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

British Columbia Influenza Surveillance Bulletin

Influenza Season 2015-16, Number 10, Week 5
January 31 to February 6, 2016

Table of Contents:

Increasing Influenza B Activity in BC

In week 5 (January 31 to February 6, 2016), community-based surveillance indicators suggest increasing influenza-like illness activity in BC, with mostly influenza B viruses circulating.

At the BCCDC Public Health Laboratory, influenza positivity has remained elevated at >30% since week 2. Influenza B detections continued to comprise an increasing proportion of influenza detections in week 5, representing more than 70% of all influenza positive specimens. Influenza A(H1N1)pdm09 viruses and respiratory syncytial viruses (RSV) were also commonly detected during this period.

Since our last bulletin one week ago, two new lab-confirmed influenza A outbreaks were reported in long-term care facilities in VCHA, both with onset in week 5 and both with subtype pending.

This week, the European I-MOVE multicentre study released interim estimates of vaccine effectiveness (VE) for the 2015-16 northern hemisphere season. Adjusted VE against A(H1N1)pdm09 was 44% (95% CI: -3%, 70%) in all patients and 41% (95% CI: -25%, 72%) in adults 18-64 years. Interim estimates are based on a small number of cases and should be interpreted with caution. For details, see: www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21378

Also this week, the WHO published a Risk Assessment on Seasonal Influenza A(H1N1)pdm09, available from: www.who.int/influenza/publications/riskassessment_AH1N1pdm09_201602/en/

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team
Contributors: Lisan Kwindt, Catharine Chambers, Danuta Skowronski

Report Disseminated: February 11, 2016

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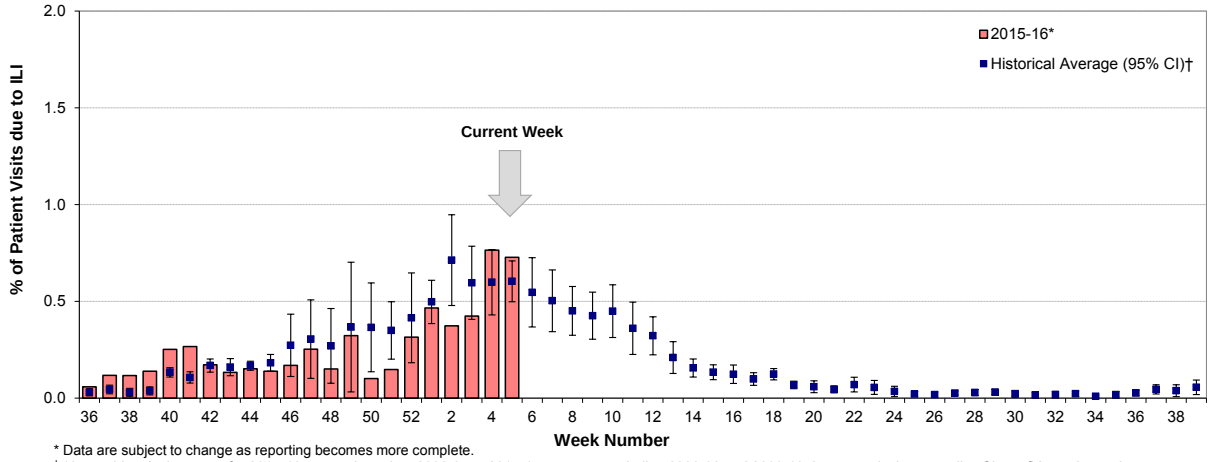
British Columbia

Sentinel Physicians

In week 5, the proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites remained elevated for the second consecutive week and was significantly above the 10-year historical average for this time of year at 0.73%. So far, 49% of sentinel sites have reported for week 5.

