

British Columbia Influenza Surveillance Bulletin

Influenza Season 2016-17, Number 01, Weeks 39-41

September 25 to October 15, 2016

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Multiple Early Influenza A(H3N2) Outbreaks in Long-term Care Facilities in BC Despite Low-level Community Activity

This is the first bulletin of the 2016-17 surveillance period. During weeks 39-41 (September 25 to October 15, 2016), low-level influenza activity was detected in BC overall, but these detections were focused among multiple early outbreaks in long-term care facilities (LTCFs).

At the BCCDC Public Health Laboratory, influenza positivity remained above 10% in weeks 39-41. Influenza A(H3N2) was the dominant subtype among influenza detections; however, entero/rhinoviruses were the most commonly detected respiratory virus during this period.

A total of 5 LTCF influenza outbreaks [3 A(H3N2) and 2 with subtype pending] have been reported so far during the 2016-17 season, with onset dates ranging from week 37 to 42. Reporting of LTCF outbreaks during summer/early fall is atypical, although sporadic outbreaks did occur as early as week 32 during the 2014-15 and 2015-16 seasons.

Since August 2016, the BCCDC Public Health Laboratory has detected 35 cases of enterovirus D68 (EV-D68). Three-quarters of cases have occurred in children <10 years old and 43% in infants/toddlers <2 years old. At least 60% of cases have been hospitalized. By comparison, 104 cases, of which 16% were infants/toddlers <2 years old, were reported to this date during the 2014 outbreak.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

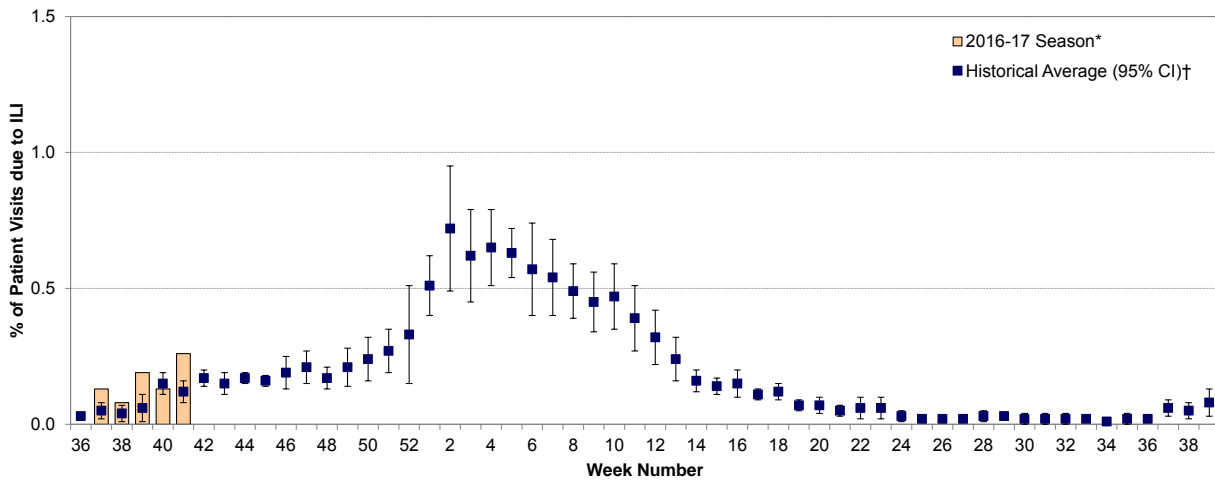
Report Disseminated: October 20, 2016

British Columbia

Sentinel Physicians

During weeks 39-41, the proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites ranged from 0.13% to 0.26%. Rates were significantly higher than the 10-year historical average for weeks 39 and 41. So far, between 37% and 54% of sentinel sites have reported data each week during this period.

