

AN EPIDEMIOLOGY PUBLICATION OF THE OREGON DEPARTMENT OF HUMAN SERVICES

INFLUENZA 2005–2006: NO EMERGENCY (YET)

**I**N A TYPICAL YEAR, influenza kills an estimated 36,000 human beings in the U.S. Each influenza season presents its own challenges. This issue of the *CD Summary* encapsulates the recommendations for prevention of flu as promulgated by CDC's Advisory Committee on Immunization Practices (ACIP).

**NEW THIS YEAR**

1. Another group of individuals at risk of complications was included—viz., those with afflictions compromising respiratory functions associated with secretions.
2. More emphasis is given to reducing viral transmission by healthcare workers, especially to those at high risk of complications arising from influenza.

2. The role of FluMist™ in situations of vaccine shortage is clarified.
4. The vaccines will include one new component—A/California/7/2004 (H3N2)-like viruses or virion components. The A/New Caledonia/20/99 (H1N1)-like and B/Shanghai/361/2002-like strains will be retained.
5. There is a newcomer to the influenza vaccine market: Fluarix,™ an inactivated vaccine manufactured by GlaxoSmith-Kline, Inc., and approved for use in persons ≥18 years of age.

**A TIERED APPROACH**

Predictions regarding production and FDA approval of influenza are always dicey. That said, we expect that at least 71 million doses of vaccine will be available in the U.S. this season. Pending approval by the FDA, Chiron Corporation may add another 18–26 million doses to our supply. For comparison, the most ever administered during a single season in the U.S. was 83 million doses.

Given the uncertainties in production and in the timing of vaccine availability, we ask that until **October 24, 2005**, trivalent inactivated vaccine (TIV) be reserved for persons at increased risk for complications from influenza and for healthcare workers; others may be vaccinated thereafter. Recommendations are summarized in the table.

There is no cutoff date for influenza vaccination; it may be administered right up to the expiration date. If influenza is present, antivirals may be employed during the 10–14 days required for development of host immunity following administration of inactivated vaccine.<sup>1</sup>

**VACCINE ADMINISTRATION**

**1. Inactivated Vaccine**

The intramuscular route is recommended. Adults and older children should be vaccinated in the deltoid muscle using a needle length of one inch or more. Infants and young children should be vaccinated in the anterolateral aspect of the thigh.

Doses by age group are as follows:

- 6–35 months old: 0.25 mL
- ≥3 years old: 0.5 mL

Influenza Vaccination, 2005–06: Who, When, Wherewith		
Group	When	Vaccine
<b>Persons at increased risk for complications from influenza</b>		
Persons ≥65 years of age	Now	TIV
Residents of long-term-care facilities	Now	TIV
Persons with chronic cardiovascular or pulmonary disease, including asthma or such neuromuscular afflictions as compromise the management of respiratory secretions or increase the risk of aspiration, including cognitive dysfunction, spinal cord injuries and seizure disorders	Now	TIV
Persons with chronic metabolic diseases such as diabetes, renal disease, hemoglobinopathies or immune dysfunction (including immunosuppression caused by medications or infections, including HIV)	Now	TIV
Children <18 who are receiving long-term aspirin therapy (and would therefore be at risk for Reye Syndrome)	Now	TIV
Women who will be pregnant during the influenza season	Now	TIV
Children 6–23 months old	Now	TIV
Persons 50–64 years old	After Oct. 24	TIV
<b>Others who should be vaccinated</b>		
Healthcare personnel who provide direct patient care	Now	TIV or LAIV*†
Household contacts and out-of-home caretakers of infants <6 months of age for whom influenza vaccine has not been approved	Now	TIV or LAIV*
Persons who can transmit influenza to those at high risk, including household contacts, persons providing home care, and employees and visitors of long-term-care facilities	After Oct. 24	TIV or LAIV*†
Those providing essential community services like police, fire and rescue, public health, child daycare	After Oct. 24	TIV or LAIV*
Students, teachers and others in educational settings, especially those who live in dormitories	After Oct. 24	TIV or LAIV*
Individuals not vaccinated in the recent fall or winter who plan to travel to the tropics, travel with organized groups at any time of year or travel to the Southern Hemisphere during April–September	After Oct. 24	TIV or LAIV*
Individuals culling or otherwise having contact with wild or domestic fowl infected with avian influenza viruses. (This will lessen the likelihood that such persons will be infected simultaneously with two influenza strains, which could facilitate viral reassortment.)	After Oct. 24	TIV or LAIV*
TIV: trivalent inactivated vaccine LAIV: live, attenuated influenza vaccine * Even in these cases, LAIV should <b>not</b> be given to persons <5 or ≥50 years of age, to persons at increased risk for complications from influenza, to persons with a history of Guillain-Barré syndrome, or to persons with a history of hypersensitivity to LAIV components or to eggs. LAIV may be given even before Oct. 24, as no shortage of this formulation is anticipated. † For those with close contact with severely immunosuppressed persons requiring a protected environment (e.g., hematopoietic stem cell transplant recipients), TIV is preferred.		