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

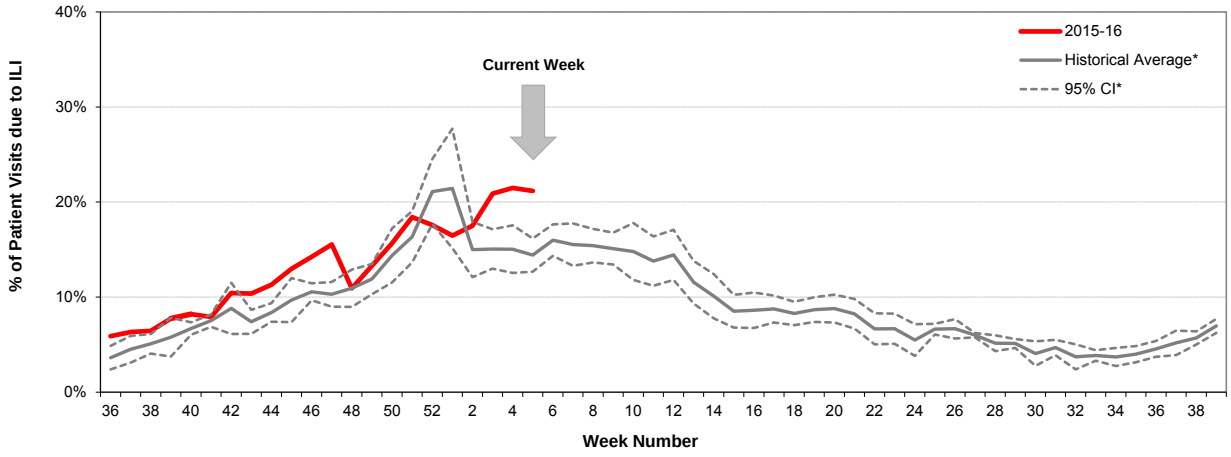


* Data are subject to change as reporting becomes more complete.
† 10-year historical average for 2015-16 season based on 2003-04 to 2014-15 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children's Hospital Emergency Room

The proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI was 21% in week 5 and has been significantly above the 5-year historical average for this time of year since week 3.

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

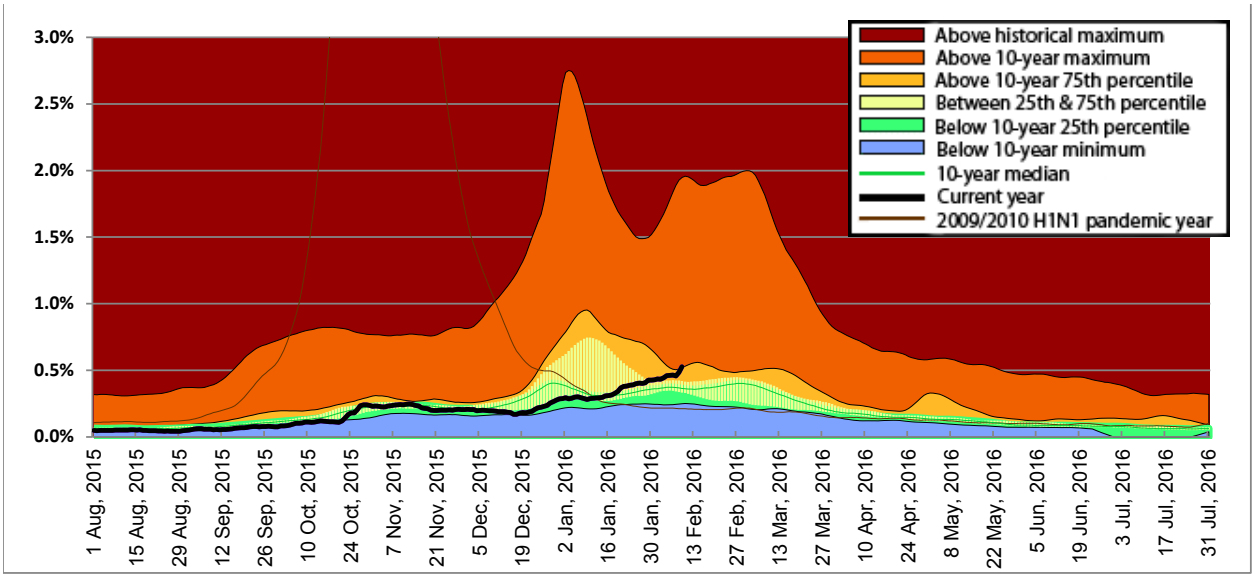


Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chieft complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2015-16 season based on 2010-11 to 2014-15 seasons; CI=confidence interval

Medical Services Plan

In week 5, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, increased in all regions of the province, notably in FHA, VCHA and for the province overall where rates were above 10-year maximums. In NHA, rates were above 10-year 75th percentiles; while in IHA and VIHA, rates were within 10-year median levels.

