

British Columbia Influenza Surveillance Bulletin

Influenza Season 2015-16, Number 15, Week 10

March 6 to 12, 2016

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Influenza Activity Still High in BC but May have Passed the Epidemic Peak

In week 10 (March 6 to 12, 2016), influenza activity remained elevated in BC, although the epidemic peak may have passed. Most influenza surveillance indicators showed stable or declining activity in week 10. A(H1N1)pdm09 has been the predominant circulating influenza virus since week 9, while influenza B viruses dominated earlier this season.

At the BCCDC Public Health Laboratory, influenza positivity decreased from a peak of 45% in week 6 to 36% in week 10. A(H1N1)pdm09 viruses comprised about two-thirds of influenza detections with known type/subtype in week 10.

Since our last bulletin one week ago, one new influenza A(H1N1)pdm09 outbreak was reported from a long-term care facility in IHA in week 8.

This week, Canadian researchers published interim estimates of vaccine effectiveness (VE) for the 2015-16 influenza vaccine. VE was 64% (95%CI=44-77%) overall and 56% (95%CI=26-73%) among adults 20-64 years old against the dominant circulating A(H1N1)pdm09 strain. Despite some genetic evolution in circulating viruses, findings show significant protection exceeding 60% this season and support the recent WHO decision to retain the same A(H1N1)pdm09 vaccine component for the 2016-17 season. Details are available at: www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21415.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

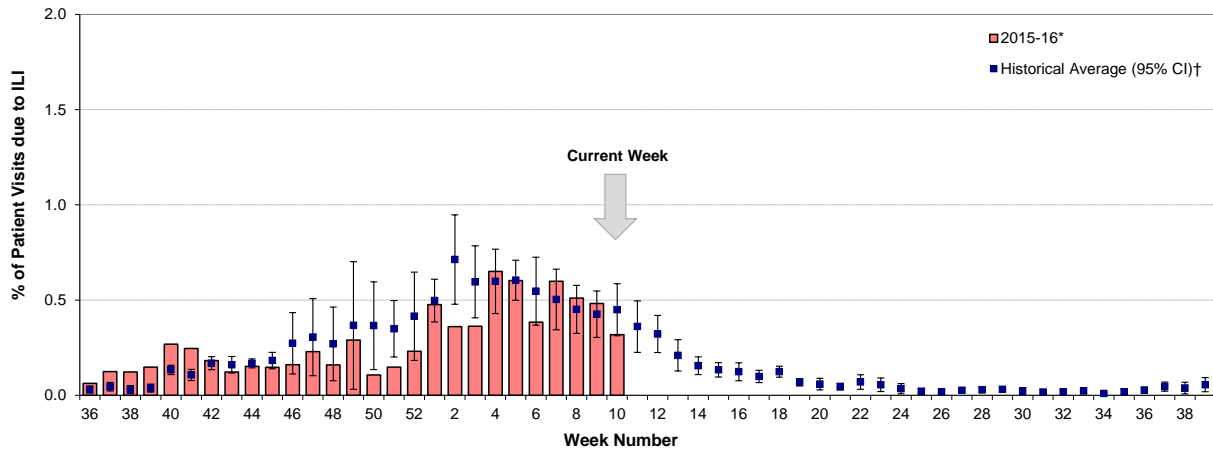
Report Disseminated: March 17, 2016

British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites decreased from 0.48% in week 9 to 0.32% in week 10 but remained within the 10-year historical average for this time of year. So far, 49% of sentinel sites have reported for week 10.

