BC Centre for Disease Control An agency of the Provincial Health Services Authority

British Columbia Influenza Surveillance Bulletin

Influenza Season 2016-17, Number 17, Weeks 10-11 March 5 to 18, 2017

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Canada: Page 9 NML Strain Characterization Page 9 NML Antiviral Resistance Page 9 2016-17 Mid-season VE Page 10	At the BCCDC Public Health Laboratory, influenza positivity remained stable above 20%, driven by the increasing number of influenza B detections. Influenza B viruses comprised >60% of all influenza detections in week 10 and >80% in week 11.
International: USA (CDC) Surveillance Page 11 WHO Page 11 Influenza Vaccine Components (WHO Recommendations)	Since our last bulletin two weeks ago, 8 new influenza outbreaks were reported from facilities, including 5 with influenza B and 3 with influenza A detected. The majority of the cumulative 195 facility outbreaks reported to date this season had influenza A detected, although an increasing number of influenza B outbreaks have been reported in recent weeks (n=14 in total since work 5)
2016-17 Northern Hemisphere 2017-18 Northern HemispherePage 12 Page 12Additional Information:Explanatory note List of AcronymsPage 13 Page 13 Page 13 Outbreak Report Form	total since week 5). Medical Services Plan (MSP) claims for influenza illness were at expected median levels for this time of year. Sentinel ILI rates were within the 10-year historical average for this time of year in week 10 but increased slightly to above the historical average in week 11.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

Report Disseminated: March 23, 2017



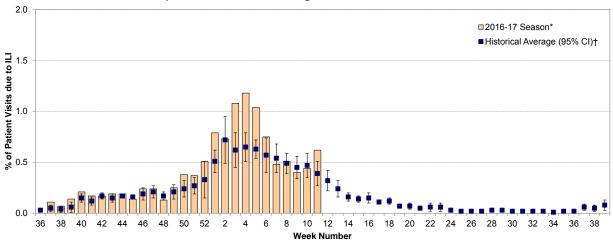




British Columbia

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 at 0.44% in week 10 but increased to above the historical average at 0.62% in week 11. So far, 79% and 59% of sites have reported data for weeks 10 and 11, respectively; rates are subject to change as reporting becomes more complete.

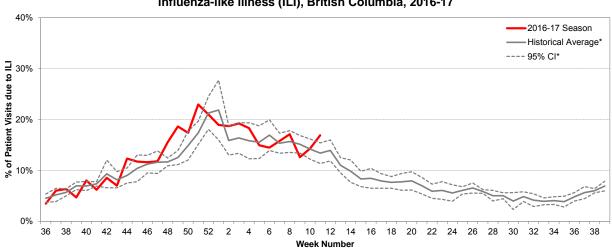


Percent of patient visits to sentinel physicians due to influenza-like illness (ILI) compared to historical average, British Columbia, 2016-17

* Data are subject to change as reporting becomes more complete. One hospital ER site that reported ILI rates ≥5% was excluded from the graph. † 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

In weeks 10-11, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI increased slightly and was above the 5-year historical average for this time of year at 17% in week 11.



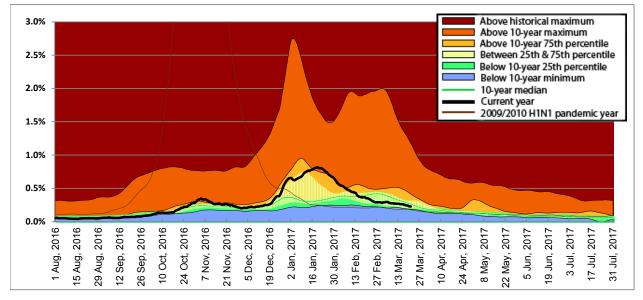
Percent of patients presenting to BC Children's Hospital ER attributed to influenza-like illness (ILI), British Columbia, 2016-17

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

In weeks 10-11, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, were at or below expected median levels for this time of year in all regions of the province.



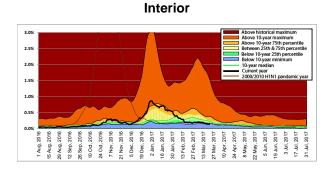
Service claims submitted to MSP for influenza illness (II)* as a proportion of all submitted general practitioner service claims, British Columbia, 2016-17

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

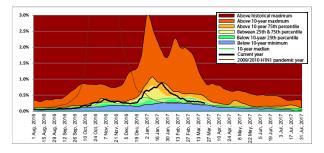
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2016 corresponds to sentinel ILI week 31; data are current to March 21, 2017.

