National, State, and Urban Area Vaccination Coverage Levels Among Children Aged 19-35 Months—United States, July 1996-June 1997

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3 tables omitted

The National Immunization Survey (NIS) is an ongoing survey that provides national estimates of vaccination coverage among children aged 19-35 months based on data for the most recent 12 months for each of the 50 states, the District of Columbia, and 27 other selected urban areas. CDC initiated the NIS in April 1994 to monitor vaccination coverage levels as part of the Childhood Immunization Initiative (CII), a national strategy to ensure high vaccination coverage of children during the first 2 years of life. This report presents NIS findings for July 1996-June 1997, which indicate that vaccination levels among U.S. children aged 19-35 months remain the highest ever recorded. This report also includes the first annualized estimates for varicella vaccine coverage.

NIS uses a quarterly random-digit-dialed sample of telephone numbers for each survey area to collect vaccination information for all eligible children. During July 1996-June 1997, a total of 32,652 household interviews were completed, representing 33,064 children (mean: 424 children per survey area). The overall response rate for eligible households was 67% for all 78 survey areas (range: 55%-80%). For completeness and verification, vaccination data also are requested from vaccination providers. Provider data are weighted to represent the entire group of children surveyed and to account for household nonresponse, natality data, and the lower vaccination coverage levels among children in households without telephones.

Compared with 1996, national vaccination coverage with all individual vaccines and the 4:3:1† and 4:3:1:3‡ series during July 1996-June 1997 remained stable at high levels, except that coverage with hepatitis B vaccine showed a small, but statistically significant, increase of 1.5% (from 81.8% to 83.3%). The national coverage level for varicella vaccine during July 1996-June 1997 was 19%. During the last quarter of this reporting period (April-June 1997), national varicella vaccine coverage was 25%. For July 1996-June 1997, varicella coverage levels ranged from 3% to 33% (median: 17%) among states and from 7% to 33% (median: 16%) among selected urban areas.

During July 1996-June 1997, estimated state-specific coverage levels for the 4:3:1 series ranged from 69% to 91% (median: 79%), and for the 4:3:1:3 series, from 67% to 88% (median: 77%). Estimated coverage levels among selected urban areas ranged from 63% to 86% (median: 77%) for the 4:3:1 series and from 61% to 85% (median: 74%) for the 4:3:1:3 series. Compared with 1996, there were statistically significant changes in state-specific coverage with the 4:3:1 series in West Virginia (from 71% to 80%) and New York (from 79% to 74%); among selected urban areas, changes were statistically significant in Marion County, Indiana (from 72% to 78%), and the District of Columbia (from 78% to 72%). During July 1996-June 1997, the coverage range for 4:3:1:3 among the states narrowed compared with 1996 (range: 67%-88% versus 63%-87%, respectively). For urban areas, the 4:3:1:3 coverage range remained virtually unchanged (61%-85% in July 1996-June 1997 versus 62%-84% in 1996). Compared with 1996, the number of states and selected urban areas that met the 1996 CII coverage goal for three or more doses of hepatitis B vaccine increased from 48 to 50 and from 27 to 28, respectively. The number that met the goal for three or more doses of DTP increased from 48 to 50 states and decreased from 26 to 25 urban areas; urban

| Vaccine/Dose | CII 1996 goals | 12-Month estimate | 3-Month estimate |
|--------------|----------------|-------------------|------------------|
|               | January–December 1996$ | July 1996–June 1997 | April–June 1997 |
|               | % (95% CI) | % (95% CI) | % (95% CI) |
| DTP/DT† | ≥3 Doses | 90% | 95% (±0.4%) | 95% (±0.4%) | 95% (±0.6%) |
|          | ≤4 Doses | — | 81% (±0.7%) | 81% (±0.7%) | 82% (±1.0%) |
| Poliovirus | ≥3 Doses | 90% | 91% (±0.5%) | 91% (±0.5%) | 90% (±0.8%) |
| Hib† | ≥3 Doses | 90% | 92% (±0.5%) | 92% (±0.5%) | 93% (±0.7%) |
| MCV‡ | ≥1 Dose | 90% | 91% (±0.5%) | 90% (±0.5%) | 91% (±0.8%) |
| Hepatitis B | ≥3 Doses | 70% | 82% (±0.7%) | 83% (±0.6%) | 84% (±1.0%) |
| Varicella* | 1 Dose | — | NA* | 19% (±0.6%) | 25% (±1.1%) |
| Combined series | 4 DTP/3 Polio/1 MCV§ | — | 78% (±0.8%) | 78% (±0.7%) | 78% (±1.1%) |
|          | 4 DTP/3 Polio/1 MCV/3 HIB§ | — | 77% (±0.8%) | 76% (±0.8%) | 77% (±1.1%) |