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

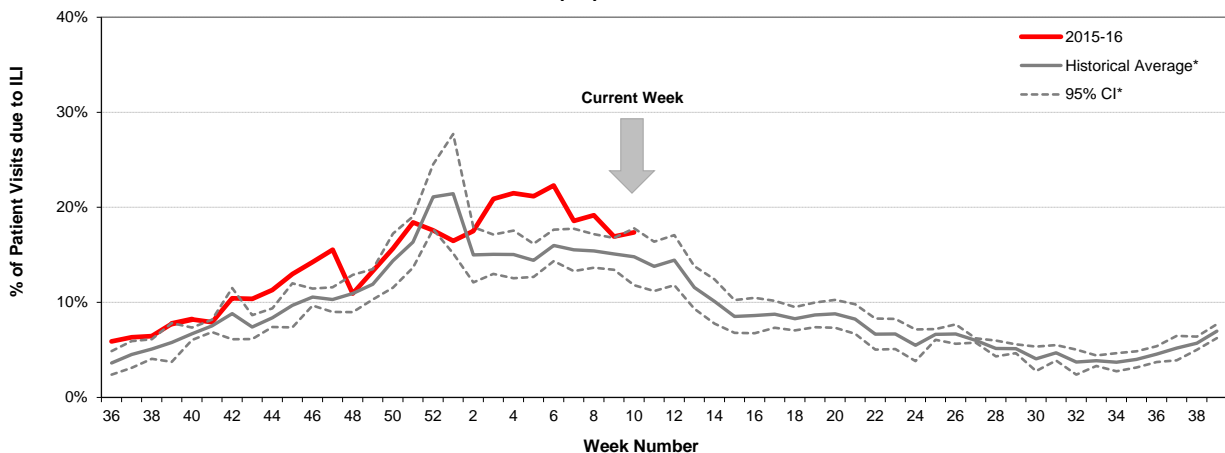


* Data are subject to change as reporting becomes more complete. One hospital ER site that reported ILI rates of $\geq 4\%$ during weeks 7-9 is excluded from graph.
† 10-year historical average for 2015-16 season based on 2003-04 to 2014-15 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children's Hospital Emergency Room

The proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI remained stable around 17% in week 10, falling within the 5-year historical average for the first time in eight weeks.

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

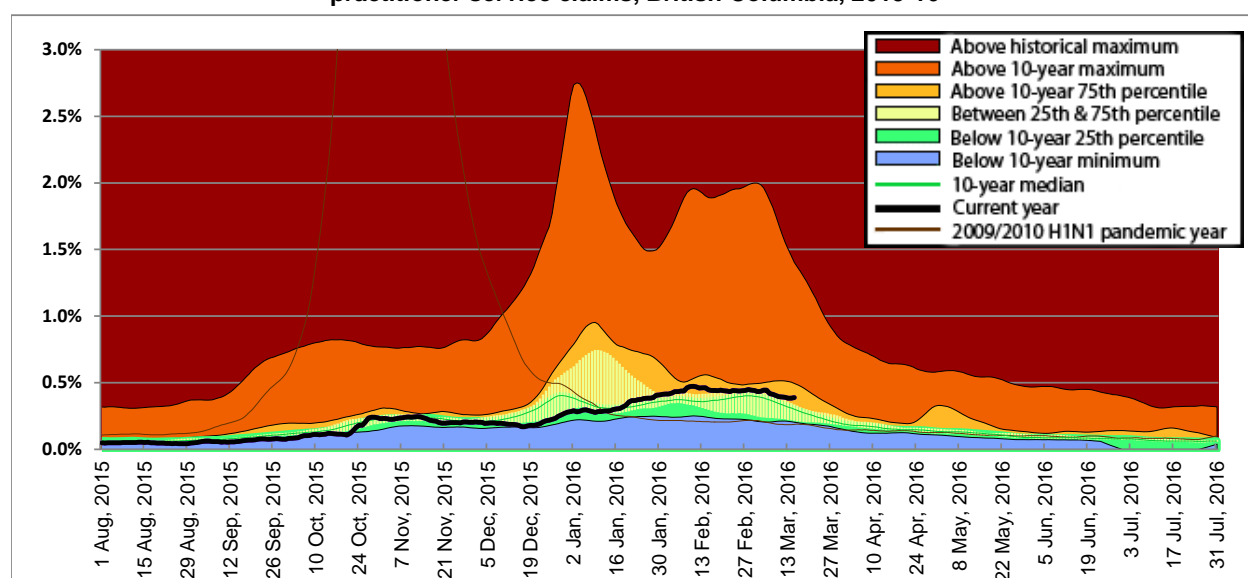


Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2015-16 season based on 2010-11 to 2014-15 seasons; CI=confidence interval

Medical Services Plan

BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, continued a stable trend again in week 10 but have started to decline in some regions of the province. Rates remained higher than expected for this time of year but were lower than historical peak levels observed in previous seasons, which typically occur earlier in the season. Rates were above 10-year 75th percentiles in all Health Authorities and for the province overall in week 10, with the exception of NHA where rates were between 25th and 75th percentiles.

