

British Columbia Influenza Surveillance Bulletin

Influenza Season 2016-17, Number 14, Week 6

February 5 to 11, 2017

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Declining Influenza A(H3N2) Activity in BC

During week 6 (February 5 to 11, 2017), several indicators suggest declining influenza activity in BC; however, elevated activity continues to be observed across most regions of the province.

At the BCCDC Public Health Laboratory, influenza positivity continued to decline, falling below 30% in week 6 and concurrent with a decrease in test volumes. Influenza A(H3N2) remains the dominant type/subtype so far this season, but influenza B viruses comprised about one-quarter of influenza detections in week 6.

Since our last bulletin one week ago, 13 new influenza outbreaks were reported, including 12 with influenza A and one with influenza B detected. Cumulatively, 166 influenza outbreaks have been reported to date this season.

Medical Services Plan (MSP) claims for influenza illness continued to decline in all regions of the province, returning to expected median levels for this time of year. Sentinel ILI rates decreased from the previous week but remained significantly above the 10-year historical average for this time of year.

This week, the United States published its mid-season estimate of 2016-17 influenza vaccine effectiveness (VE) against outpatient medically attended A(H3N2) illness of 43%, consistent with Canadian findings published last week reporting mid-season VE of 42%.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

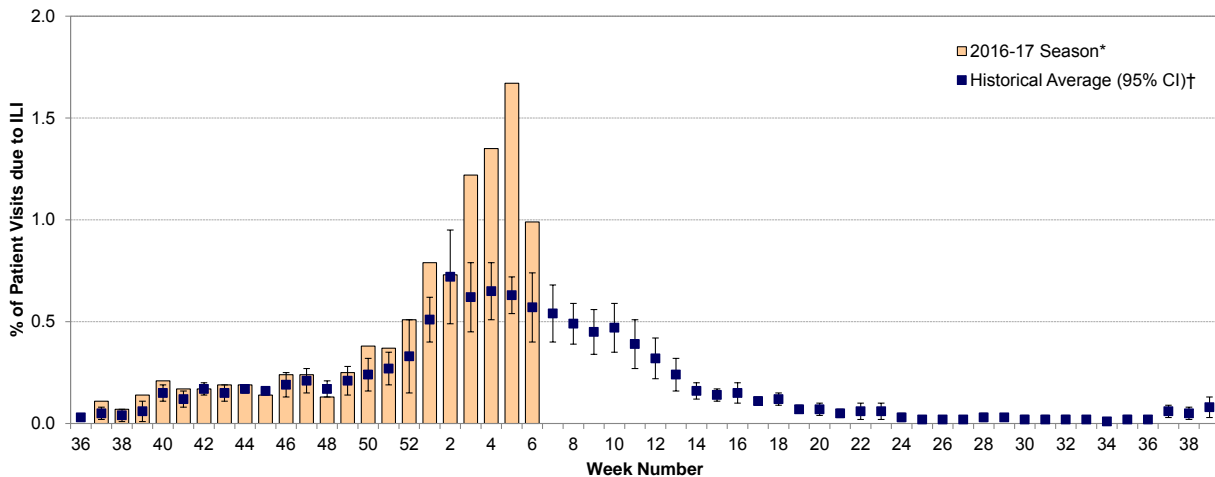
Report Disseminated: February 16, 2017

British Columbia

Sentinel Physicians

In week 6, the proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites decreased from the previous week to <1% but remained significantly above the 10-year historical average for this time of year. So far, 48% of sites have reported data for this week; 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, 2016-17

