

British Columbia Influenza Surveillance Bulletin

Influenza Season 2016-17, Number 07, Week 50

December 11 to 17, 2016

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Seasonal Influenza A(H3N2) Activity Continues in BC

During week 50 (December 11 to 17, 2016), influenza activity was at seasonal levels in BC but may be expected to increase as we enter the winter holiday period.

At the BCCDC Public Health Laboratory (PHL), influenza positivity remained above 15% for the second consecutive week. Influenza A(H3N2) has been the dominant subtype so far this season. Respiratory syncytial virus (RSV) activity remained elevated at both the BCCDC PHL and the BC Children's and Women's Health Centre Laboratory during this period.

Two new influenza A outbreaks were reported from long-term care facilities in FHA: one with onset in week 50 and one in week 51. A total of 17 influenza outbreaks have been reported so far this season (since week 37), 16 with influenza A detected (all H3N2 where subtype information is available) and one with influenza B detected.

Medical Services Plan (MSP) claims for influenza illness were at expected median levels for this time of year, while sentinel ILI rates remained above 10-year historical averages.

Three new cases of enterovirus D68 (EV-D68) were detected, bringing the total number of cases detected in BC since August 2016 to 74 cases.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

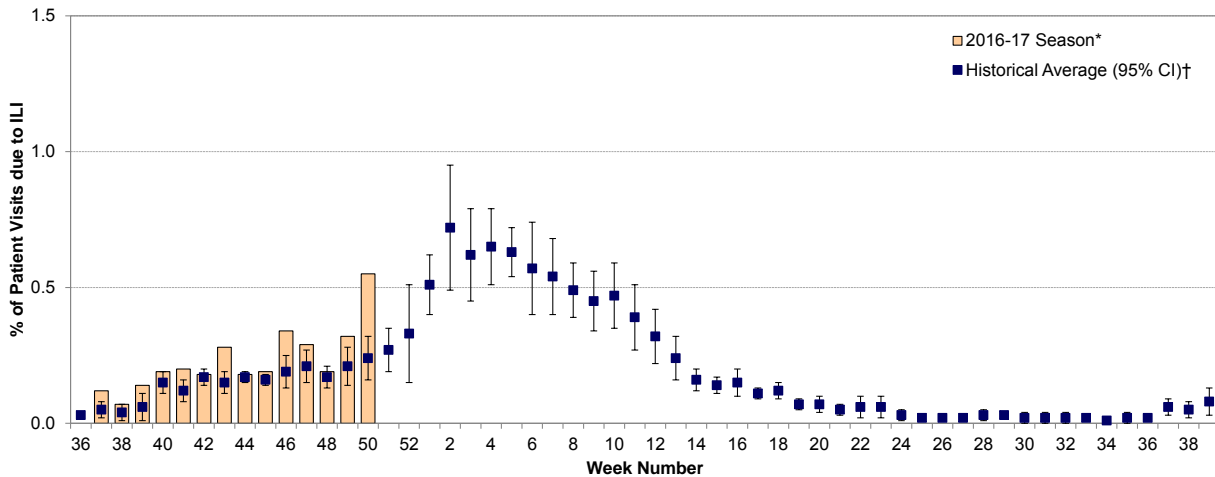
Report Disseminated: December 22, 2016

British Columbia

Sentinel Physicians

In week 50, the proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites increased from 0.32% in week 49 to 0.55% in week 50 and was significantly higher than the 10-year historical average for this time of year. So far, 47% of sentinel 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

