

British Columbia Influenza Surveillance Bulletin

Influenza Season 2014-15, Number 10, Week 50

December 7 to 13, 2014

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Influenza A(H3N2) Activity Continues to Increase in BC

In week 50 (December 7 to 13, 2014), surveillance indicators continue to show an increase in influenza activity in BC, following an earlier than usual start to the season. Influenza A(H3N2) has been the predominant subtype so far this season, with >90% of viruses assessed showing mismatch (called "antigenic drift") from the vaccine strain.

The proportion of patients testing positive for influenza at the BC provincial laboratory exceeded 20% for the first time this season, while at BC Children's and Women's Health Centre Laboratory, rates exceeded 10% for the first time this season. Increasing co-circulation of respiratory syncytial virus (RSV) was also detected.

One new influenza A outbreak in a long-term care facility was reported, bringing the total tally of facility outbreaks so far this season to 19, higher than the number reported for the entire season last year in 2013-14. Of the influenza A outbreaks with subtype information available, all were A(H3N2). Six school outbreaks of influenza-like illness were reported and, of those with lab testing performed, influenza A was detected.

Overall, surveillance indicators in BC consistently show upswing in influenza activity due to drifted A(H3N2) viruses as we enter the holiday period.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

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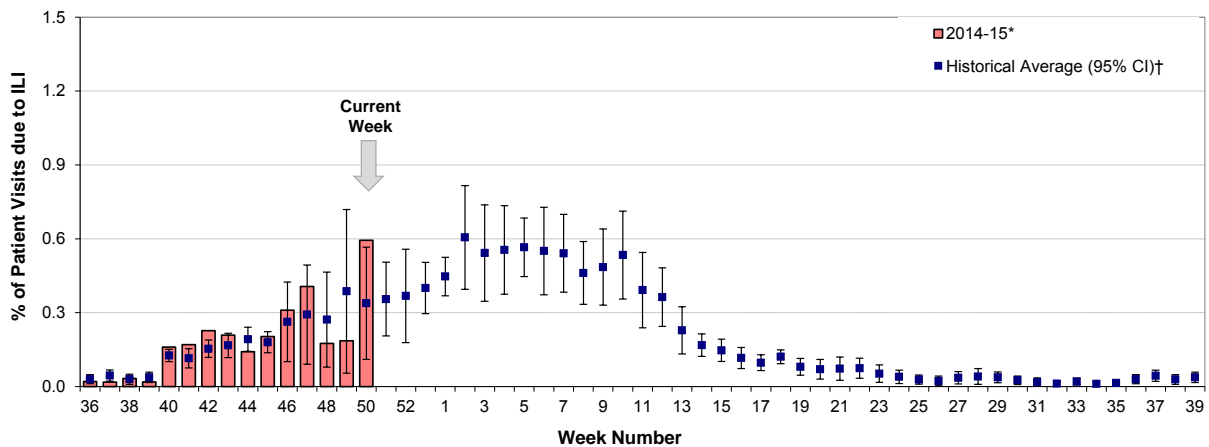
Report Disseminated: December 18, 2014

British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI) among those presenting to sentinel physicians increased to 0.6% in week 50, significantly above the historical average for this time of year and following two consecutive weeks of unexpected dip in weeks 48-49. So far, 56% of sentinel sites have reported data in week 50.

Percent of patient visits to sentinel physicians due to influenza-like illness (ILI) compared to historical average, British Columbia, 2014-15

