

British Columbia Influenza Surveillance Bulletin

Influenza Season 2016-17, Number 19, Week 13

March 26 to April 1, 2017

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Low-level Influenza B Activity in BC

During week 13 (March 26 to April 1, 2017), low-level influenza B activity continued in BC, with most surveillance indicators at expected seasonal levels.

At the BCCDC Public Health Laboratory, influenza positivity continued to decline, reaching 17% in week 13. Influenza B viruses comprised more than three-quarters of all influenza detections in week 13.

Since last week's bulletin, two new influenza B outbreaks were reported from long-term care facilities (LTCFs). The majority of the 192 LTCF outbreaks reported to date this season had influenza A detected, although an increasing number of influenza B outbreaks have been reported in recent weeks. This cumulative tally already exceeds the total number of LTCF outbreaks reported during the last A(H3N2)-dominant season in 2014-15 (n=165 from week 40 to week 17), which had previously been associated with the highest number of LTCF outbreaks recorded in the past decade.

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

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

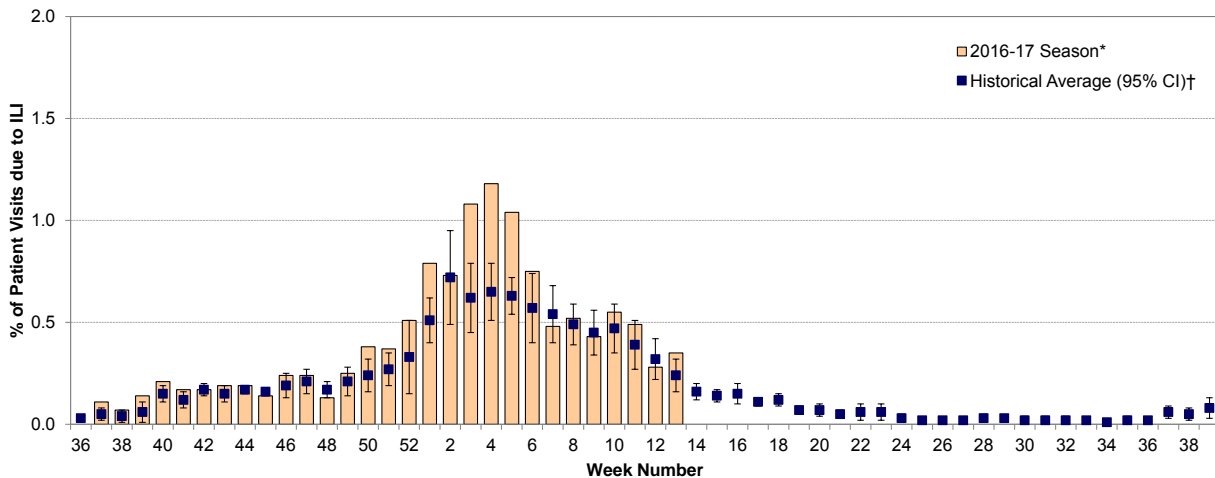
Report Disseminated: April 6, 2017

British Columbia

Sentinel Physicians

In week 13, the proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites was slightly above the 10-year historical average for this time of year at 0.35%. So far, 50% of sites have reported data for week 13; 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

