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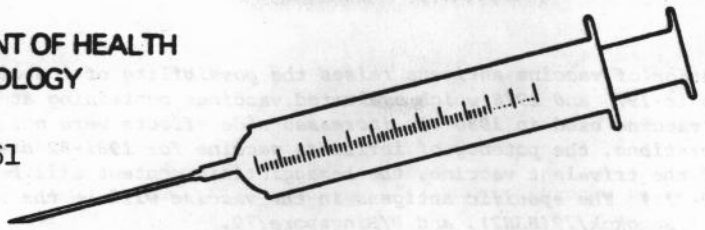

# EPIDEMIOLOGY BULLETIN

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## RECOMMENDATION OF THE PUBLIC HEALTH SERVICE IMMUNIZATION PRACTICES ADVISORY COMMITTEE

### INFLUENZA VACCINE 1981-82

*This annual revision of influenza vaccine recommendations updates information on influenza activity in the United States during 1980-81 and provides information on the vaccine to be available for the 1981-82 influenza season.*

### INTRODUCTION

*Influenza virus infections occur every year in the United States but vary greatly in incidence and geographic distribution. Infections may be asymptomatic, or they may produce a spectrum of manifestations, ranging from mild upper-respiratory infection to pneumonia and death. Influenza A and B viruses are responsible for only a small portion of all respiratory disease. However, they are unique in their ability to cause periodic widespread outbreaks of febrile respiratory disease in both adults and children.*

*Influenza epidemics are frequently associated with deaths in excess of the number normally expected. During the period 1968-1981, more than 150,000 excess deaths are estimated to have occurred during epidemics of influenza in the United States. Preliminary data indicate that excess mortality in the 1980-81 influenza season, especially among the elderly, was the highest recorded since the influenza pandemic of 1968-69.*

*Efforts to prevent or control influenza in the United States have been aimed at protecting those at greatest risk of serious illness or death. Observations during influenza epidemics indicate that influenza-related deaths occur primarily in chronically ill children and adults and in older persons, especially those over age 65. Therefore, annual vaccination is recommended for these high-risk persons.*

*Influenza A viruses are classified into subtypes on the basis of 2 antigens: hemagglutinin (H) and neuraminidase (N). Three subtypes of hemagglutinin (H1-H3) and 2 subtypes of neuraminidase (N1, N2) are recognized among viruses causing widespread disease in humans. Immunity to these antigens, especially hemagglutinin, reduces the likelihood of infection and reduces the severity of disease in infected persons. However, there may be sufficient antigen variation (antigen drift) within the same subtype over time so that infection or immunization with 1 strain may not induce immunity to distantly related strains. Although influenza B viruses have shown much more antigenic stability than influenza A viruses, antigen variation does occur. It was noted in the 1979-80 influenza season. As a consequence, the antigen characterization of current strains is very important in selecting the virus strain(s) to be included in the vaccine.*

*The predominant influenza viruses causing illness in the United States during 1980-81 were influenza A(H3N2) strains, generally closely related to A/Bangkok/1/79. All age groups were affected. As in the preceding 3 years, influenza A(H1N1) viruses circulated primarily among children and young adults but caused few documented outbreaks. The majority of H1N1 isolates resembled A/England/333/80, a strain shown by sensitive laboratory methods to be slightly different from A/Brazil/11/78. Tests of antibody responses to vaccines indicate that vaccines containing A/Brazil/11/78 antigen should protect against the H1N1 strains that were prevalent in 1980-81.*

*No outbreaks caused by influenza B virus were detected.*

### INFLUENZA VIRUS VACCINES FOR 1981-82

*Field studies of influenza vaccines conducted on many occasions since the 1940s have shown marked variation in vaccine efficacy, ranging from undemonstrable to 70%-80%. The general explanation for these findings has been the relative "match" between vaccine antigens, necessarily selected almost a year in advance, and the viruses ultimately causing disease - an example of antigen drift. In recent years, titers of antibody induced by vaccines were sometimes low with respect to strains which became prevalent - one explanation for the lower-than-expected vaccine effectiveness sometimes observed. One way to improve vaccine effectiveness against viruses that have undergone some antigen drift is to increase the concentration of related antigens in the vaccine. This increases antibody levels not only against vaccine strains but also against related strains.*

