CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

July 10, 1998 / Vol. 47 / No. 26

MMWR™
MORBIDITY AND MORTALITY WEEKLY REPORT

Improper Use of Child Safety Seats — Kentucky, 1996

Since enactment of the Kentucky child restraint law in 1982, the number of motor-vehicle–occupant deaths among children aged 0–4 years has decreased 37% (*1*). A substantial proportion of this decline is attributed to the increased use of child safety seats (CSSs); in 1995, use of CSSs in Kentucky was 72% (*2*). In 1996 in the United States, although approximately 85% of infants and 60% of children aged 0–4 years were restrained, approximately 80% of CSSs were used improperly (*3*). The effectiveness of CSSs in preventing death and injury is reduced when they are used incorrectly (*4,5*). To estimate the rate for improper use of CSSs, the Kentucky Injury Prevention and Research Center analyzed data from observations and inspections of vehicles entering the main community shopping center parking lot during 1 day in each of two rural counties. This report summarizes the results of this study, which indicate that most children in CSSs were restrained improperly.

In both counties, an inspection area was set up within the parking lot, and two observers were placed at the entrance; other entrances were closed by traffic safety cones. Observers completed a survey form for each vehicle containing an occupant appearing to be aged ≤4 years, and every other vehicle with an occupant appearing to be aged ≤4 years was asked to participate in the interview/inspection process. When a driver agreed to participate, a consent form was signed and one researcher interviewed the driver and a second inspected the CSS. Interviews consisted of 16 questions related to the driver, the CSS, and the reason for the trip. Inspections addressed the type of CSS, position(s) of child(ren) in the vehicle, type of vehicle, and whether the CSS was used properly.

A total of 232 motor vehicles with an occupant aged ≤4 years were observed at the two sites. Of the 116 vehicles that were eligible for interview/inspection, 77 (66%) drivers agreed to participate. There were 87 child occupants in the 77 vehicles; 62 (81%) of the drivers were female, and 54 (70%) of the drivers were mothers of the children.

Of the 87 children, 69 (79%) were restrained, and 17 (20%) were restrained properly; 14 (16%) of the children were unrestrained. The restraint status of the remaining four children was undetermined because they were unrestrained at the time of inspection; although the adult occupants reported the children had been restrained before the inspection and interview, these four were not included in the analysis. A total of 73 instances of improper use were observed among the 52 improperly restrained children. A substantially greater percentage of these errors occurred with the use of convertible

Child Safety Seats — Continued

CSSs (e.g., a seat that can be used for both infants and toddlers; backward facing for infants aged <12 months and weighing <20 lbs, and forward facing for children aged ≥12 months and weighing 20–40 lbs). Within this category, 22 (42%) errors involved the harness, and 19 (37%) involved misuse of the harness retainer (chest) clip (Figure 1).

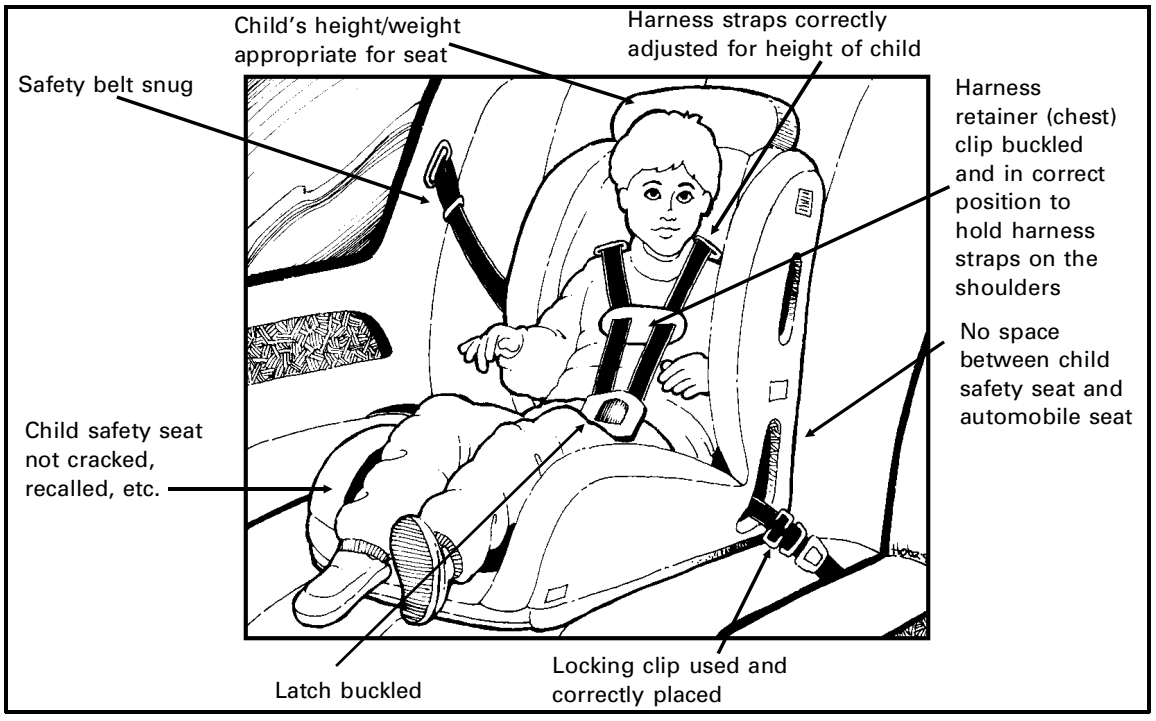
Of the 42 drivers who had improperly restrained children as occupants, 28 (67%) reported having learned how to use the device by reading the accompanying instructions. Nine (21%) reported having learned through the process of trial and error, and five (12%) reported having learned through demonstration.