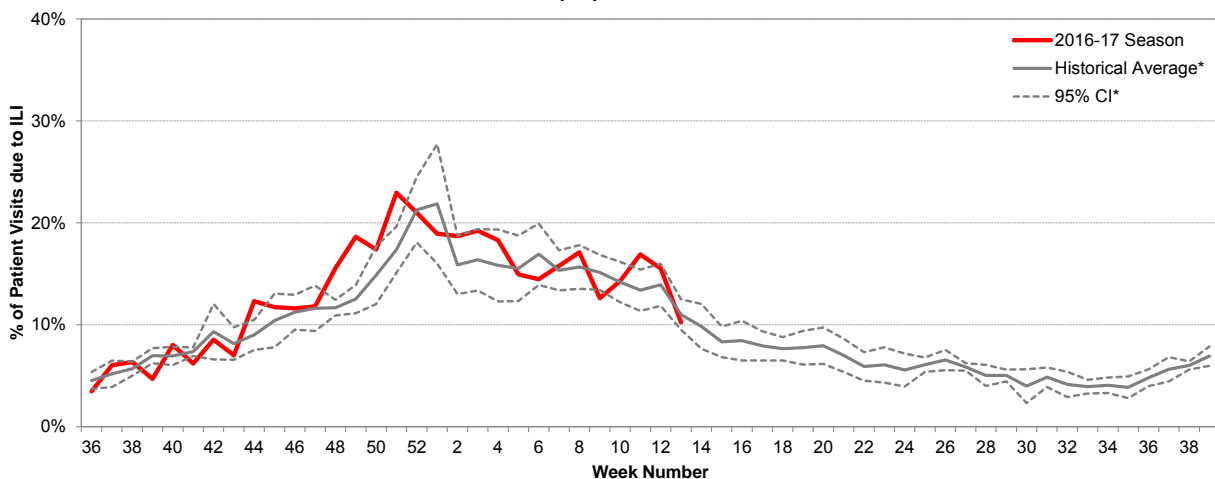


* Data are subject to change as reporting becomes more complete. One hospital ER site that reported ILI rates $\geq 5\%$ was excluded from the graph.
† 10-year historical average for 2016-17 season based on 2004-05 to 2015-2016 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence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

BC Children's Hospital Emergency Room

In week 13, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI decreased to 10% and 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

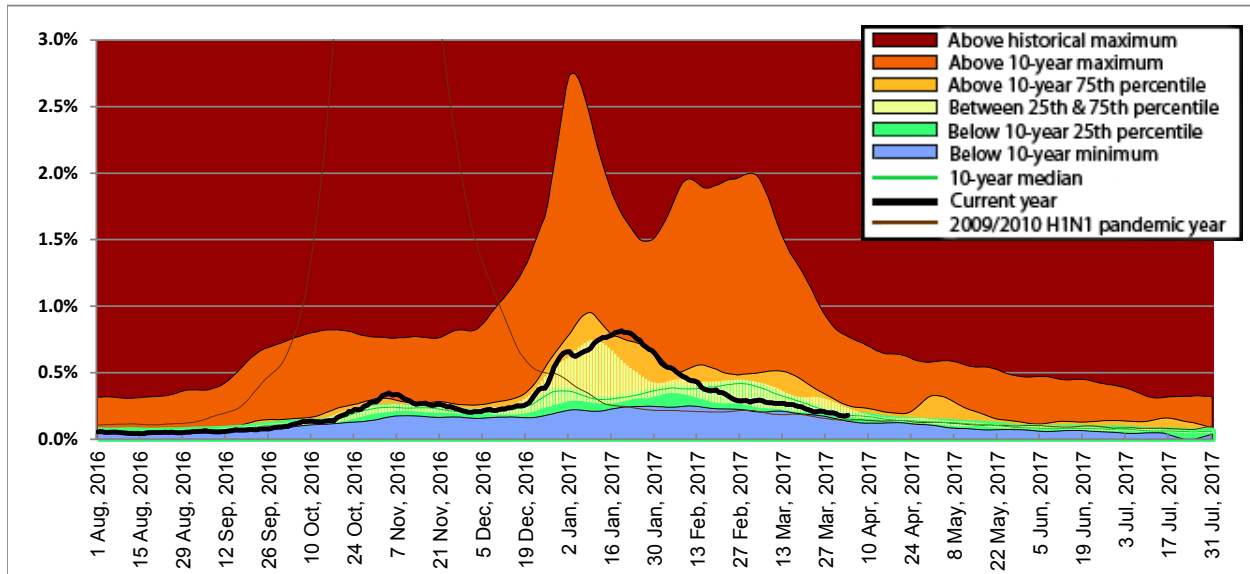


Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2016-17 season based on 2011-12 to 2015-16 seasons; CI=confidence interval.

Medical Services Plan

In week 13, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, were at or below expected median levels for this time of year in all regions of the province.

