Clinician Quick Reference Influenza Vaccination Guide

INTRODUCTION

The 2023-2024 flu season is here, with many parts of the country already experiencing extraordinary levels of influenza activity and confirmed influenza infection, as tracked by the Centers for Disease Control and Prevention's Weekly US Map: Influenza Summary Update.

It is important to STRONGLY RECOMMEND annual influenza vaccination for ALL patients ≥6 months who do not have contraindications[1] and to co-administer multiple recommended vaccines at the same visit if the patient is eligible and the timing for each vaccine is consistent with their vaccination schedule.[2]

RECOMMENDATION

The American Academy of Family Physicians and the Advisory Committee on Immunization Practices recommend all patients ≥6 months who do not have contraindications receive a licensed and age-appropriate seasonal influenza vaccine based on the following[1]:

- All patients ≥9 years should receive one dose of influenza vaccine annually.
- Children 6 months through 8 years who have NOT previously received ≥2 doses of influenza vaccine, or the number of prior doses is unknown, should receive 2 doses of influenza vaccine ≥4 weeks apart.
- Children 6 months through 8 years who have previously received ≥2 doses of influenza vaccine need only 1 dose. The 2 previous doses do not need to have been administered during the same or consecutive seasons or be the same vaccine product. The 2 doses are recommended even if the child turns 9 years between receiving dose 1 and dose 2.
- Adults ≥65 years should preferably receive any one of the following higher-dose or adjuvanted influenza vaccines:
  - Quadrivalent high-dose inactivated influenza vaccine or HD-IIV4
  - Quadrivalent recombinant influenza vaccine or RIV4
  - Quadrivalent adjuvanted inactivated influenza vaccine or aIIV4
- All patients ≥6 months with an egg allergy should receive an influenza vaccine. Any influenza vaccine (egg- or non-egg-based) that is otherwise appropriate for the recipient's age and health status can be used.

VACCINES, CONTRAINDICATION AND PRECAUTIONS

For the 2023-2024 influenza season, vaccines in the United States are quadrivalent, containing hemagglutinin derived from:

- One influenza A(H1N1)pdm09 virus;
- One influenza A(H3N2) virus;
- One influenza B/Victoria lineage virus; and
- One influenza B/Yamagata lineage virus.

Inactivated influenza vaccine or IIV4, RIV4 and live attenuated influenza vaccine or LAIV4 are expected to be available.

Table 1. Influenza Vaccines for the 2023-2024 Season in the United States

Trade name (Manufacturer)	Available Presentations	Approved Age Indication	Volume Per Dose
IIV4 (standard-dose, egg-based vaccines)			
Afluria Quadrivalent (Seqirus)	0.5-mL PFS 5.0-mL MDV	≥3 years ≥6 months (needle and syringe) 18 through 64 years (jet injector)	15 µg/0.5 mL 7.5 µg/0.25 mL 15 µg/0.5 mL
Fluarix Quadrivalent (GlaxoSmithKline)	0.5-mL PFS	≥6 months	15 µg/0.5 mL
FluLaval Quadrivalent (GlaxoSmithKline)	0.5-mL PFS	≥6 months	15 µg/0.5 mL
Fluzone Quadrivalent (Sanofi Pasteur)	0.5-mL PFS 0.5-mL SDV 5.0-mL MDV	≥6 months ≥6 months ≥6 months	15 µg/0.5 mL 15 µg/0.5 mL 7.5 µg/0.25 mL 15 µg/0.5 mL
ccIIV4 (standard-dose, cell culture-based vaccine)			
Flucelvax Quadrivalent (Seqirus)	0.5-mL PFS 5.0-mL MDV	≥6 months ≥6 months	15 µg/0.5 mL 15 µg/0.5 mL
HD-IIV4 (high-dose, egg-based vaccine)			
Fluzone High-Dose Quadrivalent (Sanofi Pasteur)	0.7-mL PFS	≥65 years	60 µg/0.7 mL
aIIV4 (standard-dose, egg-based vaccine with MF59 adjuvant)			
Fluad Quadrivalent (Seqirus)	0.5-mL PFS	≥65 years	15 µg/0.5 mL
RIV4 (recombinant HA vaccine)			
Flublok Quadrivalent (Sanofi Pasteur)	0.5-mL PFS	≥18 years	45 µg/0.5 mL
LAIV4 (egg-based vaccine)			
FluMist Quadrivalent (AstraZeneca)	0.2-mL prefilled single-use intranasal sprayer	2 through 49 years	$10^{6.5-7.5}$ florescent focus units/0.2 mL
Abbreviations: HA = hemagglutinin; IIV4 = inactivated influenza vaccine, quadrivalent; LAIV4 = live attenuated influenza vaccine, quadrivalent; MDV = multidose vial; PFS = prefilled syringe; RIV4 = recombinant influenza vaccine, quadrivalent; SDV = single-dose vial			

