

British Columbia Influenza Surveillance Bulletin

Influenza Season 2016-17, Number 09, Week 1

January 1 to 7, 2017

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Influenza A(H3N2) and RSV Activity Remain Elevated in BC

During week 1 (January 1 to 7, 2017), influenza and other influenza-like illness (ILI) activity remained elevated in BC. It is too soon to determine if the seasonal epidemic peak has been reached.

At the BCCDC Public Health Laboratory, influenza positivity remained elevated above 40% in week 1. A(H3N2) remains the dominant subtype so far this season. Respiratory syncytial virus (RSV) activity also remained elevated at the BCCDC PHL and BC Children's and Women's Health Centre Laboratory.

Since our last bulletin one week ago, 36 new influenza outbreaks were reported, including 33 in long-term care facilities and three in acute care hospitals, with onset spanning week 51 to week 2. Cumulatively, 83 facility influenza outbreaks have been reported to date this season. Of the influenza A outbreaks with subtype information available, all had A(H3N2) detected.

Medical Services Plan (MSP) claims for influenza illness were stable around expected median levels for the province overall and in most regional Health Authorities, while sentinel ILI rates were significantly above 10-year historical averages for the fourth consecutive week.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

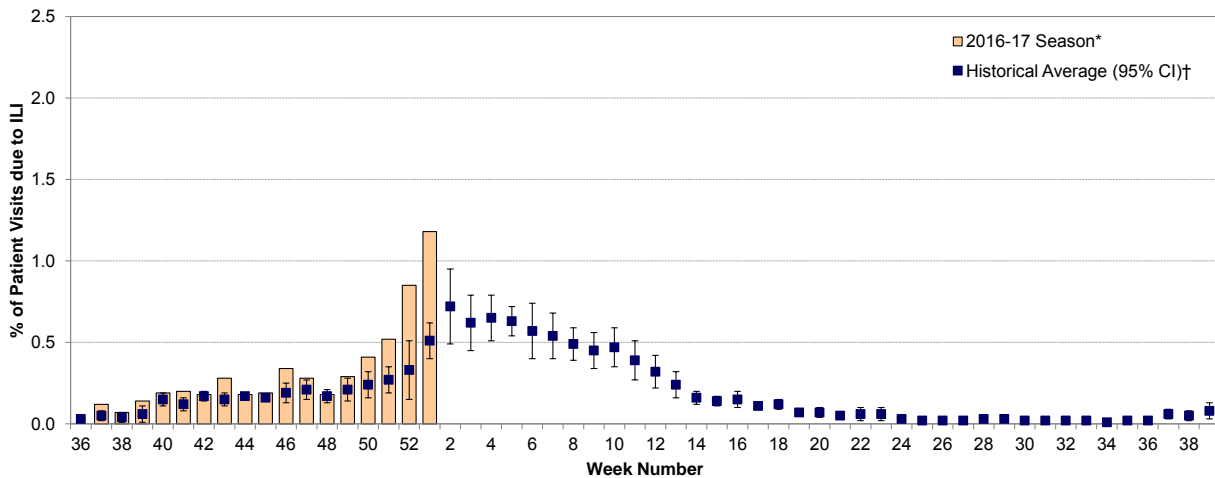
Report Disseminated: January 12, 2017

British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites continued to increase and were above 1% in week 1. Sentinel ILI rates remained significantly higher than the 10-year historical average for the fourth consecutive week. So far, 60% of sites have reported data for this period.

