

British Columbia Influenza Surveillance Bulletin

Influenza Season 2016-17, Number 11, Week 3

January 15 to 21, 2017

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Ongoing Influenza A(H3N2) Activity in BC

During week 3 (January 15 to 21, 2017), influenza activity remained elevated in BC. Although some surveillance indicators suggest that activity levels may be beginning to decline, it is too soon to tell if the epidemic peak has been reached.

At the BCCDC PHL, influenza positivity remained elevated above 40% in week 3, but declined from a peak of almost 50% in week 52. Influenza A remained the most frequently detected respiratory virus during this period, but respiratory syncytial virus (RSV) activity also remained high around 15% positivity.

Since our last bulletin one week ago, 16 new influenza outbreaks were reported from long-term care facilities, with onset spanning week 1 to week 4. Cumulatively, 129 facility influenza outbreaks have been reported to date this season.

Medical Services Plan (MSP) claims for influenza illness remained elevated above seasonal norms in most regions of the province, while sentinel ILI rates were significantly above 10-year historical averages for this time of year.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

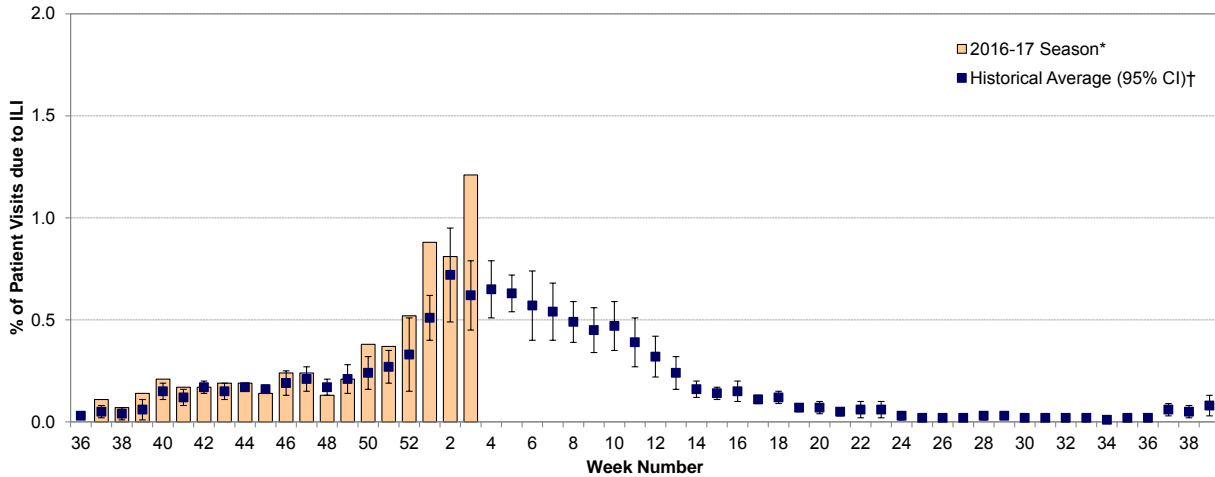
Report Disseminated: January 26, 2017

British Columbia

Sentinel Physicians

In week 3, the proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites was above 1%, significantly higher than the 10-year historical average for this time of year. So far, 48% of sites have reported data for this week.

Percent of patient visits to sentinel physicians due to influenza-like illness (ILI) compared to historical average, British Columbia, 2016-17