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



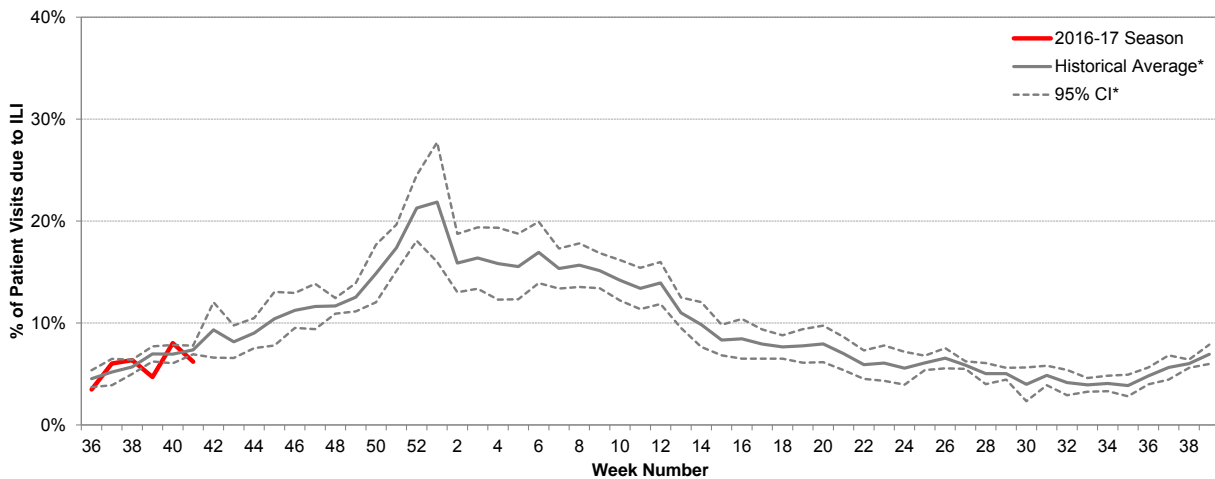
* Data are subject to change as reporting becomes more complete.

† 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

During weeks 39-41, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI ranged from 5 to 8% and was consistent with expected seasonal levels 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

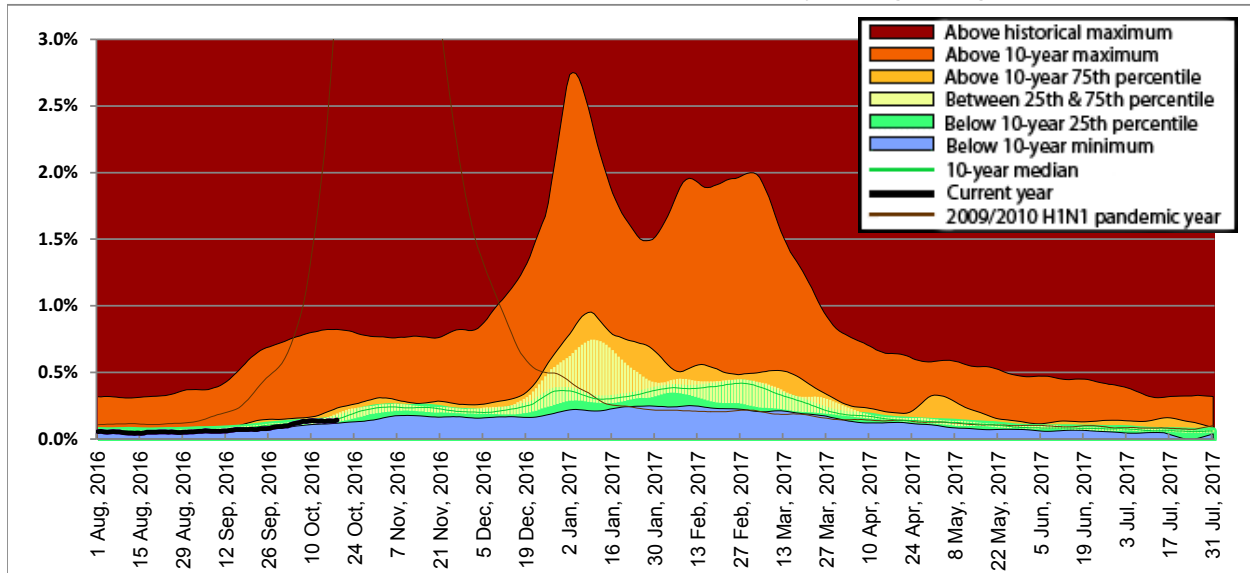


Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2016-17 season based on 2011-12 to 2015-16 seasons; CI=confidence interval.