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

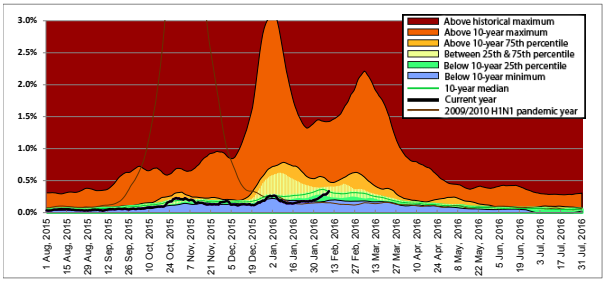


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

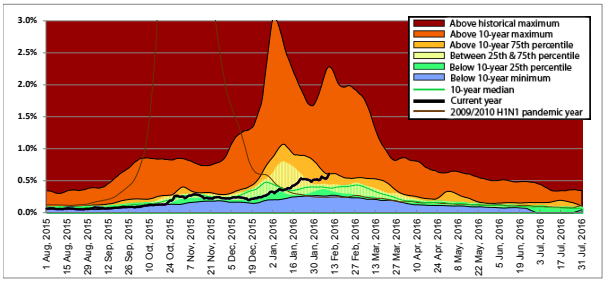
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2015 corresponds to sentinel ILI week 30; data are current to February 9, 2016.

