British Columbia Influenza Surveillance Bulletin

Influenza Season 2015-16, Number 19, Weeks 15-16 April 10 to 23, 2016

Table of Contents:

British Columbia:

Sentinel Physicians
Children's Hospital ER
Medical Services Plan
Laboratory Surveillance
ILI Outbreaks
Page 2
Page 2
Page 3
Page 5
Page 8

Canada:

FluWatch Activity levels

NML Strain Characterization

NML Antiviral Resistance

Page 9

Page 9

International:

USA (CDC) Surveillance Page 10
WHO Page 10

Influenza Vaccine Components (WHO Recommendations)

2016-17 Northern Hemisphere Page 11
2015-16 Northern Hemisphere Page 11

Additional Information:

Explanatory note Page 12
List of Acronyms Page 12
Web Sites Page 12
Outbreak Report Form Page 12

Declining Influenza Activity in BC

In weeks 15-16 (April 10 to 23, 2016), influenza activity continued to decline in BC, with most surveillance indicators returning to expected seasonal levels for this time of year.

For the first time since week 50, influenza positivity at the BCCDC Public Health Laboratory fell to below 15% in weeks 15-16. Influenza viruses continued to be detected, predominantly A(H1N1)pdm09 and influenza B, with co-circulation of entero/rhinoviruses during this period.

Since our last bulletin two weeks ago, one new influenza B outbreak was reported in a long-term care facility in FHA with onset in week 15. Of note, despite prominent A(H1N1)pdm09 contribution to influenza detections overall this season in BC, A(H1N1)pdm09 has been a lesser contributor to facility influenza outbreaks: of the 36 facility influenza outbreaks reported cumulatively since week 32, only 6 (17%) were diagnosed as A(H1N1)pdm09. Most were due to A(H3N2) despite its low-level circulation overall.

Medical Services Plan (MSP) claims for influenza illness returned to expected median levels in weeks 15-16, following a gradual decline in recent weeks. Overall, MSP rates for this season were lower than historical peak levels observed in previous seasons and suggest a later than typical seasonality.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

Report Disseminated: April 29, 2016



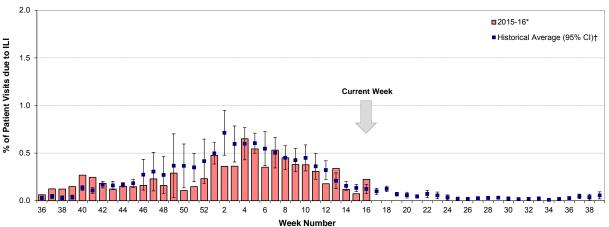


British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites was significantly below the 10-year historical average for this time of year at 0.07% in week 15, but rose to significantly above the historical average at 0.22% in week 16. So far, 71% and 65% of sentinel sites have reported for weeks 15 and 16, respectively.

Percent of patient visits to sentinel physicians due to influenza-like illness (ILI) compared to historical average, British Columbia, 2015-16



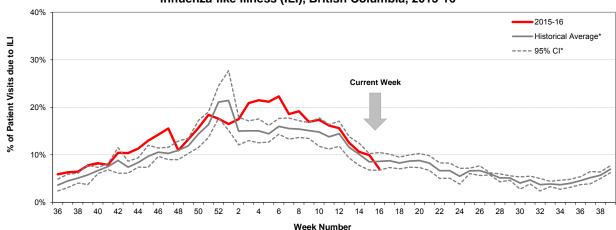
^{*} Data are subject to change as reporting becomes more complete. One hospital ER site that reported ILI rates of ≥4% during weeks 7-9 was excluded from graph.

†10-year historical average for 2015-16 season based on 2003-04 to 2014-15 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 continued a downward trend, dropping from 10% in week 15 to 7% in week 16, and was consistent with the 5-year historical average for this time of year.

Percent of patients presenting to BC Children's Hospital ER attributed to influenza-like illness (ILI), British Columbia, 2015-16



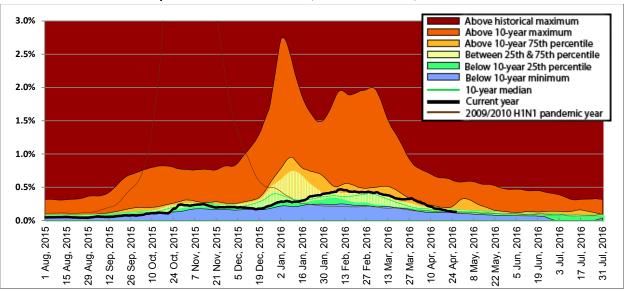
Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chieft complaint of "flu" or "influenza" or "fever/cough."

