British Columbia Influenza Surveillance Bulletin

Influenza Season 2017-18, Number 6, Week 50 December 10 to 16, 2017

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Increasing influenza activity in BC: Mix of A(H3N2), A(H1N1)pdm09 and Influenza B

During week 50 (December 10 to 16, 2017), influenza positivity at the BCCDC Public Health Laboratory increased to >30%, with influenza A viruses continuing to predominate but with higher than usual influenza B activity for this time of year. Among influenza A detections, A(H3N2) remains the dominant subtype but with low level detection of A(H1N1)pdm09 continuing.

Since our last bulletin, three new labconfirmed influenza outbreaks were reported; one in IHA with onset in week 49, and one each in FHA and NHA with onset in week 50. All three outbreaks were in long-term care facilities (LTCFs). The LTCF outbreaks in IHA and NHA had influenza A(H3N2) detected whereas the FHA outbreak had influenza B detected. Additionally, four school ILI outbreaks in IHA were reported in week 50.

Other surveillance indicators were consistent with expected levels for this time of year but are anticipated to increase over the holiday period.

Prepared by BCCDC Influenza & Emerging Respiratory Pathogens Team

Report Disseminated: December 21, 2017

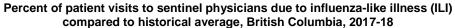


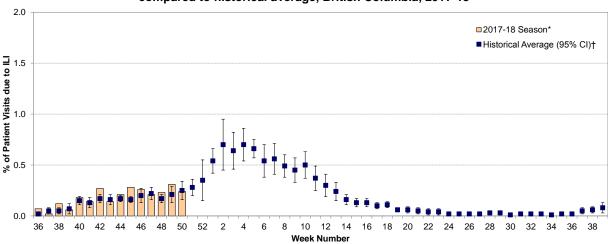


British Columbia

Sentinel Physicians

The proportion of patients with influenza-like illness (ILI), among those presenting to sentinel sites, was consistent with the 10-year historical average for week 50. Rates are subject to change as reporting becomes more complete.

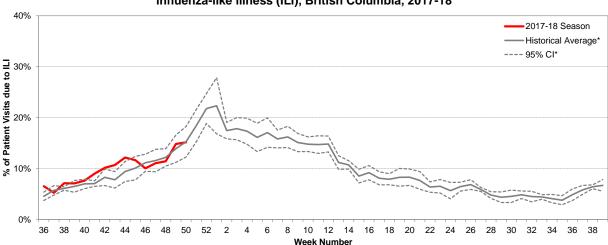




BC Children's Hospital Emergency Room

In week 50, the proportion of visits to BC Children's Hospital Emergency Room (ER) attributed to ILI was 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, 2017-18



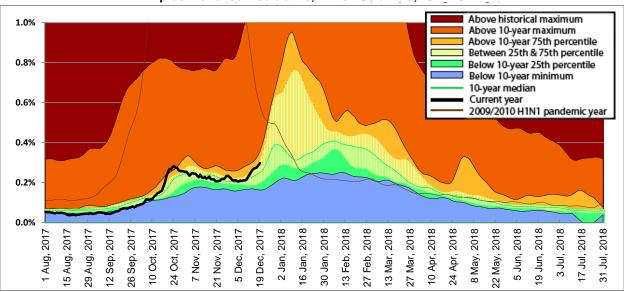
Source: BCCH Admitting, Discharge, Transfer database (ADT). Data includes records with a triage chief complaint of "flu" or "influenza" or "fever/cough." * 5-year historical average for 2017-18 season based on 2012-13 to 2016-17 seasons; CI=confidence interval.

^{*} Data are subject to change as reporting becomes more complete.
† 10-year historical average for 2017-18 season based on 2005-06 to 2016-2017 seasons, excluding 2008-09 and 2009-10 due to atypical seasonality; CI=confidence interval.

Medical Services Plan

In week 50, BC Medical Services Plan (MSP) general practitioner claims for influenza illness (II), as a proportion of all submitted MSP claims, began to increase slightly but were generally within expected levels for this time of year in all regions of the province, except IHA and NHA where rates exceeded the 10-year 75th percentile. Rates are anticipated to continue increasing over the seasonal holiday period.

