

British Columbia Influenza Surveillance Bulletin

Influenza Season 2014-15, Number 23, Weeks 37-38

September 13 to 26, 2015

Table of Contents:

British Columbia:

Sentinel Physicians	Page 2
Children's Hospital ER	Page 2
Medical Services Plan	Page 3
Laboratory Surveillance	Page 5
ILI Outbreaks	Page 7

Canada:

FluWatch Activity levels	Page 8
NML Strain Characterization	Page 8
NML Antiviral Resistance	Page 8

International:

USA (CDC) Surveillance	Page 9
WHO	Page 9

Emerging Respiratory Pathogens:

Avian Influenza A(H7N9)	Page 9
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Influenza Vaccine Components (WHO Recommendations)

2014-15 Northern Hemisphere	Page 10
2015-16 Northern Hemisphere	Page 10
2016 Southern Hemisphere	Page 10

Additional Information:

List of Acronyms	Page 11
Web Sites	Page 11
Outbreak Report Form	Page 12

Early, Low-level Influenza A(H3N2) Activity Continues in BC

In weeks 37-38 (September 13 to September 26, 2015), sporadic, low-level influenza A(H3N2) activity continued to be detected in BC.

One new lab-confirmed influenza A(H3N2) outbreak in a long-term care facility (LTCF) was reported in VCHA with onset in week 37. This is the second LTCF influenza outbreak to be reported in recent weeks; the first was reported in week 32. Summer and/or early fall reporting of LTCF outbreaks is atypical and warrants monitoring for possible early season activity for the 2015-16 season.

Sporadic influenza activity was detected at the BC provincial laboratory, with 9% of patients testing positive during this period; all were A(H3N2) where subtype information was available. Detections of entero/rhinovirus increased in weeks 37-38; however, unlike last year, no EV-D68 has been detected thus far in BC despite enhanced surveillance since August 1, 2015.

This week, the WHO announced recommended components for the 2016 Southern Hemisphere vaccine, recommending a strain change for 2 of the 3 components included in the 2015-16 trivalent influenza vaccines: www.who.int/influenza/vaccines/virus/recommendations/2016_south/en/.

Also this week, insights related to the detection of avian influenza A(H7N9) infections in two BC travellers returning from China in January 2015 were published in *Emerging Infectious Diseases*: wwwnc.cdc.gov/eid/article/22/1/15-1330_article.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

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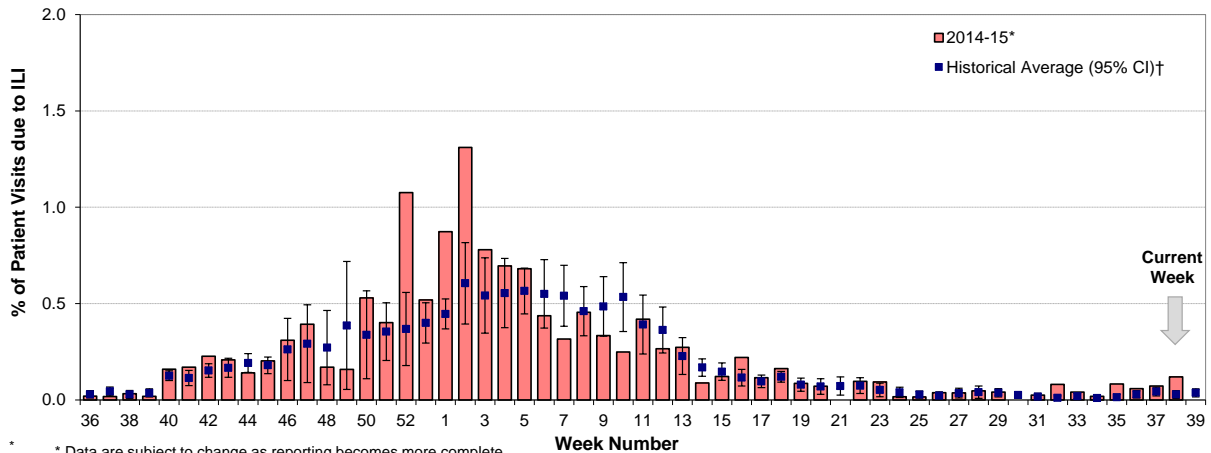
Report Disseminated: October 1, 2015

British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites was 0.07% in week 37 and 0.12% in week 38, slightly higher than expected for this time of year. To date, 64% and 48% of sentinel sites have reported data for weeks 37 and 38, respectively.

