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

British Columbia Influenza Surveillance Bulletin

Influenza Season 2014-15, Number 12, Week 53
December 28, 2014 to January 3, 2015

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Heightened Influenza A(H3N2) Activity Continues in BC

In week 53 (December 28, 2014 to January 3, 2015), influenza activity, predominantly A(H3N2), remained at heightened levels in BC.

The proportion of patients testing positive for influenza at the BC provincial laboratory remained elevated at 43% in week 53. Most influenza detections continue to be elderly adults aged ≥65 years driven in part by a record number of influenza outbreaks being reported in long-term care facilities (LTCFs).

In the past week, 17 new influenza outbreaks were reported, including 16 in LTCFs and one in acute care. In total since week 39, 62 facility influenza outbreaks (58 in LTCFs and 4 in acute care) have been reported. Almost all of the outbreaks reported 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).

Influenza A(H3N2) remains the predominant subtype, with virtually all viruses assessed nationally showing mismatch (called "antigenic drift") from the vaccine strain.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team
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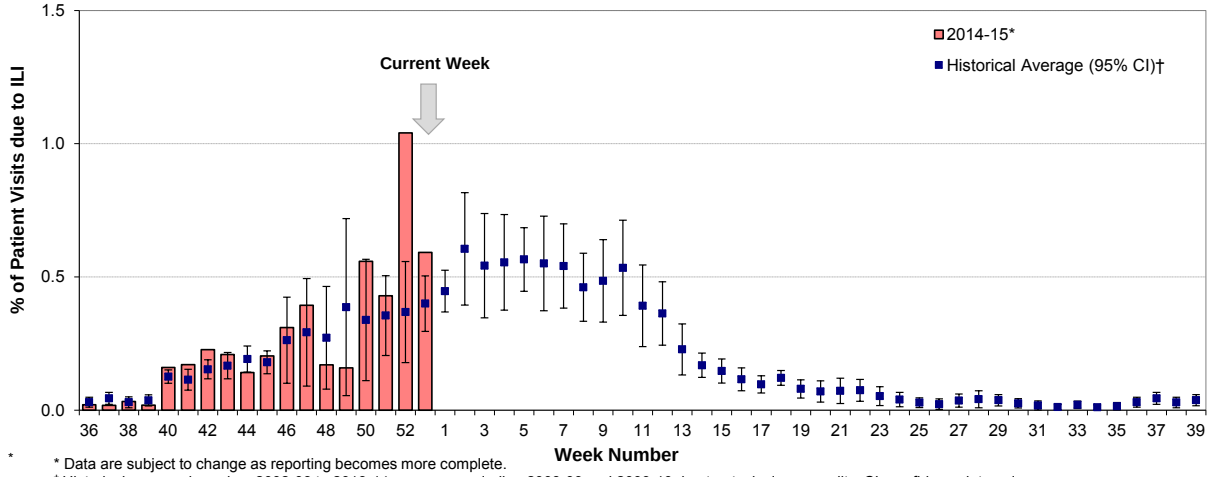
British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI) among those presenting to sentinel physicians remained significantly above the historical average at 0.6%, lower than week 52 when rates spiked above 1%. So far, 50% and 42% of sentinel sites have reported data for weeks 52 and 53, respectively. Reporting aberrations during the holiday period should be taken into account in interpreting these data.

