Recommended Childhood Immunization Schedule—United States, 2001

MMWR. 2000;50:7-10

Each year, CDC’s Advisory Committee on Immunization Practices (ACIP) reviews the recommended childhood immunization schedule to ensure that it remains current with changes in manufacturers’ vaccine formulations, revisions in recommendations for the use of licensed vaccines, and recommendations for newly licensed vaccines. This report presents the recommended childhood immunization schedule for 2001 and documents the changes that have occurred since the January 2000 publication.4

For 2001, ACIP, the American Academy of Family Physicians, and the American Academy of Pediatrics have added pneumococcal conjugate vaccine to the schedule2 and have extended the recommendation for the use of hepatitis A vaccine to include persons through age 18 years in selected geographic areas and in certain high-risk groups.3 Detailed recommendations for using vaccines are available from the manufacturers’ package inserts, ACIP statements on specific vaccines, and the 2000 Red Book.3 ACIP statements for each recommended childhood vaccine can be viewed, downloaded, and printed from CDC’s National Immunization Program World-Wide Web site, http://www.cdc.gov/nip/publications/ACIP-list.htm.

Pneumococcal Conjugate Vaccine

In February 2000, the Food and Drug Administration licensed a heptavalent pneumococcal polysaccharide-protein conjugate vaccine (PCV) (Prevnar™, Wyeth Lederle Vaccines and Pediatrics, Philadelphia, Pennsylvania) for use among infants and young children. All children aged 2-23 months should receive four doses of PCV intramuscularly at ages 2, 4, 6, and 12-15 months. ACIP also recommends the vaccine for children aged 24-59 months who are at increased risk for pneumococcal disease (e.g., children with sickle cell hemoglobinopathies, human immunodeficiency virus infection, and other immunocompromising or chronic medical conditions). For these children, ACIP recommends two doses of PCV administered 2 months apart followed by one dose of a 23-valent pneumococcal polysaccharide vaccine (PPV 23) administered two or more months after the second dose of PCV. ACIP also recommends that PCV be considered for all other children aged 24-59 months, with priority given to children aged 24-35 months, American Indian/Alaska Native and black children, and children who attend child-care centers. ACIP recommends one dose of PCV for children in these groups. Additional information on the use of PCV can be found in the ACIP statement.2

Hepatitis A Vaccination Recommendation

ACIP continues to recommend hepatitis A vaccine (Hep A) for routine use in some states and regions. For 2001, the recommendation has been extended to include adolescents through age 18 years and for persons in certain high-risk groups (i.e., persons traveling to countries where hepatitis A is moderately or highly endemic, men who have sex with men, users of injectable and noninjectable drugs, persons who have clotting-factor disorders, persons working with nonhuman primates, and persons with chronic liver disease). The hepatitis A vaccine label is shaded on the 2001 Immunization Schedule to indicate its use in selected states and regions, and for certain high-risk groups. Providers can contact their local public health authority for the current recommendations for hepatitis A vaccination in their community. Additional information on the use of Hep A can be found in the ACIP statement.3

Vaccine Information Statements

The National Childhood Vaccine Injury Act requires that all health-care providers give to parents or patients copies of Vaccine Information Statements before administering each dose of the vaccines listed in this schedule. Vaccine Information Statements, developed by CDC, can be obtained from state health departments and CDC’s World-Wide Web site, http://www.cdc.gov/nip/publications/VIS. Instructions on use of the Vaccine Information Statements are available at http://www.cdc.gov/nip/publications/VIS/vis-Instructions.pdf.

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*Use of trade names and commercial sources is for identification only and does not constitute endorsement by CDC or the U.S. Department of Health and Human Services.
Recommended Childhood Immunization Schedule¹—United States, January-December 2001

| Vaccine                          | Birth | 1 mo | 2 mos | 4 mos | 6 mos | 12 mos | 15 mos | 18 mos | 24 mos | 4-6 yrs | 11-12 yrs | 14-18 yrs |
|----------------------------------|-------|------|-------|-------|-------|--------|--------|--------|--------|---------|-----------|-----------|
| Diphtheria and Tetanus Toxoids and Pertussis³ | DTaP  | DTaP | DTaP  | DTaP  | DTaP  | Td      |        |        |        |         |           |           |
| Haemophilus influenzae type b⁴   | Hib   | Hib  | Hib   | Hib   | Hib   |        |        |        |        |         |           |           |
| Inactivated Polio⁵               | IPV   | IPV  | IPV   | IPV   | IPV   |        |        |        |        |         |           |           |
| Pneumococcal Conjugate⁶          | PCV   | PCV  | PCV   | PCV   | PCV   | MMR    | MMR    | Var    |        |         |           |           |
| Measles-Mumps-Rubella⁷           |       |      |       |       |       |        |        |        |        |         |           |           |
| Varicella⁸                       |       |      |       |       |       |        |        |        |        |         |           |           |
| Hepatitis A⁹                     |       |      |       |       |       |        |        |        |        |         |           |           |

¹ This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines as of November 1, 2000, for children through age 18 years. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Providers should consult the manufacturer's package inserts for detailed recommendations.

