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

British Columbia Influenza Surveillance Bulletin

Influenza Season 2017-18, Number 11, Week 4
January 21 to 27, 2018

Table of Contents:

BC has Likely Passed the Epidemic Peak but Influenza Activity Remains Elevated

During week 4 (January 21 to 27, 2018), most influenza surveillance indicators began to decline but influenza activity remained elevated in some regions.

Influenza positivity at the BCCDC Public Health Laboratory continued to decline, falling to below 40% in week 4 from a peak of more than 50% in week 52, driven by declining A(H3N2) activity. Influenza B has predominated among influenza detections (>55%) this week with activity levels for type B remaining stable.

Since our last bulletin, 14 new lab-confirmed outbreaks were reported, including 13 from long-term care facilities (LTCFs) and 1 from an acute care hospital; 5 school ILI outbreaks were reported. Of the 14 lab-confirmed outbreaks, 10 had influenza B detected, 3 had influenza A detected and 1 had influenza A and B detected; of the 2 influenza A outbreaks that had subtype information available, both were A(H3N2).

On February 1, Canadian researchers published the first estimates of mid-season influenza vaccine effectiveness (VE) for the 2017-18 season. Adjusted VE for A(H3N2) was low at <20% overall, driven by a single genetic variant, but higher for influenza B at 55%, despite lineage mismatch between vaccine and circulating strains. The full report is available here: http://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2018.23.5.18-00035

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

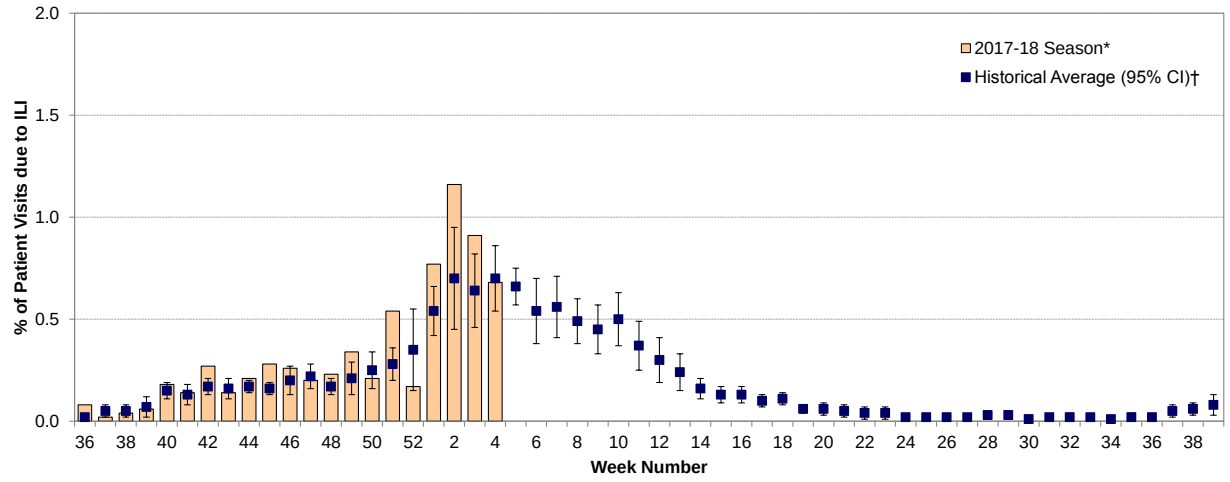
Report Disseminated: February 1, 2018

British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI), among those presenting to sentinel sites, has returned to within the expected range after being significantly above the 10-year historical average for the three preceding weeks. Rates are subject to change as reporting becomes more complete. To date, 57% of sentinel sites have reported data for week 4.

