BC Centre for Disease Control
An agency of the Provincial Health Services Authority

British Columbia Influenza Surveillance Bulletin

Influenza Season 2017-18, Number 5, Weeks 48-49
November 26 to December 9, 2017

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Increasing Influenza Activity: A(H3N2) Dominant with Concurrent but Lower Level A(H1N1)pdm09 and Influenza B

During weeks 48-49 (November 26 to December 9, 2017), influenza activity showed signs of increase, with A(H3N2) subtype viruses continuing to predominate. Other surveillance indicators for influenza-like illness (ILI) activity were consistent with expected levels for this time of year but are anticipated to increase over the holiday period.

Overall, influenza detections remained at low but increasing levels with a mix of influenza A and B. Among influenza A detections, A(H3N2) subtype viruses continue to predominate but with sustained, lower level detection of A(H1N1)pdm09 viruses in recent weeks. Influenza B detections are also ongoing and greater for this period than in previous years.

The proportion of respiratory specimens that tested positive for influenza at the BCCDC Public Health Laboratory increased from 18% in week 48 to 21% in week 49. Entero/rhinoviruses were the most frequently detected non-influenza respiratory virus during this period but have begun to decrease in recent weeks concurrent with increasing influenza activity.

Since our last bulletin, two new lab-confirmed influenza outbreaks were reported in NHA in week 48; one in an acute care facility (influenza A, subtype pending) and one in a long-term care facility (LTCF) (influenza B). Additionally, four school ILI outbreaks in IHA were reported; one in week 48 and three in week 49.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

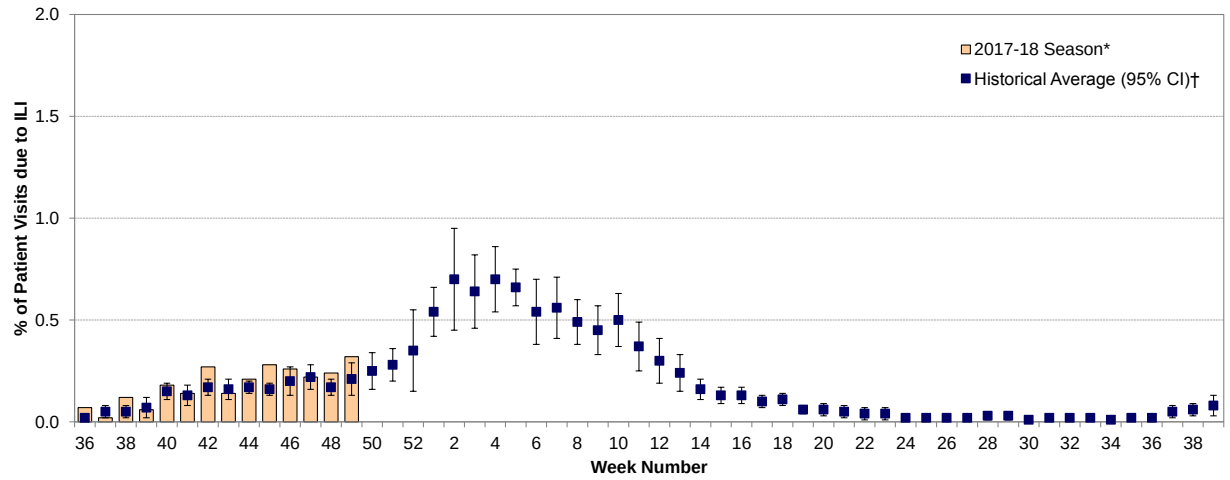
Report Disseminated: December 14, 2017

British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI), among those presenting to sentinel sites, exceeded the 10-year historical average for this time of year in weeks 48-49. Rates are subject to change as reporting becomes more complete.