Service claims submitted to MSP for influenza illness (II)* as a proportion of all submitted general practitioner service claims, British Columbia, 2017-18



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

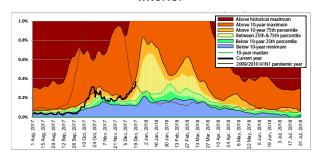
Data for the period August 1, 2009 to July 31, 2010 have been excluded from the 10-year median calculation due to atypical seasonality during the 2009/2010 H1N1 pandemic year. MSP data beginning August 1, 2017 corresponds to sentinel ILI week 31; data are current to December 19, 2017.

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

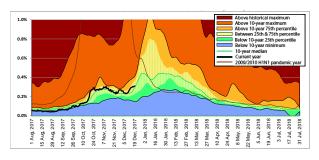
BC Centre for Disease Control

An agency of the Provincial Health Services Authority

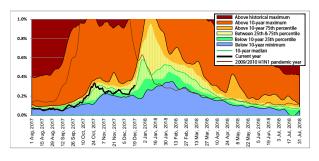
Interior



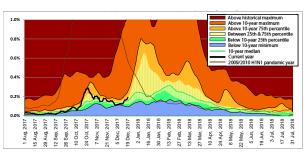
Fraser



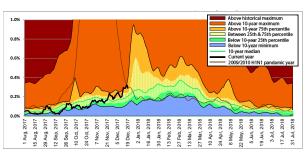
Vancouver Coastal



Vancouver Island



Northern



Laboratory Reports

BCCDC Public Health Laboratory

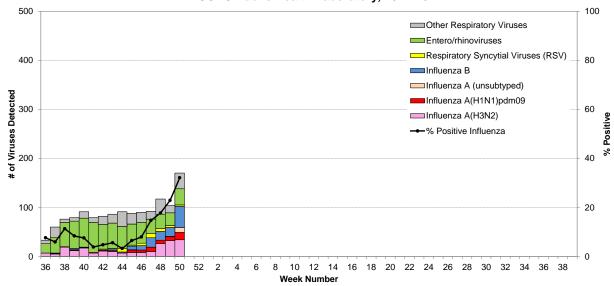
In week 50, 318 specimens were tested for respiratory viruses at the BCCDC Public Health Laboratory (PHL). Of these, 102 (32%) tested positive for influenza; 59 (58%) viruses were typed as influenza A [34 A(H3N2), 15 A(H1N1)pdm09 and 10 subtype pending] and 43 (42%) viruses were typed as influenza B. Among influenza A detections, A(H3N2) remained the dominant subtype during this period although A(H1N1)pdm09 viruses have also contributed at lower levels. Influenza B detections are also ongoing and influenza B positivity remains greater than in previous years for this period. Influenza positivity continued an increasing trend since week 44, exceeding 30% in week 50 concurrent with increased testing volumes.

More than half (54%) of A(H3N2) cases so far during the 2017-18 season have been detected among elderly adults ≥65 years old, with three-quarters (75%) of A(H3N2) cases detected among adults ≥50 years old. The distribution of A(H3N2) detections in the older age categories is slightly higher than the prior A(H3N2)-dominant 2016-17 season (46% and 60% among those ≥65 years old and ≥50 years old, respectively) but lower than in 2014-15 (71% and 76%, respectively).

Conversely, a greater proportion of influenza A(H1N1)pdm09 and B detections in the current season include children <20 years old (37% and 23%, respectively) and younger adults 20-49 years old (44% and 23%, respectively), with 19% and 54%, respectively, ≥50 years old.

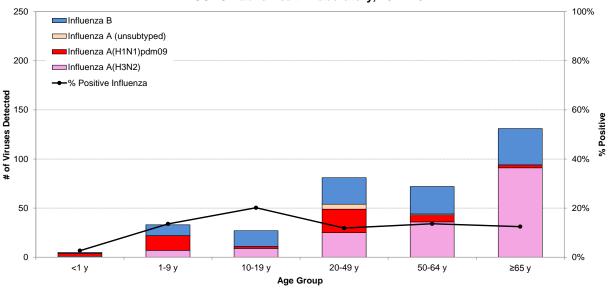
Entero/rhinoviruses were the most commonly detected non-influenza respiratory virus during this period but detections have begun to decrease starting in week 47 concurrent with increasing influenza activity.