² Infants born to hepatitis B surface antigen (HBsAg)–negative mothers should receive the first dose of hepatitis B vaccine (Hep B) by age 2 months. The second dose should be administered at least 1 month after the first dose. The third dose should be administered at least 4 months after the first dose and at least 2 months after the second dose, but not before age 6 months. Infants born to HBsAg–positive mothers should receive Hep B at 0.5 mL hepatitis B immune globulin (HBIG) within 12 hours of birth at separate sites. The second dose is recommended at age 1-2 months and the third dose at age 6 months. Infants born to mothers whose HBsAg status is unknown should receive Hep B within 12 hours of birth. Maternal blood should be drawn at delivery to determine the mother’s HBsAg status; if the HBsAg test is positive, the infant should receive HBIG as soon as possible (no later than age 1 week). All children and adolescents (through age 18 years) who have not been immunized against hepatitis B should begin the series during any visit. Providers should make special efforts to immunize children who were born in or whose parents were born in areas of the world where hepatitis B virus infection is moderately or highly endemic.

³ The fourth dose of diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP) may be administered as early as age 12 months, provided 6 months have elapsed since the third dose and the child is unlikely to return at age 15-18 months. Tetanus and diphtheria toxoids (Td) is recommended at age 11-12 years if at least 5 years have elapsed since the last dose of diphtheria and tetanus toxoids and pertussis vaccine (DTP), DTaP, or diphtheria and tetanus toxins (DT). Subsequent routine Td boosters are recommended every 10 years.

⁴ Three type b (Hib) conjugate vaccines are licensed for infant use. If Hib conjugate vaccine (PRP-OMP) (PedvaxHIB or Comvax [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required. Because clinical studies in infants have demonstrated that using some combination products may induce a lower immune response to the Hib vaccine component, DTaP/Hib combination products should not be used for primary immunization in infants at ages 2, 4 or 6 months unless approved by the Food and Drug Administration for these ages.

⁵ An all-inactivated poliovirus vaccine (IPV) schedule is recommended for routine childhood polio vaccination in the United States. All children should receive four doses of IPV at age 2 months, age 4 months, between ages 6 and 18 months, and between ages 4 and 6 years. Oral poliovirus vaccine should be used only in selected circumstances (1).

⁶ The heptavalent pneumococcal conjugate vaccine (PCV) is recommended for all children age 2-23 months. It is also recommended for certain children age 24-59 months (2).

⁷ The second dose of measles, mumps, and rubella vaccine (MMR) is recommended routinely at age 4-6 years but may be administered during any visit, provided at least 4 weeks have elapsed since receipt of the first dose and that both doses are administered beginning at or after age 12 months. Those who previously have not received the second dose should complete the schedule no later than the routine visit to a health-care provider at age 11-12 years.

⁸ Varicella vaccine (Var) is recommended at any visit on or after the first birthday for susceptible children (i.e., those who lack a reliable history of chickenpox [as judged by a health-care provider] and who have not been immunized). Susceptible persons aged 13 years should receive two doses given at least 4 weeks apart.

⁹ Hepatitis A vaccine (Hep A) is recommended for use in selected states and/or regions, and for certain high-risk groups. Information is available from local public health authorities (3).

Additional information about the immunization schedule is available on the National Immunization Program World-Wide Web site, http://www.cdc.gov/nip, or by telephone, (800) 232-2522 (English) or (800) 232-0233 (Spanish).
Underdiagnosis of Dengue—Laredo, Texas, 1999

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DENGUE OUTBREAKS HAVE BEEN REPORTED in communities along the Mexico-U.S. border since 19801; however, during 1987-July 1999, no cases were reported from Laredo, Texas (1999 population: 162,000). During January–July 1999, approximately 300-325 dengue cases were reported from Nuevo Laredo, Tamaulipas, Mexico (1999 population: 274,000), a city across the Rio Grande from Laredo. To determine whether undiagnosed or unreported dengue cases had occurred in Laredo, the Texas Department of Health (TDH) reviewed medical records from five Laredo health facilities (the two city hospitals and the three largest of five community clinics). This report summarizes the findings of the review, which indicated that during July 23–August 20, 1999, 50% of suspected case-patients had undiagnosed dengue infection. Recognition of the diagnosis of dengue can be improved through heightened surveillance, professional and public education, and prompt reporting of cases by the health-care providers to local or state health departments.

