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disease prevention news

Prevention and Control of Influenza: Vaccines

Recommendations of the Advisory Committee on Immunization Practices (ACIP)

These recommendations update information on the vaccine available for controlling influenza during the 1993-94 influenza season (superseding MMWR 1992; 41 (No. RR-9):1-17.) The principal changes include information about • the influenza strains in the trivalent vaccine for 1993-94, • the effectiveness of influenza vaccine, and • side effects and adverse reactions.

Introduction

Influenza A or B viral infections account for substantial upper respiratory morbidity everyfall, winter, and early spring. For optimal prevention and control of influenza, TDH recommends that vaccination campaigns should be implemented before the 1993-94 influenz a season gets underway in the fourth quarter of this year. This report provides vaccination guidelines for the 1993-94 influenza season and explains why influenza vaccine must be administered annually to certain groups of people.

The influenza vaccine for the 1993-94 season includes the following components: influenza A/Texas/36/91-like (H1N1), influenza A/Beijing/32/92-like (H3N2), and influenza B/ Panama/45/90-like.

Influenza A viruses are classified into subtypes based on the antigenic characteristics of two surface antigens: hemagglutinin (H) and neuraminidase (N). Three subtypes of hemagglutinin (H1, H2, H3) and two subtypes of neuraminidase (N1, N2) associated with epidemic disease have been identified. Immunity to these antigens, especially to hemagglutinin, reduces both the likelihood of infection and the severity of disease if infection occurs. Infection with a virus of one subtype, however, confers little or no protection against viruses of other subtypes. Moreover, influenza viruses can alter the antigenic properties of their surface proteins in response to increasing levels of immunity in the population. Over time, antigenic variation (antigenic drift) within a subtype may be so extreme that infection or vaccination with one strain may not induce immunity to distantly related strains of the same subtype. Although influenza B viruses have demonstrated more antigenic stability than influenza A viruses, antigenic variation occurs for B viruses as well. Because new variants of influenza virus emerge every year around the world, the composition of the influenza vaccine must be modified annually.

Why Vaccinate Against Influenza?

Although influenza usually is an acute, self-limiting upper respiratory infection, it may be complicated by primary influenza pneumonia or secondary bacterial pneumonia, which

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Texas Department of Health

typically require hospitalization. Groups at increased risk for complications include the elderly and individuals with chronic or acute diseases. While influenza-associated mortality is a major concern for all those at high-risk, the elderly are at highest risk. Approximately 80-90% of the deaths attributed to pneumonia and influenza occur among persons ≥65 years of age. Vaccination of persons at high risk before each influenza season is currently the most effective way to reduce influenza morbidity and mortality.

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Vaccine Components and Availability

Influenza vaccine is made from highly purified, egg-grown viruses that have been inactivated and are therefore non-infectious. The current influenza vaccine contains three virus components (usually two type A and one type B) representing those influenza viruses expected to circulate in the U.S. during the upcoming season. The efficacy of the vaccine in preventing or attenuating illness depends on a number of factors, particularly the age and immunocompetence of the vaccine recipient. Equally important is the degree of similarity between the vaccine virus strains and circulating virus strains for that particular influenza season. The vaccine is most effective when vaccine strains and circulating strains of virus are closely matched. An effective vaccine can prevent influenza illness in approximately 70% of healthy children and young adults, and reduce by 70% the need for hospitalization due to pneumonia and other complications among the elderly.

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Whole-virus, subvirion, and purified-surface-antigen preparations are available for adults. To minimize febrile reactions, only subvirion or purified-surface-antigen preparations should be used for children. Most vaccine recipients will develop high levels of immunity to the vaccine strains or related variants. Although the elderly and those with chronic disease may develop lower antibody titers after influenza vaccination, and therefore remain somewhat susceptible to infection, the vaccine has been shown to reduce the risk of hospitalization and death by preventing severe complications in these individuals.

Recommendations For Use

Influenza vaccine is strongly recommended for any person >6 months of age who is at increased risk for complications of influenza because of age or an underlying medical condition. All those in close contact with persons in high-risk groups, such as health-care workers and household members, also should be vaccinated. Influenza vaccine also may be given to any person who wishes to reduce the chance of becoming infected with influenza.