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

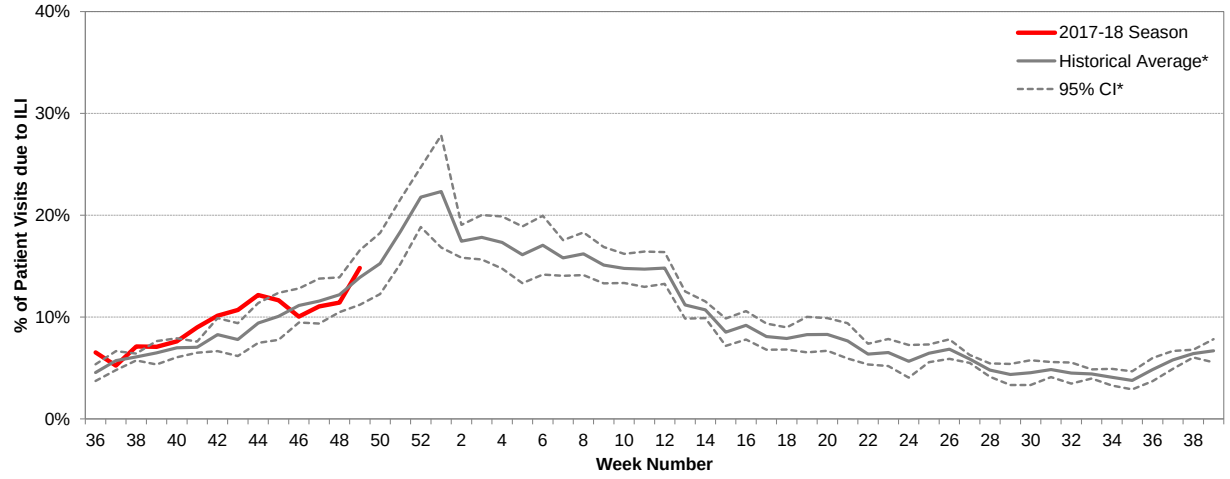


* Data are subject to change as reporting becomes more complete.
† 10-year historical average for 2017-18 season based on 2005-06 to 2016-2017 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children's Hospital Emergency Room

In weeks 48-49, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI showed an increasing trend but 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

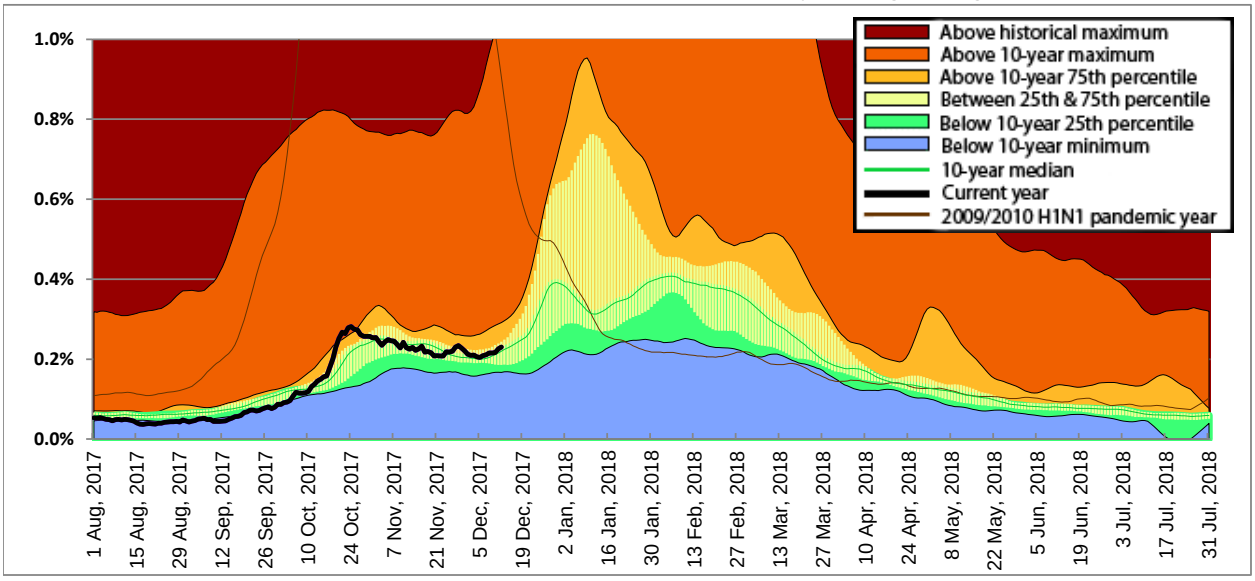


Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2017-18 season based on 2012-13 to 2016-17 seasons; CI=confidence interval.

