

CONTAGIOUS COMMENTS

Department of Epidemiology

Influenza Vaccination

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The influenza vaccination season has arrived. It is important to vaccinate all children 6 months of age and older against influenza before the start of the flu season, which can be highly unpredictable from year to year. Annual influenza vaccination remains the most effective strategy against influenza. For example, during the severe 2017-18 influenza season, when vaccine effectiveness was close to 40%, vaccination was estimated to have prevented 7.1 million illnesses, 109,000 hospitalizations and 8000 deaths.

The composition of the new 2019-2020 seasonal influenza vaccine has changed for both the trivalent and quadrivalent vaccines. Trivalent vaccines contain two influenza A strains and one B strain, and the quadrivalent vaccines contain the same strains as the trivalent vaccine, plus an additional B strain.

A reminder of the nomenclature follows:

- ❖ IIV=Inactivated Influenza Vaccine
- ❖ IIV₃=Inactivated Influenza Vaccine, Trivalent
- ❖ IIV₄=Inactivated Influenza Vaccine, Quadrivalent
- ❖ RIV=Recombinant Influenza Vaccine
- ❖ LAIV=Live-Attenuated Influenza Vaccine (FluMist®)

Frequently asked questions:

What are the recommendations for influenza vaccination for 2019-2020?

1. Annual influenza vaccination is recommended for **all** individuals 6 months of age and older.
2. Vaccination by the end of October is preferable, before the onset of influenza activity in the community. Vaccination should continue for the duration of the influenza season, while unexpired vaccine stock is available.
3. For the 2019-2020 season, the CDC recommends any licensed, age-appropriate vaccine, including LAIV.

What is the composition of flu vaccines for the upcoming season?

The U.S. influenza vaccine composition for the 2019-20 season is as follows. Strain changes from the previous vaccine formulation are indicated by an asterisk.

Trivalent vaccines:

- *A/Brisbane/02/2018 (H1N1)pdm09-like virus (updated)
- *A/Kansas/14/2017 (H3N2)-like virus (updated)
- B/Colorado/06/2017-like (Victoria lineage) virus

Quadrivalent vaccines:

- Contain the three used in the trivalent vaccines, plus B/Phuket/3073/2013-like virus (Yamagata lineage)

Influenza Vaccination Formulations for Children, 2019-2020

There are many different vaccine formulations available. Some are licensed for specific age groups or are more appropriate than others for persons with certain medical conditions. The influenza vaccines currently available are as follows:

Table 1. Influenza Vaccination Formulations for Children, 2019-2020

Ages	Trade Name	Manufacturer	Presentation
≥6 mo ≥ 6 mo	Fluzone® IIV4	Sanofi Pasteur	0.25mL single dose syringe 0.5mL single-dose syringe 5 mL multi-dose vial
2-49 yrs	FluMist® quadrivalent	AstraZeneca	0.2mL intranasal sprayer
≥6 mos	Fluarix® IIV4	GSK	0.5mL single dose syringe
≥ 6 mo	Afluria® IIV4	Seqirus	0.25mL single dose syringe 0.5mL single dose syringe 5.0mL multidose vial
≥ 6mos	FluLaval IIV4	ID Biomedical	0.5mL single-dose syringe 5.0mL multidose vial
≥4 yrs	Flucelvax® IIV4 ^a	Seqirus	0.5mL single-dose syringe 5.0mL multidose vial

The age indication for Afluria Quadrivalent has been expanded from ≥5 years to ≥6 months. The dose volume for Afluria Quadrivalent is 0.25 mL for children aged 6 through 35 months and 0.5 mL for all persons aged ≥36 months (≥3 years). The dose volume for Fluzone Quadrivalent for children aged 6 through 35 months, which was previously 0.25 mL, is now either 0.25 mL or 0.5 mL. The dose volume for Fluzone Quadrivalent is 0.5 mL for all persons aged ≥36 months (≥3 years).