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



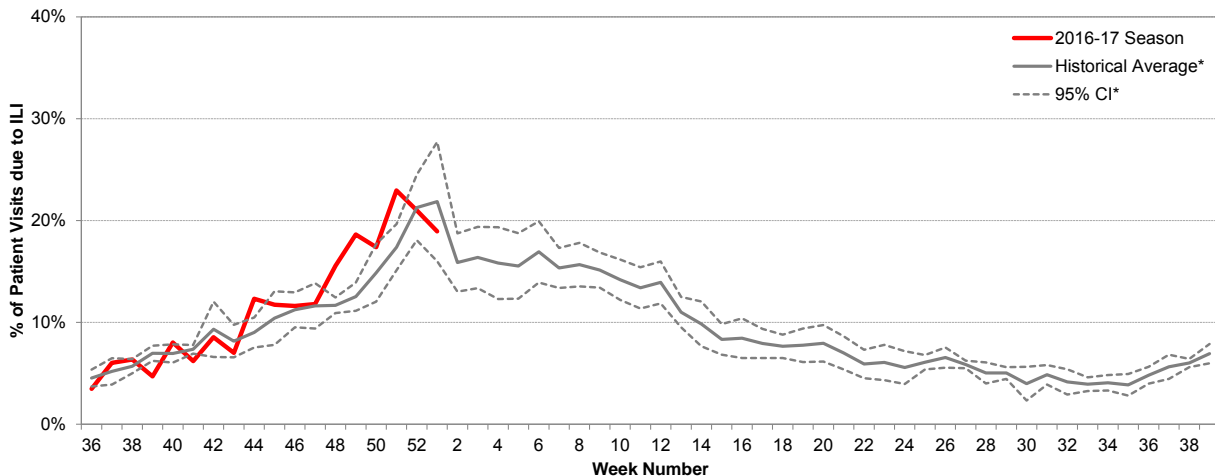
* Data are subject to change as reporting becomes more complete.

† 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 1, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI declined slightly to 19%, consistent with the 5-year historical average 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



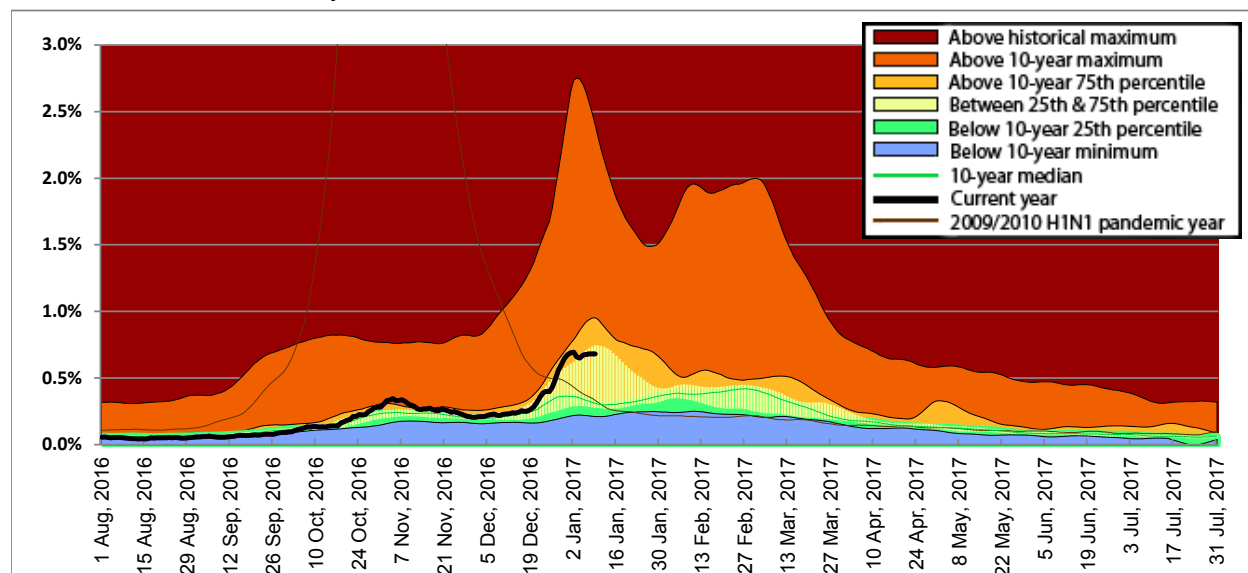
Source: BCCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."

* 5-year historical average for 2016-17 season based on 2011-12 to 2015-16 seasons; CI=confidence interval.

Medical Services Plan

In week 1, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, remained elevated but were stable around expected median levels for this time of year for the province overall and in most regional Health Authorities. In IHA, rates declined slightly but remained above the 10-year maximum. In NHA, II activity has remained low so far this season but was within expected median levels in week 1.