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

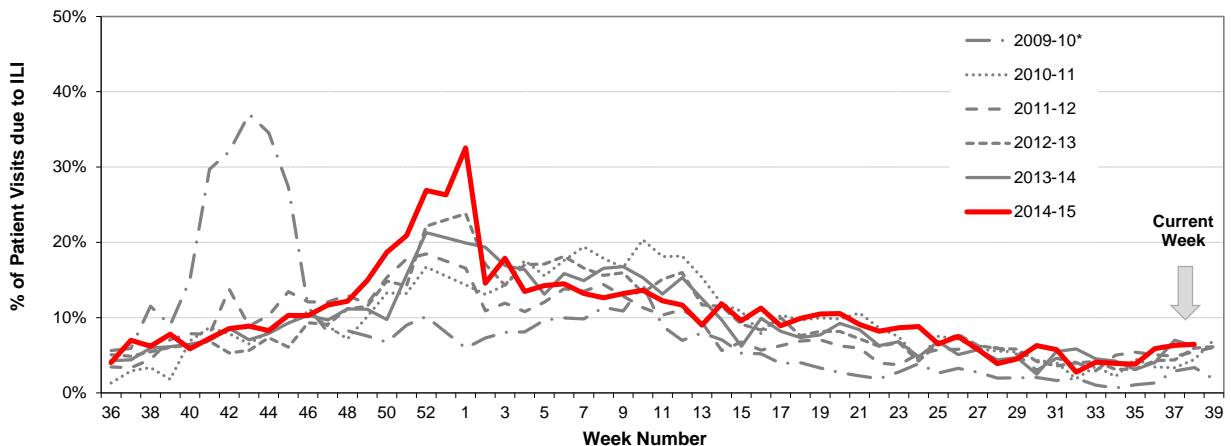


* Data are subject to change as reporting becomes more complete.
† Historical average based on 2002-03 to 2013-14 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children’s Hospital Emergency Room

In weeks 37-38, the proportion of visits to BC Children’s Hospital Emergency Room (ER) attributed to ILI remained at 6%, consistent with previous seasons for this inter-seasonal period.

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



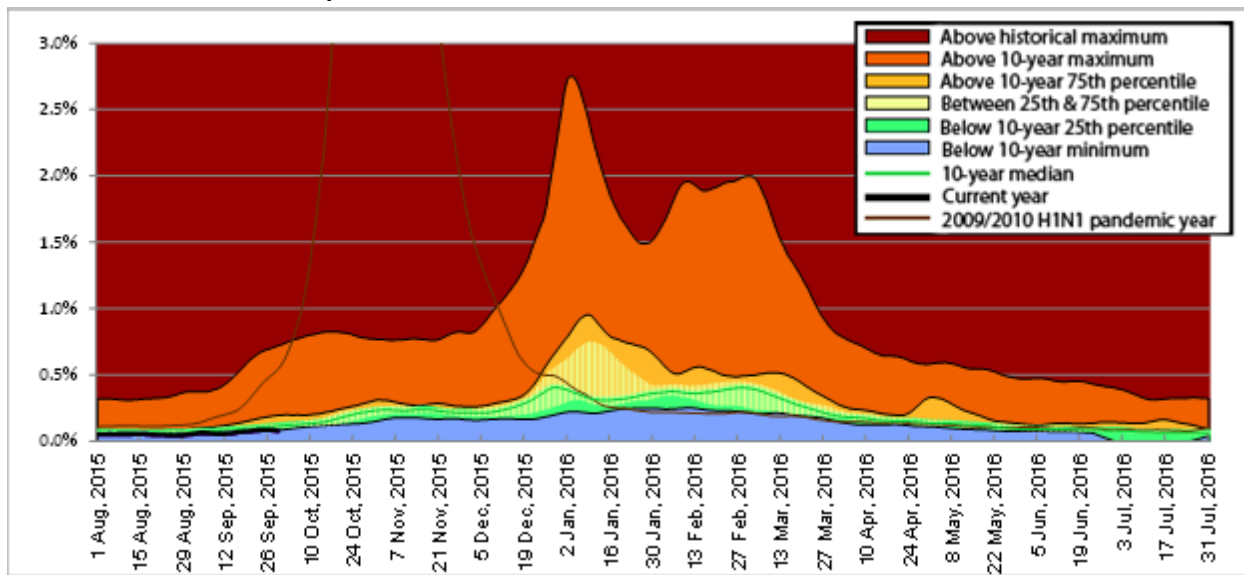
Source: BCCH Admitting, discharge, transfer database, ADT