Medical Services Plan

In weeks 48-49, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, were generally within expected levels for this time of year in all regions of the province, except IHA and NHA where rates exceeded the 10-year 75th percentile. Rates are anticipated to increase over the seasonal holiday period.

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

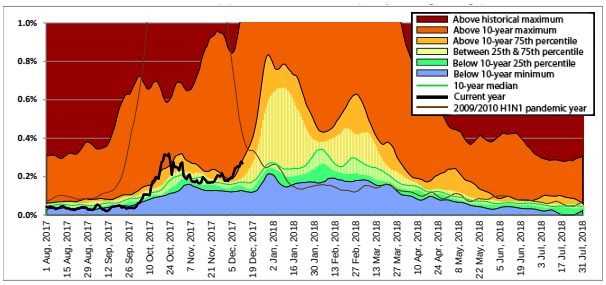


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

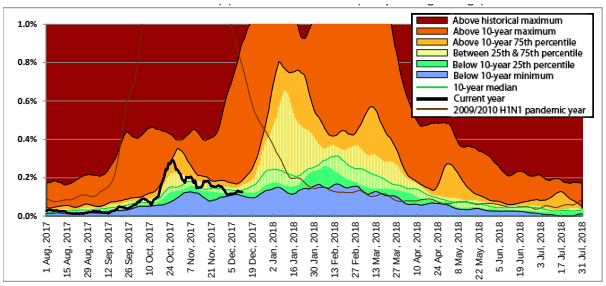
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP data beginning August 1, 2017 corresponds to sentinel ILI week 31; data are current to December 12, 2017.