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

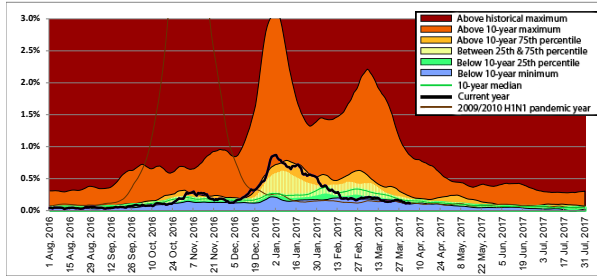


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

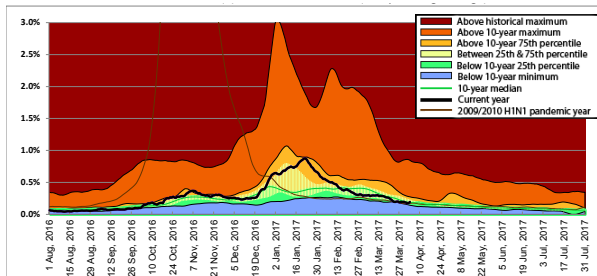
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2016 corresponds to sentinel ILI week 31; data are current to April 3, 2017.

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

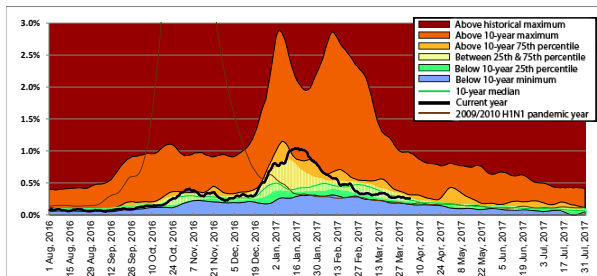
Interior



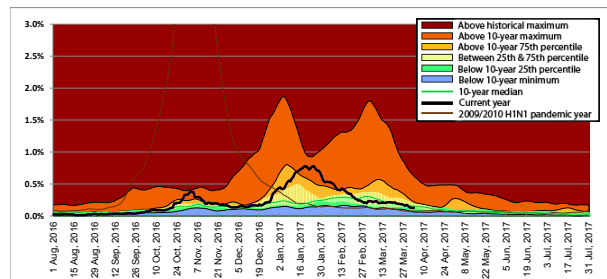
Fraser



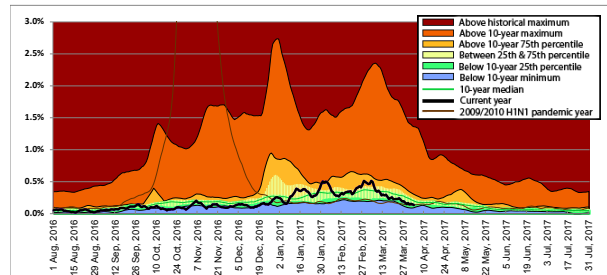
Vancouver Coastal



Vancouver Island



Northern



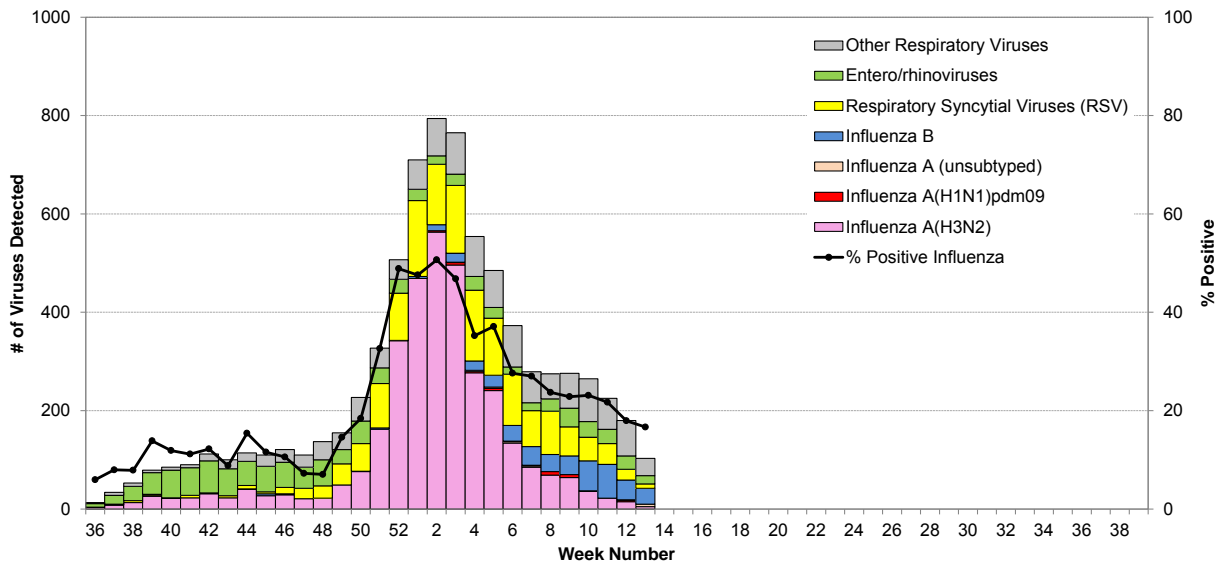
Laboratory Reports

BCCDC Public Health Laboratory

In week 13, 252 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 42 (17%) tested positive for influenza, including 10 (24%) with influenza A [5 A(H3N2) and 5 subtype pending] and 32 (76%) with