



Influenza Vaccination: 2008 CDC Update

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In preparation for the winter influenza outbreak, the Center for Disease Control Advisory Committee on Immunization Practices (ACIP) makes yearly recommendations on the prevention and control of influenza. These recommendations address vaccine content, target populations for vaccine administration, timing of vaccination programs, and the use of antiviral agents to prevent and treat influenza infection.

Annual influenza vaccination is the most effective strategy to prevent influenza. Although antiviral drugs are used for chemoprophylaxis or treatment of influenza, they are adjuncts to, not substitutes for, vaccination. Nonpharmacologic strategies such as handwashing and improved respiratory hygiene reduce transmission of respiratory diseases and are reasonable and inexpensive; however, they have not been studied adequately to determine if they reduce influenza virus transmission.¹

Influenza vaccination is recommended for adults and children as outlined in Table 1. The influenza vaccine contains one influenza A (H3N2) virus, one influenza A (H1N1) virus, and one influenza B virus. Each year the one or more of the specific strains may be changed on the basis of global surveillance of influenza viruses. The 2008-2009 trivalent inactivated influenza vaccine (TIV) virus strains are A/Brisbane/59/2007 (H1N1)-like, A/Brisbane/10/2007 (H3N3)-like, and B/Florida/4/2006-like antigens. In the US, there are two antigenically equivalent options for influenza vaccine administrations, intramuscular injection and intranasal inhalation.¹

Table 1. Annual Vaccination Recommendations¹

Vaccination of all children aged 6 months to 18 years should begin before or during the 2008-2009 season, if feasible, but no later than the 2009-2010 season. **Vaccination of all children aged 5-18 years is a new ACIP recommendation.** Children and adolescents at high-risk for influenza complications should continue to be a focus of vaccination efforts during this transition and include the following:

- Age 6 months to 4 years
- Chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, hematological, or metabolic disorders (including diabetes mellitus)
- Immunosuppression including that caused by medications or human immunodeficiency virus
- Conditions that can compromise respiratory function or the handling or respiratory secretions or that can increase the risk for aspiration
- Long-term aspirin therapy which places children and adolescents at risk for Reye syndrome after influenza infection
- Residents of chronic-care facilities
- Pregnancy during influenza season

Adults

- Any adult who wants to reduce the risk of becoming ill with influenza or transmitting it to others.
- Age greater than 50 years
- Pregnancy during influenza season
- Chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, hematological, or metabolic disorders (including diabetes mellitus)
- Immunosuppression including that caused by medications or human immunodeficiency virus
- Conditions that can compromise respiratory function or the handling or respiratory secretions or that can increase the risk for aspiration
- Residents of nursing homes
- **Health care personnel**
- Household contacts and caregivers of children less than 5 years of age and adults over 50 years of age with particular emphasis on vaccinating contacts of children less than 6 months of age
- Household contacts and caregivers of persons with medical conditions that put them at high risk for severe complications from influenza

The injectable vaccine is a trivalent inactivated influenza vaccine (TIV). In this product, the virus has been killed and cannot cause influenza infection. In contrast, inhalation product contains live-attenuated influenza vaccine (LAIV, FluMist[®]) which is a weakened form of the influenza virus and still capable of causing mild signs and symptoms of influenza infection. For this reason, LAIV is not recommended for use in populations with medical risk factors for influenza complications. These patients include the following:¹

- Adults and children with chronic disorders of the pulmonary or cardiovascular systems;
- Adults and children with chronic metabolic diseases, renal dysfunction, hemoglobinopathies, or immunosuppression;
- Children and adolescents receiving long-term aspirin therapy (at risk of developing Reye syndrome after wild-type influenza infection);
- Persons with any condition that can compromise respiratory function or the handling of respiratory secretions or that can increase risk of aspiration;
- Pregnant women;
- Residents of nursing homes and other chronic-care facilities that house persons with chronic medical conditions

Additionally, LAIV should not be given to children under 2 years of age, adults over 49 years, or to family members or close contacts of immunosuppressed persons requiring a protected environment (e.g., hematopoietic stem cell transplant recipient).¹

TIV and LAIV are produced using chicken eggs; therefore, neither of these vaccines should be used in persons with documented severe allergic reactions (anaphylaxis, hives, etc.) to eggs. Delay of vaccination is recommended for patients with acute febrile illness or active neurological disorder characterized by changing neurological findings.²

Annual influenza vaccination efforts should begin each year by October in order to reach as many at-risk individuals as possible before

peak activity occurs. In over 80% of influenza seasons since 1976, peak influenza activity has not occurred until January or later. The duration of influenza season varies and outbreaks may not appear until March in some communities. Offers of vaccination should continue throughout the winter months as antibody protection appears in most adults two weeks after vaccination.¹

Dosage and administration recommendations for the two influenza vaccines are provided in Table 2. The average wholesale price (AWP), the average cost to pharmacies, for LAIV is about \$23 per dose and about \$19 for TIV.³

Table 2. Dosage and Administration of Influenza Vaccines¹

Vaccine	Brand Name(s)	Dose*
TIV	Fluzone [®] , Fluvirin [®] , others	0.5mL intramuscularly in the deltoid muscle (adults and older children) or anterolateral aspect of the thigh (infants and young children)
LAIV	FluMist [®]	0.1mL sprayed into each nostril (total of 0.2 mL)

* For children 2-8 years of age receiving influenza vaccination for the first time, two doses of vaccine must be given four weeks apart.

As health care providers, we have a responsibility to protect the public health. We accomplish this not only by encouraging, offering, recommending, or administering influenza vaccination for patients at risk for complications of severe disease, but also by receiving the vaccine ourselves and encouraging our students to do the same.

References

1. Fiore AE, Shay DK, Broder K, et al. Prevention and Control of Influenza: Recommendations of the Advisory Committee of Immunization Practices (ACIP) 2008. *MMWR*. 2008;57(RR-7):1-60.
2. Grabenstein JD. *ImmunoFacts: Vaccines and Immunologic Drugs*. St. Louis, MO: Wolters Kluwer Health; 2007. p 226-248.
3. *Redbook[®]*. Montvale, NJ: Thomson Healthcare; 2008.