

British Columbia Influenza Surveillance Bulletin

Influenza Season 2017-18, Number 8, Week 1 December 31, 2017 to January 6, 2018

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Influenza Activity Remains Elevated in BC

During week 1 (December 31, 2017 to January 6, 2018), influenza activity remained elevated in BC. Although some surveillance indicators plateaued or decreased slightly in week 1, it is too early to determine if the seasonal peak has been reached.

Influenza positivity at the BCCDC Public Health Laboratory remained above 40% in week 1. A mix of influenza types A and B continue to circulate in approximately equal proportions, with A(H3N2) remaining the dominant subtype among influenza A detections.

Since our last bulletin, 29 new lab-confirmed outbreaks were reported; 26 from long-term care facilities (LTCFs) and three from acute care hospitals. Of the 29 outbreaks, 16 had influenza B detected, 11 had influenza A detected, and 2 had influenza A and B detected; of the 2 influenza A outbreaks with subtype information available, both were A(H3N2).

Medical Services Plan (MSP) claims for influenza illness were stable around expected median levels for the province overall and in most regions, while sentinel ILI rates were significantly above 10-year historical averages.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

Report Disseminated: January 11, 2018



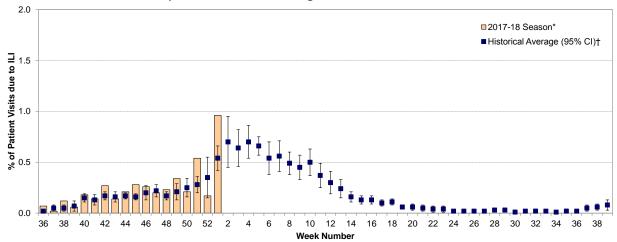


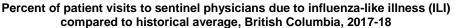


British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI), among those presenting to sentinel sites, was above the 10-year historical average for week 1. Rates are subject to change as reporting becomes more complete. To date, only 45% of sentinel sites have reported data for week 52, likely reflecting delayed reporting over the holiday period, compared to 69% for week 1.

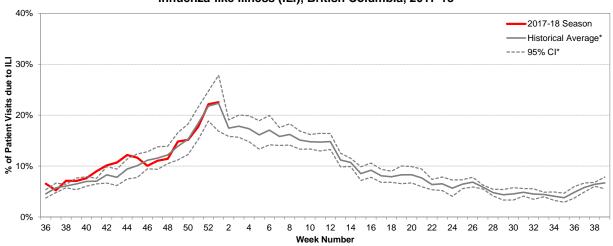




* Data are subject to change as reporting becomes more complete. † 10-year historical average for 2017-18 season based on 2005-06 to 2016-2017 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children's Hospital Emergency Room

In week 1, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI was consistent with the historical average for the past 5 seasons.



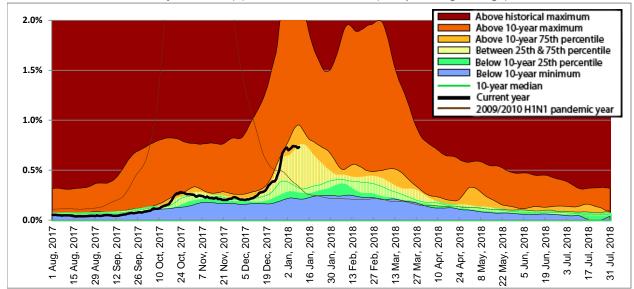
Percent of patients presenting to BC Children's Hospital ER attributed to influenza-like illness (ILI), British Columbia, 2017-18

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 week 1, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims remained elevated but stabilized around expected levels for this time of year in most regions of the province following an increase in previous weeks. In contrast, MSP rates declined from week 52 to week 1 in IHA and NHA. In week 1, rates for the province overall and in VCHA and VIHA were between 25th and 75th percentiles, while rates in IHA, FHA, and NHA were above the 10-year 75th percentile.