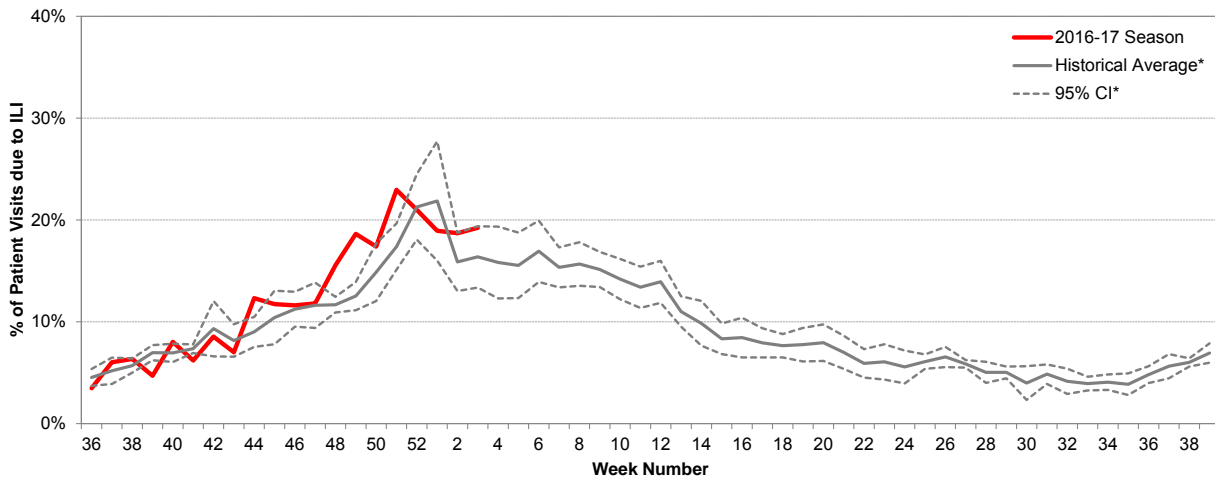


* Data are subject to change as reporting becomes more complete. One hospital ER site that reported ILI rates $\geq 5\%$ was excluded from the graph.
† 10-year historical average for 2016-17 season based on 2004-05 to 2015-2016 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children's Hospital Emergency Room

In week 3, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI remained stable around 19%, slightly higher than the 5-year historical average but still within expected values for this time of year.

Percent of patients presenting to BC Children's Hospital ER attributed to influenza-like illness (ILI), British Columbia, 2016-17

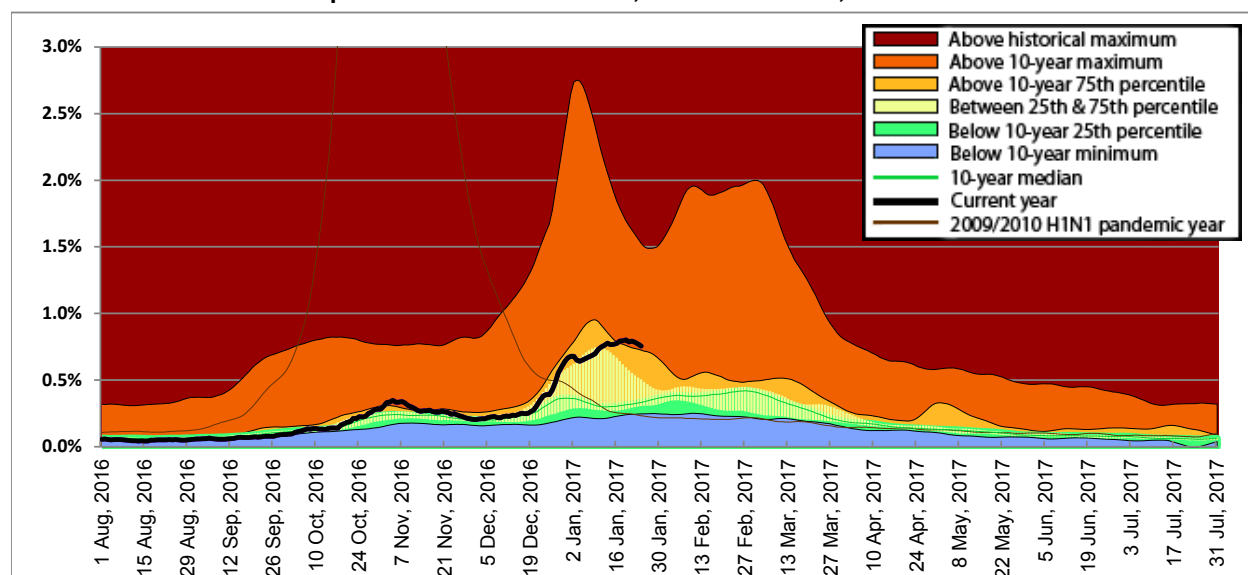


Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2016-17 season based on 2011-12 to 2015-16 seasons; CI=confidence interval.

