British Columbia Influenza Surveillance Bulletin

Influenza Season 2014-15, Number 11, Weeks 51-52 December 14 to 27, 2014

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Sharp Increase in Influenza A(H3N2) Activity

In weeks 51-52 (December 14 to 27, 2014), there has been sharp increase in influenza activity in BC.

The proportion of patients testing positive for influenza at the BC provincial laboratory increased to 31% in week 51 and 45% in week 52. Influenza A(H3N2) remains the predominant subtype, with virtually all viruses assessed showing mismatch (called "antigenic drift") from the vaccine strain. Cocirculation of respiratory syncytial virus (RSV) was also detected.

In the past two weeks alone, 28 new influenza outbreaks were reported, including 25 in long-term care facilities (LTCFs) and 3 in acute care. Since week 39, 47 facility outbreaks (43 in LTCFs and 4 in acute care) have been reported. This cumulative tally is about double the number reported for the same period in 2012-13 (n=24), also a season of mismatched A(H3N2) activity, and more than threefold compared to the entire 2013-14 season (n=13), which was dominated by A(H1N1)pdm09 activity. All but two of the facility outbreaks to date this season have been due to influenza A, and of the influenza A outbreaks with subtype information available, all have been A(H3N2).

Please note that surveillance data are subject to change as reporting becomes more complete following the holiday period.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

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Report Disseminated: January 2, 2015



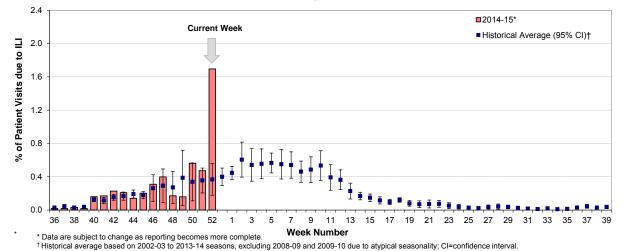


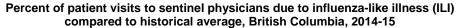


British Columbia

Sentinel Physicians

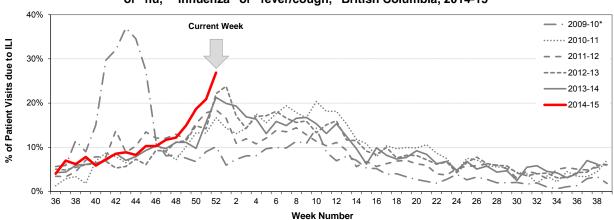
The proportion of patients with influenza-like illness (ILI) among those presenting to sentinel physicians increased sharply from around 0.5% in weeks 50-51 to 1.7% in week 52. However, rates are subject to change as reporting becomes more complete following the holiday period. So far, only 47% and 22% of sentinel sites have reported data in weeks 51 and 52, respectively.





BC Children's Hospital Emergency Room

The proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI continued a sharply increasing trend from ≤15% in weeks 40-49 to 21% in week 51 and 27% in week 52 and has remained slightly above rates observed in previous seasons for this time of year since week 49.



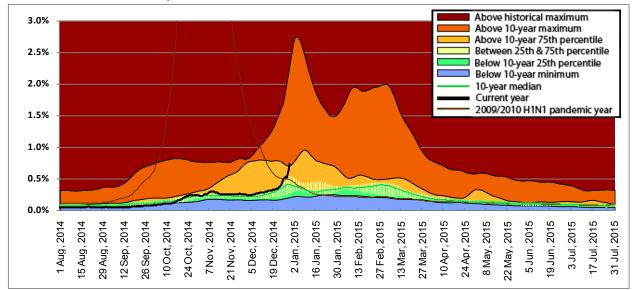
Percent of patients presenting to BC Children's Hospital ER with triage chief complaint of "flu," "influenza" or "fever/cough," British Columbia, 2014-15

Source: BCCH Admitting, discharge, transfer database, ADT * Data from 2010-11 to 2014-15 are based on new variable (Triage Chief Complaint) for capturing ILI symptoms and are not directly comparable to data for 2009-10. In week 9 of the 2011-12 season, the BCCH ER implemented a new data collection system, the National Ambulatory Care Reporting System (NACRS); data are not directly comparable to data collected using old system.