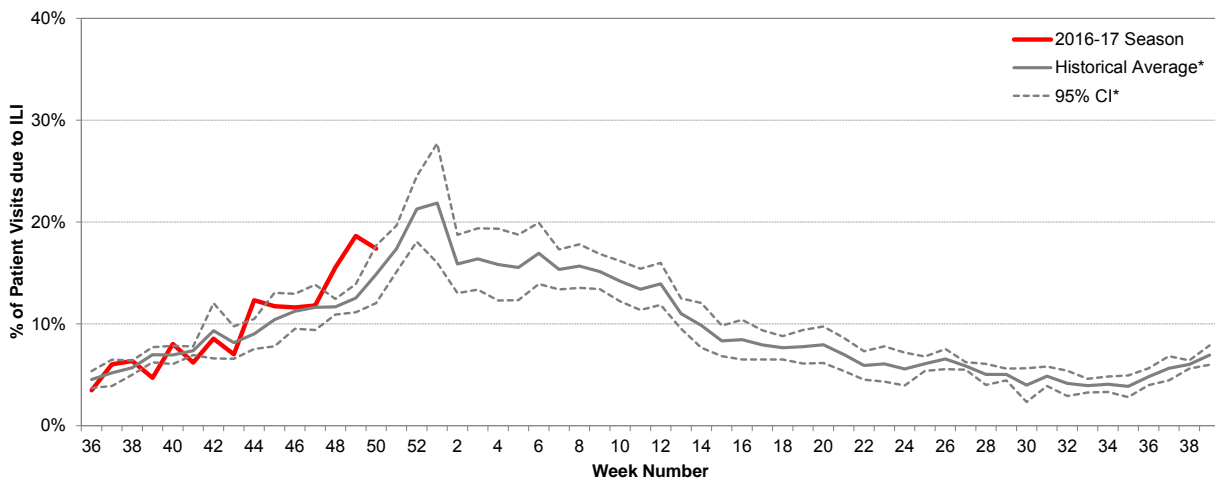


* Data are subject to change as reporting becomes more complete.
† 10-year historical average for 2016-17 season based on 2004-05 to 2015-2016 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children’s Hospital Emergency Room

In week 50, the proportion of visits to BC Children’s Hospital Emergency Room (ER) attributed to ILI remained elevated at 17% but was 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

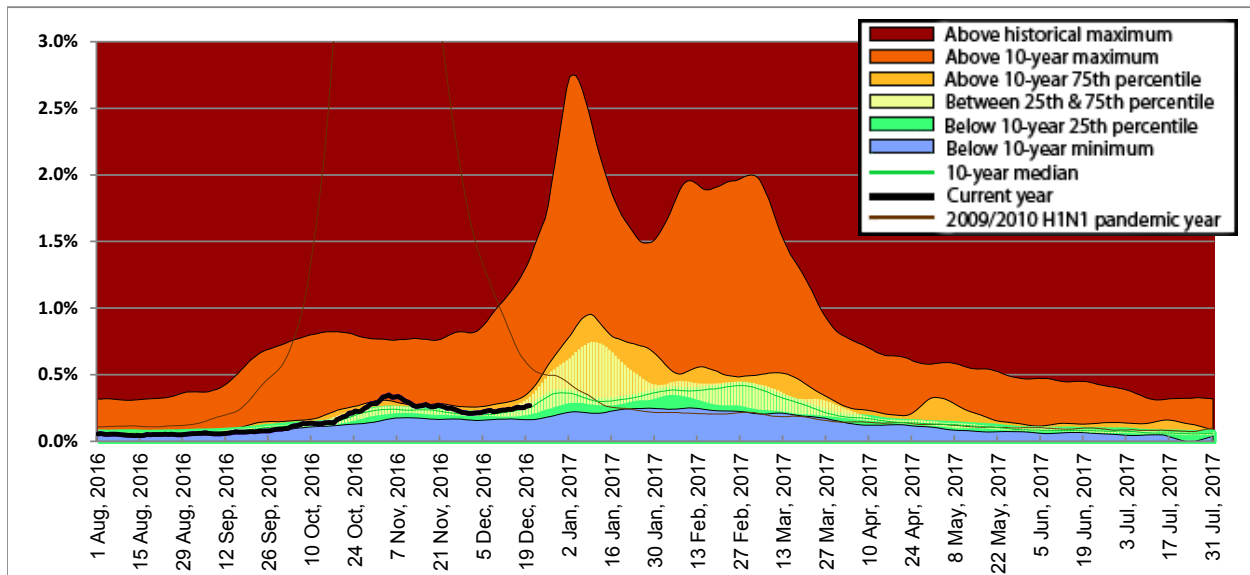


Source: BCCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2016-17 season based on 2011-12 to 2015-16 seasons; CI=confidence interval.

Medical Services Plan

In week 50, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, were within expected median levels for this time of year in all regions of the province, except IHA where rates were above 10-year 75th percentiles and NHA where rates remained below 10-year 25th percentiles.