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

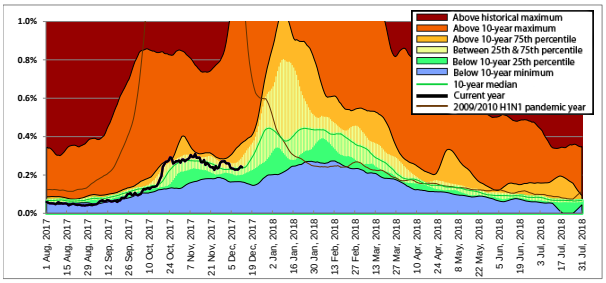
Interior



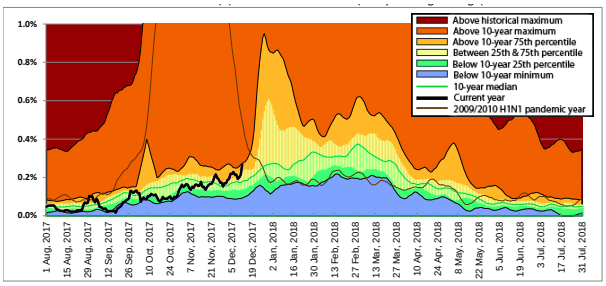
Vancouver Island



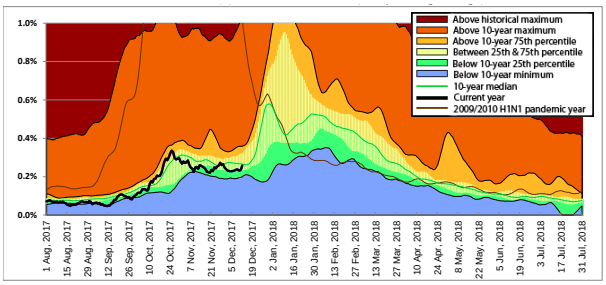
Fraser



Northern



Vancouver Coastal



Laboratory Reports

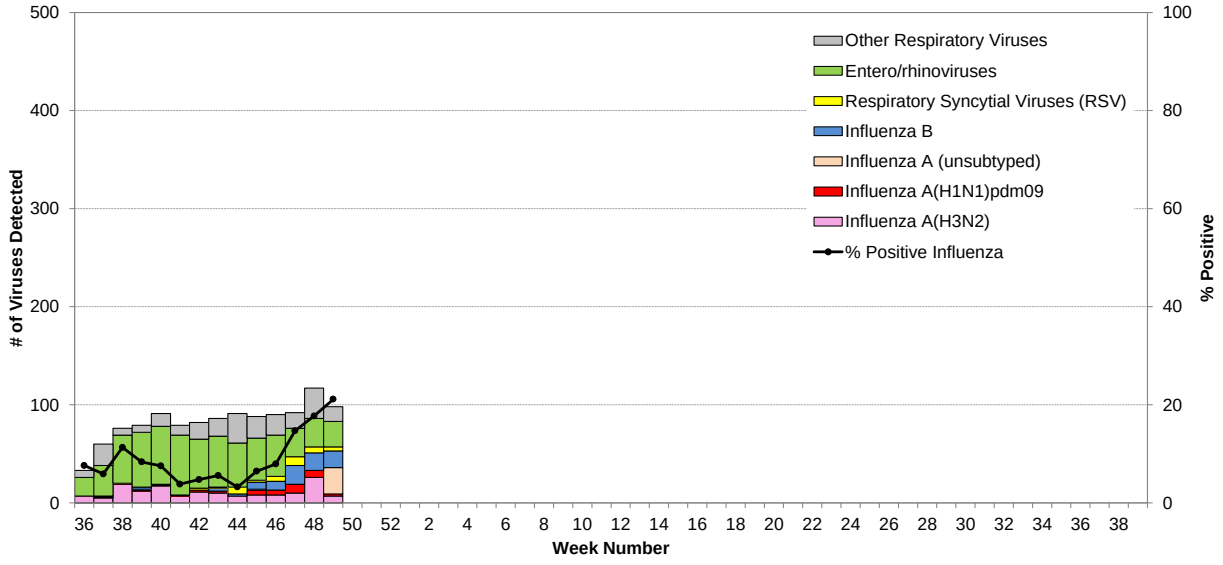
BCCDC Public Health Laboratory

In weeks 48-49, 539 specimens were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 104 (19%) tested positive for influenza; 69 (66%) viruses were typed as influenza A [33 A(H3N2), 9 A(H1N1)pdm09 and 27 subtype pending] and 35 (34%) viruses were typed as influenza B. The proportion of respiratory specimens that tested positive for influenza at the BCCDC PHL increased from 18% in week 48 to 21% in week 49, driven by increasing influenza A activity since week 44. Among influenza A detections, A(H3N2) remained the dominant subtype during this period although in recent weeks, A(H1N1)pdm09 viruses have also contributed at lower levels. Influenza B detections are also ongoing and influenza B positivity remains greater than in previous years for this period.

More than half (53%) of A(H3N2) cases so far during the 2017-18 season have been detected among elderly adults ≥65 years old, with more than three-quarters (76%) detected among adults ≥50 years old. Conversely, a greater proportion of influenza A(H1N1)pdm09 and B detections include children <20 years old (42% and 24%, respectively) and younger adults 20-49 years old (39% and 20%, respectively), with 18% and 57%, respectively, ≥50 years old.

