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Communicable Disease Control Division  
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## PUBLIC HEALTH ADVISORY:

### Updated Recommendations for Prevention and Control of Influenza for the 2018-2019 Season

As of November 14, 2018, influenza activity remains low both in the City of Boston and nationwide. Annual influenza vaccination is recommended for all persons  $\geq 6$  months who do not have specific vaccine contraindications.<sup>1</sup> For the 2018-2019 season, CDC is re-introducing the intranasal quadrivalent live attenuated influenza vaccine (LAIV4, also referred to as FluMist®) as an option for vaccination in non-pregnant individuals, 2 years through 49 years of age. There is a precaution against the use of LAIV4 for people with certain underlying medical conditions, including children 2-4 years who have received a diagnosis of asthma in the preceding 12 months. However, the American Academy of Pediatrics (AAP) recommends an inactivated influenza vaccine (IIV) *as the primary choice* for all children, with use of LAIV4 reserved for children *who refuse IIV* and for *whom it is not otherwise contraindicated*. There is otherwise no preferential recommendation for any licensed inactivated or recombinant vaccine product. Influenza vaccination is an important and effective preventive strategy. Providers are encouraged to vaccinate all patients  $\geq 6$  months with whatever appropriate vaccine product they have in stock during the patient encounter to avoid missed opportunities to vaccinate.

***All healthcare providers and laboratories in Boston are required by city health department regulations to report all laboratory-confirmed cases of influenza, regardless of state or city of residence, as well as any clusters of illness, to the Boston Public Health Commission (BPHC) by phone (617) 534-5611 or fax (617) 534-5905.***

#### BACKGROUND

- During the 2017-2018 influenza season (defined as 10/1/2017- 5/5/2018), 4,139 cases of laboratory-confirmed influenza were reported in Boston residents. Of these, 772 (19%) were hospitalized, and 19 (2.5%) died. Influenza A(H3N2) was the predominant strain through most of the season, and all influenza A components of the 2017-2018 vaccine were well-matched to circulating strains. **Detailed information on the 2017-2018 Boston influenza season can be found by clicking here: [BPHC's 2017-2018 Influenza Season in Review](#). A pictorial summary of the 2017-2018 Boston influenza season can be found by clicking here: [BPHC's 2017-2018 Influenza Season Infographic](#).**
  - The CDC's *Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2018–19 Influenza Season* can be viewed by clicking here: <https://www.cdc.gov/mmwr/volumes/67/rr/pdfs/rr6703a1-H.pdf>.
  - A brief summary of all CDC changes to recommendations for the 2018-19 season can be found here: [https://www.cdc.gov/flu/pdf/professionals/acip/acip-2018-19\\_summary-of-recommendations.pdf](https://www.cdc.gov/flu/pdf/professionals/acip/acip-2018-19_summary-of-recommendations.pdf)
  - The AAP's *Recommendations for Prevention and Control of Influenza in Children, 2018–2019* can be found here: <http://pediatrics.aappublications.org/content/pediatrics/early/2018/08/30/peds.2018-2367.full.pdf>

#### THE COMPOSITION OF THE 2018–19 VACCINE HAS BEEN UPDATED FROM LAST SEASON:

- The A(H1N1) component in all IIVs (A/Michigan/45/2015 (H1N1)pdm09-like virus) remains unchanged from last season.
- The A(H1N1) component of LAIV4 now contains A(H1N1)pdm09-like virus (A/Slovenia/2903/2015). Based on limited data, this slight variant to the H1N1 component contained in IIVs is expected to overcome issues with

<sup>1</sup> See [https://www.cdc.gov/flu/professionals/vaccination/vaccine\\_safety.htm](https://www.cdc.gov/flu/professionals/vaccination/vaccine_safety.htm) for a list of medical contraindications by vaccine product.

previous versions of LAIV4 that, due to poor viral replication, led to suboptimal immunologic response and virtually no protection from circulating H1N1. While currently available data exist to indicate that this updated variant results in an improved replication and immunologic response in recipients, no effectiveness data are yet available for this updated formulation of LAIV4, and interim effectiveness data will not be available until well into the upcoming influenza season.

- The A(H3N2) component has been updated to contain an A/Singapore/INFIMH-16-0019/2016 A(H3N2)-like virus, which is the same A(H3N2) component contained in the 2018 Southern Hemisphere's seasonal influenza vaccine. The decision to update the A(H3N2) component was not made to address antigenic drift, but rather because the egg-propagated A/Singapore vaccine virus is antigenically more similar to circulating viruses than the egg-propagated A/Hong Kong vaccine virus used in the Northern Hemisphere 2017–2018 vaccine.
- Both *trivalent and quadrivalent* vaccines will include an updated Victoria lineage influenza B virus component. This recommendation represents a change in the influenza B/Victoria lineage component recommended for the 2017–2018 Northern Hemisphere and 2018 Southern Hemisphere influenza vaccines. The B component change was made because of the increasing global circulation of an antigenically drifted B/Victoria lineage. The updated Victoria lineage virus is a B/Colorado/06/2017-like virus.
- The Yamagata lineage influenza B virus, the second influenza B strain and found only in the quadrivalent vaccine formulation, is a B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage) and remains unchanged from last season.