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

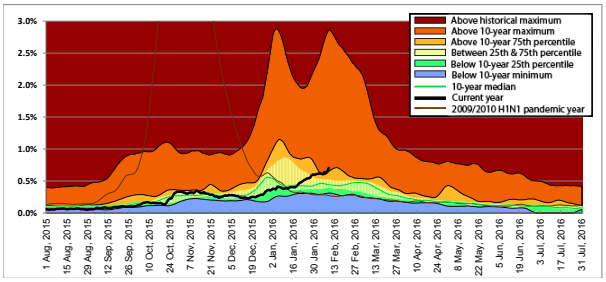
Interior



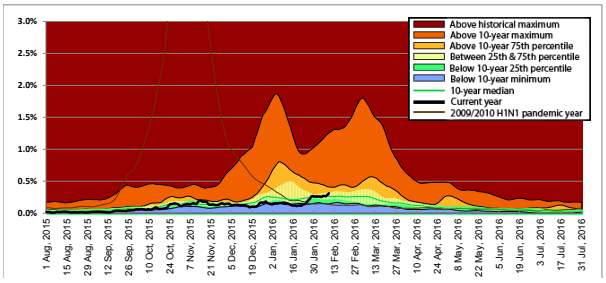
Fraser



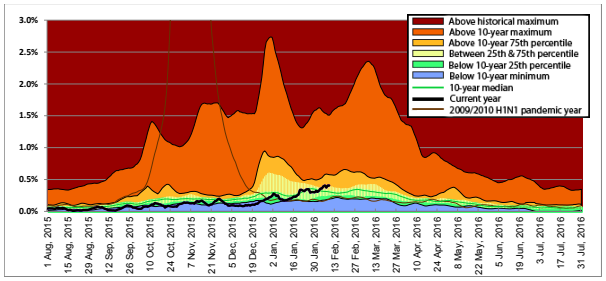
Vancouver Coastal



Vancouver Island



Northern



Laboratory Reports

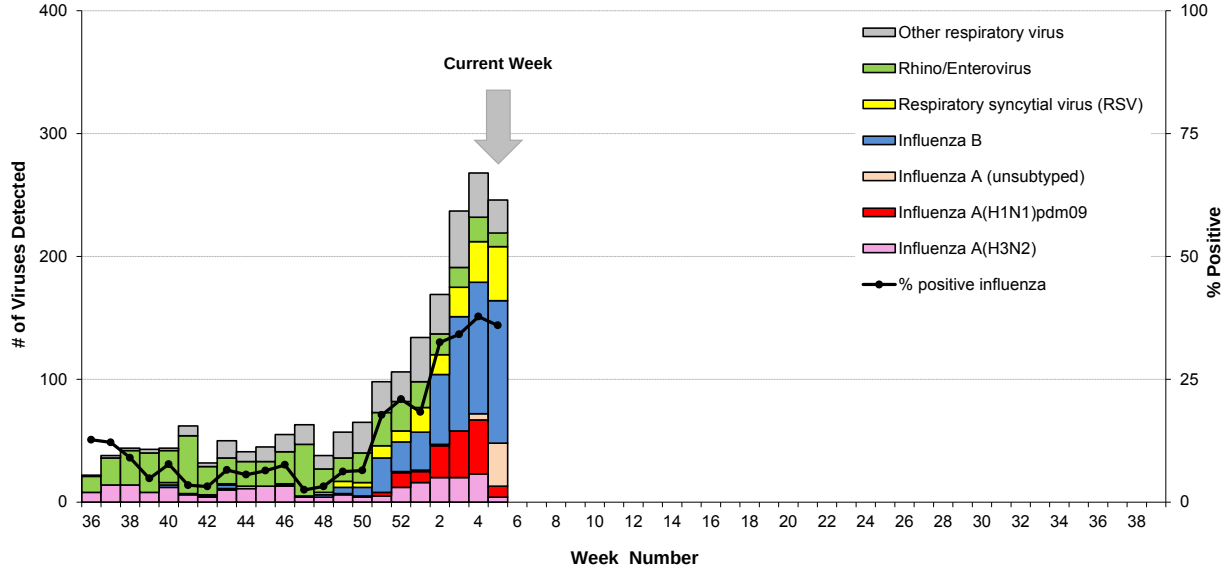
BCCDC Public Health Laboratory

In week 5, 456 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 164 (36%) tested positive for influenza, including 48 (29%) with influenza A [4 A(H3N2), 9 A(H1N1)pdm09, and 35 subtype pending] and 116 (71%) with influenza B. Influenza positivity has remained elevated at above 30% since week 2 at the BCCDC PHL. Influenza B viruses continued to comprise an increasing proportion of influenza detections in week 5, representing more than 70% of all influenza positive specimens. An increasing proportion of A(H1N1)pdm09 viruses and respiratory syncytial viruses (RSV) was also detected.

Cumulatively since week 40 (starting October 4, 2015), 835 (19%) patients have tested positive for influenza at the BCCDC PHL, including 363 (43%) with influenza A [182 A(H3N2), 144 A(H1N1)pdm09 and 37 subtype pending], 470 (56%) with influenza B, and two adult patients with influenza A and B co-infections. Influenza B viruses have comprised the majority of influenza detections since week 50, with influenza B/Victoria lineage viruses predominating over B/Yamagata lineage viruses at a ratio of 3:1 so far this season. Among influenza A detections, A(H1N1)pdm09 subtype viruses have comprised an increasing proportion of detections, outnumbering A(H3N2) subtype viruses since week 2.