Service claims submitted to MSP for influenza illness (II)* as a proportion of all submitted general practitioner service claims, British Columbia, 2016-17

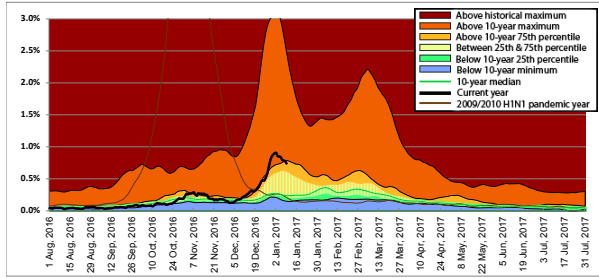


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

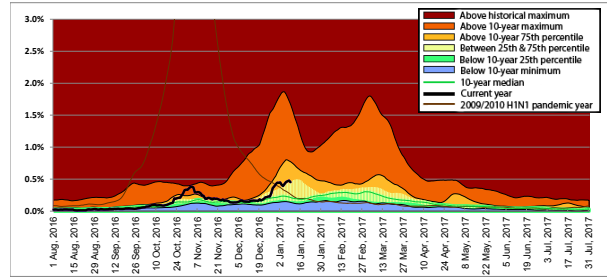
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2016 corresponds to sentinel ILI week 31; data are current to January 9, 2017.