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

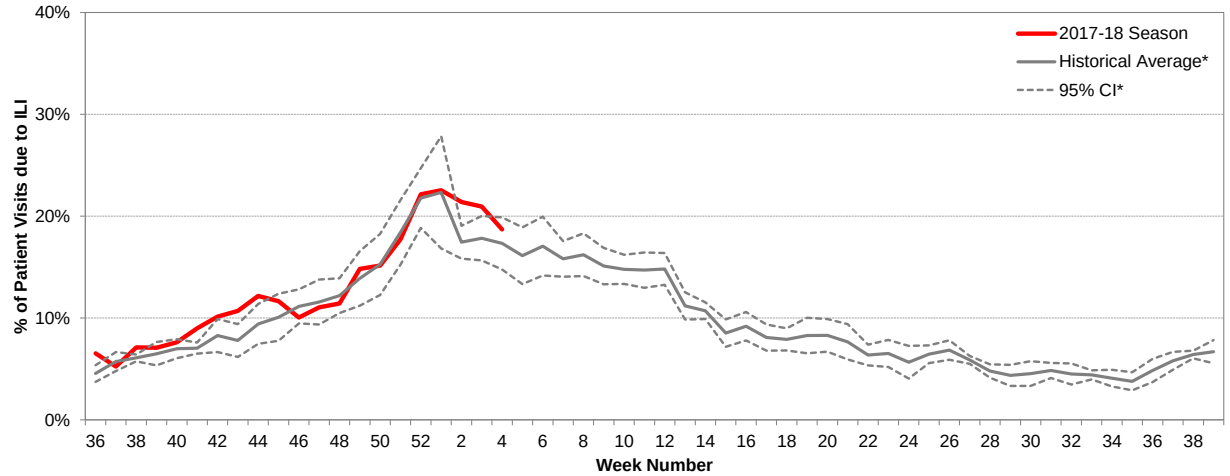


* Data are subject to change as reporting becomes more complete.
† 10-year historical average for 2017-18 season based on 2005-06 to 2016-2017 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children's Hospital Emergency Room

In week 4, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI remained elevated but was within expected levels for this period.

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

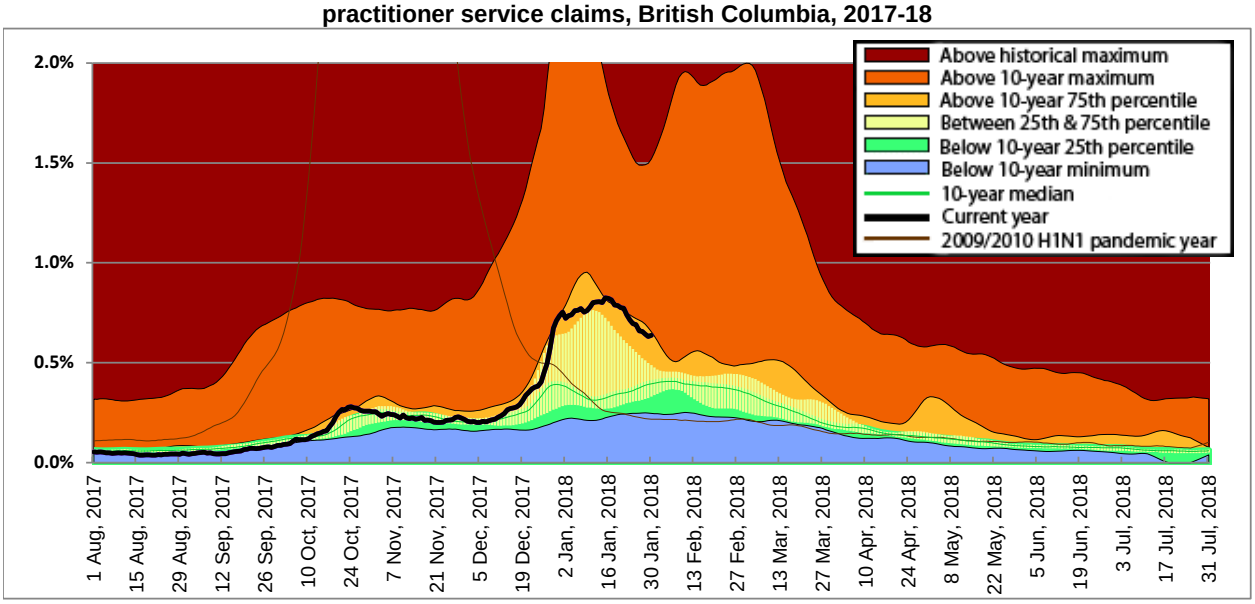


Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2017-18 season based on 2012-13 to 2016-17 seasons; CI=confidence interval.