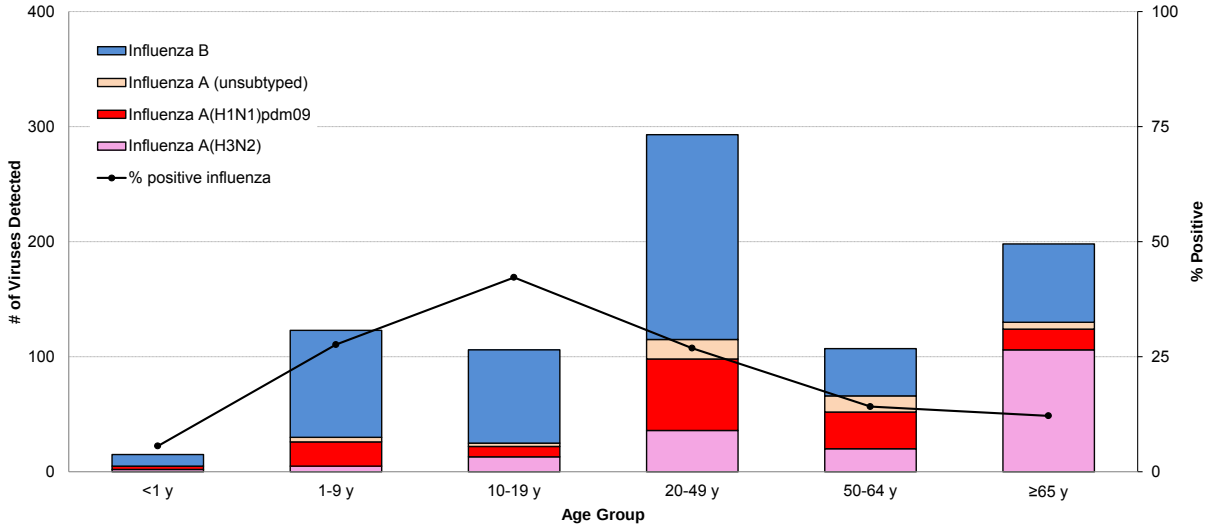
So far this season (cumulatively since week 40), just under one-half (47%) of influenza detections have been in non-elderly, working-aged adults 20-64 years, followed by children <20 years (29%) and elderly adults ≥65 years (23%), with differences observed by influenza type/subtype. Adults 20-64 years, 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.

Influenza and other virus detections among respiratory specimens submitted to BCCDC Public Health Laboratory, 2015-16



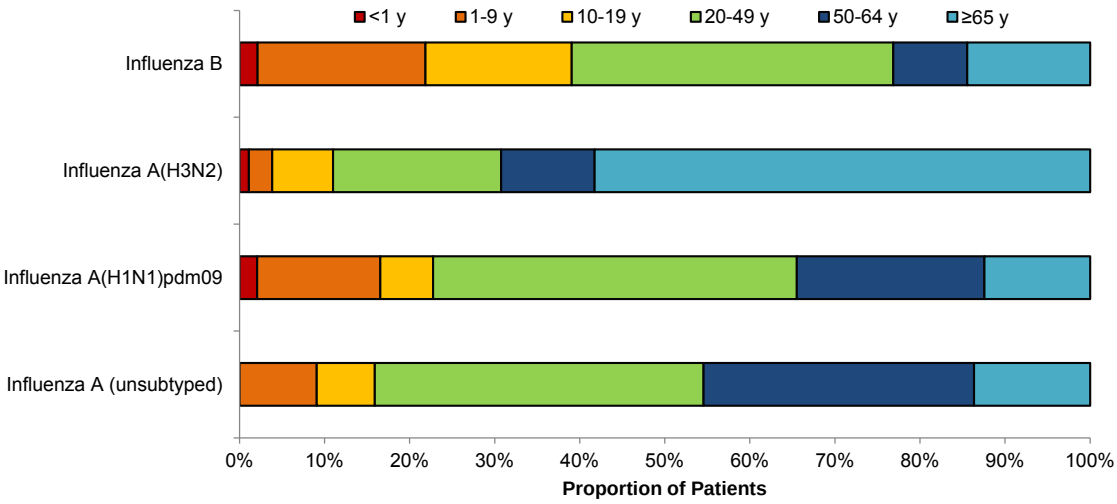
Data are current to February 10, 2016.

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



Data are current to February 10, 2016; figure includes cumulative influenza detections for specimens collected from weeks 40-5.