influenza B. Overall influenza positivity continued to decline, reaching 17% in week 13. Influenza B viruses continued to comprise the majority of influenza detections at the BCCDC PHL, representing more than three quarters of all influenza detections in week 13.

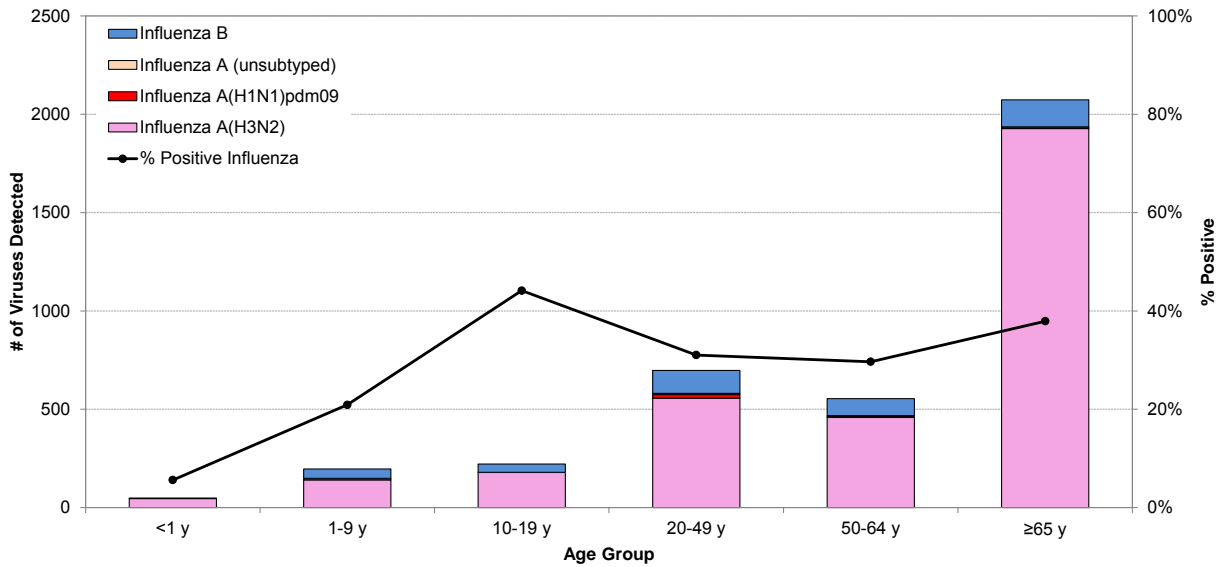
Cumulatively since week 40 (starting October 2, 2016), 3784 (32%) patients tested positive for influenza at the BCCDC PHL, including 3351 (89%) with influenza A [3307 A(H3N2), 35 A(H1N1)pdm09 and 9 subtype pending], 430 (11%) with influenza B and three patients who had both influenza A and B detected during the season. Elderly adults ≥ 65 years old are disproportionately represented among influenza A(H3N2) detections, although younger age groups are also affected; whereas, adults 20-64 years old comprise a larger proportion of influenza B detections.