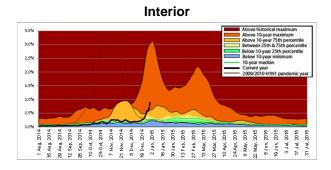
Medical Services Plan

In weeks 51-52, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, increased sharply at the provincial level and in all regional Health Authorities. Rates were above 10-year maximums for the province overall and in IHA; above 10-year 75th percentiles in FHA, VCHA, and VIHA; and below 10-year 25th percentiles in NHA. Ongoing monitoring in the coming weeks is warranted to assess trends following the holiday period.

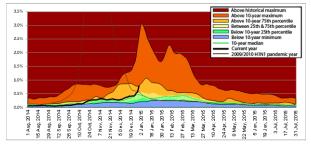


Service claims submitted to MSP for influenza illness (II)* as a proportion of all submitted general practitioner service claims, British Columbia, 2014-15

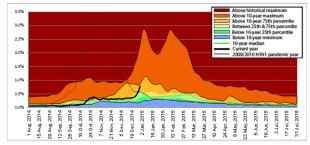
* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza). Data provided by Population Health Surveillance and Epidemiology, BC Ministry of Health Services. Note: MSP week beginning 3 August 2014 corresponds to sentinel ILI week 32; data current to December 30, 2014.

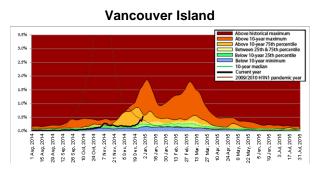




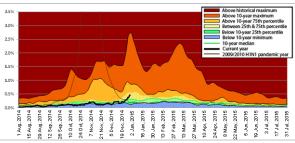


Vancouver Coastal











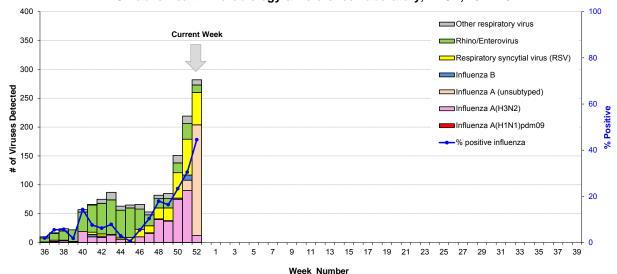
Laboratory Reports

BC Public Health Microbiology & Reference Laboratory (PHMRL)

In weeks 51-52, the BC Public Health Microbiology & Reference Laboratory (PHMRL) tested 840 patients for respiratory viruses. Of these, 321 (38%) had laboratory-confirmed influenza, including 312 (97%) influenza A [102 A(H3N2) and 210 with subtype pending] and 9 (3%) influenza B. The influenza percent positivity continued a sharp increase from <20% in weeks 40-49 to 31% in week 51 and 45% in week 52. Respiratory syncytial virus (RSV) activity also continued to increase during this period and was the most commonly detected respiratory virus after influenza.

Cumulatively, during the 2014-15 influenza season (since week 40, starting September 28, 2014), 565 (20%) patients have tested positive for influenza at the BC PHMRL, including 545 (96%) with influenza A and 20 (4%) with influenza B. So far this season since week 40, A(H3N2) has been the dominant subtype in BC, with lesser co-circulation of influenza B and no detection of A(H1N1)pdm09.

The majority of influenza detections continue to be in elderly adults (≥65 years of age), driven in part by reports of influenza outbreaks in long-term care facilities (LTCFs).



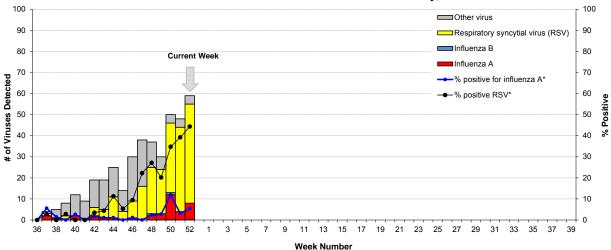
Influenza and other virus detections among respiratory specimens submitted to BC Public Health Microbiology & Reference Laboratory, PHSA, 2014-15

Note: Data current to January 1, 2015.