Medical Services Plan

In week 3, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, remained elevated in most regions of the province. Rates were above the 10-year maximum in VCHA, VIHA and for the province overall and were above the 10-year 75th percentile in FHA. In IHA, rates began to decline but remained above the 10-year 75th percentile. In NHA, rates remained low and were consistent with median 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, 2016-17

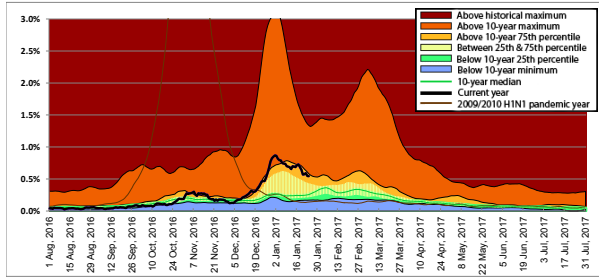


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

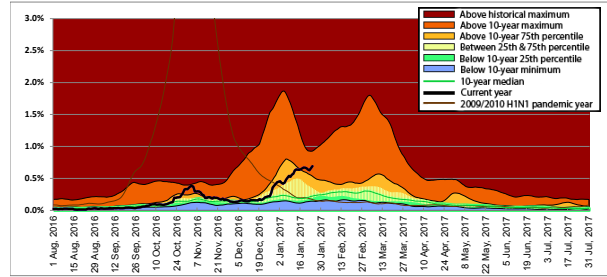
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2016 corresponds to sentinel ILI week 31; data are current to January 24, 2017.