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



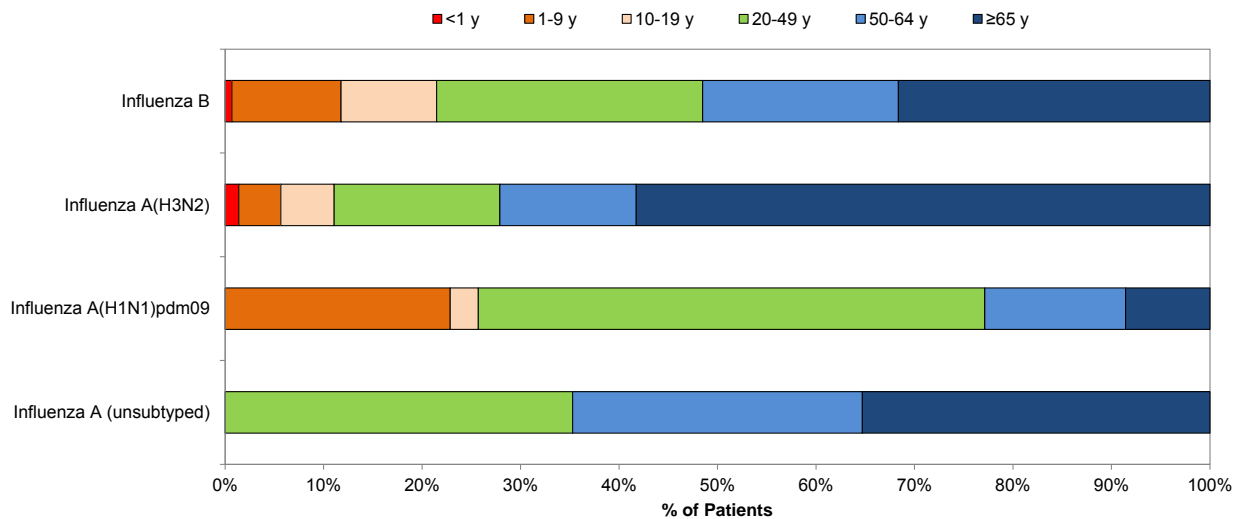
Data are current to April 5, 2017.

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



Data are current to April 5, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-13.

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

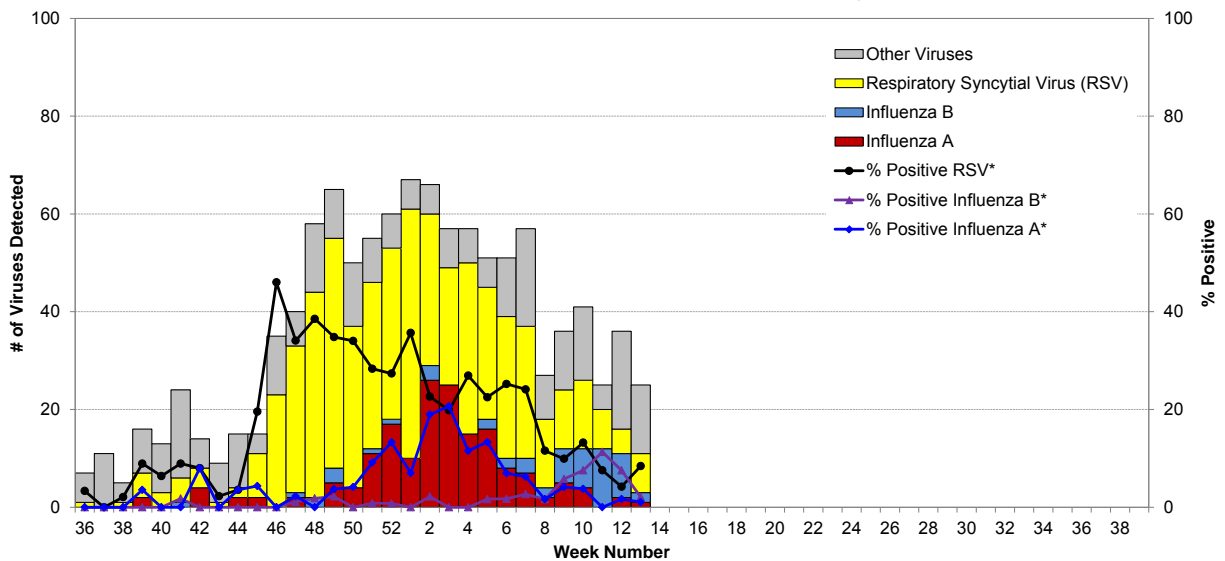


Data are current to April 5, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-13.