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

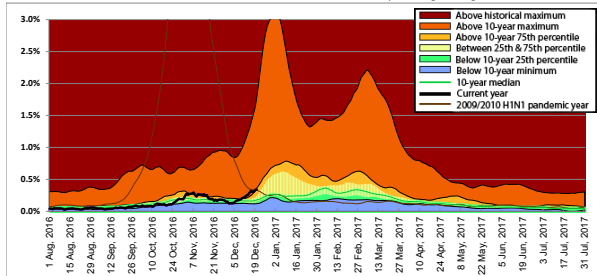


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

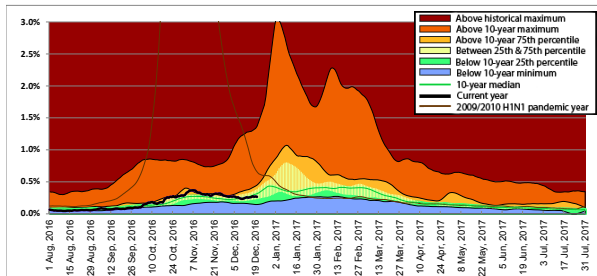
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2016 corresponds to sentinel ILI week 31; data are current to December 20, 2016.

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

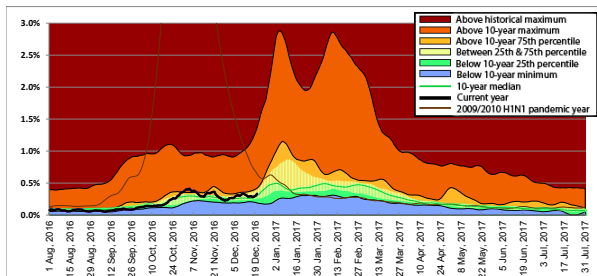
Interior



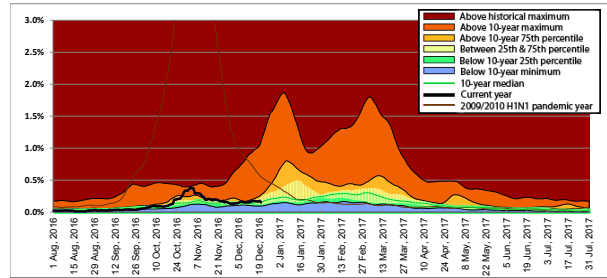
Fraser



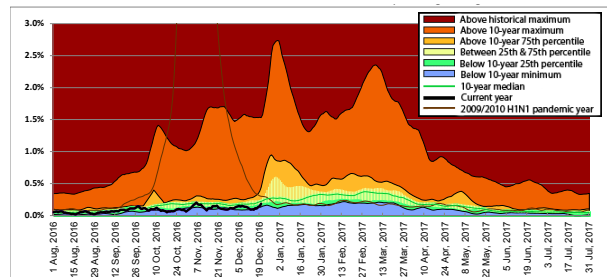
Vancouver Coastal



Vancouver Island



Northern



Laboratory Reports

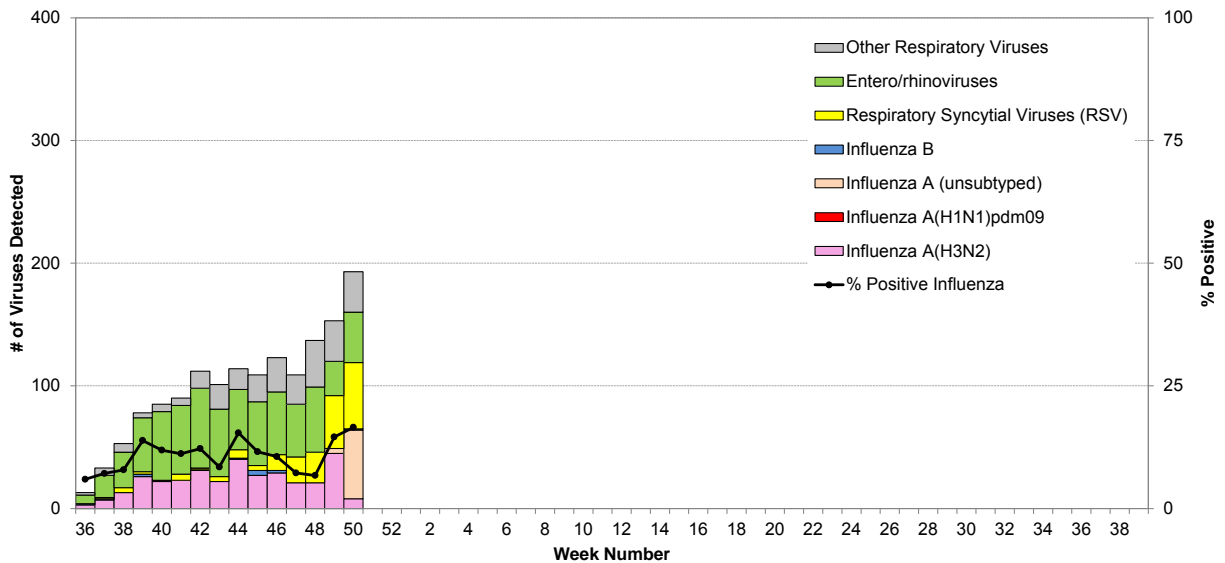
BCCDC Public Health Laboratory

During week 50, 393 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 64 (16%) tested positive for influenza, including 63 (98%) with influenza A [8 A(H3N2) and 55 with subtype pending] and one (2%) with influenza B. Overall