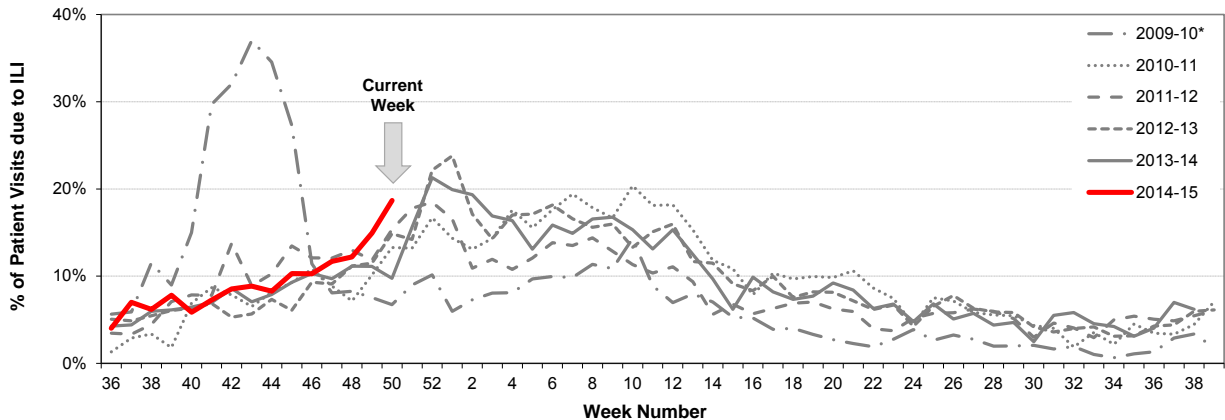


* Data are subject to change as reporting becomes more complete.
† Historical average based on 2002-03 to 2013-14 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children’s Hospital Emergency Room

The proportion of visits to BC Children’s Hospital Emergency Room (ER) attributed to ILI increased from 15% in week 49 to 19% in week 50, slightly above rates observed in previous seasons for this time of year and continuing an increasing trend since week 40.

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



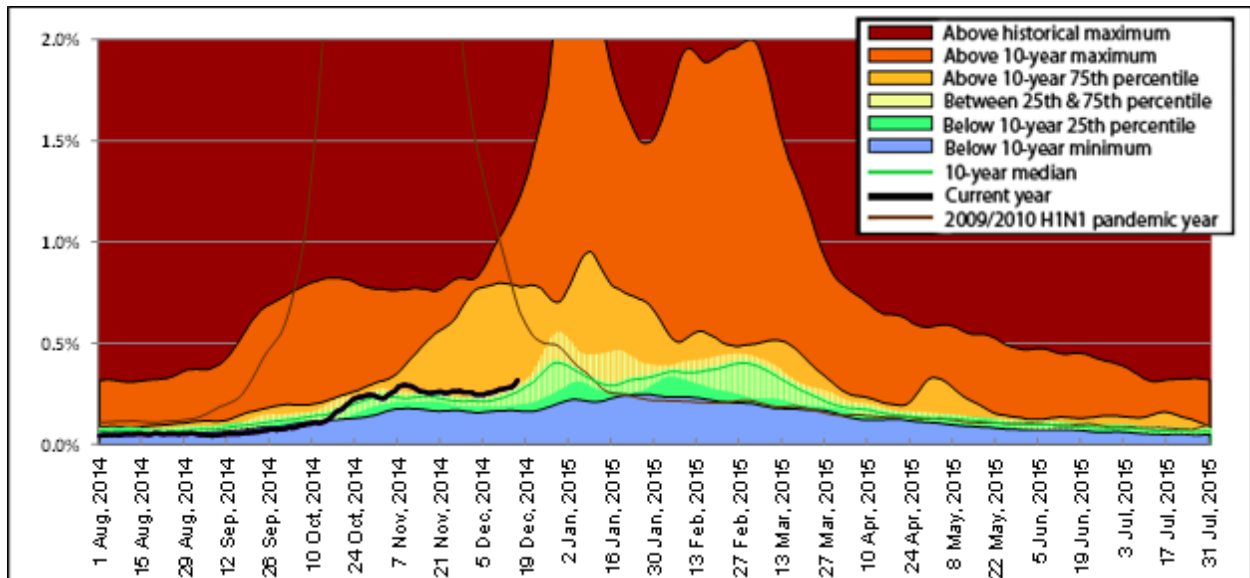
Source: BCCH Admitting, discharge, transfer database, ADT

* 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

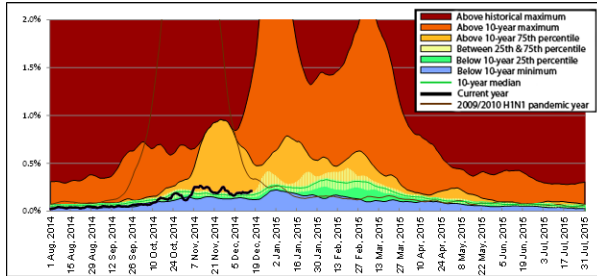
In week 50, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, remained stable at above historical norms for this time of year for the province overall and in most regional Health Authorities, following a sharp increase earlier this season. In IHA, FHA, and VIHA, rates were above 10-year 75th percentiles; in VCHA, rates were between 10-year 25th and 75 percentiles; and in NHA, rates were below 10-year 25th percentiles.