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

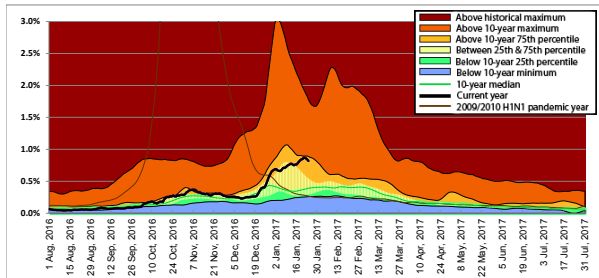
Interior



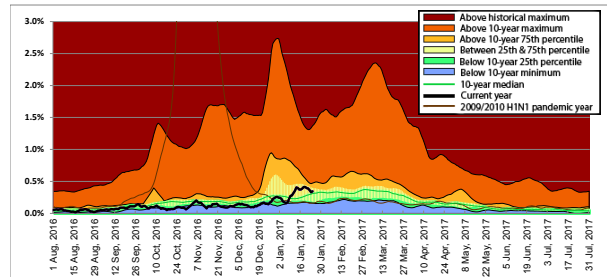
Vancouver Island



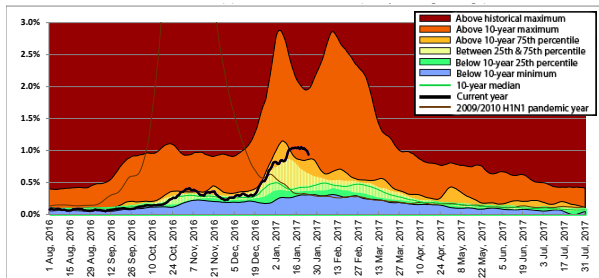
Fraser



Northern



Vancouver Coastal



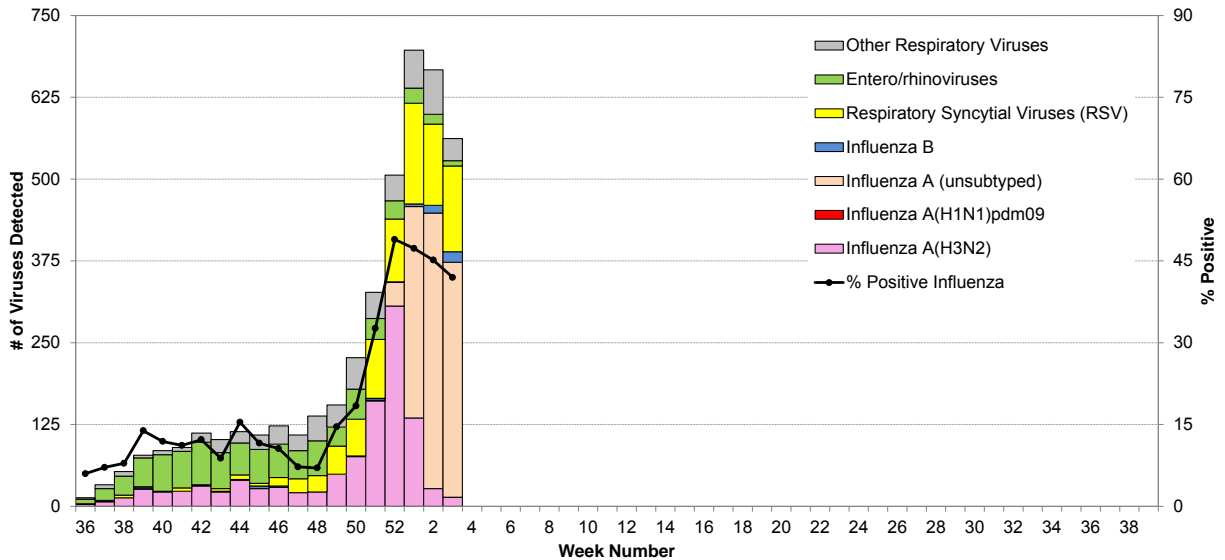
Laboratory Reports

BCCDC Public Health Laboratory

In week 3, 927 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 389 (42%) tested positive for influenza, including 373 (96%) with influenza A [14 A(H3N2) and 359 with subtype pending] and 16 (4%) with influenza B. Influenza positivity continued to decline from a peak of 49% in week 52 to 42% in week 3, concurrent with a decrease in test volumes, but remained elevated above 40%. The large number of influenza A specimens with pending subtype information reflects delays in laboratory testing, due to the high volume of specimens submitted during this peak period. Respiratory syncytial virus (RSV) activity also remained high during this period, with 14% of patients testing positive in week 3.

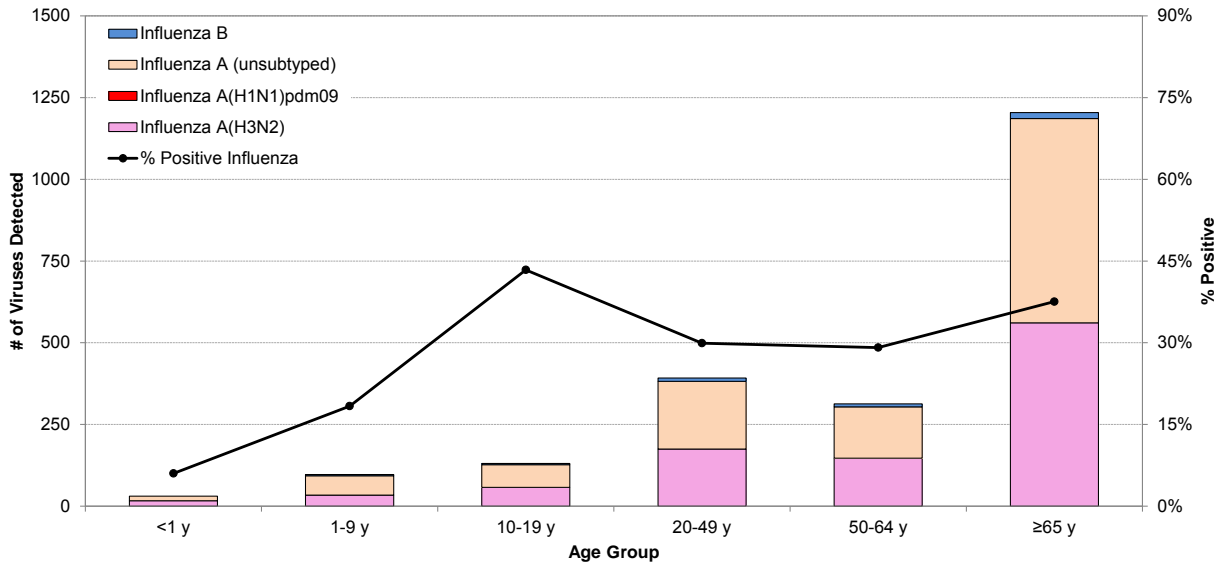
Cumulatively since week 40 (starting October 2, 2016), 2163 (31%) patients tested positive for influenza at the BCCDC PHL, including 2118 (98%) with influenza A [992 A(H3N2) and 1126 subtype pending] and 45 (2%) with influenza B. So far during the 2016-17 season, influenza A(H3N2) has been the dominant subtype among influenza detections. Elderly adults ≥ 65 years old are disproportionately represented among influenza detections, although younger age groups are also affected.