Influenza and other virus detections among respiratory specimens submitted to BCCDC Public Health Laboratory, 2017-18



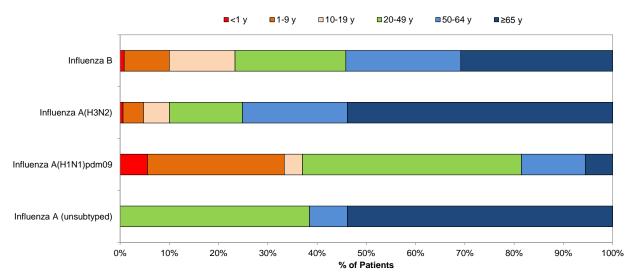
Data are current to December 20, 2017.

Cumulative number (since week 40) of influenza detections by type subtype and age group, BCCDC Public Health Laboratory, 2017-18



Data are current to December 20, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-50.

Age distribution of influenza detections (cumulative since week 40), BCCDC Public Health Laboratory, 2017-18

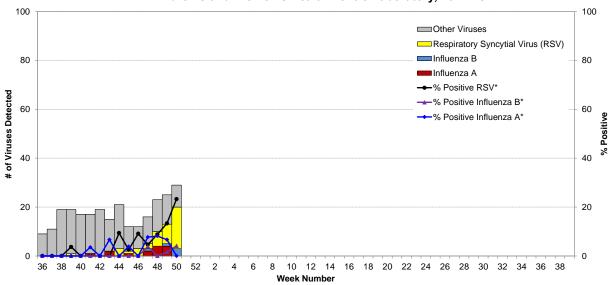


Data are current to December 20, 2017; figure includes cumulative influenza detections for specimens collected from weeks 40-50.

BC Children's and Women's Health Centre Laboratory

In week 50, 73 tests for respiratory viruses were conducted at the BC Children's and Women's Health Centre (CWHC) laboratory. Of these, none were positive for influenza A while 3 (4%) were positive for influenza B. Additionally, 17 (23%) were positive for respiratory syncytial virus (RSV) representing an increase in positivity in recent weeks. RSV was the most commonly detected respiratory viruses during this period.

Influenza and other virus detections among respiratory specimens submitted to BC Children's and Women's Health Centre Laboratory, 2017-18



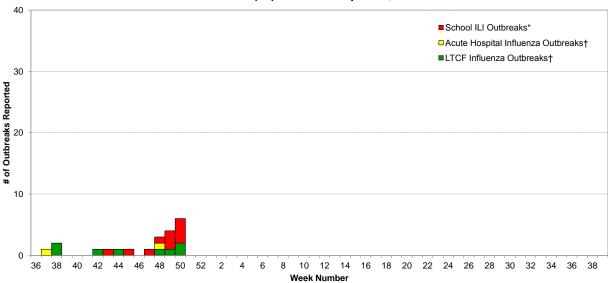
^{*} Positive rates were calculated using aggregate data. The denominators for each rate represent the total number of tests; multiple tests may be performed for a single specimen and/or patient

Influenza-like Illness (ILI) Outbreaks

Since our last bulletin, three new lab-confirmed influenza outbreaks were reported; one with onset in week 49 in IHA, and one each in FHA and NHA with onset in week 50. All three outbreaks were in longterm care facilities (LTCFs). The LTCF outbreaks in IHA and NHA had influenza A(H3N2) detected: whereas, the FHA outbreak had influenza B detected. Additionally, four school ILI outbreaks, with unknown etiology, were reported during week 50. All of the outbreaks occurred in IHA, currently the only health authority routinely reporting school ILI outbreaks to BCCDC.

Cumulatively during the 2017-18 season (since week 37, starting September 10, 2017), 10 lab-confirmed influenza outbreaks have been reported, including 5 with influenza A detected [3 A(H3N2) and 2 subtype unknown], 3 with influenza B, and 2 with influenza A (H3N2) and influenza B; of these, 8 were reported in LTCFs and 2 were reported from an acute care facility. Similarly, 11 school ILI outbreaks have occurred without etiologic agent identified. Compared to the prior A(H3N2)-dominant 2016-17 season, which was associated with a record number of influenza outbreaks, fewer lab-confirmed influenza outbreaks have been reported so far this season over the same time period (n=10 vs. 17), likely reflecting the mix of A(H3N2) and A(H1N1)pdm09 circulation this season; whereas a greater number of school outbreaks have been reported (n=11 vs. 7).