Symptoms reported by the 11 confirmed case-patients included fever (100%), arthralgias (73%), headache (64%), malaise (64%), and rash (45%). Discharge diagnoses of "viral syndrome" or "viral fever" were given to nine (82%) and "flu-like illness" were given to two (18%). Nine case-patients reported a history of travel like illness were given to two (18%). Nine case-patients reported a history of travel to Mexico within 2 weeks of illness onset; two had not been outside Texas.

Confirmed case-patients included fever (100%), arthralgias (73%), headache (64%), malaise (64%), and rash (45%). Eight of 11 patients had fever for >3 days and eight of 11 had rash. Four of 11 patients were admitted to hospital for dengue fever or dengue hemorrhagic fever (DHF). The case-fatality rate was 0%.

Forty-nine suspected dengue case-patients were identified from 494 records; 24 (49%) were located and interviewed. Of these, 22 (92%) agreed to provide a serum sample. Eleven case-patients had serologic evidence of recent dengue infection; 10 (91%) of the 11 tested positive for both IgM and IgG antibodies. One case-patient was negative for IgM antibodies but had a fourfold increase in IgG antibody titers over a 3-month period. Symptoms reported by the 11 confirmed case-patients included fever (100%), arthralgias (73%), headache (64%), malaise (64%), and rash (45%). Discharge diagnoses of "viral syndrome" or "viral fever" were given to nine (82%) and "flu-like illness" were given to two (18%). Nine case-patients reported a history of travel to Mexico within 2 weeks of illness onset; two had not been outside Texas.

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CDC Editorial Note: Dengue is an arboviral illness of tropical and subtropical areas commonly transmitted by Aedes aegypti mosquitoes.2,3 Approximately 2.5 billion persons live in regions where dengue is endemic and 50-100 million infections occur annually.2,4 Although infection may result in lifelong homotypic immunity, cross-protective immunity does not occur among the four dengue virus serotypes. Infection with any dengue serotype can be asymptomatic or can cause dengue, dengue hemorrhagic fever (DHF), or dengue shock syndrome (DSS). DHF and DSS are life-threatening conditions.5 Since the 1970s, outbreaks of dengue, DHF, and DSS have increased in frequency and severity in the Americas and the Caribbean.6,7 Dengue may present as an undifferentiated febrile illness and unless physicians retain a high level of suspicion, a dengue diagnosis may be missed easily in areas where the virus is not endemic. Laboratory testing is necessary for diagnostic confirmation. Acute- and convalescent-phase serum samples should be obtained for diagnosis and sent for confirmation to state or territorial health department laboratories. Serum samples should be accompanied by a summary of clinical and epidemiologic information, including onset date, sample collection date, and a travel history for the 3 weeks before illness onset.

An estimated two million crossings occur each month between Laredo and Nuevo Laredo, and Aedes aegypti is found in both cities. Movement of infected persons can introduce the virus into dengue-free areas. Travelers to regions where dengue is endemic should avoid exposure to mosquito bites by using repellents and protective clothing and by staying in well-screened or air-conditioned quarters. Residents of areas where dengue is endemic and Mexico-U.S. border communities can reduce the Aedes aegypti population in and around homes by changing water in bird baths or flower vases daily, tightly covering stored water receptacles, and eliminating old tires, containers, tree holes, and other potential mosquito breeding sites.

Following identification of dengue cases, the Laredo Health Department implemented mosquito reduction activities (e.g., aggressive refuse and tire disposal campaigns and insecticide fogging). Dengue alerts were sent to health-care providers, and mosquito reduction and personal protection information was distributed through health fairs and schools. Information exchange increased substantially between health officials from Laredo and Nuevo Laredo. Although no suspected cases were reported before the alerts were issued, 161 suspected dengue cases were reported during mid-August–December 1999; 18 cases tested positive for dengue. No positive cases were reported from Laredo in 2000.

When a case of dengue is confirmed in a community, the public health response should include education of health-care providers and the public, intensified surveillance, and enhanced vector-control activities. Additional information about dengue is available on the World-Wide Web, http://www.cdc.gov/ncidod/dvbid/dengue.htm.