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

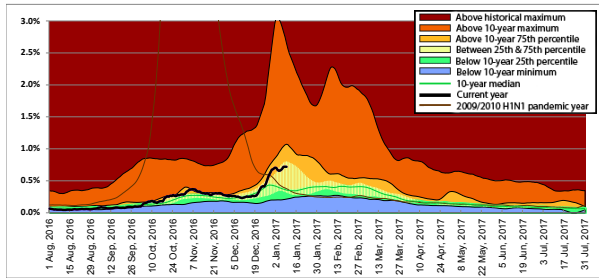
Interior



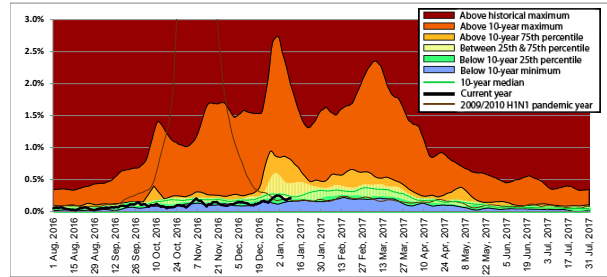
Vancouver Island



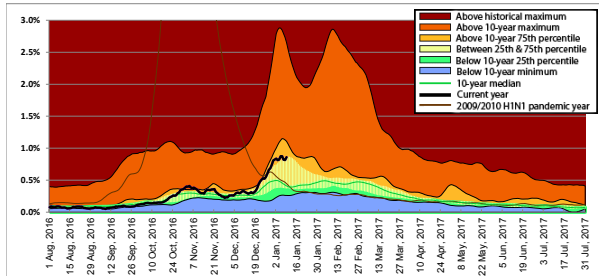
Fraser



Northern



Vancouver Coastal



Laboratory Reports

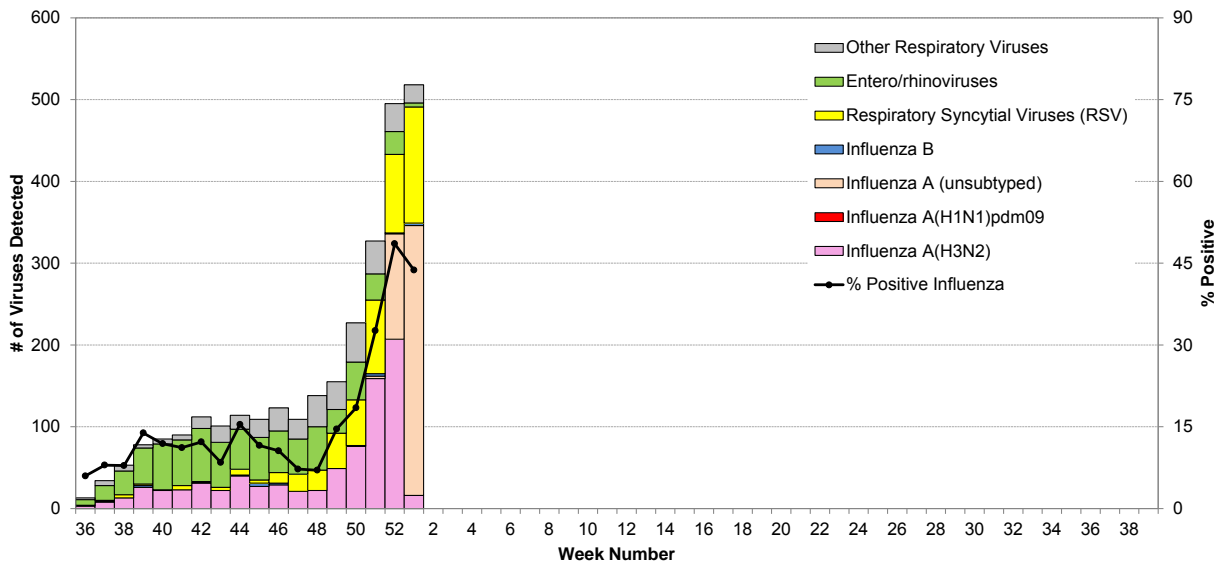
BCCDC Public Health Laboratory

In week 1, 798 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 347 (43%) tested positive for influenza, including 344 (99%) with influenza A [16 A(H3N2) and 328 with subtype pending] and three (1%) with influenza B. Overall influenza positivity remained elevated above 40% during this period. In addition, a large number of patients tested positive for respiratory syncytial virus (RSV) during this period, with 18% positivity in week 1.

Cumulatively since week 40 (starting October 2, 2016), 1211 (25%) patients tested positive for influenza at the BCCDC PHL, including 1195 (99%) with influenza A [739 A(H3N2) and 456 subtype pending] and 16 (1%) with influenza B. No patients have tested positive for influenza A(H1N1)pdm09 so far this season.

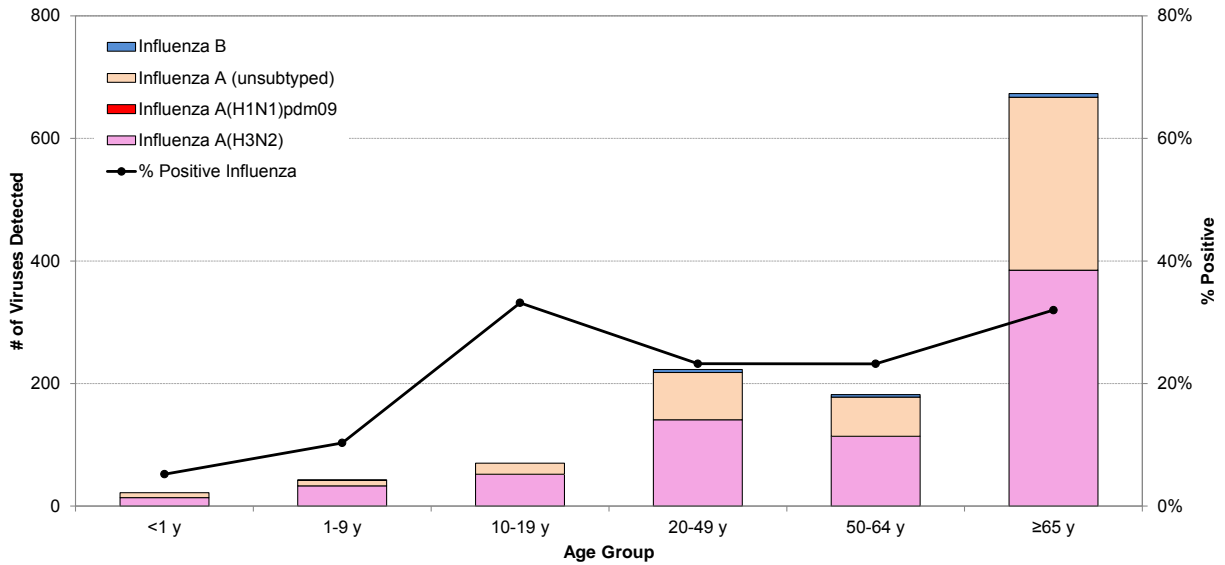
So far during the 2016-17 season, influenza A(H3N2) has been the dominant subtype among influenza detections. Elderly adults ≥ 65 years old are disproportionately represented among influenza detections, although younger age groups are also affected.