BC Children's and Women's Health Centre Laboratory

In week 13, 95 tests for respiratory viruses were conducted at the BC Children's and Women's Health Centre Laboratory. Of these, 2 (2%) were positive for influenza B and 1 (1%) was positive for influenza A; 8 (8%) were positive for respiratory syncytial virus (RSV).

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

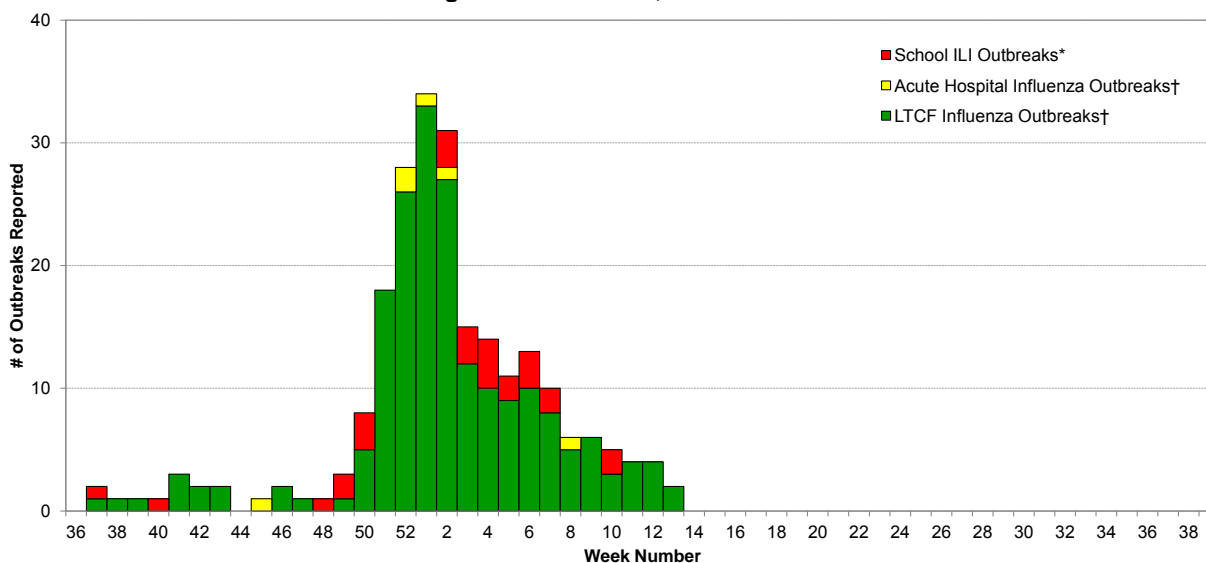
Since last week's bulletin, two new influenza B outbreaks were reported from long-term care facilities (LTCFs) in FHA. One had onset in week 12 and one in week 13.

Cumulatively during the 2016-17 season (since week 37, starting September 11, 2016), a total of 202 influenza outbreaks have been reported as of April 6, 2017, including 192 in LTCFs, six in acute care settings, and four from other facility types. This cumulative tally of LTCF outbreaks for the 2016-17 season (n=192) already exceeds the total number of LTCF outbreaks reported during the last A(H3N2)-dominant season in 2014-15 (n=165 from week 40 to week 17), which had previously been associated with the highest number of LTCF outbreaks recorded in the past decade.

The majority (183/202, 91%) of facility outbreaks reported this season had influenza A detected [all A(H3N2) where subtype information is available]; however, an increasing number of outbreaks with influenza B detected have been reported in recent weeks. In total this season, 18 influenza B outbreaks were reported. One outbreak with both influenza A and B detected was additionally reported.