Medical Services Plan

In weeks 39-41, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, remained at or below 10-year median levels 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

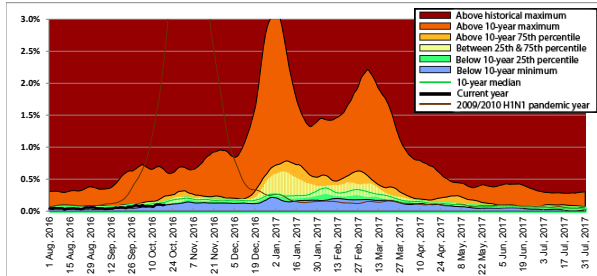


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

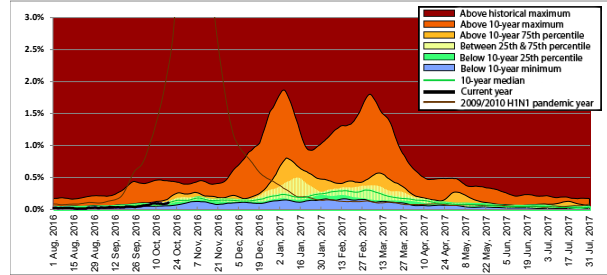
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2016 corresponds to sentinel ILI week 31; data are current to October 18, 2016.