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



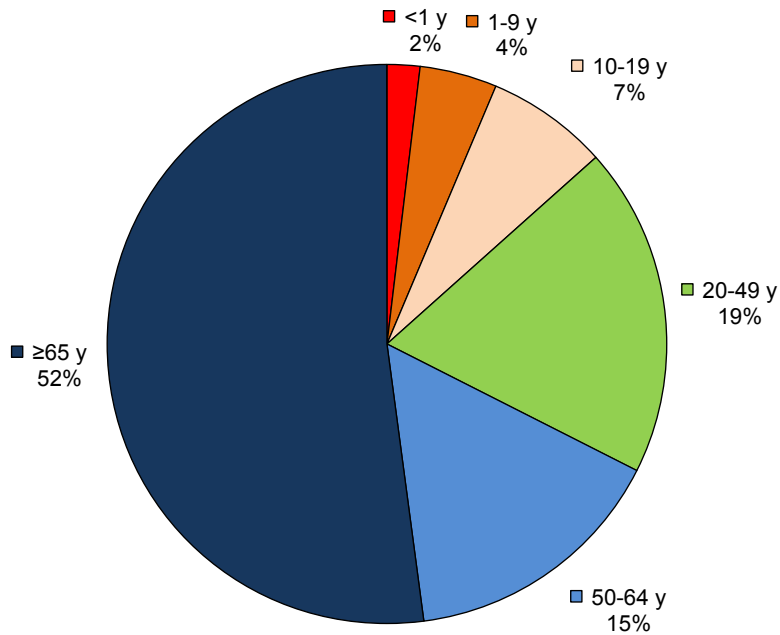
Data are current to January 11, 2017.

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 11, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-1.

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

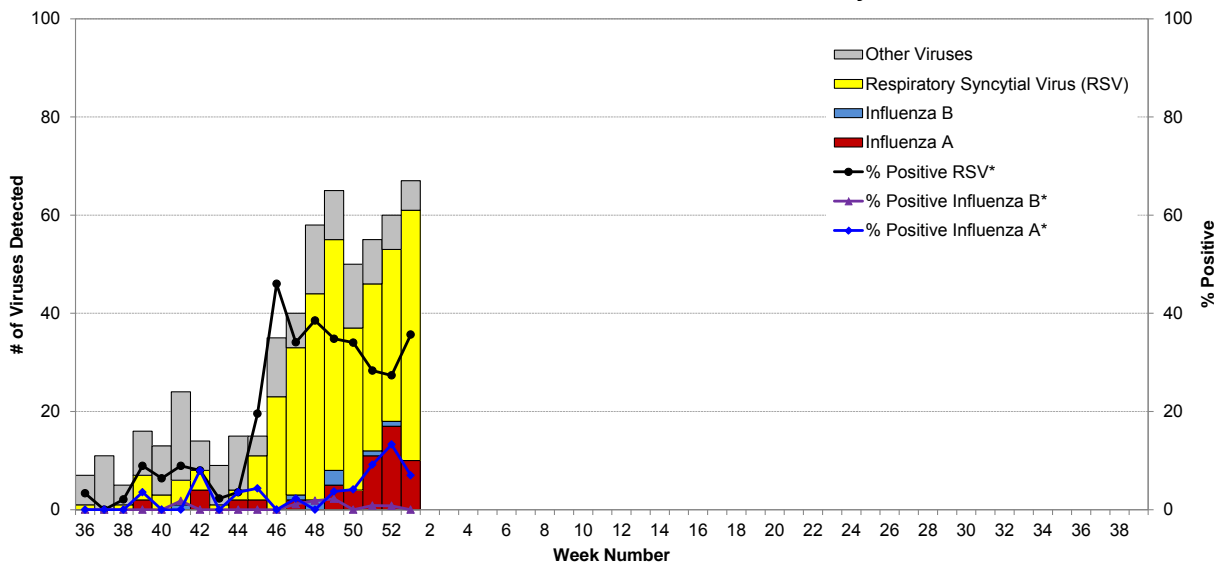


Data are current to January 11, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-1.