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

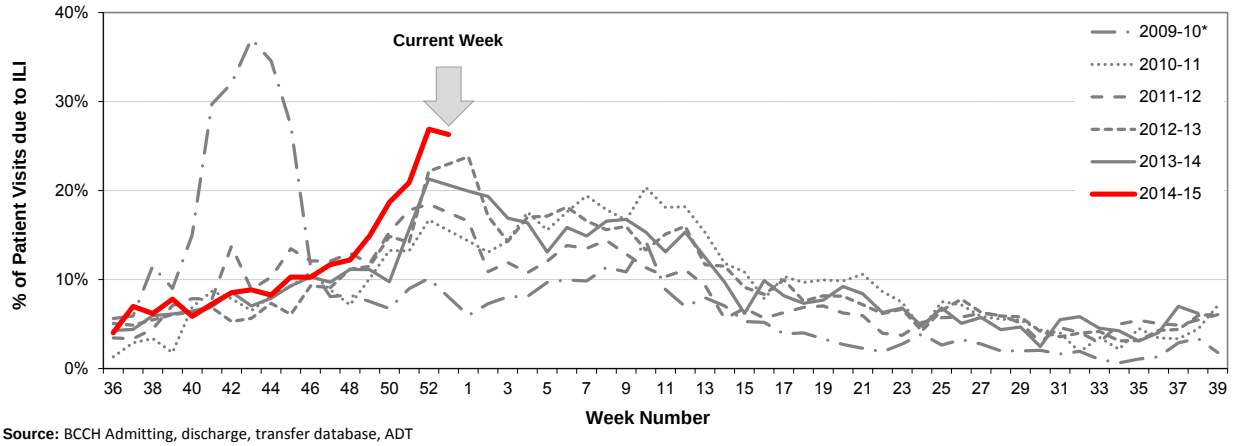


* Data are subject to change as reporting becomes more complete.
† Historical average based on 2002-03 to 2013-14 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children's Hospital Emergency Room

The proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI remained stable at 26% in week 53, above rates observed in previous seasons for this time of year, following several consecutive weeks of sharp increase.

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

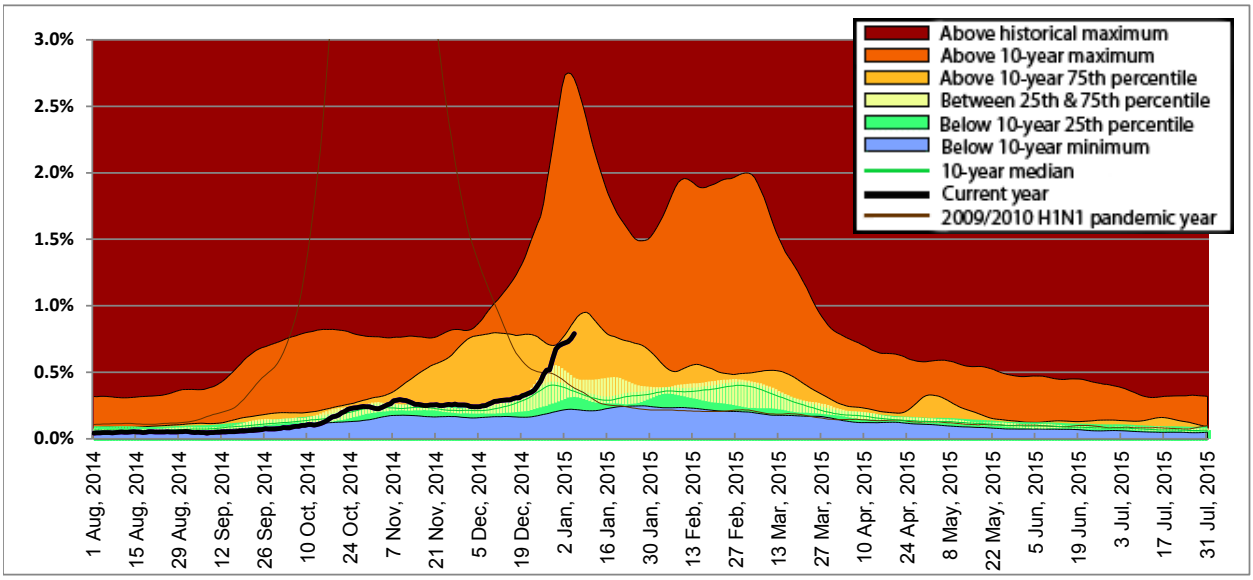


Source: BCCH Admitting, discharge, transfer database, ADT
* Data from 2010-11 to 2014-15 are based on new variable (Triage Chief Complaint) for capturing ILI symptoms and are not directly comparable to data for 2009-10. In week 9 of the 2011-12 season, the BCCH ER implemented a new data collection system,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

Medical Services Plan

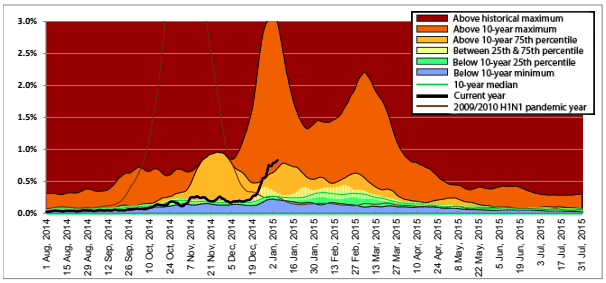
In week 53, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, remained above seasonal norms for this time of year following a sharp increase in previous weeks. Rates were above 10-year maximums in IHA and VIHA, and above 10-year 75th percentiles in all other regional Health Authorities and for the province overall.

