### British Columbia Influenza Surveillance Bulletin

Influenza Season 2017-18, Number 4, Weeks 46-47 November 12 to 25, 2017

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# Increasing Influenza Activity: Mix of Types A and B

During weeks 46-47 (November 12 to 25, 2017), influenza-like illness (ILI) activity was consistent with expected levels for this time of year.

Overall influenza detection remains at low but increasing levels with a mix of influenza A and B. Among influenza A detections, A(H3N2) viruses continue to predominate but with increased detection of A(H1N1)pdm09 viruses in recent weeks. Influenza B detections have trended upward in recent weeks and are greater than in previous years.

The proportion of respiratory specimens that tested positive for influenza at the BCCDC Public Health Laboratory increased from 8% in week 46 to 13% in week 47. Entero/rhinoviruses were the most frequently detected non-influenza respiratory virus during this period.

Since our last bulletin, one school ILI outbreak in IHA was reported in week 47.

### Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

Report Disseminated: November 30, 2017

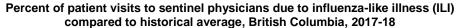


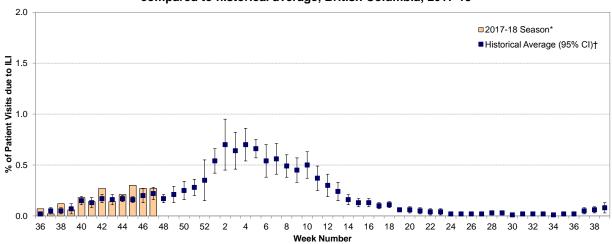


### **British Columbia**

#### **Sentinel Physicians**

The proportion of patients with influenza-like illness (ILI), among those presenting to sentinel sites, was within the 10-year historical average for this time of year in weeks 46-47 after exceeding the historical average in week 45. Rates are subject to change as reporting becomes more complete.

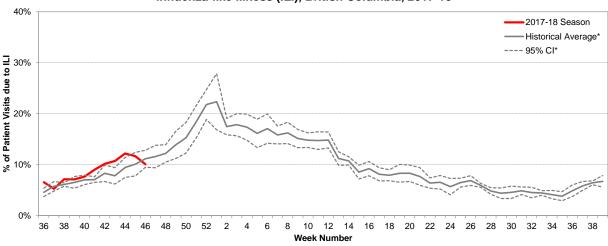




#### **BC Children's Hospital Emergency Room**

In weeks 46-47, 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



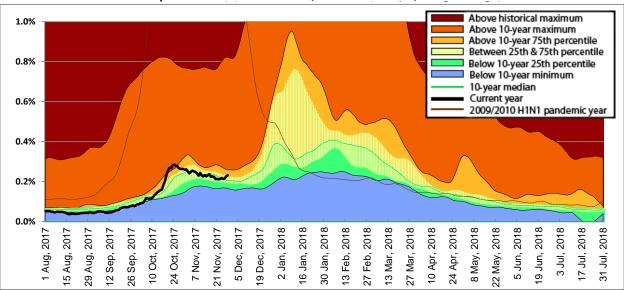
Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough." \* 5-year historical average for 2017-18 season based on 2012-13 to 2016-17 seasons; CI=confidence interval.

<sup>\*</sup> 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.

#### **Medical Services Plan**

In weeks 46-47, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, were generally within expected levels for this time of year but increased slightly, in week 47, to greater than the 75<sup>th</sup> percentile of the 10-year historical average for the province overall.

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



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

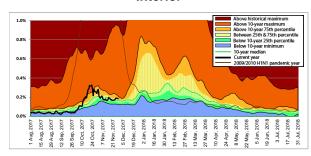
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP data beginning August 1, 2017 corresponds to sentinel ILI week 31; data are current to November 28, 2017.