influenza positivity remained above 15% for the second consecutive week. Respiratory syncytial virus (RSV) activity continued to increase during this period, with 14% of patients positive in week 50.

Cumulatively since week 40 (starting October 2, 2016), 355 (12%) patients tested positive for influenza at the BCCDC PHL, including 346 (97%) with influenza A [287 A(H3N2) and 59 subtype pending] and 9 (3%) with influenza B. No patients have tested positive for influenza A(H1N1)pdm09 so far this season.

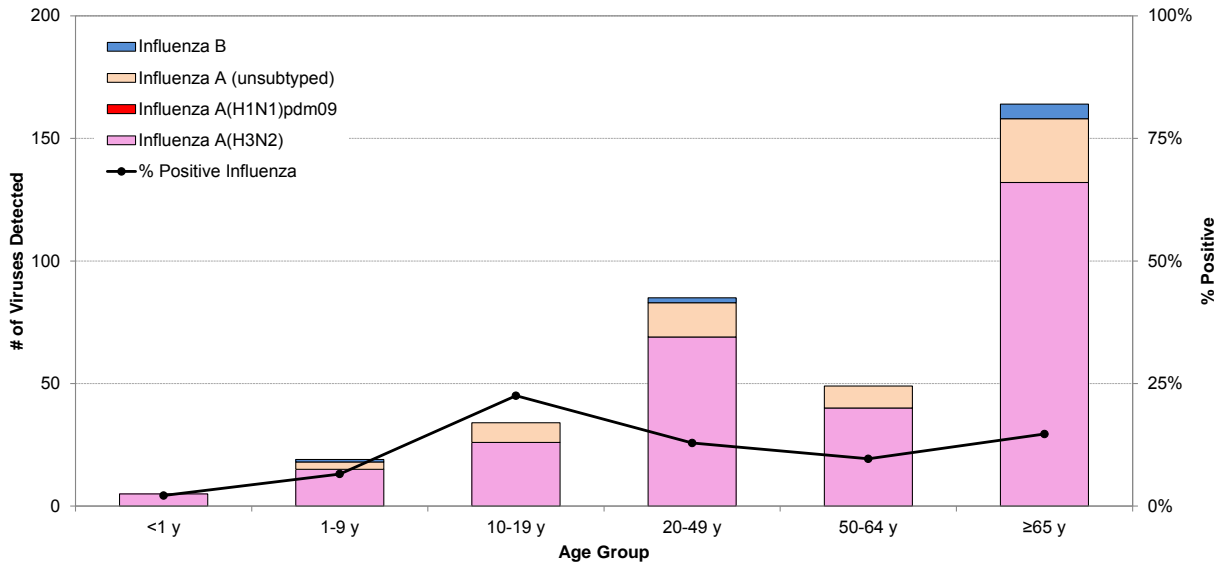
So far during the 2016-17 season, influenza A(H3N2) has been the dominant subtype among influenza detections. Elderly adults ≥ 65 years old are disproportionately represented among influenza detections, consistent with dominant circulation of A(H3N2) subtype viruses so far this season, although younger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

