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

British Columbia Influenza Surveillance Bulletin

Influenza Season 2016-17, Number 08, Weeks 51-52
December 18 to 31, 2016

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Seasonal Spike in Influenza Activity over Holiday Period, A(H3N2) Dominant

During weeks 51-52 (December 18 to 31, 2016), a spike in influenza activity was observed in BC, as expected over the holiday period.

Compared to other recent seasons, influenza activity so far in 2016-17 is comparable to the last prior A(H3N2)-dominant season in 2014-15, but is earlier and more intense than the A(H1N1)pdm09-dominant season last year in 2015-16.

At the BCCDC Public Health Laboratory, influenza positivity increased from <20% in week 50 to 32% in week 51 and 48% in week 52. A(H3N2) remains the dominant subtype so far this season.

Since our last bulletin, 30 new influenza outbreaks were reported, including 29 in long-term care facilities and one in a rehabilitation centre, with onset spanning week 50 to week 1. Of the influenza A outbreaks with subtype information available, all had A(H3N2) detected.

Medical Services Plan (MSP) claims for influenza illness increased dramatically during this period and were above 10-year 75th percentiles for the province overall, while sentinel ILI rates were significantly above 10-year historical averages.

Surveillance indicators are subject to change as reporting becomes more complete over the holiday period.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

Report Disseminated: January 5, 2017

Provincial Health Services Authority
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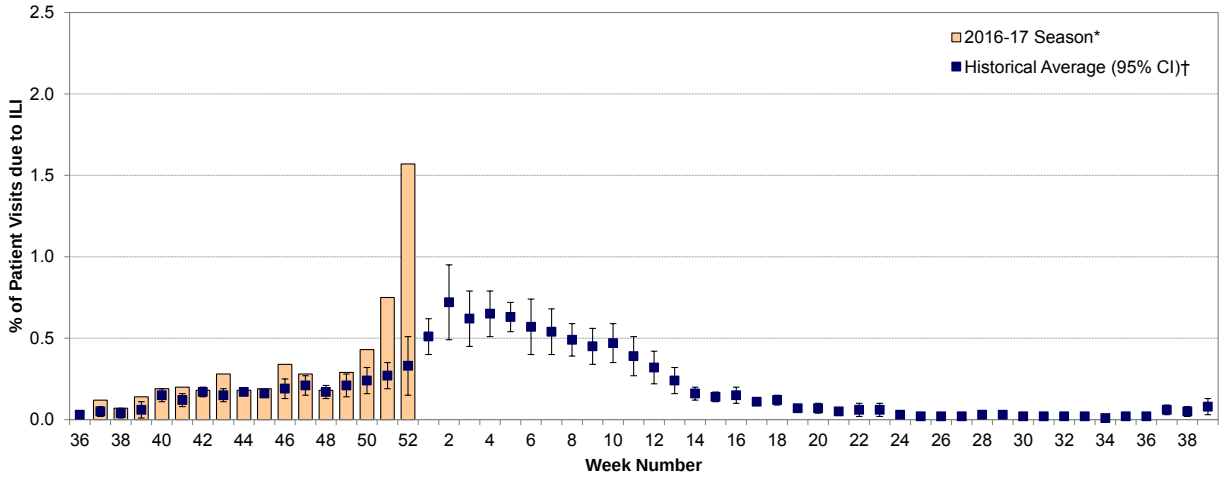
British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites increased from 0.75% in week 51 to 1.57% in week 52, significantly higher than the 10-year historical average for this time of year. Rates are subject to change as reporting becomes more complete over the holiday period; so far, only 43% and 30% of sites have reported data for weeks 51 and 52, respectively.