* 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 weeks 37-38, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, remained below 10-year 25th percentiles throughout the province.

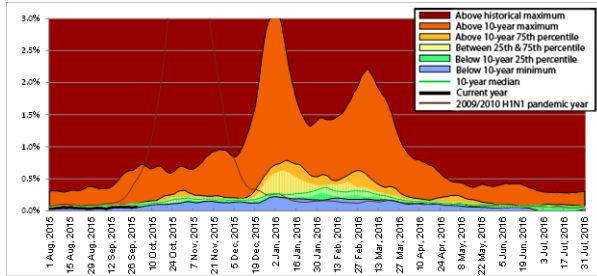
Service claims submitted to MSP for influenza illness (II)* as a proportion of all submitted general practitioner service claims, British Columbia, 2014-15



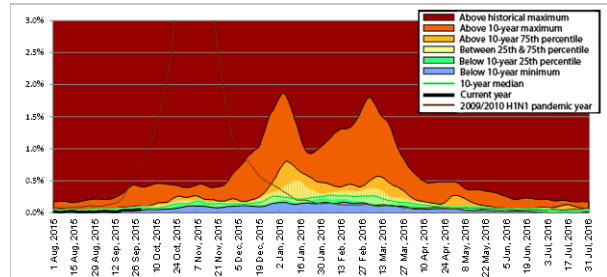
* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza). Data provided by Population Health Surveillance and Epidemiology, BC Ministry of Health Services

Note: MSP week beginning 1 August 2015 corresponds to sentinel ILI week 30; data current to 29 September 2015.