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

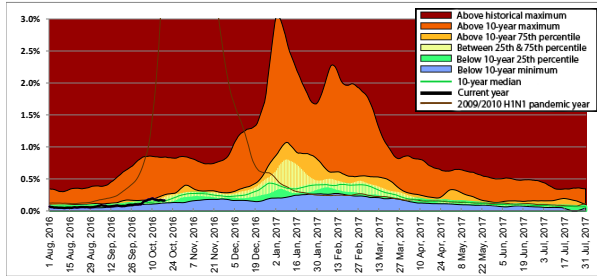
Interior



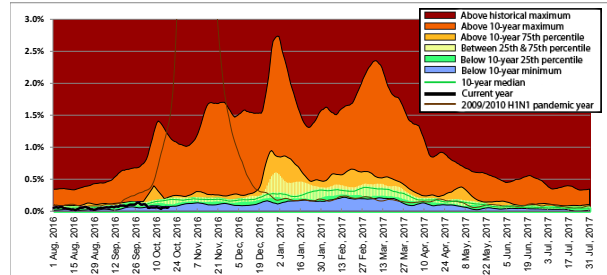
Vancouver Island



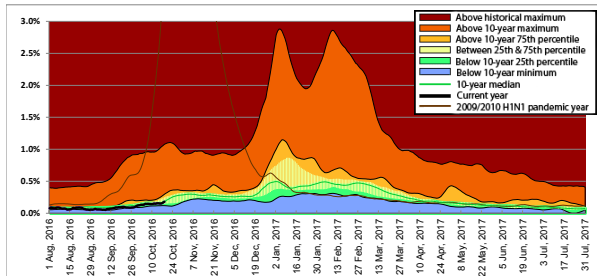
Fraser



Northern



Vancouver Coastal

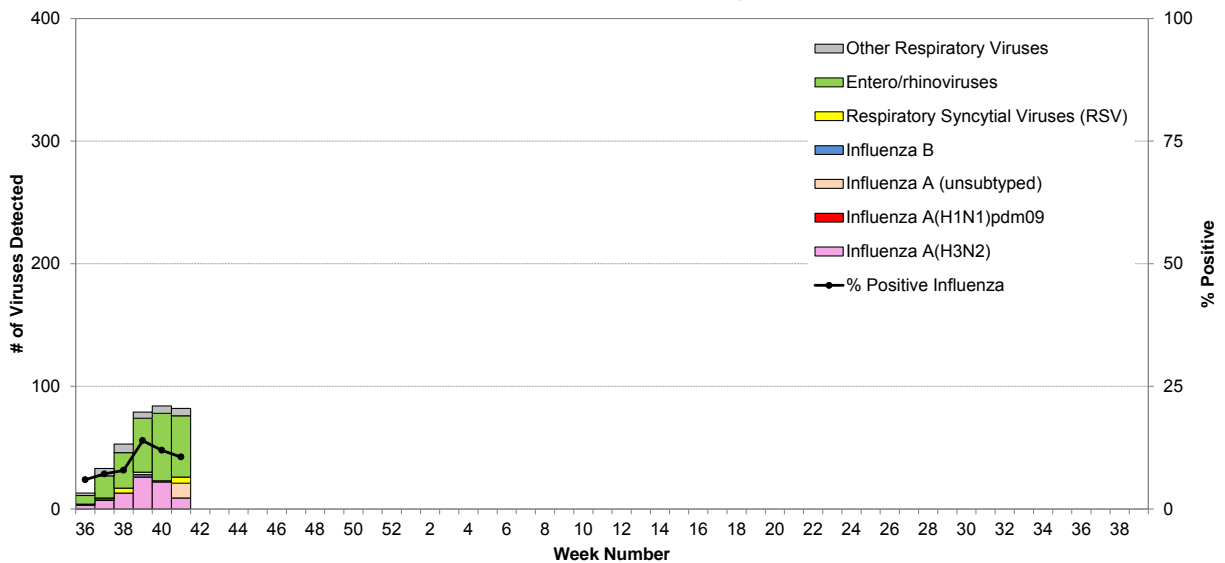


Laboratory Reports

BCCDC Public Health Laboratory

During weeks 39-41, 578 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 71 (12%) tested positive for influenza, including 69 (97%) influenza A [57 A(H3N2) and 12 with subtype pending] and 2 (3%) influenza B. Overall influenza positivity decreased slightly from 13% in week 39 to 11% in week 41 but remained above 10% during this period. So far during the 2016-17 season, influenza A(H3N2) has been the dominant subtype among influenza detections, with multiple detections among early season outbreaks in long-term care facilities (LTCFs). Enteroviruses were the most commonly detected respiratory virus during this period.

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

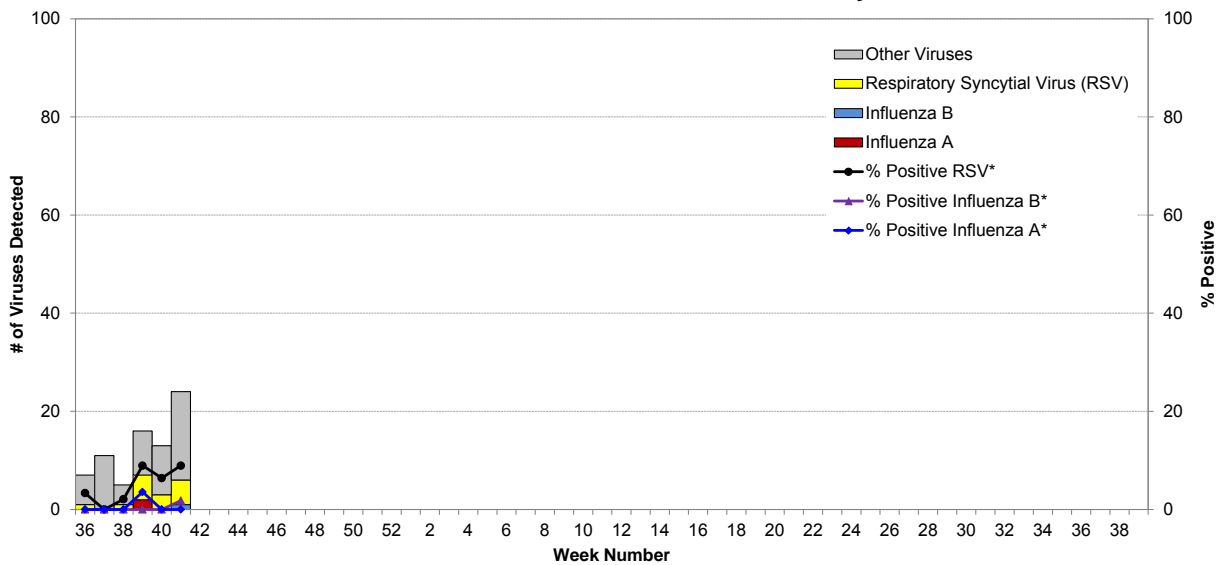


Data are current to October 19, 2016.

BC Children's and Women's Health Centre Laboratory

During weeks 39-41, the BC Children's and Women's Health Centre Laboratory conducted 159 tests for influenza A and B. Of these, 2 (1.3%) were positive for influenza A and one (0.6%) was positive for influenza B. Enteroviruses were the most commonly detected non-influenza respiratory viruses during this period and RSV was also more commonly detected than influenza.

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.