Table adapted from CDC, Prevention and control of seasonal influenza with vaccines: recommendations from the Advisory Committee on Immunization Practices – United States, 2023-24 influenza season, https://www.cdc.gov/mmwr/volumes/72/rr/rr7202a1.htm

Additional notes about Table 1:
While egg-based IIV4 and LAIV4 are labeled a contraindication for severe allergic reactions to eggs (e.g., anaphylaxis), the ACIP recommends all patients ≥6 months with an egg allergy should still receive an influenza vaccine of any egg- or non-egg-based product that is otherwise appropriate for the patient's age and health status.

For Afluria Quadrivalent, the approved dose volume is 0.25 mL for patients 6 through 35 months and 0.5 mL for patients ≥3 years. However, 0.25-mL PFS are no longer available. For patients 6 through 35 months, a 0.25-mL dose must be obtained from a multidose vial.

For Fluzone Quadrivalent, the approved dose volume is either 0.25 mL or 0.5 mL per dose for patients 6 through 35 months. However, 0.25-mL PFS are no longer available. For patients 6 through 35 months, if a PFS is used, the dose volume will be 0.5 mL per dose.

Current vaccine shortages and delays are available at https://www.cdc.gov/vaccines/hcp/clinical-resources/shortages.html.

Manufacturer package inserts are available at https://www.fda.gov/vaccines-blood-biologics/vaccines/vaccines-licensed-use-united-states.

Table 2. Influenza Vaccines by Type for the 2023-2024 Season in the United States

Vaccine Type	Contraindications	Precautions
Egg-based IIV4	• History of a severe allergic reaction (e.g., anaphylaxis) to any component of the vaccine or a previous dose of any influenza vaccine (i.e., any egg-based IIV, ccIIV, RIV or LAIV)	• Moderate or severe acute illness with or without fever • History of Guillain-Barré syndrome within 6 weeks of receipt of influenza vaccine
ccIIV4	• History of a severe allergic reaction (e.g., anaphylaxis) to a previous dose of any ccIIV or any component of ccIIV4	• Moderate or severe acute illness with or without fever • History of Guillain-Barré syndrome within 6 weeks of receipt of influenza vaccine • History of severe allergic reaction to a previous dose of any other influenza vaccine (i.e., any egg-based IIV, RIV or LAIV)
RIV4	• History of a severe allergic reaction (e.g., anaphylaxis) to a previous dose of any RIV or any component of RIV4	• Moderate or severe acute illness with or without fever • History of Guillain-Barré syndrome within 6 weeks of receipt of influenza vaccine • History of severe allergic reaction to a previous dose of any other influenza vaccine (i.e., any egg-based IIV, ccIIV or LAIV)
LAIV4	• History of a severe allergic reaction (e.g., anaphylaxis) to any component of the vaccine or a previous dose of any influenza vaccine (i.e., any egg-based IIV, ccIIV, RIV or LAIV) • Concomitant aspirin- or salicylate-containing therapy in children and adolescents • Children 2 through 4 years who have received a diagnosis of asthma or whose parents or caregivers report that a health care provider 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 • Children and adults who are immunocompromised due to any cause, including but not limited to immunosuppression caused by medications, congenital or acquired immunodeficiency states, HIV infection, anatomic asplenia or functional asplenia (e.g., due to sickle cell anemia) • Close contacts and caregivers of severely immunosuppressed patients who require a protected environment • Pregnancy • Patients with active communication between the CSF and the oropharynx, nasopharynx, nose or ear or any other cranial CSF leak • Patients with cochlear implants • Receipt of influenza antiviral medication within the previous 48 hours for oseltamivir and zanamivir, previous 5 days for peramivir and previous 17 days for baloxavir	• Moderate or severe acute illness with or without fever • History of Guillain-Barré syndrome within 6 weeks of receipt of influenza vaccine • Asthma in patients ≥5 years • Other underlying medical conditions that might 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])

Abbreviations: ccIIV = cell culture-based inactivated influenza vaccine (any valency); ccIIV4 = cell culture-based inactivated influenza vaccine, quadrivalent; CSF = cerebrospinal fluid; IIV = inactivated influenza vaccine (any valency); IIV4 = inactivated influenza vaccine, quadrivalent; LAIV = live attenuated influenza vaccine (any valency); LAIV4 = live attenuated influenza vaccine, quadrivalent; RIV = recombinant influenza vaccine (any valency); RIV4 = recombinant influenza vaccine, quadrivalent

Table adapted from CDC, Prevention and control of seasonal influenza with vaccines: recommendations from the Advisory Committee on Immunization Practices – United States, 2023-24 influenza season, https://www.cdc.gov/mmwr/volumes/72/rr/rr7202a1.htm

Additional notes about Table 2:
Vaccination should occur in a medical setting and be supervised by a health care provider who is able to recognize and manage severe allergic reactions. Consider a consultation with an allergist to identify the components responsible for the reaction.