*Increasing the concentration of vaccine antigens raises the possibility of inducing more side effects. However, in studies in 1976 and 1978 which evaluated vaccines containing at least twice the amount of antigen as the vaccine used in 1980-81, increased side effects were not observed.*

*In view of these considerations, the potency of influenza vaccine for 1981-82 has been doubled. For each component antigen of the trivalent vaccine, the hemagglutinin content will be 15 mcg./0.5 ml dose. (It was 7 mcg. in 1980-81.) The specific antigens in the vaccine will be the same as those in 1980-81: A/Brazil/78(H1N1), A/Bangkok/79(H3N2), and B/Singapore/79.*

*Persons 29 years old and older will require only 1 dose. Because of lack of previous contact with H1N1 strains, persons less than 29 years of age who did not receive at least 1 dose of the 1978-79, 1979-80, or 1980-81 trivalent vaccine will require 2 doses of the 1981-82 vaccine. Those who did receive the 1978-79, 1979-80, or 1980-81 vaccine will require only 1 dose. The 1981-82 vaccine will be available as whole-virion (whole-virus) and subvirion (split-virus) preparations. Based on past data, split-virus vaccines have been associated with somewhat fewer side effects in children than whole-virus vaccines. Thus, only split-virus vaccines are recommended for persons less than 13 years old.*

## VACCINE USAGE

### General Recommendations

*Annual vaccination is strongly recommended for all persons, children and adults, who are at increased risk of adverse consequences from infections of the lower respiratory tract. Conditions predisposing to such risk include 1). acquired or congenital heart disease with actually or potentially altered circulatory dynamics, such as mitral stenosis, congestive heart failure, or pulmonary vascular overload; 2). any chronic disorder with compromised pulmonary function, such as chronic obstructive pulmonary disease, bronchiectasis, tuberculosis, severe asthma, cystic fibrosis, neuromuscular and orthopedic disorders with impaired ventilation, and residual pulmonary dysplasia following the neonatal respiratory distress syndrome; 3). chronic renal disease with azotemia or the nephrotic syndrome; 4). diabetes mellitus and other metabolic diseases with increased susceptibility to infection; 5). chronic, severe anemia, such as sickle cell disease; and 6). conditions which compromise the immune mechanism, including certain malignancies and immunosuppressive therapy.*

*Vaccination is also generally recommended for older persons, particularly those over age 65, because excess mortality in influenza outbreaks occurs in this age group.*

*In balancing the benefits, risks, and costs for the community, some localities have elected to vaccinate persons who provide essential community services and medical care personnel who are at increased risk of exposure. Uniform recommendations cannot be made about this matter. However, vaccination programs for community groups should not take precedence over vaccination of persons specified to be at high risk.*

*Table 1 summarizes vaccine and dosage recommendations by age group for 1981-82.*

**TABLE 1. Influenza vaccine* dosage, by age, 1981-82**

| Age group | Product | Dosage (ml) | Number of doses |
|---|---|---|---|
| 29 years and older | whole virion (whole virus) or subvirion (split virus) | 0.5 | 1 |
| 13-28 years | whole virion (whole virus) or subvirion (split virus) | 0.5 | 2† |
| 3-12 years | subvirion (split virus) | 0.5 | 2† |
| 6-35 months‡ | subvirion (split virus) | 0.25 | 2† |

*Contains 15 μg each of A/Brazil/78, A/Bangkok/79, and B/Singapore/79 hemagglutinin antigens in each 0.5 ml.

†4 weeks or more between doses; both doses essential for good protection, unless the individual received at least 1 dose of 1978-79, 1979-80, or 1980-81 vaccine. In the latter instance, 1 dose is sufficient.

‡Based on limited data. Since the likelihood of febrile convulsions is greater in this age group, special care should be taken in weighing relative risks and benefits.

### Use in Pregnancy

*Physicians should evaluate pregnant women's need for influenza immunization on the same basis used for other persons, that is, vaccination should be advised for pregnant women who have underlying high-risk conditions. Only in the pandemics of 1918-19 and 1957-58 was there persuasive evidence that influenza infection increased maternal mortality.*

*When vaccine is to be given in pregnancy, however, it is reasonable to avoid giving it during the first trimester. There is no evidence to suggest that influenza vaccine carries any maternal or fetal risk, and being inactivated, it does not share any of the theoretical risks of live-virus-vaccine infection of the fetus. Nonetheless, waiting until the second or third trimester should minimize any concern over teratogenicity.*

