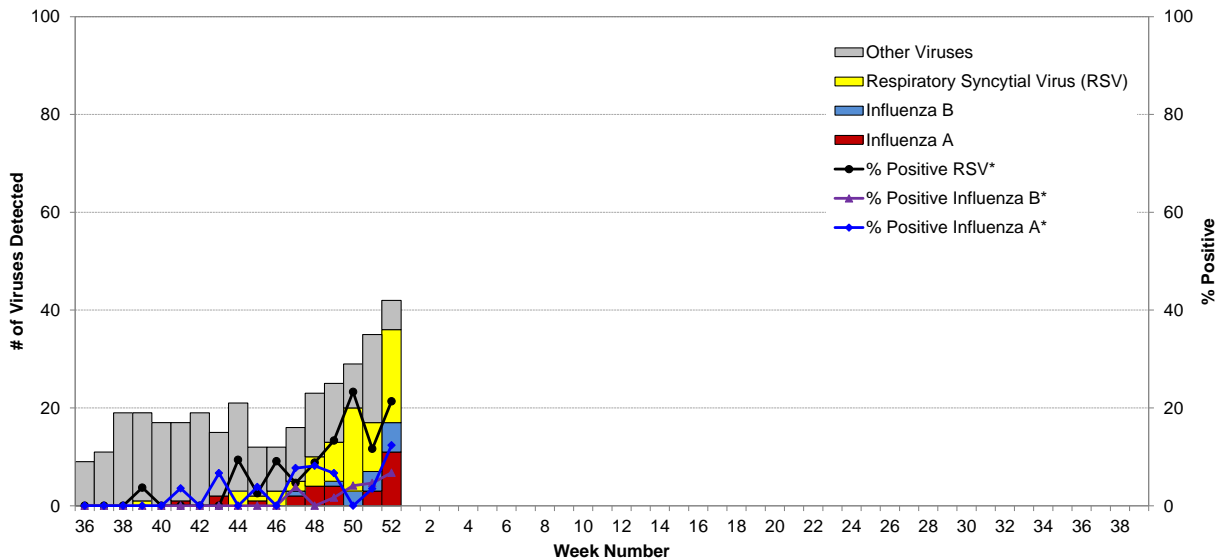


Data are current to January 3, 2018; figure includes cumulative influenza detections for specimens collected from weeks 40-52.

BC Children's and Women's Health Centre Laboratory

In weeks 51-52, 175 tests for respiratory viruses were conducted at the BC Children's and Women's Health Centre (CWHC) laboratory. Of these, 14 (8%) were positive for influenza A (including 3 in week 51 and 11 in week 52) and 10 (6%) were positive for influenza B (including 4 in week 51 and 6 in week 52). Additionally, 29 (17%) were positive for respiratory syncytial virus (RSV). RSV was the most commonly detected respiratory viruses during this period.

Influenza and other virus detections among respiratory specimens submitted to BC Children's and Women's Health Centre Laboratory, 2017-18



* 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.

