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

British Columbia Influenza Surveillance Bulletin

Influenza Season 2016-17, Number 22, Weeks 18-32
April 30 to August 12, 2017

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Summer Update: Sporadic Flu Detections in BC

Sporadic influenza activity has been detected in BC and elsewhere in Canada this summer, with some provinces reporting summer outbreaks in long-term care facilities. Influenza A(H3N2) had been the predominant subtype during this period.

In the **southern hemisphere** where they are in the midst of their winter seasonal epidemic, influenza activity has increased or peaked in most countries in recent weeks. In Australia and New Zealand, influenza activity predominately due to A(H3N2) is increasing with lesser co-circulation of B(Yamagata) viruses. In some Southeast Asian countries, high levels of influenza activity continue to be reported, including in Myanmar where A(H1N1)pdm09 is predominating and in Southern China and Hong Kong where a severe summer influenza epidemic due to A(H3N2) is underway.

As in previous years, the US CDC has reported sporadic human cases of **novel influenza A viruses** associated with exposure to swine at agriculture fairs, including human cases of A(H1N2)v (the first reported in 2017) and A(H3N2)v, this summer.

Sporadic detections of **Middle East Respiratory Syndrome coronavirus (MERS-CoV)** associated with a hospital cluster in Saudi Arabia and **avian influenza A(H7N9)** in China were also reported during this period.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

Report Disseminated: August 17, 2017

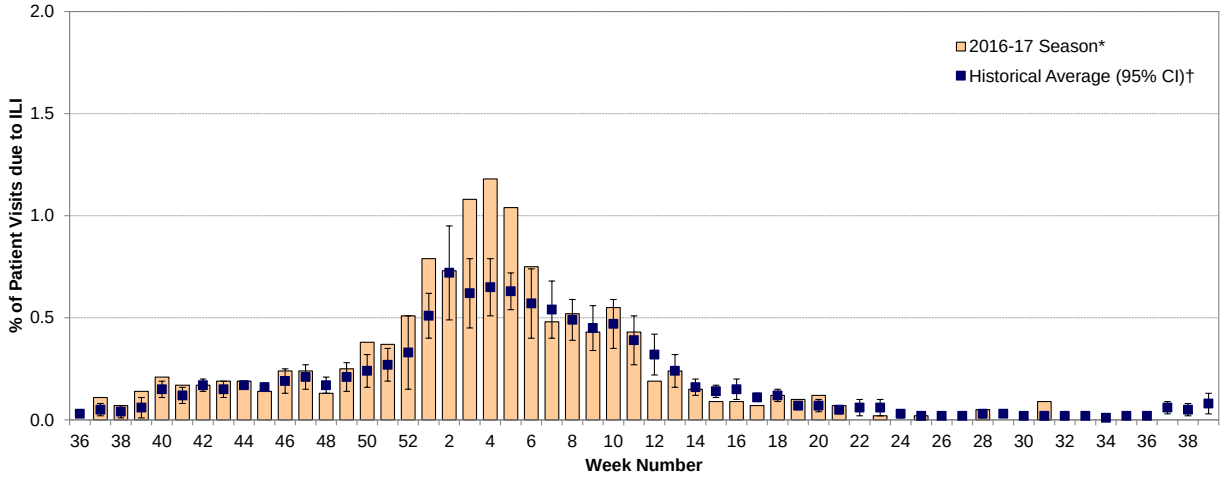
Provincial Health Services Authority
Province-wide solutions. Better health.

British Columbia

Sentinel Physicians

During weeks 18-32, the proportion of patients with influenza-like illness (ILI) among those presenting to sentinel sites remained at inter-seasonal levels. Rates are subject to change as reporting becomes more complete.

Percent of patient visits to sentinel physicians due to influenza-like illness (ILI) compared to historical average, British Columbia, 2016-17

