disease prevention news

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ACIP Recommendations for Influenza Prevention and Control for the 2002-2003 Season

This report is a summary of the Advisory Committee on Immunization Practices (ACIP) recommendations for influenza vaccine and antiviral agents (found in MMWR 2002; 51 [No. RR-3]:1–36 and online at www.cdc.gov/mmwr/preview/mmwrhtml/rr5103a1.htm). The principle changes from last year include information about the timing of influenza vaccination by risk group, influenza vaccine for children aged 6 through 23 months, the 2002-2003 trivalent vaccine virus strains, and limited amount of influenza vaccine with reduced thimersol content.

Influenza A and B are the two types of influenza virus that cause epidemic human disease. Influenza A viruses are categorized into subtypes on the basis of two surface antigens: hemagglutinin (H) and neuraminidase (N). Influenza B viruses are not categorized into subtypes. Influenza A and B viruses are also each grouped on the basis of antigenic characteristics. Currently 3 subtypes of hemag glutinin (H1, H2, H3) and 2 subtypes of neuraminidase (N1, N2) are associated with widespread seasonal disease in humans. Since 1977 influenza A (H1N1) viruses, influenza A (H3N2) viruses, and influenza B viruses have been in global circulation. Influenza A (H1N2) viruses that probably emerged after genetic reassortment between human A (H3N2) and A (H1N1) viruses have been detected recently in many countries.

Immunity to these antigens, especially to the hemagglutinin, reduces the likelihood of infection and lessens the severity of disease. Infection with a virus of one subtype, however, confers little or no protection against infection caused by another subtype. Moreover, antigenic variation (antigenic drift) within a subtype may be so marked over time that infection or vaccination with one strain may not induce effective immunity to distantly related strains of the same subtype. Although influenza B viruses have demonstrated comparatively more antigenic stability than influenza A viruses, antigenic variation does occur. New influenza virus variants result from frequent antigenic change (ie, antigenic drift) resulting from point mutations that occur during viral replication. Influenza B viruses undergo antigenic drift less rapidly than influenza A viruses do. Consequently, new variants of influenza virus emerge every year around the world, necessitating an annual change in the composition of the influenza vaccine.

Composition of the 2002-2003 Vaccine

*The influenza trivalent vaccine for the 2002-2003 season will include the following components: A/Moscow/10/99 (H3N2)-like, A/New Caledonia/20/99 (H1N1)-like, and B/Hong Kong/330/2001-like strains.**

* Manufacturers will use the antigenically equivalent A/Panama/2007/99 (H3N2) virus for the A/Moscow/10/99 (H3N2)-like antigen. For the B/Hong Kong/330/2001-like antigen, B/Hong Kong/1434/02 will be used.

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Also in this issue:

Why Vaccinate Against Influenza?

Although influenza by itself is an acute, self-limiting upper respiratory infection, it can lead to more serious illness such as primary influenza pneumonia or secondary bacterial pneumonia. Influenza-associated hospitalizations averaged approximately 130,000 to 170,000 per epidemic from the 1969-1970 season through the 1993-1994 season.

Influenza epidemics typically occur during the winter months and are responsible for about 20,000 deaths annually in the United States. Influenza viruses can cause pandemics during which rates of illness and death from influenza-related complications can increase dramatically worldwide. Rates of infection are highest among children but cause serious illness and death in persons aged 65 years or older and in persons of any age who are immune compromised due to underlying medical conditions.

Preseason vaccination of persons in high-risk groups currently remains the most effective measure for reducing the impact of influenza.

To prevent morbidity and mortality due to severe influenza and its complications, influenza vaccine campaigns are targeted toward members of medically at-risk groups. During major influenza epidemics, hospitalization rates for high-risk populations increase 2- to 5-fold, depending on the age group. The impact of such epidemics is also demonstrated by an increase in mortality. While influenza-associated mortality is a major concern for persons with chronic diseases, this increase is most marked in persons 65 years of age or older, with more than 90% of the deaths attributed to pneumonia and influenza occurring in persons of this age group. Because the proportion of elderly persons in the US population is increasing and because age and its associated chronic diseases are risk factors for severe influenza illness, the number of deaths from influenza and its complications is expected to increase unless control measures are more vigorously implemented. Preseason vaccination of persons in high-risk groups currently remains the most effective measure for reducing the impact of influenza.

2001-2002 Influenza Epidemic in Texas

The first confirmed case of influenza for the 2001-2002 season was in a patient from Travis County. The specimen was submitted to the Texas Department of Health (TDH) Bureau of Laboratories on October 4, 2001. Sporadic cases were reported from various Texas cities through early December.