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Among previously unvaccinated children  $\leq 9$  years old, 2 doses must be administered 1 month apart for satisfactory antibody response. If possible, the second dose should be administered before December.

The most frequent side effect of vaccination is soreness at the vaccination site, lasting up to two days. Fever, malaise, myalgia and other systemic symptoms occur, usually among those who have not been vaccinated against influenza before. Rarely, immediate hypersensitivity reactions (hives, angioedema, allergic asthma or anaphylaxis) occur, usually due to allergies to egg protein. Vaccine should not be administered to people who are allergic to eggs or egg protein, without appropriate medical evaluation and possibly desensitization.

It's unclear whether any influenza vaccine since the swine flu vaccine of 1976 has caused Guillain-Barré Syndrome. However, the risk, if any, cannot be more than about one case per million doses; so the benefits of influenza vaccine justify giving it annually to patients at high risk for influenza *even if* they have previously experienced Guillain-Barré Syndrome within six weeks of a dose. Alternatively, you may want to consider antiviral chemoprophylaxis in these patients.

FDA approvals for these vaccines do vary, so be sure to use the vaccine appropriate for the patient's age. Only one vaccine is currently licensed for those 6–47 months of age—Fluzone<sup>®</sup> from Sanofi Pasteur. The other previously licensed vaccine, Fluvirin<sup>™</sup>, from Chiron, was labeled in the US for use only among those  $\geq 4$  years old.

## 2. Live, Attenuated Vaccine

FluMist<sup>™</sup>, a live, attenuated influenza vaccine (LAIV) produced by MedImmune, Inc., was approved by the FDA on June 17, 2003, for healthy persons aged 5–49 years. The vaccine contains cold-adapted virions and is administered intranasally. Children 5–8 years old need two doses  $\geq 6$  weeks apart in their first year of vaccination with FluMist<sup>™</sup>; those 9–49 years old need but one dose. The virions replicate in the nasal passages and nasopharynx and stimulate mucosal IgA and humoral IgG antibodies against types A and B influenza viruses. Virions may be shed from the upper respiratory tract for up to 7 days following instillation. The most common reactions to administration are nasal congestion, rhinorrhea, pharyngitis, and cough. This vaccine is not recommended for any person at elevated risk of influenzal complications or who has had an allergic reaction to eggs or a previous dose of FluMist<sup>™</sup>. Efficacy in prevention of influenza is comparable to that of the traditional inactivated vaccines.

## OTHER VACCINATIONS

Since there is some overlap in the groups for which pneumococcal and influenza vaccinations are recommended, consider concurrent immunization with pneumococcal vaccine. Inactivated influenza vaccines can be given concurrently (in different sites) with other routine childhood and adult vaccines. Please refer to the FluMist<sup>™</sup> package insert for recommendations regarding its use with other vaccines or biologics.

## ANTIVIRALS

Antiviral drugs are an adjunct to vaccine for controlling and preventing influenza; however, they are not a substitute for vacci-

nation. Four licensed virustatic drugs are currently available in the United States—amantadine, rimantadine, zanamivir, and oseltamivir. Amantadine and rimantadine are chemically related drugs with activity against influenza A but not influenza B viruses. Amantadine is approved for both treatment and chemoprophylaxis of influenza A infections among adults and children aged  $\geq 1$  year. Rimantadine is approved for both treatment and chemoprophylaxis among adults but only for prophylaxis among children. However, some consider it appropriate as well for treatment of children. The neuraminidase inhibitors zanamivir and oseltamivir have activity against both influenza A and B viruses. Both are approved for treating uncomplicated influenza—zanamivir for persons aged  $\geq 7$  years, and oseltamivir for persons aged  $\geq 1$  year. In 2000, oseltamivir was additionally approved for chemoprophylaxis of influenza among persons aged  $\geq 13$  years.

## ADDITIONAL INFO

The complete recommendations of the ACIP can be found on our website. A world of discovery awaits your visit at <http://oregon.gov/DHS/ph/acd/flu/influenza.shtml>. Information about clinics administering vaccine can be obtained by dialing 1-800-SAFENET. Thanks to all who supported our surveillance programs last season. We look forward to working with you again.

## REFERENCES

1. CDC. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2005; 54(RR-8):1-40. Available at <http://www.cdc.gov/mmwr/pdf/rr/rr5408.pdf>.
2. CDC. Update: influenza vaccine supply and recommendations for prioritization during the 2005-06 influenza season. MMWR 2005; 850. Available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5434a4.htm>.