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

British Columbia Influenza Surveillance Bulletin

Influenza Season 2017-18, Number 2, Weeks 41-42
October 8 to 21, 2017

Table of Contents:

Low-level A(H3N2) but Increasing Influenza-like Illness Activity in BC

During weeks 41-42 (October 8 to 21, 2017), influenza-like illness (ILI) activity increased in BC and was slightly higher than expected levels for this time of year.

As in prior recent seasons since 2012-13, sporadic influenza detections, mostly belonging to the A(H3N2) subtype, continue to be detected at low levels at the BCCDC Public Health Laboratory. Influenza positivity was around 5% in weeks 41-42. Entero/rhinoviruses were the most frequently detected respiratory virus during this period.

Since our last bulletin, one new influenza B outbreak was reported from a long-term care facility in VCHA with onset in week 42.

On October 26, Australian researchers published interim vaccine effectiveness (VE) estimates for the 2017 southern hemisphere vaccine containing the same components included in the upcoming 2017-18 northern hemisphere vaccine. VE against A(H3N2), the dominant subtype during their season, was 10% (95% CI: -16 to 31%), suggesting a lack of vaccine protection. See: www.eurosurveillance.org/content/10.2807/1560-7917.ES.2017.22.43.17-00707.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

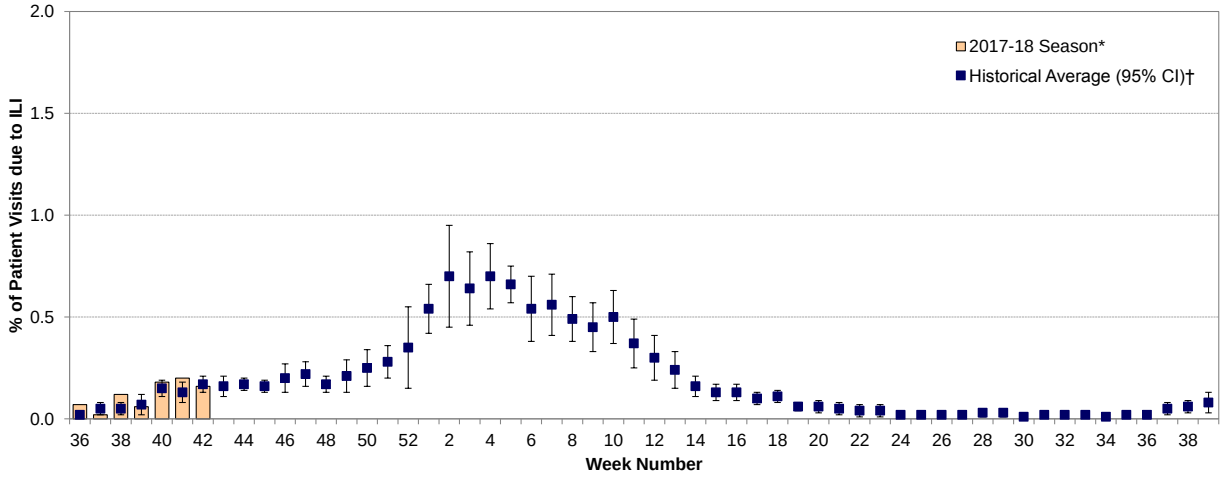
Report Disseminated: October 26, 2017

British Columbia

Sentinel Physicians

In weeks 41-42, the proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites increased slightly compared to recent weeks but was consistent with the 10-year historical average for this time of year. 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, 2017-18