A single dose of influenza vaccine generally is recommended for adults and previously vaccinated children. Two doses administered at least one month apart may be required for a satisfactory antibody response among previously unvaccinated children <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.

Current recommendations *DO NOT* include 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

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no improvement in antibody responses when a second dose is administered to healthy adults during the same season.

Adverse Reactions and Contraindications

Because influenza vaccine contains only noninfectious viruses, it cannot cause an influenza infection in vaccine recipients. Respiratory disease after vaccination represents coincidental illness unrelated to influenza vaccination. Adverse reactions to influenza vaccination can be local or systemic.

Local Reactions. The most frequent side effect of vaccination is immediate tenderness at the site of injection that lasts approximately two days. Delayed-hypersensitivity reactions to vaccine components such as thimerosol are less frequent and are characterized by skin rash, tenderness, swelling, and/or redness.

Systemic Reactions. Systemic reactions cause persistent symptoms such as fever, malaise, and myalgia. These symptoms most often affect persons who have had no previous exposure to influenza virus antigens in the vaccine (e.g., young children) and may last for one or two days. Anaphylactic reactions result from hypersensitivity to some vaccine component (most often to residual egg protein). The protocol for influenza vaccination developed by Murphy and Strunk may be considered for high-risk patients with known sensitivities to egg proteins (see reference at the end of the article).

Contraindications. Influenza vaccine should not be given to persons known to have anaphylactic hypersensitivity to eggs or to other components of the influenza vaccine without first consulting a physician. In general, adults with acute febrile illnesses usually should not be vaccinated until their symptoms have abated. However, minor illnesses with or without fever do not contraindicate the use of influenza vaccine. Vaccine inserts provided by each manufacturer list specific contraindications.

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Influenza Vaccine[1] Dosage, By Age Group
United States, 1993-94 Season

Age Group	Product[2]	Dosage	No. Doses	Route
6-35 mos.	Split virus only	0.25 ml	1 or 2[3]	IM
3-8 yrs.	Split virus only	0.50 ml	1 or 2[3]	IM
9-12 yrs.	Split virus only	0.50 ml	1	IM
>12 yrs.	Whole or split virus	0.50 ml	1	IM

[1]Contains 15 µg each of A/Texas/36/91-like (H1N1), A/Beijing/32/92-like (H3N2), and B/Panama/45/90-like hemagglutinin antigens in each 0.5 mL. Manufacturers include: Connaught Laboratories, Inc. (1-800 822-0432 or 323-8683); and Wyeth-Ayerst Laboratories (1-800 950-5099).

[2]Because of the lower potential for causing febrile reactions, only split-virus vaccines should be used for children. The vaccines may be labeled as "split," "subvirion," or "purified-surface-antigen" vaccine. Immunogenicity and side effects of split- and whole-virus vaccines are similar for adults when vaccines are administered at the recommended dosage.

[3]Two doses administered at least one month apart are recommended for children <9 years of age who are receiving influenza vaccine for the first time.

Timing of Vaccination Activities

Beginning in September, health-care providers should offer influenza vaccine to high-risk persons seen for routine care or as a result of hospitalization. Children <9 years of age who have never been vaccinated should receive two doses of vaccine at least one month apart to maximize the chance of a satisfactory antibody response to all three vaccine antigens. They should receive the second dose before December, if possible.

Both children and adults should receive vaccine up to and even after influenza virus activity is documented in a community. Influenza vaccine can be administered at the same time as other immunizations (e.g., pneumococcal vaccine, measles-mumps-rubella vaccine, diphtheria-tetanus toxoids). Multiple vaccines should be administered at different sites on the body. The optimal time for organized vaccination campaigns for persons in high-risk groups is usually between mid-October and mid-November. Vaccination programs, however, can be conducted as soon as influenza vaccine supplies become available, especially if regional influenza virus activity is expected to begin earlier than usual.

