Communicating About Flu Vaccination

The following chart answers frequently asked questions about flu vaccine efficacy, administration with other vaccines, use in patients who are immunocompromised or pregnant, and more. For information on specific influenza vaccine products, see our resource, *Flu Vaccines* (US) (Canada).

Question	Answer/Pertinent Information

Who should receive a flu vaccine?	• Flu vaccination is recommended for **everyone ≥6 months** without contraindications, using any age-appropriate vaccine.[1,2]
	  ○ Canadian guidelines recommend focusing vaccination efforts on:[1]
	  ▪ people at high risk of severe disease, flu-related complications or hospitalization.
	  ▪ people capable of transmitting flu to those at high risk.
	  ▪ people who provide essential community services.
	  ▪ people in direct contact with poultry infected with avian flu during culling operations.
	• For patients who cannot remember if they received this season's flu vaccine, avoid missed opportunities to vaccinate by giving the flu vaccine even if this means giving a second dose to some patients.[3]

Which flu vaccine is preferred?	• Avoid delaying vaccination in order to use a specific "preferred" flu vaccine.[1,4] • A higher-dose, adjuvanted, OR recombinant flu vaccine is preferred (if available) for patients ≥65 years old.[1,3] • In Canada, there is **no longer a preference** for quadrivalent flu vaccines over trivalent flu vaccines in children.[1]
Why are US quadrivalent flu vaccines transitioning to trivalent for the 2024-2025 season?	• All US influenza vaccines for the 2024-2025 season are **trivalent** (one influenza A[H1N1] virus, one A[H3N2] virus and one influenza B/Victoria lineage virus.[5] • The influenza B/Yamagata virus has not been detected worldwide since March 2020. This component of the quadrivalent vaccine has been removed for the US 2024-2025 vaccine formulations.[5] • In Canada, NACI recommends any otherwise appropriate quadrivalent OR trivalent influenza vaccine for the 2024-2025 season. Vaccine availability is expected to remain largely unchanged.[5] • See our resource, *Flu Vaccines* (US) (Canada), for details of specific products.
When are two doses of a flu vaccine needed?	• To provide optimal protection, **children 6 months through eight years** should receive two doses of flu vaccine (separated by at least four weeks) if they have not received at least two doses of flu vaccine (separated by at least four weeks) prior to July 1 of the current year (US) or if they have not previously received the seasonal flu vaccine (Canada).[1,4] ○ US guidance specifies that 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.[4]

Question	Answer/Pertinent Information

When should flu vaccines be given?	• **In the US**, encourage vaccination by the end of October. Generally, avoid starting vaccinations before September, due to the possibility of reduced effectiveness later in the flu season.[4]
	  ○ Consider earlier vaccination in children, especially if they require two doses, and pregnant patients in their 3rd trimester.[4]
	• **In Canada**, start vaccinations as soon as possible based on availability.[1]
	• Don't miss an opportunity to vaccinate due to fears the vaccine's effectiveness will not last throughout the entire flu season.
	  ○ Though delayed vaccination may lead to increased immunity later in the season, it can lead to missed opportunities to vaccinate, and is not recommended.[1,3,6]
	  ▪ Booster doses are NOT recommended later in the season for patients who receive their vaccine early in the season.[1,3]
	• Continue to vaccinate as long as flu viruses are circulating and unexpired vaccine is available.[1,3]

Can flu vaccines be given with other vaccines?	• Live-attenuated and inactivated flu vaccines can be given with other vaccines (including COVID-19 vaccines), using separate administration sites (preferably different limbs).[1,2,7] ○ If two live vaccines (including *FluMist*) are NOT given on the same day, they should be administered at least four weeks apart.[7] (Canada: Despite the theoretical risk of immune interference (and reduced efficacy), due to lack of data and based on expert opinion, NACI recommends that *FluMist* can be given together with or at any time before or after any other live-attenuated or inactivated vaccine.[1]) • Data are limited for coadministration of two adjuvanted vaccines (e.g., *Fluad*, *Heplisav-B*, *Shingrix*).[1,4] There are theoretical concerns about more side effects. If a patient is receiving another adjuvanted vaccine, don't delay flu vaccination if an adjuvanted flu vaccine (i.e., *Fluad*) is the only flu vaccine available.[4]
Can the flu vaccine be given to someone who is acutely ill?	• **Continue to give the flu vaccine to most patients with mild (and moderate in Canada) acute illnesses** to avoid missed opportunities to vaccinate.[1,8] Most acute illness with or without fever (e.g., diarrhea, upper respiratory infection) is not a contraindication to receiving the vaccine.[1,9] • Severe (and moderate in the US) acute illness is a precaution for administering any vaccine.[9,10] Vaccination side effects (e.g., fever, malaise) may make it difficult to assess management of acute illness.[8] In the US, it is recommended that vaccination be deferred in patients with moderate to severe illness.[8] In Canada, expert opinion is recommended to assess risks and benefits when there is a high-risk exposure situation or a short window of opportunity for vaccine administration[10]

Can immuno-compromised patients receive the flu vaccine?	• **Immunocompromised patients** may receive any licensed, recommended, age-appropriate **injectable** flu vaccine.[1,4]
	  ○ See detailed guidance for the timing of influenza vaccination with specific conditions.[4]
	  ○ Note that some experts recommend a high-dose or adjuvanted flu vaccine for immunocompromised patients. These vaccines may lead to an improved antibody response compared to standard-dose vaccines in these patients. However, evidence is lacking to show that this antibody response correlates with better protection against flu.[11-13]
	• In the US, high-dose and adjuvanted influenza vaccines are acceptable options for solid organ transplant recipients (18 to 64 years) who are taking immunosuppressants, without a preference over other inactivated or recombinant influenza vaccines.[29]
	• Live attenuated influenza vaccine (LAIV) should be **avoided** in immunocompromised patients.[8]