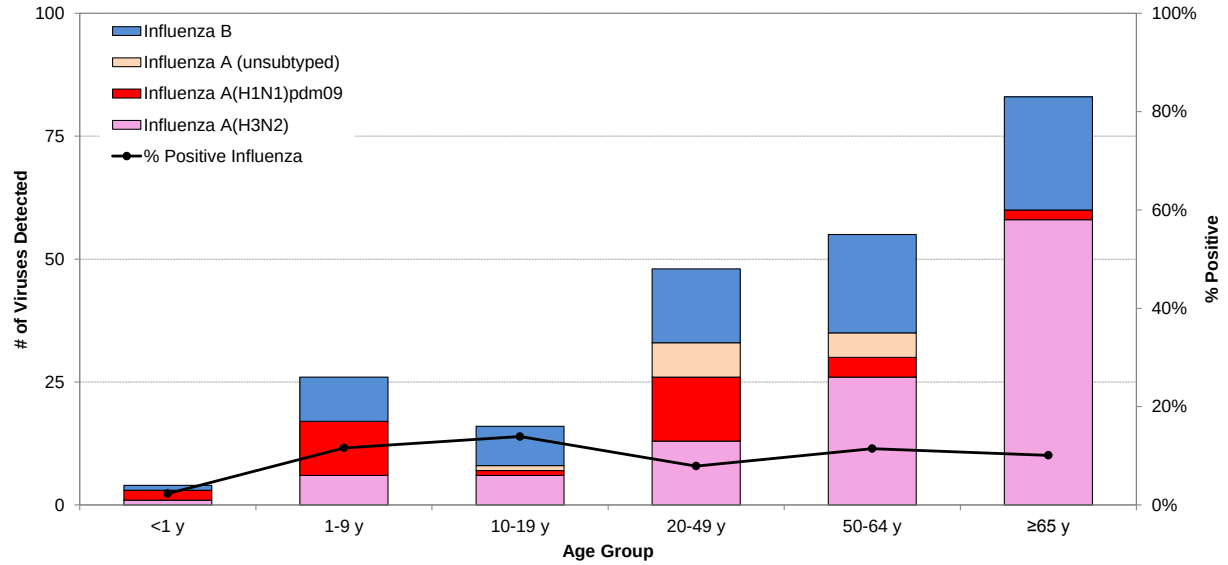
Entero/rhinoviruses were the most commonly detected non-influenza respiratory virus during this period but detections have begun to decrease starting in week 47 concurrent with increasing influenza activity.

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



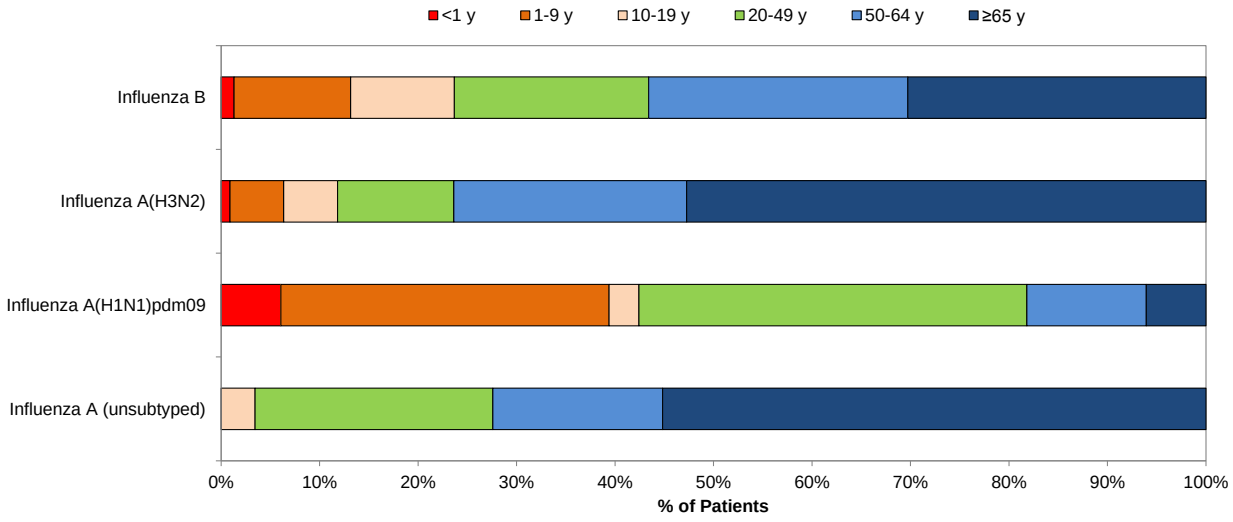
Data are current to December 13, 2017.