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

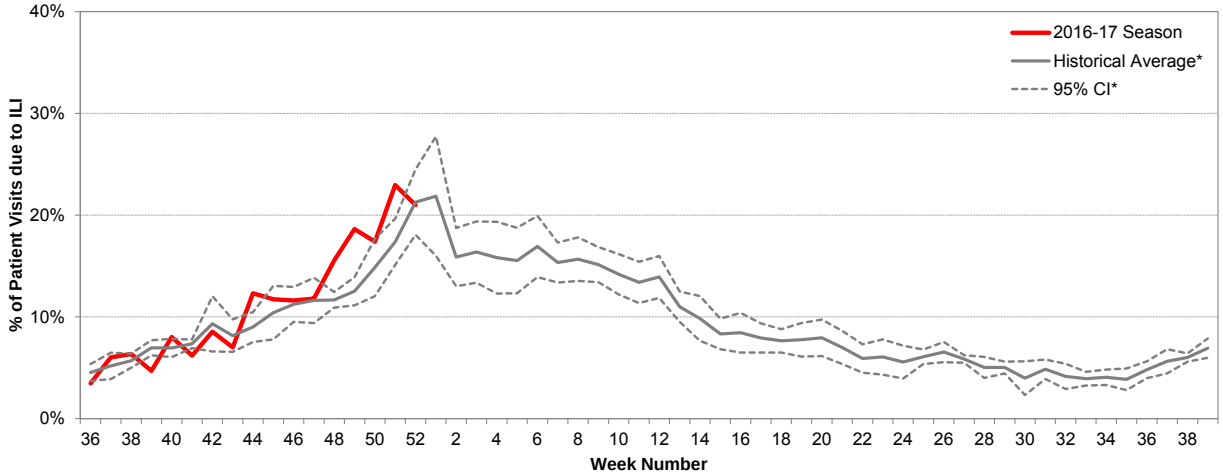


* Data are subject to change as reporting becomes more complete.
† 10-year historical average for 2016-17 season based on 2004-05 to 2015-2016 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children's Hospital Emergency Room

The proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI continued an increasing trend, averaging 22% in weeks 51-52, and was slightly higher than 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

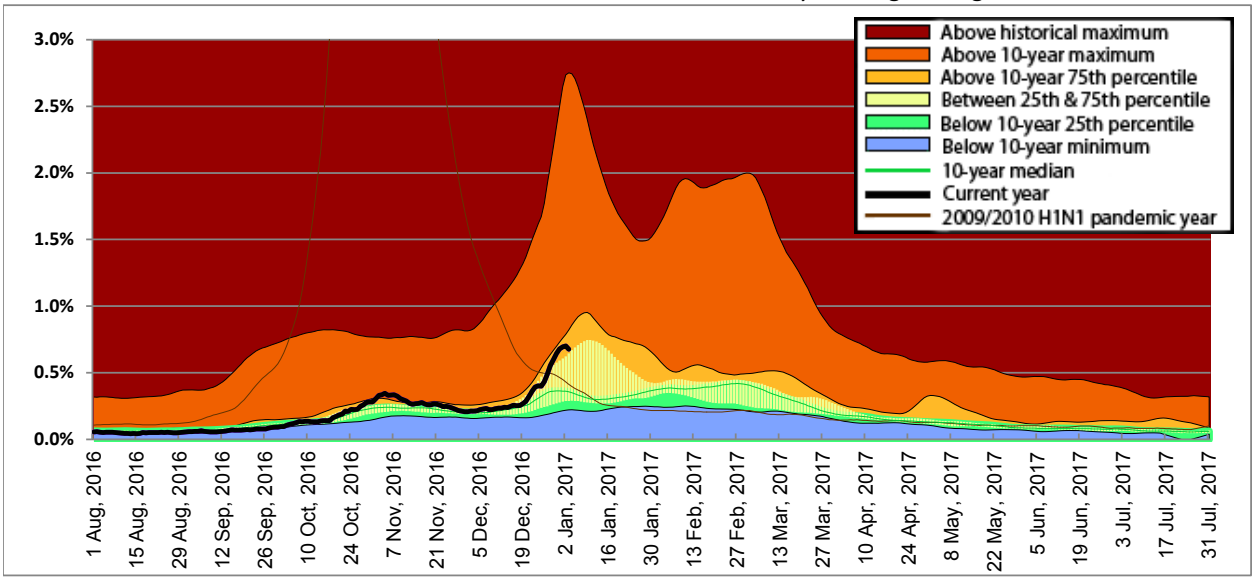


Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2016-17 season based on 2011-12 to 2015-16 seasons; CI=confidence interval.