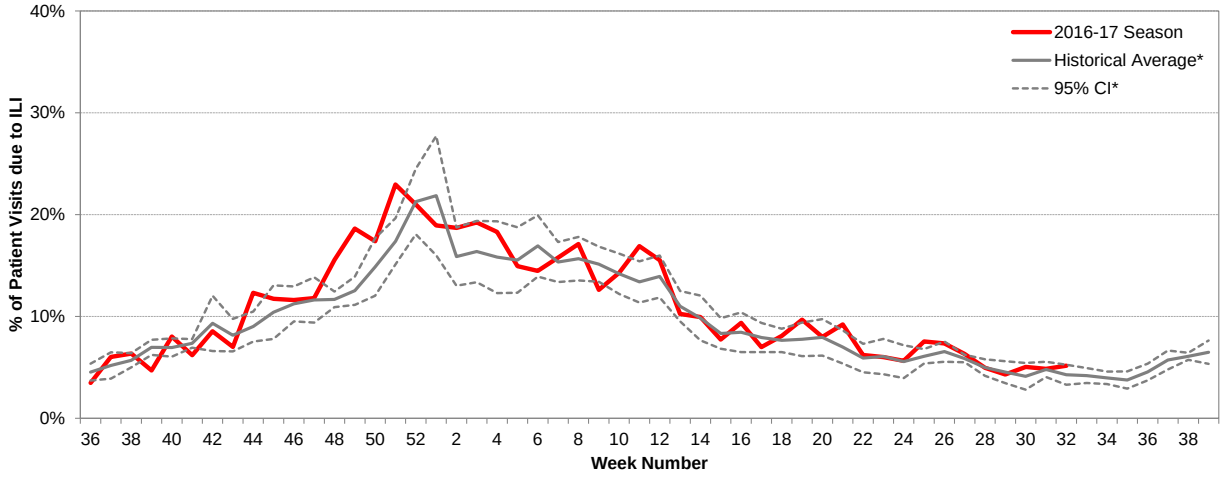


* Data are subject to change as reporting becomes more complete. One hospital ER site that reported ILI rates ≥5% was excluded from the graph.
† 10-year historical average for 2016-17 season based on 2004-05 to 2015-2016 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

BC Children's Hospital Emergency Room

In weeks 18-32, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI was generally consistent with the historical average for the past 5 seasons.

Percent of patients presenting to BC Children's Hospital ER attributed to influenza-like illness (ILI), British Columbia, 2016-17

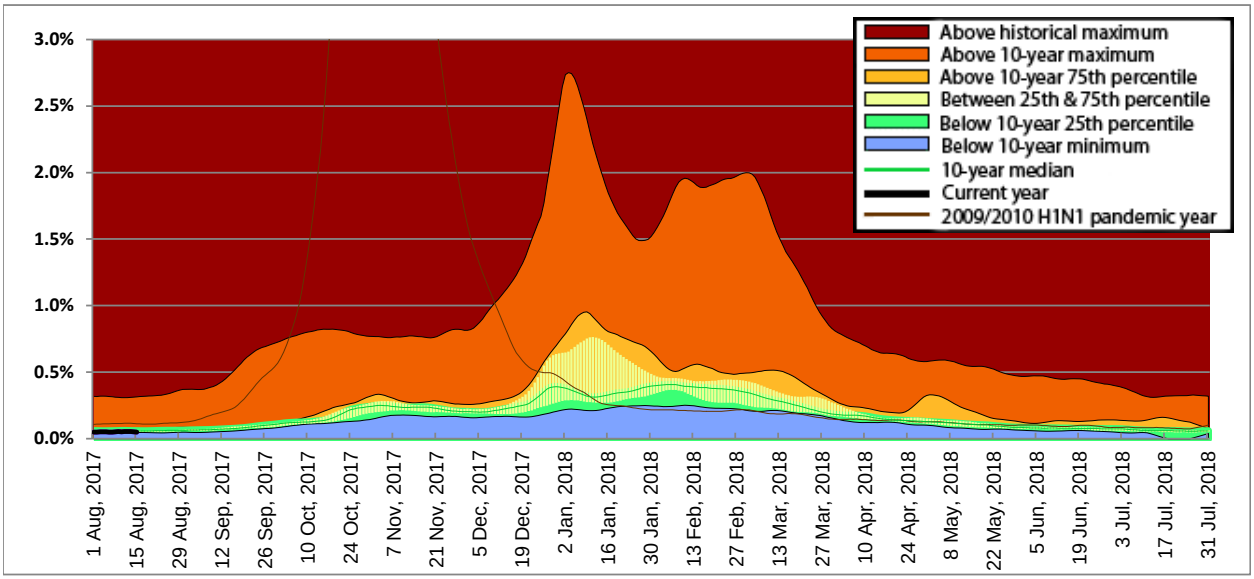


Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough."
* 5-year historical average for 2016-17 season based on 2011-12 to 2015-16 seasons; CI=confidence interval.

Medical Services Plan

In weeks 18-32, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, were at or below expected median levels for this time of year in all regions of the province.

Service claims submitted to MSP for influenza illness (II)* as a proportion of all submitted general practitioner service claims, British Columbia, 2016-17

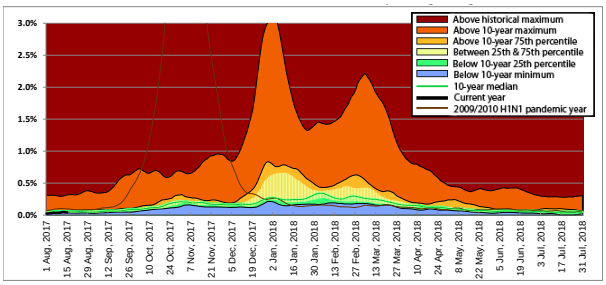


* Influenza illness is tracked as the percentage of all submitted MSP general practitioner claims with ICD-9 code 487 (influenza).

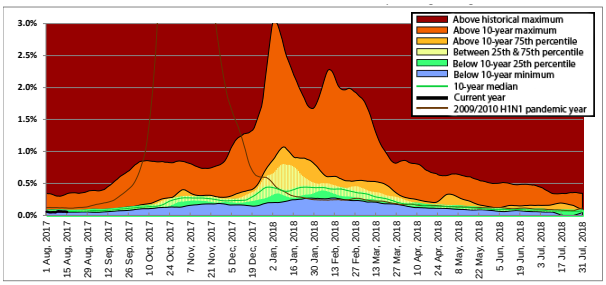
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP week beginning August 1, 2017 corresponds to sentinel ILI week 31; data are current to August 15, 2017.