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



Data are current to December 13, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-49.

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

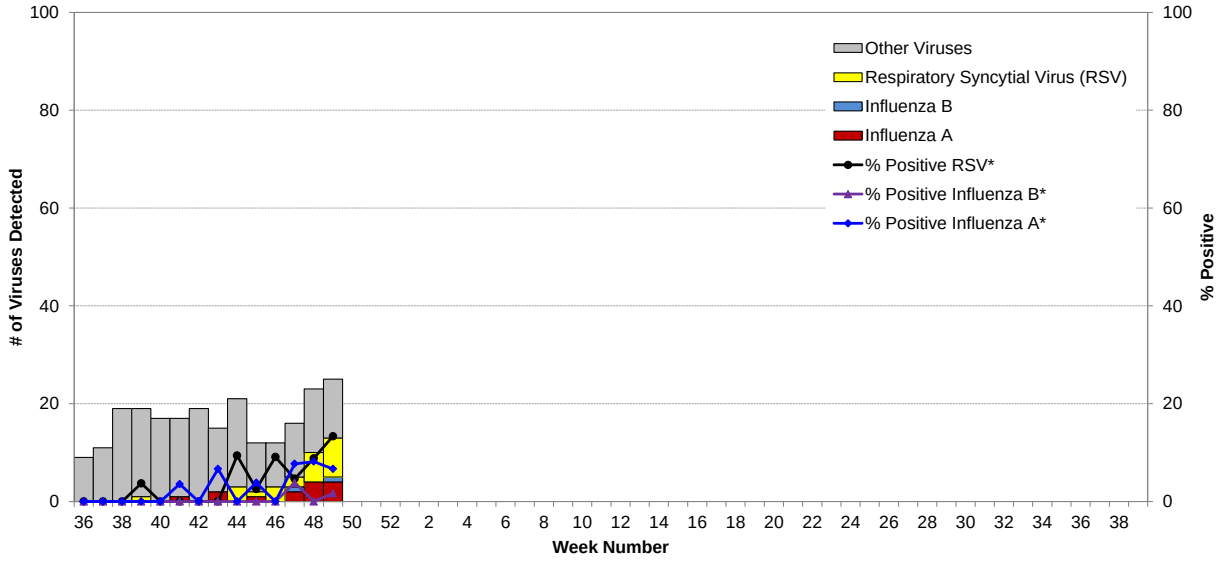


Data are current to December 13, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-49.

BC Children's and Women's Health Centre Laboratory

In weeks 48-49, 109 tests for respiratory viruses were conducted at the BC Children's and Women's Health Centre (CWHC) laboratory. Of these, 8 (7%) were positive for influenza A and 1 (1%) was positive for influenza B; four positives were from week 48 and the remaining five positives were from week 49. Increasing influenza A activity has been observed at CWHC since week 47, consistent with laboratory surveillance at the BCCDC PHL. Additionally, 14 (11%) were positive for respiratory syncytial virus (RSV) and have also increased in positivity in recent weeks; 6 tests were positive for RSV in week 48 and 8 in week 49. RSV and rhinoviruses were 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