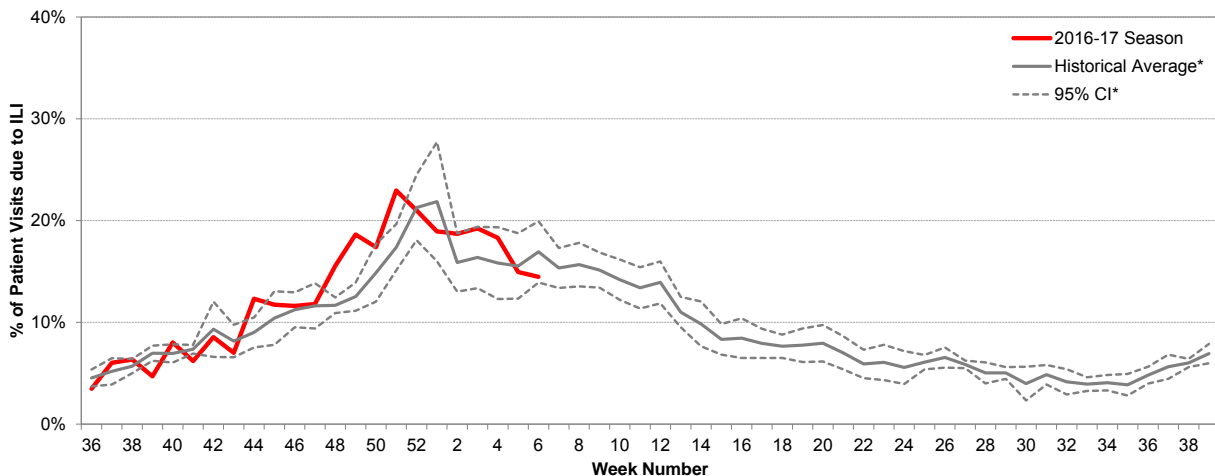


* Data are subject to change as reporting becomes more complete. One hospital ER site that reported ILI rates $\geq 5\%$ was excluded from the graph.
† 10-year historical average for 2016-17 season based on 2004-05 to 2015-2016 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence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

BC Children's Hospital Emergency Room

In week 6, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI continued to decline from a peak of 23% in week 51 to 15% in week 6, below the 5-year historical average but 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

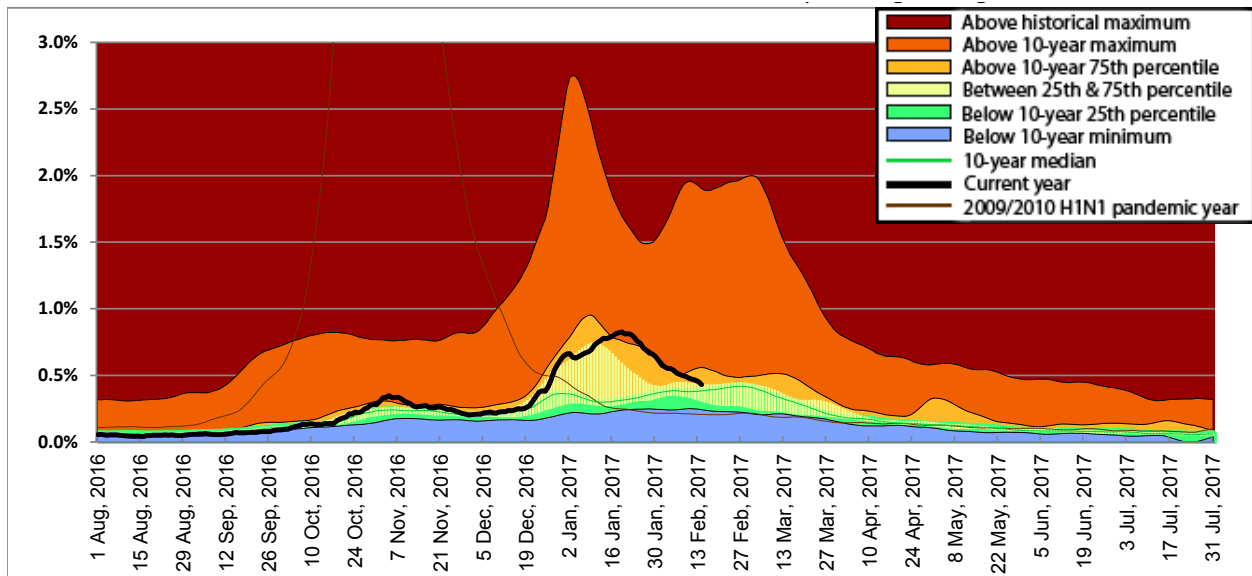


Source: BCCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2016-17 season based on 2011-12 to 2015-16 seasons; CI=confidence interval.