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

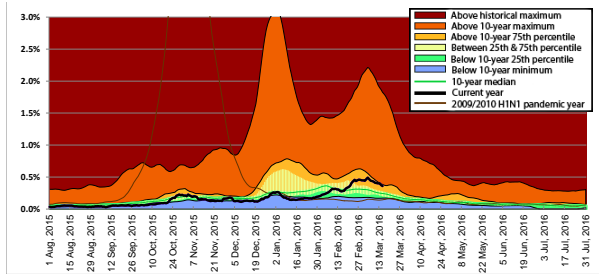


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

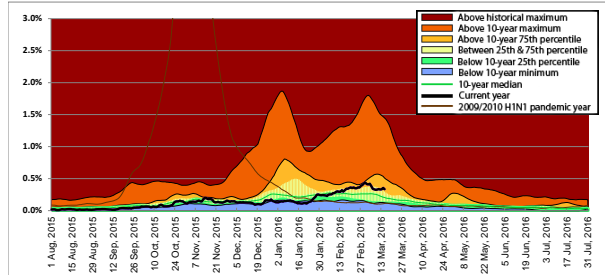
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2015 corresponds to sentinel ILI week 30; data are current to March 15, 2016.

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

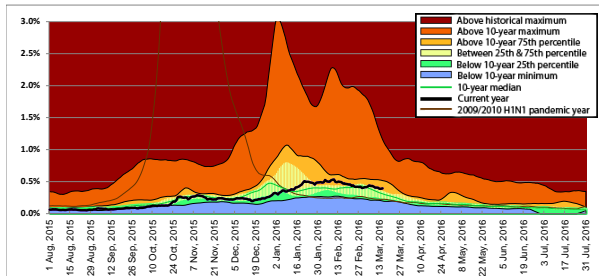
Interior



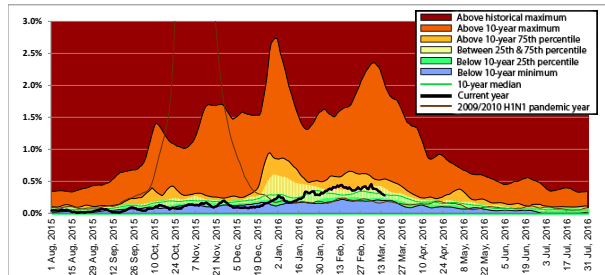
Vancouver Island



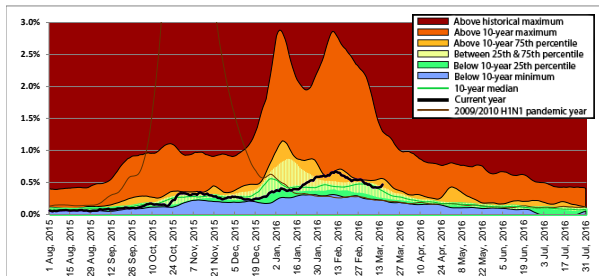
Fraser



Northern



Vancouver Coastal



Laboratory Reports

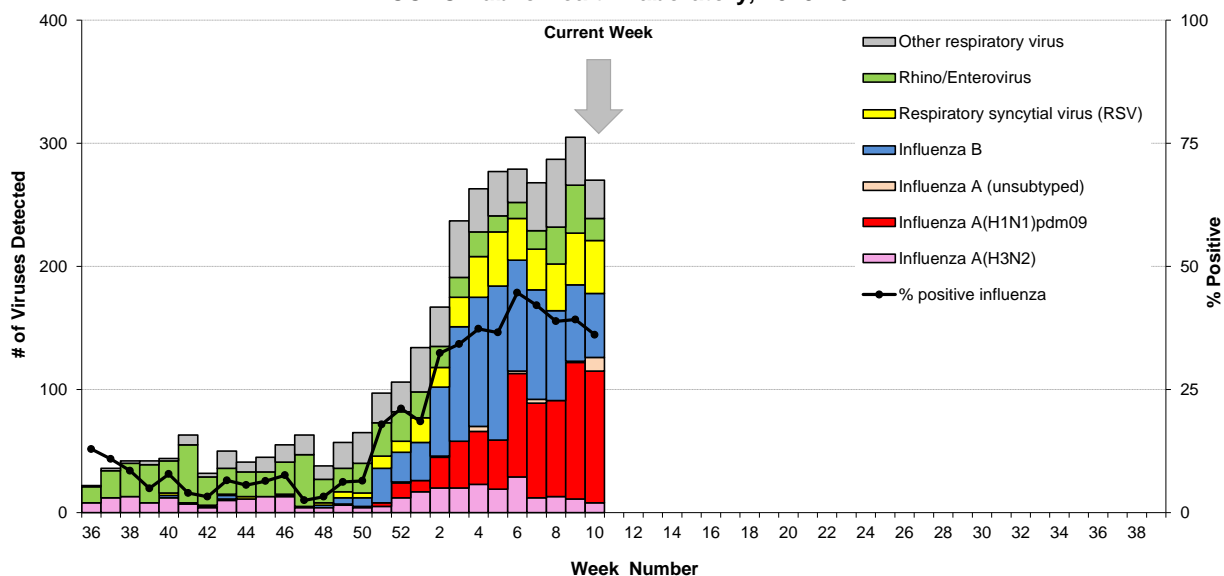
BCCDC Public Health Laboratory

In week 10, 493 patients were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 178 (36%) tested positive for influenza, including 126 (71%) with influenza A [107 A(H1N1)pdm09, 8 A(H3N2), and 11 subtype pending] and 52 (29%) with influenza B. Influenza positivity continued a decreasing trend from a peak of 45% in week 6 to 36% in week 10 but remained elevated. Influenza A(H1N1)pdm09 has been the predominant circulating influenza virus since week 9, comprising about two-thirds of influenza detections with known type/subtype in week 10. Earlier this season, influenza B had been the predominant circulating influenza virus up to week 5, with equal co-circulation of influenza A and B in weeks 6-8. Respiratory syncytial viruses (RSV) were also commonly detected during this period.