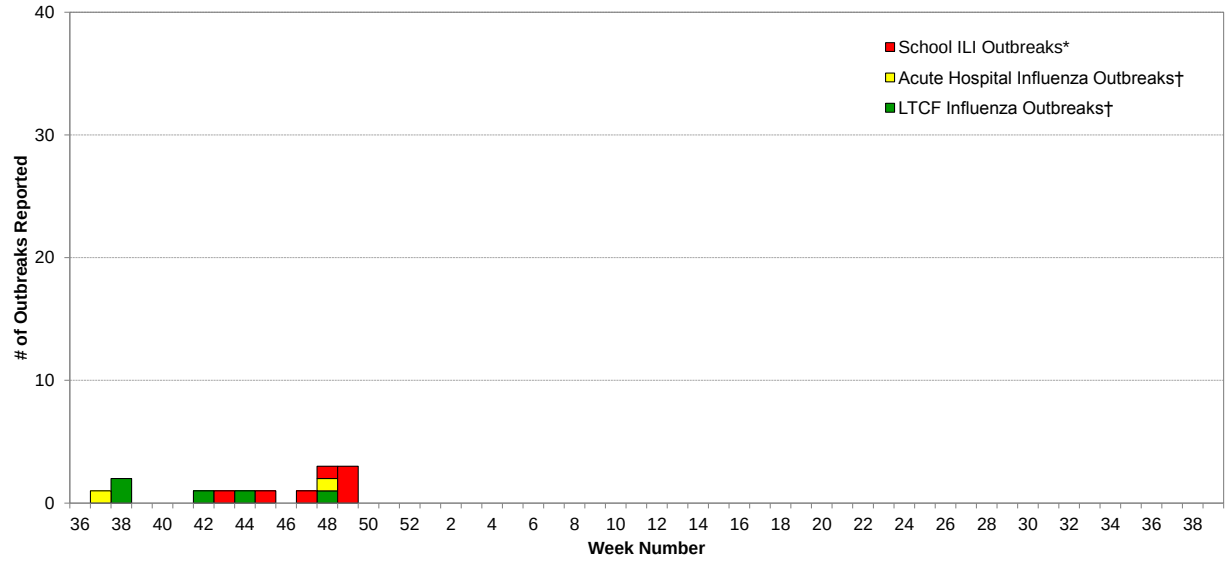
* Positive rates were calculated using aggregate data. The denominators for each rate represent the total number of tests; multiple tests may be performed for a single specimen and/or patient.

Influenza-like Illness (ILI) Outbreaks

Since our previous bulletin two weeks ago, two new lab-confirmed influenza outbreaks were reported in NHA in week 48; one in an acute care facility and one in a long-term care facility (LTCF). The outbreak in the acute care facility was diagnosed as influenza A (subtype pending) whereas the LTCF outbreak was diagnosed as influenza B. Additionally, four school ILI outbreaks, with unknown etiology, were reported. One of the outbreaks was reported in week 48 while three outbreaks were reported in week 49; 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), 7 lab-confirmed influenza outbreaks have been reported, including 3 with influenza A detected [1 A(H3N2) and 2 subtype unknown], 3 with influenza B, and 1 with influenza A (H3N2) and influenza B; of these, 5 were reported in LTCFs and 2 were reported from an acute care facility. Similarly, seven school ILI outbreaks have occurred without etiologic agent identified.

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 48, November 26 to December 2, 2017)

At the national level, the influenza season began early this year. Influenza activity continues to increase sharply across Canada. 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. Several indicators of influenza activity are above the expected levels for this time of year, and most similar to levels observed during the 2014-15 influenza season, when A(H3N2) was the predominant circulating subtype. 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 December 14, 2017, the National Microbiology Laboratory (NML) received 168 influenza viruses [131 A(H3N2), 10 A(H1N1)pdm09 and 27 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 131 influenza A(H3N2) viruses, only 31 (24%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 31 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 30 out of 31 viruses that were antigenically characterized with available sequencing information, 27 belonged to genetic group 3C.2a and 3 belonged to subclade 3C.2a1; sequencing is pending for the remaining one isolate. Genetic characterization was performed to infer antigenic properties on the remaining 100 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 100 viruses genetically characterized, 74 were reported to belong to genetic group 3C.2a, which includes the A/Hong Kong/4801/2014 vaccine strain, while 26 belonged to subclade 3C.2a1.

Influenza A(H1N1)pdm09: All of the 10 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 27 influenza B viruses characterized, 4 (15%) were 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 23 (85%) 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 December 14, 2017, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 142 influenza A viruses [132 A(H3N2) and 10 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 169 influenza viruses [132 A(H3N2), 10 A(H1N1)pdm09, and 27 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 169 influenza viruses [132 A(H3N2), 10 A(H1N1)pdm09, and 27 B] tested against zanamivir, all were sensitive.