Influenza and other virus detections among respiratory specimens submitted to BCCDC Public Health Laboratory, 2016-17



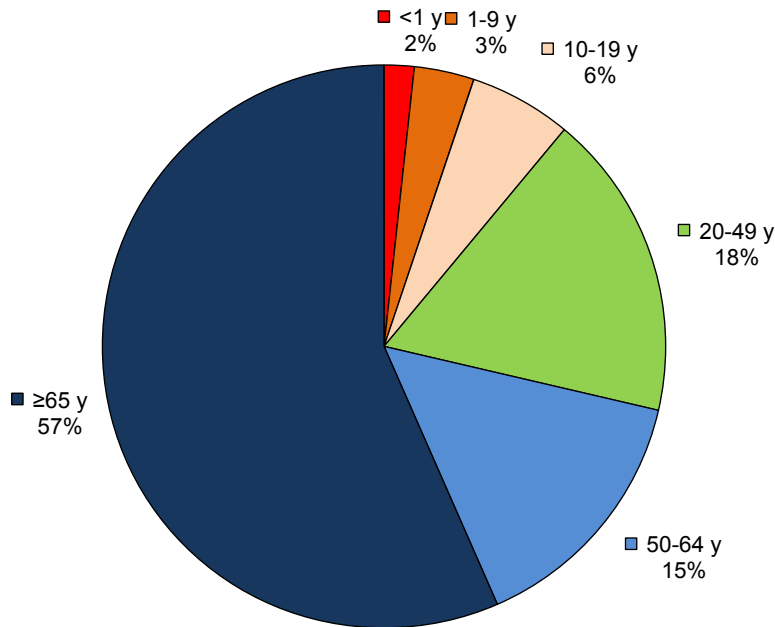
Data are current to January 25, 2017.

Cumulative number (since week 40) of influenza detections by type/subtype and age group, BCCDC Public Health Laboratory, 2016-17



Data are current to January 25, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-3.

Age distribution of influenza A(H3N2) detections (cumulative since week 40), BCCDC Public Health Laboratory, 2016-17