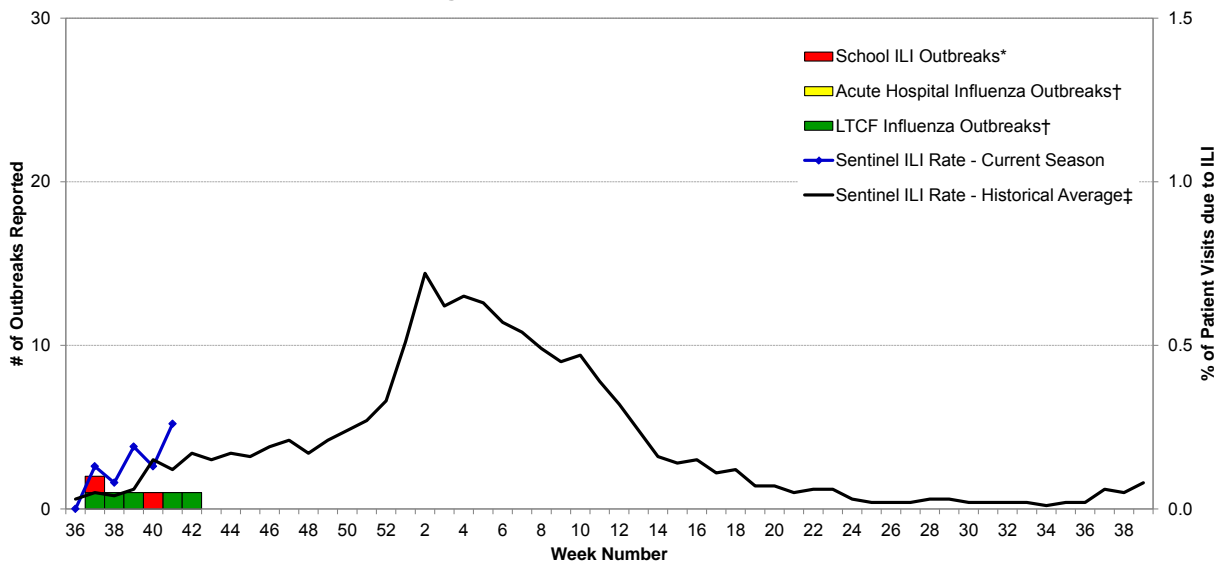
Influenza-like Illness (ILI) Outbreaks

Since our last bulletin, 3 new lab-confirmed influenza outbreaks were reported from long-term care facilities (LTCF) in FHA: one with influenza A(H3N2) detected with onset in week 39 and two with influenza A (subtype pending) detected with onset more recently in weeks 41 and 42.

Reporting of LTCF outbreaks during summer/early fall is atypical. However, during the 2014-15 and 2015-16 seasons, sporadic LTCF outbreaks were reported as early as week 32. So far, a total of 5 LTCF outbreaks have been reported during the 2016-17 season, with onset dates ranging from weeks 37 to 42. By comparison, to the current week there were 6 outbreaks in 2014-15 and 5 outbreaks in 2015-16; whereas, prior to those most recent seasons, LTCF outbreaks had not been reported this early in the season.

The significance of these early season outbreaks in the context of low-level community circulation more generally is uncertain, but the situation warrants ongoing monitoring.

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

In the past 3 weeks since our last bulletin, 19 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 35 cases.

Of the 35 laboratory-confirmed EV-D68 cases reported in BC to date since August 2016, 26 (74%) were detected in children <10 years old, and of those, the majority (15/26, 58%) have been detected in infants/toddlers <2 years old. At least 60% of cases with known information have been hospitalized and one infant/toddler presented with neurologic illness characterized by arm paralysis and some truncal weakness. Cases have been detected in all regions of the province. EV-D68 cases have also been reported in other parts of Canada, the US, and Europe in recent months, including one case in a young child ≤2 years old in Alberta with acute flaccid paralysis.

In 2014, BC along with other Canadian provinces and US states, experienced a nationwide outbreak of EV-D68, with several cases associated with severe respiratory illness notably in children with asthma. By comparison, 104 EV-D68 cases were reported during the same time period to date during the 2014 outbreak, including 4 neurologic cases and one death. Of the 2014 cases, about two-thirds occurred in children <10 years old and 16% were in infants/toddlers <2 years old, notably lower proportions compared to the current 2016 age profile. During the 2014 outbreak in BC, cases were initially detected in August, with subsequent increase through September and peak in October. A summary of the 2014 outbreak was published in *Euro Surveillance*, available from: www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21283.

Of note, despite systematic testing of over 700 respiratory specimens at the BCCDC Public Health Laboratory for EV-D68 during August and September 2015, no EV-D68 cases were detected in BC last fall, 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.