^{* 5-}year historical average for 2015-16 season based on 2010-11 to 2014-15 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, returned to expected median levels for this time of year, following a gradual decline in recent weeks. In week 16, rates were at median levels for the province overall and in IHA, FHA, and VCHA; rates were above 10-year 75th percentiles in VIHA and below 10-year minimums in NHA. Overall, rates for this season continue to be lower than historical peak levels observed in previous seasons and suggest a later than typical seasonality.

Service claims submitted to MSP for influenza illness (II)* as a proportion of all submitted general practitioner service claims, British Columbia, 2015-16



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

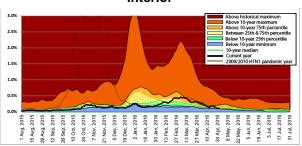
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2015 corresponds to sentinel ILI week 30; data are current to April 26, 2016.

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

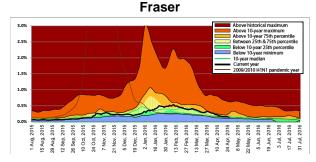
BC Centre for Disease Control

An agency of the Provincial Health Services Authority

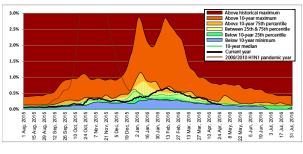
Interior



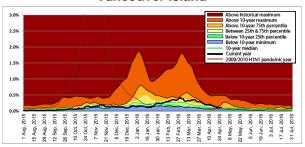
_



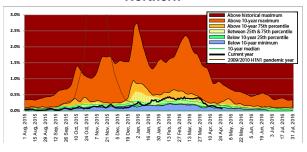
Vancouver Coastal



Vancouver Island



Northern



Laboratory Reports

BCCDC Public Health Laboratory

In weeks 15-16, 428 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 56 (13%) tested positive for influenza, including 31 (55%) with influenza A [19 A(H1N1)pdm09, 4 A(H3N2), and 8 subtype pending and 25 (45%) with influenza B. Influenza positivity declined sharply from 28% in week 14 to 15% in week 15 and 11% in week 16. Influenza A. predominantly A(H1N1)pdm09, and influenza B co-circulated during this period, along with entero/rhinoviruses.

Cumulatively since week 40 (starting October 4, 2015), 2,222 (27%) patients have tested positive for influenza at the BCCDC PHL, including 1,253 (56%) with influenza A [943 A(H1N1)pdm09, 293 A(H3N2), and 17 subtype pending, 964 (43%) with influenza B, and five adult patients with influenza A and B coinfections. The 2015-16 season to date has been characterized by mixed circulation of influenza A and B viruses, with A(H1N1)pdm09 subtype viruses predominating over A(H3N2) subtype viruses since week 2 and B/Victoria lineage viruses predominating over B/Yamagata lineage viruses throughout.

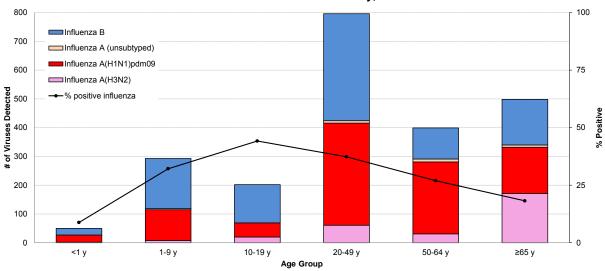
So far this season (cumulatively since week 40), just over one-half (53%) of influenza detections have been in non-elderly, working-aged adults 20-64 years, with a smaller proportion of detections in children <20 years (25%) and elderly adults ≥65 years (22%). However, this age distribution differs by influenza type/subtype: adults 20-64 years, and to a lesser extent children <20 years, comprise a larger proportion of A(H1N1)pdm09 and influenza B cases, while elderly adults ≥65 years comprise a larger proportion of A(H3N2) cases.