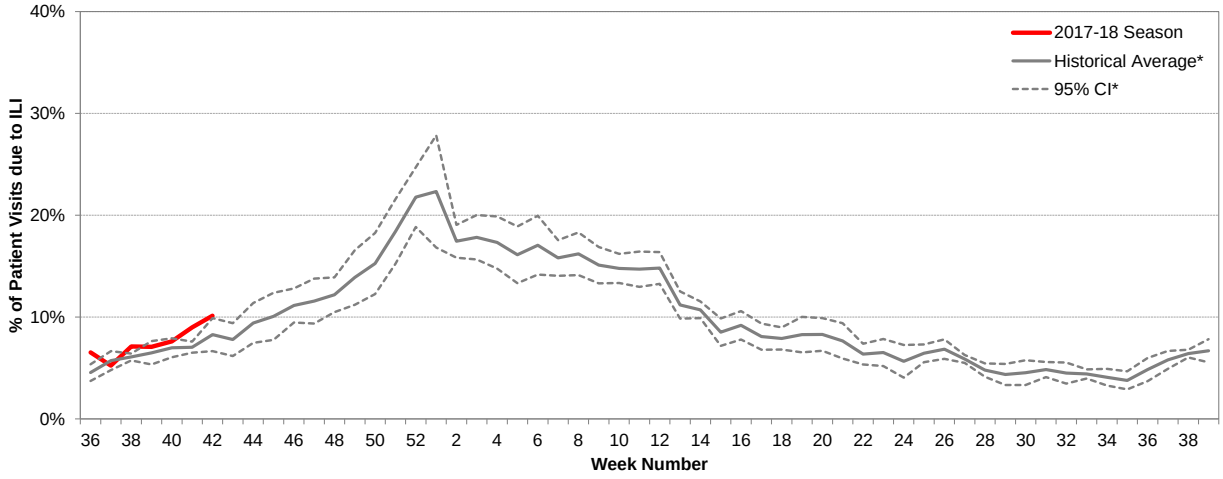


* Data are subject to change as reporting becomes more complete.
† 10-year historical average for 2017-18 season based on 2005-06 to 2016-2017 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children's Hospital Emergency Room

In weeks 41-42, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI increased and was slightly higher than the historical average for the past 5 seasons.

Percent of patients presenting to BC Children's Hospital ER attributed to influenza-like illness (ILI), British Columbia, 2017-18

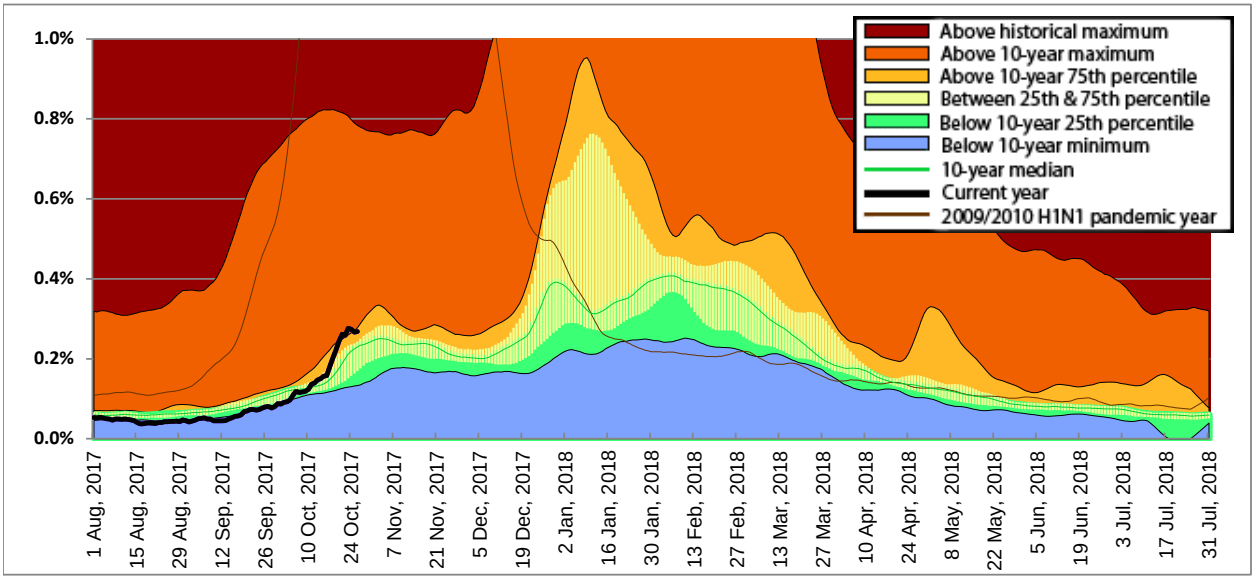


Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2017-18 season based on 2012-13 to 2016-17 seasons; CI=confidence interval.

Medical Services Plan

In weeks 41-42, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, showed an increasing trend and were higher than expected levels for this time of year in most regions of the province, except NHA where rates remained below historical median levels.