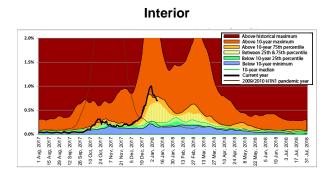
Service claims submitted to MSP for influenza illness (II)* as a proportion of all submitted general practitioner service claims, British Columbia, 2017-18

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

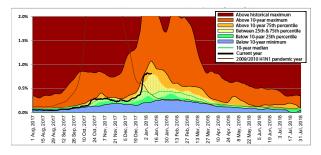
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP data beginning August 1, 2017 corresponds to sentinel ILI week 31; data are current to January 9, 2018.

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

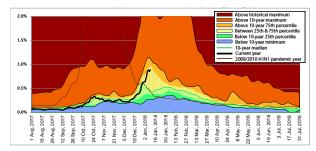




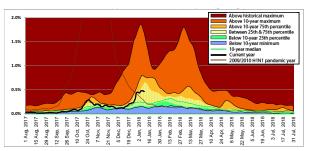




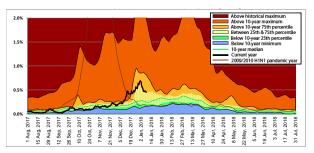
Vancouver Coastal



Vancouver Island



Northern





Laboratory Reports

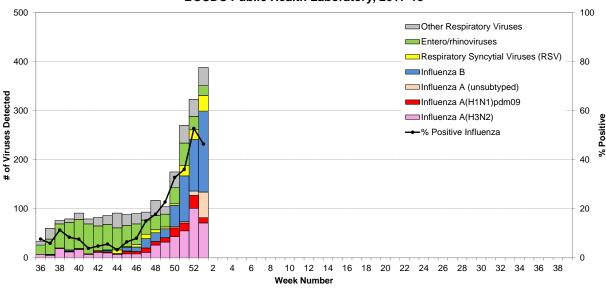
BCCDC Public Health Laboratory

In week 1, 645 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 299 (46%) tested positive for influenza; 134 (45%) had influenza A detected [71 A(H3N2), 11 A(H1N1)pdm09 and 52 subtype pending], while 165 (55%) had influenza B detected. Among influenza A detections, A(H3N2) remained the dominant subtype during this period. Influenza B positivity remains greater than in previous years for this period, comprising >50% of all influenza detections in week 1. Influenza positivity at the BCCDC PHL remained elevated at above 40% but declined slightly compared to the previous week.

Cumulatively during the 2017-18 season (since week 40, starting October 1, 2017), 1062 (24%) patients tested positive for influenza at the BCCDC PHL, including 581 (55%) with influenza A [403 A(H3N2), 110 A(H1N1)pdm09, 68 subtype pending], 479 (45%) with influenza B and two patients with both influenza A [one with A(H3N2) and one with A(H1N1)pdm09] and B detected.

More than half (57%) of A(H3N2) cases have been detected among elderly adults \geq 65 years old, with 8% <20 years old, 22% 20-49 years old, and 17% 50-64 years old. Conversely, 41% of influenza B cases have been detected among elderly adults \geq 65 years old, with 15% <20 years old, 21% 20-49 years old, and 22% 50-64 years old. Among A(H1N1)pdm09 cases, only 11% have been detected among elderly adults \geq 65 years old, 44% 20-49 years old, and 15% 50-64 years old.

RSV was the most commonly detected non-influenza respiratory virus during this period.

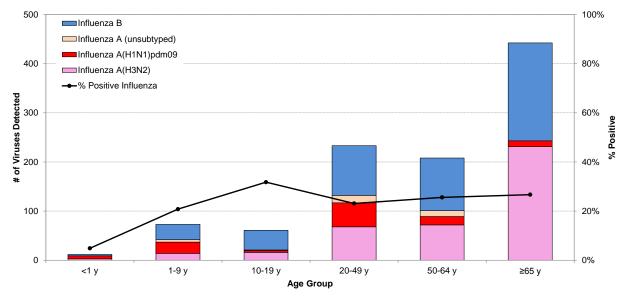


Influenza and other virus detections among respiratory specimens submitted to BCCDC Public Health Laboratory, 2017-18

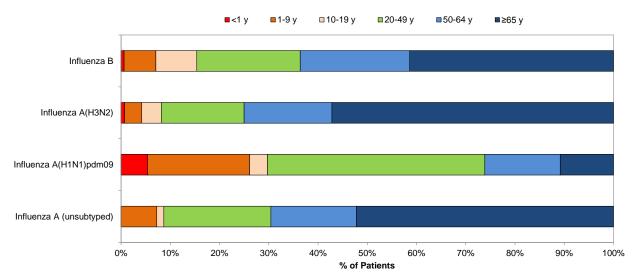
Data are current to January 10, 2018.