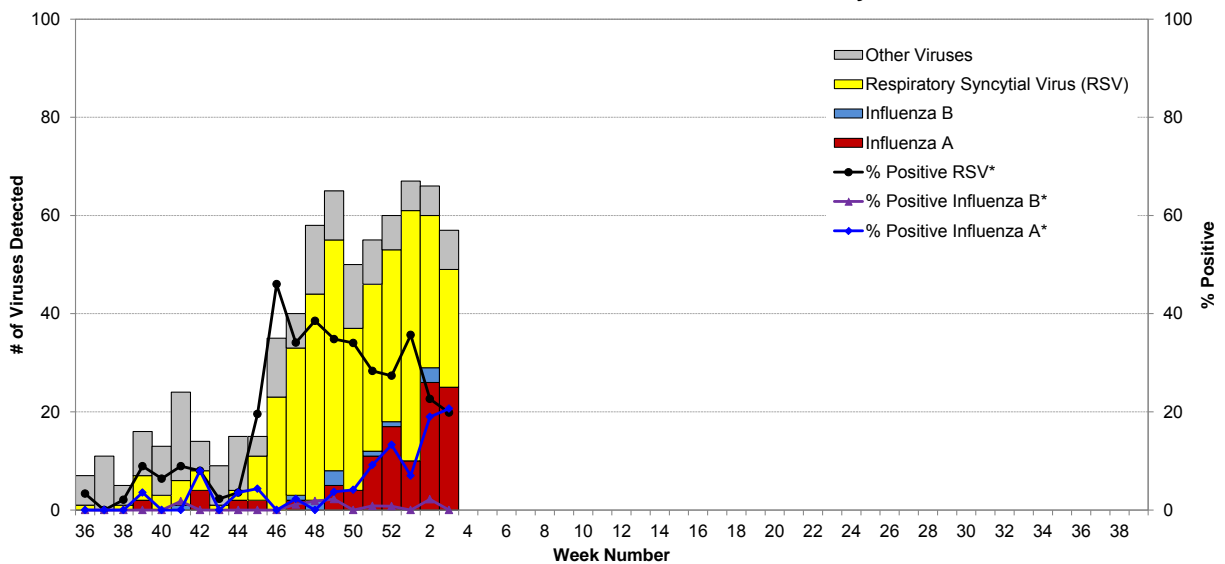


Data are current to January 25, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-3.

BC Children’s and Women’s Health Centre Laboratory

In week 3, the proportion of tests positive for influenza A remained elevated at the BC Children’s and Women’s Health Centre Laboratory. The positivity rate for influenza A and RSV were comparable for both viruses around 20% in week 3. Of the 121 tests conducted, 25 (21%) were positive for influenza A and 24 (20%) were positive for RSV; none were positive for influenza B.

Influenza and other virus detections among respiratory specimens submitted to BC Children’s and Women’s Health Centre Laboratory, 2016-17



* 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.

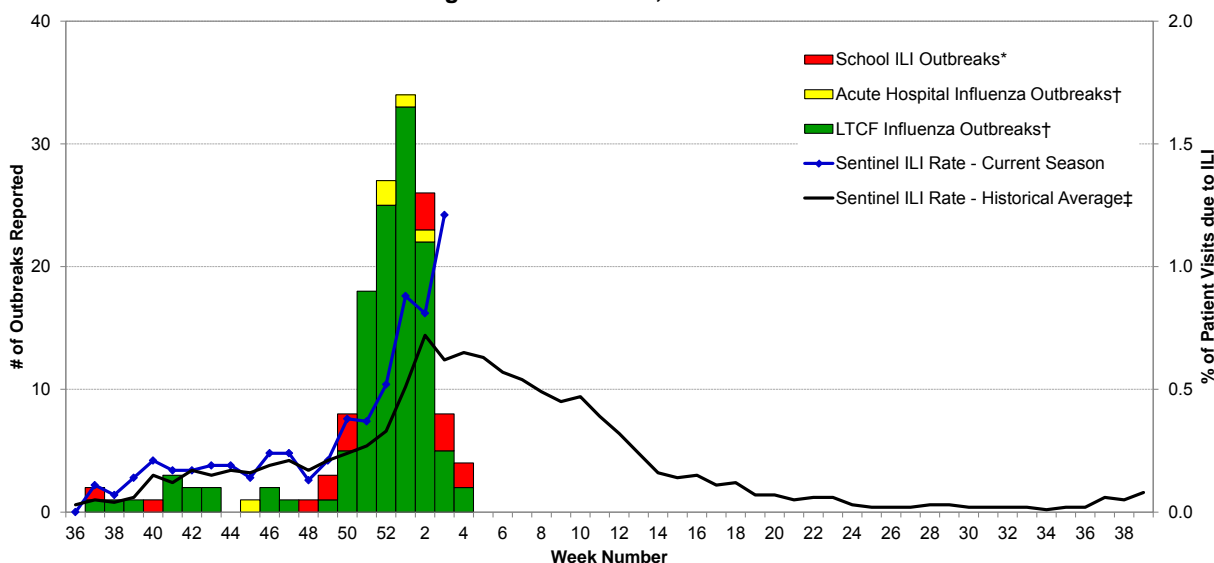
Influenza-like Illness (ILI) Outbreaks

Since our last bulletin one week ago, 16 new influenza outbreaks were reported, all from long-term care facilities (LTCFs). Of the 16 newly reported outbreaks, 6 were reported from VCHA, 5 from FHA, 3 from VIHA, and 2 from IHA; none were reported from NHA. Onset dates ranged from week 1 to week 4. Of the 16 outbreaks, 15 had influenza A detected, all with subtype pending, and one had influenza detected with A/B type pending at the time of report. Two new school ILI outbreaks were reported from IHA in week 4.