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

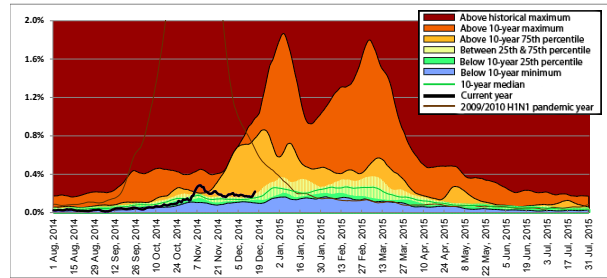


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza). Data provided by Population Health Surveillance and Epidemiology, BC Ministry of Health Services. Note: MSP week beginning 3 August 2014 corresponds to sentinel ILI week 32; data current to December 16, 2014.

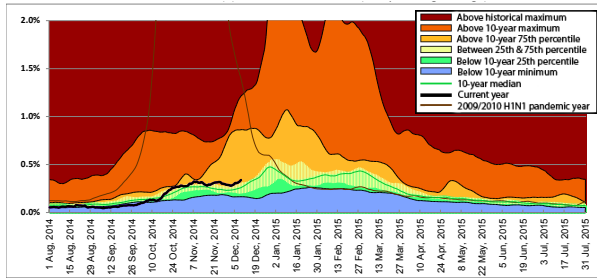
Interior



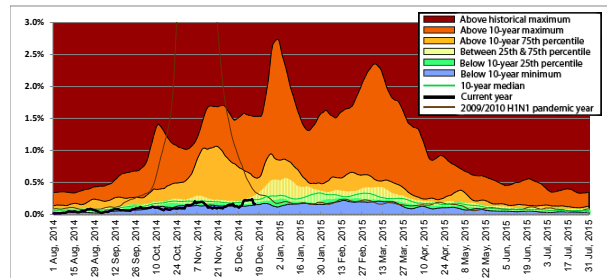
Vancouver Island



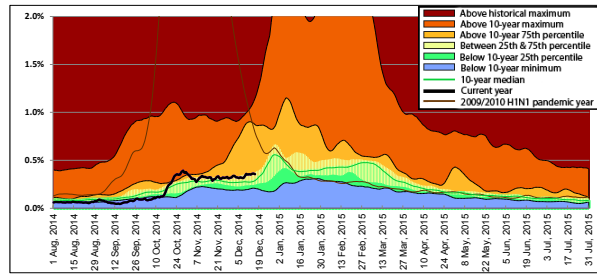
Fraser



Northern



Vancouver Coastal



Laboratory Reports

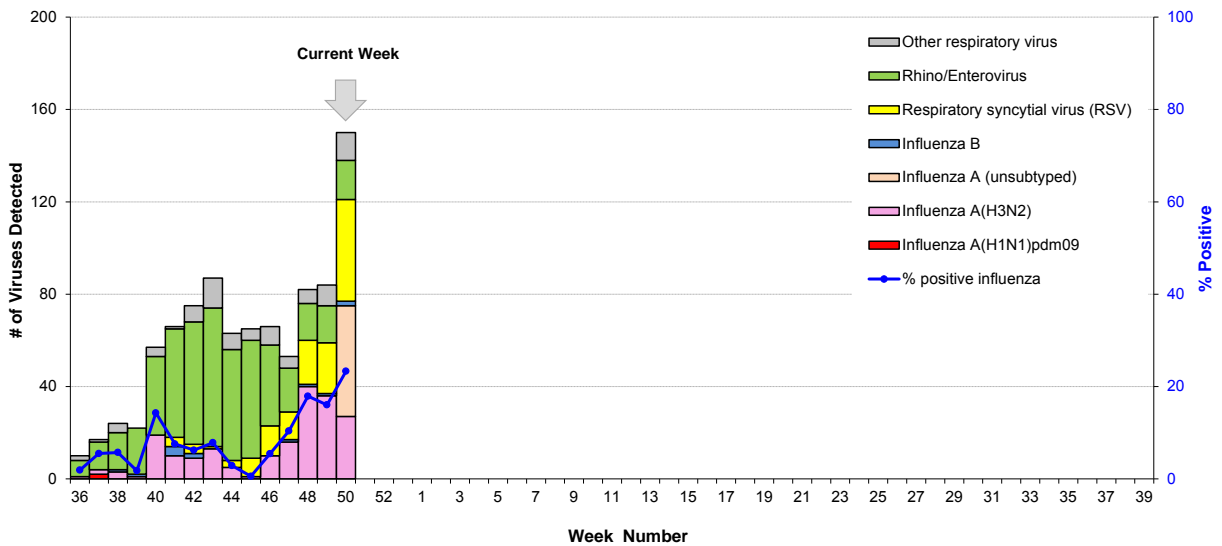
BC Public Health Microbiology & Reference Laboratory (PHMRL)

In week 50, the BC Public Health Microbiology & Reference Laboratory (PHMRL) tested 330 patients for respiratory viruses. Of these, 77 (23%) had laboratory-confirmed influenza, including 75 (97%) influenza A [27 A(H3N2) and 48 with subtype pending] and 2 (3%) influenza B. The influenza percent positivity increased to above 