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Cumulative number (since week 40) of influenza detections by type subtype and age group, BCCDC Public Health Laboratory, 2017-18



Data are current to January 10, 2018; figure includes cumulative influenza detections for specimens collected from weeks 40-1.



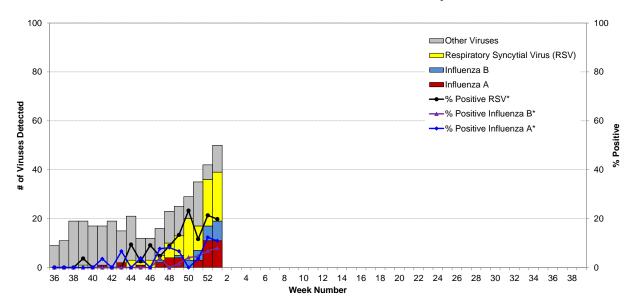
Age distribution of influenza detections (cumulative since week 40), BCCDC Public Health Laboratory, 2017-18

Data are current to January 10, 2018; figure includes cumulative influenza detections for specimens collected from weeks 40-1.



BC Children's and Women's Health Centre Laboratory

In week 1, 101 tests for respiratory viruses were conducted at the BC Children's and Women's Health Centre (CWHC) laboratory. Of these, 11 (11%) were positive for influenza A and 8 (8%) were positive for influenza B. Additionally, 20 (20%) were positive for respiratory syncytial virus (RSV). RSV was the most commonly detected respiratory viruses during this period.



Influenza and other virus detections among respiratory specimens submitted to BC Children's and Women's Health Centre Laboratory, 2017-18

* 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.



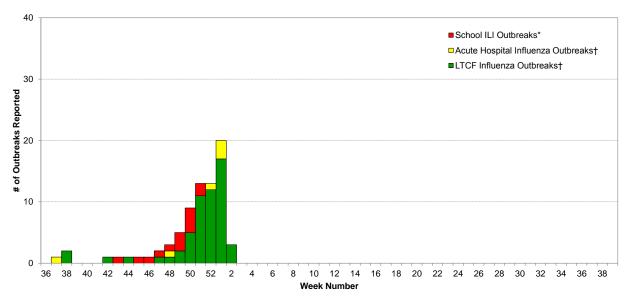
Influenza-like Illness (ILI) Outbreaks

Since our last bulletin, 29 new lab-confirmed outbreaks were reported, including 26 from long-term care facilities (LTCFs) and 3 from acute care hospitals. Of the 29 newly reported outbreaks, 4 had onset in week 51 in VCHA, 4 had onset in week 52 (1 in FHA, 1 in IHA, 1 in VCHA, 1 in VIHA), 18 had onset in week 1 (12 in FHA, 1 in IHA, 1 in NHA, 1 in VIHA, 3 in VCHA), and 3 had onset in week 2 in FHA.

Of the 29 outbreaks, 16 had influenza B detected, 11 had influenza A detected, and 2 had influenza A and B detected; of the 2 influenza A outbreaks with subtype information available, both were A(H3N2).

Cumulatively during the 2017-18 season (since week 37, starting September 10, 2017), 62 lab-confirmed influenza outbreaks have been reported, including 27 with influenza A detected [11 A(H3N2) and 16 subtype unknown], 31 with influenza B, 1 with influenza A (H3N2) and influenza B, and 3 with influenza A (unspecified subtype) and influenza B; of these, 56 were reported in LTCFs and 6 were reported from an acute care facility. Similarly, 14 school ILI outbreaks have occurred without etiologic agent identified.

