# British Columbia Influenza Surveillance Bulletin

Influenza Season 2016-17, Number 03, Weeks 43-44 October 23 to November 5, 2016

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# Early Indicators of Influenza Increase but Still Overall Low-level A(H3N2) Circulation

During weeks 43-44 (October 23 to November 5, 2016), several influenza indicators suggest increasing influenza-like illness activity in BC but still overall lowlevel activity. So far this season, influenza A(H3N2) viruses have predominated, consistent with reports of influenza outbreaks in long-term care facilities (LTCFs).

Medical Services Plan (MSP) claims for influenza illness spiked to above 10-year historical maximums in week 44 in most regions of the province.

At the BCCDC Public Health Laboratory (PHL), influenza positivity has remained above 10% since week 39, increasing to 14% in week 44. The majority of influenza detections continue to be in elderly adults  $\geq$ 65 years old.

A total of 10 influenza outbreaks – all A(H3N2) where subtype information is available – have been reported since week 37, including 9 in LTCFs and one in an acute care facility. Reporting of LTCF outbreaks this early in the season is atypical, although outbreaks did occur as early as week 32 in 2014-15 and 2015-16 (n=7 and 9, respectively, for the comparable time periods).

Entero/rhinoviruses were the most commonly detected other respiratory virus by the BCCDC PHL during this period. Since our last bulletin, 9 new cases of enterovirus D68 were detected, bringing the total number of cases detected in BC since August 2016 to 47.

# Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

Report Disseminated: November 10, 2016



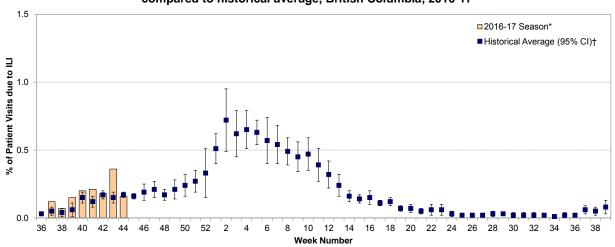




# **British Columbia**

#### **Sentinel Physicians**

The proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites was significantly higher than the 10-year historical average at 0.36% in week 43 but returned to expected seasonal levels at 0.16% in week 44. So far, 65% and 55% of sentinel sites have reported data for weeks 43 and 44, respectively.

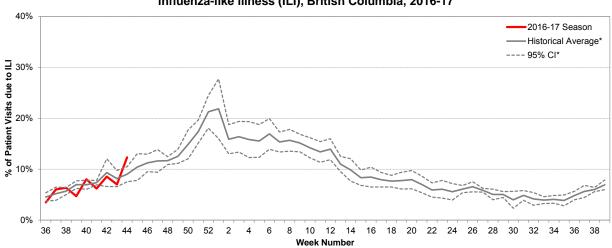


# Percent of patient visits to sentinel physicians due to influenza-like illness (ILI) compared to historical average, British Columbia, 2016-17

\* 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**

The proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI increased from 7% in week 43 to 12% in week 44, significantly higher than the 5-year historical average.



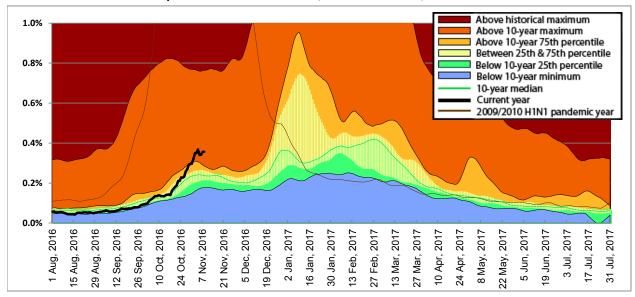
Percent of patients presenting to BC Children's Hospital ER attributed to influenza-like illness (ILI), British Columbia, 2016-17

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**

BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, continued to increase in weeks 43 and 44 and spiked to above 10-year maximum values in all regions of the province, except IHA where rates were below 10-year maximums but above 10-year 75<sup>th</sup> percentiles and NHA where rates remained at median levels.

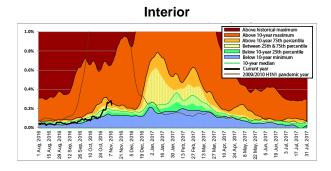


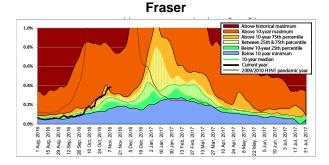
Service claims submitted to MSP for influenza illness (II)\* as a proportion of all submitted general practitioner service claims, British Columbia, 2016-17

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

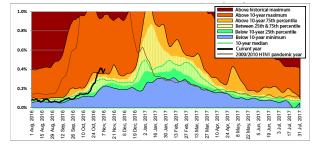
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2016 corresponds to sentinel ILI week 31; data are current to November 8, 2016.