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

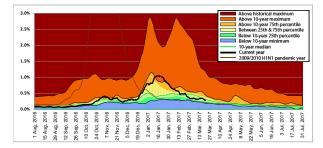
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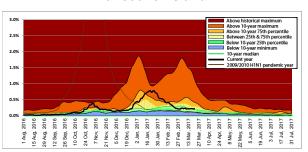
Fraser



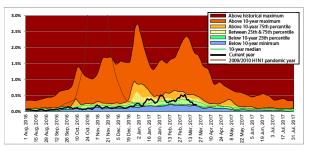
Vancouver Coastal



Vancouver Island



Northern



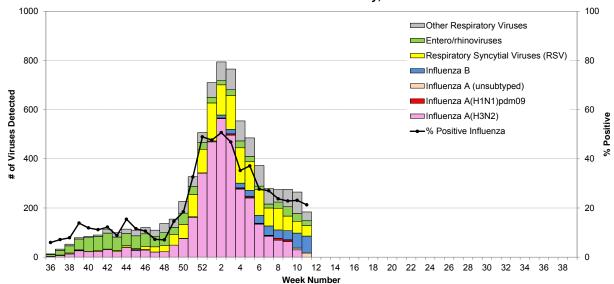


Laboratory Reports

BCCDC Public Health Laboratory

In weeks 10-11, 821 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 184 (22%) tested positive for influenza, including 54 (29%) with influenza A [30 A(H3N2) and 24 with subtype pending] and 130 (71%) with influenza B. Overall influenza positivity remained stable above 20% in weeks 10-11, driven by the increasing number of influenza B detections. Since week 10, influenza B viruses have comprised the majority of influenza detections at the BCCDC PHL, representing >60% of all influenza detections in week 10 and >80% in week 11. Among influenza A detections, A(H3N2) remains the dominant subtype detected so far during the 2016-17 season.

Cumulatively since week 40 (starting October 2, 2016), 3679 (32%) patients tested positive for influenza at the BCCDC PHL, including 3318 (90%) with influenza A [3259 A(H3N2), 32 A(H1N1)pdm09 and 27 subtype pending], 358 (10%) with influenza B and three patients who had both influenza A and B detected during the season. Elderly adults \geq 65 years old are disproportionately represented among influenza A(H3N2) detections, although younger age groups are also affected; whereas, adults 20-64 years old comprise a larger proportion of influenza B detections.

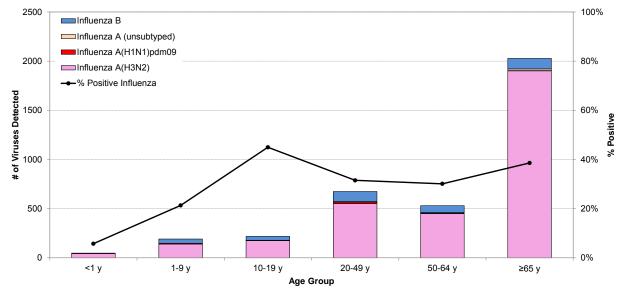




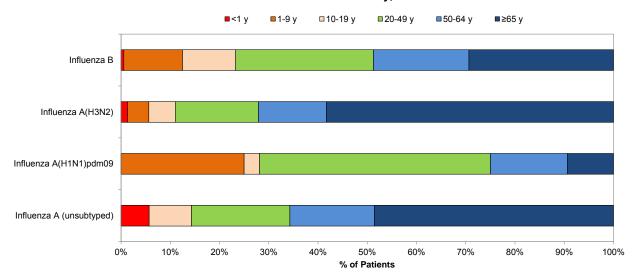
Data are current to March 22, 2017.

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Data are current to March 22, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-11.



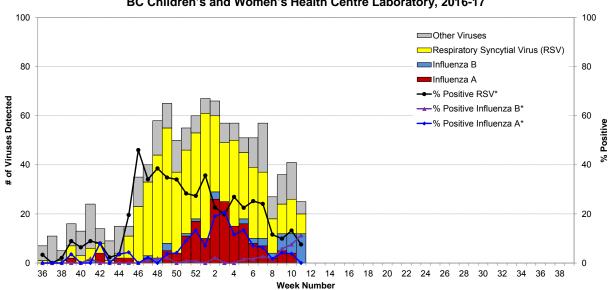
Age distribution of influenza detections (cumulative since week 40), BCCDC Public Health Laboratory, 2016-17

Data are current to March 22, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-11.



BC Children's and Women's Health Centre Laboratory

In weeks 10-11, the proportion of tests positive for influenza B at the BC Children's and Women's Health Centre Laboratory increased from 8% in week 10 to 11% in week 11. Of the 212 tests conducted in total during this period, 20 (9%) were positive for influenza B and 4 (2%) were positive for influenza A; 22 (10%) were positive for respiratory syncytial virus (RSV).



Influenza and other virus detections among respiratory specimens submitted to BC Children's and Women's Health Centre Laboratory, 2016-17

* 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.