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

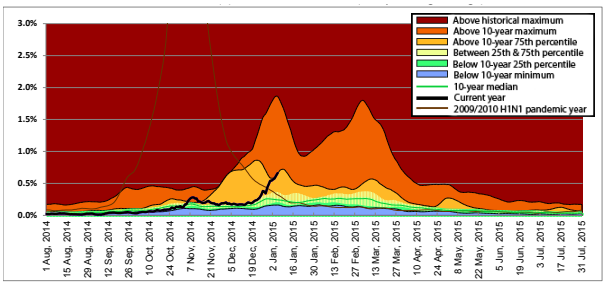


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).
Data provided by Population Health Surveillance and Epidemiology, BC Ministry of Health Services.
Note:MSP week beginning 3 August 2014 corresponds to sentinel ILI week 32; data current to January 5, 2015.

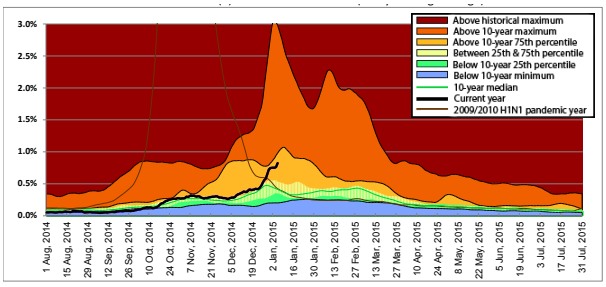
Interior



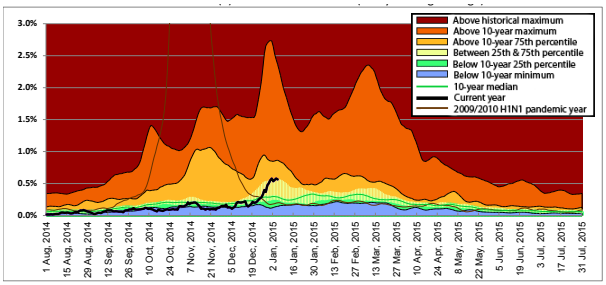
Vancouver Island



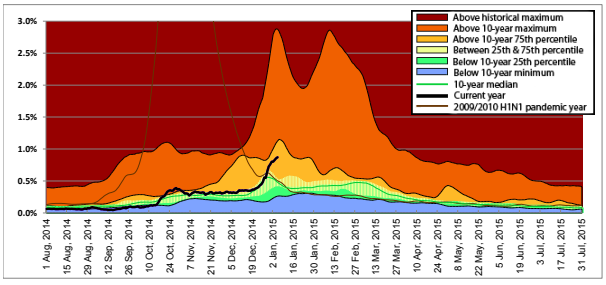
Fraser



Northern



Vancouver Coastal



Laboratory Reports

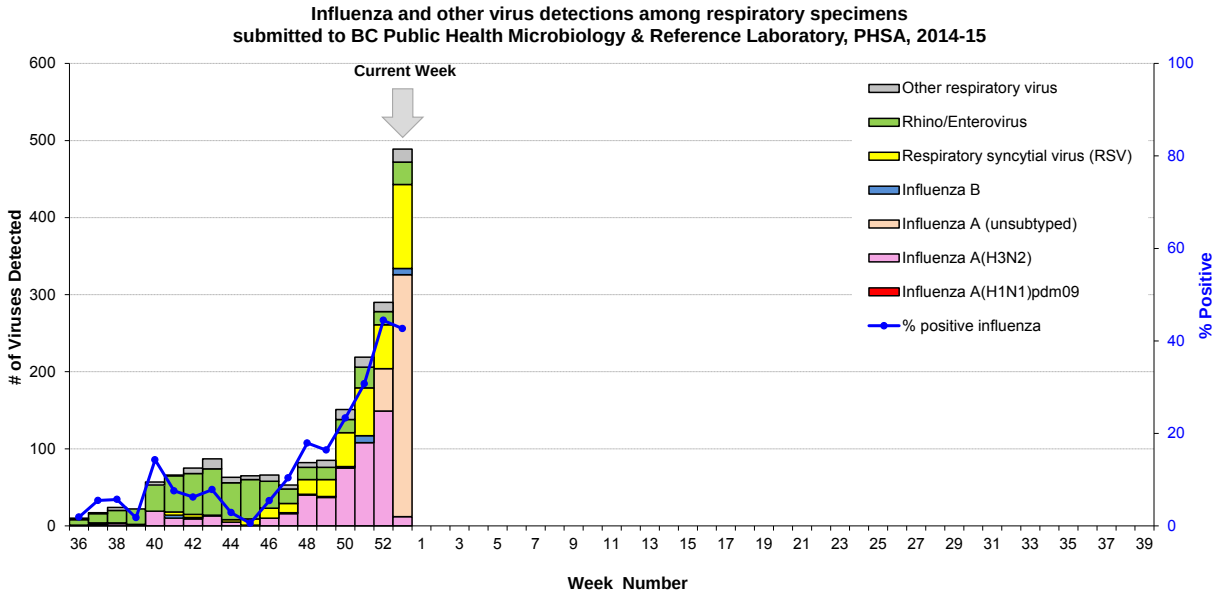
BC Public Health Microbiology & Reference Laboratory (PHMRL)

In week 53, the BC Public Health Microbiology & Reference Laboratory (PHMRL) tested 783 patients for respiratory viruses. Of these, 333 (43%) had laboratory-confirmed influenza, including 325 (98%) influenza A [12 A(H3N2) and 313 with subtype pending] and 8 (2%) influenza B. The influenza percent positivity remained stable at 43% following several consecutive weeks of sharp increase and despite a continued increase in overall test volumes. Respiratory syncytial virus (RSV) activity also remained elevated during this period and, after influenza, was the most commonly detected other respiratory virus.

Cumulatively, during the 2014-15 influenza season (since week 40, starting September 28, 2014), 895 (25%) patients have tested positive for influenza at the BC PHMRL, including 867 (97%) with influenza A and 28 (3%) 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

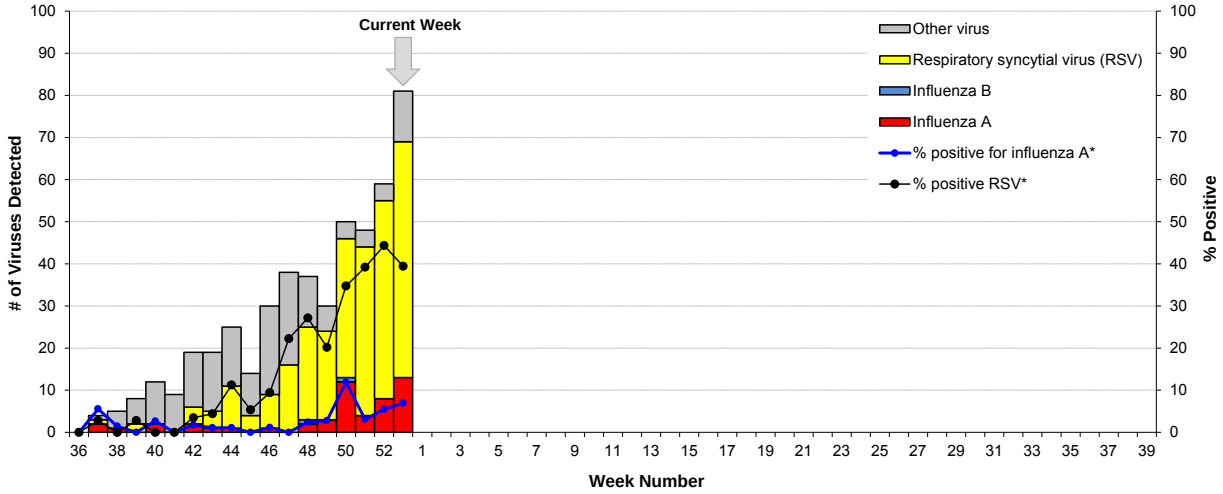


Note: Data current to January 7, 2015.

