

October 2019 ~ Resource #351001

Flu Vaccines for 2019-20

CDC has released recommendations for influenza vaccines for the 2019-20 influenza season. These recommendations (and the specific strains covered in this year's vaccines) can be found at: <https://www.cdc.gov/mmwr/volumes/68/rr/rr6803a1.htm>. Items that are addressed include the following:

- **Influenza vaccination is recommended for everyone ages six months and older** who do not have contraindications, using any age-appropriate vaccine.¹ Encourage patients to try to **complete vaccination by the end of October**. Though delayed vaccination may lead to increased immunity later in the season, it could also lead to missed opportunities to vaccinate, and is not recommended.¹
 - **Similar to the 2018-19 flu season, the LAIV4 (intranasal vaccine; *FluMist*) is an available option endorsed by the Advisory Committee on Immunization Practices (ACIP) for the 2019-20 flu season.**^{1,c} Unlike last year, the American Academy of Pediatrics (AAP) also endorses this recommendation without giving preference to any particular age-appropriate licensed vaccine.¹³ However, supplies of LAIV4 will be limited during the 2019-20 season due to manufacturing issues.¹⁵
- **Live-attenuated* and inactivated influenza vaccines can be given at the same time as other vaccines, using separate administration sites.**¹ (See *Fluad* row below concerning co-administration of two adjuvanted vaccines.)
 - *If two live vaccines (including LAIV4) are not given on the same day, they should be administered at least four weeks apart.¹
- Don't miss an opportunity to vaccinate due to fears the vaccine's effectiveness will not last throughout the entire flu season. **Influenza vaccination should be offered by the end of the October**. Some evidence suggests that vaccination in August or September may lead to "waning" or "wearing off" before the end of the flu season. However, this has not been consistently seen from year to year, nor among different patient populations. In addition, the timing of flu outbreaks is not able to be predicted.¹ Also note, it is not recommended (due to lack of data) to repeat a flu vaccine in a fully vaccinated patient due to fears of waning from vaccinating early in the season (e.g., August, September).¹¹

Continue to the **last page** of this document for information about when two doses of influenza vaccine are needed; vaccination with an acute illness; vaccinating immunocompromised, pregnant, or breastfeeding patients; and managing patients with an egg allergy. The chart below provides information about approved influenza vaccines for the 2019-20 season including FDA-approved ages for use, route of administration, dose, and cost.

Abbreviations: IIV4 = influenza inactivated vaccine, quadrivalent; IIV3 = influenza inactivated vaccine, trivalent; IM = intramuscular; LAIV4 = live attenuated influenza vaccine, quadrivalent; MDV = multidose vial; PFS = pre-filled syringe; RIV4 = recombinant inactivated vaccine, quadrivalent; SDV = single-dose vial.

Brand Name Manufacturer ^a	Route ^a	Approved Ages for Use ^a	Availability ^a (Cost/dose ^b)	Contains Thimerosal? ^a	Dose ^a	Comments ^a
Quadrivalent inactivated (IIV4): protects against two influenza A-like viruses and two influenza B-like viruses. ¹						
<i>Afluria</i> <i>Quadrivalent</i> Seqirus	IM	≥6 months	0.25 mL and 0.5 mL PFS (\$17.97) 5 mL MDV (\$16.62)	Yes (MDV only)	6-35 months: • 0.25 mL ≥36 months: • 0.5 mL	<ul style="list-style-type: none"> • No latex • Once entered, the MDV should be discarded after 28 days. • <i>PharmaJet</i> Stratis needle-free injector approved for ages 18-64 years.

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Brand Name Manufacturer ^a	Route ^a	Approved Ages for Use ^a	Availability ^a (Cost/dose ^b)	Contains Thimerosal? ^a	Dose ^a	Comments ^a
Quadrivalent inactivated (IIV4), continued (Protects against two influenza A-like viruses and two influenza B-like viruses. ¹)						
<i>Fluarix Quadrivalent</i> GSK	IM	≥6 months	0.5 mL PFS (\$16.07)	No	0.5 mL	<ul style="list-style-type: none"> • No latex
<i>Flucelvax Quadrivalent</i> Seqirus	IM	≥4 years	0.5 mL PFS (\$24.80) 5 mL MDV (\$23.51)	Yes (MDV only)	0.5 mL	<ul style="list-style-type: none"> • This cell-cultured vaccine may be abbreviated ccIIV4.¹ • No latex • Egg-free¹
<i>FluLaval Quadrivalent</i> GSK	IM	≥6 months	0.5 mL PFS (\$16.07) 5 mL MDV (\$15.02)	Yes (MDV only)	0.5 mL	<ul style="list-style-type: none"> • No latex • Once entered, the MDV should be discarded after 28 days.
<i>Fluzone Quadrivalent</i> Sanofi Pasteur	IM	≥6 months	0.25 mL PFS (\$19.63) 0.5 mL PFS and SDV (\$17.56 to \$18.31) 5 mL MDV (\$16.19 to \$16.94)	Yes (MDV only)	6-35 months: • 0.25 mL or 0.5 mL ≥36 months: • 0.5 mL	<ul style="list-style-type: none"> • No latex • A max of ten doses can be withdrawn from the MDV vial.