Medical Services Plan

In week 6, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, continued to decline in all regions of the province, returning to expected 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

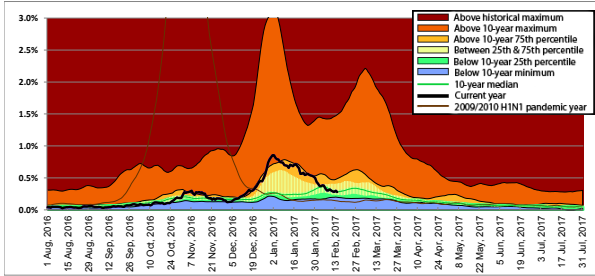


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

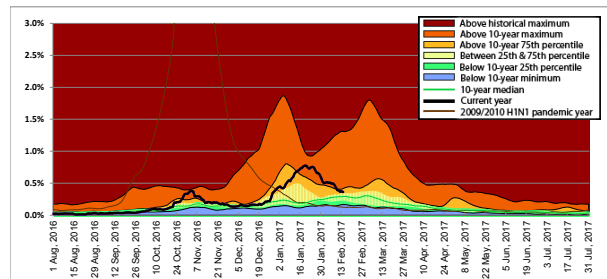
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2016 corresponds to sentinel ILI week 31; data are current to February 14, 2017.