During the early portion of the season, as anticipated, the predominant circulating strain of the virus was influenza A/Panama/2007/99 (H3N2). Additionally, there were 3 positive influenza A/New Caledonia/20/99 (H1N1)-like isolates. The influenza vaccine used in the 2001-2002 season provided a good match for these circulating strains. Similarly, the influenza B strain (B/Sichuan/379/99-like) that circulated in March and April was also a good match.

In mid-March 2002, a second influenza B strain began to circulate in Texas. The B/Hong Kong was not included in the vaccine. This strain of influenza B was last identified in the US and Texas in 1991; recent vaccine formulations offered no protection from this strain.

The TDH Medical Virology Branch tested a total of 1240 specimens; 474 were confirmed as influenza A and 56 as influenza B. The last positive specimen was submitted from Nueces County on July 5, 2002. Influenza B was isolated.

Submission of isolates to the Centers for Disease Control and Prevention provides

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a measure of the relative prevalence of circulating virus type and subtype. TDH sends initial positive and periodic cultures from each influenza season to CDC for virologic surveillance, subtyping, and detection of antigenic variants. State and national surveillance provides an indication of the annual vaccine effectiveness against circulating influenza virus. TDH supports this surveillance effort and submits weekly reports to CDC regarding influenza activity.

Influenza Vaccine and Recommendations for Use

The vaccine is made from highly purified, egg-grown viruses that have been made noninfectious (inactivated). Because the vaccine viruses are initially grown in embryonated hens' eggs, the vaccine might contain limited amounts of residual egg protein. Influenza vaccines are standardized to contain the hemagglutinins of strains representing the influenza viruses likely to circulate in the US in the upcoming season. Each year's influenza vaccine contains 3 virus strains (usually 2 type A and 1 type B) representing those strains expected to circulate in the US during the upcoming season. (See Page 1 for the specific composition of the 2002-2003 vaccine.)

The degree of similarity between the vaccine virus components and the circulating virus strains influences vaccine efficacy. When there is a close match, the vaccine can prevent illness in approximately 70% of healthy children and young adults. The efficacy of the vaccine in preventing or attenuating illness also depends on the age and immunocompetence of the vaccine recipient. The efficacy of influenza vaccine in preventing hospitalization due to pneumonia and other complications among the elderly ranges from 30% to 90%. Among elderly persons residing in nursing homes, influenza vaccine can be 50% to 60% effective in preventing pneumonia and hospitalization, and 80% effective in preventing death due to influenza and its complications.

Vaccine efficacy overall in the elderly, however, is only 30% to 40%. Therefore, it is important that persons who have contact with the elderly, particularly their care givers, be vaccinated. Although the current influenza vaccine can contain 1 or more of the antigens administered in previous years, annual vaccination with the current vaccine is necessary because immunity declines in the year following vaccination.

A single dose of influenza vaccine is generally recommended for adults and previously vaccinated children. Two doses administered at least 1 month apart may be required for a satisfactory antibody response in previously unvaccinated children under 9 years of age. Influenza vaccine is administered via the intramuscular route for all age groups. Adults and older children should be vaccinated in the deltoid muscle, and infants and young children in the anterolateral aspect of the thigh.

Please note that current guidelines ***DO NOT*** *recommend additional doses of influenza vaccine for adults during the second half of the season*. Studies conducted with vaccines similar to those in current use have shown little or no improvement in antibody responses when a second dose is administered to adults during the same season.

Influenza vaccine is strongly recommended for any person aged 6 months or older who is at increased risk for complications from influenza. In addition, health-care workers and other persons (including household members) in close contact with persons at high risk should be vaccinated to decrease the risk for transmitting influenza to persons at high risk.

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The best way to control influenza outbreaks among medically fragile and institutionalized populations is to ensure that all care givers and allied staff working with these populations receive an influenza vaccination.

Vaccination for Target Groups at Increased Risk for Complications

Vaccination is recommended for the following groups of persons who are at increased risk for complications from influenza or who have a higher prevalence of chronic medical conditions that place them at risk for influenza-related complications.

- Persons 65 years of age or older
- Residents of nursing homes and other chronic-care facilities that house persons of any age who have chronic medical conditions
- Adults and children with chronic disorders of the pulmonary or cardiovascular systems, including children with asthma
- Adults and children who have required regular medical follow-up or hospitalization during the preceding year because of chronic metabolic diseases (including diabetes mellitus), renal dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression caused by medications or by human immunodeficiency virus [HIV])
- Children and teenagers (aged 6 months to 18 years) who are receiving long-term aspirin therapy and therefore may be at risk of developing Reye syndrome after influenza infection
- Women who will be in the second or third trimester of pregnancy during the influenza season. (All women who are pregnant by the date of this issue are in this category.)