*One of the national health objectives for the year 2000 is to achieve series-complete coverage for the recommended vaccines among ≥90% of children aged 2 years.
†Children in this survey period were born during August 1993–November 1995.
‡Children in this survey period were born during February 1993–May 1995.
§Confidence interval.
||Diphtheria and tetanus toxoids and pertussis vaccine/diphtheria and tetanus toxoids.
||Haemophilus influenzae type b vaccine.
|any measles-containing vaccine; vaccination coverage goals are for measles-mumps-rubella (MMR) vaccine.
|One dose administered on or after the first birthday.
|Not available for this reporting period. Data collection began in July 1996.
|Four or more doses of DTP/DT, three or more doses of poliovirus vaccine, and one or more doses of MCV.
|Four or more doses of DTP/DT, three or more doses of poliovirus vaccine, one or more doses of MCV, and three or more doses of Hib.
areas that did not meet the goal were within 2% below the goal. The number that met the goal for three or more doses of polio vaccine increased from 38 to 40 states and decreased from 17 to 13 urban areas; all remaining states and 13 of the remaining 15 urban areas had coverage levels of 85%-89%. For one or more doses of MCV, the number reaching the 1996 interim coverage goal for measles-mumps-rubella vaccine (MMR) increased from 32 to 37 states, but decreased from 19 to 18 urban areas; all the remaining states and eight of the 10 remaining urban areas had coverage levels of 85%-89%. The number that met the goal for three or more doses of Hib vaccine increased from 41 to 45 states but decreased from 19 to 18 urban areas; all remaining states and nine of the remaining 10 urban areas had coverage levels of 85%-89%. Overall, the number that met all CII vaccination coverage goals, including the goal for hepatitis B vaccine, increased from 30 to 33 states, but decreased from 14 to 11 urban areas.2

CDC Editorial Note: The NIS data in this report indicate that all national coverage goals established by CII for 1996 have been met or exceeded for the vaccines routinely recommended for children. Attainment of these goals reflects the widespread implementation of the comprehensive CII strategy by public- and private-sector organizations and health-care providers at the national, state, and local levels.3 Coverage with hepatitis B vaccine for the second birthday to be fully vaccinated. To overcome this apparent leveling in coverage, and to attain the year 2000 objective of 90% coverage with a complex series, vaccination providers must become even more efficient and effective in ensuring full protection of children. Each day, an estimated 11,000 children are born in the United States, and all must receive 12-16 doses of vaccine before the second birthday to be fully vaccinated. Achievement of the 1996 goals demonstrates that reaching high coverage levels is possible but does not ensure such coverage in the future. Meeting these and other goals at the national, state, and local levels requires a fully functional vaccination delivery system, which remains incomplete in 1998. Important components of this system are state- and community-based computerized vaccination registries, which include all children from birth and can identify children in need of vaccines and recall them for missed vaccinations; ongoing quality assurance and information feedback activities; continuous education programs for parents and health-care providers, which remain to be fully created and implemented; and expanding and strengthening the links to the Special Supplemental Nutrition Program for Women, Infants, and Children.9 CDC will continue to use NIS to monitor and target efforts to improve vaccination coverage levels in the United States.

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For this reporting period (July 1996-June 1997), the NIS included children born during August 1995-November 1995 (median age 11 months).

‡Four or more doses of diphtheria and tetanus toxoids and pertussis vaccine/diphtheria and tetanus toxoids (DTP/DT), three or more doses of polio vaccine, and one or more doses of measles-containing vaccine (MCV).

*Four or more doses of DT/DTP, three or more doses of polio vaccine, one or more doses of MCV, and three or more doses of Haemophilus influenzae type b vaccine (Hib).
Tetanus Among Injecting-Drug Users—California, 1997

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DURING 1997, 47 cases of tetanus were provisionally reported in the United States; 11 of these were reported from California. Of these 11, six (55%) occurred among injecting-drug users (IDUs). The substantial proportion of cases among IDUs prompted a review of reported tetanus cases in California. This report summarizes reported cases of tetanus in IDUs in California during 1987-1997 and presents two case reports for 1997.