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

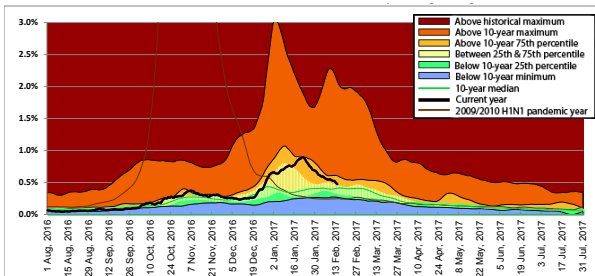
Interior



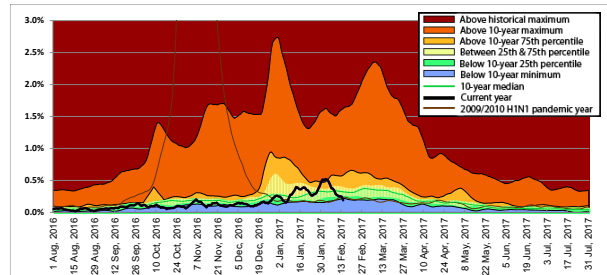
Vancouver Island



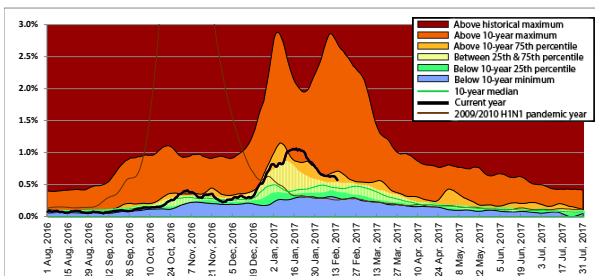
Fraser



Northern



Vancouver Coastal



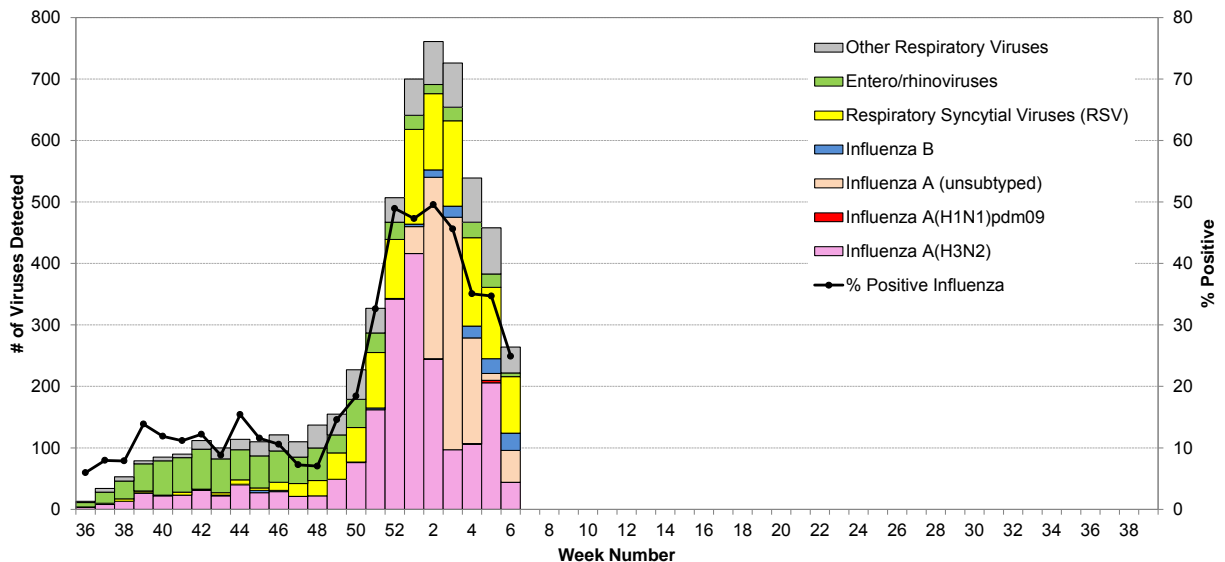
Laboratory Reports

BCCDC Public Health Laboratory

In week 6, 498 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 122 (24%) tested positive for influenza, including 94 (77%) with influenza A [44 A(H3N2) and 50 with subtype pending], 27 (22%) with influenza B and one (1%) patient co-infected with influenza A and B. Overall influenza positivity continued to decline, falling below 30% in week 6 and concurrent with a decrease in test volumes. Influenza A(H3N2) remains the most frequently detected type/subtype; however, an increasing number of influenza B viruses (comprising about one-quarter of influenza detections in week 6) have been detected in recent weeks.

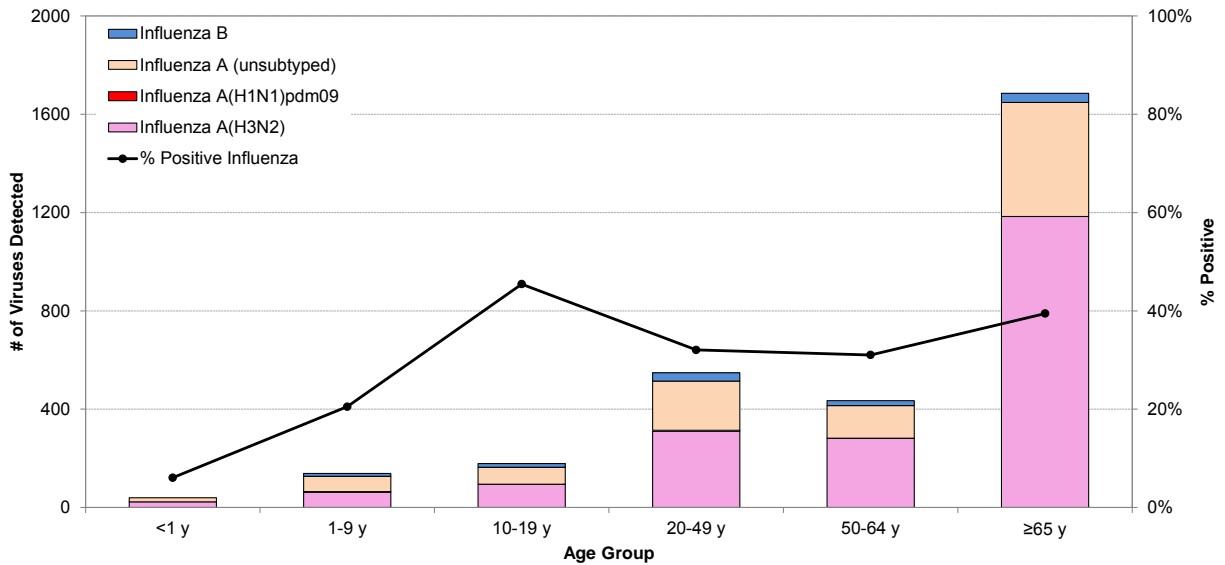
Cumulatively since week 40 (starting October 2, 2016), 3014 (33%) patients tested positive for influenza at the BCCDC PHL, including 2896 (96%) with influenza A [1957 A(H3N2), 6 A(H1N1)pdm09 and 933 subtype pending], 117 (4%) with influenza B and one patient co-infected with influenza A and B. So far 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