BC Children’s and Women’s Health Centre Laboratory

In week 1, the proportion of tests positive for influenza A decreased slightly at the BC Children’s and Women’s Health Centre Laboratory (C&W lab), while the proportion of tests positive for RSV increased. RSV detections continue to outnumber influenza detections at the BC C&W lab by a ratio of about 5:1. Of the 143 tests conducted in week 1, 10 (7%) were positive for influenza A and 51 (36%) 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.

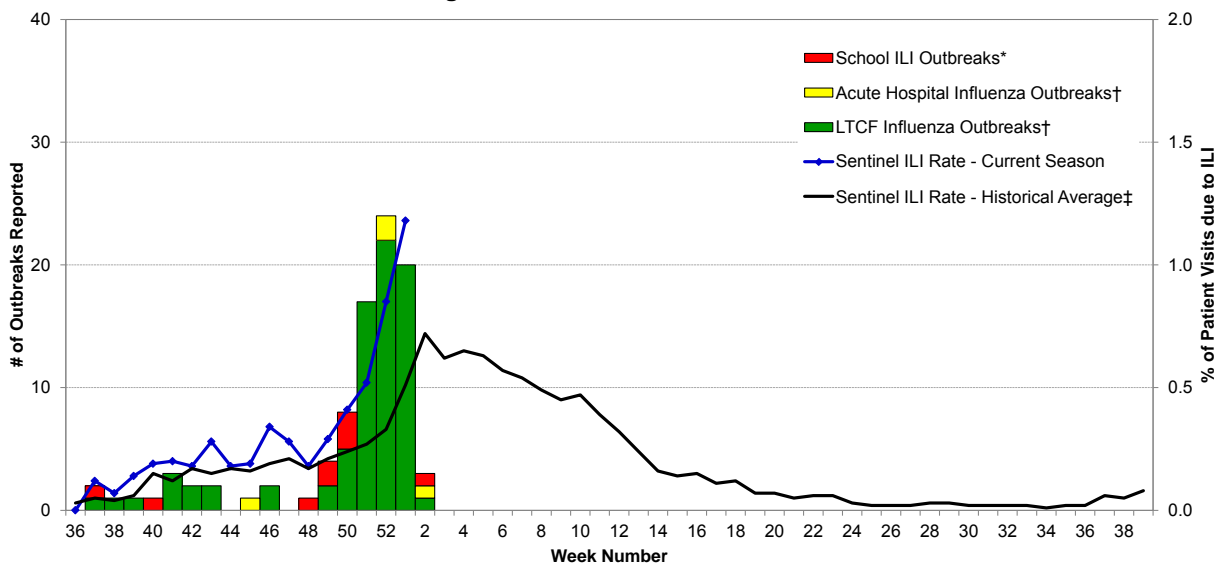
Influenza-like Illness (ILI) Outbreaks

Since our last bulletin one week ago, 36 new influenza outbreaks were reported, including 33 from long-term care facilities (LTCFs) and three in acute care hospitals. Of the 36 newly reported outbreaks, 12 were reported from VCHA, 8 from FHA, 8 from IHA, and 8 from VIHA; none were reported from NHA. Onset dates ranged from week 51 to week 2. Of the 36 outbreaks, 35 had influenza A detected and one had influenza detected with A/B type pending at the time of report; of the 4 influenza A outbreaks with subtype information available, all were A(H3N2). One school ILI outbreak was reported from IHA in week 2.