International

USA (week 48, November 26 to December 2, 2017)

During week 48, overall influenza activity increased slightly in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 48 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories declined slightly. 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. Two influenza-associated pediatric deaths were reported. A cumulative rate of 3.0 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for influenza-like illness (ILI) was 2.3%, which is above the national baseline of 2.2%. The geographic spread of influenza in seven states was reported as widespread; Puerto Rico and 18 states reported regional activity; 18 states reported local activity; and the District of Columbia, the U.S. Virgin Islands and seven states reported sporadic activity; and Guam did not report. Details are available at: www.cdc.gov/flu/weekly/.

WHO (December 11, 2017)

Influenza activity continued to increase in the temperate zone of the northern hemisphere while in the temperate zone of the southern hemisphere activity appeared to have 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 13 to November 26, 2017, the WHO GISRS laboratories tested more than 113,412 specimens, of which 8,982 were positive for influenza viruses: 5,617 (63%) were typed as influenza A and 3,365 (38%) as influenza B. Of the subtyped influenza A viruses, 1,122 (33%) were influenza A(H1N1)pdm09 and 2,273 (67%) were influenza A(H3N2). Of the characterized B viruses, 1521 (80%) belonged to the B-Yamagata lineage and 381 (20%) 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 increased since the previous weeks, but remained low, with detections of predominantly influenza B viruses followed by influenza A(H3N2) viruses.
- In Western Asia, high levels of influenza activity were reported in Oman and Qatar in recent weeks, with detections of all seasonal influenza subtypes.
- In Central Asia, respiratory illness indicators appeared to increase in Kazakhstan and Uzbekistan in recent weeks.
- In East Asia, influenza activity remained low in general. In Northern China, ILI and influenza percentage positive continued to increase, with influenza A(H3N2) and 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. In India, influenza A(H1N1)pdm09 and A(H3N2) detections continued to be reported.
- In Northern Africa, sporadic influenza A virus detections were reported in Morocco and Tunisia.
- In Western Africa, influenza A(H1N1)pdm09 virus detections increased in Cote d'Ivoire and Ghana. In Middle Africa, influenza B detections were reported in Central African Republic. In Eastern Africa, influenza B Yamagata-lineage virus detections were reported in 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 appeared to have decreased overall.

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

version: 26 Oct 2011

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 — Reporting Information

Health unit/medical health officer notified? ☐ *Yes* ☐ *No*

Person Reporting: _____ Title: _____

Contact Phone: _____ Email: _____

Health Authority: _____ HSDA: _____

Full Facility Name: _____

Is this report:

☐ First Notification *(complete section **B** below; Section **D** if available)*

☐ Update *(complete section **C** below; Section **D** if available)*

☐ Outbreak Over *(complete section **C** below; Section **D** if available)*

B — First Notification

Type of facility: ☐ LTCF ☐ Acute Care Hospital ☐ Senior's Residence

(if ward or wing, please specify name/number: _____)

☐ Workplace ☐ School (grades:) ☐ Other (_____)

Date of onset of first case of ILI (dd/mm/yyyy): DD / MMM / YYYY

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

C — Update AND Outbreak Declared Over

Date of onset for most recent case of ILI (dd/mm/yyyy): DD / MMM / YYYY

If over, date outbreak declared over (dd/mm/yyyy): DD / MMM / YYYY

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

D — Laboratory Information

Specimen(s) submitted? ☐ Yes (location: _____) ☐ No ☐ Don't know

If yes, organism identified? ☐ Yes (specify: _____) ☐ No ☐ Don't know

Communicable Disease Prevention & Control Services
655 W. 12th Ave.
Vancouver BC V5Z 4R4

Phone: (604) 707-2510
Fax: (604) 707-2516
ilioutbreak@bccdc.ca