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

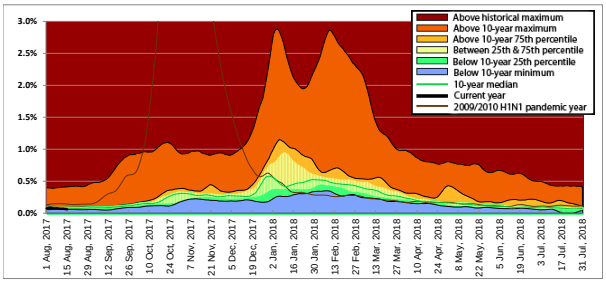
Interior



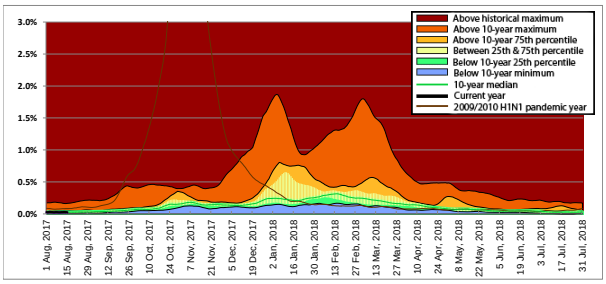
Fraser



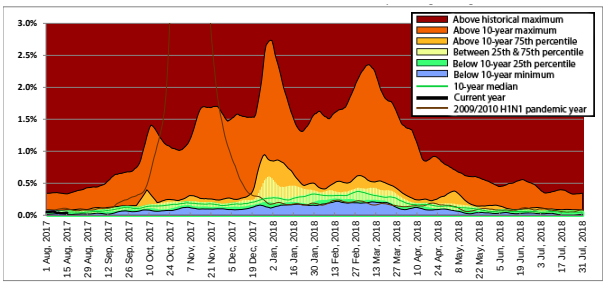
Vancouver Coastal



Vancouver Island



Northern

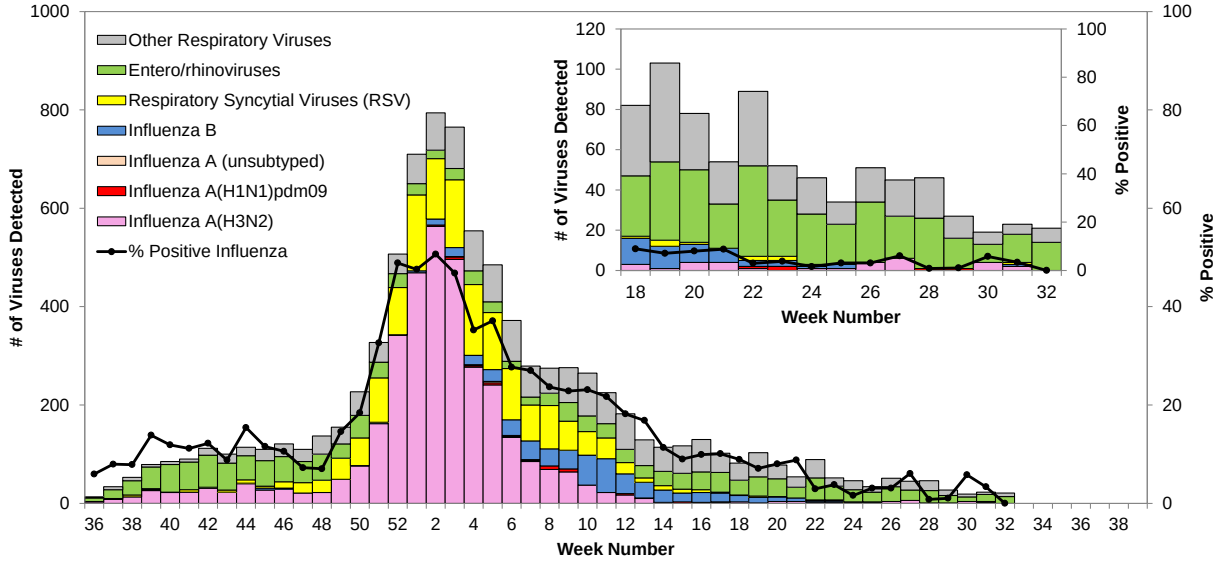


Laboratory Reports

BCCDC Public Health Laboratory

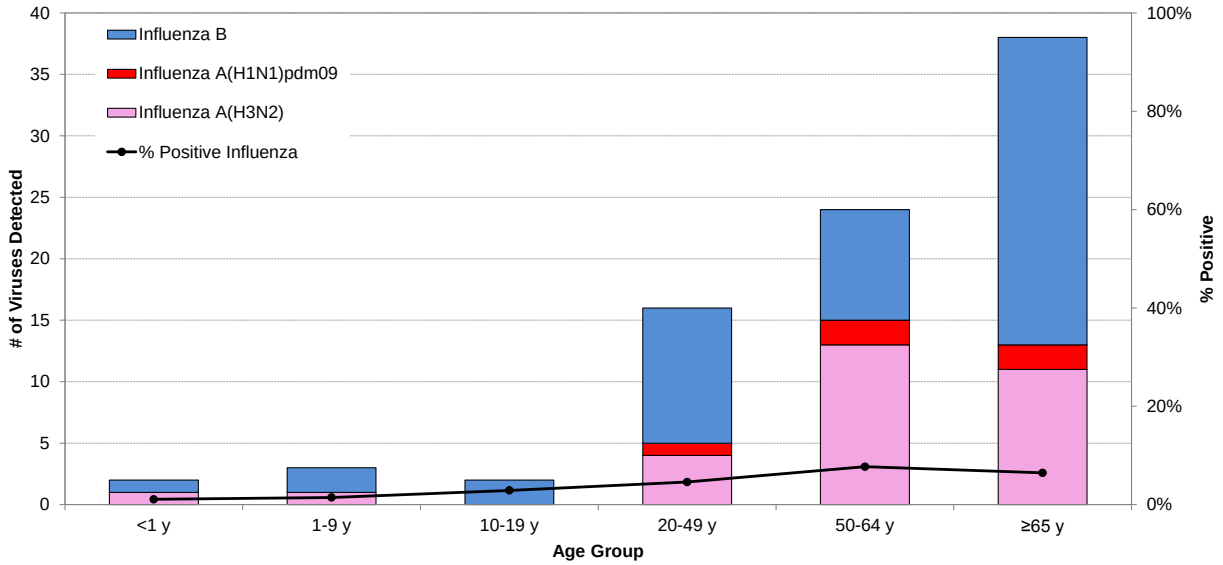
Cumulatively during the inter-seasonal period (week 18 starting April 30, 2017 to week 32 ending August 12, 2017), 85 (5%) patients tested positive for influenza at the BCCDC Public Health Laboratory (PHL), including 35 (41%) with influenza A [30 A(H3N2) and 5 A(H1N1)pdm09] and 50 (59%) with influenza B. This included 14 influenza detections since week 27 (starting July 2, 2017), mostly A(H3N2) (n=11) with minimal detection of A(H1N1)pdm09 (n=2) or influenza B (n=1). Influenza positivity has remained <10% since week 18. Entero/rhinoviruses were the most commonly detected respiratory virus during this period but were also detected at low levels.

Influenza and other virus detections among respiratory specimens submitted to BCCDC Public Health Laboratory, 2016-17



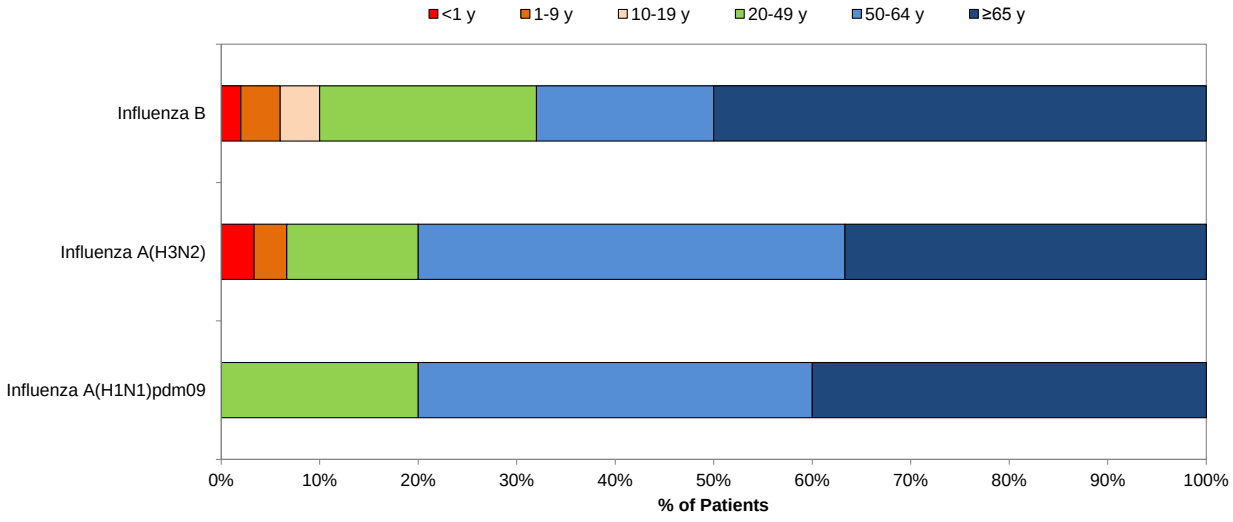
Data are current to August 16, 2017.

Cumulative number (weeks 18-32) of influenza detections by type/subtype and age group, BCCDC Public Health Laboratory, 2016-17



Data are current to August 16, 2017; figure includes cumulative influenza detections for specimens collected from weeks 18-32.