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

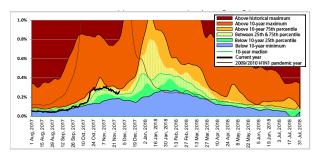
#### **BC Centre for Disease Control**

An agency of the Provincial Health Services Authority

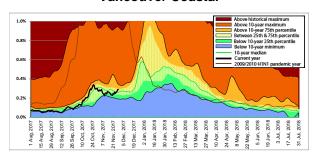
#### Interior



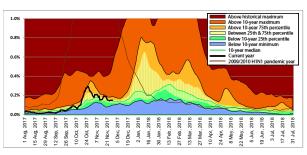
#### Fraser



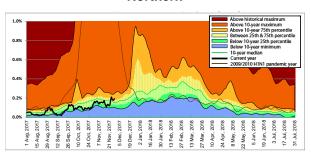
#### **Vancouver Coastal**



#### Vancouver Island



#### **Northern**

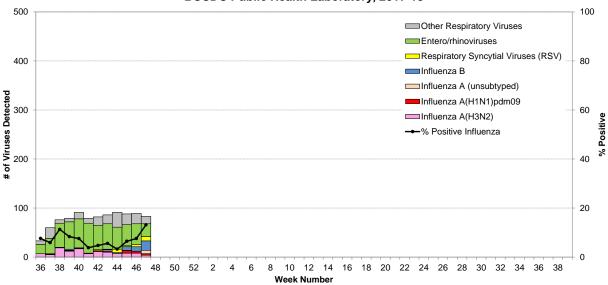


#### **Laboratory Reports**

#### **BCCDC Public Health Laboratory**

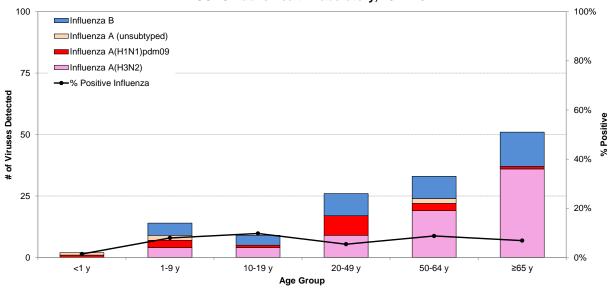
In weeks 46-47, 528 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 54 (10%) tested positive for influenza; 26 (48%) viruses were typed as influenza A [12 A(H3N2), 7 A(H1N1)pdm09 and 7 subtype pending] and 28 (52%) viruses were typed as influenza B. The proportion of respiratory specimens that tested positive for influenza at the BCCDC Public Health Laboratory increased from 8% in week 46 to 13% in week 47, driven by increasing influenza B activity. Influenza A viruses comprised the majority (57%) of all influenza detections in week 46, but influenza B viruses comprised the majority (58%) in week 47. Among influenza A detections, A(H3N2) remained the dominant subtype during this period but with increased detection of A(H1N1)pdm09 viruses in recent weeks. Influenza B detections have trended upward in recent weeks and influenza B positivity is greater than in previous years for this period. Half (50%) of A(H3N2) cases so far during the 2017-18 season have been detected among elderly adults ≥65 years old, with more than three-quarters (76%) being detected among adults ≥50 years old. Conversely, a greater proportion of influenza B detections include children <20 years old (22%) and younger adults 20-49 years old (22%), with 56% ≥50 years old. Entero/rhinoviruses were 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



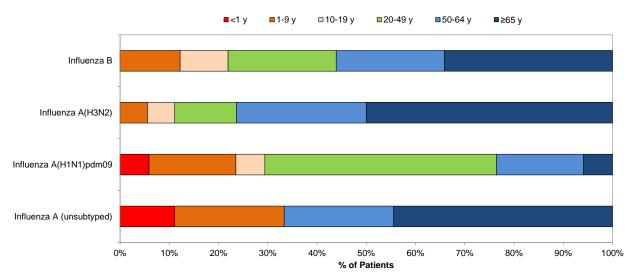
Data are current to November 28, 2017.

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



Data are current to November 28, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-47.

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

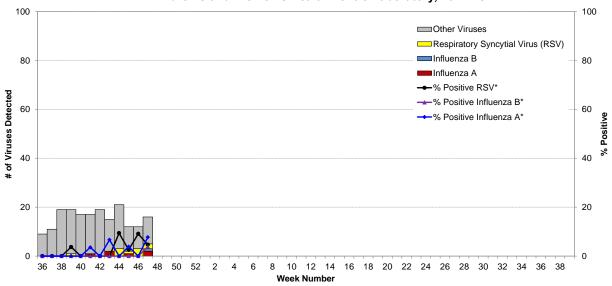


Data are current to November 28, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-47.

#### BC Children's and Women's Health Centre Laboratory

In weeks 46-47, 50 tests for respiratory viruses were conducted at the BC Children's and Women's Health Centre laboratory. Of these, 2 (4%) were positive for influenza A and 1 (2%) was positive for influenza B; all three positive tests were in week 47. Additionally, five (10%) were positive for respiratory syncytial virus (RSV); three in week 46 and two in week 47. Rhinoviruses were 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



<sup>\*</sup> 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 previous bulletin two weeks ago, one school ILI outbreak, with unknown etiology, was reported in IHA in week 47.