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



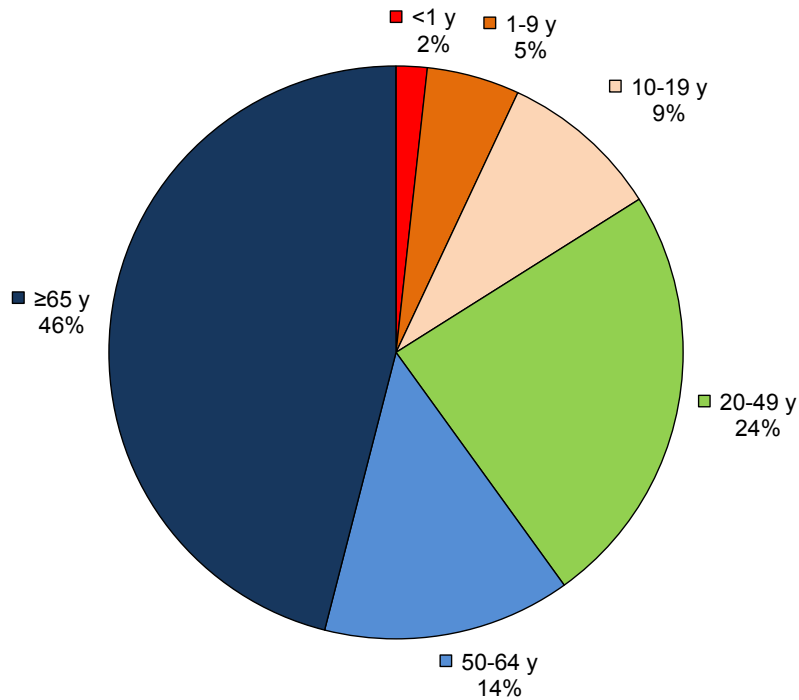
Data are current to December 21, 2016.

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



Data are current to December 21, 2016; figure includes cumulative influenza detections for specimens collected from weeks 40-50.

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

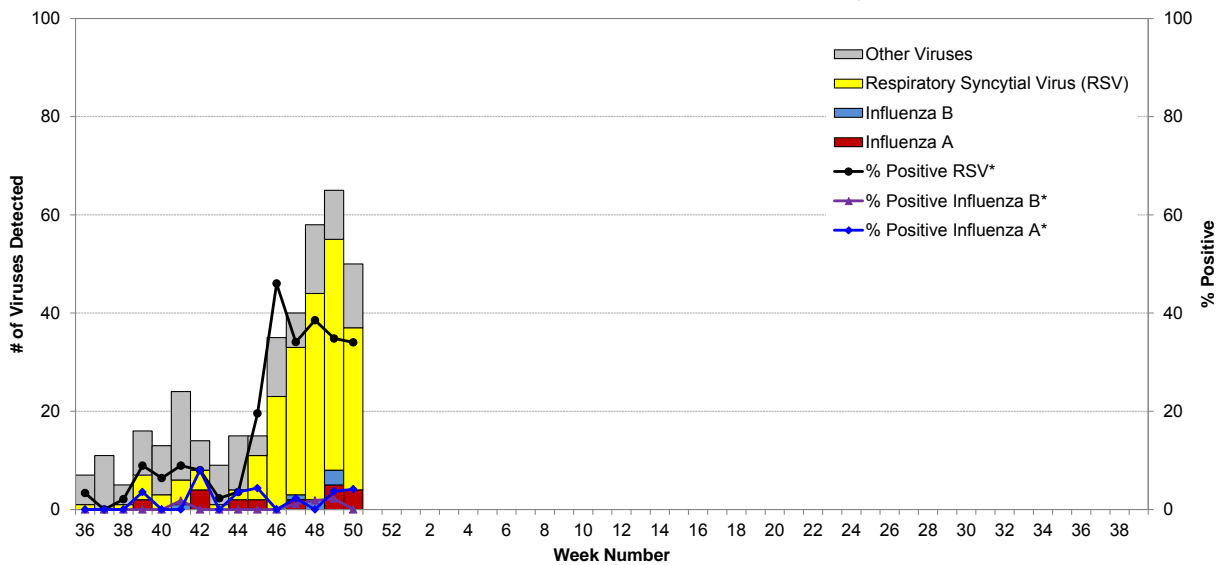


Data are current to December 21, 2016; figure includes cumulative influenza detections for specimens collected from weeks 40-50.

BC Children’s and Women’s Health Centre Laboratory

In week 50, RSV activity remained elevated at the BC Children’s and Women’s Health Centre Laboratory. Of the 97 tests conducted, 33 (34%) were positive for RSV. Four (4%) tests were positive for influenza A in week 50; 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.