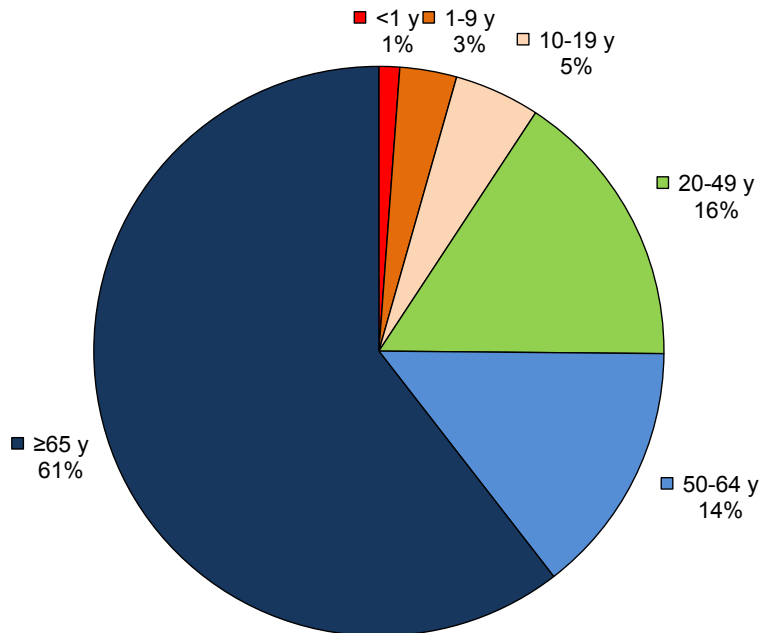
Data are current to February 15, 2017.

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



Data are current to February 15, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-6.

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

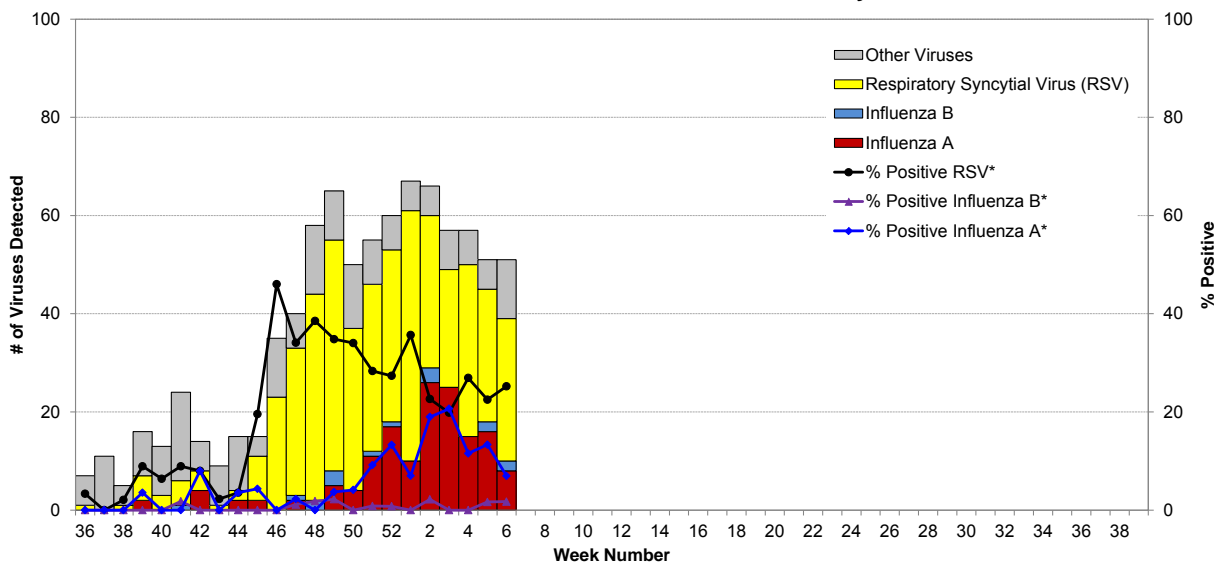


Data are current to February 15, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-6.