Medical Services Plan

In week 4, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims began to decline following several weeks of elevated activity overall driven by regional variation across the province. In IHA, FHA, and VCHA, MSP rates suggested declining activity, while in others (VIHA and NHA) rates plateaued. In week 4, rates for the province overall and IHA, FHA, VCHA and VIHA were above the 10-year 75th percentile, while rates in NHA were above the 10-year maximum.

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

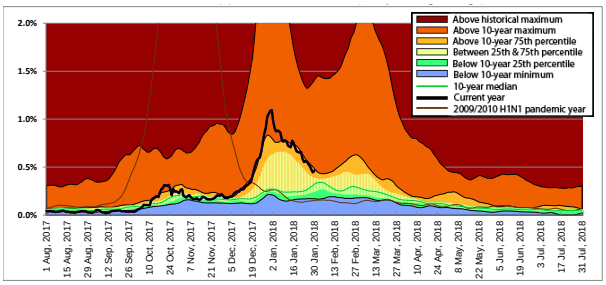


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

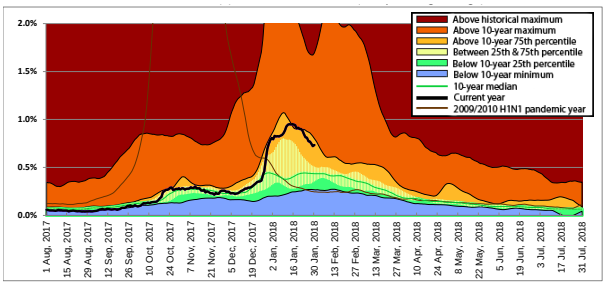
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP data beginning August 1, 2017 corresponds to sentinel ILI week 31; data are current to January 30, 2018.