BCCDC Public Health Laboratory, 2015-16 400 100 Other respiratory virus Rhino/Enterovirus Respiratory syncytial virus (RSV) 300 75 Influenza B # of Viruses Detected Influenza A (unsubtyped) **Current Week** ■Influenza A(H1N1)pdm09 Positive ■Influenza A(H3N2) % positive influenza 100 25 48 52 12 14 16 50 2 6 8 10 Week Number

Influenza and other virus detections among respiratory specimens submitted to

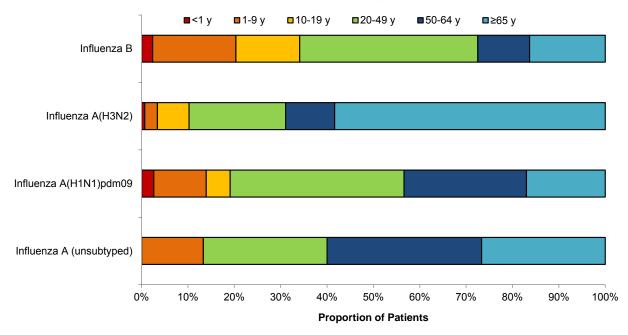
Data are current to April 27, 2016.

Cumulative number (since week 40) of influenza detections by type/subtype and age group, BCCDC Public Health Laboratory, 2015-16



Data are current to April 27, 2016; figure includes cumulative influenza detections for specimens collected from weeks 40-16.

Age distribution of influenza detections (cumulative since week 40) by type/subtype, BCCDC Public Health Laboratory, 2015-16

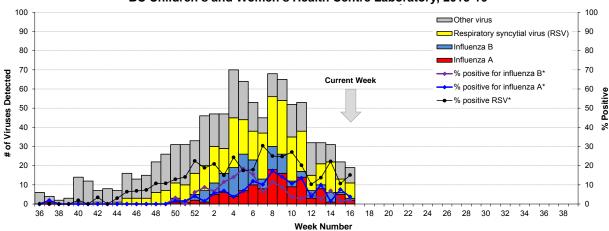


Data are current to April 27, 2016; figure includes cumulative influenza detections for specimens collected from weeks 40-16.

BC Children's and Women's Health Centre Laboratory

In weeks 15-16, the BC Children's and Women's Health Centre Laboratory conducted 119 tests for influenza; 7 (6%) were positive for influenza A, and 2 (2%) were positive for influenza B. Respiratory syncytial viruses (RSV) were also commonly detected during this period.

Influenza and other virus detections among respiratory specimens submitted to BC Children's and Women's Health Centre Laboratory, 2015-16



^{*} 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

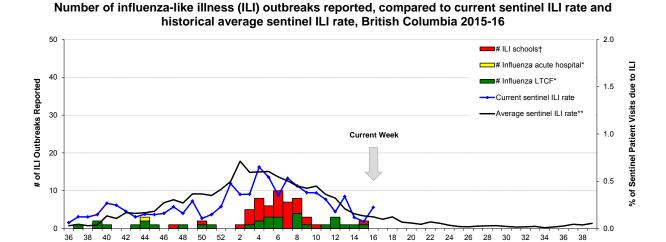
Since our last bulletin two weeks ago, one new lab-confirmed influenza B outbreak was reported in a long-term care facility (LTCF) in FHA, with onset in week 15.

In total since mid-August (since week 32, starting August 9, 2015), 36 influenza outbreaks have been reported from facilities, including 33 from LTCFs, 1 from an acute care facility, and 2 from rehabilitation facilities:

- 17 with influenza A(H3N2) detected;
- 4 with influenza A(H1N1)pdm09 detected:
- 1 with influenza A (subtype could not be determined due to insufficient sample) detected;
- 2 with both influenza A(H3N2) and A(H1N1)pdm09 detected;
- 2 with both influenza A(H3N2) and B detected; and
- 10 with influenza B detected.

Of note, despite prominent A(H1N1)pdm09 contribution to influenza detections overall this season in BC (among laboratory detections by the BCCDC PHL with known type/subtype: 43% A(H1N1)pdm09, 13% A(H3N2) and 44% influenza B), A(H1N1)pdm09 has been a lesser contributor to facility influenza outbreaks (among those with known type/subtype: 17% A(H1N1)pdm09, 60% A(H3N2), 34% influenza

In addition, 38 school ILI outbreaks have been reported so far this season.



Updated AMMI Guidelines: LTCF Outbreak Control

In December 2015, the Association of Medical Microbiology and Infectious Disease (AMMI) Canada posted updated recommendations for influenza antiviral drug treatment and prophylaxis for the 2015-16 season, notably in relation to control of influenza outbreaks in long-term care facilities, available from www.ammi.ca/guidelines.

^{*} 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. ** 10-year historical average for 2015-16 season based on 2003-04 to 2014-15 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality.