A total of 27 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 12, March 19 to 25, 2017)

Overall, the slow decline in influenza activity in Canada has continued in week 12. Many parts of Canada are still reporting localized influenza activity in week 12. In week 12, all indicators (laboratory detections, influenza-like illness, outbreaks and hospitalizations) decreased from the previous week. Influenza activity due to influenza B is slowly increasing but is low compared to the same time period in the previous two seasons. Influenza A activity is decreasing; however, influenza 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 April 6, 2017, the National Microbiology Laboratory (NML) received 1525 influenza viruses [1326 A(H3N2), 35 A(H1N1)pdm09 and 164 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 1326 influenza A(H3N2) viruses, only 332 (25%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 332 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 329 out of 332 viruses antigenically characterized with available sequencing information, 281 (85%) belonged to genetic group 3C.2a and 48 (15%) belonged to genetic group 3C.3a. Genetic characterization was performed to infer antigenic properties on the remaining 994 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 994 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 35 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 164 influenza B viruses characterized, 42 (26%) 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 122 (74%) 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 April 6, 2017, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 201 influenza A viruses [173 A(H3N2) and 28 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 836 influenza viruses [682 A(H3N2), 29 A(H1N1)pdm09 and 125 B] tested against oseltamivir, 834 out of 835 were sensitive; one A(H3N2) virus was resistant to oseltamivir.

Zanamivir: Of the 835 influenza viruses [681 A(H3N2), 28 A(H1N1)pdm09 and 126 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

On February 17, 2017, 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 12, March 19 to 25, 2017)

During week 12, influenza activity remained elevated in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 12 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased slightly. Of the 942 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. Six influenza-associated pediatric deaths were reported. A cumulative rate for the season of 54.1 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for ILI was 3.2%, which is above the national baseline of 2.2%. The geographic spread of influenza in 31 states was reported as widespread; Guam, Puerto Rico and 12 states reported regional activity; the District of Columbia and five states reported local activity; two states reported sporadic activity; and the U.S. Virgin Islands reported no activity. Details are available at: www.cdc.gov/flu/weekly/.

WHO (April 3, 2017)

Influenza activity in the temperate zone of the northern hemisphere continued to decrease. Worldwide, influenza A(H3N2) and influenza B viruses were predominant during this reporting period. In South Asia, influenza activity with mainly influenza A(H1N1)pdm09 remained elevated.

- In North America, overall influenza activity continued to decrease in Canada and United States, with influenza A(H3N2) virus predominating. In Mexico, influenza activity decreased slightly, but remained high, with influenza A(H1N1)pdm09 virus predominating.
- In Europe, influenza activity continued to decrease to low levels in general, but especially in South Western Europe. In Northern Europe, some countries reported continued influenza activity, with influenza A(H3N2) and influenza B viruses. In some countries in Eastern Europe, influenza activity decreased but the proportion of influenza B virus detections increased in recent weeks.
- In East Asia, low influenza activity was reported with influenza A(H3N2) virus predominant in the region.
- In Western Asia, influenza activity continued to decrease with influenza B virus predominant in the region. In Armenia and Georgia, high levels of severe acute respiratory infection were reported in the recent weeks.
- In Southern Asia, influenza activity continued to be reported in India, Maldives and Sri Lanka, with mainly influenza A(H1N1)pdm09 virus reported followed by influenza B virus.
- In South East Asia, influenza activity remained low.
- In Northern Africa, low influenza activity was reported in Morocco and Tunisia, with influenza A(H3N2) and influenza B viruses circulating in the region.
- In East and West Africa, low influenza activity was reported in the recent weeks, with influenza A(H1N1)pdm09, influenza A(H3N2) and influenza B viruses co-circulating.
- In the Caribbean and Central America countries, influenza and other respiratory virus activity remained low in general.
- In tropical South America, influenza and other respiratory virus activity remained low, although RSV activity remained elevated in Colombia.
- In the temperate zone of the Southern Hemisphere, influenza activity was at inter-seasonal levels.
- From March 6 to 19, 2017, the WHO GISRS laboratories tested more than 132,143 specimens during that time period. 23,560 were positive for influenza viruses, of which 15,164 (64%) were typed as influenza A and 8396 (36%) as influenza B. Of the subtyped influenza A viruses, 755 (15%) were influenza A(H1N1)pdm09 and 4247 (85%) were influenza A(H3N2). Of the characterized B viruses, 588 (77%) belonged to the B/Yamagata lineage and 176 (23%) 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 2017-18 Northern Hemisphere Influenza Vaccine

On March 2, 2017, the WHO announced the recommended strain components for the 2017-18 northern 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 are the same as those recommended for the 2017 southern hemisphere TIV and represent a change for one of the three components used for the 2016-17 northern hemisphere TIV and 2016 southern 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_18_north/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