BC Children's and Women's Health Centre Laboratory

In weeks 51-52, the BC Children's and Women's Health Centre Laboratory conducted 275 tests for influenza A and 208 tests for influenza B. Of these, 12 (4%) were positive for influenza A, including 4 (3%) in week 51 and 8 (5%) in week 52; none were positive for influenza B. The proportion of tests positive for RSV continued to increase during this period, with 39% of tests positive in week 51 and 44% in week 52.



Influenza and other virus detections among respiratory specimens submitted to BC Children's and Women's Health Centre Laboratory, 2014-15

* Positive rates were caculated 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.



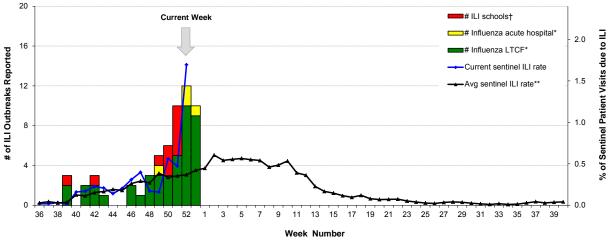
Influenza-like Illness (ILI) Outbreaks

Since our last bulletin, 28 new laboratory-confirmed influenza outbreaks were reported, including 25 from LTCFs and 3 from acute care facilities. Of the 25 LTCF outbreaks, 24 were due to influenza A, all with subtype pending, and one was due to influenza B. Of the newly reported LTCF outbreaks, one had symptom onset in week 50 in FHA, 5 in week 51 (2 FHA and 3 IHA), 10 in week 52 (1 FHA, 4 VCHA, and 5 VIHA), and 9 in week 53 (2 FHA, 2 VCHA and 5 VIHA). Of the 3 acute care facilities, all were due to influenza A with subtype pending; 2 had symptom onset in week 52 (1 VCHA and 1 VIHA) and one in week 53 in VIHA. As previously reported, one school outbreak due to laboratory-confirmed influenza A was reported in NHA with symptom onset in week 51.

Cumulatively, since week 39 (starting September 21, 2014), 47 facility outbreaks due to laboratoryconfirmed influenza have been reported, including 43 from LTCFs and 4 from acute care. All but two of these outbreaks were due to influenza A and, of those with subtype information available, all were A(H3N2).

To date during the 2014-15 season, about double the number of facility outbreaks of influenza have been reported compared to the same year-to-date period for the 2012-13 season (n=24), which was also characterized by A(H3N2) vaccine mismatch and ultimately associated with the highest number of LTCF outbreaks recorded in BC (n=91) compared to any prior season. The current 2014-15 season also exceeds by more than three-fold the total number of facility outbreaks reported during the entire 2013-14 season last year (n=13) during which A(H1N1)pdm09 viruses instead predominated, and younger adults were mainly affected.

In the context of documented vaccine mismatch to circulating A(H3N2) viruses, all of which retain sensitivity to the neuraminidase inhibitor drugs, the Association of Medical Microbiology and Infectious Disease (AMMI) Canada has posted updated recommendations for antiviral use, notably in relation to LTCF outbreak control, available here: <u>http://www.ammi.ca/guidelines</u>.



Number of influenza-like illness (ILI) outbreaks reported, compared to current sentinel ILI rate and historical average sentinel ILI rate, British Columbia, 2014-15

* Facility-based influenza outbreaks defined as 2 or more ILI cases within 7-day period, with at least one laboratory-confirmed case of influenza. † School-based ILI outbreak defined as >10% absenteeism on any day, most likely due to ILI. * Historical values exclude 2008-09 and 2009-10 seasons due to atypical seasonality.