Cumulatively since week 40 (starting October 4, 2015), 1,745 (27%) patients have tested positive for influenza at the BCCDC PHL, including 906 (52%) with influenza A [621 A(H1N1)pdm09, 271 A(H3N2), and 14 subtype pending], 835 (48%) with influenza B, and four adult patients with influenza A and B co-infections. The 2015-16 season to date has been characterized by mixed circulation of influenza A and B viruses, with A(H1N1)pdm09 subtype viruses predominating over A(H3N2) subtype viruses since week 2 among influenza A detections and B/Victoria lineage viruses predominating over B/Yamagata lineage viruses among influenza B detections.

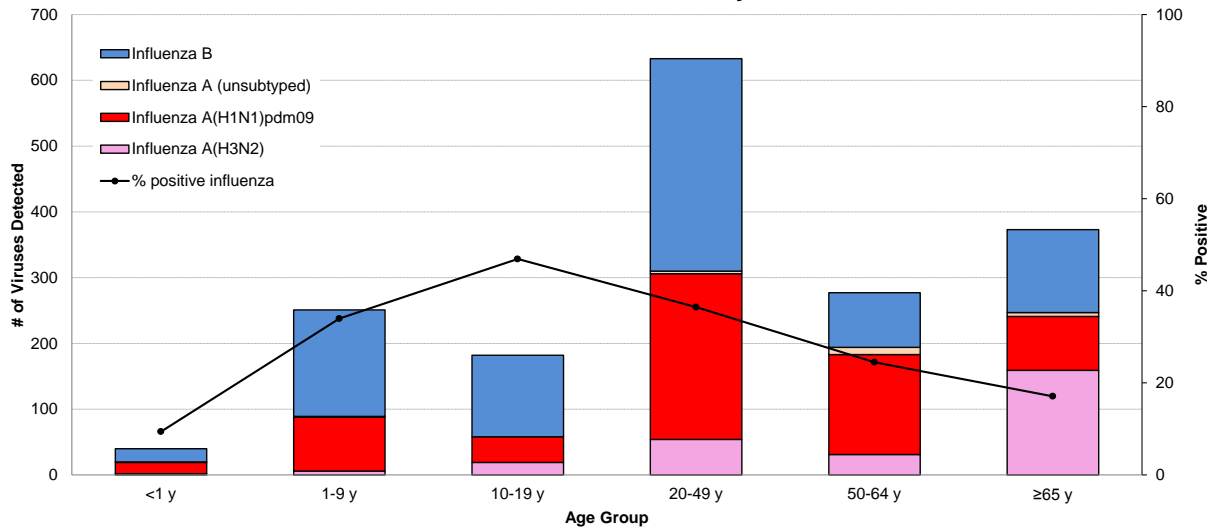
So far this season (cumulatively since week 40), just over one-half (52%) of influenza detections have been in non-elderly, working-aged adults 20-64 years, with a smaller proportion of detections in children <20 years (27%) and elderly adults ≥65 years (21%). However, this age distribution differs by influenza type/subtype: adults 20-64 years, and to a lesser extent children <20 years, comprise a larger proportion of A(H1N1)pdm09 and influenza B cases, while elderly adults ≥65 years comprise a larger proportion of A(H3N2) cases.