BC Children's and Women's Health Centre Laboratory

In week 6, the proportion of tests positive for influenza A decreased slightly at the BC Children's and Women's Health Centre Laboratory, while the proportion positive for respiratory syncytial virus (RSV) remained relatively stable. Of the 115 tests conducted, 8 (7%) were positive for influenza A and 29 (25%) were positive for RSV; two (2%) 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.

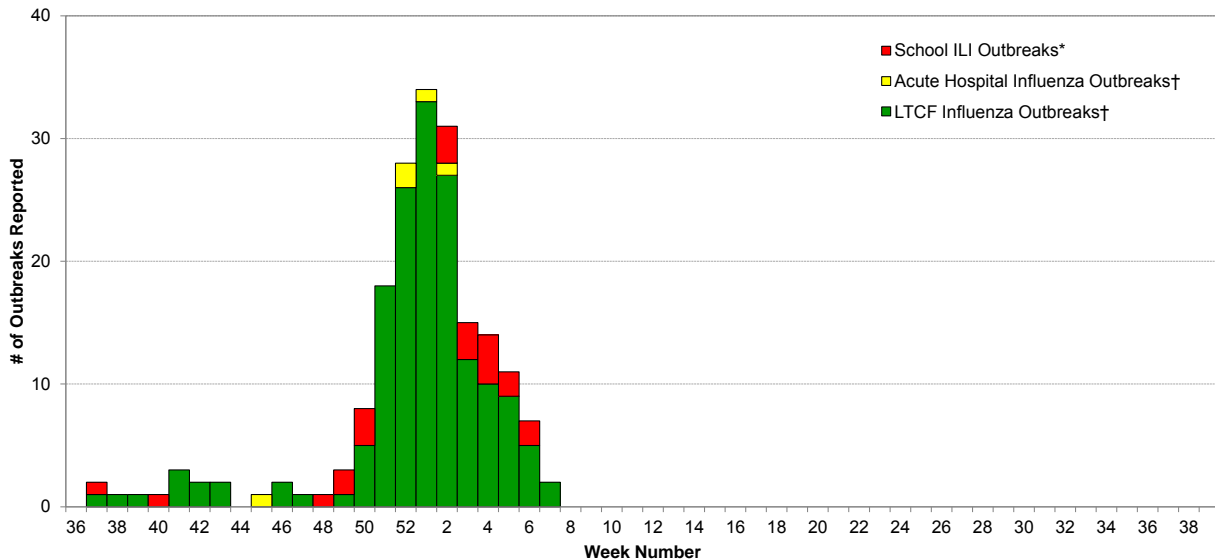
Influenza-like Illness (ILI) Outbreaks

Since our last bulletin one week ago, 13 new influenza outbreaks were reported, including 12 from long-term care facilities (LTCFs) and one from a mental health facility. Of the 13 newly reported outbreaks, seven were reported from FHA, four from VCHA and two from VIHA. Onset dates ranged from weeks 2-7. Twelve had influenza A detected [three A(H3N2) and nine subtype pending] and one had influenza B detected. No new school ILI outbreaks were reported this week.

Cumulatively during the 2016-17 season (since week 37, starting September 11, 2016), a total of 166 influenza outbreaks have been reported as of February 16, 2017, including 158 in LTCFs, five in acute care settings, and three from other facility types. All of the influenza A outbreaks with subtype information available had influenza A(H3N2) detected; four outbreaks with influenza B detected and one outbreak with both influenza A and B detected were additionally reported.

A total of 22 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.

