ACIP Updates Influenza Vaccination Recommendations for 2016-2017

Key Points for Practice

- LAIV is not recommended this season because of its low effectiveness in recent years.
- Patients at risk of complications from influenza include persons 65 years and older, children younger than five years, and persons of any age who are immunosuppressed or have chronic medical conditions such as pulmonary disease.
- Persons with a history of egg allergy who have experienced only hives after exposure to egg should receive any of the recommended age-appropriate influenza vaccines.

From the *AFP* Editors

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The Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP) has released its annual recommendations for routine influenza vaccination in the 2016-2017 season. Updates this year include the antigenic composition of seasonal influenza vaccines available in the United States; information on influenza vaccines expected to be available this season, including newly licensed products *(Table 1)*; a recommendation against the use of live attenuated influenza vaccine (LAIV); and revised recommendations for vaccination of persons with egg allergy.

Routine annual influenza vaccination is recommended for all persons six months and older who do not have contraindications. No single vaccine is preferred over others in persons for whom more than one product is appropriate *(Table 2)*. The composition of influenza vaccines typically changes from season to season, with one or more vaccine strains replaced annually to provide protection against viruses that are anticipated to circulate during the upcoming season. Clinical trials have shown that protection against viruses that are antigenically similar to those in the vaccine extends at least for six to eight months, particularly in nonelderly populations. Influenza strains contained in this year's trivalent vaccines include an A/California/7/2009 (H1N1)-like virus, an A/Hong Kong/4801/2014 (H3N2)-like virus, and a B/Brisbane/60/2008–like virus (Victoria lineage). Quadrivalent vaccines will include an additional strain, a B/Phuket/3073/2013–like virus (Yamagata lineage). These vaccines include a change in the H3N2 virus and the lineage of the influenza B viruses.

ACIP recommends that quadrivalent LAIV not be used this season because of its low effectiveness in recent years. However, it remains a licensed vaccine that, if available, some clinicians may elect to use; for this reason, previous recommendations for its use are provided in *Table 2* for informational purposes.

Although the precise timing of the onset, peak, and end of influenza activity varies from one season to the next, annual epidemics of seasonal influenza typically occur in the United States between October and April. Ideally, vaccination should occur before the onset of influenza activity in the community. Clinicians should offer vaccination by the end of October, if possible. Children six months to eight years of age who have not received influenza vaccination before require two doses for the first season. They should receive their first dose as soon as vaccine becomes available, followed by a second vaccination no earlier than four weeks later. In recent years, some clinicians have received their initial shipments of vaccine as early as July. This has raised questions about the ideal timing of vaccination because early availability and administration of vaccine—particularly in older adults—may contribute to reduced protection against influenza later in the season. Conversely, delaying vaccination may confer greater immunity later in the

Table 1. Influenza Vaccines—United States, 2016-2017

Trade name	*Dispensing method*	*Age indications*	*Route of administration*
Inactivated influenza vaccine, quadrivalent, standard dose*			
Fluarix Quadrivalent	0.5-mL single-dose prefilled syringe	≥ 3 years	Intramuscular†
Flulaval Quadrivalent	0.5-mL single-dose prefilled syringe	≥ 3 years	Intramuscular†
	5.0-mL multidose vial	≥ 3 years	Intramuscular†
Fluzone Intradermal Quadrivalent‡	0.1-mL single-dose prefilled microinjection system	18 to 64 years	Intradermal§
Fluzone Quadrivalent	0.25-mL single-dose prefilled syringe	6 to 35 months	Intramuscular†
	0.5-mL single-dose prefilled syringe	≥ 36 months	Intramuscular†
	0.5-mL single-dose vial	≥ 36 months	Intramuscular†
	5.0-mL multidose vial	≥ 6 months	Intramuscular†
Inactivated influenza vaccine, quadrivalent, cell culture–based, standard dose*			
Flucelvax Quadrivalent	0.5-mL single-dose prefilled syringe	≥ 4 years	Intramuscular†
Inactivated influenza vaccine, trivalent, standard dose*			
Afluria	0.5-mL single-dose prefilled syringe	≥ 9 years‖	Intramuscular†
	5.0-mL multidose vial	≥ 9 years (needle and syringe)‖ 18 to 64 years (jet injector)	Intramuscular†
Fluvirin	0.5-mL single-dose prefilled syringe	≥ 4 years	Intramuscular†
	5.0-mL multidose vial	≥ 4 years	Intramuscular†
Adjuvanted inactivated influenza vaccine, trivalent, standard dose*			
Fluad	0.5-mL single-dose prefilled syringe	≥ 65 years	Intramuscular†
Inactivated influenza vaccine, trivalent, high dose¶			
Fluzone High-Dose	0.5-mL single-dose prefilled syringe	≥ 65 years	Intramuscular†
Recombinant influenza vaccine, trivalent**			
Flublok	0.5-mL single-dose vial	≥ 18 years	Intramuscular†
Live attenuated influenza vaccine, quadrivalent††			
Flumist Quadrivalent	0.2-mL single-dose prefilled intranasal sprayer	2 to 49 years	Intranasal