Medical Services Plan

BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, increased dramatically during the holiday period and were above the 10-year 75th percentile for the province overall in weeks 51-52. Similar increases were observed in each of the regional Health Authorities, notably in IHA where rates increased to above the 10-year maximum, but with the exception of NHA where rates remained at median levels.

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

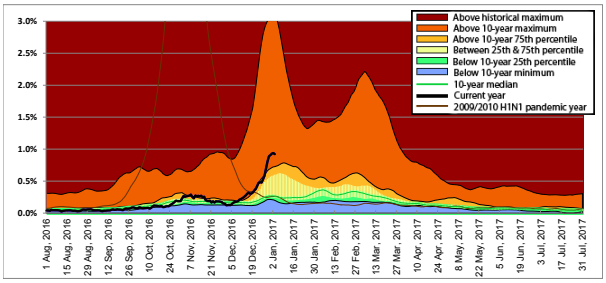


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

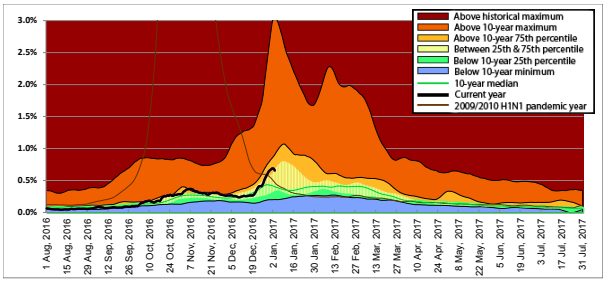
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2016 corresponds to sentinel ILI week 31; data are current to January 3, 2017.