Cumulatively during the 2017-18 season (since week 37, starting September 10, 2017), 5 lab-confirmed influenza outbreaks have been reported, including 2 with influenza A detected [1 A(H3N2) and 1 subtype unknown], 2 with influenza B, and 1 with influenza A (H3N2) and influenza B; of these, 4 were reported in LTCFs and one was reported from an acute care facility. Similarly, three school ILI outbreaks have occurred without etiologic agent identified. Since the 2014-15 season, sporadic facility influenza outbreaks have previously been reported as early as week 37; current sporadic outbreak reports are, in that regard, not exceptional.

### Number of influenza-like illness (ILI) outbreaks reported, British Columbia 2017-18 40 ■ School ILI Outbreaks\* □ Acute Hospital Influenza Outbreaks† ■LTCF Influenza Outbreaks† 30 # of Outbreaks Reported 10 10 12 14 16 18 20 Week Number

#### **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: https://www.ammi.ca/Update/79.ENG.pdf.

<sup>\*</sup> 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 46, November 12 to 18, 2017)

At the national level, the influenza season began early this year, crossing the seasonal threshold of 5% influenza positivity in week 45. The number and percentage of laboratory tests positive for both influenza A and B continues to increase, and is higher for this time of year compared to previous seasons. At a national level, the majority of influenza detections continue to be A(H3N2) although an elevated number of influenza B detections has also been reported. The number of influenza-related hospitalizations among adults and the proportion of regions reporting localized activity are above the expected levels for this time of year. Details are available at: <a href="www.canada.ca/en/public-health/services/diseases/flu-influenza-surveillance/weekly-influenza-reports.html">www.canada.ca/en/public-health/services/diseases/flu-influenza-surveillance/weekly-influenza-reports.html</a>.

#### National Microbiology Laboratory (NML): Strain Characterization

From September 1, 2017 to November 30, 2017, the National Microbiology Laboratory (NML) received 103 influenza viruses [84 A(H3N2), 6 A(H1N1)pdm09 and 13 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 84 influenza A(H3N2) viruses, only 14 (17%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 14 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 13 out of 14 viruses that were antigenically characterized with available sequencing information, 11 belonged to genetic group 3C.2a and 2 belonged to subclade 3C.2a1; sequencing is pending for the remaining one isolate. Genetic characterization was performed to infer antigenic properties on the remaining 70 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 70 viruses genetically characterized, 51 were reported to belong to genetic group 3C.2a, which includes the A/Hong Kong/4801/2014 vaccine strain, while 19 belonged to subclade 3C.2a1.

<u>Influenza A(H1N1)pdm09:</u> All of the 6 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.

<u>Influenza B:</u> Of the 13 influenza B viruses characterized, 2 (15%) were 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 11 (85%) 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 November 30, 2017, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

<u>Amantadine:</u> Of the 25 influenza A viruses [19 A(H3N2) and 6 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 109 influenza viruses [90 A(H3N2), 6 A(H1N1)pdm09, and 13 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 109 influenza viruses [90 A(H3N2), 6 A(H1N1)pdm09, and 13 B] tested against zanamivir, all were sensitive.

#### <u>International</u>

#### **USA** (week 46, November 12 to 18, 2017)

During week 46, influenza activity increased in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 46 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories is increasing. One human infection with a novel influenza A virus (H1N1 variant) was reported. 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. A cumulative rate of 1.4 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. Five influenza-associated pediatric deaths were reported, one of which occurred during the 2016-17 season. The proportion of outpatient visits for influenza-like illness (ILI) was 2.0%, which is below the national baseline of 2.2%. The geographic spread of influenza in two states was reported as widespread; Guam and six states reported regional activity; 20 states reported local activity; the District of Columbia, the U.S. Virgin Islands and 21 states reported sporadic activity; one state reported no activity; and Puerto Rico did not report. Details are available at: www.cdc.gov/flu/weekly/.

#### WHO (November 27, 2017)

Influenza activity increased slightly in the temperate zone of the northern hemisphere while in the temperate zone of the southern hemisphere activity appeared to have decreased at inter-seasonal levels. In Central America and the Caribbean, influenza activity remained low. Worldwide, influenza A(H3N2) and B viruses accounted for the majority of influenza detections.