The influenza season is unpredictable. The Boston Public Health Commission (BPHC) will be monitoring influenza activity throughout the season and will provide weekly updates on Boston case counts and trends along with state and national data. For a summary on of influenza activity in the United States and worldwide, from October 1, 2017–May 19, 2018, please see: <https://www.cdc.gov/mmwr/volumes/67/wr/pdfs/mm6722a4-H.pdf>.

## VACCINATION

- Annual influenza vaccination is recommended for all persons  $\geq 6$  months who do not have specific vaccine contraindications. Vaccination offers protection to the person vaccinated as well as to those around them who may be at higher risk from influenza such as young children, the elderly, pregnant women, and those with underlying medical conditions for whom vaccine may be contraindicated.
- For the 2018-19 influenza season, CDC, ACIP, and AAP have reintroduced live attenuated influenza vaccine (LAIV4) as a vaccine option. The AAP recommends an IIV (IIV3 or IIV4) as the **primary** choice for all children based upon inferior effectiveness of LAIV4 against influenza A (H1N1) during past seasons and unknown effectiveness against influenza A (H1N1) for this upcoming season. However, LAIV4 may be used for children who would not otherwise receive an influenza vaccine (e.g., refusal of an IIV) and for whom it is appropriate according to age (i.e., 2 years of age and older) and clinical status. All children with egg allergy of any severity can receive either an IIV or LAIV4 without any additional precautions beyond those routinely recommended for any vaccine.

## TREATMENT

- A summary of CDC treatment guidelines is available at: <https://www.cdc.gov/flu/professionals/antivirals/index.htm>
- Neuraminidase inhibitors (e.g., oseltamivir, zanamivir, and parenteral peramivir) are effective against most circulating influenza strains and are approved for both influenza treatment and chemoprophylaxis.
- Adamantanes (e.g., adamantane and rimantadine) are **NOT** recommended for influenza treatment or chemoprophylaxis as circulating influenza A viruses are now universally resistant to this class of drugs and are not effective against influenza B viruses in general.
- Antiviral treatment is recommended as early as possible for any person with confirmed or suspected influenza who:
  - is hospitalized; or
  - has severe, complicated, or progressive illness; or
  - is at higher risk for influenza complications.
- Persons at higher risk for influenza complications include:
  - children aged younger than 2 years;
  - adults aged 65 years and older;

- persons with chronic pulmonary (including asthma), cardiovascular, renal, hepatic, hematological, metabolic, or neurologic disorders; and persons with immunosuppression;
  - women who are pregnant, or postpartum (within 2 weeks after delivery);
  - persons under 19 years old who are receiving long-term aspirin therapy;
  - persons who are morbidly obese (i.e., body-mass index  $\geq 40$ ); and
  - residents of chronic-care facilities.
- Antiviral treatment can also be considered for suspected or confirmed influenza in previously healthy, symptomatic outpatients not at high risk on the basis of clinical judgment, especially if treatment can be initiated within 48 hours of illness onset.
  - **In prior years, localized shortages of influenza antivirals have been reported. Healthcare providers in Boston who become aware that patients are experiencing difficulty obtaining these medications are asked to contact the BPHC Medical Intelligence Center (MIC) by calling (617) 343-6920 or emailing [MIC@bphc.org](mailto:MIC@bphc.org).**

## TESTING

- CDC guidance on diagnostic testing for influenza is available at: <https://www.cdc.gov/flu/professionals/diagnosis/index.htm>
- Serologic testing for influenza is NOT recommended as single acute serum specimens are uninterpretable, and require paired convalescent sera taken at least two weeks apart, providing little utility as a diagnostic tool.
- Rapid influenza diagnostic tests (RIDTs, which include rapid antigen tests) have sensitivities ranging from 50-70% and may produce false negative results. Many RIDTs are FDA approved.
  - For general information on RIDTs, see: <http://www.cdc.gov/flu/professionals/diagnosis/rapidlab.htm>
  - To view a list of approved test kits, see: <https://www.cdc.gov/flu/professionals/diagnosis/table-ridt.html>.
- Molecular testing (PCR) is preferred over RIDTs due to greater sensitivity and specificity. Contact your laboratory to see if PCR testing is available at your facility. For information on molecular assays to detect influenza, see: <https://www.cdc.gov/flu/professionals/diagnosis/molecular-assays.htm>

## 2017-2018 INFLUENZA SEASON NATIONAL OVERVIEW

The 2017-2018 A(H3N2)-predominant influenza season (without antigenic drift) was classified as High Severity with significant disease burden seen across all age groups and overall demonstrated widespread and elevated influenza activity. Overall estimated hospitalization rates (all ages) during 2017-2018 were the highest recorded since 2010, with an estimated 960,000 influenza-related hospitalizations, surpassing the previously recorded high of 710,000 influenza-related hospitalizations during the 2014-2015 season--another high severity A(H3N2)-predominant season marked by antigenic drift. Further, according to CDC, an estimated 80,000 persons died of influenza and its complications during 2017-2018 throughout the US, the highest estimated mortality since the 1976-1977 influenza season. Historically, influenza-related deaths have ranged from approximately 12,000 to 56,000 annually. In general, influenza A(H3N2)-predominant seasons are typically more severe, as A(H3N2) strains tend to result in higher rates of complications, e.g., pneumonia, increased hospitalization rates, and death. In addition, seasonal influenza vaccines tend to be less effective against A(H3N2) than A(H1N1) or influenza B viruses, particularly in the elderly.