Service claims submitted to MSP for influenza illness (II)* as a proportion of all submitted general practitioner service claims, British Columbia, 2017-18

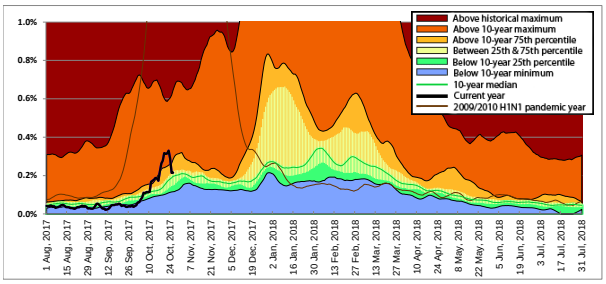


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

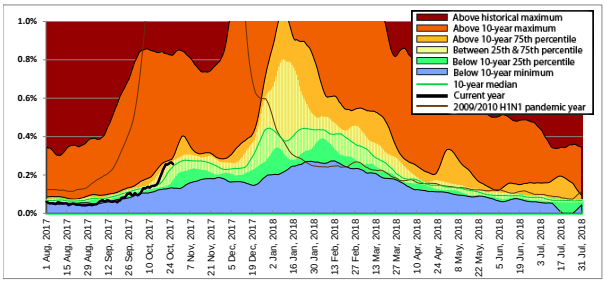
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP data beginning August 1, 2017 corresponds to sentinel ILI week 31; data are current to October 26, 2017.