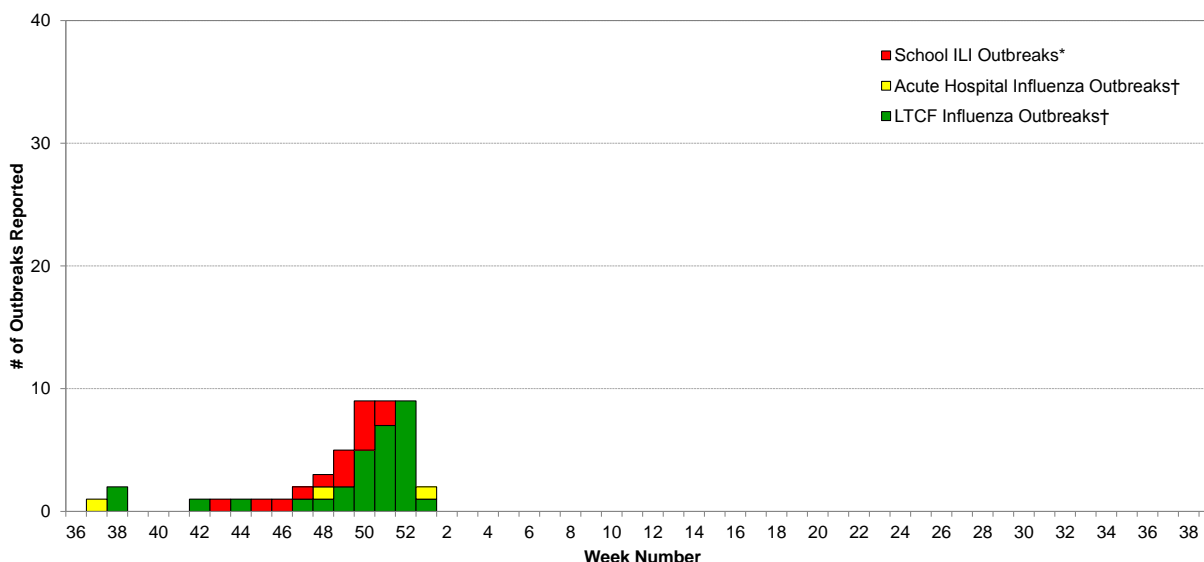
Influenza-like Illness (ILI) Outbreaks

Since our last bulletin, two weeks ago, 23 new lab-confirmed outbreaks were reported, including 22 from long-term care facilities (LTCFs) and one in an acute care hospital. Of the 23 newly reported outbreaks, 1 had onset in week 47 in VCHA, 1 had onset in week 49 in IHA, 3 had onset in week 50 in IHA, 7 had onset in week 51 (3 in FHA, 2 in IHA, 2 in VIHA), 9 had onset in week 52 (4 in FHA, 3 in IHA, 2 in VIHA), and 2 had onset in week 1 (1 in IHA, 1 in VIHA). Of the 23 outbreaks, 11 had influenza A detected, 11 had influenza B detected, and 1 had influenza A and B detected; of the 3 influenza A outbreaks with subtype information available, all were A(H3N2). Additionally, two school ILI outbreaks, with unknown etiology, were reported during week 51. All of the outbreaks occurred in IHA, currently the only health authority routinely reporting school ILI outbreaks to BCCDC.

Cumulatively during the 2017-18 season (since week 37, starting September 10, 2017), 33 lab-confirmed influenza outbreaks have been reported, including 16 with influenza A detected [6 A(H3N2) and 10 subtype unknown], 15 with influenza B, 1 with influenza A (H3N2) and influenza B, and 1 with influenza A (unspecified subtype) and influenza B; of these, 30 were reported in LTCFs and 3 were reported from an acute care facility. Similarly, 14 school ILI outbreaks have occurred without etiologic agent identified.

So far during this season of mixed A(H3N2) and influenza B co-circulation, the number of long term care facility outbreaks reported since week 40 (n=28) is lower than the tally for the same period during recent A(H3N2) dominant epidemics in 2014-15 (n=41) and 2016-17 (n=42) but higher than during recent A(H1N1)pdm09 dominant epidemics in 2013-14 (n=0) and 2015-16 (n=8), bearing in mind variation in the timing of seasonal epidemics that may influence final end-of-season comparisons.

Number of influenza-like illness (ILI) outbreaks reported, British Columbia 2017-18



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

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

Updated Antiviral Guidelines

The Association of Medical Microbiology and Infectious Disease Canada (AMMI Canada) have released updated guidance on the use of antiviral drugs given potential low vaccine effectiveness for the 2017-18 influenza season. These guidelines are available at: <https://www.ammi.ca/Update/79.ENG.pdf>.

National

FluWatch (week 50, December 10 to 16, 2017)

At the national level, influenza activity continues to increase across Canada. Some indicators increased slightly compared to the previous week; however, there was a notable increase in the number of outbreaks and hospitalizations reported in week 50. The majority of influenza detections continue to be A(H3N2), although a substantially greater number of influenza B detections has also been reported compared to previous seasons. In keeping with the early influenza activity this season, several indicators of influenza activity are above the expected levels for this time of year. The majority of lab confirmations, hospitalizations and deaths have been among adults 65 years of age and older. Since early November, an above-average number of weekly pediatric hospitalizations has been reported by the IMPACT network. Details are available at: 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, 2017 to January 4, 2018, the National Microbiology Laboratory (NML) received 273 influenza viruses from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 190 influenza A(H3N2) viruses, only 52 (27%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 52 viruses characterized by HI assay, all were considered antigenically similar to a cell culture-propagated A/Hong Kong/4801/2014-like virus, the WHO-recommended A(H3N2) component for the 2017-18 northern hemisphere influenza vaccine. Of the 33 out of 52 viruses that were antigenically characterized with available sequencing information, 29 belonged to genetic group 3C.2a and 4 belonged to subclade 3C.2a1; sequencing is pending for the remaining 19 isolates. Of the 138 viruses genetically characterized, 111 were reported to belong to genetic group 3C.2a, which includes the A/Hong Kong/4801/2014 vaccine strain, while 27 belonged to subclade 3C.2a1.