Number of influenza-like illness (ILI) outbreaks reported, British Columbia 2017-18



^{*} School-based ILI outbreak defined as >10% absenteeism on any day, most likely due to ILI.

Updated Antiviral Guidelines

The Association of Medical Microbiology and Infectious Disease Canada (AMMI Canada) have released updated guidance on the use of antiviral drugs given potential low vaccine effectiveness for the 2017-18 influenza season. These guidelines are available at: https://www.ammi.ca/Update/79.ENG.pdf.

[†] 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

FluWatch (week 49, December 3 to 9, 2017)

At the national level, influenza activity continues to increase across Canada; however many indicators such as hospitalizations, outbreaks and geographic spread remain similar to the previous week. The majority of influenza detections continue to be A(H3N2), although a substantially greater number of influenza B detections have also been reported compared to previous seasons. Several indicators of influenza activity are above the expected levels for this time of year, and most similar to levels observed during the 2014-15 influenza season, when A(H3N2) was the predominant circulating subtype. The majority of lab confirmations, hospitalizations and deaths have been among adults aged 65+. Since early November, an above average number of weekly pediatric hospitalizations have been reported by the IMPACT network. Details are available at: www.canada.ca/en/public-health/services/diseases/flu-influenza-surveillance/weekly-influenza-reports.html.

National Microbiology Laboratory (NML): Strain Characterization

From September 1, 2017 to December 21, 2017, the National Microbiology Laboratory (NML) received 214 influenza viruses [160 A(H3N2), 11 A(H1N1)pdm09 and 43 B] from Canadian laboratories for antigenic characterization.

Influenza A(H3N2): Of the 160 influenza A(H3N2) viruses, only 32 (20%) had sufficient haemagglutination titre for antigenic characterization by haemagglutination inhibition (HI) assay. Of the 32 viruses characterized by HI assay, all were considered antigenically similar to a cell culture-propagated A/Hong Kong/4801/2014-like virus, the WHO-recommended A(H3N2) component for the 2017-18 northern hemisphere influenza vaccine. Of the 32 viruses that were antigenically characterized with available sequencing information, 29 belonged to genetic group 3C.2a and 3 belonged to subclade 3C.2a1. Of the 128 viruses genetically characterized, 101 were reported to belong to genetic group 3C.2a, which includes the A/Hong Kong/4801/2014 vaccine strain, while 27 belonged to subclade 3C.2a1.

Influenza A(H1N1)pdm09: All of the 11 A(H1N1)pdm09 viruses characterized were antigenically similar to an A/Michigan/45/2015-like virus, the WHO-recommended influenza A(H1N1) component for the 2017-18 northern hemisphere influenza vaccine.

Influenza B: Of the 43 influenza B viruses characterized, 4 (9%) were characterized as antigenically similar to a B/Brisbane/60/2008(Victoria)-like virus, the WHO-recommended influenza B component for the 2017-18 northern hemisphere trivalent influenza vaccine, while 39 (93%) were antigenically similar to a B/Phuket/3073/2013(Yamagata lineage)-like virus, the WHO-recommended influenza B component for the 2017-18 northern hemisphere quadrivalent influenza vaccine containing two influenza B strains.

National Microbiology Laboratory (NML): Antiviral Resistance

From September 1, 2017 to December 21, 2017, the NML received influenza viruses from Canadian laboratories for drug susceptibility testing.

Amantadine: Of the 174 influenza A viruses [163 A(H3N2) and 11 A(H1N1)pdm09] tested against amantadine, all were resistant.

Oseltamivir: Of the 220 influenza viruses [165 A(H3N2), 11 A(H1N1)pdm09, and 44 B] tested against oseltamivir, all were sensitive.

Zanamivir: Of the 220 influenza viruses [165 A(H3N2), 11 A(H1N1)pdm09, and 44 B] tested against zanamivir, all were sensitive.