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

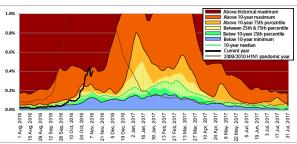




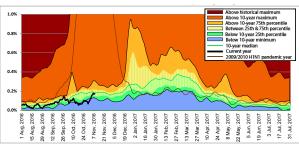
Vancouver Coastal



Vancouver Island



Northern





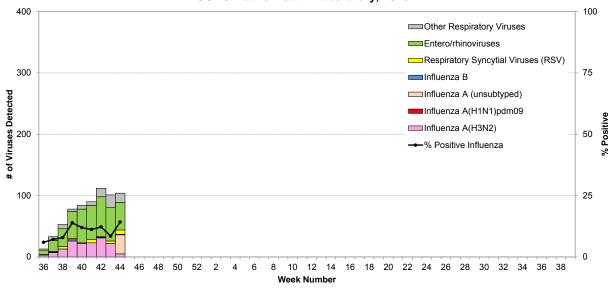
#### Laboratory Reports

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

During weeks 43 and 44, 516 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 59 (11%) tested positive for influenza, including 58 (98%) influenza A [27 A(H3N2) and 31 with subtype pending] and one (2%) influenza B. Overall influenza positivity increased from 9% in week 43 to 14% in week 44, but has remained elevated above 10% since week 39. Entero/rhinoviruses were the most commonly detected respiratory virus during this period.

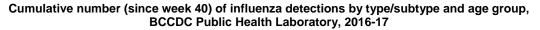
Cumulatively since week 40 (starting October 2, 2016), 136 (12%) patients tested positive for influenza at the BCCDC PHL, including 134 (99%) with influenza A [103 A(H3N2) and 31 subtype pending] and two (1%) with influenza B. No patients have tested positive for influenza A(H1N1)pdm09 so far this season.

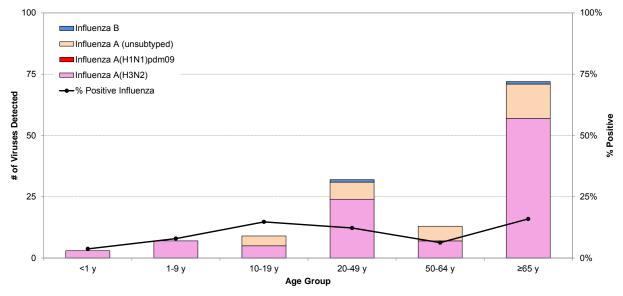
So far during the 2016-17 season, influenza A(H3N2) has been the dominant subtype among influenza detections. The majority of influenza detections have been in elderly adults  $\geq$ 65 years old, consistent with early season outbreak reports from long-term care facilities (LTCFs) and dominant circulation of A(H3N2) subtype viruses so far this season. However, a greater proportion of influenza A(H3N2) detections during the 2016-17 season are in non-elderly individuals <64 years old compared to the same period of the last early dominant A(H3N2) season in 2014-15 (45% vs. 27%, respectively).



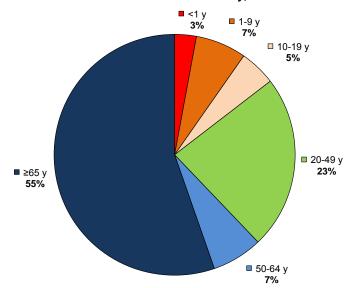
#### Influenza and other virus detections among respiratory specimens submitted to BCCDC Public Health Laboratory, 2016-17

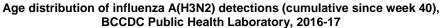
Data are current to November 9, 2016.





Data are current to November 9, 2016; figure includes cumulative influenza detections for specimens collected from weeks 40-44.





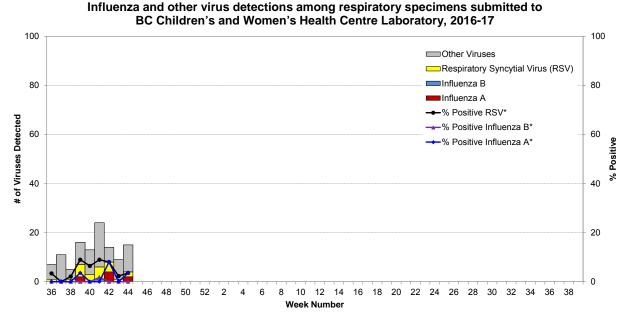
Data are current to November 9, 2016; figure includes cumulative influenza detections for specimens collected from weeks 40-44.