Age distribution of influenza detections (cumulative total, weeks 18-32), BCCDC Public Health Laboratory, 2016-17

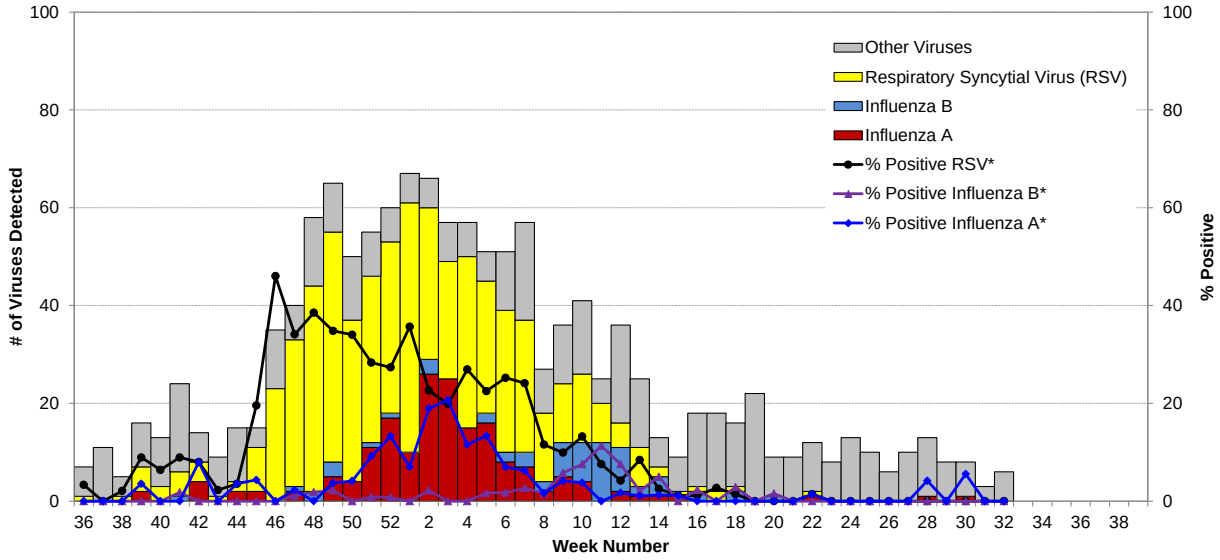


Data are current to August 16, 2017; figure includes cumulative influenza detections for specimens collected from weeks 18-32.

BC Children's and Women's Health Centre Laboratory

In weeks 18-32, 526 tests for respiratory viruses were conducted at the BC Children's and Women's Health Centre laboratory. Of these, 3 (<1%) were positive for influenza A, including 2 that were positive since week 27, and 3 (<1%) were positive for influenza B. Two (<1%) specimens were positive for respiratory syncytial virus (RSV) since week 18.

Influenza and other virus detections among respiratory specimens submitted to BC Children's and Women's Health Centre Laboratory, 2016-17

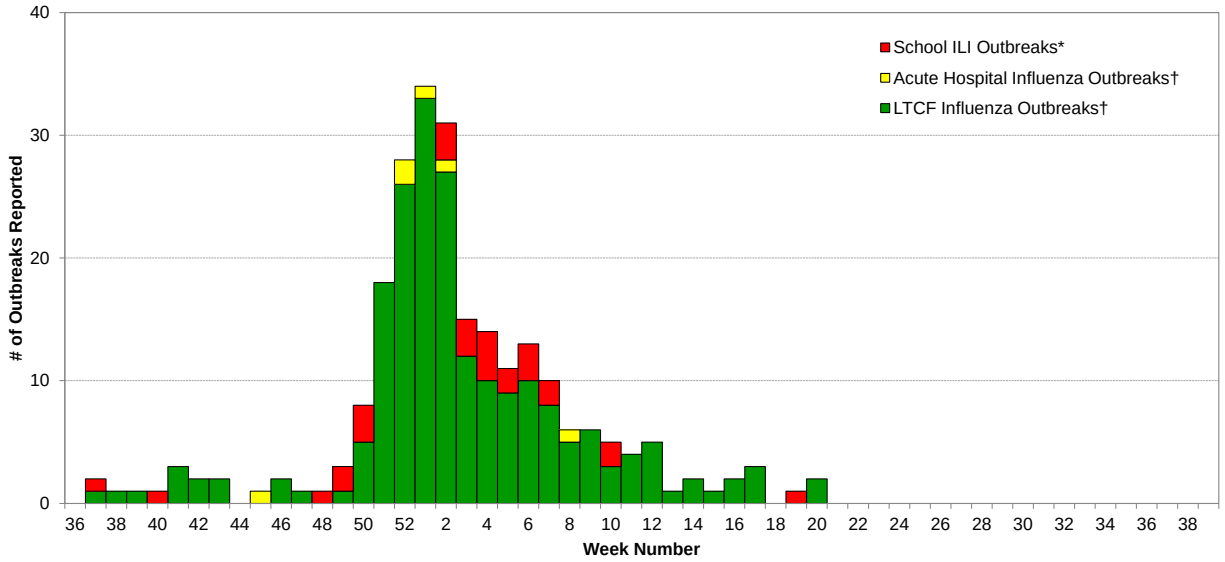


* Positive rates were calculated using aggregate data. The denominators for each rate represent the total number of tests; multiple tests may be performed for a single specimen and/or patient.