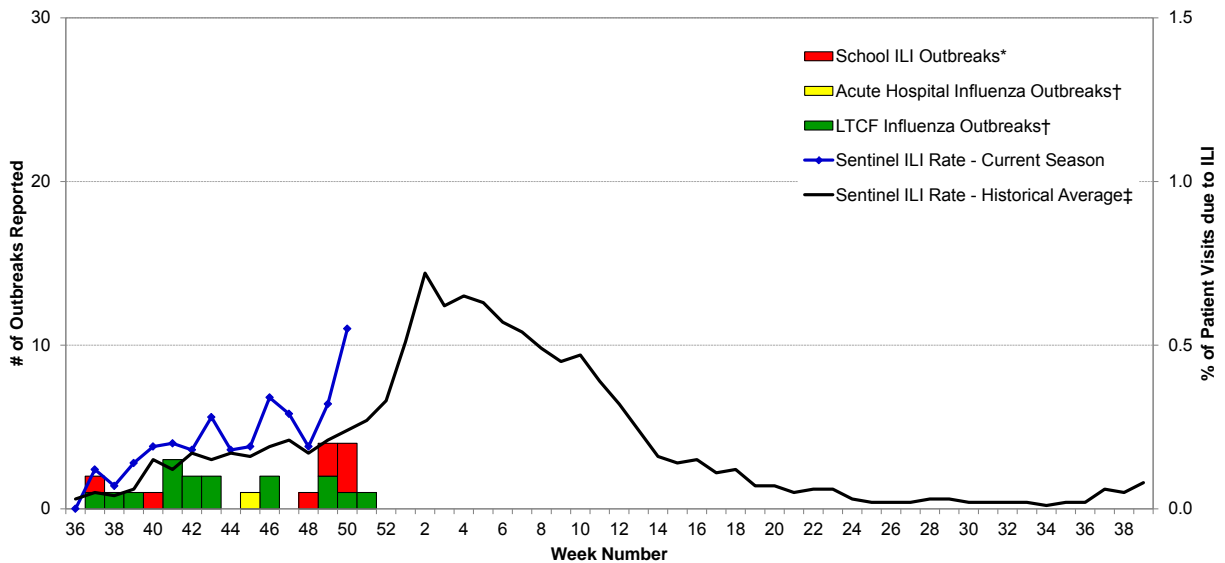
Influenza-like Illness (ILI) Outbreaks

Since our last bulletin, two new influenza outbreaks were reported from long-term care facilities (LTCFs) in FHA, both with influenza A (subtype pending) detected: one with onset in week 50 and one in week 51. One school ILI outbreak in IHA was additionally reported in week 50.

Cumulatively during the 2016-17 season (since week 37, starting September 11, 2016), a total of 17 influenza outbreaks have been reported, including 16 in LTCFs and one in an acute care setting. 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 7 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.

Emerging Respiratory Viruses

Enterovirus D68 (EV-D68), British Columbia

Since our last bulletin, 3 new cases of enterovirus D68 (EV-D68) were detected at the BCCDC Public Health Laboratory, bringing the total number of cases detected in BC since August 2016 to 74 cases.

Of the 74 laboratory-confirmed EV-D68 cases reported in BC to date since August 2016, 57 (77%) were detected in children <10 years old, and of those, about half (30/57, 53%) have been detected in infants/toddlers <2 years old. Over 60% of cases are male. Almost three-quarters of cases with known information have been hospitalized, including two hospitalized cases with EV-D68-associated neurologic illness, both <2 years old and involving arm paralysis.

A summary of the prior 2014 outbreak in BC was published in *Euro Surveillance*, available from: www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21283. No EV-D68 cases were detected in BC during the fall 2015, consistent with an expected 2-3 year periodicity.

Generally most EV-D68 cases present with mild respiratory illness; however, EV-D68 infection has been associated with neurologic illness characterized by acute flaccid paralysis in a small subset of cases. People with asthma and other lung conditions may be at higher risk of more serious respiratory complications.