So far during this season of mixed A(H3N2) and influenza B co-circulation, the number of long term care facility outbreaks reported since week 40 (n=53) is lower than the tally for the same period during recent A(H3N2) dominant epidemics in 2014-15 (n=97) and 2016-17 (n=75) but higher than during recent A(H1N1)pdm09 dominant epidemics in 2013-14 (n=1) and 2015-16 (n=9), bearing in mind variation in the timing of seasonal epidemics that may influence final end-of-season comparisons.



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.

Updated Antiviral Guidelines

The Association of Medical Microbiology and Infectious Disease Canada (AMMI Canada) have released updated guidance on the use of antiviral drugs given potential low vaccine effectiveness for the 2017-18 influenza season. These guidelines are available at: <u>https://www.ammi.ca/Update/79.ENG.pdf</u>.



National

FluWatch (weeks 51-52, December 17 to 30, 2017)

At the national level influenza activity continues to increase across Canada. All indicators of influenza activity increased in weeks 51 and 52, but are within the range of expected levels for this time of year. The majority of influenza detections continue to be A(H3N2), although the proportion of detections that are influenza B has been increasing steadily. Influenza B is circulating much earlier than usual this season. The number of influenza B detections remains substantially greater this season compared to previous years. To date this season, the majority of lab confirmations, hospitalizations and deaths have been among adults 65 years of age and older. 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 January 11, 2018, the National Microbiology Laboratory (NML) received 351 influenza viruses from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 229 influenza A(H3N2) viruses, only 54 (24%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 54 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 53 out of 54 viruses that were antigenically characterized with available sequencing information, 45 belonged to genetic group 3C.2a and 8 belonged to subclade 3C.2a1; sequencing is pending for the remaining isolate. Of the 175 viruses genetically characterized, 143 were reported to belong to genetic group 3C.2a, which includes the A/Hong Kong/4801/2014 vaccine strain, while 31 belonged to subclade 3C.2a1 and 1 belonged to clade 3C.3a.

Influenza A(H1N1)pdm09: All of the 26 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 96 influenza B viruses characterized, 6 (6%) belonged to the B(Victoria) lineage and 90 (94%) belonged to the B(Yamagata) lineage. Among the 6 B(Victoria) viruses, 1 (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%) viruses showed reduced titre with ferret antisera produced against cell-propagated B/Brisbane/60/2008. Sequence analysis showed that the five viruses had a two-amino acid deletion in the hemagglutinin (HA) gene. Among the 90 B(Yamagata) viruses, all 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 against.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1, 2017 to January 4, 2018, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

<u>Amantadine</u>: Of the 252 influenza A viruses [231 A(H3N2) and 21 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 353 influenza viruses [230 A(H3N2), 27 A(H1N1)pdm09, and 96 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 353 influenza viruses [230 A(H3N2), 27 A(H1N1)pdm09, and 96 B] tested against zanamivir, all were sensitive.



International

USA (week 52, December 24 to 30, 2017)

During week 52, overall influenza activity increased sharply in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 52 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the system-specific epidemic threshold in the National Center for Health Statistics (NCHS) Mortality Surveillance System. One influenza-associated pediatric death was reported. A cumulative rate of 13.7 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for influenza-like illness (ILI) was 5.8%, which is above the national baseline of 2.2%. The geographic spread of influenza in 46 states was reported as widespread; four states reported regional activity; the District of Columbia reported local activity; and Guam, Puerto Rico, and the U.S. Virgin Islands did not report. Details are available at: www.cdc.gov/flu/weekly/.

WHO (January 8, 2018)

Influenza activity continued to increase in the temperate zone of the northern hemisphere while in the temperate zone of the southern hemisphere activity was at inter-seasonal levels. Worldwide, influenza A(H3N2) and B viruses accounted for the majority of influenza detections although influenza A(H1N1)pdm09 viruses were predominant in some countries.

From December 11 to December 24, 2017, the WHO GISRS laboratories tested more than 179,990 specimens, of which 40,431 were positive for influenza viruses: 26,351 (65%) were typed as influenza A and 14,080 (35%) as influenza B. Of the subtyped influenza A viruses, 3,357 (31%) were influenza A(H1N1)pdm09 and 7,582 (69%) were influenza A(H3N2). Of the characterized B viruses, 5,620 (86%) belonged to the B(Yamagata) lineage and 891 (14%) to the B(Victoria) lineage.