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

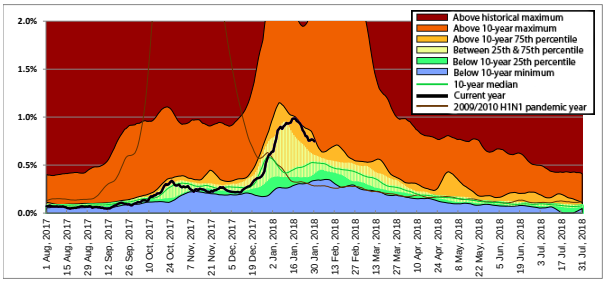
Interior



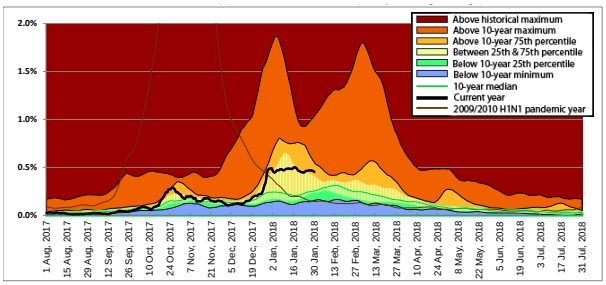
Fraser



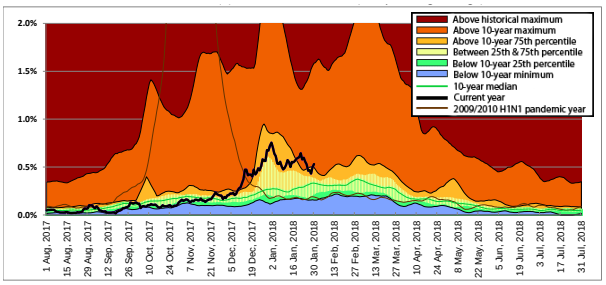
Vancouver Coastal



Vancouver Island



Northern



Laboratory Reports

BCCDC Public Health Laboratory

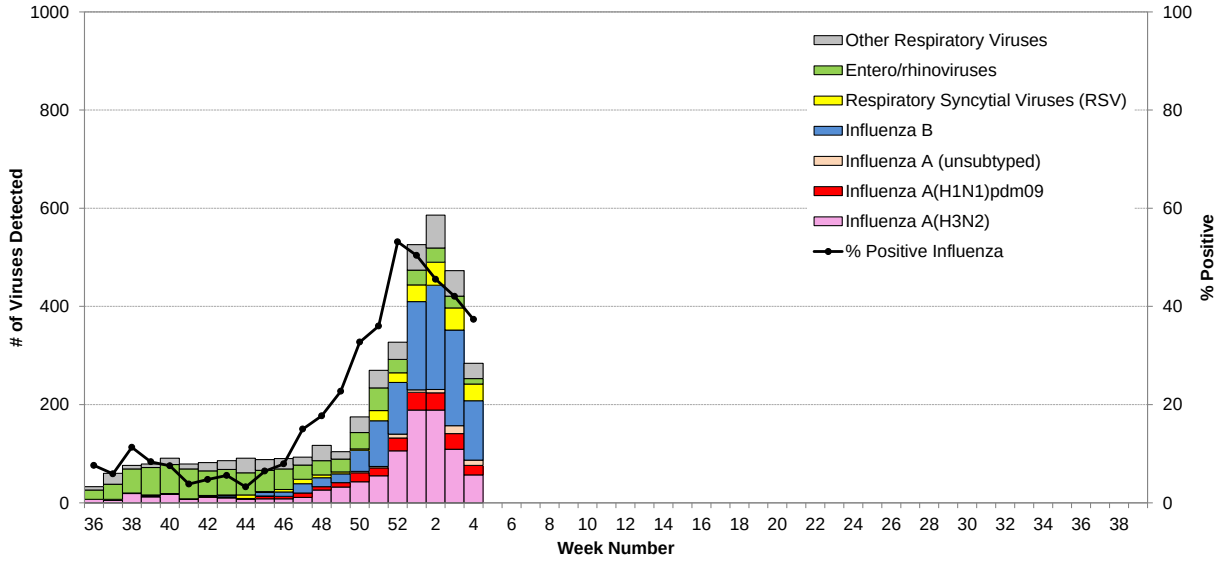
In week 4, 557 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 206 (37%) tested positive for influenza; 85 (42%) had influenza A detected [56 A(H3N2), 18 A(H1N1)pdm09 and 11 subtype pending], 119 (58%) had influenza B detected and 2 (1%) had both influenza A [one with A(H3N2) and one with A(H1N1)pdm09] and B detected. Influenza positivity at the BCCDC PHL declined to 37% in week 4 from a peak of more than 50% in week 52, driven by declining detection of A(H3N2), the dominant influenza A subtype this season. Influenza B positivity remained greater than in previous years for this period, comprising more than half of all influenza detections in week 4 and with influenza B positivity rates remaining relatively stable over recent weeks. Based on national surveillance reports, B(Yamagata) is the predominant influenza B lineage circulating in BC and elsewhere in Canada this season.

Cumulatively during the 2017-18 season (since week 40, starting October 1, 2017), 2159 (32%) patients tested positive for influenza at the BCCDC PHL, including 1139 (53%) with influenza A [871 A(H3N2), 217 A(H1N1)pdm09, 51 subtype pending], 1013 (47%) with influenza B and seven patients with both influenza A [five with A(H3N2) and two with A(H1N1)pdm09)] and B detected.

More than half (61%) of A(H3N2) cases have been detected among elderly adults ≥65 years old, with 8% <20 years old, 17% 20-49 years old, and 15% 50-64 years old. Conversely, 42% of influenza B cases have been detected among elderly adults ≥65 years old, with 15% <20 years old, 22% 20-49 years old, and 20% 50-64 years old. Among A(H1N1)pdm09 cases, only 17% have been detected among elderly adults ≥65 years old, with 28% <20 years old, 39% 20-49 years old, and 16% 50-64 years old.