Influenza-like Illness (ILI) Outbreaks

In recent weeks, no new ILI outbreaks have been reported. Two influenza B outbreaks were reported in LTCFs in week 20; however, no outbreaks have since been reported.

Number of influenza-like illness (ILI) outbreaks reported, British Columbia 2016-17



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

National

Other Provinces

Sporadic influenza activity since early July (starting week 27) has also been reported in other provinces across Canada. In Alberta, influenza A positivity at the provincial laboratory has remained <5% each week during summer months, with A(H3N2) dominant. One influenza A(H3N2) outbreak was reported from a long-term care facility (LTCF) in Alberta in week 29. In Ontario, sporadic influenza detections, primarily A(H3N2), have also been reported, including 2 influenza A detections from LTCF outbreaks this summer. In Quebec, influenza positivity has been <5% each week with a mix of influenza A and B detected. Influenza activity has remained low in Maritime Provinces during summer months. Surveillance data for the summer period were not available from Saskatchewan and Manitoba. Details are available at:

Alberta: public.tableau.com/profile/publish/AlbertaHealthServicesRespiratoryVirusSurveillance/Summary

Ontario: www.publichealthontario.ca/en/ServicesAndTools/SurveillanceServices/Pages/Ontario-Respiratory-Virus-Bulletin.aspx

Quebec: www.inspq.qc.ca/influenza

FluWatch (weeks 25-29, June 18 to July 22, 2017)

Influenza activity is at inter-seasonal levels across the country, with a few regions reporting sporadic or localized activity. In weeks 25-29, influenza A and B viruses circulated at inter-seasonal levels in Canada. The majority of subtyped influenza A viruses were A(H3N2). 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, 2016 to August 17, 2017, the National Microbiology Laboratory (NML) received 2335 influenza viruses [1647 A(H3N2), 61 A(H1N1)pdm09 and 627 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 1647 influenza A(H3N2) viruses, only 396 (24%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 396 viruses characterized by HI assay, all were considered antigenically similar to A/Hong Kong/4801/2014, the WHO-recommended A(H3N2) component for the 2016-17 northern hemisphere influenza vaccine. Of the 396 viruses that were antigenically characterized with available sequencing information, 331 (84%) belonged to genetic group 3C.2a and 65 (16%) belonged to genetic group 3C.3a. Genetic characterization was performed to infer antigenic properties on the remaining 1251 viruses that did not grow to sufficient haemagglutination titre for HI assay. Of the 1251 viruses genetically characterized, 1250 (>99%) were reported to belong to genetic group 3C.2a, which includes the A/Hong Kong/4801/2014 vaccine strain; one virus belonged to genetic group 3C.3a.

Influenza A(H1N1)pdm09: All of the 61 A(H1N1)pdm09 viruses characterized were antigenically similar to A/California/7/2009, the WHO-recommended influenza A(H1N1) component for the 2016-17 northern hemisphere influenza vaccine.

Influenza B: Of the 627 influenza B viruses characterized, 126 (20%) were antigenically similar to a B/Brisbane/60/2008(Victoria lineage)-like virus, the WHO-recommended influenza B component for the 2016-17 northern hemisphere trivalent influenza vaccine. The remaining 501 (80%) viruses were characterized as a B/Phuket/3073/2013(Yamagata lineage)-like virus, the other WHO-recommended influenza B component for the 2016-17 northern hemisphere quadrivalent influenza vaccine containing two influenza B components.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1, 2016 to August 17, 2017, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 287 influenza A viruses [232 A(H3N2) and 55 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 1254 influenza viruses [760 A(H3N2), 52 A(H1N1)pdm09 and 442 B] tested against oseltamivir, 1251 were sensitive; two A(H3N2) viruses and one A(H1N1)pdm09 virus were resistant to oseltamivir.

Zanamivir: Of the 1254 influenza viruses [759 A(H3N2), 51 A(H1N1)pdm09 and 444 B] tested against zanamivir, all were sensitive.

International

USA (week 31, July 30 to August 5, 2017)

During week 31, influenza activity was at inter-seasonal levels in the United States. The most frequently identified influenza subtype reported by public health laboratories during week 31 was influenza A(H3N2). The percentage of respiratory specimens testing positive for influenza in clinical laboratories remained at low levels. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the system-specific epidemic threshold. No influenza-associated pediatric deaths were reported. The proportion of outpatient visits for ILI was 0.7%, which is below the national baseline of 2.2%. Sporadic detections of novel influenza A viruses associated with swine exposure at agriculture fairs have also been reported to the US CDC during summer months (see Emerging Respiratory Viruses section). Details are available at: www.cdc.gov/flu/weekly/.

