CD Summary

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PREPARATIONS FOR THE 2003–2004 INFLUENZA EPIDEMIC

With the recent excitement over the emergence of monkeypox and SARS in the U.S., it seems odd to turn our thoughts to the "routine" annual assault of influenza viruses. Failing to find a pandemic champion of their own, influenza viruses may decide to share their technology with others. This issue of the *CD Summary* will focus upon basic steps to minimize the persistently impressive morbidity and mortality attributable to influenza.

THIS YEAR'S ETHERIAL MUSINGS

Barring the appearance of mutants with pandemic potential, the 2003–2004 season should be a repeat of the last three—an "average" one. Current levels of influenza transmission in the Southern Hemisphere indicate a likely repeat of recent seasons, with H3N2 strains predominating and quite possibly lesser numbers of B/Hong Kong/330/2001-like viruses.

The noninfectious trivalent vaccine for this year, for a change, is unchanged from last year's in all three strains: A/Moscow/10/99(H3N2)-like, A/New Caledonia/20/99(H1N1)-like and B/Hong Kong /30/2001-like antigens. As in past seasons, any hoarded cache of prior years' vaccines should be promptly discarded following their expiration dates.

Although but two manufacturers of noninfectious influenza vaccine have continued in the business, no vaccine shortages are anticipated this season. The recent FDA licensure of FluMist,® an infectious trivalent influenza vaccine, may reduce the demand for noninfectious influenza vaccines among the healthy and immunocompetent 5–49-year-olds. The most recent projection of the total output of all three manufacturers is 86.5 to 93 million doses.

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 **noninfectious 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 in the second or third trimester of pregnancy during the influenza season; and
- healthy children 6–23 months old.

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

STEP #2

Get yourself vaccinated before the onset of community transmission of influenza—along with all other persons who might expose the above groups to influenza virus by means of clinical or subclinical infections. It would seem preferable to employ the noninfectious vaccine as persons may shed the infectious vaccine virions for up to 21 days following administration, and the risk of such spread to immunocompromised individuals is not fully 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 (who are not eligible for influenza vaccine).*

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 daycare, etc.;
- students, teachers and others in educational settings, especially those in dormitory residences; and
- 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.

TIMING

There is no cutoff point 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.

VACCINE ADMINISTRATION

1. Noninfectious

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 to ensure sufficient penetration. 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
- 3–12 years old: 0.5 mL
- 13 years and older: 0.5 mL

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.

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The most frequent side effect of vaccination is soreness at the vaccination site, affecting 10%–64% of patients and lasting up to two days. These local reactions are generally mild. Fever, malaise, myalgia and other systemic symptoms occur, usually among those who have not been vaccinated against influenza before. These reactions generally begin 6–12 hours after vaccination and can persist for 1–2 days. Rarely, immediate hypersensitivity reactions occur. These include hives, angioedema, allergic asthma or anaphylaxis, and are 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 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 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.

2. Infectious

FluMist,® an infectious trivalent vaccine produced by MedImmune Vaccines 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 ⩾6 weeks apart in their first year of vaccination with FluMist,® and those 9–49 years old need only 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 21 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 allegic reaction to eggs to or a previous dose of FluMist.® Efficacy in prevention of influenza is comparable to that of the traditional noninfectious trivalent vaccines.

OTHER VACCINATIONS

As always, providers should assess each patient's immunization history and take action to bring the patient 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 the indications for concurrent immunization with pneumococcal vaccine.

Noninfectious influenza vaccines can be given concurrently in different sites (without increasing side effects) with other routine childhood and adult vaccines. *FluMist,® however, should not be administered concurrently with other vaccines nor within one month of receipt of any "live" virus vaccine or within two weeks of receipt of any "inactivated" or "subunit" vaccine.*

ANTIVIRALS

Antiviral drugs are an adjunct to vaccine for controlling and preventing influenza. However, these agents are not a substitute for vaccination. Four licensed anti-influenza 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 >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 additionally approved for chemoprophylaxis of influenza among persons aged >13 years.

ADDITIONAL INFO

The complete recommendations of the Advisory Committee on Immunization Practices can be found on our website. 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. Happy vaccinating. And may all your influenza years be below average.