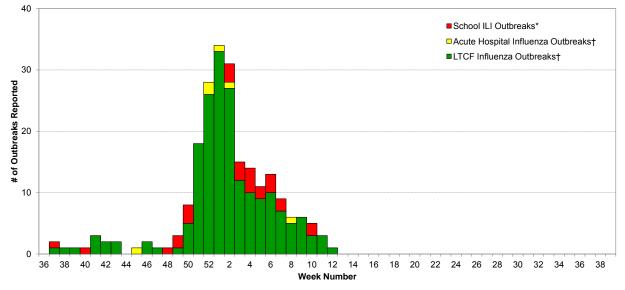


Influenza-like Illness (ILI) Outbreaks

Since our last bulletin two weeks ago, eight new influenza outbreaks were reported, including seven from long-term care facilities (LTCFs) and one from a rehabilitation centre. Of these, five had influenza B detected and three had influenza A detected [one A(H3N2) and two subtype pending]. Of the eight newly reported outbreaks, four were reported from FHA, two from VIHA, one from IHA and one from VCHA. Onset dates ranged from weeks 9-12.

Cumulatively during the 2016-17 season (since week 37, starting September 11, 2016), a total of 195 influenza outbreaks have been reported as of March 23, 2017, including 185 in LTCFs, six in acute care settings, and four from other facility types. The majority (180/195, 92%) of facility outbreaks reported this season had influenza A detected [all A(H3N2) where subtype information is available]; however, an increasing number of outbreaks with influenza B detected have been reported in recent weeks. In total this season, 14 influenza B outbreaks were reported. One outbreak with both influenza A and B detected was additionally reported.

A total of 27 school ILI outbreaks 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.



National

FluWatch (week 10, March 5 to 11, 2017)

Overall, the decline in influenza activity in Canada has been slow compared to previous seasons. Many parts of Canada, particularly in the Eastern and Atlantic regions are still reporting elevated activity in week 10. Widespread or localized influenza activity was reported in 23 regions (out of 53 regions reporting) across six provinces. In week 10, laboratory detections, influenza-like illness and outbreaks from participating provinces and territories and sentinel networks decreased from the previous week. Influenza A continues to account for the majority of detections; however, influenza B detections have been steadily increasing for the past few weeks, but remain below what has been observed in previous seasons. Influenza A(H3N2) continues to be the most common subtype of influenza affecting Canadians. The majority of laboratory detections, hospitalizations and deaths have been among adults aged ≥65 years. 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, 2016 to March 23, 2017, the National Microbiology Laboratory (NML) received 1419 influenza viruses [1271 A(H3N2), 28 A(H1N1)pdm09 and 120 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 1271 influenza A(H3N2) viruses, only 319 (25%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 319 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 319 viruses antigenically characterized with available sequencing information, 272 (85%) belonged to genetic group 3C.2a and 47 (15%) belonged to genetic group 3C.3a. Genetic characterization was performed to infer antigenic properties on the remaining 952 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 952 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 28 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 120 influenza B viruses characterized, 40 (33%) 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 80 (67%) viruses were characterized as a B/Phuket/3073/2013(Yamagata lineage)-like virus, the other 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, 2016 to March 23, 2017, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

<u>Amantadine</u>: Of the 179 influenza A viruses [155 A(H3N2) and 24 A(H1N1)pdm09] tested against amantadine, all were resistant.

<u>Oseltamivir</u>: Of the 759 influenza viruses [635 A(H3N2), 25 A(H1N1)pdm09 and 99 B] tested against oseltamivir, 758 out of 759 were sensitive; one A(H3N2) virus was resistant to oseltamivir.

Zanamivir: Of the 759 influenza viruses [635 A(H3N2), 24 A(H1N1)pdm09 and 100 B] tested against zanamivir, all were sensitive.



Mid-season Estimates of 2016-17 Influenza Vaccine Effectiveness, North America

<u>Canada</u>

On February 9, 2017, researchers from the Canadian Sentinel Practitioner Surveillance Network (SPSN) published the first mid-season estimates of influenza vaccine effectiveness (VE) for the 2016-17 season. They found VE of 42% (95% confidence interval (CI): 18-59%) against outpatient medically attended, laboratory-confirmed A(H3N2) illness, which has been the dominant subtype so far this season. This finding indicates that, compared to unvaccinated people, the risk of A(H3N2) illness in vaccinated people was reduced by about 40%. This VE estimate is consistent with vaccine protection typically expected for A(H3N2)-dominant seasons, but is considerably higher than in the last A(H3N2)-dominant 2014-15 season when no vaccine protection was found.

The full report is available at: www.eurosurveillance.org/ViewArticle.aspx?ArticleId=22714.