WHO (August 7, 2017)

Expected winter seasonal influenza activity is occurring in countries of the southern hemisphere, notably Australia, New Zealand and South Africa. Worldwide, influenza A(H3N2) viruses are predominating among subtyped influenza A viruses to date. In the temperate zone of the southern hemisphere and in some countries of South East Asia, high levels of influenza activity continued to be reported. Influenza activity in the temperate zone of the northern hemisphere was reported at low levels.

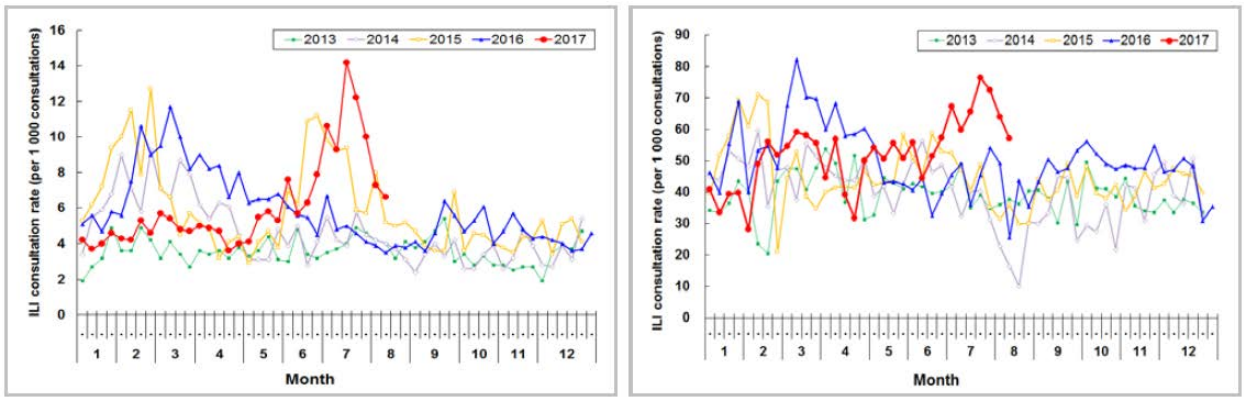
From July 10 to 23 2017, the WHO GISRS laboratories tested more than 58,087 specimens. Of these, 9972 were positive for influenza viruses including 9149 (92%) typed as influenza A and 823 (8%) as influenza B. Of the subtyped influenza A viruses, 653 (8%) were influenza A (H1N1)pdm09 and 7505 (92%) were influenza A(H3N2). Of the characterized B viruses, 173 (58%) belonged to the B(Yamagata) lineage and 123 (42%) to the B(Victoria) lineage.

In countries in the temperate zone of the southern hemisphere, influenza activity increased or peaked in most countries in recent weeks. In Australia and New Zealand, seasonal influenza activity continued to increase, with influenza A(H3N2) and B(Yamagata) viruses present in the region. In Southern Africa, seasonal activity appeared to decrease after peaking in week 26, with influenza A(H3N2) being the most detected viruses.

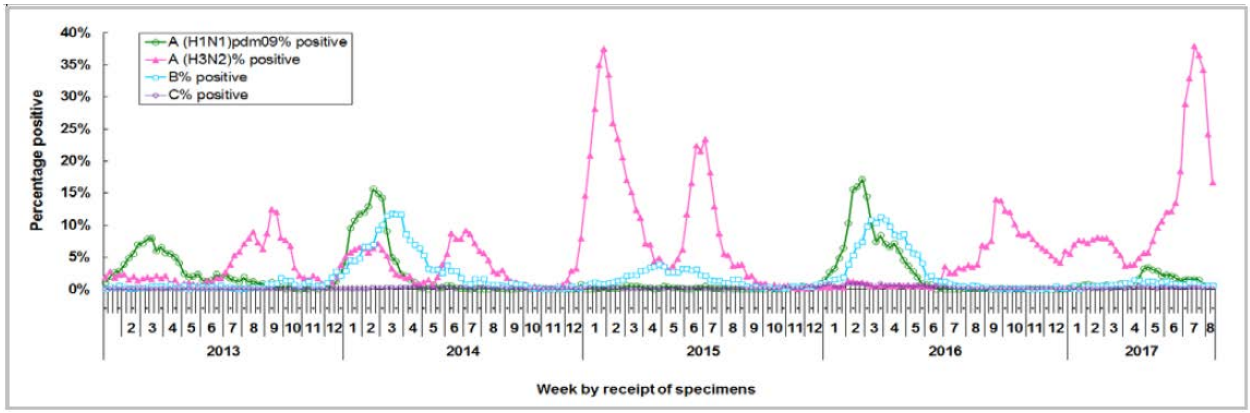
In select countries in the tropical zone, high levels of ILI and influenza activity continue to be reported, including in Myanmar where A(H1N1)pdm09 is predominating and in Southern China and Hong Kong where a severe summer influenza epidemic due to A(H3N2) is underway. In Hong Kong, the average ILI consultation rate among sentinel general outpatient clinics (GOPCs) has exceeded levels seen during the same weeks of previous seasons (see Charts on next page). The percentage of respiratory specimens testing positive for seasonal influenza viruses is also higher than expected, with A(H3N2) predominating. ILI and influenza activity levels in Hong Kong have begun to decline in recent weeks.