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

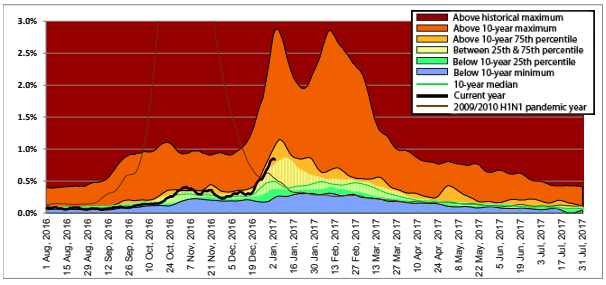
Interior



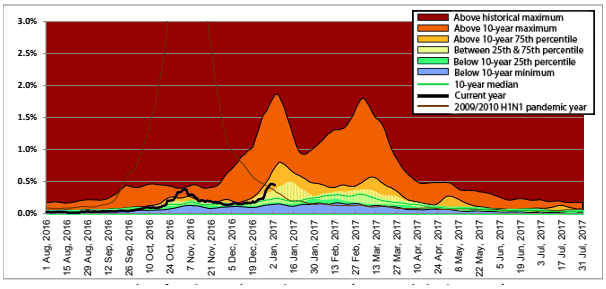
Fraser



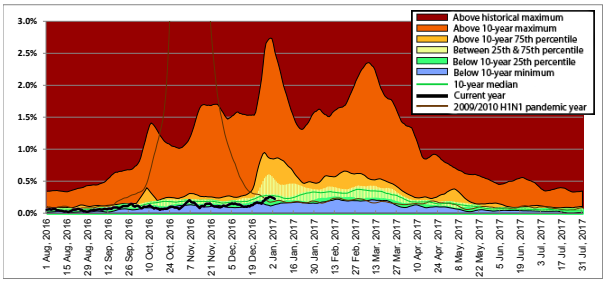
Vancouver Coastal



Vancouver Island



Northern



Laboratory Reports

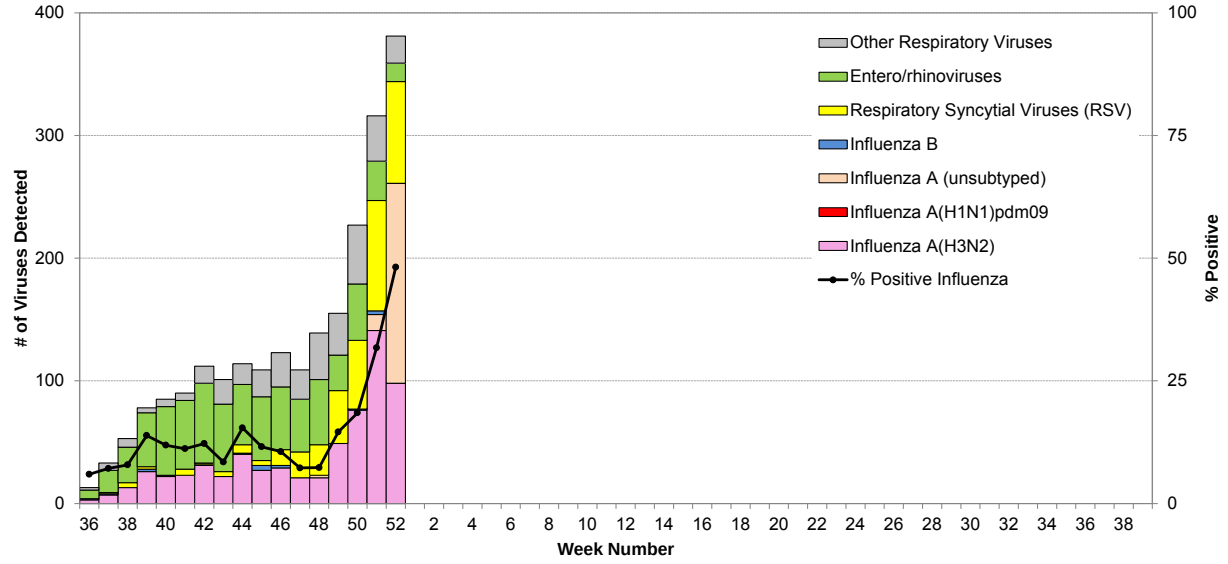
BCCDC Public Health Laboratory

During weeks 51-52, 1035 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 415 (40%) tested positive for influenza, including 412 (99%) with influenza A [239 A(H3N2) and 173 with subtype pending] and three (1%) with influenza B. Overall influenza positivity increased dramatically during this period from <20% in week 50 to 32% in week 51 and 48% in week 52. Respiratory syncytial virus (RSV) activity also remained elevated during this period, with 18% of patients testing positive in week 51 and 15% in week 52.

Cumulatively since week 40 (starting October 2, 2016), 784 (20%) patients tested positive for influenza at the BCCDC PHL, including 772 (98%) with influenza A [597 A(H3N2) and 175 subtype pending] and 12 (2%) with influenza B. No patients have tested positive for influenza A(H1N1)pdm09 so far this season.

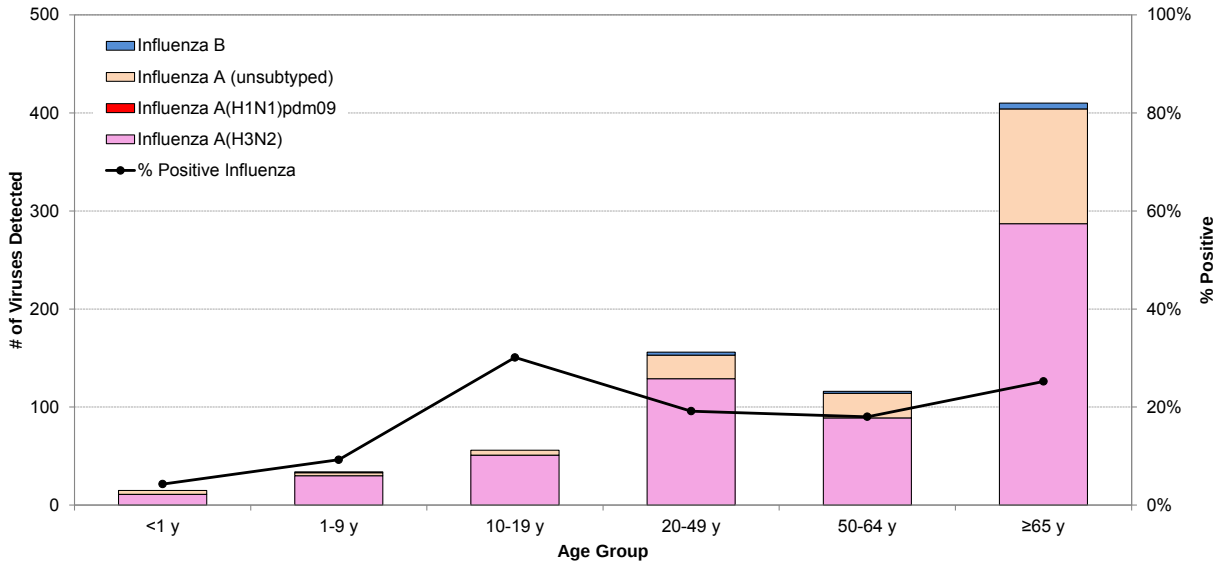
So far during the 2016-17 season, influenza A(H3N2) has been the dominant subtype among influenza detections. Elderly adults ≥65 years old are disproportionately represented among influenza detections, although younger age groups are also affected.