- In North America, overall influenza activity continued to increase in the region, with detections of predominantly influenza A(H3N2) viruses.
- In Europe, influenza activity increased above baseline levels in most countries in Northern and Southwestern Europe with
 sharp increases in respiratory illness indicators in some countries. Activity remained low in countries in Eastern Europe.
 Influenza B virus detections remained frequent and the subtype of the influenza A viruses detected varied depending on
 the country and the surveillance system (outpatient or inpatient systems).
- In Western Asia, increasing influenza activity was reported in Israel and Jordan with predominantly influenza B and A(H1N1)pdm09 virus detections, respectively.
- In Central Asia, low to no influenza activity was reported.
- In East Asia, influenza activity continued to increase in recent weeks. In both Northern and Southern China, ILI and
 influenza activity continued to increase, with influenza B Yamagata-lineage viruses predominantly detected followed by
 influenza A(H3N2) viruses. Increasing detections of influenza B and A(H3N2) viruses were reported in the Republic of
 Korea.
- In South East Asia, low levels of influenza activity were reported.
- In Southern Asia, increased influenza activity was reported in Iran with detection of all seasonal subtypes.
- In Northern Africa, influenza activity was predominantly due to influenza A(H1N1)pdm09 virus detections. Activity increased in Egypt and Morocco; and Tunisia reported sharp increases in activity.
- In Western Africa, influenza activity continued at lower levels compared to previous weeks. Detections of predominantly
 influenza A(H1N1)pdm09 viruses were reported from Burkina Faso, Côte d'Ivoire, Ghana and Togo. In Middle Africa,
 Cameroon reported activity with influenza A and B viruses and the Democratic Republic of Congo reported detections of
 influenza A(H1N1)pdm09 viruses. In Eastern Africa, sporadic influenza detections were reported in Madagascar,
 Mozambique, and the United Republic of Tanzania.
- In the Caribbean and Central American countries, low to no influenza activity was reported.
- In the tropical countries of South America, low to no influenza activity was reported.
- In the temperate zone of the Southern Hemisphere, influenza activity decreased overall to inter-seasonal levels.

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

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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/Update/79.ENG.pdf

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): <u>https://www.canada.ca/en/public-health/services/diseases/flu-influenza/influenza-surveillance.html</u> Washington State Flu Updates: <u>http://www.doh.wa.gov/portals/1/documents/5100/420-100-fluupdate.pdf</u> USA Weekly Surveillance Reports: <u>www.cdc.gov/flu/weekly/</u> Joint ECDC – WHO/Europe weekly influenza update (Flu News Europe): <u>flunewseurope.org</u> WHO – Weekly Epidemiological Record: <u>www.who.int/wer/en/</u> WHO Collaborating Centre for Reference and Research on Influenza (Australia): <u>www.influenzacentre.org/</u> Australian Influenza Report: <u>www.health.gov.au/internet/main/publishing.nsf/content/cda-surveil-ozflu-flucurr.htm</u> New Zealand Influenza Surveillance Reports: <u>www.surv.esr.cri.nz/virology/influenza_weekly_update.php</u>

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.who.int/csr/disease/avian_influenza/en/

Contact Us:

Tel: (604) 707-2510 Fax: (604) 707-2516 Email: <u>InfluenzaFieldEpi@bccdc.ca</u>

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 <u>ilioutbreak@bccdc.ca</u>

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 <i>could</i> 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 Inform Person Reporting: Contact Phone: Health Authority: Full Facility Name: Is this report:	 First Notification Update (complete 	unit/medical health officer Title: Email: HSDA: (complete section B below e section C below; Section complete section C below;	; Section D if available) D if available)	
В	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 fire		/yyy): <u>DD/MMM/YYYY</u>		
		Numbers to date Total	Residents/Students	Staff	
		With ILI			
		Hospitalized			
		Died			
С	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				