Cumulatively during the 2016-17 season (since week 37, starting September 11, 2016), a total of 129 influenza outbreaks have been reported as of January 26, 2017, including 123 in LTCFs, 5 in acute care settings, and one in a rehabilitation centre. All of the influenza A outbreaks with subtype information available had influenza A(H3N2) detected; one outbreak with influenza B detected and one outbreak with both influenza A and B detected were additionally reported. The cumulative tally of facility outbreaks to date this season (n=129) is comparable to that of the same approximate period in 2014-15 (n=136 to January 29, 2015).

A total of 16 school ILI outbreaks have also been reported so far during the 2016-17 season but without etiologic agent identified.

Number of influenza-like illness (ILI) outbreaks reported, compared to current sentinel ILI rate and historical average sentinel ILI rate, British Columbia 2016-17



* 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.

‡ 10-year historical average for 2016-17 season based on 2004-05 to 2015-16 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality.

National

FluWatch (week 2, January 8 to 14, 2017)

For the past two weeks, several indicators including laboratory detections, outbreaks and hospitalizations have been at their highest levels of the season. The percentage of tests positive for influenza increased from 24% in week 1 to 27% in week 2. A(H3N2) continues to be the most common type of influenza affecting Canadians. The majority of cases, hospitalizations and deaths have been among adults aged ≥65 years. One hundred and six confirmed influenza outbreaks were reported in week 2, with the majority occurring in long-term care facilities and due to influenza A. A total of 467 hospitalizations were reported by participating provinces and territories, up from 445 hospitalizations reported in the previous week. Details are available at: healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/flu-grippe/surveillance/fluwatch-reports-rapports-surveillance-influenza-eng.php.

National Microbiology Laboratory (NML): Strain Characterization

From September 1 to January 26, 2017, the National Microbiology Laboratory (NML) received 411 influenza viruses [371 A(H3N2), 10 A(H1N1)pdm09 and 30 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 371 influenza A(H3N2) viruses, only 132 (36%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 132 viruses characterized by HI assay, all were considered antigenically similar to A/Hong Kong/4801/2014, the WHO-recommended A(H3N2) component for the 2016-17 northern hemisphere influenza vaccine. Of the 116 viruses antigenically characterized with available sequencing information, 92 (79%) belonged to genetic group 3C.2a and 24 (21%) belonged to genetic group 3C.3a. Genetic characterization was performed to infer antigenic properties on the remaining 239 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 239 viruses genetically characterized, all were reported to belong to genetic group 3C.2a, which includes the A/Hong Kong/4801/2014 vaccine strain.

Influenza A(H1N1)pdm09: The 10 A(H1N1)pdm09 viruses characterized were antigenically similar to A/California/7/2009, the WHO-recommended A(H1N1) component for the 2016-17 northern hemisphere influenza vaccine.

Influenza B: Of the 30 influenza B viruses characterized, 14 (47%) were antigenically similar to a B/Brisbane/60/2008(Victoria lineage)-like virus, the WHO-recommended influenza B component for the 2016-17 northern hemisphere trivalent influenza vaccine. The remaining 16 (53%) viruses were characterized as a B/Phuket/3073/2013(Yamagata lineage)-like virus, the other WHO-recommended influenza B component for the 2016-17 northern hemisphere quadrivalent influenza vaccine containing two influenza B components.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1 to January 26, 2017, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 126 influenza A viruses [118 A(H3N2) and 8 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 312 influenza viruses [273 A(H3N2), 10 A(H1N1)pdm09 and 29 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 311 influenza viruses [273 A(H3N2), 9 A(H1N1)pdm09 and 29 B] tested against zanamivir, all were sensitive.