BC Children's and Women's Health Centre Laboratory

In week 53, the BC Children's and Women's Health Centre Laboratory conducted 187 tests for influenza A and 142 tests for influenza B. Of these, 13 (7%) were positive for influenza A; none were positive for influenza B. The proportion of tests positive for RSV remained stable at about 40%; RSV continues to be the most commonly detected respiratory virus during this period.

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.

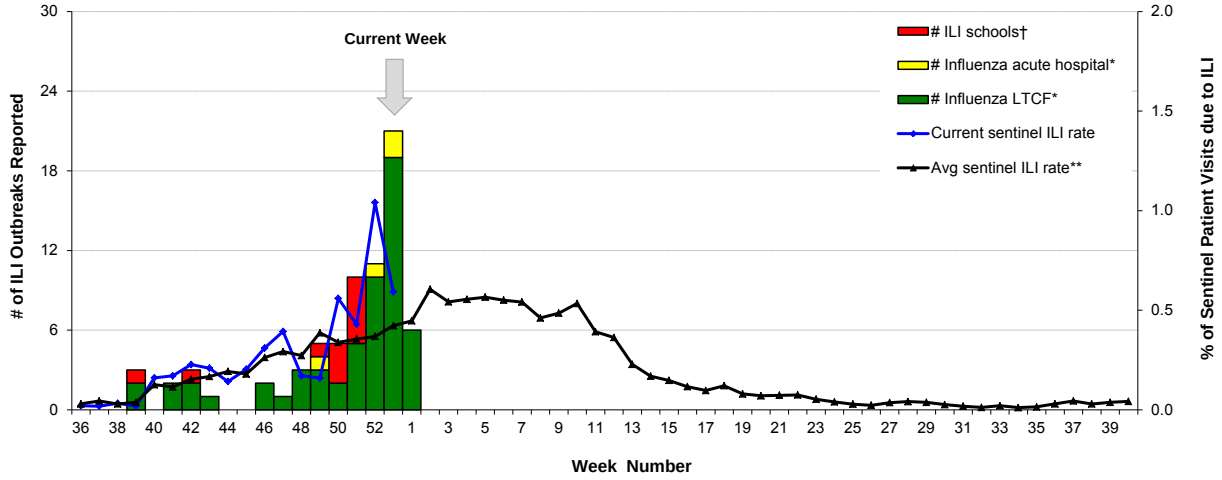
Influenza-like Illness (ILI) Outbreaks

Since our last bulletin, 17 new laboratory-confirmed influenza outbreaks were reported, including 16 from LTCFs and one from an acute care facility. Of the 16 LTCF outbreaks, 15 were due to influenza A, all with subtype pending, and one had both influenza A and influenza B detected in separately affected units. Of the newly reported LTCF outbreaks, one had symptom onset in week 52 in IHA, 9 in week 53 (7 FHA, 1 VCHA, and 1 VIHA), and 6 in week 1 (5 FHA and 1 VIHA). The one acute care facility outbreak was due to influenza A (subtype pending) and had symptom onset in week 53 in VCHA.

Cumulatively, since week 39 (starting September 21, 2014), 62 facility outbreaks due to laboratory-confirmed influenza have been reported, including 58 from LTCFs and 4 from acute care. All but three of these outbreaks were due to influenza A and, of those with subtype information available, all were A(H3N2); two outbreaks due to influenza B and one due to both influenza A and influenza B detected in separate units have been reported.

Facility outbreak reports are substantially elevated this season compared to prior seasons. The number of facility outbreaks for the same year-to-date period (week 40 – week 1) during the last 2012-13 season of dominant, mismatched H3N2 activity was 40, and across the full season (week 40 – week 17) for 2012-13 and the 2013-14 A(H1N1)pdm09 dominant season was 91 and 13, respectively.