Table 2. Additional Influenza Vaccination Formulations for Adults, 2019-2020^a

Ages	Trade Name	Manufacturer	Presentation
≥18- yrs	FluBlok® Recombinant IIV4	Sanofi Pasteur	0.5mL single-dose syringe
≥65 yrs	Fluzone® High Dose IIV3	Sanofi Pasteur	0.5mL single-dose syringe
≥65 yrs	Fluad IIV3®	Seqirus	0.5mL single-dose syringe

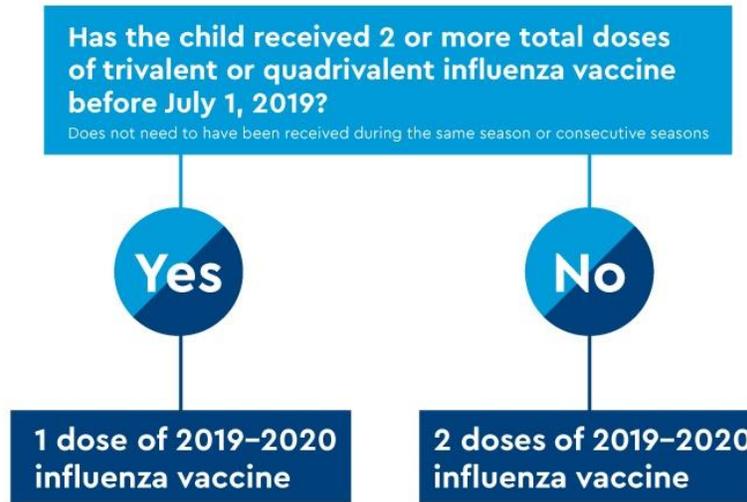
a-in addition to formulations also available for children

Which pediatric patients will need two doses of influenza vaccine for the 2019-20 influenza season?

The number of recommended doses depends on the child's age at the time he or she received the first dose and their influenza vaccination history.

Children aged 6 months through 8 years will need 2 doses of vaccine administered at least 4 weeks apart during their first season of vaccination. Children aged 6 months through 8 years who have received at least 2 doses of influenza vaccine previously only require 1 dose for the 2019-2020 season (Figure 1). The two previous doses do not need to have been given during the same season or consecutive seasons.

Figure 1. Number of 2019-2020 seasonal influenza vaccine doses for children 6 months to 8 years of age.



What are the contraindications and precautions to influenza vaccination in children?

For IIV, the only contraindication is a history of severe allergic reaction to any component of the vaccine or to a previous dose of any influenza vaccine. Contraindications and conditions for which use is not recommended for LAIV include children < 2 years of age, a history of severe allergic reaction to any component of the vaccine or to a previous dose of any influenza vaccine, concomitant aspirin or salicylate-containing therapy, children with a diagnosis of asthma, or a wheezing episode in children aged 2 to 4 years of age in the past 12 months, immunocompromised state, close contacts and caregivers of immunocompromised persons, pregnancy and those who have received an influenza antiviral in the preceding 48 hours.

What if a child has an egg allergy, can they still receive the influenza vaccine?

1. Individuals with a history of egg allergy who have experienced only hives after exposure to egg can receive influenza vaccine of any formulation (Figure 2).

For those who experience severe allergic reactions/anaphylaxis (angioedema, respiratory distress, lightheadedness, or recurrent emesis; or who required epinephrine or another emergency medical intervention), any vaccine formulation may be used, with the following additional safety measures:

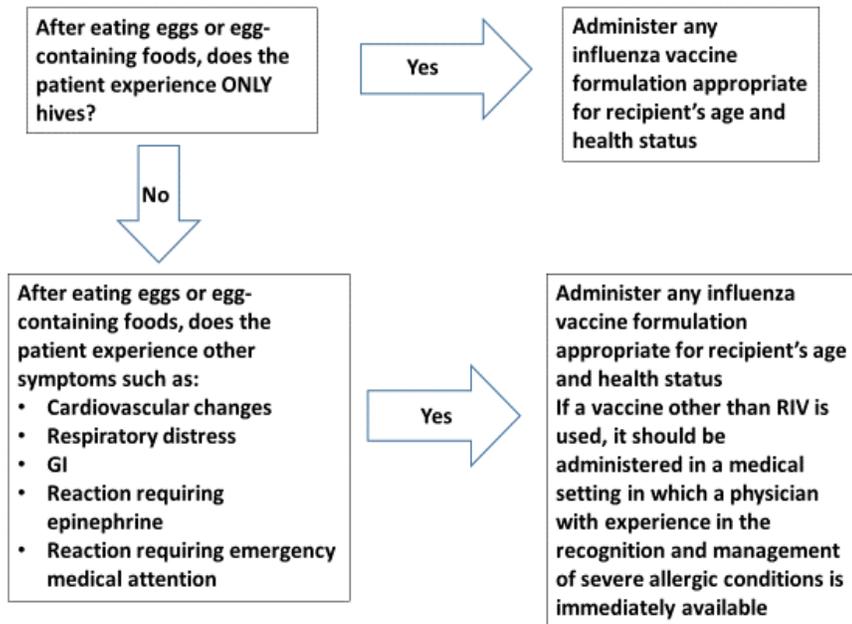
Vaccine should be administered in a medical setting in which a physician with experience in the recognition and management of severe allergic conditions is immediately available. The vaccine recipients no longer need to be observed for at least 30 minutes for signs of a reaction after administration of each vaccine dose; a 15-minute period of observation will suffice (1).

Recombinant Influenza Vaccine (RIV) is the only truly egg-free formulation and may be used for persons aged 18-49 years who have no other contraindications.

2. Some persons who report allergy to egg might not be egg-allergic. Those who are able to eat lightly cooked egg (e.g., scrambled egg) without reaction are unlikely to be allergic. Egg-allergic persons might tolerate egg in baked products (e.g., bread or cake). Tolerance to egg-containing foods does not exclude the possibility of egg allergy (2). Egg allergy can be confirmed by a consistent medical history of adverse reactions to eggs and egg-containing foods, plus skin and/or blood testing for immunoglobulin E antibodies to egg proteins.

A previous severe allergic reaction to influenza vaccine, regardless of the component suspected to be responsible for the reaction, remains the only true contraindication to future receipt of the vaccine.

Figure 2. Algorithm for children with egg allergy



Ref: <http://www.cdc.gov/vaccines/acip/meetings/downloads/>

Why is the intranasal influenza vaccine recommended again for this season?

The Advisory Committee for Immunization Practices of the Centers for Disease Control and Prevention (CDC) reviewed data regarding the effectiveness of LAIV over the past several seasons, which showed decreased vaccine effectiveness for the H1N1 component of the vaccine. The new LAIV4 formulation has a new H1N1 strain (A/Slovenia/2903/2015), which induces similar antibody responses to an earlier LAIV vaccine that had high vaccine effectiveness. Data from the UK showed that the new formulation of LAIV was effective against influenza A H1N1 last season. Therefore, for this season, the AAP and CDC recommend either vaccine with no preference.

Which influenza vaccines are available at Children's Hospital Colorado?

Vaccines are ordered every spring from our distributor to ensure an adequate supply for patients, families and staff. At CHCO, we are taking measures to increase influenza vaccination among inpatients and outpatients. We have individual syringes of FluLaval® quadrivalent injectable vaccine for patients 6 months of age and older. This formulation allows a single dose of 0.5mL for all ages, even for those aged 6 months to 36 months of age. We do not stock LAIV4 (FluMist®) for the 2019-2020 season available for patients, family or staff.

A grant from the Association of Volunteers and funding from the Rotary Club has enabled us to vaccinate 3500 family members against influenza without cost. Our family influenza vaccine vials are also FluLaval® quadrivalent influenza vaccine.

Team members at CHCO will receive the Fluarix quadrivalent® vaccine, which is approved for individuals 4 years of age and older.

References:

1. Committee on Infectious Diseases. Recommendations for Prevention and Control of Influenza in Children, 2018-2019. *Pediatrics*, Volume 140 (4) October 2018 e20182367.
2. Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2019–20 Influenza Season August 23, 2019.

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