Influenza A(H1N1)pdm09: All of the 20 A(H1N1)pdm09 viruses characterized were antigenically similar to an A/Michigan/45/2015-like virus, the WHO-recommended influenza A(H1N1) component for the 2017-18 northern hemisphere influenza vaccine.

Influenza B: Of the 63 influenza B viruses characterized, 6 (10%) belonged to the B(Victoria) lineage and 57 (90%) belonged to the B(Yamagata) lineage. Among the 6 B(Victoria) viruses, 1 (17%) was characterized as antigenically similar to a B/Brisbane/60/2008(Victoria)-like virus, the WHO-recommended influenza B component for the 2017-18 northern hemisphere trivalent influenza vaccine, while 5 (83%) viruses showed reduced titre with ferret antisera produced against cell-propagated B/Brisbane/60/2008. Sequence analysis showed that the five viruses had a two-amino acid deletion in the HA gene. Among the 57 B(Yamagata) viruses, all were antigenically similar to a B/Phuket/3073/2013(Yamagata lineage)-like virus, the WHO-recommended influenza B component for the 2017-18 northern hemisphere quadrivalent influenza vaccine containing two influenza B strains.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1, 2017 to January 4, 2018, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 185 influenza A viruses [173 A(H3N2) and 12 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 287 influenza viruses [206 A(H3N2), 20 A(H1N1)pdm09, and 61 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 226 influenza viruses [168 A(H3N2), 12 A(H1N1)pdm09, and 46 B] tested against zanamivir, all were sensitive.

International

USA (week 51, December 17 to 23, 2017)

During week 51, overall influenza activity increased sharply in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 51 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the system-specific epidemic threshold in the National Center for Health Statistics (NCHS) Mortality Surveillance System. Three influenza-associated pediatric deaths were reported. A cumulative rate of 8.7 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for influenza-like illness (ILI) was 5.0%, which is above the national baseline of 2.2%. The geographic spread of influenza in 36 states was reported as widespread; Puerto Rico and 13 states reported regional activity; one state reported local activity; and the District of Columbia, the U.S. Virgin Islands, and Guam did not report. Details are available at: www.cdc.gov/flu/weekly/.

WHO (December 25, 2017)

Influenza activity continued to increase in the temperate zone of the northern hemisphere while in the temperate zone of the southern hemisphere activity decreased at inter-seasonal levels. In Central America and the Caribbean, influenza activity remained low. Worldwide, influenza A(H3N2) and B viruses accounted for the majority of influenza detections.

From November 27 to December 10, 2017, the WHO GISRS laboratories tested more than 127,006 specimens, of which 15,344 were positive for influenza viruses: 9579 (62%) were typed as influenza A and 5765 (38%) as influenza B. Of the subtyped influenza A viruses, 1596 (30%) were influenza A(H1N1)pdm09 and 3698 (70%) were influenza A(H3N2). Of the characterized B viruses, 2640 (85%) belonged to the B(Yamagata) lineage and 460 (15%) to the B(Victoria) lineage.

- In North America, overall influenza activity continued to increase in the region, with detections of predominantly influenza A(H3N2) viruses.
- In Europe, influenza activity continued to increase, but remained low in most of the countries, with detections of predominantly influenza B followed by influenza A(H3N2) viruses.
- In Western Asia, elevated levels of influenza activity were reported in recent weeks, with influenza A(H1N1)pdm09 predominantly detected.
- In Central Asia, low to no influenza activity was reported.
- In East Asia, influenza activity remained low in most of the countries with the exception of China where influenza like illness (ILI) and influenza percentage positive continued to increase, with influenza B Yamagata-lineage viruses predominantly detected.
- In South East Asia, low levels of influenza activity were reported.
- In Southern Asia, influenza activity remained low in general. Detections of influenza A(H1N1)pdm09 and A(H3N2) viruses were reported in India and of all seasonal subtypes in the Islamic Republic of Iran.
- In Northern Africa, low levels of influenza activity were reported. Detections of influenza A(H1N1)pdm09 virus increased slightly in Tunisia.
- In Western Africa, influenza virus detections were reported in Burkina Faso, Ghana, and Sierra Leone, with influenza A(H1N1) pdm09 virus predominating. In Middle Africa, sporadic detections of influenza A were reported in Cameroon. In Eastern Africa, influenza A(H3N2) and B detections were reported in Madagascar and Mozambique.
- In the Caribbean and Central American countries, respiratory illness indicators and influenza activity remained low in general but respiratory syncytial virus (RSV) activity remained high in several countries.
- In the tropical countries of South America, influenza and RSV activity remained at low levels overall.
- In the temperate zone of the Southern Hemisphere, influenza activity decreased overall to inter-seasonal levels.