Target Groups for Special Vaccination Programs

Members of the following high-risk groups should be targeted for organized vaccination programs:

- Persons >65 years of age
- Residents of nursing homes and other chronic-care facilities housing persons of any age with chronic medical conditions
- Adults and children with chronic disorders of the pulmonary or cardio-vascular 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 regardless of cause
- Children and teenagers (6 months - 18 years of age) who are receiving long-term aspirin therapy and are therefore at risk of developing Reye syndrome after influenza

Persons who are clinically or subclinically infected, and who attend or live with members of high-risk groups, can transmit influenza virus to them. In order to reduce the risk of exposure of high-risk persons to influenza via care providers, the following groups also should be vaccinated:

- Physicians, nurses, and other personnel in both hospital and out-patient-care settings
- Employees of nursing homes and chronic-care facilities
- Providers of home care to persons at high risk (e.g., visiting nurses)
- Household members (including children) of persons in high-risk groups

Influenza vaccine is considered safe for pregnant women. Pregnant women who have health conditions that increase their risks for influenza-related complications should be vaccinated regardless of the stage of pregnancy.

Prepared by: Lynne Sehulster, PhD, TDH Infectious Disease Epidemiology and Surveillance Division.

Adapted from: CDC. MMWR, May 14, 1993:**42** (RR-6). Recommendations and Reports. Prevention and Control of Influenza: Part I, Vaccines. Recommendations of the Advisory Committee on Immunization Practices (ACIP).

References

Murphy, KR, and Strunk, RC. 1985. Safe administration of influenza vaccine in asthmatic children hypersensitive to egg proteins. J. Pediatr. **106**:931-933.

CDC. MMWR, August 13, 1993:**42**(31). Final results: Medicare influenza vaccine demonstration - selected states, 1988-1992, p.601-604.

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Influenza Activity This Season

Three large outbreaks of influenza-like illness occurred in southern Louisiana between August 12 and September 4. Two of these outbreaks occurred in nursing homes, and the third among workers on a dredging barge in a southeastern Louisiana river. A/Beijing (H3N2) has been isolated from patients in all three clusters. Subsequent to these outbreaks, the Texas Department of Health (TDH) has received reports of influenza-like illness from physicians in northern and eastern Texas. These illnesses were characterized by fever, malaise, chills, and myalgias and seem to respond when treated with Amantadine. Using virus isolation, TDH is attempting to confirm the cause of these illnesses.

Verified reports of influenza virus isolation serve as indicators of the beginning of the season. Although no confirmed influenza virus activity has been reported in Texas as of September 21, the confirmed Louisiana outbreaks, combined with the influenza-like illnesses reported in Texas, point to the likelihood of an early influenza season in Texas. For this reason, TDH has begun its virus surveillance a month early.

Medical epidemiologists expect that influenza A/Beijing (H3N2) will be the predominant virus during the 1993-94 season. Based on observations of past H3N2 seasons, persons >65 years of age are at highest risk of developing severe complications associated with influenza A (H3N2) virus. Although vaccinating the elderly against influenza should substantially reduce morbidity and mortality, only 30% of persons >65 years of age usually are vaccinated for influenza.

Efforts to develop effective strategies for increasing vaccine coverage led to the Medicare Influenza Vaccine Demonstration program, a four-year study of vaccine coverage, vaccine effectiveness, and cost-effectiveness. Because of favorable results in all three parts of the study, influenza vaccine was made a covered benefit for all Medicare B beneficiaries as of May 1, 1993. Health-care providers such as physicians, hospitals, skilled-nursing facilities, home health agencies, and public health departments can now bill Medicare for reimbursement for the cost of influenza vaccine and the cost of its administration. The billing codes are 90724 and Q0124, respectively. Health care providers with questions regarding Medicare, Part B coverage for influenza vaccine can call (903)463-4495 for additional information.

Recommendations regarding the use of antiviral therapies specific for the treatment of influenza A infections will appear in an upcoming issue of *DPN*. For further information regarding the availability and use of influenza vaccine, contact the TDH Immunization Division at 512/458-7284. For general information about the epidemiology of influenza and laboratory identification of influenza viruses in Texas, contact the TDH Infectious Diseases Epidemiology and Surveillance Division at 512/458-7328.

No confirmed influenza cases have been reported in Texas this fall, but flu-like illness has already occurred in Louisiana.

Prepared by: Lynne Sehulster, PhD, TDH.

Acknowledgement

We would like to thank Dr. W. Paul Glezen, M.D., Medical Epidemiologist for the Influenza Research Center at Baylor College of Medicine, for his continued support as our primary influenza consultant.