Details are available at: www.who.int/influenza/surveillance_monitoring/updates/en/.

ILI consultation rates at sentinel GOPCs (left) and private doctors (right), Hong Kong, 2013-17



Percent of respiratory specimens positive for influenza viruses by subtype, Hong Kong, 2013-17



Source: Hong Kong Centre for Health Protection. Flu express. Volume 14, number 32. (Published on August 17, 2017).

Emerging Respiratory Viruses

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Between July 4 and August 12, 2017, Saudi Arabia reported 26 additional cases of Middle East Respiratory Syndrome coronavirus (MERS-CoV) infection including six deaths, and two deaths among previously reported cases.

Among the 26 newly reported cases, 13 are associated with a cluster in a hospital in Al Jawf Region, Saudi Arabia. The initial case was a 51-year-old reported on August 2, 2017. To date, 12 cases have been identified though contact tracing. These cases include eight health care workers (all asymptomatic) in the hospital where the initial case was treated, one hospital contact (a 70-year-old male) and three household contacts. Follow up of health care workers, hospital and household contacts are ongoing.

Globally, 2,066 laboratory-confirmed cases of infection with MERS-CoV including at least 720 related deaths have been reported to WHO.

Novel Influenza A Viruses, United States

On August 2, the first influenza A(H1N2) variant [A(H1N2)v] virus infection identified in the United States during 2017 was reported to the WHO. The patient is a child (<18 years old) with no underlying medical conditions who developed an influenza-like illness following exposure to swine in a fair setting in Ohio in week 29. The patient was not hospitalized and fully recovered from their illness. No human-to-human transmission was identified.

Three additional human infections with novel influenza A viruses were detected in Ohio during week 31. Three persons, all attendees at the same agricultural fair, were infected with influenza A(H3N2) variant [A(H3N2)v] viruses. All three patients were children <18 years old who reported direct exposure to swine in a fair setting during the week preceding illness onset. None of the three patients were hospitalized, and all have fully recovered from their illness. No human-to-human transmission of these viruses has been identified. Public health and agriculture officials are investigating the extent of disease among humans and swine, but no increases in ILI in the community have been reported.

To date, a total of 15 (Texas [1] and Ohio [14]) human infections with A(H3N2)v viruses and one (Ohio [1]) human infection with A(H1N2)v virus have been identified during 2017. Since 2005, a total of 417 human infections with influenza variant viruses have been identified in the United States, most notably in 2012 when more than 300 A(H3N2)v cases were reported associated with a large outbreak in multiple states.

Avian Influenza A(H7N9), China

Sporadic human infections with avian influenza A(H7N9) continue to be reported from China during summer months, with the most recent case being reported from Fujian province in late July. As of July 25, 2017, a total of 1557 laboratory-confirmed cases of human infection with avian influenza A(H7N9) viruses, including at least 605 deaths, have been reported to WHO since early 2013.

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 (Victoria-lineage)-like 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 (Yamagata-lineage)-like 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 2017-18 Northern Hemisphere Influenza Vaccine

On March 2, 2017, the WHO announced the recommended strain components for the 2017-18 northern hemisphere trivalent influenza vaccine (TIV):*

- an A/Michigan/45/2015 (H1N1)pdm09-like virus;†
- an A/Hong Kong/4801/2014 (H3N2)-like virus;
- a B/Brisbane/60/2008 (Victoria-lineage)-like 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 (Yamagata-lineage)-like virus.

* These recommended strains are the same as those recommended for the 2017 southern hemisphere TIV and represent a change for one of the three components used for the 2016-17 northern hemisphere TIV and 2016 southern hemisphere TIV.

† Recommended strain represents a change from an A/California/7/2009-like virus, which had been retained as the A(H1N1)pdm09 component since the 2009 pandemic, to an A/Michigan/45/2015-like virus belonging to the emerging phylogenetic subclade 6B.1.

For further details: www.who.int/influenza/vaccines/virus/recommendations/2017_18_north/en/.

Additional Information

Explanatory Note:

The surveillance period for the 2016-17 influenza season is defined starting in week 40. Weeks 36-39 of the 2015-16 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/?ID=122&Language=ENG

Web Sites:

BCCDC Emerging Respiratory Pathogen Updates:
www.bccdc.ca/health-professionals/data-reports/emerging-respiratory-virus-updates

Influenza Web Sites

Canada – Influenza surveillance (FluWatch): healthycanadians.gc.ca/diseases-conditions-maladies-affections/disease-maladie/flu-grippe/surveillance/index-eng.php
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/
Joint ECDC – WHO/Europe weekly influenza update (Flu News Europe): flunewseurope.org
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

Communicable Disease Prevention & Control Services
655 W. 12th Ave.
Vancouver BC V5Z 4R4

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