International

USA (week 49, December 3 to 9, 2017)

During week 49, overall influenza activity increased in the United States. The most frequently identified influenza virus subtype reported by public health laboratories during week 49 was influenza A(H3N2), with minimal circulation of A(H1N1)pdm09 or influenza B. The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased. One human infection with a novel influenza A(H3N2) variant virus was reported. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the system-specific epidemic threshold in the National Center for Health Statistics (NCHS) Mortality Surveillance System. One influenza-associated pediatric death was reported. A cumulative rate of 4.3 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported. The proportion of outpatient visits for influenza-like illness (ILI) was 2.7%, which is above the national baseline of 2.2%. The geographic spread of influenza in 12 states was reported as widespread; Puerto Rico and 26 states reported regional activity; 10 states reported local activity; the District of Columbia, the U.S. Virgin Islands and two states reported sporadic activity; and Guam did not report. Details are available at: www.cdc.gov/flu/weekly/.

WHO

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

WHO Recommendations for Influenza Vaccines

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/.

WHO Recommendations for the 2018 Southern Hemisphere Influenza Vaccine

On September 28, 2017, the WHO announced recommended strain components for the 2018 southern hemisphere trivalent influenza vaccine (TIV):*

- an A/Michigan/45/2015 (H1N1)pdm09-like virus;†
- an A/Singapore/INFIMH-16-0019/2016 (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 (Victoria-lineage)-like virus.

- * Recommended strains represent a change for two of the three components used for the 2017 southern hemisphere vaccines.
- † Recommended strain is the same as recommended for the 2017 southern hemisphere and 2017-18 northern hemisphere vaccines. The A/Michigan/45/2015-like virus belongs to the emerging phylogenetic subclade 6B.1; it replaces the A/California/7/2009-like virus that had been retained as the previous A(H1N1) component since the 2009 pandemic.
- ‡ Recommended strain for the A(H3N2) component represents a phylogenetic clade-level change from a clade 3C.2a virus to a clade 3C.2a1 virus containing the amino acid substitution N121K in the HA which is found in the majority of recent A(H3N2) viruses.
- § Recommended strain for the influenza B component represents a lineage-level change from a B(Victoria)-lineage virus to a B(Yamagata)-lineage virus.

For further details: http://www.who.int/influenza/vaccines/virus/recommendations/2018_south/en/.

The European Centre for Disease Prevention and Control has also posted a useful summary of WHO recommendations for the 2018 southern hemisphere influenza season, including rationale, available at: https://ecdc.europa.eu/en/news-events/who-recommendations-influenza-virus-vaccine-composition-2018-southern-hemisphere

Additional Information

Explanatory Note:

The surveillance period for the 2017-18 influenza season is defined starting in week 40. Weeks 36-39 of the 2016-17 season are shown on graphs for comparison purposes.

List of Acronyms:

ACF: Acute Care Facility

AI: Avian influenza

MSP: BC Medical Services Plan

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

IHA: Interior Health Authority

ILI: Influenza-Like Illness

VCHA: Vancouver Coastal Health Authority

VIHA: Vancouver Island Health Authority

WHO: World Health Organization

LTCF: Long-Term Care Facility

Current AMMI Canada Guidelines on the Use of Antiviral Drugs for Influenza:

www.ammi.ca/Update/79.ENG.pdf

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): https://www.canada.ca/en/public-

health/services/diseases/flu-influenza/influenza-surveillance.html

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. Reporting Information Health unit/medical health officer notified? ☐ Yes ☐ No Person Reporting: _____ Title: _____ Email: Contact Phone: Health Authority: _____ HSDA: _____ Full Facility Name: _____ First Notification (complete section **B** below; Section **D** if available) Is this report: Update (complete section **C** below; Section **D** if available) Outbreak Over (complete section **C** below; Section **D** if available) **First Notification** B 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 / YYYYY Numbers to date Residents/Students Staff Total With ILI Hospitalized Died **Update AND Outbreak Declared Over** Date of onset for most recent case of ILI (dd/mm/yyyy): DD / MMM / YYYYY If over, date outbreak declared over (dd/mm/yyyy): DD/MMM/YYYY Numbers to date Residents/Students Staff Total With ILI Hospitalized Died **Laboratory Information** ☐ Yes (location: _____) ☐ No ☐ Don't know Specimen(s) submitted?