

The Flu: What's New?

The Centers for Disease Control and Prevention estimate that influenza infection results in approximately 36,000 deaths per year in the United States. Influenza infection is also responsible for approximately 200,000 hospitalizations and for an estimated \$15 billion in direct and indirect medical costs each year. Fortunately, steps can be taken to help prevent infection by the influenza virus.

The principle method of prevention is the influenza vaccine. Because the influenza virus epidemic hits the United States every year during the winter months from late December through March, the best time for vaccination is from October to November. Vaccinations after November are still beneficial because influenza infection usually does not peak until February. The official flu season runs from December 1 to March 1.

The vaccines available include the trivalent inactivated vaccine (Fluvirin, Fluzone), and, more recently, the live attenuated intranasal vaccine (Flumist). Both of these vaccine types provide protection against two strains of influenza A virus (H1N1 and H3N2) and one strain of B virus, which are determined the previous year by studying trends and making predictions based on the previous flu season. The components of the influenza vaccine vary from year to year based on these predictions.

In the past few years, supply problems have prevented some people from being able to obtain the vaccine. According to a recent press release, the CDC does not anticipate a shortage this year. Based on their estimates, approximately 100 million vaccines will be available this season. This is almost 20 million more vaccine doses than were distributed last year. See table 1 for more information about the available flu vaccines.

Another option for prevention and treatment of influenza infection is antiviral medications. In the United States, four influenza antiviral medications are available: amantadine (Symmetrel), rimantadine (Flumadine), zanamivir (Relenza), and oseltamivir (Tamiflu). Although all four of these drugs are available, only two are recommended for use by the CDC for flu prevention: zanamivir and oseltamivir. The CDC recommends that neither amantadine nor rimantadine be used for treatment or prevention of influenza in the United States because of high levels of resistance to these drugs.

Both oseltamivir and zanamivir have a different mechanism from amantadine and rimantadine and work by preventing the initial infection of a cell. In cases where infection does occur, they decrease the incidence and severity of illness. Oseltamivir should be administered within 2 days of exposure to an infected person and continued for at least 7 days. It has been shown to prevent approximately 50 percent of infections and 84 percent of illnesses.

Zanamivir is an inhaled medication that is also approved for prevention of influenza infection in adults and children 5 years of age and older. Zanamivir should be administered for at least 10 days although some people may be required to use it for up to 28 days.

It is also recommended that high-risk patients who get the vaccine once the influenza outbreak has already occurred take the antiviral agents for 2 to 4 weeks because it takes approximately 2 weeks to mount a full immune response to the vaccine. In children under the age of 9, it is also recommended that they take antiviral medications for 4 weeks after the first dose of the vaccine and for an additional 2 weeks after the second dose. Antiviral agents are an important part of preventing and treating

influenza, but they should not be used as substitutes for annual vaccinations. Details of these medications are summarized in table 1.

In addition to antiviral medications and annual vaccines for influenza prevention, the CDC also recommends some healthy habits that everyone can follow to help avoid catching and spreading the flu as well as the common cold. First, try to avoid contact with those who are sick. If you do become ill, distance yourself from others by staying at home. Because the flu is spread by respiratory droplets, always cover your mouth and nose when coughing or sneezing.

Hand washing is another simple, precautionary measure. Wash your hands **often**, especially before and after preparing food, after touching possibly contaminated objects, and after using the bathroom. Use warm, soapy water for at least 10 to 15 seconds. While the temperature of the water used to wash hands is not hot enough to kill germs, using soap and thoroughly scrubbing your hands, wrists, and nails help eliminate germs. After washing, dry hands completely with a paper towel or clean towel.

If water is not available, use alcohol-based hand wipes and gel sanitizers that also kill germs on the hands. Avoid touching your eyes, nose, and mouth even though you may think your hands are clean; you never know if you have touched a contaminated object. Both the influenza A and B viruses can survive on nonporous objects for up to 48 hours and can live on cloth material for a maximum of 8 to 12 hours. Table 2 contains a summary of the general health precautions.

Because a shortage of vaccine is not a problem this year, everyone who wishes to reduce their risk of becoming infected with the influenza virus should contact their physicians or local pharmacies to get the flu vaccination. Some people should get the

vaccination every year because they are at high risk for developing complications related to influenza infection or they care for people who are at high risk. See table 3 for a complete list of people who should be vaccinated each year.