20% in week 50 for the first time this season, continuing a rising trend since week 45. Among other respiratory virus detections, respiratory syncytial virus (RSV) activity also continued to increase, with 13% of patients testing positive for this virus in week 50.

Cumulatively, during the 2014-15 influenza season (since week 40, starting September 28, 2014), 244 (12%) patients have tested positive for influenza at the BC PHMRL, including 233 (95%) with influenza A [185 A(H3N2) and 48 with subtype pending] and 11 (5%) with influenza B. So far this season since week 40, A(H3N2) has been the dominant subtype, with no detection of A(H1N1)pdm09 in BC.

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); however, an increasing proportion of detections are now also seen in children <20 years old and adults 20-64 years old compared to prior weeks this season.

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

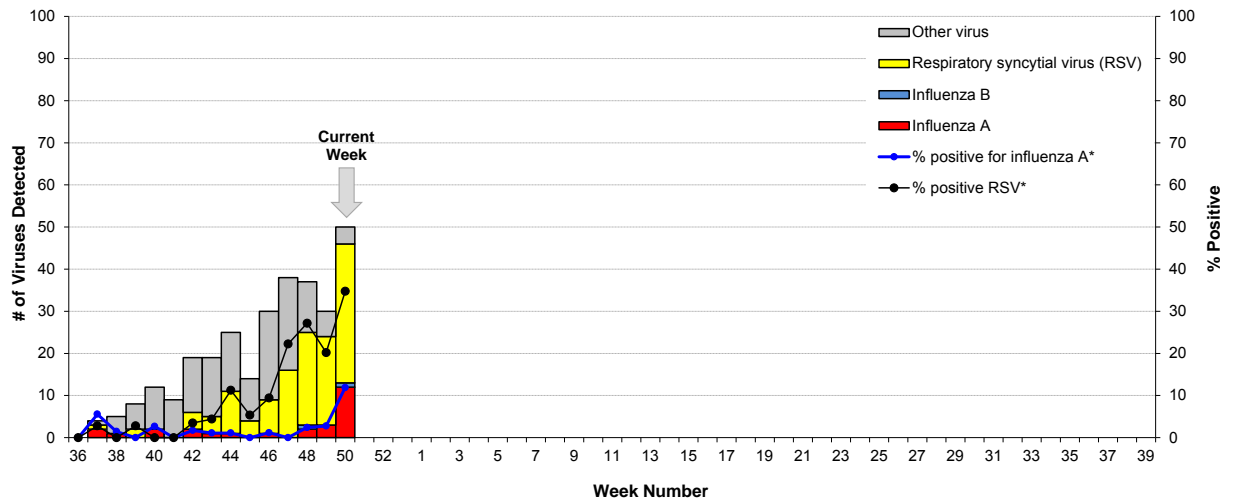


Note: Data current to December 17, 2014.