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

The BC Children's and Women's Health Centre Laboratory conducted 100 tests for influenza A and B in weeks 43 and 44. Of these, 2 (2%) were positive for influenza A (both in week 44) and none were positive for influenza B. Entero/rhinoviruses were the most commonly detected non-influenza respiratory viruses during this period.

By comparison, low-level influenza A activity was also detected at the BC Children's and Women's Health Centre Laboratory during the 2014-15 season; whereas, no influenza viruses were detected during the prior 2015-16 season for the same 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.

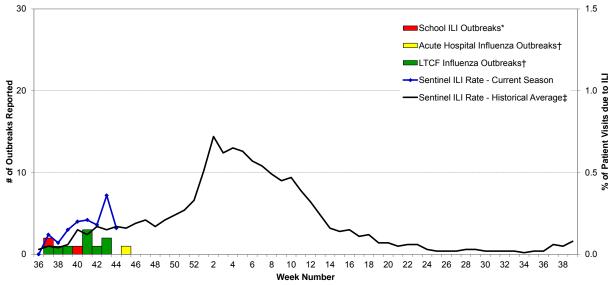


#### Influenza-like Illness (ILI) Outbreaks

Since our last bulletin, 3 new lab-confirmed influenza outbreaks were reported. Two outbreaks in longterm care facilities (LTCFs) had onset in week 43: one in IHA with A(H3N2) detected and one in VIHA with influenza A (subtype pending) detected. One additional outbreak was reported in an acute care facility in VIHA with onset in week 45 with influenza A (subtype pending) detected.

Cumulatively during the 2016-17 season (since week 37, starting September 11, 2016), a total of 10 influenza outbreaks have been reported, including 9 in LTCFs and one in an acute care setting. Of the 8 out of 10 outbreaks with available subtype information, all had influenza A(H3N2) detected. By comparison, 7 influenza outbreaks were reported for the comparable time period in 2014-15 (starting in week 39) and 9 were reported in 2015-16 (starting in week 32). Prior to these most recent seasons, LTCF outbreaks have typically not been reported this early in the season.

Two school ILI outbreaks (one in week 37 and one in week 40) have also been reported so far during the 2016-17 season but without etiologic agent identified.



Number of influenza-like illness (ILI) outbreaks reported, compared to current sentinel ILI rate and historical average sentinel ILI rate, British Columbia 2016-17

\* School-based ILI outbreak defined as >10% absenteeism on any day, most likely due to ILI.

† Facility-based influenza outbreaks defined as 2 or more ILI cases within 7-day period, with at least one laboratory-confirmed case of influenza. ‡ 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

Since our last bulletin 2 weeks ago, 9 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 47 cases.

Of the 47 laboratory-confirmed EV-D68 cases reported in BC to date since August 2016, 37 (79%) were detected in children <10 years old, and of those, a substantial proportion (19/37, 51%) have been detected in infants/toddlers <2 years old. About 70% of cases are male. Almost three-quarters of cases with known information have been hospitalized and one infant/toddler presented with acute flaccid myelitis (AFM). 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. 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 (week 44, October 30 to November 5, 2016)

Influenza activity is at inter-seasonal levels with the majority regions in Canada reporting low activity. The percentage of tests positive for influenza increased in week 44 but remained at inter-seasonal levels, with 3.9% of tests positive for influenza. A total of 147 positive influenza detections were reported in week 44. Influenza A(H3N2) continues to be the most common subtype detected to date this season, representing 73% of laboratory-confirmed detections. In week 44, 1.4% of visits to sentinel healthcare professionals were due to influenza-like symptoms, a slight increase from week 43. Nine laboratory-confirmed influenza outbreaks were reported in week 44. Ten hospitalizations were reported in week 44; all due to influenza A(H3N2). The first influenza-associated deaths of the season were reported in week 44, but cumulative counts remain low (less than five deaths). Details are available at: <u>healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/flu-grippe/surveillance/fluwatch-reports-rapports-surveillance-influenza-eng.php</u>.

## National Microbiology Laboratory (NML): Strain Characterization

From September 1 to November 9, 2016, the National Microbiology Laboratory (NML) received 67 influenza viruses [55 A(H3N2), 3 A(H1N1)pdm09 and 9 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 55 influenza A(H3N2) viruses, only 31 (56%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 31 viruses characterized by HI assay, all were considered antigenically similar to A/Hong Kong/4801/2014, the WHO-recommended A(H3N2) component for the 2016-17 northern hemisphere influenza vaccine. Of the 26 out of 31 viruses antigenically characterized with available sequencing information, 21 (81%) belonged to genetic group 3C.2a and 5 (19%) belonged to genetic group 3C.3a. Genetic characterization was performed to infer antigenic properties on the remaining 24 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 24 viruses genetically characterized, all were reported to belong to genetic group 3C.2a, which includes the A/Hong Kong/4801/2014 vaccine strain.