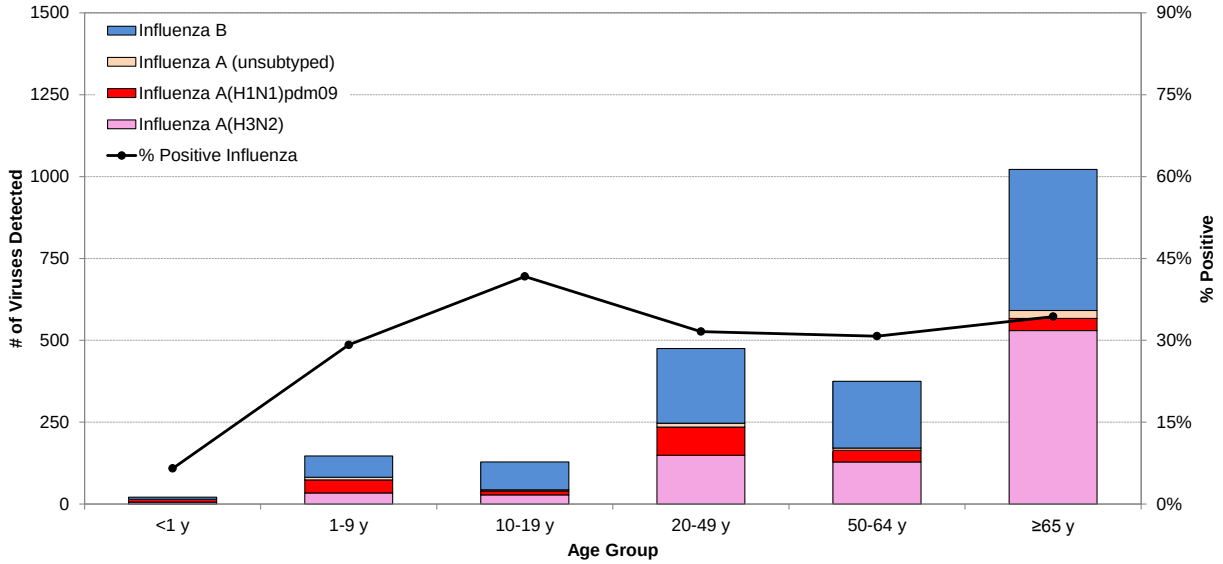
RSV was the most commonly detected non-influenza respiratory virus during this period. RSV detections have been less frequent than in the 2016-17 season; 6% of patients tested positive for RSV in week 4 this season compared to 18% in the 2016-17 season during the same period.

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



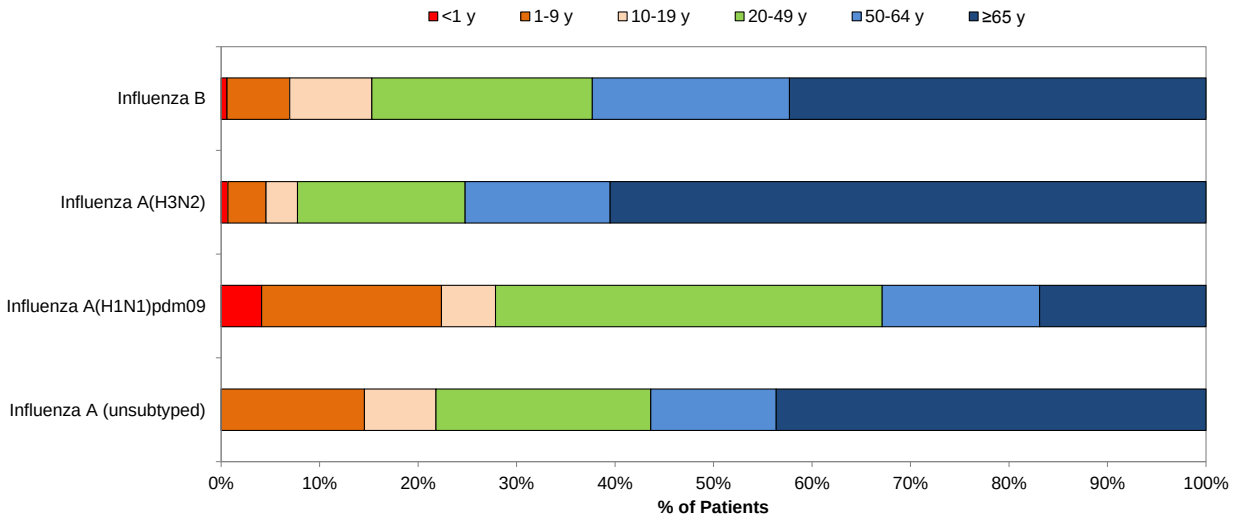
Source: BCCDC Public Health Laboratory (PHDRW); Data are current to January 31, 2018.