Influenza vaccine is considered safe for pregnant women. Pregnant women who have medical conditions that increase their risk for influenza-related complications should be vaccinated before the influenza season regardless of the stage of pregnancy. Women whose pregnancy has progressed beyond the first trimester of pregnancy (≥14 weeks gestation) during the influenza season should also be vaccinated.

Because children aged 6 months through 23 months of age are at substantially increased risk for influenza-related hospitalizations, influenza vaccination of all children in this age group is encouraged when feasible. However, before the recommendation can be made to annually vaccinate all children aged 6 months to 23 months, ACIP, the American Academy of Pediatrics, and the American Academy of Family Physicians recognize that certain key concerns must be addressed.

Vaccination is recommended for persons aged 50 to 64 years because this group has an increased prevalence of persons with high-risk conditions.

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Persons who are clinically or subclinically infected and who are in close contact with members of high-risk groups can transmit influenza virus to them. To reduce the risk of exposure of high-risk persons to influenza via care providers, the following individuals should be vaccinated:

- Physicians, nurses, and other personnel in both hospital and outpatient-care settings, including emergency response workers
- Employees of nursing homes and other chronic care facilities who have contact with patients or residents
- Employees of assisted living and other residences for persons in high-risk groups
- Persons who provide home care to high-risk groups
- Household members (including children) of persons in high-risk groups
- Emergency response workers

The best way to control influenza outbreaks among medically fragile and institutionalized populations is to ensure that all care givers and allied staff working with these populations receive an influenza vaccination.

Dosage

Dosage recommendations vary according to age group. Among previously unvaccinated children younger than 9 years old, 2 doses administered more than 1 months apart are recommended for satisfactory antibody responses. If possible, the second dose should be administered before December. Among adults, studies have indicated limited or no improvement in antibody response when a second dose is administered during the same season. Even when the current influenza vaccine contains ≥1 antigens administered in previous years, annual vaccination with the current vaccine is necessary because immunity declines during the year after vaccination. Vaccine prepared for a previous influenza season should not be administered to provide protection for the current season.

Contraindications, Side Effects, and Adverse Reactions

Influenza vaccine contains only noninfectious viruses. Therefore, the vaccine cannot cause influenza in vaccine recipients. Respiratory disease after vaccination represents coincidental illness unrelated to influenza vaccination. The most frequent side effect of vaccination is soreness at the injection site that lasts approximately 2 days. Two forms of systemic reactions also have been noted:

- Fever, malaise, myalgia, and other systemic symptoms, which most often affect persons who have had no exposure to influenza virus antigens in the vaccine (eg, young children). These symptoms begin 6 to 12 hours after vaccination and can persist 1 to 2 days.

- Immediate reactions (presumably allergic) resulting from hypersensitivity to a vaccine component (most often to residual egg protein).

The potential exists for hypersensitivity reactions to any vaccine component. Reactions to thimerosal also may occur but are generally local delayed-hypersensitivity reactions.

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Adults with acute febrile illness usually should not be vaccinated until their symptoms have abated. Minor illness with or without fever does not, however, contraindicate the use of influenza vaccine. This vaccine should not be given to persons with known anaphylactic hypersensitivity to eggs or to other components of the influenza vaccine without prior physician consultation. Vaccine inserts provided by each manufacturer contain specific contraindications.

Unlike the 1976 swine influenza vaccine, subsequent vaccines prepared from other influenza virus strains have not been clearly associated with an increased frequency of Guillain-Barré syndrome (GBS). However, in a recent study of the 1992-1993 and 1993-1994 seasons, investigators found an elevation of the overall relative risk for GBS of 1.83 (95% confidence interval=1.12-3.00) during the 6 weeks following vaccination, representing an excess of an estimated 1 to 2 cases per million persons vaccinated.

Any clinically significant adverse event occurring after administration of any vaccine licensed in the US should be reported. The Reportable Event Table specifically outlines the reportable post-vaccination events and the time frames of events that are reportable by law. The table can be accessed at www.fda.gov/cber/vaers/eventtab.htm.

To report an adverse reaction, contact the TDH Immunization Division at 800/252-9152. Adverse events following use of privately purchased vaccine should be reported directly to VAERS. *Contact* 800/VAC-RXNS *for forms and information.*

Timing of Influenza Vaccination

The optimal time to vaccinate is usually October through November. However, because of substantial vaccine distribution delays during the 2000-2001 and 2001-2002 influenza seasons and the possibility of similar situations in future years, ACIP recommends that vaccine providers focus their vaccination efforts in October and earlier on persons at high risk and health-care workers. Vaccination of children younger than 9 years old who are receiving vaccine for the first time should also begin in October because they need a booster dose 1 month after the initial dose.

Vaccination of all other groups should begin in November, including household members of persons at high risk, healthy persons aged 50 to 64 years, and other persons who wish to decrease their risk for influenza infection. Materials to assist providers in prioritizing early vaccination are available at www.cdc.gov/nip/flu/Provider.htm.