A total of 185 influenza-associated pediatric deaths were reported to CDC for the 2017-2018 season. Approximately 80% of these deaths occurred in children who had not received seasonal influenza vaccination. This exceeds the previous maximum reported during a regular influenza season (171 during the 2012-2013 season). There were 358 reported influenza-associated pediatric deaths during the 2009-2010 pandemic A(H1N1) season. Pediatric influenza deaths became nationally reportable in 2004.

The 2017-2018 influenza season was also marked by elevated and geographically widespread influenza activity for an extended period. ILI was at or above the national baseline for 19 weeks, making the 2017-2018 season one of the longest in recent years. ILI activity began to increase in November, had a prolonged peak throughout January and February, and persisted with high activity until the end of March. ILI peaked at 7.5%, the highest activity level since the 2009-2010 pandemic A(H1N1) influenza season, which peaked at 7.7%.

Methodology for estimating overall influenza burden<sup>2</sup> was developed by CDC during the 2010-2011 season to assess the numbers of influenza illnesses, medical visits, and hospitalizations in the US, as well as determining the impact of influenza vaccination on these results. Additionally, CDC implemented a new methodology to classify seasonal severity<sup>3</sup> during the 2017-2018 season and has subsequently used this modeling system to retrospectively analyze influenza seasons starting with the 2003-2004 season.

### **2017-2018 INFLUENZA SEASON BOSTON OVERVIEW**

Boston ED ILI activity this past 2017-2018 influenza season (an A(H3N2)-predominant season without antigenic drift) peaked at 5.23%, and was the highest level since the 2009-2010 pandemic A(H1N1) influenza season. However, Massachusetts state data demonstrated that Suffolk County (including Boston, Chelsea, Revere, and Winthrop) experienced ILI activity consistently below overall weekly statewide ILI averages. Furthermore, in contrast to increased ILI activity, influenza severity did not appear greater compared with recent previous seasons. The proportion of Boston residents with laboratory-confirmed influenza who were hospitalized was 19% (24.8% among cases initially seen at an ED facility), consistent with the previous four influenza seasons (range: 17%-25%). The maximum hospitalization rate of 25% (31.6% among cases initially seen at an ED facility) was seen during the 2014-2015 influenza season, an A(H3N2)-predominant season characterized by antigenic drift. Increased ED visits may reflect increased concern due to media attention, increased referrals from providers, etc., and often reflect perceived risk rather than actual illness. Although total city vaccination rates are not known (as vaccine may be obtained at local/chain pharmacies, EDs, primary care providers, community health centers, long term care facilities, etc.), high vaccination rates could explain reduced influenza activity in Boston.

The estimated overall mortality of all laboratory-confirmed cases of influenza among Boston residents for the 2017-2018 (A(H3N2)-predominant) season was 0.5%, similar to the 2016-2017 (A(H3N2)-predominant) season (0.4%), and lower than both the 2014-2015 (A(H3N2)-predominant, with antigenic drift) and 2015-2016 (H1N1-predominant) influenza seasons (2% and 1%, respectively).

During the 2017-2018 influenza season, no pediatric influenza deaths were identified among Boston residents; statewide there was one pediatric influenza death.

Note: BPHC and MDPH utilize different methodologies for calculating ILI activity. BPHC calculates ILI using ED visit chief complaint data from nine Boston acute care hospitals to categorize visits as ILI, whereas ILINet,<sup>4</sup> used by MDPH, utilizes outpatient data from recruited healthcare providers to estimate ILI. BPHC methodology has been validated and allows us to obtain Boston-specific data in near real-time.

### **EDUCATION**

- BPHC has a variety educational materials, including fact sheets in several languages, available on its website: <http://bphc.org/whatwedo/infectious-diseases/flu-information-center/Pages/Educational-Material.aspx>.
- A 30 second PSA on influenza and vaccination is available in both English and Spanish though YouTube: [BPHC Influenza PSA \(English\), YouTube](#) and [BPHC Influenza PSA \(Spanish\), YouTube](#).

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<sup>2</sup> See: <https://www.cdc.gov/flu/about/burden/estimates.htm> and <https://www.cdc.gov/flu/about/burden/how-cdc-estimates.htm>

<sup>3</sup> See: <https://www.cdc.gov/flu/professionals/classifies-flu-severity.htm>

<sup>4</sup> For information about ILINet see: <https://www.cdc.gov/flu/weekly/overview.htm>