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



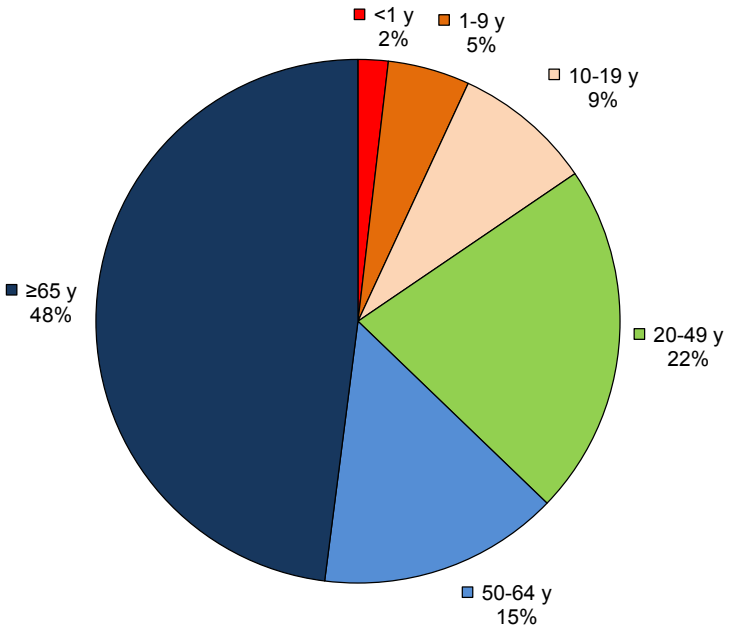
Data are current to January 4, 2017.

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 4, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-52.