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FDA Safety Alert

Hazards of Volume Ventilators and Heater Humidifiers

The Federal Drug Administration (FDA) has received several reports of patient deaths and injuries resulting from malfunctioning volume ventilators and/or heated humidifiers, and urges health professionals to take certain precautions.

Attention!
- Hospital Administrators
- Respiratory Therapy Departments
- Anesthesiology Departments
- Critical Care Units
- Operating Rooms
- Home Healthcare Services
- Biomedical/Clinical Laboratories
- Risk Managers:

Three patients died in a fire believed to have originated in either a Puritan-Bennett IA humidifier or in the Puritan-Bennett 7200 series ventilator to which the humidifier was attached. This incident is still being investigated. In another incident, an employee sustained electrical injury requiring hospitalization when a Puritan-Bennett 7200 series ventilator chassis became electrically live as a result of a damaged power cord inside the unit. The Center for Devices and Radiological Health (CDRH) of National Regional State Telecommunications Exchange Network (NRSTEN) received reports that units from all series of Puritan-Bennett Cascade humidifiers and Puritan-Bennett ventilators have been associated with fires and/or overheating, and also that humidifiers and volume ventilators from other firms have overheated.

To prevent further deaths and injuries, FDA recommends that the use of all volume ventilators and heated humidifiers in both health care facilities and homes be used with the following precautions:

- Immediately remove from service any heated humidifier or volume ventilator which has shown signs of overheating, smoking or electrical malfunction (e.g., sparking or causing shocks). Do not return these units to service until they have been evaluated for safety by an authorized factory representative or other authorized personnel and repaired if necessary.

- Use an audio temperature alarm that senses gas temperature in the line delivering gas to the patient or any humidifier used in conjunction with a volume ventilator. Be sure to test the alarm periodically for proper functioning.

- Review the service and maintenance records for volume ventilators and heated humidifiers to assure that they currently meet all service recommendations of the manufacturer. (For example, Puritan-Bennett recommends replacing the thermoswitch in the Cascade I series humidifiers every five years.) Reviewing service records is especially important for used or remanufactured equipment.

- Check power cords regularly for damage both inside and outside the unit.

- Assure that power cords are properly fitted with strain relief devices inside the chassis.

If you have any questions pertaining to this safety alert or wish to report a problem with a unit, please contact D. Bruce Burlington, M.D., Director, or Sue Ellen Bounds, Office of Surveillance and Biometrics, Center for Devices and Radiological Health, FDA, 1390 Piccard Drive, Rockville, MD, (301)594-1156, Fax 301-594-1967.

Monthly Statistical Summary of Selected Reportable Diseases

Selected Diseases/Conditions	HHSC Region 1	2	3	4	5	6	7	8	9	10	11	Selected Texas Counties Bexar	Dallas	El Paso	Harris	Hidalgo	Nueces	Tarrant	Travis	This Period 1992	1993	Cumulative[1] 1992	1993
Sexually Transmitted Diseases[2]																							
Syphilis, primary and secondary	1	8	151	8	35	94	31	10	5	1	4	8	70	1	69	0	3	59	14	559	348	2258	1731
Congenital Syphilis	0	0	9	0	1	23	3	1	0	0	1	1	2	0	18	0	0	2	0	54	38	215	138
Resistant Neisseria gonorrhoeae	1	0	30	0	0	12	28	24	0	0	0	23	13	0	11	0	0	6	1	129	95	1038	386
Enteric Diseases																							
Salmonellosis	26	12	23	7	1	12	15	10	23	20	11	0	10	19	4	0	6	0	6	481	160	1247	928
Shigellosis	18	20	45	6	2	37	67	47	44	26	55	4	20	26	19	0	40	3	46	698	457	2148	2755
Hepatitis A	13	7	50	11	1	16	9	19	4	19	31	5	34	19	13	13	4	3	7	325	180	1144	1194
Campylobacteriosis	4	2	12	1	1	6	11	7	7	10	4	3	9	10	1	0	3	1	6	242	64	731	505
Bacterial Infections																							
H. influenzae, invasive	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	6	3	29	29
Meningococcal, invasive	1	0	3	0	0	1	1	0	0	0	0	0	1	0	0	0	0	1	1	15	6	82	87
Lyme disease	0	0	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	19	3	93	20
Vibrio species	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	9	5
Other Conditions																							
Influenza & flu-like illness	15	188	8	116	0	224	8	62	158	100	466	0	0	100	219	0	399	6	0	1498	1345	34976	198166
AIDS[4]	14	10	211	16	16	202	79	79	15	14	30	73	133	13	157	11	9	48	42	547	757	2168	5448
Hepatitis B	7	5	20	8	3	5	13	1	1	1	2	0	13	1	2	0	0	1	10	236	66	1138	725
Adult elevated blood lead levels	3	0	14	0	0	0	0	60	0	1	0	60	14	1	0	0	0	0	0	80	78	322	300
Animal rabies - total	0	5	5	0	0	2	15	11	13	3	18	1	1	3	2	2	1	0	11	44	72	327	953
Animal rabies - dogs and cats	0	1	0	0	0	0	1	1	0	0	2	0	0	0	0	1	0	0	0	2	5	40	63
Tuberculosis Disease[2]																							
Children (0-14 years)	0	0	1	0	0	9	1	3	0	2	12	1	0	0	7	5	0	0	1	72	28	131	94
Adults (>14 years)	5	3	92	20	16	172	37	38	3	18	49	29	45	20	145	20	3	40	21	408	453	1290	1328
Injuries[2,3]																							
Spinal Cord Injuries	0	0	7	5	2	6	8	5	0	1	0	5	1	1	3	0	0	4	1	15	34	112	222