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



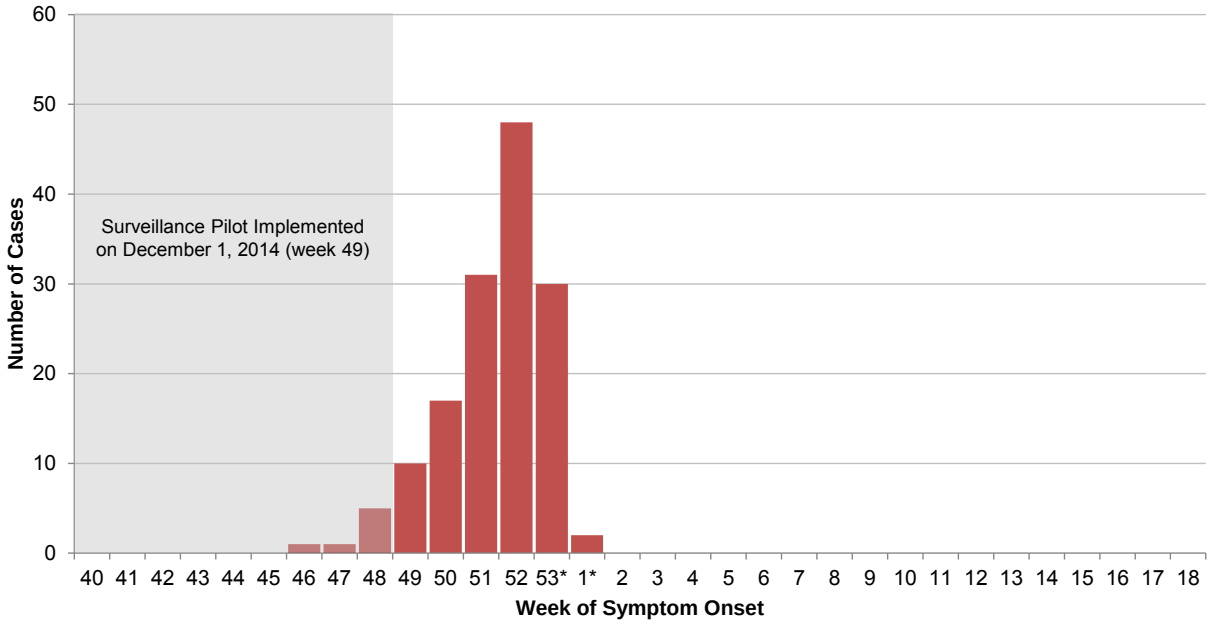
* Facility-based influenza outbreaks defined as 2 or more ILI cases within 7-day period, with at least one **laboratory-confirmed** case of influenza.
† School-based ILI outbreak defined as >10% absenteeism on any day, most likely due to ILI.
** Historical values exclude 2008-09 and 2009-10 seasons due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

Laboratory-confirmed Influenza Hospitalizations

On December 1, 2014, the BC Centre for Disease Control and the regional Health Authorities implemented an influenza severe outcome surveillance (SOS) pilot in BC for monitoring laboratory-confirmed influenza hospitalizations. An epidemic curve of hospitalized influenza cases by week of symptom onset is shown below, mirroring trends observed in other surveillance indicators. Of note, reporting delays should be taken into account in interpreting trends, particularly for the most recent weeks of the epidemic curve displayed.

The median age of cases is 79 years (range: <1 year to >90 years), and more than 70% of cases have been reported in elderly adults ≥65 years. The majority (>85%) of cases have had one or more underlying comorbidity. Almost all cases (97%) have been due to influenza A, all A(H3N2) among those with subtype information available, with a minority (3%) due to influenza B.

Number of laboratory-confirmed influenza hospitalizations by week of symptom onset, British Columbia, 2014-15



* Based on partial week; data are subject to change as reporting becomes more complete. Includes influenza SOS case report forms received as of noon PST on January 8, 2015.

Symptom onset date was imputed as hospital admission date minus two days where symptom onset was unknown.

Only severe cases of laboratory-confirmed influenza admitted to an intensive care unit (ICU) are reported in FHA; in all other Health Authorities, both hospitalizations and ICU admissions are reported.