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

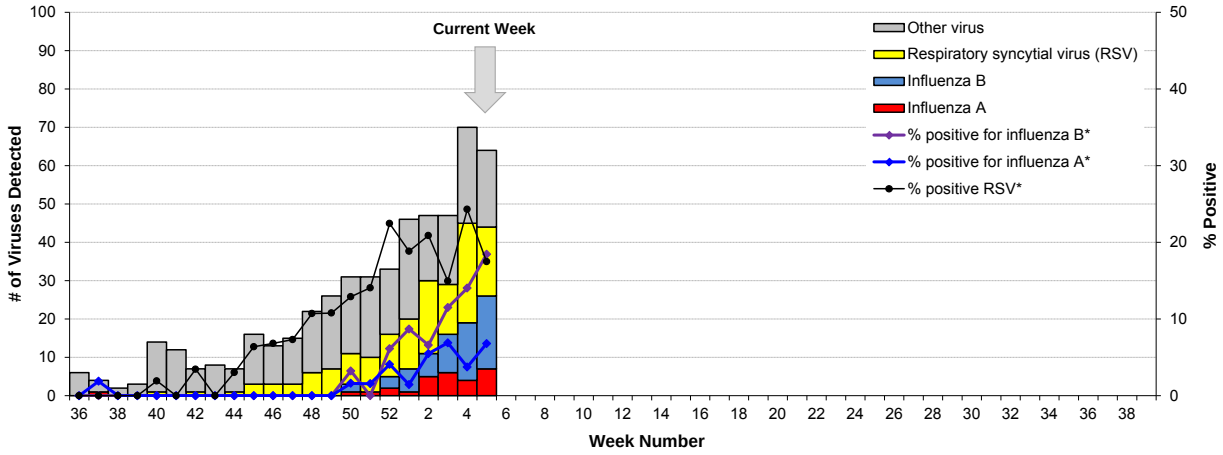


Data are current to February 10, 2016; figure includes cumulative influenza detections for specimens collected from weeks 40-5.

BC Children's and Women's Health Centre Laboratory

In week 5, the BC Children's and Women's Health Centre Laboratory conducted 103 tests for influenza; 7 (7%) were positive for influenza A, and 19 (18%) were positive for influenza B. The proportion of tests positive for influenza B continued to rise during this period, increasing from 7% in week 2 to 18% in week 5. Respiratory syncytial virus (RSV) was also commonly detected (18% of tests positive in week 5).

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



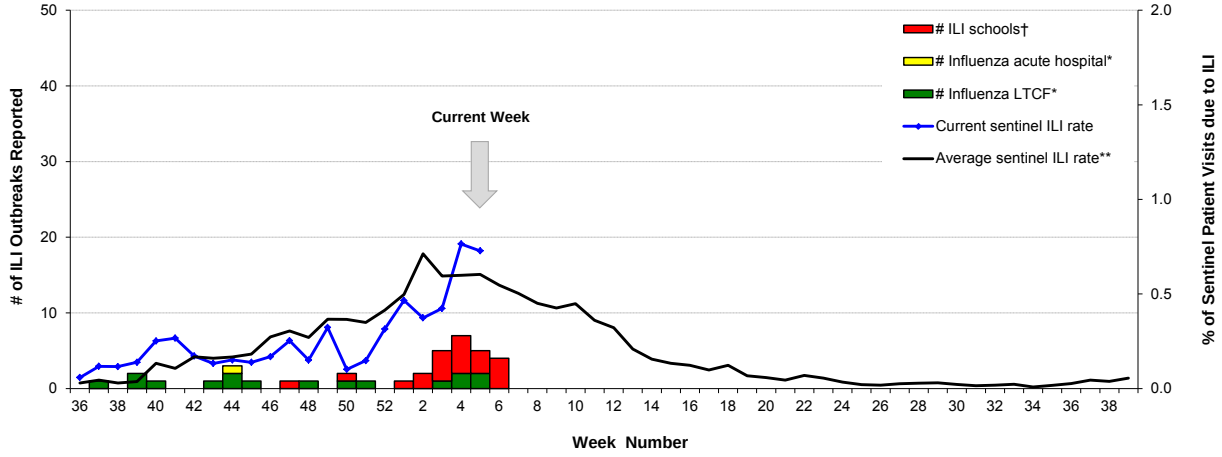
* Positive rates were caculated using aggregate data. The denominators for each rate represent the total number of tests; multiple tests may be performed for a single specimen and/or patient.