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



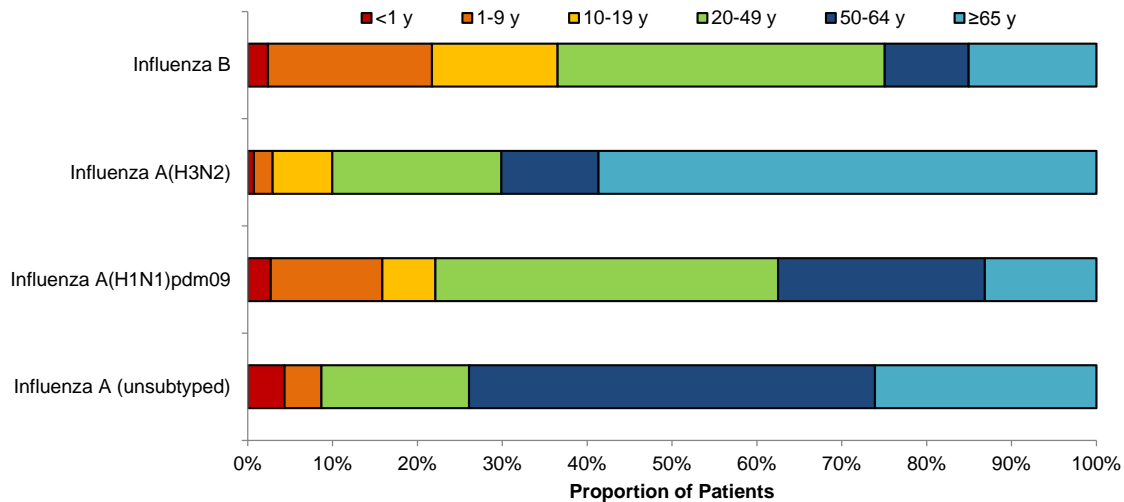
Data are current to March 16, 2016.

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



Data are current to March 16, 2016; figure includes cumulative influenza detections for specimens collected from weeks 40-10.