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



Source: BCCDC Public Health Laboratory (PHDRW); Data are current to January 31, 2018; figure includes cumulative influenza detections for specimens collected from weeks 40-4.

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

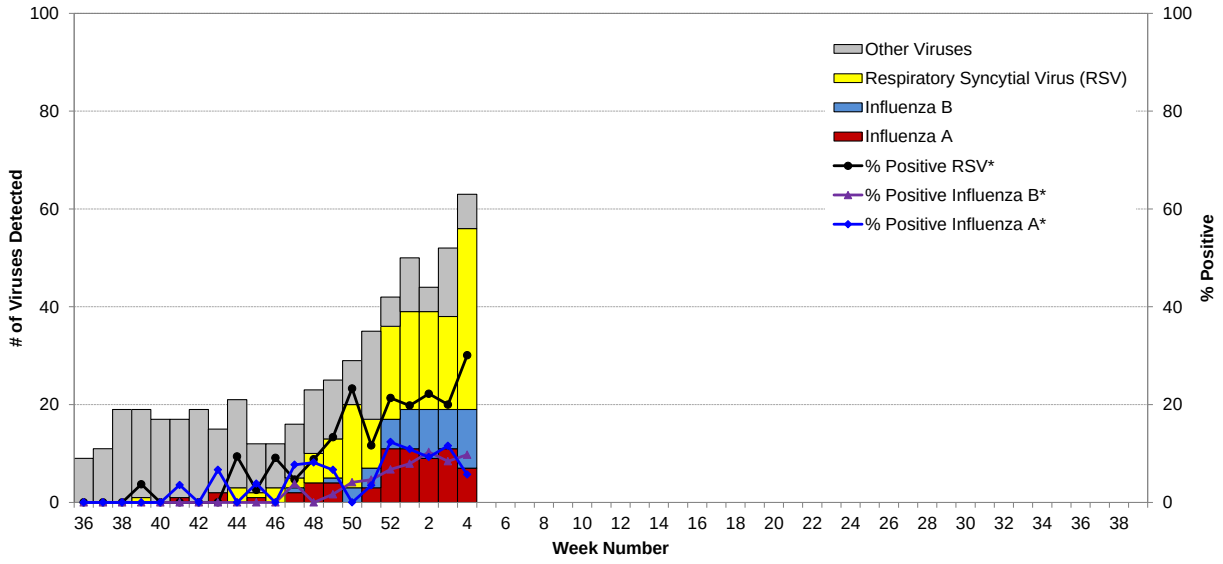


Source: BCCDC Public Health Laboratory (PHDRW); Data are current to January 31, 2018; figure includes cumulative influenza detections for specimens collected from weeks 40-4.

BC Children's and Women's Health Centre Laboratory

In week 4, 123 tests for influenza viruses were conducted at the BC Children's and Women's Health Centre (CWHC) laboratory. Of these, 7 (6%) were positive for influenza A and 12 (10%) were positive for influenza B. Respiratory syncytial virus (RSV) was the most commonly detected respiratory viruses during this period, increasing from 20% positivity in week 3 to 30% positivity in week 4. In contrast to observations from the BCCDC PHL, RSV positivity from this week was comparable to week 4 in the 2016/17 season where RSV positivity was 27%.

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, 14 new lab-confirmed outbreaks were reported, including 13 from long-term care facilities (LTCFs) and 1 from an acute care hospital. Of the 14 newly reported outbreaks, 1 had onset in week 52 in VCHA, 1 had onset in week 1 in VCHA, 2 had onset in week 2 in VCHA, 6 had onset in week 3 (1 in FHA, 1 in NHA, 4 in VCHA), 2 had onset in week 4 (1 in FHA, 1 in VCHA) and 2 had onset in week 5 (1 in IHA, 1 in VIHA). Of the 14 outbreaks, 10 had influenza B detected, 3 had influenza A detected and 1 had influenza A and B detected; of the 2 influenza A outbreaks that had subtype information available, both were A(H3N2).