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

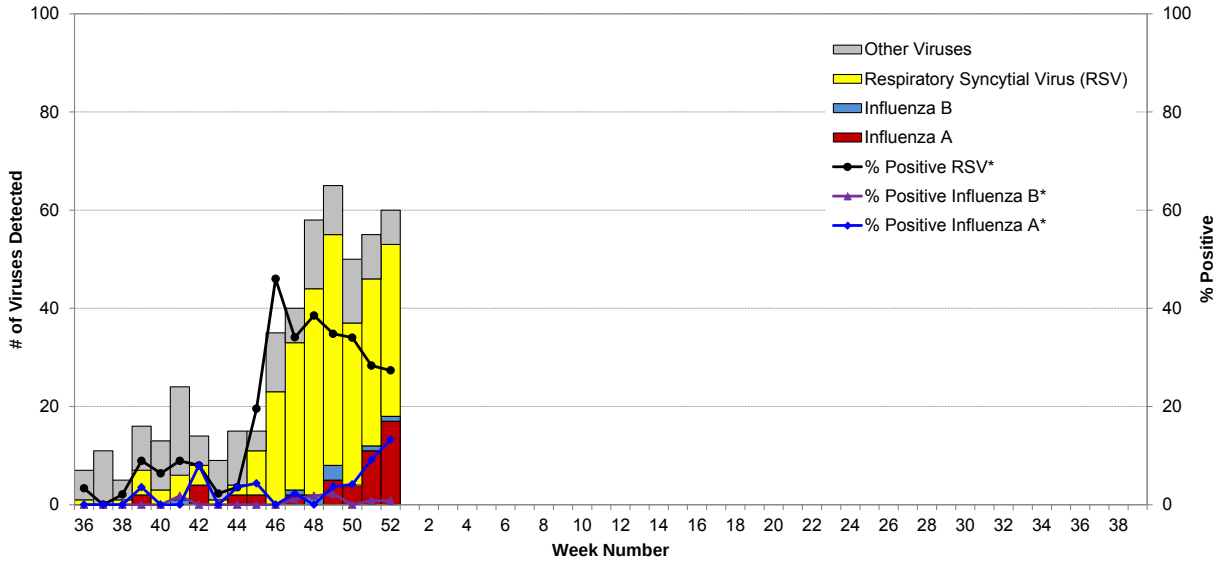


Data are current to January 4, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-52.

BC Children's and Women's Health Centre Laboratory

In weeks 51-52, the proportion of tests positive for influenza A increased at the BC Children's and Women's Health Centre Laboratory. Of the 248 tests conducted, 11/120 (9%) were positive for influenza A in week 51 and 17/128 (13%) were positive in week 52. Two tests were positive for influenza B, one each in weeks 51 and 52. The number of tests positive for RSV remained elevated during this period, but the percent positivity decreased from 34% in week 50 to <30% in weeks 51-52.

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

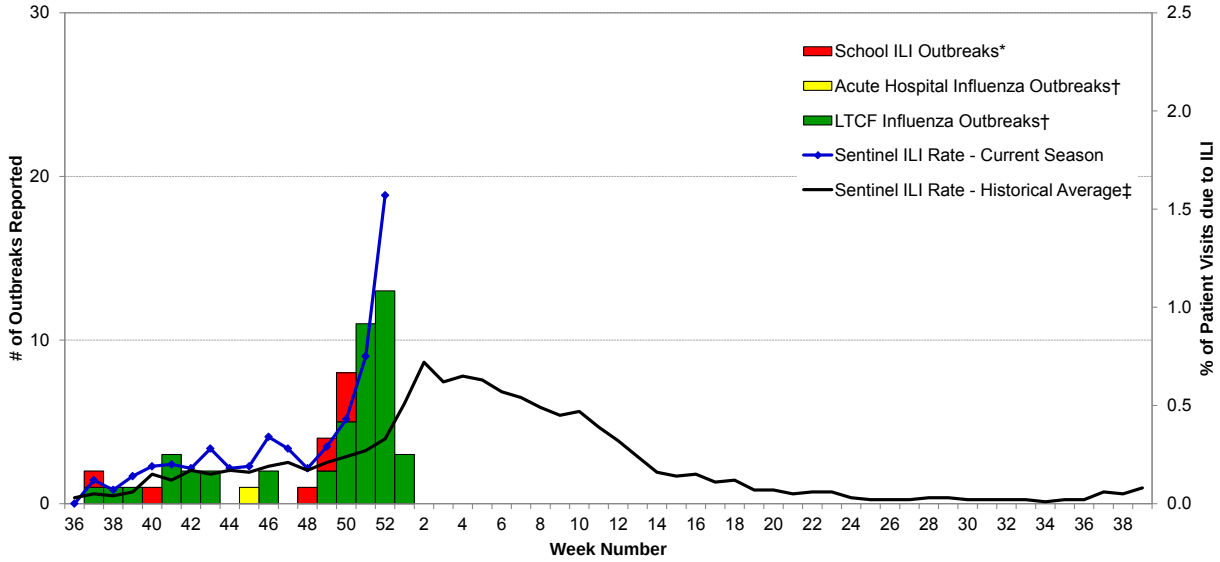
Since our last bulletin, 30 new influenza outbreaks were reported, including 29 from long-term care facilities (LTCFs) and one in a rehabilitation centre. Of the 30 newly reported outbreaks, 15 were reported from FHA, 6 from VCHA, 6 from IHA, and 3 from VIHA; none were reported from NHA. Onset dates ranged from week 50 to week 1. Of the 30 outbreaks, 29 had influenza A detected and one had influenza detected with A/B type pending at the time of report; of the 6 influenza A outbreaks with subtype information available, all were A(H3N2). No school ILI outbreaks were reported during this period.