National

FluWatch (weeks 39-40, September 25 to October 8, 2016)

Influenza activity is at inter-seasonal levels with the majority of regions of Canada reporting no influenza activity. Since week 35, the majority of influenza activity has been reported in Western regions of Canada. A total of 127 positive influenza detections were reported in weeks 39 and 40, with 2.5% of tests positive in week 39 and 2.3% in week 40. Influenza A(H3N2) was the most common subtype detected and the majority of detections were in adults ≥ 65 years of age. In weeks 39 and 40, approximately 1.0% of visits to sentinel healthcare professionals were due to ILI. A total of six laboratory-confirmed influenza outbreaks were reported all of which occurred in week 39. Low numbers of hospitalizations and no deaths were reported in weeks 39 and 40. 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 October 19, 2016, the National Microbiology Laboratory (NML) received 15 influenza viruses [10 A(H3N2), 1 A(H1N1)pdm09 and 4 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 10 influenza A(H3N2) viruses, only 3 (30%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 3 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. Genetic characterization was performed to infer antigenic properties on the remaining 7 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 7 viruses genetically characterized, all were reported to belong to a genetic group in which most viruses were antigenically related to A/Hong Kong/4801/2014.

Influenza A(H1N1)pdm09: The one A(H1N1)pdm09 viruses characterized was 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 4 influenza B viruses characterized, 3 (75%) 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 one (25%) virus was 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 October 19, 2016, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 26 influenza A viruses [25 A(H3N2) and 1 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 29 influenza viruses [24 A(H3N2), 1 A(H1N1)pdm09 and 4 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 29 influenza viruses [24 A(H3N2), 1 A(H1N1)pdm09 and 4 B] tested against zanamivir, all were sensitive.

International

USA (week 40, October 2-8, 2016)

During week 40, influenza activity was low in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 40 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories is low. 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. The proportion of outpatient visits for ILI was 1.1%, which is below the national baseline of 2.2%. The geographic spread of influenza in Guam was reported as widespread; Puerto Rico and one state reported local activity; the U.S. Virgin Islands and 36 states reported sporadic activity; and the District of Columbia and 13 states reported no activity. Details are available at: www.cdc.gov/flu/weekly/.

WHO (October 17, 2016)

Influenza activity in the temperate zone of the northern hemisphere remained at inter-seasonal levels. Influenza activity decreased in Oceania, South Africa and temperate South America.

- In North America and Europe, influenza activity was low with few influenza virus detections and ILI levels below seasonal thresholds. In the United States, RSV activity increased.
- In temperate South America, influenza and RSV activity decreased throughout most of the sub-region. In Chile, ILI and laboratory confirmed influenza detections decreased but remained elevated with A(H3N2) viruses predominant followed by influenza B viruses. In Paraguay, ILI and severe acute respiratory infection (SARI) cases decreased with decreasing detections of respiratory viruses.
- In the temperate countries of Southern Africa, influenza detections decreased with A(H1N1)pdm09 virus dominant.
- In Oceania, influenza virus activity decreased in the last few weeks. Influenza A(H3N2) remained the dominant circulating influenza virus. In Australia, activity decreased but was still high, while in New Zealand ILI consultation rates remained below the seasonal baseline level.
- In the Caribbean countries, influenza and other respiratory virus activity remained low except in Cuba where influenza B virus detections increased and in French Guiana where ILI activity and influenza detections increased slightly. In Central America, influenza virus activity remained low but detections of RSV increased in several countries.
- In tropical South America, respiratory virus activities remained low in most of the countries, except in Colombia, where RSV activity increased.
- In tropical countries of South Asia, influenza activity was generally low with predominantly influenza B detections.
- In South East Asia, in general a decreasing trend in influenza detection was observed, although in Lao People's Democratic Republic (PDR) and Thailand increased number of influenza detections was reported in recent weeks.
- In tropical countries of Africa, Ghana and Senegal reported slightly increased influenza activity.
- In Northern temperate Asia, influenza activity remained low with predominantly influenza A(H3N2) detections in northern China.
- From September 19 to October 2, 2016, the WHO GISRS laboratories tested more than 43,038 specimens, of which 2619 were positive for influenza viruses: 2150 (82%) were typed as influenza A and 469 (18%) as influenza B. Of the sub-typed influenza A viruses, 161 (9%) were influenza A(H1N1)pdm09 and 1577 (91%) were influenza A(H3N2). Of the characterized B viruses, 22 (20%) belonged to the B/Yamagata lineage and 90 (80%) to the B/Victoria lineage.

Details 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: 50%;">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															
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