National

FluWatch (week 15, April 10-16, 2016)

Influenza activity peaked nationally in the second week of March; however, lower but sustained activity continues to be reported throughout the country. Many regions across Canada are reporting a greater number of influenza B detections; however, in British Columbia and the Atlantic Region, detections remain predominantly influenza A. In week 15, the percentage of tests positive for influenza continued to decrease from the previous week (23% in week 14 to 21% in week 15), but remained above the 5-year expected level for this time of year (range: 12-17%). However, with the late start to the 2015-16 influenza season, these above-normal levels are not unexpected. Hospitalizations, ICU admissions and deaths among the paediatric population, while declining, remain above expected levels based on the past several influenza seasons. Despite higher paediatric hospitalizations reported, the paediatric population accounts for the smallest proportion of all deaths reported. In week 15, 12 new laboratory confirmed influenza outbreaks (11 in LTCFs and one in a hospital) were reported, fewer than the previous week. Details are available at: healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/flu-grippe/surveillance/fluwatch-reports-rapports-surveillance-influenza-eng.php.

National Microbiology Laboratory (NML): Strain Characterization

From September 1, 2015 to April 28, 2016, the National Microbiology Laboratory (NML) received 2,117 influenza viruses [194 A(H3N2), 1,188 A(H1N1)pdm09 and 735 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 194 influenza A(H3N2) viruses, only 50 (26%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 50 viruses characterized by HI assay, all were considered antigenically similar to cell-passaged A/Switzerland/9715293/2013, the WHO-recommended A(H3N2) component for the 2015-16 northern hemisphere influenza vaccine. Genetic characterization was performed to infer antigenic properties on the remaining 144 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 144 A(H3N2) viruses genetically characterized, all were reported to belong to a genetic group in which most viruses were antigenically related to A/Switzerland/9715293/2013.

Influenza A(H1N1)pdm09: The 1,188 A(H1N1)pdm09 viruses characterized were antigenically similar to A/California/7/2009, the WHO-recommended A(H1N1) component for the 2015-16 northern hemisphere influenza vaccine.

Influenza B: Of the 735 influenza B viruses characterized, 154 (21%) were antigenically similar to B/Phuket/3073/2013 (Yamagata lineage), the recommended influenza B component for the 2015-16 northern hemisphere influenza vaccine, while 581 (79%) were characterized as B/Brisbane/60/2008 (Victoria lineage), the recommended influenza B component for the 2015-16 northern hemisphere quadrivalent influenza vaccine containing two influenza B components.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1, 2015 to April 28, 2016, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing. Of the 1,349 influenza A viruses [201 A(H3N2) and 1,148 A(H1N1)pdm09] tested against amantadine, all were resistant with the exception of one A(H3N2) virus and one A(H1N1)pdm09 viruses which were sensitive to amantadine. Of the 1,288 influenza viruses [157 A(H3N2), 794 A(H1N1)pdm09 and 337 B] tested against oseltamivir, all A(H3N2) and B viruses and 786/794 (99%) A(H1N1)pdm09 viruses were sensitive; eight A(H1N1)pdm09 viruses with a H275Y mutation were resistant. Of the 1,290 influenza viruses [157 A(H3N2), 796 A(H1N1)pdm09 and 337 B] tested against zanamivir, all were sensitive.

International

USA (week 15, April 10-16, 2016)

During week 15, influenza activity decreased in the United States. The most frequently identified influenza virus type reported by public health laboratories during week 15 was influenza A, with influenza A(H1N1)pdm09 viruses predominating. The percentage of respiratory specimens testing positive for influenza in clinical laboratories decreased. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the system-specific epidemic threshold in the NCHS Mortality Surveillance System and above the system-specific epidemic threshold in the 122 Cities Mortality Reporting System. Six influenza-associated paediatric deaths were reported. A cumulative rate for the season of 28.4 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for ILI was 2.1%, which is at the national baseline of 2.1%. The geographic spread of influenza in 14 states was reported as widespread, 19 states reported regional activity, 13 states reported local activity, and four states reported sporadic activity. Details are available at: www.cdc.gov/flu/weekly/.

WHO (April 18, 2016)

In the Northern Hemisphere influenza activity was decreasing, while still elevated in some areas, due in part to an increase of influenza B activity. In the Southern Hemisphere influenza activity was reported to be slightly increasing.