Details are available at: www.who.int/influenza/surveillance_monitoring/updates/en/.

WHO Recommendations for Influenza Vaccines

WHO Recommendations for 2017-18 Northern Hemisphere Influenza Vaccine

On March 2, 2017, the WHO announced the recommended strain components for the 2017-18 northern hemisphere trivalent influenza vaccine (TIV):*

- an A/Michigan/45/2015 (H1N1)pdm09-like virus;†
- an A/Hong Kong/4801/2014 (H3N2)-like virus;
- a B/Brisbane/60/2008 (Victoria-lineage)-like virus.

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

* These recommended strains are the same as those recommended for the 2017 southern hemisphere TIV and represent a change for one of the three components used for the 2016-17 northern hemisphere TIV and 2016 southern hemisphere TIV.

† Recommended strain represents a change from an A/California/7/2009-like virus, which had been retained as the A(H1N1)pdm09 component since the 2009 pandemic, to an A/Michigan/45/2015-like virus belonging to the emerging phylogenetic subclade 6B.1.

For further details: www.who.int/influenza/vaccines/virus/recommendations/2017_18_north/en/.

WHO Recommendations for the 2018 Southern Hemisphere Influenza Vaccine

On September 28, 2017, the WHO announced recommended strain components for the 2018 southern 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/Phuket/3073/2013-like (Yamagata-lineage) virus.§

It is recommended that quadrivalent influenza vaccines (QIV) containing two influenza B viruses contain the above three viruses and a B/Brisbane/60/2008 (Victoria-lineage)-like virus.

* Recommended strains represent a change for two of the three components used for the 2017 southern hemisphere vaccines.

† Recommended strain is the same as recommended for the 2017 southern hemisphere and 2017-18 northern hemisphere vaccines. The A/Michigan/45/2015-like virus belongs to the emerging phylogenetic subclade 6B.1; it replaces the A/California/7/2009-like virus that had been retained as the previous A(H1N1) component since the 2009 pandemic.

‡ Recommended strain for the A(H3N2) component represents a phylogenetic clade-level change from a clade 3C.2a virus to a clade 3C.2a1 virus containing the amino acid substitution N121K in the HA which is found in the majority of recent A(H3N2) viruses.

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

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

The European Centre for Disease Prevention and Control has also posted a useful summary of WHO recommendations for the 2018 southern hemisphere influenza season, including rationale, available at: <https://ecdc.europa.eu/en/news-events/who-recommendations-influenza-virus-vaccine-composition-2018-southern-hemisphere>

Additional Information

Explanatory Note:

The surveillance period for the 2017-18 influenza season is defined starting in week 40. Weeks 36-39 of the 2016-17 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/Update/79.ENG.pdf

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

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> Health unit/medical health officer notified? <input type="checkbox"/> Yes <input type="checkbox"/> No
	Person Reporting: _____ Title: _____
	Contact Phone: _____ Email: _____
	Health Authority: _____ HSDA: _____
	Full Facility Name: _____
	Is this report: <input type="checkbox"/> First Notification (<i>complete section B below; Section D if available</i>) <input type="checkbox"/> Update (<i>complete section C below; Section D if available</i>) <input type="checkbox"/> Outbreak Over (<i>complete section C below; Section D if available</i>)

B	<u>First Notification</u>
	Type of facility: <input type="checkbox"/> LTCF <input type="checkbox"/> Acute Care Hospital <input type="checkbox"/> Senior's Residence <i>(if ward or wing, please specify name/number: _____)</i>
	<input type="checkbox"/> Workplace <input type="checkbox"/> School (grades: _____) <input type="checkbox"/> Other (_____)
	Date of onset of first case of ILI (dd/mm/yyyy): <u>DD / MMM / YYYY</u>

Numbers to date	Residents/Students	Staff
Total		
With ILI		
Hospitalized		
Died		

C	<u>Update AND Outbreak Declared Over</u>
	Date of onset for most recent case of ILI (dd/mm/yyyy): <u>DD / MMM / YYYY</u>
	If over, date outbreak declared over (dd/mm/yyyy): <u>DD / MMM / YYYY</u>

Numbers to date	Residents/Students	Staff
Total		
With ILI		
Hospitalized		
Died		

D	<u>Laboratory Information</u>
	Specimen(s) submitted? <input type="checkbox"/> Yes (location: _____) <input type="checkbox"/> No <input type="checkbox"/> Don't know If yes, organism identified? <input type="checkbox"/> Yes (specify: _____) <input type="checkbox"/> No <input type="checkbox"/> Don't know