Summary of Cases

The annual number of tetanus cases in IDUs in California has increased steadily from one in 1987 to six in 1997. Of 67 cases of tetanus reported in California during 1987-1997, a total of 27 (40%) occurred in IDUs. Of these IDUs, 24 (89%) were Hispanic. Of the 27 cases of tetanus in IDUs, 24 (89%) had no antecedent injuries other than drug injection. Abscesses were observed at injection sites for 18 (69%) patients. Information about injecting technique was provided for 14 patients, all of whom reported subcutaneous injection (i.e., “skin popping”). All 10 patients for whom the specific drug injected was reported had used heroin, either exclusively or with other drugs.

Case Reports

Case 1. In June 1997, the California Department of Health Services received a report of tetanus in a 59-year-old Hispanic woman who had injected heroin intermittently throughout her life. She had resumed daily heroin injection 2 years before onset of disease. On June 18, she sought treatment for opisthotonus at a local emergency department. Tetanus was diagnosed, and she was hospitalized that day. She had multiple abscesses at injection sites on her arms and feet. Despite mechanical ventilation and treatment with tetanus immune globulin (TIG), she died on June 23. Her tetanus vaccination status was unknown. She had had access to sterile syringes, alcohol, and other supplies for injections because her husband was diabetic. Her family indicated she had used hygienic technique when injecting and had not shared injecting equipment.

Case 2. On July 17, 1997, a 45-year-old Hispanic man who had injected heroin subcutaneously five times a day sought treatment at a local emergency department because of respiratory failure and tremors. He reported having used diazepam in an attempt at detoxification, and he was hospitalized that day with a diagnosis of drug withdrawal. He had persistent spasms, and tetanus was diagnosed on July 21. TIG was administered, and he was placed on mechanical ventilation. Clostridium subterminale and Staphylococcus aureus were cultured from a wound on his right arm. He was hospitalized for 13 weeks, including 4 weeks in a rehabilitation hospital, then released. His tetanus vaccination history was unknown.

CDC Editorial Note: When the anaerobe C. tetani colonizes devitalized tissue, the exotoxin tetanospaenin is disseminated to inhibitory motor neurons, resulting in tetanus. The spastic paralysis of tetanus can persist for several weeks. Predisposing wounds include open fractures, abrasions, abscesses, and punctures. The diagnosis is usually made clinically. Patients often require mechanical ventilation, and the case-fatality rate is 25%. Tetanus among IDUs has been reported previously,10 and the Advisory Committee on Immunization Practices considers IDUs to be at high risk for tetanus. In California, subcutaneous injection of Mexican black tar heroin has been associated with a recent increase of wound botulism caused by infection with C. botulinum. The annual number of wound botulism cases reported in California increased from one in 1990 to 23 in 1995. During this period, all but one case occurred among IDUs. Both the spastic paralysis of tetanus and the flaccid paralysis of wound botulism are caused by ubiquitous anaerobic soil bacteria.

During 1987-1997, Hispanics constituted 60% of all patients with tetanus reported in California and 80% of IDU-associated cases. Mexican Americans are the predominant Hispanic population in California. A recent serologic survey indicated that 58% of Mexican Americans, compared with 73% of non-Hispanic whites, had protective levels of antibody to tetanus toxoid. This increased susceptibility may, in part, explain the disproportionate occurrence of tetanus among Hispanic IDUs.

Tetanus cases are reported to local and state health departments through a passive reporting system, and both cases and risk factors probably are underreported.2 Drug use preceding tetanus may be underestimated because of limited reporting by patients or clinicians. Drug injection provides several potential sources for infection with C. tetani, including the drug, its adulterants, injection equipment, and unwashed skin. Although recommendations to prevent transmission of human immunodeficiency virus among IDUs8 may limit infection from contaminated injection equipment, these measures may not be effective against spores inoculated into the skin or contained in the drug. Therefore, prevention efforts should emphasize vaccination for tetanus.

Tetanus is almost entirely preventable through vaccination and appropriate wound care, including administration of TIG when appropriate. A primary series of three doses of tetanus-diphtheria toxoid (Td) and subsequent booster doses of Td every 10 years are highly effective in preventing tetanus.9 IDUs have frequent contact with the medical system but poorer continuity of care10; each clinical encounter should be used for assessment and, when needed, completion of tetanus vaccination.

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