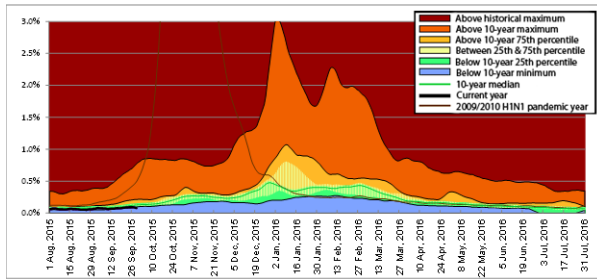
Interior



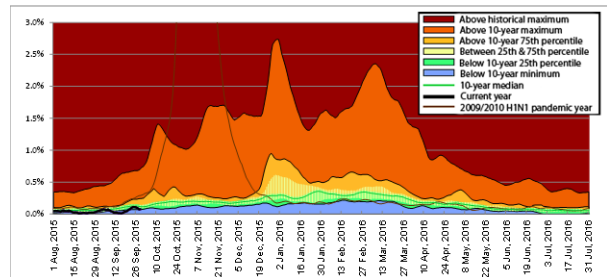
Vancouver Island



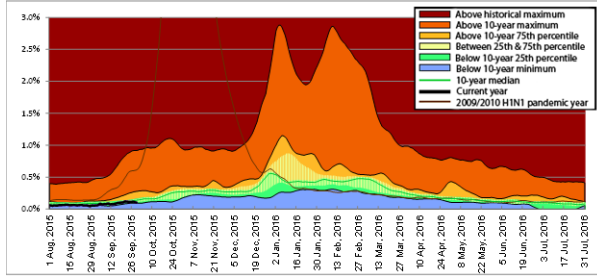
Fraser



Northern



Vancouver Coastal



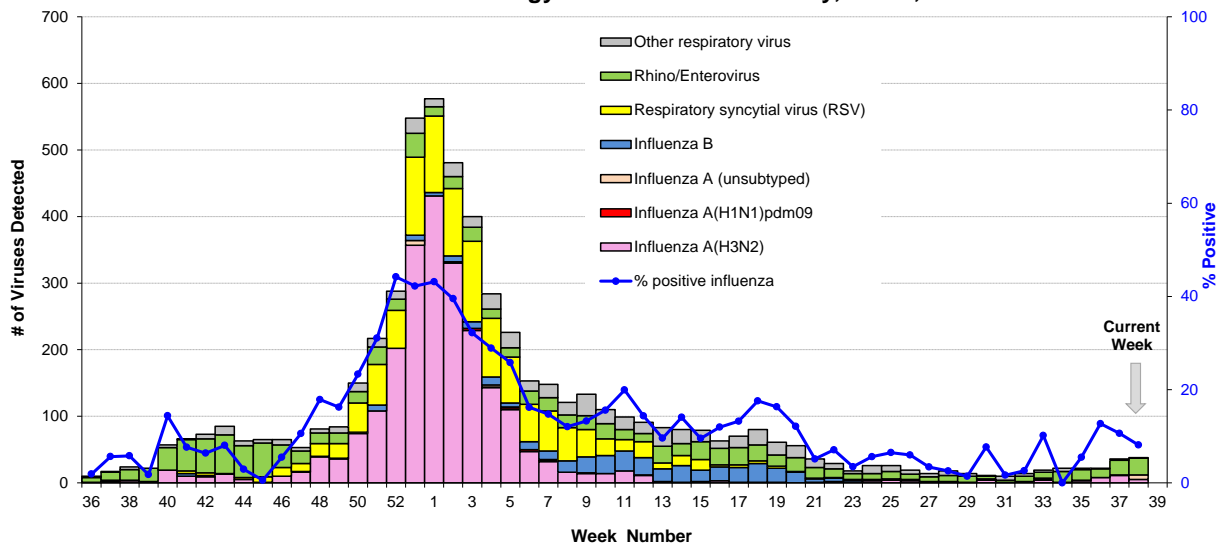
Laboratory Reports

BC Public Health Microbiology & Reference Laboratory (PHMRL)

In weeks 37-38, 262 patients were tested for respiratory viruses at the BC Public Health Microbiology & Reference Laboratory (PHMRL), PHSA. Of these, 23 (9%) patients tested positive for influenza A, including 16 A(H3N2) and 7 with subtype pending; none tested positive for influenza B during this period. Percent positivity was 11% in week 37 and 8% in week 38. Sporadic cases of influenza A(H3N2) are likely due in part to detections among out-of-province residents associated with cruise ship travel and a lab-confirmed outbreak of influenza A(H3N2) in VCHA with onset in week 37.

Enteroviruses were the most commonly detected respiratory viruses during this period. Detections of enteroviruses increased in weeks 37-38, consistent with late summer/early fall seasonality. However, unlike this time last year, no EV-D68 detections have yet been identified in BC despite enhanced laboratory surveillance among specimens submitted to the BC PHMRL since August 1, 2015.