Cumulatively during the 2016-17 season (since week 37, starting September 11, 2016), a total of 83 influenza outbreaks have been reported, including 78 in LTCFs, 4 in an acute care setting, 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 was additionally reported.

A total of 9 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 (weeks 51 & 52, December 18 to 31, 2016)

Seasonal influenza activity continued to increase during that period in Canada, with greater numbers of influenza detections, hospitalizations and outbreaks being reported in weeks 51 and 52. The percentage of tests positive for influenza increased from 16% in week 51 to 24% in week 52. Influenza A(H3N2) has been the most common subtype detected. Seventy-one laboratory-confirmed influenza outbreaks were reported in week 52, with the majority occurring in long-term care facilities. Adults aged ≥ 65 years accounted for the largest proportion of hospitalizations and deaths reported from adult sentinel networks and participating provinces and territories. 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 11, 2017, the National Microbiology Laboratory (NML) received 216 influenza viruses [188 A(H3N2), 10 A(H1N1)pdm09 and 18 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 188 influenza A(H3N2) viruses, only 68 (36%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 68 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 68 viruses antigenically characterized with available sequencing information, 53 (78%) belonged to genetic group 3C.2a and 15 (22%) belonged to genetic group 3C.3a. Genetic characterization was performed to infer antigenic properties on the remaining 120 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 120 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 18 influenza B viruses characterized, 9 (50%) 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 9 (50%) viruses were characterized as a B/Phuket/3073/2013(Yamagata lineage)-like virus, the 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 11, 2017, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 115 influenza A viruses [109 A(H3N2) and 6 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 223 influenza viruses [196 A(H3N2), 9 A(H1N1)pdm09 and 18 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 223 influenza viruses [196 A(H3N2), 9 A(H1N1)pdm09 and 18 B] tested against zanamivir, all were sensitive.

International

USA (week 52, December 25 to 31, 2016)

During week 52, influenza activity increased in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 52 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased. Of the 259 A(H3N2) viruses genetically characterized by the US CDC during the 2016-17 season, 95% belonged to genetic group 3C.2a, including the newly emerging subgroup 3C.2a1, and 5% 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. No influenza-associated pediatric deaths were reported. A cumulative rate for the season of 4.9 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for influenza-like illness (ILI) was 3.4%, which is above the national baseline of 2.2%. The geographic spread of influenza in 12 states was reported as widespread; Guam and 28 states reported regional activity; the District of Columbia and 10 states reported local activity; the U.S. Virgin Islands reported sporadic activity; and Puerto Rico did not report. Details are available at: www.cdc.gov/flu/weekly/.

WHO (January 9, 2017)

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

- In North America, influenza activity continued to increase with influenza A(H3N2) virus predominating. ILI levels just surpassed the seasonal thresholds in the United States. In the United States, RSV activity increased.
- In Europe, influenza activity was increasing, with influenza A(H3N2) virus being the most prominent subtype. Persons aged ≥ 65 years were most frequently associated with severe disease.
- In East Asia, influenza activity continued to increase with influenza A(H3N2) viruses predominant.
- In Western Asia, influenza activity increased slightly.
- In Southern Asia, influenza activity increased mainly due to influenza A(H3N2). Increased activity was reported in recent weeks by the Islamic Republic of Iran and Sri Lanka.
- In South East Asia, influenza activity continued to decrease, with influenza A(H3N2) virus and influenza B predominating in the region.
- In Northern Africa, continued increased influenza detections were reported in Morocco and Tunisia with influenza A(H3N2) virus dominating.
- In West Africa, influenza continued to be detected in Ghana with 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 is at inter-seasonal levels.
- From December 12 to 25, 2016, the WHO GISRS laboratories tested more than 124,657 specimens, of which 25,263 were positive for influenza viruses: 24,223 (96%) were typed as influenza A and 1040 (4%) as influenza B. Of the subtyped influenza A viruses, 159 (1%) were influenza A(H1N1)pdm09 and 11,927 (99%) were influenza A(H3N2). Of the characterized B viruses, 67 (35%) belonged to the B/Yamagata lineage and 125 (65%) to the B/Victoria lineage.

Previous updates 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-affectious/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