NOTE: *Immunization providers should check U.S. Food and Drug Administration–approved prescribing information for 2016-2017 influenza vaccines for the most complete and updated information, including (but not limited to) indications, contraindications, warnings, and precautions. Package inserts for U.S.-licensed vaccines are available at http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm. Availability of specific products and presentations may change and differ from what is described in this table.*

**—A 0.5-mL dose of standard-dose intramuscular inactivated influenza vaccine contains 15 mcg of each vaccine HA antigen (45 mcg total for trivalents and 60 mcg total for quadrivalents).*

†—*For adults and older children, the recommended site for intramuscular influenza vaccination is the deltoid muscle. The preferred site for infants and young children is the anterolateral aspect of the thigh. Specific guidance regarding site and needle length for intramuscular administration may be found in the Advisory Committee on Immunization Practices (ACIP) general recommendations on immunization at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm.*

‡—*A 0.1-mL dose of intradermal quadrivalent inactivated influenza vaccine contains 9 mcg of each vaccine HA antigen (36 mcg total).*

§—*The preferred injection site is over the deltoid muscle. Fluzone Intradermal Quadrivalent is administered using the delivery system included with the vaccine.*

‖—*Age indication per package insert is ≥ 5 years; however, ACIP recommends that Afluria not be used in children 6 months to 8 years of age because of increased risk for febrile reactions noted in this age group with Seqirus' 2010 Southern Hemisphere trivalent inactivated influenza vaccine. Afluria can be used if no other age-appropriate, licensed inactivated seasonal influenza vaccine is available for a child 5 to 8 years of age who has a medical condition that increases the risk of influenza complications; however, clinicians should discuss the benefits and risks of Afluria with the child's parents or caregivers before administering this vaccine. Afluria may be used in persons ≥ 9 years of age. Afluria is licensed for administration by jet injector for persons 18 to 64 years of age only.*

¶—*A 0.5-mL dose of high-dose trivalent inactivated influenza vaccine contains 60 mcg of each vaccine antigen (180 mcg total).*

***—A 0.5-mL dose of trivalent recombinant influenza vaccine contains 45 mcg of each vaccine HA antigen (135 mcg total).*

††—*ACIP recommends that Flumist not be used during the 2016-2017 season.*

Adapted from Grohskopf LA, Sokolow LZ, Broder KR, et al. Prevention and control of seasonal influenza with vaccines. MMWR Recomm Rep. *2016;65(5):19.*

Table 2. Contraindications and Precautions to the Use of Influenza Vaccines—United States, 2016-2017