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Brand Name Manufacturer ^a	Route ^a	Approved Ages for Use ^a	Availability ^a (Cost/dose ^b)	Contains Thimerosal? ^a	Dose ^a	Comments ^a
Trivalent inactivated (IIV3): protect against two influenza A-like viruses and one influenza B-like virus. ¹						
<i>Fluad</i> Seqirus	IM	≥65 years	0.5 mL PFS (\$52.34)	No ¹	0.5 mL	<ul style="list-style-type: none"> • No latex. • This adjuvanted vaccine may be abbreviated aIIV3.¹ • May provide modestly greater protection against laboratory confirmed flu vs non-adjuvanted trivalent vaccine in patients ≥65 years of age (n=227, unable to calculate NNT), [Evidence level B-2].^{1,5} • Higher risk of adverse effects (injection site reactions, fatigue, myalgias, headache) than IIV3.¹ • Coadministration with other adjuvanted vaccines (e.g., <i>Heplisav-B</i>, <i>Shingrix</i>) has not been studied. There are theoretical concerns about more side effects. Don't delay flu vaccination if <i>Fluad</i> is the only flu vaccine available.¹
<i>Fluzone High-Dose</i> Sanofi Pasteur Contains 60 mcg of each virus strain compared to 15 mcg in standard-dose IM vaccines. ¹	IM	≥65 years	0.5 mL PFS (\$48.50 to \$49.25)	No ¹	0.5 mL	<ul style="list-style-type: none"> • No latex • Provides modestly greater protection against laboratory-confirmed flu vs standard-dose trivalent vaccine in patients ≥65 years of age (n=31,989; NNT=200), [Evidence level A-1].^{1,3} • Higher risk of nonserious adverse effects (injection site reactions, fever, myalgias) than standard dose.

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Brand Name Manufacturer ^a	Route ^a	Approved Ages for Use ^a	Availability ^a (Cost/dose ^b)	Contains Thimerosal? ^a	Dose ^a	Comments ^a
Quadrivalent recombinant (RIV4): protects against two influenza A-like viruses and two influenza B-like viruses. ¹						
Flublok Quadrivalent Sanofi Pasteur Contains 45 mcg of each virus strain compared to 15 mcg in standard-dose IM vaccines. ¹	IM	≥18 years	0.5 mL PFS (\$48.50 to \$49.25)	No ¹	0.5 mL	<ul style="list-style-type: none"> • No latex • Egg-free • May be slightly more effective in preventing laboratory confirmed flu than IIV4 vaccines in patients ≥50 years of age (n=8,604; NNT=100), [Evidence level A-1].^{1,2}
Quadrivalent live-attenuated (LAIV4): protects against two influenza A-like viruses and two influenza B-like viruses. ¹						
FluMist Quadrivalent MedImmune	Intranasal	2 to 49 years	0.2 mL prefilled intranasal sprayer (\$22.95 to \$23.70)	No ¹	0.1 mL per nostril	<ul style="list-style-type: none"> • No latex • For use in healthy, non-pregnant patients.¹ • Avoid in patients with contraindications to live vaccines (e.g., chronic diseases, immunosuppression, severely immunosuppressed close contacts).¹ • Avoid in children between the ages of 2 and 4 years with asthma or a history of wheezing in the last 12 months.¹ • Avoid in patients who have received influenza antivirals in the past 48 hours.¹

