

BATTLING THE INFLUENZA INVASION: 2004–2005

NOW THAT the recent epizootics of bird flu in Asia and elsewhere have failed to give birth to a pandemic champion, we need not fear pretraumatic stress syndrome but must once again deal mere variants of the more mundane strains we have faced over the past. This issue of the *CD Summary* will recap recommendations of CDC's Advisory Committee on Immunization Practices (ACIP)¹ to minimize morbidity and mortality associated with influenza.

NEW THIS YEAR

The ACIP and the American Academy of Pediatrics² recommend that healthy children aged 6–23 months as well as all close contacts of those 0–23 months old be vaccinated against influenza.

Inactivated vaccine is to be preferred over live, attenuated vaccine (FluMist™) for use in household members, health-care workers and others having close contact with severely immunosuppressed persons requiring protective environments.

Severely immunosuppressed persons should not administer live vaccine. Others not so categorized, yet at elevated risk of influenza complications, are not so prohibited.

The vaccines will include two new components—A/Fujian/411/2002 (H3N)-like and B/Shanghai/361/2002-like strains. The A/New Caledonia/20/99 (H1N1)-like strains will be retained again this season. Discard any influenza vaccines remaining from last season.

The following steps will mitigate the havoc wrought by flu.

STEP #1

The following persons at risk of influenza-related complications should be identified, notified when vaccine is available, and vaccinated in October or early November with *inactivated trivalent influenza vaccine*, regardless of the setting:

- all those 65 years of age and older;
- nursing home or chronic-care facility residents;
- those with chronic pulmonary or cardiovascular disease, including asthma;
- those with chronic metabolic diseases such as diabetes, renal disease, hemoglobinopathies or immune dysfunction (including immunosuppression caused by medications or infections, including HIV);
- children under 18 who are receiving long-term aspirin therapy (and would therefore be at risk for Reye Syndrome);
- women who will be pregnant during the influenza season; and
- children 6–23 months old.

If vaccine is available, it may, to avoid missing an opportunity, be given in September during visits for routine care or during hospitalization. The live, attenuated FluMist™ vaccine is not recommended for administration to any of these individuals.

STEP #2

Get yourself vaccinated before influenza gets here—along with all other persons who might expose the above groups to influenza virus by means of clinical or subclinical infections. Use the inactivated vaccine, because if you take the live, attenuated vaccine, you may shed vaccine virions for up to 21 days thereafter,* and the risk of spread to immunocompromised persons is not known. The following should be vaccinated:

- physicians, nurses and other personnel in home-care, hospital or outpatient settings, including emergency response workers;
- employees and visitors of nursing homes, chronic-care facilities, assisted-living or other such residences having contact with patients or residents; and

- household contacts and out-of-home caretakers of children 0–23 months of age, *especially those of infants <6 months of age for whom influenza vaccine has not been approved.*

STEP #3

Vaccinate others in the community whose work would be seriously affected by influenza, such as:

- those providing essential community services such as police, fire and rescue, public health, child day care, etc.;
- students, teachers and others in educational settings, especially those in dormitory residences; and
- individuals 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.

TIMING

There is no cutoff point for influenza vaccination; it may be administered right up to the expiration date. If influenza is circulating, antiviral drugs may be employed during the 10–14 days required for development of host immunity.

Although only two manufacturers of inactivated influenza vaccine have continued in the business, total production is projected at 90–100 million doses, and no vaccine shortages are anticipated this season. If demand exceeds production, stay tuned to this space for recommendations regarding risk-tiered timing of vaccinations for various groups.

VACCINE ADMINISTRATION Inactivated Vaccine

The intramuscular route is recommended. Adults and older children should be vaccinated in the deltoid muscle using a needle length of ≥ 1 inch to ensure sufficient penetration. Infants and young children should be vaccinated in the anterolateral aspect of the thigh. Give 0.25 mL to children 6–35 months old, and 0.5 mL to those ≤ 3 years of age.

* So says the package insert.



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Among previously unvaccinated children <9 years old, two 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, usually mild, at the vaccination site, affecting 10%–64% of patients and lasting up to two days. Fever, malaise, myalgia and other systemic symptoms may occur. Rarely, immediate hypersensitivity reactions 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.

Existing data, though limited, suggest that the benefits of vaccination justify the yearly vaccination of patients at high risk for influenza even if they have experienced Guillain-Barré Syndrome within six weeks of previous influenza vaccination. Alternatively, providers may want to consider the use of antiviral chemoprophylaxis for 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 months of age—Fluzone[®] from Aventis Pasteur. The other licensed vaccine, Fluvirin[™], from Evans Vaccines, is labeled in the US for use only among those ≥ 4 years old.

Live, Attenuated Vaccine

FluMist[™], a live, attenuated influenza vaccine produced by MedImmune, Inc., was approved by the FDA on June 17, 2003, for healthy persons 5–49 years of

age. The vaccine contains cold-adapted virions and is administered intranasally. Children 5–8 years old need two doses ≥ 6 weeks apart in their first year of vaccination with FluMist[™],[†] and those 9–49 years old need only one dose. The virions replicate and stimulate mucosal IgA and humoral IgG antibodies against types A and B influenza viruses. 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 influenza complications or who has had an allergic reaction to eggs to or a previous dose of FluMist[™]. Efficacy in prevention of influenza is comparable to that of the traditional inactivated trivalent vaccines.

OTHER VACCINATIONS

As always, assess each patient's immunization history and take action to bring them up to date. Since there is some overlap in the groups for which pneumococcal and influenza vaccinations are recommended, it is particularly important to consider concurrent immunization with pneumococcal vaccine. Inactivated influenza vaccines can be given concurrently in different sites with other routine childhood and adult vaccines.[‡]

ANTIVIRALS

Antiviral drugs are an adjunct to vaccine for controlling and preventing influenza, but they are not a substitute for vaccination. Amantadine, rimantadine, zanamivir, and oseltamivir are currently licensed in the United States. Amantadine

and rimantadine have 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 ≥ 1 year. Rimantadine is approved for both treatment and chemoprophylaxis of infection 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 is approved for persons aged ≥ 7 years, and oseltamivir for persons aged ≥ 1 year. In 2000, oseltamivir was approved for chemoprophylaxis of influenza among persons aged ≥ 13 years.

ADDITIONAL INFO

The complete recommendations of the ACIP can be found on our web site. A world of discovery awaits your visit at <http://www.oshd.org/acd/docs/influenza.cfm>. Information about clinics administering vaccine can be obtained by dialing 1-800-SAFENET. Resist the influenza invasion by creative acts of immunoprophylaxis!

REFERENCES

1. CDC. Prevention and Control of Influenza—Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2004;53:RR6. At: <http://www.cdc.gov/mmwr/PDF/rr/rr5306.pdf>.
2. At: <http://www.aap.org/advocacy/releases/mayimmunization.htm>

[†] The ACIP feels that one dose of FluMist[™] will suffice if the child has received any previous influenza vaccination.
[‡] As for FluMist[™], the package insert, citing a lack of specific data, advises against giving it concurrently with any other vaccine and suggests 2-week and 1-month intervals between administration of FluMist[™] and other inactivated and live vaccines, respectively. The ACIP recommendations, following the patterns recommended for older vaccines, are more permissive. Consult these sources if your patient needs both FluMist[™] and another vaccine.