Influenza-like Illness (ILI) Outbreaks

Since our last bulletin one week ago, two new lab-confirmed influenza A outbreaks were reported from long-term care facilities (LTCF) in VCHA, both with onset in week 5 and both with subtype pending. Six new ILI outbreaks were reported from schools in IHA: two in week 5, and four in week 6.

In total since mid-August (since week 32, starting August 9, 2015), 18 influenza outbreaks [11 A(H3N2), 1 with both A(H3N2) and A(H1N1)pdm09 viruses detected, 3 influenza A (subtype pending), and 3 influenza B] have been reported from facilities, including 17 from LTCFs and one from an acute care facility. Twenty-one school ILI outbreaks have been reported so far this season.

Number of influenza-like illness (ILI) outbreaks reported, compared to current sentinel ILI rate and historical average sentinel ILI rate, British Columbia 2015-16



* 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.

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.

National

FluWatch (week 4, January 24-30, 2016):

Overall in week 4, seasonal influenza activity increased from the previous week. Laboratory detections increased to 16% in week 4; rates remained lower than average but are now within expected levels for this time of the year (range: 12-26% based on the previous five seasons). The majority of influenza detections were reported from Western Canada, where BC and AB accounted for 58% of influenza detections in Canada in week 4. Influenza A(H1N1) is the most common influenza subtype circulating in Canada. Adults aged 20-44 and 45-64 years accounted for 51% of reported influenza A(H1N1)pdm09 cases; whereas, adults aged 65 years and older represented 44% of all reported A(H3N2) cases. In week 4, 13 new laboratory confirmed influenza outbreaks were reported: six in LTCFs, four in hospitals and three in an institutional or community setting; the majority were due to influenza A. In week 4, 38 new lab-confirmed, influenza-associated paediatric hospitalizations were reported by the IMPACT network, 19 due to A(H1N1)pdm09, one due to A(H3N2), and nine due to influenza B; the remainder were influenza A (unsubtyped). 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 February 11, 2016, the National Microbiology Laboratory (NML) received 330 influenza viruses [107 A(H3N2), 152 A(H1N1)pdm09 and 71 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 107 influenza A(H3N2) viruses, only 15 (14%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 15 viruses characterized by HI assay, all were considered antigenically similar to a cell-passaged A/Switzerland/9715293/2013-like virus, 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 92 viruses that did not grow to sufficient titre for HI assay. Of the 92 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 152 A(H1N1)pdm09 viruses characterized were antigenically similar to an A/California/7/2009-like virus, the WHO-recommended A(H1N1) component for the 2015-16 northern hemisphere influenza vaccine.

Influenza B: Of the 71 influenza B viruses characterized, 32 (45%) were antigenically similar to a B/Phuket/3073/2013-like (Yamagata lineage) virus, the recommended influenza B component for the 2015-16 northern hemisphere influenza vaccine, while 39 (55%) were characterized as a B/Brisbane/60/2008-like (Victoria lineage) virus, 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 February 11, 2016, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing. Of the 257 influenza A viruses [111 A(H3N2) and 146 A(H1N1)pdm09] tested against amantadine, all were resistant with the exception of one A(H3N2) virus which was sensitive to amantadine. Of the 327 influenza viruses [109 A(H3N2), 150 A(H1N1)pdm09 and 68 B] tested against oseltamivir, all were sensitive. Of the 326 influenza viruses [109 A(H3N2), 149 A(H1N1)pdm09 and 68 B] tested against zanamivir, all were sensitive.

International

USA (week 4, January 24-30, 2016): During week 4, influenza activity increased slightly in the United States. The most frequently identified influenza virus type reported by public health laboratories during week 4 was influenza A, with influenza A (H1N1)pdm09 viruses predominating. The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the system-specific epidemic thresholds. Two influenza-associated pediatric deaths were reported. A cumulative rate for the season of 2.6 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for influenza-like illness (ILI) was 2.2%, which is above the national baseline of 2.1%. The geographic spread of influenza in three states was reported as widespread; 18 states reported regional activity; 16 states reported local activity; 12 states reported sporadic activity; and one state reported no activity. Details are available at: www.cdc.gov/flu/weekly/.