The number of outbreaks reported over the holiday period is considerably higher than the prior 2015-16 season, when only two influenza B outbreaks were reported, but is more comparable to the last A(H3N2)-dominant season in 2014-15.

Cumulatively during the 2016-17 season (since week 37, starting September 11, 2016), a total of 47 influenza outbreaks have been reported, including 45 in LTCFs, one 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. The cumulative number of outbreaks reported so far this season now exceeds the total number reported during the entire season last year in 2015-16 (n=38), but is comparable to the year-to-date totals for the A(H3N2)-dominant 2014-15 season.

A total of 8 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, 4 new cases of enterovirus D68 (EV-D68) were detected at the BCCDC Public Health Laboratory (PHL), bringing the total number of cases detected in BC since August 2016 to 78 cases.

Of the 78 laboratory-confirmed EV-D68 cases reported in BC to date since August 2016, 60 (77%) were detected in children <10 years old, and of those, about half (32/60, 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.

As of December 31, 2016, the BCCDC PHL has stopped routine testing of respiratory specimens for EV-D68. This will be the last EV-D68 update for the 2016-17 season.

Human Case of Avian Influenza H7N2, New York

One human infection with a novel avian lineage influenza A(H7N2) virus was reported in late December 2016 associated with an outbreak in cats in New York. The individual reported prolonged and unprotected exposure to the respiratory secretions of infected cats and has since recovered. Although human infections with A(H7N2) have been documented previously, this is the first known case acquired through exposure to an infected cat. No further human-to-human transmission was identified.

For more information about influenza A(H7N2) and the outbreak in cats, please refer to our previous bulletin: www.bccdc.ca/health-professionals/data-reports/influenza-surveillance-reports.

National

FluWatch (week 50, December 11 to 17, 2016)

Seasonal influenza activity continues to increase in Canada, with greater numbers of influenza detections, hospitalizations and outbreaks being reported in week 50. Influenza A(H3N2) continues to be the most common subtype detected. The percentage of tests positive for influenza continues to increase with 12% of tests positive for influenza in week 50. Compared to the previous influenza A(H3N2)-dominant season in 2014-15, the percent positive (12%) was lower than the percent positive reported in week 50 of the 2014-15 season (26%). Eighteen laboratory-confirmed influenza outbreaks were reported in week 50, with the majority occurring in LTCFs. 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 4, 2017, the National Microbiology Laboratory (NML) received 198 influenza viruses [174 A(H3N2), 7 A(H1N1)pdm09 and 17 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 174 influenza A(H3N2) viruses, only 62 (36%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 62 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 58 out of 62 viruses antigenically characterized with available sequencing information, 48 (83%) belonged to genetic group 3C.2a and 10 (17%) belonged to genetic group 3C.3a. Genetic characterization was performed to infer antigenic properties on the remaining 112 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 112 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 17 influenza B viruses characterized, 9 (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 8 (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 January 4, 2017, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 88 influenza A viruses [82 A(H3N2) and 6 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 181 influenza viruses [159 A(H3N2), 6 A(H1N1)pdm09 and 16 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 181 influenza viruses [159 A(H3N2), 6 A(H1N1)pdm09 and 16 B] tested against zanamivir, all were sensitive.

International

USA (week 51, December 18 to 24, 2016)

During week 51, influenza activity increased in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 51 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased. Of the 217 A(H3N2) viruses genetically characterized by the US CDC during the 2016-17 season, 94% belonged to genetic group 3C.2a, including the newly emerging subgroup 3C.2a1, and 6% 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 3.1 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for ILI was 2.9%, which is above the national baseline of 2.2%. The geographic spread of influenza in Guam and eight states was reported as widespread, the U.S. Virgin Islands and 17 states reported regional activity, the District of Columbia and 19 states reported local activity, five states reported sporadic activity, and Puerto Rico and one state did not report. Details are available at: www.cdc.gov/flu/weekly/.

WHO (December 26, 2016)

Influenza activity in the temperate zone of the northern hemisphere increased slightly, with some countries passing their seasonal threshold, which is early for the season. Worldwide, influenza A(H3N2) virus was predominant.