United States

On February 17, 2017, the U.S. Flu VE Network published mid-season estimates of 2016-17 influenza VE, reporting an adjusted VE of 43% (95% CI: 29-54%) for A(H3N2). These findings are consistent with Canadian mid-season estimates published last week, suggesting VE of around 40% against outpatient, medically attended A(H3N2) illness, which has been the dominant influenza strain so far during the 2016-17 season. Both the Canadian and U.S. studies used a test-negative design to derive influenza VE.

For details see: www.cdc.gov/mmwr/volumes/66/wr/mm6606a3.htm?s_cid=mm6606a3_w.



International

USA (week 10, March 5 to 11, 2017)

During week 10, influenza activity decreased, but remained elevated in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 10 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories decreased. Of the 821 A(H3N2) viruses genetically characterized by the US CDC during the 2016-17 season, 96% belonged to genetic group 3C.2a, including the newly emerging subgroup 3C.2a1, and 4% to group 3C.3a based on analysis of HA gene segments. The proportion of deaths attributed to pneumonia and influenza (P&I) was above the system-specific epidemic threshold. Five influenza-associated pediatric deaths were reported. A cumulative rate for the season of 46.9 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for ILI was 3.7%, which is above the national baseline of 2.2%. The geographic spread of influenza in 36 states was reported as widespread; Guam, Puerto Rico and 11 states reported regional activity; the District of Columbia and three states reported local activity; and the U.S. Virgin Islands reported no activity. Details are available at: www.cdc.gov/flu/weekly/.

WHO (March 20, 2017)

Influenza activity in the temperate zone of the northern hemisphere appeared to decrease. Influenza activity in many countries especially in East Asia and Europe already peaked. Worldwide, influenza A(H3N2) virus was predominant. In South Asia, influenza activity with mainly A(H1N1)pdm09 has been increasing. The majority of influenza viruses characterized so far were similar antigenically to the reference viruses contained in vaccines for use in the 2016-17 northern hemisphere influenza season. Nearly all tested viruses collected recently for antiviral sensitivity were susceptible to the neuraminidase inhibitor antiviral medications.

- In North America, overall influenza and other respiratory virus activity decreased in Canada and United States. Influenza activity slightly increased in Mexico with influenza A(H1N1)pdm09 virus predominating.
- In Europe, influenza activity appeared to decrease with influenza A(H3N2) and influenza B viruses predominant in the region. Detections of influenza B virus increased in the recent weeks. Persons aged ≥65 years continued to be reported as most frequently associated with severe disease from influenza infection.
- In East Asia, influenza activity continued to decrease with influenza A(H3N2) virus predominant.
- In Western Asia, influenza activity continued to decrease with influenza A(H3N2) and B viruses co-circulating in the region.
- In Southern Asia, influenza activity continued to increase in India, the Maldives and Sri Lanka, with mainly influenza A(H1N1)pdm09 virus reported followed by influenza B virus.
- In South East Asia, influenza activity remained low.
- In Northern Africa, low influenza activity was reported in Tunisia, with influenza A(H3N2) and influenza B virus co-circulating.
- In West Africa, influenza activity continued to be reported in Ghana and Mali, with influenza B being the main virus detected. In Eastern Africa, influenza activity was reported in Ethiopia and Mauritius with influenza A(H3N2) virus predominant.
- In the Caribbean countries and Central America, influenza and other respiratory virus activity remained low in general.
- In tropical South America, influenza and other respiratory virus activity remained low, although RSV activity remained elevated in Colombia.
- In the temperate zone of the Southern Hemisphere, influenza activity was at inter-seasonal levels.
- From February 20 to March 5, 2017, the WHO GISRS laboratories tested more than 156,226 specimens during that time period. 34,376 were positive for influenza viruses, of which 26,581 (77%) were typed as influenza A and 7,795 (23%) as influenza B. Of the subtyped influenza A viruses, 651 (8%) were influenza A(H1N1)pdm09 and 7392 (92%) were influenza A(H3N2). Of the characterized B viruses, 614 (71%) belonged to the B/Yamagata lineage and 246 (29%) 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 2017-18 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/.



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 12th Ave, Vancouver BC V5Z 4R4

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

Influenza-Like Illness (ILI) Outbreak Summary Report Form

Please complete and email to <u>ilioutbreak@bccdc.ca</u>

Note: This form is for provincial surveillance purposes. Please notify your local health unit per local guidelines/requirements.

arthralgia,	Acute onset of respiratory illness with fever and cough and with one or more of the following: sore throat, algia, myalgia, or prostration which <i>could</i> be due to influenza virus. In children under 5, gastrointestinal otoms 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 Information Health unit/medical health officer notified? Yes No Person Reporting:				
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 first case of ILI (dd/mm/yyyy):DD / MI					
		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			
	Laboratory Infor	mation			
D	Laboratory Information Specimen(s) submitted? Yes (location:) If yes, organism identified? Yes (specify:) No Don't know				