WHO (as of February 8, 2016): Globally, increasing levels of influenza activity continued to be reported in the temperate zones of the northern hemisphere with influenza A(H1N1)pdm09 as the most detected virus.

- Increasing influenza A(H1N1)pdm09 activity continued to be reported in Europe. Some countries in northern and eastern Europe reported a sharp increase in ILI and an increase in severe cases due to influenza A(H1N1)pdm09. A few countries in Europe reported an increase in activity predominantly of influenza B virus.
- In North America, a slight increase of influenza A(H1N1)pdm09 was reported, but overall levels were still low.
- In eastern Asia influenza activity was increasing in Japan and the Republic of Korea due to predominantly influenza A(H1N1)pdm09 virus. In North China, influenza A(H3N2) and B were the predominant circulating viruses detected.
- In western Asia, influenza activity remained at high levels in Israel but appeared to have peaked in Jordan, Oman and Iran.
- Few influenza virus detections were reported by countries in tropical Africa.
- In tropical countries of the Americas, Central America and the Caribbean, influenza and other respiratory virus activity were overall at low levels in most countries. Puerto Rico and Guadeloupe reported increased influenza and ILI activities in recent weeks. In Costa Rica, influenza activity continued at high but decreasing levels.
- In Tropical Asia, countries in Southern and South East Asia continued to report ongoing low influenza activity.
- In the temperate countries of the southern hemisphere respiratory virus activity remained low.
- From January 11 to 24, 2016, the WHO GISRS laboratories tested more than 112,204 specimens; of these, 20,839 were positive for influenza viruses, including 17,413 (84%) typed as influenza A and 3,428 (16%) as influenza B. Of the sub-typed influenza A viruses, 10,873 (82%) were influenza A(H1N1)pdm09 and 2,405 (18%) were influenza A(H3N2). Of the characterized B viruses, 509 (42%) belonged to the B-Yamagata lineage and 700 (58%) 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/.

Early Estimates of Influenza Vaccine Effectiveness, 2015-16 Season

On February 11, 2016, the European I-MOVE multicentre case-control study released interim estimates of vaccine effectiveness (VE) for the 2015-16 northern hemisphere seasonal vaccine. Crude VE against medically attended A(H1N1)pdm09 illness was 64% (95% CI: 38%, 80%) in all patients and 39% (95% CI: -25%, 70%) when analyses were restricted to adults 18-64 years. After adjustment for study site, age and onset time, VE estimates dropped to 44% (95% CI: -3%, 70%) and 41% (95% CI: -25%, 72%) in all patients and adults 18-64 years, respectively. Due to the late start of the 2015-16 influenza season in Europe, interim VE estimates are based on a small number of cases and should be interpreted with caution. Sample size was insufficient to derive estimates for A(H3N2) or influenza B outcomes. The authors comment that no information on genetic characterization of the viruses was available, but that all A(H1N1)pdm09 characterized by the European Centre for Disease Prevention and Control (ECDC) up to week 3 have belonged to the 6B subgroup.

Details are available at: www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21378.

WHO Recommendations for Influenza Vaccines

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/.

WHO Recommendations for 2016 Southern Hemisphere Influenza Vaccine

On September 24, 2015, the WHO announced recommended strain components for the 2016 Southern 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.

* Recommended strains represent a change for two of the three components used for the 2015 Southern Hemisphere and 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 Southern Hemisphere vaccine since 2010 and 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. Most viruses belonging to A/Hong Kong/4801/2014-like (clade 3C.2a) viruses are considered antigenically related to cell-passaged A/Switzerland/9715293/2013-like (clade 3C.3a) viruses recommended for the 2015 Southern Hemisphere and 2015-16 Northern Hemisphere vaccines but are antigenically distinct from egg-passaged A/Switzerland/9715293/2013-like viruses used in vaccine manufacturing.

§ 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: www.who.int/influenza/vaccines/virus/recommendations/2016_south/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
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/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/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/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.

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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