1. Cumulative to this month.
2. Data for the STD's, Tuberculosis, and spinal cord injuries are provided by date of report, rather than date of onset.
3. Voluntary reporting.
4. AIDS totals include reported cases from Texas Department of Corrections, which are not included in the regional and county totals. March and April numbers reflect the new case definition and clean-up process.

1992 POPULATION ESTIMATES

HHSC REGIONS			
1	749,158	7	1,785,214
2	530,279	8	1,849,649
3	4,457,134	9	528,345
4	919,677	10	647,298
5	676,718	11	1,416,866
6	4,055,407		

SELECTED TEXAS COUNTIES			
Bexar	1,225,595	Hidalgo	408,450
Dallas	1,923,031	Nueces	300,700
El Paso	622,966	Tarrant	1,277,625
Harris	2,931,867	Travis	593,536

DHHS Regions

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Vaccine-Preventable Disease Update

Suspected and/or confirmed cases with onsets from 7/1/93-8/31/93

Condition	County	Number of Cases	Date of Onset
Measles	Dallas	2	7/4
			7/8
	Grayson	1	7/6
	Harris	1	7/1
	Hamilton	1	7/28
	Henderson	1	8/30*
	Houston	1	7/4
	McLennan	1	8/21
	Robertson	1	8/7
	Tarrant	1	8/28
	Travis	1	7/23
	Val Verde	1	8/18
	Ward	1	7/30
	Wood	1	8/25
Rubella	Bee	1	8/19
	Dallas	1	7/27
	Delta	1	8/9
	Maverick	1	7/26
	Midland	1	8/19
	Nueces	1	7/9
	Smith	1	7/13
Rubella	Tarrant	1	7/15
	Travis	1	8/17
	Ward	1	7/19
	Webb	1	8/31*
Pertussis	Angelina	1	8/25
	Bexar	2	7/16
			7/21
	Brazos	4	7/10
			7/25
			7/27
			8/1
	Cass	1	8/10
	Collin	1	7/25
	Dallam	1	8/3
	Dallas	11	8/15
	Denton	1	7/26
	El Paso	1	8/9
	Harris	1	7/19
	Potter	1	8/18
	Robertson	1	8/26*
	Tarrant	1	7/18
	Taylor	1	7/2
	Victoria	1	7/4

YTD	Measles	Rubella	Pertussis
	144	80	79

* Latest known onset

Errata

Table 1 on page 3 of Vol. 53, No.19 contained two typographic errors. In Table 1 (page 3) the first listed range of dates should be 1986-1989 instead of "1986-1988," and "Rate/10,00 Live Births" should be Rate/10,000 Live Births. In Rabies Update, the 13 dogs were exposed by rabid coyotes rather than "the rabid coyote," and "euthanized" should be spelled euthanitized. For Childhood Lead Poisoning in Texas, the author, Dr. Linda Prentice is with the Bureau of Maternal and Child Health, not Child Care.