National

FluWatch (week 5, January 29 to February 4, 2017)

Influenza activity continues to be reported across Canada and two regions are reporting widespread influenza activity. In week 5, the percentage of tests positive for influenza remained similar to the previous week around 24%. In week 5, 56 laboratory confirmed outbreaks were reported (up from 54 in the previous week), the majority in LTCFs and due to influenza A. A(H3N2) continues to be the most common subtype of influenza affecting Canadians. The majority of laboratory detections, hospitalizations and deaths have been among adults aged ≥ 65 years. 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, 2016 to February 16, 2017, the National Microbiology Laboratory (NML) received 668 influenza viruses [621 A(H3N2), 11 A(H1N1)pdm09 and 36 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 621 influenza A(H3N2) viruses, only 200 (32%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 200 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 189 out of 200 viruses antigenically characterized with available sequencing information, 159 (84%) belonged to genetic group 3C.2a and 30 (16%) belonged to genetic group 3C.3a. Genetic characterization was performed to infer antigenic properties on the remaining 421 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 421 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 11 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 36 influenza B viruses characterized, 17 (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 19 (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, 2016 to February 16, 2017, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 138 influenza A viruses [130 A(H3N2) and 8 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 437 influenza viruses [393 A(H3N2), 10 A(H1N1)pdm09 and 34 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 437 influenza viruses [393 A(H3N2), 9 A(H1N1)pdm09 and 35 B] tested against zanamivir, all were sensitive.

Mid-season Estimates of 2016-17 Influenza Vaccine Effectiveness, North America

Canada

On February 9, 2017, researchers from the Canadian Sentinel Practitioner Surveillance Network (SPSN) published the first mid-season estimates of influenza vaccine effectiveness (VE) for the 2016-17 season. They found VE of 42% (95% confidence interval (CI): 18-59%) against outpatient medically attended, laboratory-confirmed A(H3N2) illness, which has been the dominant subtype so far this season. This finding indicates that, compared to unvaccinated people, the risk of A(H3N2) illness in vaccinated people was reduced by about 40%. This VE estimate is consistent with vaccine protection typically expected for A(H3N2)-dominant seasons, but is considerably higher than in the last A(H3N2)-dominant 2014-15 season when no vaccine protection was found.

The full report is available at: www.eurosurveillance.org/ViewArticle.aspx?ArticleId=22714.

United States

This week, the U.S. Flu VE Network published mid-season estimates of 2016-17 influenza VE, reporting an adjusted VE of 43% (95% CI: 29-54%) for A(H3N2). These findings are consistent with Canadian mid-season estimates published last week, suggesting VE of around 40% against outpatient, medically attended A(H3N2) illness, which has been the dominant influenza strain so far during the 2016-17 season. Both the Canadian and U.S. studies used a test-negative design to derive influenza VE.

For details see: www.cdc.gov/mmwr/volumes/66/wr/mm6606a3.htm?s_cid=mm6606a3_w.

International

USA (week 5, January 29 to February 4, 2017)

During week 5, influenza activity increased in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 5 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased. Of the 593 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 above the system-specific epidemic threshold. Five influenza-associated pediatric deaths were reported. A cumulative rate for the season of 24.3 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for ILI was 4.8%, which is above the national baseline of 2.2%. The geographic spread of influenza in Puerto Rico and 43 states was reported as widespread; Guam and six states reported regional activity; the District of Columbia and one state reported local activity; and the U.S. Virgin Islands reported no activity. Details are available at: www.cdc.gov/flu/weekly/.

WHO

There have been no new 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 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-affectations/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>														
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Numbers to date</th> <th style="width: 25%;">Residents/Students</th> <th style="width: 25%;">Staff</th> </tr> </thead> <tbody> <tr> <td>Total</td> <td></td> <td></td> </tr> <tr> <td>With ILI</td> <td></td> <td></td> </tr> <tr> <td>Hospitalized</td> <td></td> <td></td> </tr> <tr> <td>Died</td> <td></td> <td></td> </tr> </tbody> </table>	Numbers to date	Residents/Students	Staff	Total			With ILI			Hospitalized			Died	
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>														
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Numbers to date	Residents/Students	Staff													
Total															
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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