National

FluWatch (week 51)

In week 51, laboratory detections of influenza increased sharply for the fifth consecutive week. The majority of laboratory detections continued to be reported in AB. ON and QC; but with increasing activity in SK and NL. Eight regions in BC, AB, ON, and QC reported widespread activity. In week 51, 2,833 (29%) influenza viruses were detected, including 2,740 (98%) influenza A [975 A(H3N2) and 1,765 unsubtyped] and 55 (2%) influenza B. Influenza A(H3N2) continues to be the most common subtype of influenza affecting Canadians. In both laboratory detections and hospitalizations, the majority of cases have been among seniors ≥65 years of age. Similar to the previous week, there were a large number of newly-reported laboratory-confirmed outbreaks of influenza: 125 influenza outbreaks in 7 provinces, of which 94 were in long-term care facilities (LTCF). Among the outbreaks in which the influenza subtype was known, all were associated with A(H3N2). The rate of antiviral prescriptions more than doubled from the previous week, increasing especially among seniors. To date, the National Microbiology Laboratory (NML) has found that the majority of A(H3N2) influenza specimens are not optimally matched to the vaccine strain, which may result in reduced vaccine effectiveness against the A(H3N2) influenza virus. However, the vaccine can still provide some protection against A(H3N2) influenza illness and can offer protection against other influenza strains such as A(H1N1)pdm09 and influenza B. Details are available at: www.phac-aspc.gc.ca/fluwatch/14-15/index-eng.php.

National Microbiology Laboratory (NML): Strain Characterization

From September 1 to December 24, 2014, the NML has antigenically characterized 59 influenza viruses [37 A(H3N2), 2 A(H1N1)pdm09, and 20 influenza B] and genetically characterized 112 influenza A(H3N2) viruses that were received from Canadian laboratories.

Influenza A(H3N2)

Of the 149 A(H3N2) viruses characterized so far this season by the NML,147 (99%) showed antigenic or genetic evidence of antigenic drift (i.e. vaccine mismatch).

Of the 37 A(H3N2) viruses antigenically characterized by hemagglutinin inhibition (HI) assay: 31 (84%) were similar to A/Switzerland/9715293/2013, the WHO-recommended A(H3N2) component for the 2015 Southern Hemisphere influenza vaccine; one (3%) was similar to A/Texas/50/2012, the WHO-recommended A(H3N2) component for the 2014-15 Northern Hemisphere influenza vaccine used this season; and 5 (14%) showed reduced titres to A/Texas/50/2012 but could not be further characterized in relation to A/Switzerland/9715293/2013 due to insufficient titres.

Genetic characterization was performed on 112 A(H3N2) viruses that did not grow to sufficient titres for antigenic characterization by HI assay. Of the 112 A(H3N2) viruses genetically characterized: 111 (99%) belonged to a genetic group that typically shows reduced titres to A/Texas/50/2012 due to amino acid mutations at antigenic sites. The remaining one (1%) virus belonged to a genetic group that does not show reduced titres to A/Texas/50/2012.

Influenza A(H1N1)pdm09

Of the 2 A(H1N1)pdm09 viruses characterized, both were antigenically similar to A/California/7/2009, the WHO-recommended A(H1N1)pdm09 component for the 2014-15 Northern Hemisphere influenza vaccine.

Influenza B

Of the 20 influenza B viruses characterized, 17 (85%) viruses were antigenically similar to B/Massachusetts/2/2012 (Yamagata-lineage), the WHO-recommended influenza B vaccine component for the 2014-15 Northern Hemisphere influenza vaccine and 3 (15%) viruses showed reduced titres with antiserum produced against B/Massachusetts/2/2012, signalling antigenic drift from vaccine strain.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1 to December 24, 2014, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing. Of the 155 influenza A viruses [153 A(H3N2) and 2 A(H1N1)pdm09] tested against amantadine, 152 A(H3N2) viruses and both A(H1N1)pdm09 viruses were resistant; one A(H3N2) virus was sensitive to amantadine. Of the 123 influenza viruses [103 A(H3N2), 2 A(H1N1)pdm09, and 18 influenza B] tested against oseltamivir, all were sensitive. Of the 123 influenza viruses [103 A(H3N2), 2 A(H1N1)pdm09, and 18 influenza B] tested against zanamivir, all were sensitive.