BC Children's and Women's Health Centre Laboratory

In week 50, the BC Children's and Women's Health Centre Laboratory conducted 101 tests for influenza A and 95 tests for influenza B. Of these, 12 (12%) were positive for influenza A, an increase in influenza A positivity from below 5% since week 40, and one (1%) was positive for influenza B. RSV continued to be the most commonly detected respiratory virus during this period, with 35% of tests positive for RSV in week 50.

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



* 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.

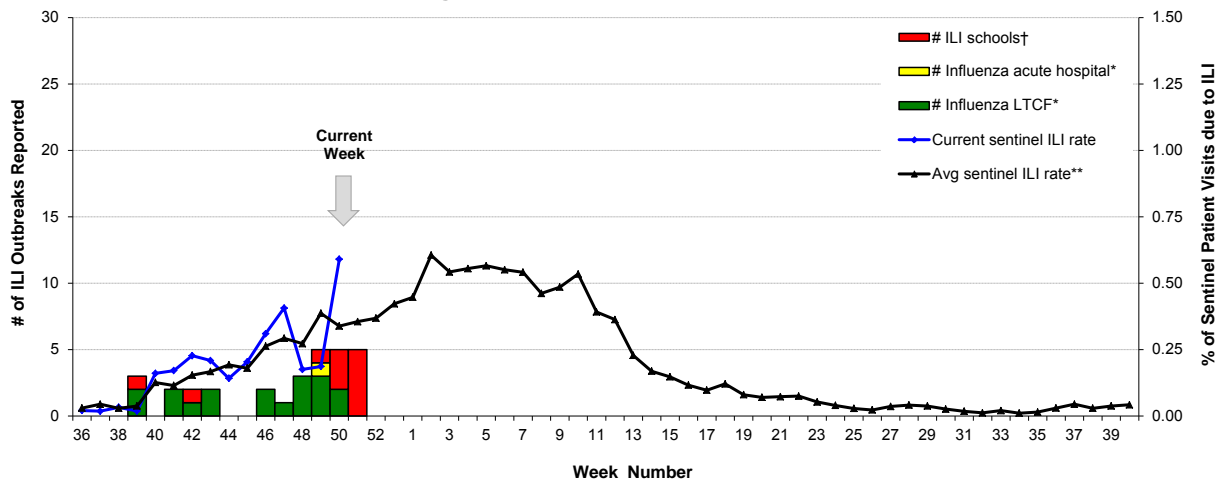
Influenza-like Illness (ILI) Outbreaks

Since our last bulletin, one new laboratory-confirmed influenza A outbreak was reported from a LTCF in VCHA with symptom onset in week 50. Subtype results were pending at the time of writing.

In week 51, 6 ILI outbreaks in schools were reported, including two due to laboratory-confirmed influenza A in NHA with symptom onset in weeks 49 and 51, and four with pathogen unknown from IHA, all with symptom onset in week 51.

Cumulatively, since week 39 (starting September 21, 2014), 19 facility outbreaks due to laboratory-confirmed influenza have been reported, including 18 from LTCFs and 1 from acute care. All but one of these outbreaks were due to influenza A and, of these, all with subtype information were A(H3N2). The majority of facility outbreaks have been reported from the Lower Mainland region of BC, with two from VIHA. The number of LTCF outbreaks due to influenza reported thus far early into the 2014-15 season dominated by A(H3N2) activity (n=18) has surpassed the total number across the entire 2013-14 season reported last year (n=13) when A(H1N1)pdm09 instead dominated.