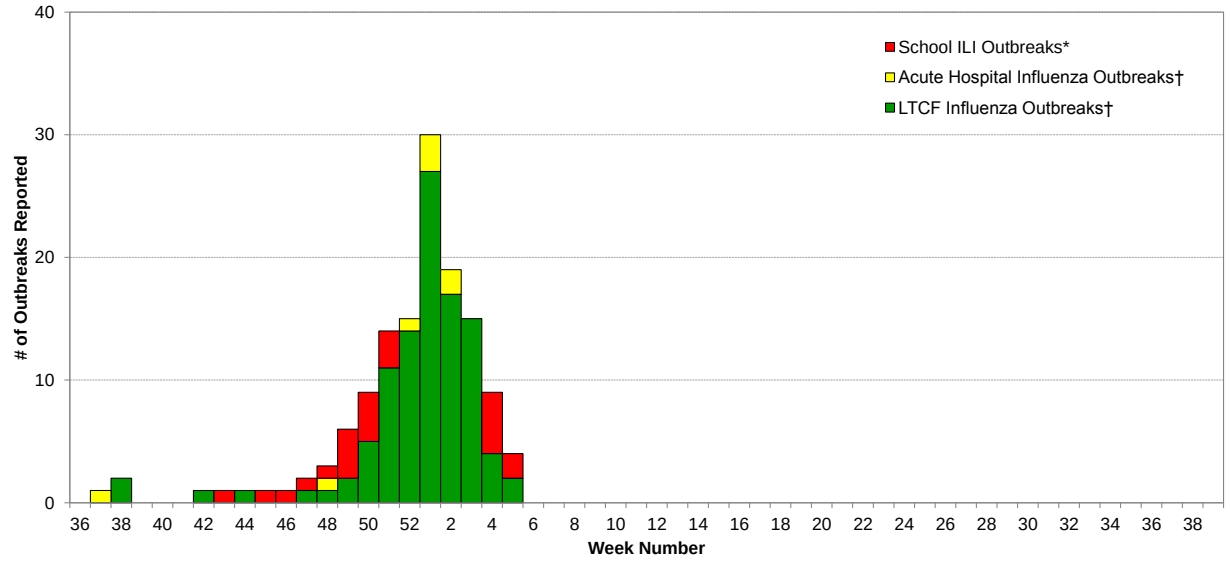
Additionally, 3 school ILI outbreaks, with unknown etiology, were reported during week 4 and 2 school ILI outbreaks were reported during week 5. All of these outbreaks occurred in IHA, currently the only health authority routinely reporting school ILI outbreaks to BCCDC.

Influenza outbreak reports appear to have declined in frequency following a peak in week 1; this may reflect declining influenza activity in the province but could also be attributed to delayed reporting.

Cumulatively during the 2017-18 season (since week 37, starting September 10, 2017), 111 lab-confirmed influenza outbreaks have been reported, including 37 with influenza A detected [19 A(H3N2) and 18 subtype unknown], 65 with influenza B, 2 with influenza A (H3N2) and influenza B, and 7 with influenza A (unspecified subtype) and influenza B; of these, 103 were reported in LTCFs and 8 were reported from an acute care facility. No influenza A outbreaks have been subtyped as A(H1N1)pdm09 so far this season. Additionally, 23 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=101) is lower than the tally for the same period during recent A(H3N2) dominant epidemics in 2014-15 (n=143) and 2016-17 (n=135) but higher than during recent A(H1N1)pdm09 dominant epidemics in 2013-14 (n=5) and 2015-16 (n=11), 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 3, January 14 to 20, 2018)