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

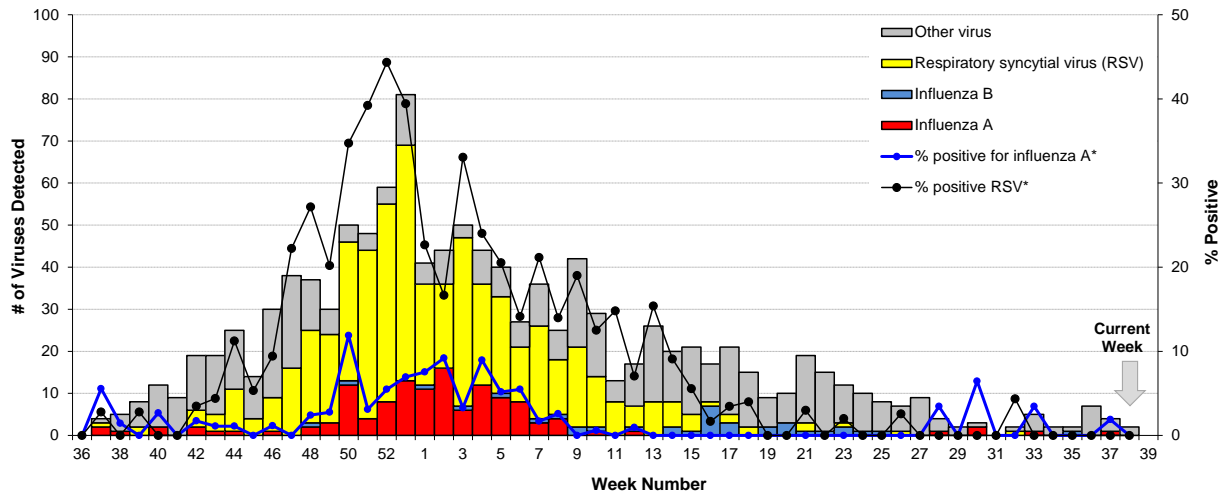


Note: PHMRL data current to September 30, 2015.

BC Children's and Women's Health Centre Laboratory

In weeks 37-38, 1% (1/101) of tests were positive for influenza A at the BC Children's and Women's Health Centre Laboratory; no influenza B was detected during this period.

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



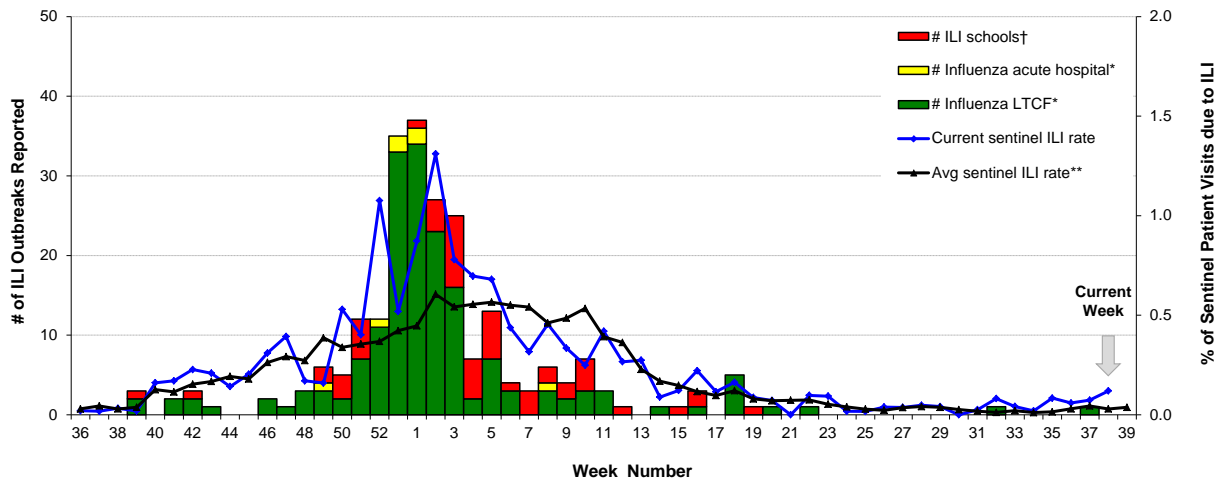
* Positive rates were calculated using aggregate data. The denominators for each rate represent the total number of tests; multiple tests may be performed for a single specimen and/or patient.