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 (week49)

In week 49, laboratory detections of influenza increased sharply for the third consecutive week. The majority of laboratory detections continued to be reported in BC, AB, ON and QC, but with increasing activity in SK and NS. Widespread activity was reported in two regions in BC and QC. In week 49, 1,011 (20%) influenza viruses were detected, including 969 (97%) influenza A [356 A(H3N2) and 613 unsubtype] and 34 (3%) influenza B. Influenza A(H3N2) continues to be the most common subtype 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: 37 influenza A outbreaks in 6 provinces, of which 32 were in LTCFs. Among the outbreaks with known subtype, all were due to A(H3N2). The rate of antiviral prescriptions among seniors increased significantly in week 49. Details are available at: www.phac-aspc.gc.ca/fluwatch/14-15/index-eng.php.

National Microbiology Laboratory (NML): Strain Characterization

From September 1, 2014, to December 18, 2014, the National Microbiology Laboratory (NML) has antigenically characterized 30 influenza viruses [13 A(H3N2), 2 A(H1N1)pdm09, and 15 influenza B] that were received from Canadian laboratories.

Influenza A(H3N2)

Of the 13 A(H3N2) viruses characterized so far this season by the NML, 12 (92%) showed evidence of antigenic drift (i.e. vaccine mismatch) away from A/Texas/50/2012, the WHO-recommended A(H3N2) component for the 2014-15 Northern Hemisphere influenza vaccine used this season: 7 (54%) were instead antigenically similar to A/Switzerland/9715293/2013, the WHO-recommended A(H3N2) component for the 2015 Southern Hemisphere influenza vaccine, 5 (38%) 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, and one (8%) was antigenically matched to A/Texas/50/2012.

Genetic characterization was performed on 58 A(H3N2) viruses that did not grow to sufficient titres for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 58 A(H3N2) viruses genetically characterized, 57 (98%) belonged to a genetic group that typically shows reduced titres to A/Texas/50/2012 due to amino acid mutations at key antigenic sites, also signalling antigenic drift. The remaining one (2%) 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 15 influenza B viruses characterized, 12 (80%) 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. Three (20%) viruses showed reduced titres with antiserum produced against B/Massachusetts/2/2012, signalling antigenic distinction from vaccine strain.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1, 2014, to December 18, 2014, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing. Of the 131 influenza A viruses [129 A(H3N2) and 2 A(H1N1)pdm09] tested against amantadine, 128 A(H3N2) viruses and both A(H1N1)pdm09 viruses were resistant; one A(H3N2) virus was sensitive to amantadine. Of the 93 influenza viruses [79 A(H3N2) and 14 influenza B] tested against oseltamivir, all were sensitive. Of the 93 influenza viruses [79 A(H3N2) and 14 influenza B] tested against zanamivir, all were sensitive.

International

USA (week 49)

During week 49, influenza activity continued to increase in the United States. Of 16,093 specimens tested, 3,415 (21%) were positive for influenza, including 3,252 (95%) influenza A [1,254 A(H3N2), 7 A(H1N1)pdm09, and 1,991 with subtyping not performed] and 163 (5%) influenza B. Of the 197 A(H3N2) influenza viruses collected since October 1, 2014, and characterized by HI assay, 64 (33%) were characterized as A/Texas/50/2012-like, the A(H3N2) component of the 2014-15 Northern Hemisphere influenza vaccine, and 133 (68%) 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 2.5%, above the national baseline of 2.0%, while the proportion of deaths attributed to pneumonia and influenza remained below the epidemic threshold. Two influenza-associated paediatric deaths were reported. Details are available at: www.cdc.gov/flu/weekly/.

WHO (December 15, 2014)