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

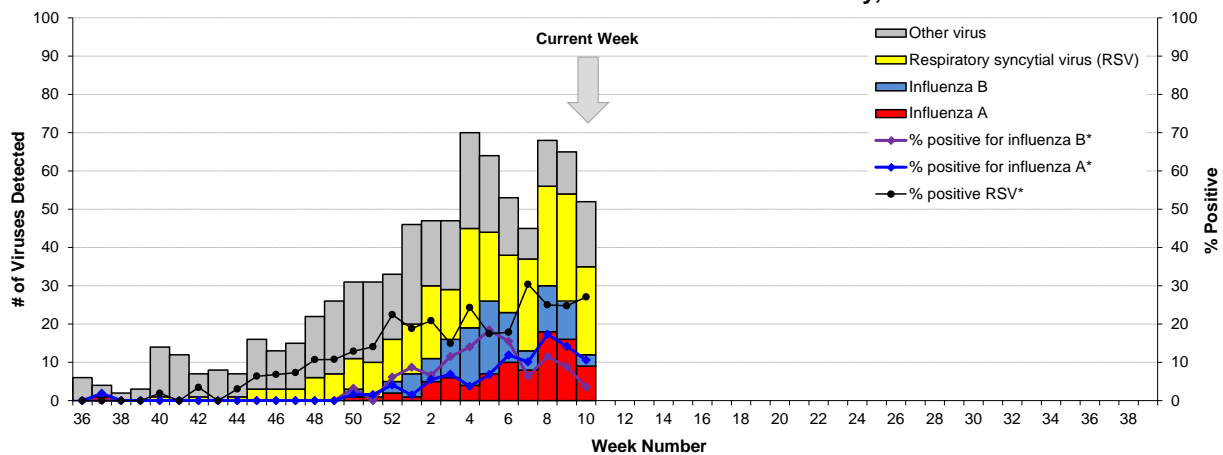


Data are current to March 16, 2016; figure includes cumulative influenza detections for specimens collected from weeks 40-10.

BC Children's and Women's Health Centre Laboratory

In week 10, the BC Children's and Women's Health Centre Laboratory conducted 85 tests for influenza; 9 (11%) were positive for influenza A, and 3 (4%) were positive for influenza B. The proportion of tests positive for influenza decreased from 17% in week 8 to 11% in week 10 for influenza A and from 12% in week 8 to 4% in week 10 for influenza B. Respiratory syncytial virus (RSV) continued to be the predominant respiratory virus detected in week 10 (27% of tests for RSV were positive).

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



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

Influenza-like Illness (ILI) Outbreaks

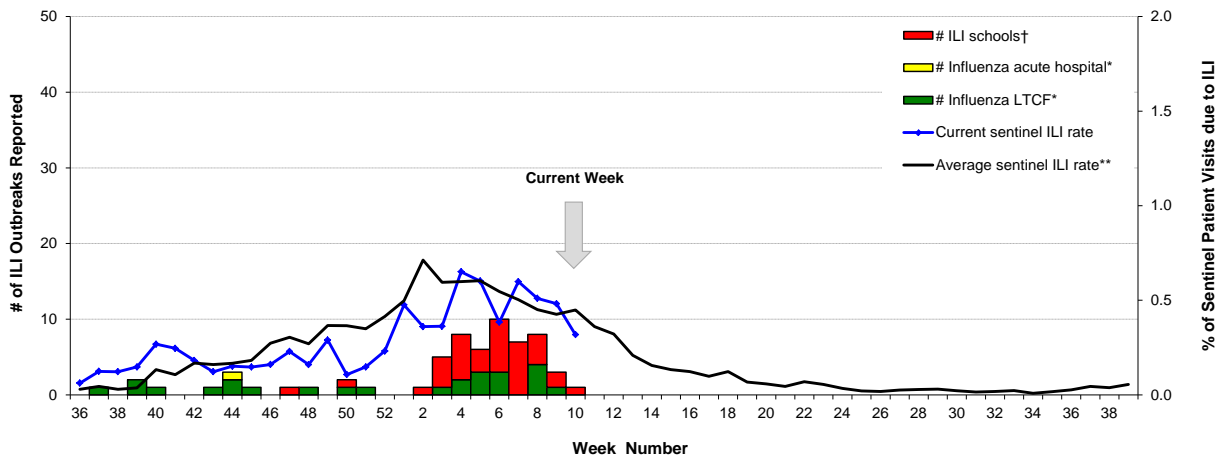
Since our last bulletin one week ago, one new lab-confirmed influenza A(H1N1)pdm09 outbreak was reported from a long-term care facility (LTCF) in IHA with onset in week 8. One new ILI outbreak in a school was reported in IHA in week 10.

In total since mid-August (since week 32, starting August 9, 2015), 28 influenza outbreaks have been reported from facilities, including 26 from LTCFs, one from an acute care facility, and one from a rehabilitation facility:

- 16 with A(H3N2) detected;
- 1 with A(H1N1)pdm09 detected;
- 2 with both A(H3N2) and A(H1N1)pdm09 detected;
- 2 with both influenza A(H3N2) and B detected; and
- 7 with influenza B detected.