For patients with a cochlear implant, an age-appropriate injectable vaccine is recommended due to the potential for CSF leak for a period after implantation, and consider a consultation with a specialist if persistent CSF leaks occur if an age-appropriate inactivated or recombinant vaccine cannot be administered.

The use of LAIV4 in the context of influenza antivirals has not been studied. However, interference with the activity of LAIV4 is biologically plausible. In the absence of data supporting an adequate minimum interval between influenza antiviral use and LAIV4 administration, the intervals provided are based on the half-life of each antiviral. The interval between influenza antiviral receipt and LAIV4, for which interference might occur, might be further prolonged in the presence of medical conditions that delay medication clearance (e.g., renal insufficiency). Influenza antivirals might also interfere with LAIV4 if initiated within 2 weeks after vaccination. Patients who receive antivirals during the period starting with the specified time before receipt of LAIV4 through 2 weeks after receipt of LAIV4 should be revaccinated with an age-appropriate IIV or RIV4.

General best practice guidelines for immunization are available at https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html.

HIGH-RISK INDICATORS AND CONDITIONS

ALL patients ≥6 months should be vaccinated unless contraindications exist. The information in this section refers to patients with poor outcomes if infected with influenza. The list of high-risk groups below is NOT in order of priority; all groups should be vaccinated. See the CDC for additional information at https://www.cdc.gov/flu/highrisk/index.htm.

High-risk groups[3]:

- Children <24 months
- Adults >65 years
- Adults and children who have chronic pulmonary (including asthma), cardiovascular (excluding isolated hypertension), renal, hepatic, neurologic, hematologic or metabolic disorders (including diabetes mellitus)
- Patients who are immunocompromised due to any cause (including but not limited to immunosuppression caused by medications or HIV infection)
- Patients who are, will be pregnant or are up to 2 weeks after pregnancy during the influenza season
- Children and adolescents (6 months through 18 years) who are receiving aspirin- or salicylate-containing medications and who might be at risk for experiencing Reye syndrome after influenza virus infection
- Residents of nursing homes and other long-term care facilities
- Patients from certain racial and ethnic groups, including American Indian or Alaska Native, non-Hispanic Black, Hispanic or Latino
- Patients who have extreme obesity (body mass index of ≥40 for adults)

Table 3. Timing of Vaccination

For most adults	Adults >65 and patients who are pregnant in the first or second trimester	Chidlren who require 1 dose	Children (6 months through 8 years) who require 2 doses	Patients who are pregant in the third trimester
Vaccination should be offered in September or October. However, vaccination should continue throughout the season as long as influenza viruses are circulating. Vaccination during July and August should be avoided unless there is a concern that later vaccination is not possible.	Vaccination in July and August should be avoided unless there is a concern that vaccination later in the season might not be possible.	Vaccination in July and August can be considered for children of any age who need only 1 dose (if vaccine is available). Vaccination opportunities can be considered because most children in this age group might visit clinicians during later summer months.	The first dose should be received as soon as possible, including during July and August (if vaccine is available). The second dose (must be administered ≥4 weeks later) should be administered by the end of October.	Vaccination in July and August can be considered for patients who are pregnant in the third trimester during these months because vaccination has been associated in multiple studies with reduced risk for influenza illness in their infants during the first months after birth when they are too young to receive the influenza vaccine.

Table based on information from CDC, Prevention and control of seasonal influenza with vaccines: recommendations from the Advisory Committee on Immunization Practices – United States, 2023-24 influenza season, https://www.cdc.gov/mmwr/volumes/72/rr/rr7202a1.htm

For additional information and resources regarding influenza and influenza vaccines, please visit https://www.cdc.gov/flu/.

REFERENCES

1. Centers for Disease Control and Prevention. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices – United States, 2023-23 influenza season. Accessed January 12, 2024. https://www.cdc.gov/mmwr/volumes/72/rr/rr7202a1.htm
2. American Academy of Family Physicians. Immunization schedules. Accessed January 12, 2024. https://www.aafp.org/family-physician/patient-care/prevention-wellness/immunizations-vaccines/immunization-schedules.html
3. CDC. People at higher risk of flu complications. Accessed January 12, 2024. https://www.cdc.gov/flu/highrisk/index.htm