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Epilepsy is a central nervous system disorder characterized by unprovoked, recurrent seizures that may affect physical, mental, or behavioral functioning. In 1995, approximately 2.3 million persons residing in the United States had epilepsy. Approximately 181,000 new cases of epilepsy are diagnosed each year, with annual estimated costs of $12.5 billion in medical care and lost productivity. Because epilepsy has a substantial impact on health (e.g., physical and psychosocial difficulties, side effects of anticonvulsant therapy, lifestyle restrictions, and perceived stigmatization), self-reported physical and mental health-related quality of life (HRQOL) measures are useful in gauging the impact of epilepsy on persons with the disorder. Persons with chronic health disorders are at risk for impaired HRQOL. Few studies have examined the HRQOL of persons with epilepsy, and none has used a representative sample of adults residing in the United States. This report examines data from the 1998 Texas Behavioral Risk Factor Surveillance System (BRFSS) that included a question about epilepsy; findings indicate that persons with epilepsy reported substantially worse HRQOL than persons without epilepsy. Community-based interventions such as the Sepulveda Epilepsy Education Program that address medication self-management, psychosocial self-management, and other education interventions can improve the quality of life for persons with epilepsy.

BRFSS data are weighted to reflect the age, sex, and racial/ethnic distribution of the state's estimated population during the survey year. The standard survey used in all states includes four self-rated questions: general health status, number of days during the 30 preceding the survey when physical health was not good, number of days during the preceding 30 when mental health was not good, and number of days during the preceding 30 when activity was limited as a result of poor physical or mental health. Unhealthy days are the total number of days when physical and mental health were not good, with the total not to exceed 30 days. In 1998, Texas added an optional quality of life module to its healthy days' measures that asked respondents about the nature of their activity limitations and the number of days of pain, depression, anxiety, insufficient sleep or rest, and overall vitality during the preceding 30 days. One question was added about epilepsy.

In Texas in 1998, 52 (1.8%) (95% confidence interval = 1.4-2.1) of 3355 respondents reported having epilepsy. These respondents did not differ in age and sex from those without epilepsy. Those with epilepsy reported substantially worse HRQOL than those without epilepsy; 18 (45.9%) respondents with epilepsy reported fair or poor health compared with 570 (18.5%) of 3290 respondents without epilepsy. Compared with those without epilepsy, respondents with epilepsy reported 4.4 more physically unhealthy days, 5.2 more mentally unhealthy days, 6.4 more overall unhealthy days, 4.0 more recent activity limitation days, 6.8 more days of pain, 5.6 more days of depression, 5.2 more days of anxiety, 3.5 more days of insufficient sleep or rest, and 3.3 fewer days of vitality in the 30 days presurvey.

CDC Editorial Note: On the basis of HRQOL responses to the 1998 Texas BRFSS questionnaire, respondents with epilepsy had substantially worse HRQOL than respondents without epilepsy based on valid HRQOL measures. These findings are comparable with the number of unhealthy days among BRFSS respondents from eight other states with arthritis, heart problems, diabetes, and cancer. Additional study is needed to determine whether the high number of reported days with pain in persons with epilepsy is associated with seizure severity, injuries from seizures, unintended effects of anticonvulsant medications, or other factors. The high number of days with depression and anxiety suggests that this population has high levels of anxiety and low levels of life fulfillment.

The findings in this report are subject to at least four limitations. First, BRFSS excludes persons without telephones, in institutions (e.g., nursing homes and the military), and persons aged <18 years. Second, BRFSS may underrepresent the severely impaired because time and functional capacity are required to participate in BRFSS. Third, it is unclear whether lower levels of HRQOL in persons with epilepsy in this study are a result of the disorder or factors unrelated to epilepsy. Finally, because the sample size of respondents with epilepsy was small, comparisons by sex and racial/ethnic subgroup were limited.

To improve the HRQOL of persons with epilepsy, the International Commission on Outcome Measurement in Epilepsy has recommended further research into the HRQOL among persons with epilepsy. In addition, BRFSS and other surveillance systems can provide data on the health status, behaviors, and HRQOL of persons with epilepsy. State and local health departments can collaborate with health-care providers to develop and promote comprehensive and continual care among minorities, children, the elderly, and other underserved populations. Schools, worksites, and places of worship can educate the public to destigmatize epilepsy, and interventions such as the Sepulveda Epilepsy Education Program can improve medication self-management and psychosocial self-management of epilepsy.

REFERENCES

10 available

*Thirteen persons without epilepsy did not answer, refused to answer, or were unsure about answering the question about general health status.