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

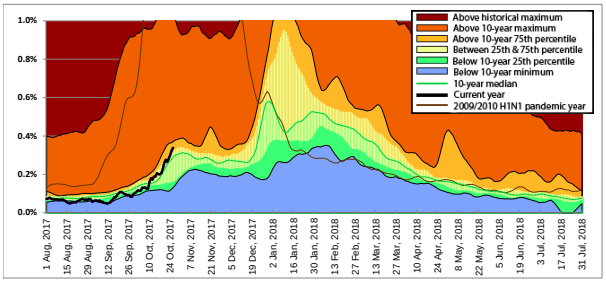
Interior



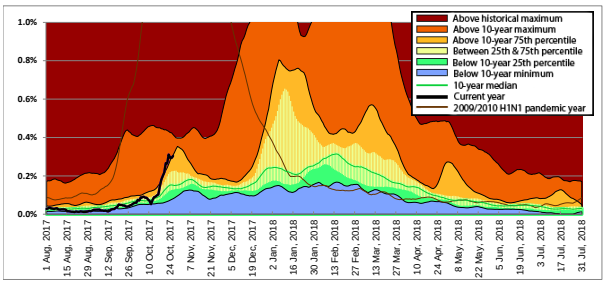
Fraser



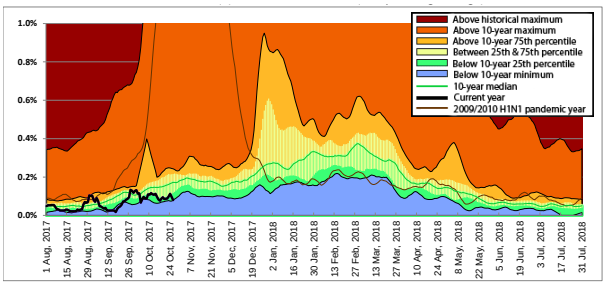
Vancouver Coastal



Vancouver Island



Northern

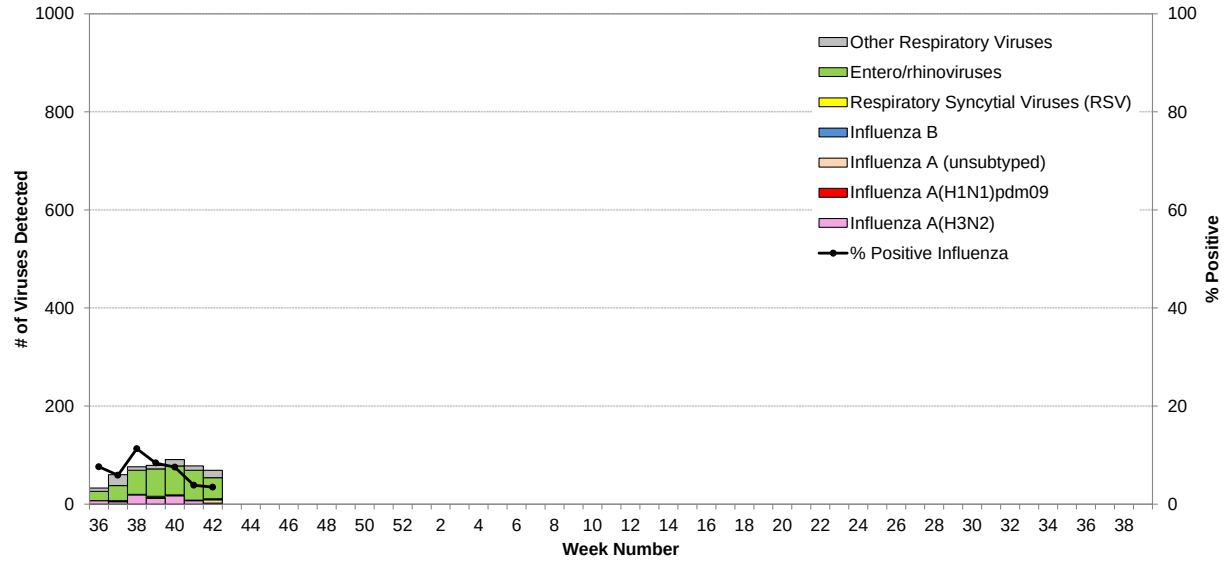


Laboratory Reports

BCCDC Public Health Laboratory

In weeks 41-42, 17 (4%) patients tested positive for influenza at the BCCDC Public Health Laboratory (PHL); all 17 viruses were typed as influenza A [9 A(H3N2), 1 A(H1N1)pdm09 and 7 subtype pending]. Influenza positivity fell to below 5% in weeks 41-42. Consistent with prior recent seasons since 2012-13, sporadic influenza detections, mostly belonging to the A(H3N2) subtype, have continued to be detected at low levels during this early fall period. Over one-third of A(H3N2) cases so far during the 2017-18 season have been detected among elderly adults ≥65 years old, with more than half being detected among adults ≥50 years old. Entero/rhinoviruses were the most commonly detected respiratory virus during this period.

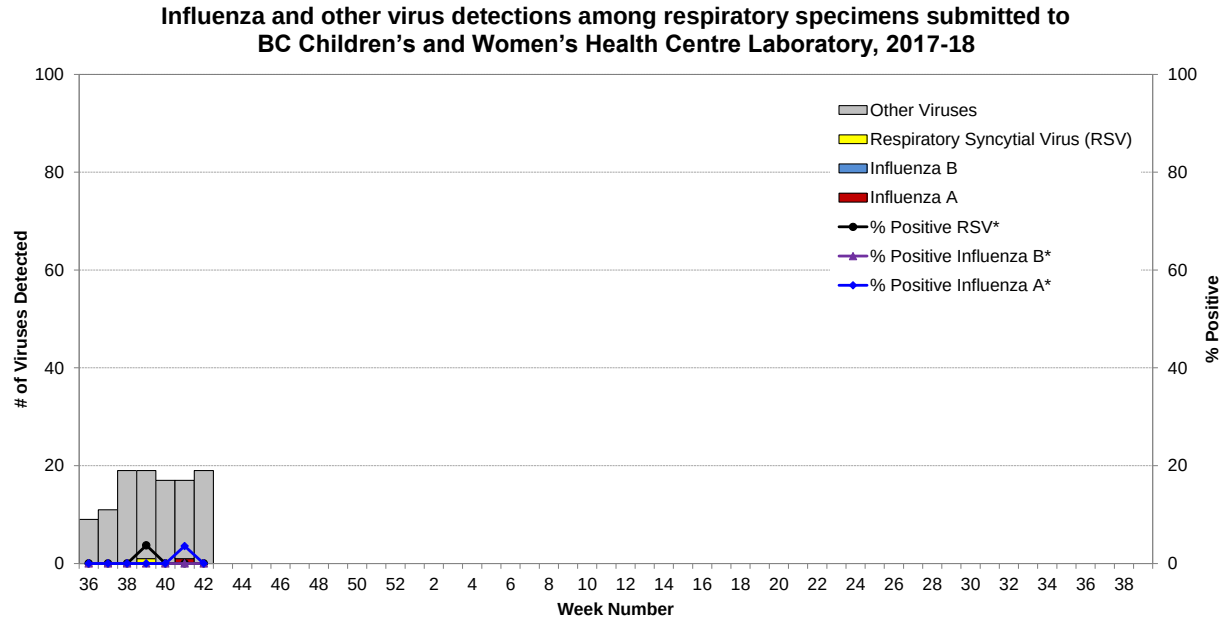
Influenza and other virus detections among respiratory specimens submitted to BCCDC Public Health Laboratory, 2017-18



Data are current to October 25, 2017.