From October 30 to November 12, 2017, the WHO GISRS laboratories tested more than 103,642 specimens, of which 5,515 were positive for influenza viruses: 3,690 (67%) were typed as influenza A and 1,825 (33%) as influenza B. Of the subtyped influenza A viruses, 509 (21%) were influenza A(H1N1)pdm09 and 1,873 (79%) were influenza A(H3N2). Of the characterized B viruses, 781 (78%) belonged to the B(Yamagata) lineage and 221 (22%) 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 remained low, with detections of predominantly influenza A(H3N2) and B viruses.
- In Western Asia, influenza activity was low in general. In Qatar, influenza activity continued to increase, with all seasonal subtypes co-circulating.
- In Central Asia, respiratory illness indicators appeared to increase in Kazakhstan, Tajikistan and Uzbekistan.
- In East Asia, influenza activity remained low in general. In Northern China, influenza A(H3N2) detections increased slightly in recent weeks.
- In South East Asia, influenza activity continued to decrease, with influenza A(H3N2) and B viruses most frequently detected.
- In Southern Asia, influenza activity remained low in general. In India, influenza A(H1N1)pdm09 and A(H3N2) detections continued to be reported.
- In Northern Africa, sporadic influenza A virus detections were reported in Morocco and Tunisia.
- In Eastern, Middle and Western Africa, influenza detections continued to be reported, with all seasonal influenza subtypes present in the regions.
- In the Caribbean and Central American countries, respiratory illness indicators and influenza activity remained low in general but respiratory syncytial virus (RSV) activity remained high in several countries.
- In the tropical countries of South America, influenza and RSV activity remained at low levels overall.
- In the temperate zone of the Southern Hemisphere, influenza activity appeared to have decreased overall.

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

#### **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: <a href="http://www.who.int/influenza/vaccines/virus/recommendations/2018\_south/en/">http://www.who.int/influenza/vaccines/virus/recommendations/2018\_south/en/</a>.

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: <a href="https://ecdc.europa.eu/en/news-events/who-recommendations-influenza-virus-vaccine-composition-2018-southern-hemisphere">https://ecdc.europa.eu/en/news-events/who-recommendations-influenza-virus-vaccine-composition-2018-southern-hemisphere</a>

### **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

MSP: BC Medical Services Plan

NHA: Northern Health Authority

**FHA:** Fraser Health Authority **NML:** National Microbiological Laboratory **HBoV:** Human bocavirus **A(H1N1)pdm09:** Pandemic H1N1 influenza (2009)

HMPV: Human metapneumovirus RSV: Respiratory syncytial virus

HSDA: Health Service Delivery Area

IHA: Interior Health Authority

ILI: Influenza-Like Illness

VCHA: Vancouver Coastal Health Authority

VIHA: Vancouver Island Health Authority

WHO: World Health Organization

LTCF: Long-Term Care Facility

#### 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): 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: <a href="www.who.int/csr/disease/avian\_influenza/en/">www.who.int/csr/disease/avian\_influenza/en/</a> World Organization for Animal Health: <a href="www.oie.int/eng/en">www.oie.int/eng/en</a> index.htm

#### Contact Us:

Tel: (604) 707-2510 Fax: (604) 707-2516

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Communicable Disease Prevention and Control Services (CDPACS) BC Centre for Disease Control

655 West 12<sup>th</sup> 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. Reporting Information Health unit/medical health officer notified? ☐ Yes ☐ No Person Reporting: \_\_\_\_\_ Title: \_\_\_\_\_ Email: Contact Phone: Health Authority: \_\_\_\_\_ HSDA: \_\_\_\_\_ Full Facility Name: \_\_\_\_\_ First Notification (complete section **B** below; Section **D** if available) Is this report: Update (complete section **C** below; Section **D** if available) Outbreak Over (complete section **C** below; Section **D** if available) **First Notification** B 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 / YYYYY Numbers to date Residents/Students Staff Total With ILI Hospitalized Died **Update AND Outbreak Declared Over** Date of onset for most recent case of ILI (dd/mm/yyyy): DD / MMM / YYYYY If over, date outbreak declared over (dd/mm/yyyy): DD/MMM/YYYY Numbers to date Residents/Students Staff Total With ILI Hospitalized Died **Laboratory Information** ☐ Yes (location: \_\_\_\_\_) ☐ No ☐ Don't know Specimen(s) submitted?