- In North America, decreasing but sustained influenza activity was reported with influenza A(H1N1)pdm09 virus predominating.
- In Europe, in general a decreasing trend of influenza activity was observed. In Northern Europe, overall influenza activity decreased but remained at moderate levels. A shift towards circulation of influenza B virus was detected in parts of Europe.
- Northern Temperate Asia continued to report ongoing and elevated levels of influenza activity with increasing proportions of influenza B virus.
- In Central America and the Caribbean, low influenza activity was reported in most countries except in Jamaica where elevated severe acute respiratory infection (SARI) activity associated with influenza A(H1N1)pdm09 virus infection was reported.
- In tropical South America, low but increasing circulation of influenza A(H1N1)pdm09 virus was reported. In Brazil, influenza activity was above expected levels for this time of year with influenza A(H1N1)pdm09 virus predominating. Colombia reported high circulation of respiratory syncytial virus (RSV).
- In Temperate South America, influenza activity slightly increased but remained at low level. An increase in ILI and SARI rates were reported in Argentina, Chile and Paraguay.
- In Oceania and South Africa, influenza virus activity remained low.
- From March 21 to April 3, 2016, the WHO GISRS laboratories tested more than 101,187 specimens, of which 24,302 were positive for influenza viruses: 13,251 (55%) were typed as influenza A and 11,051 (45%) as influenza B. Of the sub-typed influenza A viruses, 4,895 (86%) were influenza A(H1N1)pdm09 and 811 (14%) were influenza A(H3N2). Of the characterized B viruses, 473 (20%) belonged to the B-Yamagata lineage and 1,936 (80%) to the B-Victoria lineage.

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

On February 8, 2016, the WHO published a Risk Assessment on Seasonal Influenza A(H1N1)pdm09, available from: www.who.int/influenza/publications/riskassessment AH1N1pdm09 201602/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-like (Victoria-lineage) 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-like (Yamagata-lineage) 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 2015-16 Northern Hemisphere Influenza Vaccine

On February 26, 2015, the WHO announced the recommended strain components for the 2015-16 Northern 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.§

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

- * These recommended strains are the same as those used for the 2015 Southern Hemisphere vaccine.
- † 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.
- ‡ 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 the A/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 16 north/en/.

Additional Information

Explanatory Note:

The surveillance period for the 2015-16 influenza season is defined starting in week 40. Weeks 36-39 of the 2014-15 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/quidelines

Web Sites:

BCCDC Emerging Respiratory Pathogen Updates:

www.bccdc.ca/health-professionals/data-reports/emerging-respiratory-virus-updates

Influenza Web Sites

Canada – Flu Watch: www.phac-aspc.gc.ca/fluwatch/

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/

European Influenza Surveillance Scheme:

ecdc.europa.eu/EN/HEALTHTOPICS/SEASONAL_INFLUENZA/EPIDEMIOLOGICAL_DATA/Pages/Wee

kly Influenza Surveillance Overview.aspx

WHO – Weekly Epidemiological Record: www.who.int/wer/en/

WHO Collaborating Centre for Reference and Research on Influenza (Australia):

www.influenzacentre.org/

Australian Influenza Report:

www.health.gov.au/internet/main/publishing.nsf/content/cda-surveil-ozflu-flucurr.htm

New Zealand Influenza Surveillance Reports: www.surv.esr.cri.nz/virology/influenza weekly update.php

Avian Influenza Web Sites

WHO – Influenza at the Human-Animal Interface: www.who.int/csr/disease/avian_influenza/en/

World Organization for Animal Health: www.oie.int/eng/en_index.htm

Contact Us:

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

Email: lnfluenzaFieldEpi@bccdc.ca

Communicable Disease Prevention and Control Services (CDPACS)

BC Centre for Disease Control

655 West 12th Ave. Vancouver BC V5Z 4R4

Online: www.bccdc.ca/health-professionals/data-reports/influenza-surveillance-reports

version: 26 Oct 2011

Influenza-Like Illness (ILI) Outbreak Summary Report Form

Please complete and email to ilioutbreak@bccdc.ca

Note: This form is for provincial surveillance purposes.

Please notify your local health unit per local guidelines/requirements.

ILI: Acute onset of respiratory illness with fever and cough and with one or more of the following: sore throat,

arthralgia, myalgia, or prostration which could be due to influenza virus. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent. Schools and work site outbreak: greater than 10% absenteeism on any day, most likely due to ILI. Residential institutions (facilities) outbreak: two or more cases of ILI within a seven-day period. Reporting Information Health unit/medical health officer notified? ☐ Yes ☐ No Person Reporting: _____ Title: _____ _____ Email: _____ Contact Phone: _____ HSDA: ____ Health Authority: 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 / YYYYY Numbers to date Residents/Students Staff **Total** With ILI Hospitalized Died **Laboratory Information** ☐ Yes (location: _____) ☐ No ☐ Don't know Specimen(s) submitted? If yes, organism identified? Yes (specify:) No Don't know