BC Children's and Women's Health Centre Laboratory

In weeks 41-42, 78 tests for respiratory viruses were conducted at the BC Children's and Women's Health Centre laboratory. Of these, one (1%) in week 41 was positive for influenza A; none were positive for influenza B or respiratory syncytial virus (RSV). Rhinoviruses were the most commonly detected respiratory viruses during this period.

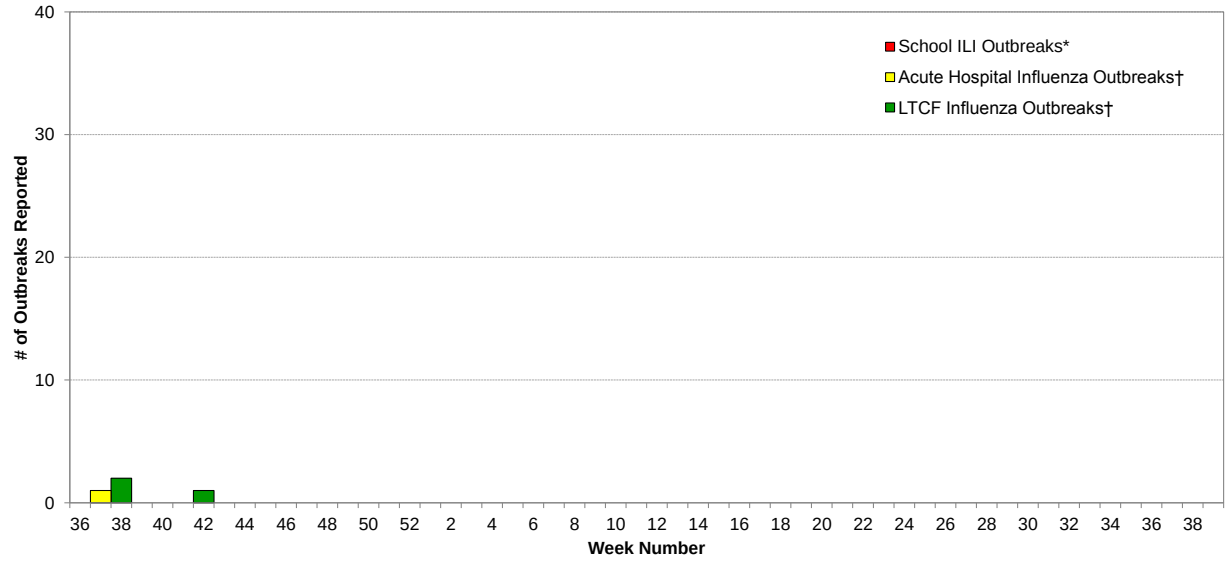


* Positive rates were calculated using aggregate data. The denominators for each rate represent the total number of tests; multiple tests may be performed for a single specimen and/or patient.

Influenza-like Illness (ILI) Outbreaks

Since our last bulletin 2 weeks ago, one new outbreak with influenza B detected was reported from a long-term care facility (LTCF) in VCHA with onset in week 42. Cumulatively during the 2017-18 season (since week 37, starting September 10, 2017), 4 lab-confirmed influenza outbreaks have been reported, including 2 with influenza A detected [1 A(H3N2) and 1 subtype unknown] and 2 with influenza B; of these, 3 were reported in LTCFs and one was reported from an acute care facility. Since the 2014-15 season, sporadic facility influenza outbreaks have previously been reported as early as week 37; current sporadic outbreak reports are not exceptional in that regard.

Number of influenza-like illness (ILI) outbreaks reported, British Columbia 2017-18



* 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 41, October 8 to 14, 2017)

Influenza activity remains at inter-seasonal levels across the country. The percentage of laboratory tests positive for influenza remains higher for this time of year compared to previous seasons. The majority of influenza detections continue to be A(H3N2). Influenza-related hospitalizations, primary care consultations for ILI and regions reporting sporadic activity are in the higher range of expected levels for this time of year. Details are available at: www.canada.ca/en/public-health/services/diseases/flu-influenza/influenza-surveillance/weekly-influenza-reports.html.