Influenza-like Illness (ILI) Outbreaks

Since our last bulletin 2 weeks ago, one new lab-confirmed influenza A(H3N2) outbreak was reported from a long-term care facility (LTCF) in VCHA with onset in week 37. This is the second LTCF influenza outbreak to be reported in recent weeks; as previously reported, there was also a lab-confirmed influenza A(H3N2) outbreak in VCHA in week 32.

Summer and/or early fall reporting of LTCF influenza outbreaks is atypical. In no other season since the 2009 pandemic have influenza outbreaks in LTCFs been reported at this time of year, with the exception of the A(H3N2)-dominant 2014-15 season where a LTCF outbreak was reported in week 33, followed by additional reports as early as weeks 39-43.

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 (weeks 35-36):

In weeks 35-36, low influenza activity was detected overall in Canada; however, influenza activity and detections are increasing in the Western provinces. Influenza detections remain at inter-seasonal levels in week 36, with 1.2% of tests positive for influenza; all were influenza A(H3N2) where subtype information was available. Among cases with reported age, the largest proportion was in those ≥ 65 years of age (45%). In weeks 35 and 36, no new outbreaks of influenza were reported. One new hospitalization was reported during this period. Details are available at: healthykanadians.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, 2014 to August 27, 2015, the NML antigenically characterized 1,171 influenza viruses [221 A(H3N2), 24 A(H1N1)pdm09, and 926 influenza B] and genetically characterized 1,224 influenza A(H3N2) viruses that were received from Canadian laboratories.

Influenza A(H3N2): Of the 1,445 A(H3N2) viruses characterized so far this season by the NML, 1,442 (>99%) showed antigenic or genetic evidence of antigenic drift (i.e. vaccine mismatch). Of the 221 A(H3N2) viruses antigenically characterized by haemagglutinin inhibition (HI) assay: 215 (97%) were similar to cell-passaged A/Switzerland/9715293/2013, the WHO-recommended A(H3N2) component for the 2015-16 Northern Hemisphere influenza vaccine; one (<1%) 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 (2%) 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 1,224 A(H3N2) viruses that did not grow to sufficient titres for antigenic characterization by HI assay. Of the 1,224 A(H3N2) viruses genetically characterized, 1,222 (~100%) 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 two (<1%) viruses belonged to a genetic group that does not show reduced titres to A/Texas/50/2012.

Influenza A(H1N1)pdm09: Of the 24 A(H1N1)pdm09 viruses characterized, all 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 926 influenza B viruses characterized, 815 (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; 3 (<1%) viruses showed reduced titres with antiserum produced against B/Massachusetts/2/2012, signalling antigenic drift from the vaccine strain; and 108 (12%) were antigenically similar to B/Brisbane/60/2008 (Victoria-lineage), the WHO-recommended influenza B/Victoria vaccine component for the quadrivalent 2014-15 Northern Hemisphere influenza vaccine.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1, 2014 to August 27, 2015, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing. Of the 1,503 influenza A viruses [1,477 A(H3N2) and 26 A(H1N1)pdm09] tested against amantadine, all but one were resistant; one A(H3N2) virus was sensitive to amantadine. Of the 1,937 influenza viruses [986 A(H3N2), 25 A(H1N1)pdm09, and 926 B] tested against oseltamivir, all but one was sensitive; one A(H3N2) virus was resistant to oseltamivir. Of the 1,935 influenza viruses [984 A(H3N2), 25 A(H1N1)pdm09, and 926 B] tested against zanamivir, all were sensitive.

International

USA (week 37 ending September 19, 2015): Influenza activity in the United States remained at inter-seasonal levels, with co-circulation of influenza A, predominantly A(H3N2), and influenza B. Details are available at: www.cdc.gov/flu/weekly/.