Globally, influenza activity increased in the Northern Hemisphere and, in several countries, has passed the seasonal threshold. Influenza A(H3N2) viruses have predominated so far. In North America, the levels of influenza activity, mainly associated with A(H3N2) virus, have passed the seasonal threshold. In Europe, overall influenza activity continued to increase, but with no clear indication that the influenza season had begun. In eastern Asia, influenza activity increased, with influenza A(H3N2) predominant. In northern and western Africa, influenza activity increased, with influenza B virus predominant. In tropical countries of the Americas, influenza activity increased in some countries of the Caribbean, decreased in Central America, and was low in the tropical countries of South America. In tropical Asia, influenza activity was low. In the Southern Hemisphere, influenza activity remained at a low level, but ILI activity remained high in several Pacific Islands. During weeks 47 to 48 (November 16 to 29, 2014), WHO Global Influenza Surveillance and Response System (GISRS) laboratories tested more than 59,940 specimens. Of these, 7,227 were positive for influenza viruses: 6,603 (91%) were typed as influenza A and 624 (9%) as influenza B. Of the subtyped influenza A viruses, 84 (2%) were influenza A(H1N1)pdm09 and 3,472 (98%) were influenza A(H3N2). Of the characterized B viruses, 140 (97%) belonged to the B-Yamagata lineage and 4 (3%) 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 laboratory-confirmed 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. There have been no new detections of EV-D68 at the BC provincial laboratory since last week. Since mid-August, 216 cases of EV-D68 infection have been detected in BC, of which at least 136 were severe cases requiring hospitalization. Hospitalization status was unknown for a further 22 cases.

The median age of severe cases requiring hospitalization is 8 years. Patient ages range from <1 year to >90 years, and about two-thirds have been reported in children <10 years. Males are over-represented among hospitalized cases, with a male-to-female ratio of 1.5.

Last week, the BCCDC was notified of a fifth case of EV-D68 infection associated with neurologic illness in BC. The patient, a 10-14-year-old child with a history of asthma, presented with respiratory illness and had focal limb weakness in the right arm. In total since mid-August, five cases of neurologic illness (three paediatric, two adult) and two deaths (one young adult, one elderly) associated with EV-D68 infection 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.

The BCCDC will continue to monitor EV-D68 and other seasonal respiratory virus activity in the coming weeks. 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 18, a total of 10 farms have been affected. HPAI refers to the viral pathogenicity in poultry and does not reflect the virus's ability to cause clinical disease in humans. 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. Sequence analysis suggests that the H5N2 virus currently affecting farms in BC is a reassortant virus containing gene segments, including the haemagglutinin H5 gene, from a HPAI H5N8 virus of Eurasian lineage and segments, including the neuraminidase N2 gene, from a North American virus. This is the first known occurrence of a Eurasian lineage HPAI H5 virus causing an outbreak in poultry in North America.

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 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_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: www.phac-aspc.gc.ca/fluwatch/

Washington State Flu Updates: www.doh.wa.gov/Portals/1/Documents/5100/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/Weekly_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: 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 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.

A	<u>Reporting Information</u>	Health unit/medical health officer notified? <input type="checkbox"/> Yes <input type="checkbox"/> No
	Person Reporting: _____	Title: _____
	Contact Phone: _____	Email: _____
	Health Authority: _____	HSDA: _____
	Full Facility Name: _____	
	Is this report:	<input type="checkbox"/> First Notification (<i>complete section B below; Section D if available</i>) <input type="checkbox"/> Update (<i>complete section C below; Section D if available</i>) <input type="checkbox"/> Outbreak Over (<i>complete section C below; Section D if available</i>)

B	<u>First Notification</u>
	Type of facility: <input type="checkbox"/> LTCF <input type="checkbox"/> Acute Care Hospital <input type="checkbox"/> Senior's Residence (if ward or wing, please specify name/number: _____)
	<input type="checkbox"/> Workplace <input type="checkbox"/> School (grades: _____) <input type="checkbox"/> Other (_____)
	Date of onset of first case of ILI (dd/mm/yyyy): <u>DD/MMM/YYYY</u>

Numbers to date	Residents/Students	Staff
Total		
With ILI		
Hospitalized		
Died		

C	<u>Update AND Outbreak Declared Over</u>
	Date of onset for most recent case of ILI (dd/mm/yyyy): <u>DD/MMM/YYYY</u>
	If over, date outbreak declared over (dd/mm/yyyy): <u>DD/MMM/YYYY</u>

Numbers to date	Residents/Students	Staff
Total		
With ILI		
Hospitalized		
Died		

D	<u>Laboratory Information</u>
	Specimen(s) submitted? <input type="checkbox"/> Yes (location: _____) <input type="checkbox"/> No <input type="checkbox"/> Don't know If yes, organism identified? <input type="checkbox"/> Yes (specify: _____) <input type="checkbox"/> No <input type="checkbox"/> Don't know