Question	Answer/Pertinent Information

Can pregnant or lactating patients receive the flu vaccine?	• Vaccinate **pregnant patients** (any trimester) with any licensed, recommended, age-appropriate **injectable** flu vaccine, regardless of thimerosal content.[1,14]
	  ○ Risk of flu and potential complications in pregnant patients and/or the fetus exceeds possible risks associated with flu vaccination.[15,16]
	• Vaccinate post-partum patients who did not receive a flu vaccine while pregnant, especially if breastfeeding an infant less than six months old, as these infants are too young to receive a flu vaccine.[14,17]
	  ○ Either non-live influenza vaccines or LAIV can be used in breastfeeding patients.[18]
	  ▪ *FluMist* is an option for breastfeeding patients younger than 50 years (younger than 59 years [Canada]), if there are no other contraindications.[1,19]

Can patients with an egg allergy receive a flu vaccine?	• Patients with a history of severe egg allergy (symptoms more severe than hives [e.g., angioedema, respiratory distress, requiring epinephrine]) do not have higher reaction rates to egg-containing vaccines compared to non-egg allergic patients.[4] • Patients with an egg allergy may receive any age-appropriate flu vaccine, including *FluMist*, without prior flu vaccine skin test and with the full dose, irrespective of a past severe reaction to egg, and in any setting where vaccines are routinely administered.[1,4] • Refer to our resource, *Flu Vaccines* (US) (Canada), to compare formulations, including egg-free vaccine options.
Should unvaccinated people who had the flu this season still get the flu vaccine?	• Yes. Vaccinate unvaccinated people who have already had the flu during this season. The vaccine might protect against other circulating flu viruses.[3]
How effective are flu vaccines?	• During seasons when flu vaccine virus components are similar to circulating strains, flu vaccination is typically about 40% to 60% effective (e.g., reduces flu illness, doctor visits, reduces laboratory confirmed flu).[20] ○ Influenza vaccination reduces the risk of severe flu, ICU admission, and death, even when the vaccine is not perfectly matched with that particular years' circulating flu strains.[21,22] • Higher dose or adjuvanted flu vaccines seem more effective than standard-dose flu vaccines for patients 65 years and older, especially at reducing flu-related hospitalizations.[23] • Trivalent *Fluzone High-Dose* provided modestly greater protection against lab-confirmed influenza vs standard-dose trivalent vaccine in patients ≥65 years of age (n=31,989; NNT=200), [Evidence Level A-1].[24] • Recombinant flu vaccine (e.g., *Flublok* [US], *Supemtek* [Canada]) may be slightly more effective in preventing lab-confirmed influenza compared to non-recombinant inactivated flu vaccines in patient ≥50 years of age (N=8,604; NNT=100), [Evidence Level A-1].[25,26] • *Fluad*, an adjuvanted vaccine, may provide modestly greater protection against lab-confirmed influenza vs non-adjuvanted trivalent vaccine in patients ≥65 years of age (n=227; unable to calculate NNT), [Evidence Level B-2].[27]

Question	Answer/Pertinent Information
Who should NOT receive the LIVE-attenuated flu vaccine (*FluMist*)?	• AVOID use of the live-attenuated flu vaccine (*FluMist*) in the following patients: o children younger than 2 years (or, in the US: 50 years and older).[1,19] o anyone who is pregnant.[1,19] o adults or children with contraindications to live vaccines (e.g., certain chronic diseases, immunosuppression, severely immunosuppressed close contacts).[1,19] o adults or children who recently took an antiviral (**see row below** "Can the LIVE-attenuated flu vaccine (*FluMist*) be given to someone who received an antiviral?").[1,19] o adults or children with asplenia, a non-functional spleen, cochlear implants, or active cerebrospinal fluid leaks (US).[19] o children between the ages of 2 and 4 years with asthma or a history of wheezing in the last 12 months (US).[19] o severe asthma or medically-attended wheezing within the previous seven days (Canada).[1] o children and adolescents on chronic aspirin or salicylate therapy.[1,19] If aspirin therapy is needed, separate aspirin and the live-attenuated flu vaccine by at least four weeks.[28] o close contacts of patients who are severely immunocompromised (i.e., who requires a protected environment).[1,19] US guidance recommends avoiding contact with severely immunocompromised patients for 7 days after receiving the live-attenuated flu vaccine.[19] o significant nasal congestion.[1]
Can the LIVE-attenuated flu vaccine (*FluMist*) be given to someone who received an antiviral?	• Most advise avoiding *FluMist* within 48 hours of an antiviral.[1] However, based on antiviral half-lives, it is possible antivirals could interfere with *FluMist* effectiveness if *FluMist* is given within the following timeframes BEFORE or AFTER an antiviral:[19] o 48 hours (oseltamivir and zanamivir) o five days (peramivir [approved but not marketed in Canada]) o 17 days (baloxavir [approved but not marketed in Canada]) • Antivirals may interfere with *FluMist* effectiveness. In Canada, if a patient must take a flu antiviral within two weeks of vaccination with *FluMist*, it is recommended they be revaccinated with an age-appropriate injectable flu vaccine (or with *FluMist* based on the timing listing above).[1]

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.

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.*	1. High-quality randomized controlled trial (RCT) 2. Systematic review (SR)/Meta-analysis of RCTs with consistent findings 3. All-or-none study
B	Inconsistent or limited-quality patient-oriented evidence.*	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).

[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. https://www.aafp.org/pubs/afp/issues/2004/0201/p548.html.]

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