- In North America, influenza activity continued to increase with influenza A(H3N2) virus predominating. ILI levels remained below seasonal thresholds. In the United States, RSV activity continued to be reported.
- In Europe, influenza activity was low but has started to rise, with a positivity rate of 28% among sentinel surveillance samples. The highest numbers of influenza cases were detected in Norway and Sweden. In South West Europe, influenza activity was higher in Portugal and Spain.
- In East Asia, influenza activity continued to increase with influenza A(H3N2) remaining the dominant virus circulating.
- In Western Asia, influenza detections slightly increased.
- In Northern Africa, influenza detections were reported in Morocco with influenza A(H3N2) virus dominating.
- In the Caribbean countries, influenza and other respiratory virus activity remained low. In Central America, there was a slight decrease in influenza and other respiratory viruses activity in most of the countries. In Costa Rica, influenza activity increased with influenza A(H1N1)pdm09 and A(H3N2) viruses co-circulating and RSV activity continued to be reported.
- In tropical South America, influenza and other respiratory viruses activity remained low with exception of Colombia where both influenza and RSV activity continued to be reported.
- In Southern Asia, influenza detections slightly increased in both Iran and Sri Lanka with influenza A(H3N2) as the most frequently detected virus in this region.
- In South East Asia, influenza activity continued to be reported at low levels, with influenza A(H3N2) virus predominant in the region.
- In West Africa, influenza detections increased in Ghana with B viruses dominating.
- In Southern Africa, influenza activity continued at inter-seasonal levels.
- In temperate South America, influenza and RSV activity continued to decrease throughout the sub-region.
- In Oceania, influenza virus activity was reported at inter-seasonal levels.
- From November 28 to December 11, 2016, the WHO GISRS laboratories tested more than 115,769 specimens. Of these, 12,979 were positive for influenza viruses: 12,221 (94%) were typed as influenza A and 758 (6%) as influenza B. Of the sub-typed influenza A viruses, 118 (2%) were influenza A(H1N1)pdm09 and 7709 (99%) were influenza A(H3N2). Of the characterized B viruses, 74 (48%) belonged to the B/Yamagata lineage and 80 (52%) 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-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

version: 26 Oct 2011

Influenza-Like Illness (ILI) Outbreak Summary Report Form

Please complete and email to ilioutbreak@bccdc.ca

Note: This form is for provincial surveillance purposes.
Please notify your local health unit per local guidelines/requirements.

ILI: Acute onset of respiratory illness with fever and cough and with one or more of the following: sore throat, arthralgia, myalgia, or prostration which *could* be due to influenza virus. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Schools and work site outbreak: greater than 10% absenteeism on any day, most likely due to ILI.

Residential institutions (facilities) outbreak: two or more cases of ILI within a seven-day period.

A — Reporting Information

Health unit/medical health officer notified? ☐ *Yes* ☐ *No*

Person Reporting: _____ Title: _____

Contact Phone: _____ Email: _____

Health Authority: _____ HSDA: _____

Full Facility Name: _____

Is this report:

☐ First Notification *(complete section **B** below; Section **D** if available)*

☐ Update *(complete section **C** below; Section **D** if available)*

☐ Outbreak Over *(complete section **C** below; Section **D** if available)*

B — First Notification

Type of facility: ☐ LTCF ☐ Acute Care Hospital ☐ Senior's Residence

(if ward or wing, please specify name/number: _____)

☐ Workplace ☐ School (grades:) ☐ Other (_____)

Date of onset of first case of ILI (dd/mm/yyyy): DD / MMM / YYYY

Numbers to date	Residents/Students	Staff
Total		
With ILI		
Hospitalized		
Died		

C — Update AND Outbreak Declared Over

Date of onset for most recent case of ILI (dd/mm/yyyy): DD / MMM / YYYY

If over, date outbreak declared over (dd/mm/yyyy): DD / MMM / YYYY

Numbers to date	Residents/Students	Staff
Total		
With ILI		
Hospitalized		
Died		

D — Laboratory Information

Specimen(s) submitted? ☐ Yes (location: _____) ☐ No ☐ Don't know

If yes, organism identified? ☐ Yes (specify: _____) ☐ No ☐ Don't know

Communicable Disease Prevention & Control Services
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