*SIDE EFFECTS AND ADVERSE REACTIONS*

*Based on data accumulated during extensive studies in 1976 and 1978, the increased concentration of antigens in the 1981-82 influenza vaccine should not significantly increase the frequency or severity of side effects. Vaccines used in recent years have generally been associated with only a few reactions; local redness and induration at the site of injection lasting 1 or 2 days have been observed in less than one-third of vaccinees. Systemic reactions have been of 3 types:*

*1. Fever, malaise, myalgia, and other systemic symptoms of toxicity, although infrequent, occur more often in children and others who have had no experience with influenza viruses containing the vaccine antigen(s). These reactions, which begin 6-12 hours after vaccination and persist 1-2 days, are usually attributed to the influenza virus itself (even though it is inactivated) and constitute most of the side effects of influenza vaccination.*

*2. Immediate, presumably allergic, responses such as flare and wheal or various respiratory expressions of hypersensitivity occur extremely rarely after influenza vaccination. They probably result from sensitivity to some vaccine component, most likely residual egg protein. Although current influenza vaccines contain only a small quantity of egg protein, on rare occasions they can induce hypersensitivity reactions. Individuals with anaphylactic hypersensitivity to eggs should not be given influenza vaccine. This would include persons who, on eating eggs, develop swelling of the lips or tongue or experience acute respiratory distress or collapse.*

*3. Guillain-Barré syndrome (GBS) is an uncommon illness characterized by ascending paralysis, usually self-limited and reversible. Although most persons with GBS recover without residual weakness, approximately 5% of cases are fatal. Before 1976, no association of GBS with influenza vaccination was recognized. That year, however, GBS appeared with excess frequency among persons who had received the A/New Jersey/76 (swine) influenza vaccine. For the 10 weeks following vaccination, the excess risk was found to be approximately 10 cases of GBS for every million persons vaccinated - an incidence 5-6 times higher than that in unvaccinated persons. Younger persons (under 25 years) had a lower relative risk than others and also had a lower case-fatality rate.*

*Data on the occurrence of GBS have been collected during the 3 influenza seasons since active surveillance began in 1978. They show no clear association between influenza vaccination and GBS. Surveillance is continuing, but available evidence indicates that any risk of GBS from influenza vaccine appears to be far lower than the risks associated with influenza in persons for whom the vaccine is indicated. Those who are candidates for influenza vaccine should be given this information.*

*SUPPLEMENTARY MEASURES*

*Annual immunization continues to be the most important way to prevent influenza and should become routine for all persons at high risk of serious and fatal disease. Supplementary measures intended to reduce the likelihood of exposure in community outbreaks, such as limiting the number of large group events, may delay spread but are not uniformly effective.*

*Amantadine hydrochloride, an antiviral drug, can play a supplementary role in helping prevent influenza A in certain persons and circumscribed groups. It is not a substitute for vaccine and not generally applicable to public health practice, but it may be useful in persons who need protection but have not been vaccinated. Effectiveness is about 70%.*

*Amantadine protects only against influenza A, not influenza B, and must be taken daily for the duration of the epidemic (6-8 weeks, generally) or until active immunity can be expected (about 10-14 days after vaccination). Precaution must be exercised in patients with certain chronic conditions, and there sometimes are mild but occasionally troublesome side effects - especially in older-age patients. Amantadine, being a prescription drug, must be ordered and monitored by a physician. Dosage, precautions, and other information on use are specified in the drug's labeling.*

*SELECTED BIBLIOGRAPHY*

*Amantadine: does it have a role in the prevention and treatment of influenza? A National Institutes of Health consensus development conference. Ann Intern Med 1980, 92(Part 1): 256-8.*

*Galasso GJ, Tyeryar FJ Jr, Cate TR, et al. Clinical studies of influenza vaccines - 1976. J Infect Dis 1977; 136(Suppl): S341-S742.*

*Dowdle WR, Coleman MT, Gregg MB. National history of influenza type A in the United States, 1957-1972. Prog Med Virol 1974; 17:91-135.*

*Eickhoff TC. Immunization against influenza: rationale and recommendations. J Infect Dis 1971; 123:446-54.*

*Kilbourne ED, ed. The influenza viruses and influenza. New York: Academic Press, 1975.*

*Leneman F. The Guillain-Barré syndrome. Definition, etiology, and review of 1,100 cases. Arch Intern Med 1966; 118:139-44.*