Table 1. Antiviral Drugs and Vaccines for Influenza Prevention

	Approved Ages	Dosing	Adverse Effects	Contra-indications	Cost (AWP)*	Comments
Oseltamivir (Tamiflu)	13 years old or older	75mg once daily (up to 6 weeks)	<p>Common: (1-10%) headache, insomnia, fatigue, vertigo, diarrhea, nausea, vomiting</p> <p>Severe: (less than 1%) aggravation of diabetes, confusion, rash, hepatitis, arrhythmia</p>	Hyper-sensitivity to oseltamivir	<p>Syrup (12mg/mL) - \$42.09 for 25mL</p> <p>Capsules (75mg) - \$84.19 for 10 capsules</p>	<p>Pregnancy Category C**</p> <p>Effective vs. influenza A and B</p> <p>Precautions: Efficacy not established in chronic cardiac disease, chronic respiratory disease, and immunosuppression.</p> <p>May need to decrease dose with kidney problems.</p>
Zanamivir (Relenza)	5 years old or older	<p>Household Setting: 2 inhalations (5mg/inhalation) twice daily for 10 days</p> <p>Community Outbreak: 2 inhalations (5mg/inhalation) once daily for 28 days</p>	<p>Common: (more than 1.5%) headache, dizziness, nausea, diarrhea, vomiting, rash, abnormal vision</p> <p>Severe: (less than 1.5%) bronchospasm, angina, edema, rash, seizures, urticaria</p>	Hyper-sensitivity to zanamivir	\$67.19 for the inhaler (5-day therapy)	<p>Pregnancy Category C**</p> <p>For treatment and prevention of influenza A and B.</p> <p>Precautions: Not recommended for patients with asthma or reactive airway disease; contains lactose.</p>

<p>Inactivated influenza vaccine (Fluvirin) (Fluzone) (Fluarix)</p>	<p>Younger than 6 months</p>	<p>Adults: 0.5 mL IM x 1 dose annually</p> <p>Children: 9 years and older: 0.5 mL IM x 1 dose annually</p> <p>3 to 8 years old: 0.5 mL IM x 1 or 2 doses; a second dose is recommended for children who have never had the vaccine before and should be given at least 4 weeks after the first dose</p> <p>6 to 35 months old: 0.25 mL IM x 1 or 2 doses; a second dose is recommended for children who have never had the vaccine before and should be given at least 4 weeks after the first dose</p>	<p>Injection site reaction, muscle aches, fever, malaise</p>	<p>Acute febrile illness, allergy to eggs, hypersensitivity to vaccine components, including thimerosal</p>	<p>Fluvirin: \$164.04(10 doses)</p> <p>Fluzone: \$166.50(10 doses)</p> <p>Fluarix: \$139.50(10 doses)</p>	<p>Pregnancy Category: C**</p> <p>Precaution with children ages 6 months to 35 months because of increased risk for febrile seizures; first trimester of pregnancy; history of Guillain-Barre syndrome; history of latex sensitivity; impaired immune responsiveness; patients with active neurologic disorder (Delay vaccination until condition is stable.)</p>
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Live influenza vaccine (Flumist)	5 years old or older	<p>Healthy adults 18 to 49 years old: 0.5 mL (0.25 mL/nosril) intranasally per season</p> <p>Healthy children 5 to 8 years old not previously vaccinated with intranasal vaccine: 0.5 mL (0.25 mL/nosril) x 2 doses intranasally at least 6 weeks apart for initial season</p> <p>Healthy children 5 to 8 years old previously vaccinated with intranasal vaccine: 0.5 mL (0.25 mL/nosril) intranasally per season</p> <p>Healthy children 9 to 17 years old: 0.5 mL (0.25 mL/nosril) intranasally</p>	Headache, cough, nasal congestion, nasal discharge	Hypersensitivity to eggs, children and adolescents (5 to 17 years old) receiving aspirin or aspirin-containing therapy; history of Guillian-Barre syndrome, immune deficiency disease, or immuno-suppression	\$222.90(10 doses)	<p>Pregnancy Category: C**</p> <p>Precaution: Not recommended for people with asthma or active airway disease.</p> <p>Avoid contact with immunocompromised individuals for at least 21 days after receiving vaccination.</p> <p>Postpone vaccination for at least 72 hours after acute phase of febrile or respiratory illness.</p>
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*AWP – Average Wholesale Price is provided for comparison purposes only. Actual retail prices may vary.

** Pregnancy Category C: Animal reproduction studies may have shown an adverse effect on the fetus or there are no adequate and well-controlled studies in humans, and the benefits from the use of the drug in pregnant women may be acceptable despite its potential risks.

Table 2. Summary of General Prevention Measures

- Distance yourself from those who are sick.
- Stay away from others when you are sick.
- Cover your mouth and nose when you cough or sneeze. Properly dispose of tissues.
- Wash your hands often; dry with a paper towel and dispose of it.
- Avoid touching your mouth, nose, and eyes.

Table 3. People who should be vaccinated each year

- Children 6 to 59 months old
- Pregnant women who will be pregnant during flu season
- People age 50 years and older
- People with certain chronic health conditions such as asthma and diabetes
- People who live in nursing homes and other long-term care facilities
- People who live with or care for those at high risk for complications from the flu
- Healthcare workers

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