Influenza A(H1N1)pdm09: The 3 A(H1N1)pdm09 viruses characterized were antigenically similar to A/California/7/2009, the WHO-recommended A(H1N1) component for the 2016-17 northern hemisphere influenza vaccine.

Influenza B: Of the 9 influenza B viruses characterized, 7 (78%) 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 2 (22%) viruses were 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 November 9, 2016, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

<u>Amantadine</u>: Of the 37 influenza A viruses [35 A(H3N2) and 2 A(H1N1)pdm09] tested against amantadine, all were resistant.

<u>Oseltamivir</u>: Of the 74 influenza viruses [62 A(H3N2), 3 A(H1N1)pdm09 and 9 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 50 influenza viruses [41 A(H3N2), 2 A(H1N1)pdm09 and 7 B] tested against zanamivir, all were sensitive.



# **International**

## USA (week 43, October 23 to 29, 2016)

During week 43, influenza activity was low in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 43 was influenza A(H3N2). Of the 171 A(H3N2) viruses genetically characterized by the US CDC, 73% belonged to genetic group 3C.2a and 27% to group 3C.3a based on analysis of HA gene segments. The percentage of respiratory specimens testing positive for influenza in clinical laboratories was low. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the system-specific epidemic threshold. Two influenza-associated pediatric deaths were reported that occurred during the 2015-2016 season. The proportion of outpatient visits for influenza in Guam was reported as widespread; Puerto Rico reported regional activity; three states reported local activity; the District of Columbia, the U.S. Virgin Islands and 39 states reported sporadic activity; and eight states reported no activity. Details are available at: www.cdc.gov/flu/weekly/.

## WHO (October 31, 2016)

Influenza activity in the temperate zone of the northern hemisphere remained at inter-seasonal levels. Influenza activity in temperate southern hemisphere countries continued to decrease or remained low.

- 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 respiratory syncytial virus (RSV) activity decreased throughout the sub-region.
- In the temperate countries of Southern Africa, influenza detections continued to decrease.
- In Oceania, influenza virus activity continued to decrease in the last few weeks. Influenza A(H3N2)
  remained the dominant circulating influenza virus. In Australia, activity decreased from the peak in
  September.
- In the Caribbean countries, influenza and other respiratory virus activity remained low except in Cuba where influenza B virus detections continued and in French Guiana where ILI activity and influenza detections of influenza A(H3N2) viruses increased slightly. In Central America, influenza virus activity in most countries remained low, except in Costa Rica where there was a slight increase in influenza detections. RSV continued to circulate in several countries as the predominant respiratory virus.
- In tropical South America, respiratory virus activities remained low.
- In tropical countries of South Asia, influenza activity was low.
- In South East Asia, a decreasing trend in influenza detection was observed, although detections continued to increase in Lao People's Democratic Republic (PDR) and Thailand
- In tropical Africa, Burkina Faso and La Réunion Island (France) reported slightly increased influenza A(H3N2) virus activity.
- In Northern temperate Asia, influenza activity remained low with predominantly influenza A(H3N2) detections in northern China.
- From October 3 to 16, 2016, the WHO GISRS laboratories tested more than 70,925 specimens, of which, 2979 were positive for influenza viruses: 2,540 (85%) were typed as influenza A and 439 (15%) as influenza B. Of the sub-typed influenza A viruses, 135 (7%) were influenza A(H1N1)pdm09 and 1,911 (93%) were influenza A(H3N2). Of the characterized B viruses, 21 (26%) belonged to the B/Yamagata lineage and 60 (74%) 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/.

BC INFLUENZA SURVEILLANCE 2016-17, BULLETIN #3



## **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): <u>healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/flu-grippe/surveillance/index-eng.php</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: <u>www.who.int/csr/disease/avian\_influenza/en/</u> World Organization for Animal Health: <u>www.oie.int/eng/en\_index.htm</u>

## **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 12<sup>th</sup> 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.

<b>ILI</b> : 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>B</b> below e section <b>C</b> below; Section complete section <b>C</b> below;	; Section <b>D</b> if available) <b>D</b> 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	-	<b>/yyy):</b> <u>DD / MMM / YYYY</u>		
		Numbers to date	Residents/Students	Staff	
		Total 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				
		Total	Residents/Students	Stall	
		With ILI			
		Hospitalized			
		Died			
D	Laboratory Infor Specimen(s) subm If yes, organisr		ation:) [ (specify:) [	] No 🔄 Don't know ] No 🔄 Don't know	