National Microbiology Laboratory (NML): Strain Characterization

From September 1, 2017 to October 26, 2017, the National Microbiology Laboratory (NML) received 45 influenza viruses [34 A(H3N2), 5 A(H1N1)pdm09 and 6 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 34 influenza A(H3N2) viruses, only 5 (15%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 5 viruses characterized by HI assay, all were considered antigenically similar to a cell culture-propagated A/Hong Kong/4801/2014-like virus, the WHO-recommended A(H3N2) component for the 2017-18 northern hemisphere influenza vaccine. Of the 5 viruses that were antigenically characterized with available sequencing information, 4 belonged to genetic group 3C.2a and one belonged to subclade 3C.2a1. Genetic characterization was performed to infer antigenic properties on the remaining 29 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 29 viruses genetically characterized, 20 were reported to belong to genetic group 3C.2a, which includes the A/Hong Kong/4801/2014 vaccine strain, while 9 belonged to subclade 3C.2a1.

Influenza A(H1N1)pdm09: All of the 5 A(H1N1)pdm09 viruses characterized were antigenically similar to an A/Michigan/45/2015-like virus, the WHO-recommended influenza A(H1N1) component for the 2017-18 northern hemisphere influenza vaccine.

Influenza B: Of the 6 influenza B viruses characterized, one (17%) was characterized as antigenically similar to a B/Brisbane/60/2008(Victoria)-like virus, the WHO-recommended influenza B component for the 2017-18 northern hemisphere trivalent influenza vaccine, while 5 (83%) were antigenically similar to a B/Phuket/3073/2013(Yamagata lineage)-like virus, the WHO-recommended influenza B component for the 2017-18 northern hemisphere quadrivalent influenza vaccine containing two influenza B strains.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1, 2017 to October 26, 2017, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 12 influenza A viruses [7 A(H3N2) and 5 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 43 influenza viruses [32 A(H3N2), 5 A(H1N1)pdm09, and 6 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 43 influenza viruses [32 A(H3N2), 5 A(H1N1)pdm09, and 6 B] tested against zanamivir, all were sensitive.

International

USA (week 41, October 8 to 14, 2017)

During week 41, influenza activity was low in the United States. The most frequently identified influenza virus type reported by public health laboratories during week 41 was influenza A. 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. One influenza-associated pediatric death was reported that occurred during the 2016-2017 season. The proportion of outpatient visits for ILI was 1.3%, which is below the national baseline of 2.2%. The geographic spread of influenza in Guam was reported as regional; five states reported local activity; the U.S. Virgin Islands and 38 states reported sporadic activity; the District of Columbia and seven states reported no activity; and Puerto Rico did not report. Details are available at: www.cdc.gov/flu/weekly/.

WHO (October 16, 2017)

Influenza activity remained at low levels in the temperate zone of the northern hemisphere. Declining levels of influenza activity were reported in the temperate zone of the southern hemisphere and in some countries of South and South East Asia. In Central America and the Caribbean, low influenza activity was reported in a few countries. Worldwide, influenza A(H3N2) and B viruses accounted for the majority of influenza detections.

From September 18 to October 1, 2017, the WHO GISRS laboratories tested more than 56,528 specimens, of which 3,496 were positive for influenza viruses: 2,566 (73%) were typed as influenza A and 930 (27%) as influenza B. Of the subtyped influenza A viruses, 260 (15%) were influenza A(H1N1)pdm09 and 1,460 (85%) were influenza A(H3N2). Of the characterized B viruses, 192 (81%) belonged to the B(Yamagata) lineage and 45 (19%) to the B(Victoria) lineage.