Each influenza season, there are usually individuals who should or want to receive influenza vaccine but who remain unvaccinated. In addition, substantial amounts of vaccine have remained unused during the past two influenza seasons. To improve vaccine coverage and use, chiefly among persons at high risk and health-care workers, influenza vaccine should continue to be offered in December and throughout the influenza season as long as vaccine supplies are available, even after influenza activity has been documented in the community. In the US, seasonal influenza activity can begin to increase as early as November or December, but influenza activity has not reached peak

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levels in the majority of recent seasons until late December through early March. Therefore, although the timing of influenza activity can vary by region, vaccine administered after November is likely to be beneficial in the majority of influenza seasons. Adults develop peak antibody protection against influenza infection 2 weeks after vaccination.

To avoid missed opportunities for vaccination of persons at high risk for serious complications, such persons should be offered vaccine beginning in September during routine health-care visits or during hospitalizations, if vaccine is available. In facilities housing older persons (eg, those in nursing homes), vaccination before October typically should be avoided because antibody levels in such persons can begin to decline within a limited time after vaccination.

Persons planning substantial organized vaccination campaigns should consider scheduling these events after mid-October because the availability of vaccine in any location cannot be ensured consistently in the early fall. Scheduling campaigns after mid-October will minimize the need for cancellations because vaccine is unavailable. Campaigns conducted before November should, as feasible, focus efforts on vaccination of persons at high risk, health-care workers, and household contacts of persons at high-risk.

Role of Antivirals

Antiviral drugs for influenza are an adjunct to influenza vaccine for controlling and preventing influenza. However, these agents are not a substitute for vaccination. Four licensed influenza antiviral agents are available in the U S: amantadine, rimantadine, zanamivir, and oseltamivir.

Amantadine and rimantadine are chemically related antiviral drugs known as adamantanes with activity against influenza A viruses but not influenza B viruses. Amantadine was approved in 1966 for chemoprophylaxis of influenza A (H2N2) infection and was later approved in 1976 for treatment and chemoprophylaxis of influenza type A virus infections among adults and children aged older than 1 year. Rimantadine was approved in 1993 for treatment and chemoprophylaxis of infection among adults and prophylaxis among children. Although rimantadine is approved only for chemoprophylaxis of infection among children, certain experts in managing influenza consider it appropriate for treating children.

Zanamivir and oseltamivir are chemically-related antiviral drugs known as neuraminidase inhibitors that are effective against both influenza A and B viruses. Both zanamivir and oseltamivir were approved in 1999 for treating uncomplicated influenza. Zanamivir is approved for treating persons older than 7 years, and oseltamivir is approved for treatment for persons younger than 1 year. In 2000, oseltamivir was approved for chemoprophylaxis of influenza among persons older than 13 years.

The four drugs differ in terms of their pharmacokinetics, side effects, routes of administration, approved age groups, dosages, and costs. Package inserts should be consulted for additional information.

Adapted from Prevention and Control of Influenza. Recommendations of the Advisory Committee on Immunization Practices. MMWR 2002; 51 [No. RR-3]:1–36.
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Texas Birth Defects Research Center Receives $900,000 Grant from CDC

Birth defects are the leading cause of infant mortality in Texas and rank third as the most common cause of death for children 1 to 14 years of age. They also contribute substantially to illness and long-term disability. Common birth defects are heart defects, spina bifida, cleft lip, and Down Syndrome, but the causes of two-thirds of all birth defects remain unknown.

A primary function of the Texas Department of Health (TDH) Birth Defects Monitoring Division is to identify and describe patterns, find causes, and work toward prevention of birth defects in Texas. For 6 years, the TDH Texas Birth Defects Research Center, among only 8 such centers nationwide, has provided essential support for these efforts. The other centers are in Arkansas, California, Iowa, Massachusetts, North Carolina, Utah, and Atlanta.

Since 1996 CDC and TDH have had a cooperative agreement to enhance research and evaluation of birth defects in Texas. This fall, the Centers for Disease Control and Prevention (CDC) awarded all 8 centers across the country with a 5-year cooperative agreement that includes funding. The TDH Research Center will receive $900,000 for the current fiscal year. The Texas BDRC has continued to receive strong CDC support due to the Texas Birth Defects Registry, a team of collaborators from Texas universities, an impressive research agenda, and a growing body of published finding from BDRC-funded research.

The national study includes such a large population in so many areas of the United States that CDC and the research collaborators will have a unique opportunity to study the causes of many rare defects and to examine more common defects in greater depth. *To learn more about this and other TDH birth defects activities call* 512/458-7232 *or go to* www.tdh.state.tx.us/tbdmd/index.htm.