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. This is likely to reduce vaccine effectiveness against the A(H3N2) influenza virus. 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 January 8, 2015, the NML has antigenically characterized 66 influenza viruses [40 A(H3N2), 2 A(H1N1)pdm09, and 24 influenza B] and genetically characterized 120 influenza A(H3N2) viruses that were received from Canadian laboratories.

Influenza A(H3N2)

Of the 160 A(H3N2) viruses characterized so far this season by the NML,158 (99%) showed antigenic or genetic evidence of antigenic drift (i.e. vaccine mismatch).

Of the 40 A(H3N2) viruses antigenically characterized by hemagglutinin inhibition (HI) assay: 34 (85%) 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 (13%) 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 120 A(H3N2) viruses that did not grow to sufficient titres for antigenic characterization by HI assay. Of the 120 A(H3N2) viruses genetically characterized: 119 (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 24 influenza B viruses characterized, 21 (88%) 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 (13%) 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, 2014 to January 8, 2015, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing. Of the 299 influenza A viruses [297 A(H3N2) and 2 A(H1N1)pdm09] tested against amantadine, 296 A(H3N2) viruses and both A(H1N1)pdm09 viruses were resistant; one A(H3N2) virus was sensitive to amantadine. Of the 198 influenza viruses [175 A(H3N2), 2 A(H1N1)pdm09, and 21 influenza B] tested against oseltamivir, all were sensitive. Of the 198 influenza viruses [173 A(H3N2), 2 A(H1N1)pdm09,and 21 influenza B] tested against zanamivir, all were sensitive.

Updated AMMI Guidelines: LTCF Outbreak Control

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: http://www.ammi.ca/guidelines.

International

USA (week 52)

During week 52, influenza activity continued to increase in the United States. Of the 24,001 specimens tested, 7,289 (30%) were positive for influenza, including 7,041 (97%) influenza A [1,635 A(H3N2), 6 A(H1N1)pdm09, and 5,400 with subtyping not performed] and 248 (3%) influenza B. Of the 268 A(H3N2) influenza viruses collected since October 1, 2014, and characterized by HI assay, 85 (32%) were characterized as A/Texas/50/2012-like, the A(H3N2) component of the 2014-15 Northern Hemisphere influenza vaccine, and 183 (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 5.9%, above the national baseline of 2.0%, while the proportion of deaths attributed to pneumonia and influenza was below the epidemic threshold. Six influenza-associated paediatric deaths were reported. Details are available at: www.cdc.gov/flu/weekly/.

WHO

There have been no updates to the WHO influenza surveillance summary since our last bulletin. Previous updates are available at: www.who.int/influenza/surveillance_monitoring/updates/en/.

Emerging Respiratory Pathogens

Enterovirus D68 (EV-D68), British Columbia

Enterovirus-D68 (EV-D68) activity has been declining in BC following a peak in early-to-mid October, concurrent with increased circulation of other seasonal respiratory viruses, such as influenza and RSV. During the autumn enhanced surveillance period, spanning September 1 to December 31, 2014, a total of 221 EV-D68 cases were detected in BC, of which at least 140 required hospitalization. Hospitalization status was unknown for a further 23 cases. As of December 31, 2014, enhanced surveillance has ended in BC.

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

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 since2010-11.

†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

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.

A

Reporting Information

Health unit/medical health officer notified? ☐ *Yes* ☐ *No*

Person Reporting: _____ Title: _____

Contact Phone: _____ Email: _____

Health Authority: _____ HSDA: _____

Full Facility Name: _____

Is this report:

☐ First Notification *(complete section **B** below; Section **D** if available)*

☐ Update *(complete section **C** below; Section **D** if available)*

☐ Outbreak Over *(complete section **C** below; Section **D** if available)*

B

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/MMM/YYYY

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

C

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 Information

Specimen(s) submitted? ☐ Yes (location: _____) ☐ No ☐ Don't know

If yes, organism identified? ☐ Yes (specify: _____) ☐ No ☐ Don't know

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Vancouver BCV5Z 4R4

Phone: (604) 707-2510
Fax: (604) 707-2516
ilioutbreak@bccdc.ca