Overall, influenza activity in Canada remains high but there is some indication that activity is starting to slow down. Most indicators remain in the higher range of expected levels for this time of year. In week 3, the percentage of laboratory test positive for influenza B continued to increase while the percentage of laboratory test positive for influenza A remained stable. The majority of influenza detections continue to be A(H3N2), although 40% of detections were influenza B in week 3. To date this season, the majority of lab confirmations, hospitalizations and deaths have been among adults 65 years of age and older. 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 February 1, 2018, the National Microbiology Laboratory (NML) received 874 influenza viruses from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 467 influenza A(H3N2) viruses, only 118 (25%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 118 viruses characterized by HI assay, 114 (97%) 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, while four viruses (all belonging to genetic clade 3C.3a) showed reduced titre with ferret antisera raised against cell culture-propagated A/Hong Kong/4801/2014. Of the 91 out of 118 viruses that were antigenically characterized with available sequencing information, 75 belonged to genetic clade 3C.2a, 12 belonged to subclade 3C.2a1 and 4 belonged to clade 3C.3a; sequencing is pending for the remaining 27 isolates. Of the 349 viruses genetically characterized, 295 (85%) were reported to belong to genetic clade 3C.2a, which includes the A/Hong Kong/4801/2014 vaccine strain, while 53 (15%) belonged to subclade 3C.2a1 and 1 belonged to clade 3C.3a.

Influenza A(H1N1)pdm09: All of the 51 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 356 influenza B viruses characterized, 15 (4%) belonged to the B(Victoria) lineage and 341 (96%) belonged to the B(Yamagata) lineage. Among the 15 B(Victoria) viruses, 5 (33%) 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 10 (67%) viruses showed reduced titre with ferret antisera produced against cell-propagated B/Brisbane/60/2008. Sequence analysis showed that the 10 viruses had a two-amino acid deletion in the hemagglutinin (HA) gene. Among the 341 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 February 1, 2018, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 592 influenza A viruses [541 A(H3N2) and 51 A(H1N1)pdm09] tested against amantadine, all were resistant.
Oseltamivir: Of the 589 influenza viruses [324 A(H3N2), 42 A(H1N1)pdm09, and 223 B] tested against oseltamivir, all were sensitive except one A(H1N1)pdm09 virus with a H275Y mutation which was resistant.
Zanamivir: Of the 586 influenza viruses [321 A(H3N2), 42 A(H1N1)pdm09, and 223 B] tested against zanamivir, all were sensitive.

Mid-season 2017-18 Vaccine Effectiveness Estimates

On February 1, 2018, Canadian researchers published the first estimates of mid-season influenza vaccine effectiveness (VE) for the 2017-18 season. The 2017-18 season to date in Canada has been characterized by an equal mix of influenza A (49%) and influenza B (51%) viruses, the latter being unusual so early in the season. Most (about two-thirds) of participants contributing to VE analyses were working-age adults 20-64 years old.

Adjusted VE against A(H3N2), driven by a single genetic subgroup of clade 3C.2a, was low at 17% (95%CI: -14 to 40%) overall and 10% (95%CI: -31 to 39%) in working-age adults. This estimate for A(H3N2) is similar to findings reported by Australia during their recent 2017 epidemic (10%) but is about half that reported in interim and end-of-season analyses for the prior 2016-17 season by Canada, the United States and Europe (~30-40%), despite the use of the same A(H3N2) vaccine component in these recent seasons. It is also lower than expected generally for A(H3N2) vaccines (~30%).

Higher adjusted VE was observed for influenza B at 55% (95%CI: 38 to 68%) overall and 40% (95%CI: 16 to 67) in working-age adults, despite prominent use of lineage-mismatched B(Victoria) trivalent vaccine in most regions against circulating viruses that belonged to the B(Yamagata) lineage. These findings suggest cross-lineage protection, which has been observed previously for influenza B.

The full report is available as an open-access publication from *EuroSurveillance*:
http://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2018.23.5.18-00035

International

USA (week 3, January 14 to 20, 2018)

During week 3, overall influenza activity increased in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 3 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories slightly increased. The proportion of deaths attributed to pneumonia and influenza (P&I) was above the system-specific epidemic threshold in the National Center for Health Statistics (NCHS) Mortality Surveillance System. Seven influenza-associated pediatric deaths were reported. A cumulative rate of 41.9 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for influenza-like illness (ILI) was 6.6%, which is above the national baseline of 2.2%. The geographic spread of influenza in Puerto Rico and 49 states was reported as widespread; Guam reported regional activity; the District of Columbia and one state reported local activity; and the U.S. Virgin Islands reported sporadic activity. Details are available at: www.cdc.gov/flu/weekly/.

WHO

There have been no WHO influenza updates since our last bulletin. Previous updates 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