Thirty-seven 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 9, February 28 – March 5, 2016)

Overall in week 9, influenza activity continued to increase. For a second week in a row, the Eastern provinces of Canada accounted for the majority of influenza activity. Nearly all reporting regions now have sporadic or localized activity. The percentage of tests positive for influenza increased slightly from 33% in week 8 to 34% in week 9, above the five-year expected levels for this time of year (range: 14-17%). However, with the late start to the 2015-16 influenza season, these above-normal levels are not unexpected and are typical of peak season levels. Influenza A(H1N1)pdm09 remains the most common influenza subtype circulating in Canada. In week 9, adults >45 years of age accounted for the largest proportion of hospitalizations. Paediatric hospitalizations reported by the IMPACT network continued to increase, reaching 132 hospitalizations in week 9. The number of outbreaks reported in week 9 continued to increase from the previous week with the majority of outbreaks reported in long-term care facilities. 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 March 17, 2016, the National Microbiology Laboratory (NML) received 994 influenza viruses [140 A(H3N2), 611 A(H1N1)pdm09 and 243 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 140 influenza A(H3N2) viruses, only 29 (21%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 29 viruses characterized by HI assay, all were considered antigenically similar to cell-passaged A/Switzerland/9715293/2013, the WHO-recommended A(H3N2) component for the 2015-16 northern hemisphere influenza vaccine. Genetic characterization was performed to infer antigenic properties on the remaining 111 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 111 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 611 A(H1N1)pdm09 viruses characterized were antigenically similar to A/California/7/2009, the WHO-recommended A(H1N1) component for the 2015-16 northern hemisphere influenza vaccine.

Influenza B: Of the 243 influenza B viruses characterized, 77 (32%) were antigenically similar to B/Phuket/3073/2013 (Yamagata lineage), the recommended influenza B component for the 2015-16 northern hemisphere influenza vaccine, while 166 (68%) were characterized as B/Brisbane/60/2008 (Victoria lineage), the recommended influenza B component for the 2015-16 northern hemisphere quadrivalent influenza vaccine containing two influenza B components.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1, 2015 to March 17, 2016, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing. Of the 604 influenza A viruses [141 A(H3N2) and 463 A(H1N1)pdm09] tested against amantadine, all were resistant with the exception of one A(H3N2) virus which was sensitive to amantadine. Of the 729 influenza viruses [126 A(H3N2), 415 A(H1N1)pdm09 and 188 B] tested against oseltamivir, all A(H3N2) and B viruses and 409/415 (99%) A(H1N1)pdm09 viruses were sensitive; six A(H1N1)pdm09 viruses with a H275Y mutation were resistant. Of the 730 influenza viruses [126 A(H3N2), 416 A(H1N1)pdm09 and 188 B] tested against zanamivir, all were sensitive.

Interim Estimates of 2015-16 Vaccine Effectiveness against Influenza A(H1N1)pdm09, Canada

This week, the Canadian Sentinel Practitioner Surveillance Network (SPSN) published interim estimates of vaccine effectiveness (VE) for the 2015-16 influenza vaccine against A(H1N1)pdm09 viruses dominating this season. VE against medically attended, lab-confirmed A(H1N1)pdm09 illness was 64% (95%CI=44-77%) overall and 56% (95%CI=26-73%) among adults 20-64 years old. Since their first emergence in 2009, A(H1N1)pdm09 viruses have evolved slightly, with an increasing proportion of viruses since October 2015 belonging to the newly emerging subclade 6B.1 (defined by S162N and I216T mutations in the haemagglutinin protein). However, these mutations do not appear to have dramatically affected the protection given by the A(H1N1)pdm09 vaccine component, which has been retained in the seasonal influenza vaccine since the 2009 pandemic. These findings are comparable to previous VE estimates of 70% measured by the Canadian SPSN during the last substantial A(H1N1)pdm09 epidemic in 2013-14, and support the recent WHO decision to retain the same A(H1N1)pdm09 vaccine component again for the 2016-17 season. The VE reported here is specific to A(H1N1)pdm09 viruses and cannot be extrapolated to other vaccine components. Due to considerations such as the late start of the 2015-16 influenza season and smaller number of accrued cases, estimates may vary in end-of-season analyses and should be interpreted with caution.