WHO (as of September 21, 2015): Globally, influenza activity continued in the Southern hemisphere, with overall slightly decreased activity in Oceania, further decreases in temperate South America and low activity in South Africa. In the Northern hemisphere countries, respiratory virus activity remained low in general and influenza activity continued at low, inter-seasonal levels. Influenza type A predominated in sporadic detections. A number of countries have ceased or reduced surveillance activity during the inter-seasonal period. Few influenza detections were reported from Africa. In Eastern Africa, in countries with reported influenza activity, influenza type A predominated. In Western Africa, influenza activity decreased overall. In tropical countries of the Americas, Central America and the Caribbean, influenza activity remained at low levels, with the exception of Cuba, where still high although decreasing levels of influenza-like illness (ILI) and severe acute respiratory infections (SARI) were reported, associated with influenza A(H1N1)pdm09 and respiratory syncytial virus (RSV) detections. In tropical Asia, countries in Southern Asia and South East Asia reported overall low influenza activity although India reported a minor increase in activity predominantly with A(H1N1)pdm09. Influenza activity showed a decline but was still at mid-levels in southern China with influenza A(H3N2) predominating. In temperate South America, influenza activity remained low in general. However, ILI activity sharply increased in Chile with increasing influenza detections. Influenza A remained the most detected influenza virus while RSV detections decreased in the region. In South Africa, influenza activity remained at low levels with influenza type B viruses predominating in recent weeks. In Australia, influenza activity seemed to be past the peak except in South Australia where it continued to rise with predominantly influenza B viruses followed by influenza A(H3N2) virus detections. In New Zealand, influenza activity may have peaked in the second week of August with influenza A(H3N2) and B viruses predominating during the season. ILI activity was still above the seasonal threshold but below the alert threshold. From August 24 to September 6, 2015, the WHO Global Influenza Surveillance and Response System (GISRS) laboratories tested more than 24,771 specimens. Of these, 2,514 were positive for influenza viruses: 1,872 (75%) were typed as influenza A and 642 (26%) as influenza B. Of the sub-typed influenza A viruses, 354 (26%) were influenza A(H1N1)pdm09 and 1,016 (74%) were influenza A(H3N2). Of the characterized B viruses, 60 (86%) belonged to the B-Yamagata lineage and 10 (14%) to the B-Victoria lineage. Details are available at: www.who.int/influenza/surveillance_monitoring/updates/en/.

Emerging Respiratory Pathogens

Human Infections with Avian Influenza A(H7N9), British Columbia

In January 2015, British Columbia reported the first two human cases of avian influenza A(H7N9) in North America in a couple returning from travel in China. Both patients presented with typical influenza-like illness and were managed in an outpatient setting. Public health investigation was triggered following collection of a specimen based on travel history and detection of a non-subtypeable influenza A virus at the BC provincial laboratory. Contact tracing was conducted on approximately 20 close contacts of the cases; all remained asymptomatic and there was no further spread. Details of the two cases as well as further insights and lessons learned were recently published in *Emerging Infectious Diseases* alongside findings from a population-based sero-survey of >1,600 serum samples showing broad susceptibility to H7N9 virus in BC. Available from: wwwnc.cdc.gov/eid/article/22/1/15-1330_article.

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 2015-16 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

List of Acronyms:

ACF: Acute Care Facility	MSP: BC Medical Services Plan
AI: Avian influenza	NHA: Northern Health Authority
FHA: Fraser Health Authority	NML: National Microbiological Laboratory
HBoV: Human bocavirus	A(H1N1)pdm09: Pandemic H1N1 influenza (2009)
HMPV: Human metapneumovirus	RSV: Respiratory syncytial virus
HSDA: Health Service Delivery Area	VCHA: Vancouver Coastal Health Authority
IHA: Interior Health Authority	VIHA: Vancouver Island Health Authority
ILI: Influenza-Like Illness	WHO: World Health Organization
LTCF: Long-Term Care Facility	

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 <i>(if ward or wing, please specify name/number: _____)</i>
	<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