- a. Information is from the following U.S. product labeling unless otherwise specified: *Afluria Quadrivalent* (March 2019); *Fluarix Quadrivalent* (July 2019); *Fluclelvax Quadrivalent* (April 2019); *FluLaval Quadrivalent* (July 2019); *Fluzone Quadrivalent* (July 2019); *Fluad* (April 2019); *Fluzone High-Dose* (July 2019); *Flublok Quadrivalent* (April 2019); *FluMist Quadrivalent* (August 2019).
- b. Pricing based on wholesale acquisition cost (WAC). Medication pricing by Elsevier, accessed August 2019.
- c. This is a change from the 2016-17 and 2017-18 recommendations (when the LAIV4 was not included in the ACIP recommendations) and the 2018-19 flu season, when the inactivated vaccines were recommended over the LAIV4 by the American Academy of Pediatrics (AAP) and the American Academy of Family Physicians (AAFP) due to efficacy rates of the LAIV4 against the H1N1 influenza A strains in recent years. At that time, AAP and AAFP recommended reserving the LAIV4 for age appropriate healthy patients (e.g., 2 to 49 years of age) who refused an injection.^{9,14}

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Information and Clinical Pearls about Influenza Vaccine Administration

- To provide optimal protection, **children between the ages of 6 months and eight years should receive two doses of influenza vaccine** (separated by at least four weeks) if they have not received at least two doses of influenza vaccine (separated by at least four weeks) prior to July 1, 2019.¹ For children who should receive two doses, if the child turns nine years old between doses one and two of the vaccine, two doses are still recommended.¹
- **Immunocompromised patients** may receive any licensed, recommended, age-appropriate **injectable** flu vaccine.⁴
- Vaccinate **pregnant women** (any trimester) with any licensed, recommended, age-appropriate **injectable** flu vaccine, regardless of thimerosal content.^{1,6}
 - Risk of influenza and potential complications in pregnant woman and/or the fetus exceeds possible risks associated with influenza vaccination.^{7,8}
 - Influenza vaccination is safe during breastfeeding. Vaccinate post-partum women who did not receive an influenza vaccine while pregnant.^{6,9,10}
- **Patients with a history of severe egg allergy** (symptoms more severe than hives [e.g., angioedema, respiratory distress, requiring epinephrine]) can usually tolerate any flu vaccine. But they should receive the vaccine in a medical setting under the supervision of a healthcare professional who can identify and treat severe allergic reactions, if necessary. **Flublok Quadrivalent** and **Flucelvax Quadrivalent** are the only influenza vaccines considered **egg-free**.¹ See our chart, *Flu Vaccination and Egg Allergy*, for answers to common questions about vaccinating egg-allergic patients.
- **Avoid missed opportunities to vaccinate** by giving the influenza vaccine to patients who cannot remember if they received this season's influenza vaccine, even if this means giving a second dose to some patients.¹¹
- **Continue to give the flu vaccine to patients with mild acute illnesses** in order to avoid missed opportunities to vaccinate. Mild acute illness with or without fever (e.g., diarrhea, upper respiratory infection) is not a contraindication to receiving the vaccine.¹² Consider delaying vaccination in patients with moderate to severe illness as vaccination side effects (e.g., fever, malaise) may make it difficult to assess management of acute illness.¹²

Users of this resource are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and internet links in this article were current as of the date of publication.

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Levels of Evidence

In accordance with our goal of providing Evidence-Based information, we are citing the **LEVEL OF EVIDENCE** for the clinical recommendations we publish.

Level	Definition	Study Quality
A	Good-quality patient-oriented evidence.*	<ol style="list-style-type: none"> 1. High-quality RCT 2. SR/Meta-analysis of RCTs with consistent findings 3. All-or-none study
B	Inconsistent or limited-quality patient-oriented evidence.*	<ol style="list-style-type: none"> 1. Lower-quality RCT 2. SR/Meta-analysis with low-quality clinical trials or of studies with inconsistent findings 3. Cohort study 4. Case control study
C	Consensus; usual practice; expert opinion; disease-oriented evidence (e.g., physiologic or surrogate endpoints); case series for studies of diagnosis, treatment, prevention, or screening.	

***Outcomes that matter to patients** (e.g., morbidity, mortality, symptom improvement, quality of life).

RCT = randomized controlled trial; **SR** = systematic review

[Adapted from Ebell MH, Siwek J, Weiss BD, et al. Strength of Recommendation Taxonomy (SORT): a patient-centered approach to grading evidence in the medical literature. *Am Fam Physician* 2004;69:548-56. <http://www.aafp.org/afp/2004/0201/p548.pdf>]





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