International

USA (week 51)

During week 51, influenza activity continued to increase in the United States. Of the 21,858 specimens tested, 6,152 (28%) were positive for influenza, including 5,987 (97%) influenza A [2,022 A(H3N2), 1 A(H1N1)pdm09, and 3,964 with subtyping not performed] and 165 (3%) influenza B. Of the 239 A(H3N2) influenza viruses collected since October 1, 2014, and characterized by HI assay, 78 (33%) were characterized as A/Texas/50/2012-like, the A(H3N2) component of the 2014-15 Northern Hemisphere influenza vaccine, and 161 (67%) showed either reduced titres with antiserum produced against A/Texas/50/2012 or belonged to a genetic group that typically shows reduced titres to A/Texas/50/2012. Among viruses that showed reduced titres with antiserum raised against A/Texas/50/2012, most were antigenically similar to A/Switzerland/9715293/2013, the A(H3N2) virus selected for the 2015 Southern Hemisphere influenza vaccine. The proportion of outpatient visits for ILI was 5.5%, above the national baseline of 2.0%, and the proportion of deaths attributed to pneumonia and influenza was at the epidemic threshold. Four influenza-associated paediatric deaths were reported. Details are available at: www.cdc.gov/flu/weekly/.

WHO (December 23, 2014)

Globally, influenza activity continued to increase in the Northern Hemisphere, with influenza A(H3N2) viruses predominating so far. The antigenic characterization of most recent A(H3N2) viruses indicated differences from the A(H3N2) virus used in the Northern Hemisphere influenza vaccines for the 2014-15 season. In North America, the levels of influenza activity continued to increase and had passed the seasonal thresholds. Influenza A(H3N2) virus predominated. In Europe, overall influenza activity mainly associated with A(H3N2) virus continued to increase, but remained at low levels. In eastern Asia, influenza activity continued to increase with influenza A(H3N2) virus predominating. In northern Africa, influenza activity increased with influenza B virus predominating, except for Egypt where influenza activity was low. In eastern and western Africa, influenza activity was low or decreasing, except for the United Republic of Tanzania where increased detections of influenza A(H3N2) were reported. In tropical countries of the Americas, influenza activity was low with the exception of Costa Rica and Cuba where an increase of influenza detections was reported. In tropical Asia, influenza activity was low. In the Southern Hemisphere, influenza activity was at inter-seasonal levels. During weeks 49 to 50 (November 30 to December 13, 2014), WHO Global Influenza Surveillance and Response System (GISRS) laboratories tested more than 70,341 specimens. Of these, 12,567 were positive for influenza viruses: 11,826 (94%) were typed as influenza A and 741 (6%) as influenza B. Of the sub-typed influenza A viruses, 109 (2%) were influenza A(H1N1)pdm09 and 6,025 (98%) were influenza A(H3N2). Of the characterized B viruses, 134 (99%) belonged to the B-Yamagata lineage and 1 (1%) to the B-Victoria lineage. Details are available at: www.who.int/influenza/surveillance monitoring/updates/en/.



Emerging Respiratory Pathogens

Enterovirus D68 (EV-D68), British Columbia

Since September, the BCCDC has been collecting enhanced surveillance information on laboratoryconfirmed cases of enterovirus D68 (EV-D68) in collaboration with the Public Health Agency of Canada. Severe cases of EV-D68 infection requiring hospitalization continue to decline, as expected for this time of year and concurrent with increased circulation of other seasonal respiratory viruses, such as influenza and RSV. Since our last bulletin, the BC provincial laboratory identified four new cases of EV-D68. Cumulatively since mid-August (2014), 220 EV-D68 cases have been detected in BC, of which at least 140 required hospitalization. Hospitalization status was unknown for a further 22 cases.

Last week, the BCCDC was notified of a third fatal case associated with EV-D68 in a young child <5 years old who died earlier this fall. In total since mid-August, five cases of neurologic illness (three paediatric, two adult) and three deaths (one child, one adult, and one elderly) associated with EV-D68 have been reported in BC. However, it remains unclear to what extent EV-D68 infection caused or contributed to these severe manifestations. As with other respiratory viruses, including enteroviruses, a proportion of all EV-D68 cases may experience more severe sequelae, although the risk for most individuals remains low.

For more information on EV-D68: www.bccdc.ca/dis-cond/a-z/ e/EnterovirusD68/default.htm.