The full-text article is available from: www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21415.

International

USA (week 9, February 28 – March 5, 2016)

During week 9, influenza activity remained elevated in the United States. The most frequently identified influenza virus type reported by public health laboratories during week 9 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 paediatric deaths were reported. A cumulative rate for the season of 10.4 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for influenza-like illness (ILI) was 3.5%, which is above the national baseline of 2.1%. The geographic spread of influenza in 37 states was reported as widespread; 13 states reported regional activity; and the District of Columbia reported local activity. Details are available at: www.cdc.gov/flu/weekly/.

WHO

There have been no new WHO Influenza Updates since our last bulletin. Previous updates are available at: www.who.int/influenza/surveillance_monitoring/updates/en/.

On February 8, 2016, the WHO published a Risk Assessment on Seasonal Influenza A(H1N1)pdm09, available from: www.who.int/influenza/publications/riskassessment_AH1N1pdm09_201602/en/.

WHO Recommendations for Influenza Vaccines

WHO Recommendations for 2016-17 Northern Hemisphere Influenza Vaccine

On February 25, 2016, the WHO announced recommended strain components for the 2016-17 Northern Hemisphere trivalent influenza vaccine (TIV):*

- an A/California/7/2009 (H1N1)pdm09-like virus;†
- an A/Hong Kong/4801/2014(H3N2)-like virus;‡
- a B/Brisbane/60/2008-like (Victoria-lineage) virus.§

It is recommended that quadrivalent influenza vaccines (QIV) containing two influenza B viruses contain the above three viruses and a B/Phuket/3073/2013-like (Yamagata-lineage) virus.

These recommended components are the same as those recommended for the 2016 Southern Hemisphere vaccine.

* Recommended strains represent a change for two of the three components used for the 2015-16 Northern Hemisphere vaccines.

† Recommended strain has been retained as the A(H1N1) component since the 2009 pandemic and has been included in the Northern Hemisphere vaccine since 2010-11.

‡ Recommended strain for the A(H3N2) component represents a phylogenetic clade-level change from a clade 3C.3a virus to a clade 3C.2a virus.

§ Recommended strain for the influenza B component represents a lineage-level change from a B/Yamagata-lineage virus to a B/Victoria-lineage virus.

For further details: http://www.who.int/influenza/vaccines/virus/recommendations/2016_17_north/en/.

WHO Recommendations for 2015-16 Northern Hemisphere Influenza Vaccine

On February 26, 2015, the WHO announced the recommended strain components for the 2015-16 Northern Hemisphere trivalent influenza vaccine (TIV):*

- an A/California/7/2009(H1N1)pdm09-like virus;†
- an A/Switzerland/9715293/2013(H3N2)-like virus;‡
- a B/Phuket/3073/2013-like (Yamagata-lineage) virus.§

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

* These recommended strains are the same as those used for the 2015 Southern Hemisphere vaccine.

† Recommended strain has been retained as the A(H1N1) component since the 2009 pandemic and has been included in the Northern Hemisphere vaccine since 2010-11.

‡ A/South Australia/55/2014, A/Norway/466/2014, and A/Stockholm/6/2014 are A/Switzerland/9715293/2013-like viruses. Recommended strain is considered antigenically distinct from the A/Texas/50/2012-like virus recommended for the 2014-15 Northern Hemisphere vaccine and clusters within the emerging phylogenetic clade 3C.3a.

§ Recommended strain is the same influenza B-Yamagata lineage as the B/Massachusetts/2/2012-like virus recommended for the 2014-15 Northern Hemisphere vaccine but represents a phylogenetic clade-level change from clade 2 to clade 3.

For further details: www.who.int/influenza/vaccines/virus/recommendations/2015_16_north/en/.

Additional Information

Explanatory Note:

The surveillance period for the 2015-16 influenza season is defined starting in week 40. Weeks 36-39 of the 2014-15 season are shown on graphs for comparison purposes.

List of Acronyms:

ACF: Acute Care Facility

AI: Avian influenza

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

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