International

USA (week 2, January 8 to 14, 2017)

During week 2, influenza activity increased in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 2 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased. Of the 385 A(H3N2) viruses genetically characterized by the US CDC during the 2016-17 season, 96% belonged to genetic group 3C.2a, including the newly emerging subgroup 3C.2a1, and 4% to group 3C.3a based on analysis of HA gene segments. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the system-specific epidemic threshold. Two influenza-associated pediatric deaths were reported. A cumulative rate for the season of 10.2 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for ILI was 3.3%, which is above the national baseline of 2.2%. The geographic spread of influenza in Puerto Rico and 29 states was reported as widespread; Guam and 17 states reported regional activity; the District of Columbia and four states reported local activity; and the U.S. Virgin Islands reported sporadic activity. Details are available at: www.cdc.gov/flu/weekly/.

WHO (January 23, 2017)

Influenza activity in the temperate zone of the northern hemisphere continued to increase, with many countries especially in East Asia and Europe having passed their seasonal threshold early in comparison with previous years. Worldwide, influenza A(H3N2) virus was predominant. The majority of influenza viruses characterized so far was similar antigenically to the reference viruses contained in vaccines for use in the 2016-17 northern hemisphere influenza season. All tested viruses collected recently for antiviral sensitivity were susceptible to the neuraminidase inhibitor antiviral medications.

- In North America, influenza activity continued to increase with influenza A(H3N2) virus predominating. In the United States of America, ILI levels were above the seasonal thresholds and RSV activity continued to be reported.
- In Europe, influenza activity was high, with influenza A(H3N2) virus being the most prominent subtype. Persons aged ≥ 65 years were most frequently associated with severe disease from influenza infection.
- In East Asia, high influenza activity continued to be reported with influenza A(H3N2) viruses predominant. In Western Asia, influenza activity slightly increased.
- In Southern Asia influenza activity remained low in most of the countries. Detection of influenza A(H3N2) virus continued to be reported by the Islamic Republic of Iran and Sri Lanka.
- In South East Asia, influenza activity remained low, with influenza A(H3N2) virus and influenza B predominating in the region.
- In Northern Africa, influenza detections continued to be reported in Morocco and Tunisia with influenza A(H3N2) virus dominating.
- In West Africa, influenza continued to be detected in Ghana with influenza B viruses dominating.
- In the Caribbean countries and Central America, influenza and other respiratory virus activity remained low in general.
- In tropical South America, influenza and other respiratory viruses activity remained low.
- In the temperate zone of the Southern Hemisphere, influenza activity was at inter-seasonal levels.
- From December 26, 2016 to January 8, 2017, the WHO GISRS laboratories tested more than 165,297 specimens, of which 40,259 were positive for influenza viruses: 38,809 (96%) were typed as influenza A and 1450 (4%) as influenza B. Of the subtyped influenza A viruses, 422 (3%) were influenza A(H1N1)pdm09 and 15,893 (97%) were influenza A(H3N2). Of the characterized B viruses, 116 (50%) belonged to the B/Yamagata lineage and 117 (50%) to the B/Victoria lineage.

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

WHO Recommendations for Influenza Vaccines

WHO Recommendations for 2016-17 Northern Hemisphere Influenza Vaccine

On February 25, 2016, the WHO announced recommended strain components for the 2016-17 northern hemisphere trivalent influenza vaccine (TIV):*

- an A/California/7/2009 (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 components are the same as those recommended for the 2016 Southern Hemisphere vaccine.

* Recommended strains represent a change for two of the three components used for the 2015-16 northern hemisphere vaccines.

† Recommended strain has been retained as the A(H1N1) component since the 2009 pandemic and has been included in the northern hemisphere vaccine since 2010-11.

‡ Recommended strain for the A(H3N2) component represents a phylogenetic clade-level change from a clade 3C.3a virus to a clade 3C.2a virus.

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

For further details: http://www.who.int/influenza/vaccines/virus/recommendations/2016_17_north/en/.

WHO Recommendations for 2017 Southern Hemisphere Influenza Vaccine

On September 29, 2016, the WHO announced the recommended strain components for the 2017 southern 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 represent a change for one of the three components used for the 2016 southern hemisphere TIV and 2016-17 northern 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_south/en/.

Additional Information

Explanatory Note:

The surveillance period for the 2016-17 influenza season is defined starting in week 40. Weeks 36-39 of the 2015-16 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): healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/flu-grippe/surveillance/index-eng.php

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