Variant Influenza H3N2 (H3N2v), Canada

On December 16, 2016, the Public Health Agency of Canada (PHAC) was notified of a human case of influenza H3N2 variant virus (H3N2v) in a young child who was in contact with swine on a farm. The child was hospitalized with pneumonia but has since recovered. Human infections with swine-origin variant influenza viruses are rare. Most cases occur in children who present with typical influenza-like illness and are generally associated with exposure to swine. Numerous cases of H3N2v have been reported previously in the United States, most notably in 2012 when over 300 cases were reported associated with outbreaks across multiple states. Limited human-to-human transmission has occurred with H3N2v, but no sustained community spread has been observed to date.

Avian Influenza H7N2 in Cats, New York

Last week, the New York City Health Department announced detection of an avian influenza H7N2 strain in 45 cats housed at an animal shelter in Manhattan. The cats presented with mild illness characterized by cough, lip smacking, runny nose and fever; one older cat with underlying illness developed pneumonia and died. Influenza virus infections are rare in cats, and it is unclear how the cats at this shelter became infected. This virus was determined to be a low-pathogenic avian influenza (LPAI) virus, based on its ability to cause mild or asymptomatic disease in poultry. LPAI H7N2 viruses have been previously associated with outbreaks in avian species, most recently ostriches in South Africa in October 2016.

To date, no human cases associated with the current outbreak have been identified; however, contact investigations of humans and other animals at the shelter are ongoing. There have been two previously documented human cases of LPAI H7N2 in the United States, both of whom recovered: one in 2002 in a farmer who was in contact with chickens and one in 2003 in an immunocompromised adult whose source of infection was not identified. In 2007, 14 suspect human cases of H7N2 associated with a domestic poultry outbreak were reported in North Wales, although only two of these cases were lab confirmed.

Other strains of H7 viruses have spread between animals and have also caused mild to severe disease in humans, for example during the H7N7 poultry outbreak in Netherlands in 2003, the H7N3 poultry outbreak in BC in 2004, and the LPAI H7N9 outbreak ongoing in China since 2013, with over 800 documented human cases, including at least 300 deaths (case fatality: >40%), reported to date.

National

FluWatch (week 49, December 4 to 10, 2016)

Seasonal influenza activity is increasing in Canada, with greater numbers of influenza detections, hospitalizations and outbreaks being reported in week 49. The percentage of tests positive for influenza continues to increase with 10% of tests positive for influenza in week 49. Influenza A(H3N2) continues to be the most common subtype detected. Compared to the previous influenza A(H3N2)-predominant season in 2014-15, the percent positive (10%) was lower than the percent positive reported in week 49 of the 2014-15 season (19%). In week 49, 1.1% of visits to sentinel healthcare professionals were due to influenza-like symptoms. Sixteen laboratory-confirmed influenza outbreaks were reported in week 49, with the majority occurring in LTCFs. Sentinel hospital networks and participating provinces and territories all reported an increased number of hospitalizations in week 49. 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 December 21, 2016, the National Microbiology Laboratory (NML) received 157 influenza viruses [135 A(H3N2), 7 A(H1N1)pdm09 and 15 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 135 influenza A(H3N2) viruses, only 51 (38%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 51 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 49 out of 51 viruses antigenically characterized with available sequencing information, 43 (88%) belonged to genetic group 3C.2a and 6 (12%) belonged to genetic group 3C.3a. Genetic characterization was performed to infer antigenic properties on the remaining 84 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 84 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 7 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 15 influenza B viruses characterized, 8 (53%) 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 7 (47%) 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 December 21, 2016, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 56 influenza A viruses [50 A(H3N2) and 6 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 169 influenza viruses [148 A(H3N2), 6 A(H1N1)pdm09 and 15 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 169 influenza viruses [148 A(H3N2), 6 A(H1N1)pdm09 and 15 B] tested against zanamivir, all were sensitive.

International

USA (week 49, December 4 to 10, 2016)

During week 49, influenza activity increased slightly in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 49 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased slightly. Of the 130 A(H3N2) viruses genetically characterized by the US CDC during the 2016-17 season, 93% belonged to genetic group 3C.2a, including the newly emerging subgroup 3C.2a1, and 7% 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 1.7 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for ILI was 1.9%, which is below the national baseline of 2.2%. The geographic spread of influenza in Puerto Rico was reported as widespread; Guam, the U.S. Virgin Islands, and seven states were reported as regional; the District of Columbia and 22 states reported local activity; 20 states reported sporadic activity; and one state 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-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 (if ward or wing, please specify name/number: _____)
	<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