*Parkman PD, Galasso GJ, Top FH Jr, Noble GR. Summary of clinical trials of influenza vaccines. J Infect Dis 1976; 134:100-7.*

*Schonberger LB, Bregman DJ, Sullivan-Bolyai JZ, et al. Guillain-Barré syndrome following vaccination in the National Influenza Immunization Program, United States 1976-1977. Am J Epidemiol 1979; 110:105-23.*

*Schonberger LB, Hurwitz ES, Katona P, Holman RC, Bregman DJ. Guillain-Barré syndrome: its epidemiology and associations with influenza vaccination. Ann Neurol 1981; 9(suppl):31-8.*

*Wright PF, Dolin R, LaMontagne JR. Summary of clinical trials of influenza vaccines II. J Infect Dis 1976; 134:633-8.*

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MONTH: May 1981

| DISEASE | STATE | | | | | REGIONS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | THIS MONTH | LAST MONTH | TOTAL TO DATE 1981 | TOTAL TO DATE 1980 | MEAN 5 YEAR TO DATE | THIS MONTH N.W. | N. | S.W. | C. | E. |
| CHICKENPOX | 151 | 406 | 1292 | 245 | 599.6 | 28 | 55 | 24 | 18 | 26 |
| MEASLES | | | 3 | 237 | 908.0 | | | | | |
| MUMPS | 6 | 8 | 65 | 45 | 83.6 | | | 1 | 1 | 4 |
| PERTUSSIS | | | 2 | 2 | 5.2 | | | | | |
| RUBELLA | 1 | 3 | 5 | 25 | 219.2 | 1 | | | | |
| MENINGITIS – ASEPTIC | 6 | 25 | 36 | 25 | 23.6 | 1 | 1 | 2 | 1 | 1 |
| BACTERIAL | 17 | 15 | 107 | 84 | 63.8 | 2 | 5 | 4 | 3 | 3 |
| ENCEPHALITIS – INFECTIOUS | 2 | 2 | 15 | 1 | 6.2 | | 1 | 1 | | |
| POST-INFECTIOUS | | | 2 | 2 | 4.4 | | | | | |
| HEPATITIS A (INFECTIOUS) | 7 | 17 | 77 | 125 | 124.2 | | 3 | 2 | 1 | 1 |
| B (SERUM) | 50 | 46 | 195 | 221 | 153.2 | 8 | 14 | 6 | 15 | 7 |
| SALMONELLOSIS | 173 | 82 | 504 | 322 | 260.6 | 13 | 46 | 27 | 48 | 39 |
| SHIGELLOSIS | 304 | 292 | 750 | 47 | 53.8 | 4 | | 6 | 286 | 8 |
| TUBERCULOSIS – PULMONARY | | | | | | | | | | |
| EXTRA-PULMONARY | | | | | | | | | | |
| SYPHILIS (PRIMARY & SECONDARY) | 56 | 60 | 341 | 219 | 240.6 | | 12 | 5 | 11 | 28 |
| GONORRHEA | 1786 | 1640 | 10150 | 7950 | 9203.6 | | | | | |
| ROCKY MOUNTAIN SPOTTED FEVER | 13 | 1 | 14 | 12 | 19.0 | 1 | 4 | 5 | 3 | |
| RABIES IN ANIMALS | 9 | 2 | 26 | 4 | 7.6 | 7 | | 2 | | |
| MENINGOCOCCAL INFECTIONS | 8 | 11 | 54 | 27 | 30.8 | | 1 | 3 | 2 | 2 |
| INFLUENZA | 47 | 92 | 4828 | 747 | 4445.6 | | 7 | 20 | 18 | 1 |
| MALARIA | 1 | | 10 | 21 | 10.6 | | 1 | | | |
| OTHER: | | | | | | | | | | |
| | | | | | | | | | | |
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COUNTIES REPORTING ANIMAL RABIES: Fauquier-1 cat, Page-1 sk., Rappahannock-1 fox, Rockingham-2 sks., Scott-2 sks., Frederick-1 rac., Warren-1 rac.

OCCUPATIONAL ILLNESSES: Occupational pneumoscomioses-10, occupational dermatoses-2, occupational hearing loss-6, asbestosis-3, carbon monoxide poisoning-1, byssinosis-1, trichloroethylene inhalation-1, mesothelioma-1.

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