Vaccine	*Contraindications*	*Precautions*
Inactivated influenza vaccine	History of severe allergic reaction to any component of the vaccine* or after a previous dose of any influenza vaccine	Moderate to severe illness with or without fever History of Guillain-Barré syndrome within 6 weeks of influenza vaccination
Recombinant influenza vaccine	History of severe allergic reaction to any component of the vaccine	Moderate to severe illness with or without fever History of Guillain-Barré syndrome within 6 weeks of influenza vaccination
Live attenuated influenza vaccine	**Live attenuated influenza vaccine is not recommended for the 2016-2017 season. Content below is provided for informational purposes only.**	
	History of severe allergic reaction to any component of the vaccine* or after a previous dose of any influenza vaccine	Moderate to severe illness with or without fever History of Guillain-Barré syndrome within 6 weeks of influenza vaccination
	Concomitant aspirin or salicylate-containing therapy in children and adolescents	Asthma in persons ≥ 5 years of age
	Children 2 to 4 years of age who have received a diagnosis of asthma, or whose parents or caregivers report that a clinician has told them during the preceding 12 months that their child had wheezing or asthma, or whose medical record indicates a wheezing episode has occurred during the preceding 12 months	Other underlying medical conditions that may predispose to complications after wild-type influenza infection (e.g., chronic pulmonary, cardiovascular [except isolated hypertension], renal, hepatic, neurologic, hematologic, or metabolic disorders, including diabetes mellitus)
	Children and adults who have immunosuppression (including immunosuppression caused by medications or human immunodeficiency virus infection)	
	Close contacts and caregivers of severely immunosuppressed persons who require a protected environment	
	Pregnancy	
	Receipt of influenza antiviral medication within the previous 48 hours	

NOTE: *Immunization providers should check U.S. Food and Drug Administration–approved prescribing information for 2016-2017 influenza vaccines for the most complete and updated information, including (but not limited to) indications, contraindications, and precautions. Package inserts for U.S.-licensed vaccines are available at http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm.*

**—History of severe allergic reaction (e.g., anaphylaxis) to egg is a labeled contraindication to the use of inactivated and live attenuated influenza vaccines. However, any licensed, recommended, and appropriate inactivated or recombinant influenza vaccine may be administered to persons with egg allergy of any severity.*

Adapted from Grohskopf LA, Sokolow LZ, Broder KR, et al. Prevention and control of seasonal influenza with vaccines. MMWR Recomm Rep. *2016;65(5):33.*

season, but may also result in missed opportunities to vaccinate.

Persons of all ages are susceptible to seasonal influenza, but complications, hospitalizations, and deaths are typically greatest among persons 65 years and older, children younger than five years (especially those younger than two years), and persons of any age who are immunosuppressed or have certain medical conditions, such as chronic cardiovascular, pulmonary, or renal disease. Vaccination is particularly important in these populations. When vaccine supply is limited, vaccination efforts should target the following persons:

- Children six to 59 months of age
- Children and adolescents six months to 18 years of age who are receiving long-term aspirin therapy and may be at risk of Reye syndrome after influenza virus infection
- Pregnant women
- Adults 50 years and older
- Residents of nursing homes and long-term care facilities
- American Indians/Alaska Natives
- Persons with a body mass index of 40 kg per m^2 or greater
- Adults and children with chronic pulmonary, cardiovascular, renal, hepatic, neurologic, hematologic, or metabolic disorders, such as asthma and diabetes mellitus
- Persons with immunosuppression.

Severe allergic reactions, including anaphylaxis, can occur in response to components of all vaccines; however, these reactions are rare. Not all reactions are related to egg proteins, but the possibility of reactions to influenza vaccines in persons with egg allergy may be of concern. With the exceptions of recombinant trivalent influenza vaccine (Flublok) and cell culture–based quadrivalent inactivated influenza vaccine (Flucelvax Quadrivalent), currently available influenza vaccines are prepared by propagation of virus in embryonated eggs. However, evidence indicates that severe allergic reactions are unlikely. Therefore, ACIP recommends that persons with a history of egg allergy who have experienced only hives after exposure to egg should receive any of the recommended influenza vaccines appropriate for the recipient's age and health status. Persons who have had reactions to egg involving symptoms other than hives (e.g., angioedema, respiratory distress, lightheadedness, recurrent emesis) or who required epinephrine or another emergency medical intervention may receive the cell culture–based or recombinant influenza vaccines appropriate for the recipient's age and health status. The selected vaccine should be administered in an inpatient or outpatient setting and should be supervised by a clinician who is able to recognize and manage severe allergic conditions. A previous severe allergic reaction to influenza vaccine is a contraindication to future receipt of the vaccine.

ACIP has removed its previous recommendation that persons allergic to eggs should be observed for 30 minutes after receipt of influenza vaccine. However, clinicians should consider observing all patients—whether or not they are allergic to egg—for 15 minutes postvaccination to decrease the risk of injury if they experience syncope.

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