- In North America, overall influenza virus activity remained low with detections of predominantly influenza A(H3N2) and B viruses in the past few weeks.
- In Europe, little to no influenza activity was reported.
- In temperate South America, influenza and RSV activity continued a downward trend throughout most of the sub-region.
- In Southern Africa, influenza activity continued to decrease in South Africa, with influenza B viruses most frequently detected.
- In Oceania, seasonal influenza activity started to decline, with influenza A(H3N2) predominant, followed by B viruses.
- In tropical South America, influenza and RSV activity remained at low levels overall.
- In the Caribbean and Central American countries, respiratory illness indicators and influenza activity remained low in general but RSV activity remained high in several countries.
- In Southern Asia, decreasing levels of influenza activity were reported in India and Bhutan, with A(H1N1)pdm09 most frequently detected.
- In South East Asia, influenza activity appeared to decrease in general, with some exceptions. Influenza activity increased in Cambodia and remained high in Lao PDR, with influenza A(H3N2) viruses predominantly detected.
- In Western Asia, influenza activity continued to increase in Oman, with influenza A(H1N1)pdm09 and A(H3N2) viruses co-circulating. Increased influenza A detections were reported in Bahrain in recent weeks.
- In East Asia, influenza activity remained low in general.
- In Western Africa, influenza detections continued to be reported, with all seasonal influenza subtypes present in the region. In Middle Africa, elevated ILI activity was reported in Cameroon. In Eastern Africa, influenza detections and ILI activity increased sharply in Réunion Island (French Overseas Department), with influenza B viruses predominant.
- In Northern Africa, little to no influenza virus detections was reported.
- In Central Asia, there were no updated reports on virus detections or respiratory illness indicators.

Details are available at: www.who.int/influenza/surveillance_monitoring/updates/en/.

Vaccine Effectiveness

Interim Estimates, 2017 Southern Hemisphere

On October 26, 2017, Australian researchers published interim vaccine effectiveness (VE) estimates for the 2017 southern hemisphere vaccine containing the same components included for the upcoming 2017-18 northern hemisphere vaccine. The 2017 influenza season in Australia was characterized by record-high influenza activity. VE against A(H3N2), the dominant subtype during the 2017 southern hemisphere season, was 10% (95% CI: -16 to 31%), suggesting a lack of vaccine protection. Better, although still suboptimal, protection against A(H3N2) was found for those vaccinated only in 2017 at 43% (95% CI: -1 to 71%) compared to those vaccinated with the identical vaccine component in both 2016 and 2017 at 3% (95% CI: -29 to 27%). These findings are consistent with negative interference from repeat vaccination in the context of homologous vaccine components and antigenically drifted circulating viruses, as was also observed during the 2014-15 season in North America.

Findings were published in *EuroSurveillance*, an open-access publication: www.eurosurveillance.org/content/10.2807/1560-7917.ES.2017.22.43.17-00707.

WHO Recommendations for Influenza Vaccines

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/.

WHO Recommendations for the 2018 Southern Hemisphere Influenza Vaccine

On September 28, 2017, the WHO announced recommended strain components for the 2018 southern hemisphere trivalent influenza vaccine (TIV):*

- an A/Michigan/45/2015 (H1N1)pdm09-like virus;†
- an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus;‡
- a B/Phuket/3073/2013-like (Yamagata-lineage)virus.§

It is recommended that quadrivalent influenza vaccines (QIV) containing two influenza B viruses contain the above three viruses and a B/Brisbane/60/2008 (Victoria-lineage)-like virus.

* Recommended strains represent a change for two of the three components used for the 2017 southern hemisphere vaccines.

† Recommended strain is the same as recommended for the 2017 southern hemisphere and 2017-18 northern hemisphere vaccines. The A/Michigan/45/2015-like virus belongs to the emerging phylogenetic subclade 6B.1; it replaces the A/California/7/2009-like virus that had been retained as the previous A(H1N1) component since the 2009 pandemic.

‡ Recommended strain for the A(H3N2) component represents a phylogenetic clade-level change from a clade 3C.2a virus to a clade 3C.2a1 virus containing the amino acid substitution N121K in the HA which is found in the majority of recent A(H3N2) viruses.

§ Recommended strain for the influenza B component represents a lineage-level change from a B(Victoria)-lineage virus to a B(Yamagata)-lineage virus.

For further details: http://www.who.int/influenza/vaccines/virus/recommendations/2018_south/en/.

The European Centre for Disease Prevention and Control has also posted a useful summary of WHO recommendations for the 2018 southern hemisphere influenza season, including rationale, available at: https://ecdc.europa.eu/en/news-events/who-recommendations-influenza-virus-vaccine-composition-2018-southern-hemisphere

Additional Information

Explanatory Note:

The surveillance period for the 2017-18 influenza season is defined starting in week 40. Weeks 36-39 of the 2016-17 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): https://www.canada.ca/en/public-health/services/diseases/flu-influenza/influenza-surveillance.html
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
655 W. 12th Ave.
Vancouver BC V5Z 4R4

Phone: (604) 707-2510
Fax: (604) 707-2516
ilioutbreak@bccdc.ca