Avian Influenza A(H5N2), Poultry Farms, British Columbia

In early December, the Canadian Food Inspection Agency (CFIA) reported an outbreak of highly pathogenic avian influenza (HPAI) A(H5N2) in two farms in the Fraser Valley of BC. As of December 29, a total of 12 farms have been affected. To date, there have been no reports of H5N2-related illness in humans associated with the current outbreak. During an outbreak of avian influenza in poultry, the risk to the general public is low. Human infections with avian influenza viruses are rare and generally occur in people who have had close, unprotected contact with infected poultry. Avian influenza viruses do not pose a risk to food safety in BC. However, as a general reminder, poultry and poultry products should always be handled and cooked properly to prevent foodborne illness. HPAI refers to the viral pathogenicity in poultry and does not reflect the virus's ability to cause clinical disease in humans.

WHO Recommendations for Influenza Vaccines

WHO Recommendations for 2014-15 Northern Hemisphere Influenza Vaccine

On February 20, 2014, the WHO announced the recommended strain components for the 2014-15 Northern Hemisphere trivalent influenza vaccine (TIV):

- an A/California/7/2009(H1N1)pdm09-like virus;
- an A/Texas/50/2012(H3N2)-like virus;
- a B/Massachusetts/2/2012-like (Yamagata-lineage) virus.

*These recommended strains are the same as those used for the 2013-14 Northern Hemisphere vaccine.

For further details: www.who.int/influenza/vaccines/virus/recommendations/2014 15 north/en/.

WHO Recommendations for 2015 Southern Hemisphere Influenza Vaccine

On September 25, 2014, the WHO announced the recommended strain components for the 2015 Southern Hemisphere trivalent influenza vaccine (TIV):

- an A/California/7/2009(H1N1)pdm09-like virus;^{*}
- an A/Switzerland/9715293/2013(H3N2)-like virus;[†]
- a B/Phuket/3073/2013-like (Yamagata-lineage) virus.[‡]

Recommended strain has been retained as the A(H1N1) component since the 2009 pandemic and has been included in the Southern Hemisphere vaccine since 2010 and in the Northern Hemisphere vaccine since 2010-11.

[†]A/South Australia/55/2014, A/Norway/466/2014 and A/Stockholm/6/2014 are A/Switzerland/9715293/2013-like viruses. Recommended strain is considered antigenically distinct from theA/Texas/50/2012-like virus recommended for the 2014-15 Northern Hemisphere vaccine and clusters within the emerging phylogenetic clade 3C.3a.

‡ Recommended strain is the same influenza B-Yamagata lineage as the B/Massachusetts/2/2012-like virus recommended for the 2014-15 Northern Hemisphere vaccine but represents a phylogenetic clade-level change from clade 2 to clade 3.

For further details: www.who.int/influenza/vaccines/virus/recommendations/2015 south/en/.

Additional Information

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/guidelines

Web Sites:

BCCDC Emerging Respiratory Pathogen Updates: www.bccdc.ca/dis-cond/DiseaseStatsReports/EmergingRespiratoryVirusUpdates.htm

Influenza Web Sites

Canada – Flu Watch: <u>www.phac-aspc.gc.ca/fluwatch/</u> Washington State Flu Updates: <u>www.doh.wa.gov/Portals/1/Documents/5100/fluupdate.pdf</u> USA Weekly Surveillance Reports: <u>www.cdc.gov/flu/weekly/</u> European Influenza Surveillance Scheme: <u>ecdc.europa.eu/EN/HEALTHTOPICS/SEASONAL_INFLUENZA/EPIDEMIOLOGICAL_DATA/Pages/Weekly Influenza Surveillance_Overview.aspx</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.oie.int/csr/disease/avian_influenza/en/

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/dis-cond/DiseaseStatsReports/influSurveillanceReports.htm

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.

arthralgia	myalgia, or prostration	n which <i>could</i> be due to	gh and with one or more of th influenza virus. In children ur 5 and older, fever may not be	nder 5, gastrointestinal	
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	Ith unit/medical health offic Title: Email: HSDA: Complete section B below; 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:)				
	Date of onset of first case of ILI (dd/mm/yyyy): DD/MMM/YYYY				
		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 Infor Specimen(s) subm If yes, organisr	itted?	,,]No □ Don't know]No □ Don't know	