The 83 children with known restraint status were distributed into three age categories: aged ≤12 months (n=19), aged 13–24 months (n=29), and aged >24 months (n=36). For three (4%) children, ages were not recorded on the interview form. Children aged ≤12 months had the lowest percentage (15%) of improper use (referent group). Compared with children aged ≤12 months, those aged 13–24 months were four times more likely to be restrained improperly (odds ratio=4.0, p=0.06). Among children aged 13–24 months, 90% were restrained improperly, followed by children aged >24 months (69%) and children aged ≤12 months (68%).

Reported by: C Spurlock, PhD, P Kidd, PhD, J Mays, MPH, R McCool, MS, J Buckner, R Clatos, J Rochussen, Kentucky Injury Prevention and Research Center, Lexington; RC Leach, MD, Kentucky Dept for Public Health. Div of Unintentional Injury Prevention, National Center for Injury Prevention and Control, CDC.

Editorial Note: The findings in this report indicate that although most children were restrained in a CSS, three fourths were restrained improperly. Previous studies have documented similar proportions of improper restraint (*5,6*). Concern about the proper use of CSSs was prompted by the relation between CSS use and air bag-related injuries to children (*7*).

FIGURE 1. Factors considered in inspection of child safety seats — Kentucky, 1996



Child Safety Seats — Continued

Children aged 13–24 months who used convertible CSSs were most likely to be restrained improperly. Infant CSSs may be easier to use correctly than are convertible CSSs. In addition, more instruction may be available for infant seats than for convertible CSSs. A previous study documented a 46% decrease in misuse of CSSs when personal instruction was given (*8*).

Because children aged 13–24 months are no longer passive infants and may protest vigorously about being restrained, the risk for CSS errors or the lack of restraint may be increased. As a result, caregivers must be firm in their resolve to have children restrained properly. Because the developmental characteristics of children cannot be changed, prevention efforts must focus on changing the behavior of caregivers.

The findings in this report are subject to at least two limitations. First, only 66% of eligible drivers participated in the survey; therefore, the findings may not be representative of all child restraint use. Second, eligibility was determined by the physical appearance of the child. As a result, some children may have been missed who appeared to be aged >4 years.

At least five strategies exist for increasing the proper use of CSSs. First, encouraging proper use of CSSs should combine health education and law enforcement (*9*). For example, law enforcement officers could issue citations for improper use, but fines could be waived if the caregiver attended an educational class on proper use and then demonstrated the capability of using the device properly. Second, at the 12-month well-child examination, health-care providers could assess the child for weight and ability to make the transition from an infant CSS to a convertible CSS, or to use the convertible seat in the position for an older child. The caregiver could bring the CSS and vehicle most frequently used to the examination site, and the health-care provider could explain and demonstrate proper use. Third, targeted educational strategies are needed for groups at highest risk. This will require better documentation of the characteristics of the misuse and resulting injuries to child passengers. Fourth, local health departments and others could offer training in the proper use of CSSs at areas frequented by toddlers and their caregivers (e.g., fast-food restaurants, day care centers, and church-affiliated child-care programs). Finally, improved engineering could make CSSs easier to use. In addition, efforts to improve automobiles so that rear seats are equipped with universal attachments for CSSs should continue (*10*).

All 50 states have legislation that mandates restraint use for children aged <4 years. The adoption of this legislation has been associated with declines in motor-vehicle–related deaths among children in this age group. To continue this decline, prevention efforts now must focus on the proper use of these CSSs to maximize their life-saving potential.

References

1. Goldstein LA, Spurlock CW. Kentucky's child restraint law has saved lives: a 20-year review of fatalities among children (aged 0–4) as motor vehicle occupants. J Ky Med Assoc 1998; 96:97–100.
2. Kentucky Transportation Center. 1995 safety belt usage survey and evaluation of effectiveness in Kentucky: research report KTC-95-19. Lexington, Kentucky: University of Kentucky, College of Engineering, 1996.
3. Decina LE, Knoebel KY. Patterns of misuse of child safety seats. Washington, DC: US Department of Transportation, National Highway Traffic Safety Administration, 1996; report no. DOT HS 808 440.

Child Safety Seats — Continued

4. Johnson C, Rivara FP, Soderberg R. Children in car crashes: an analysis of data for injury and use of restraints. Pediatrics 1994;93:960–5.
5. Gotshall CS, Eichelberger MR, Morrissey JR, Better AI, Reardon J, Bents F. Injury patterns associated with child restraint misuse. Orlando, Florida: Child Occupant Protection 2nd Symposium Proceedings, November 12, 1997.
6. Margolis LH, Wagenaar AC, Molnar LJ. Use and misuse of automobile child restraint devices. Am J Dis Child 1992;146:361–6.
7. CDC. Update: fatal air bag-related injuries to children—United States, 1993–1996. MMWR 1996; 45:1073–6.
8. Barrett R, Graff C. Comparison of child safety seat misuse in families receiving instruction prior to use and families who received no instruction prior to use [Poster]. Orlando, Florida: Child Occupant Protection 2nd Symposium Proceedings, November 12, 1997.
9. Lavelle JM, Hovell MF, West MP, Wahlgren DR. Promoting law enforcement for child protection: a community analysis. Journal of Applied Behavior Analysis 1992;25:885–92.
10. Anonymous. Blue Ribbon Panel on Child Restraint and Vehicle Compatibility: recommendations. Washington, DC: Blue Ribbon Panel on Child Restraint and Vehicle Compatibility, May, 30, 1995.

Imported Dengue — United States, 1996

Dengue is a mosquito-transmitted acute disease caused by any of four dengue virus serotypes (DEN-1, DEN-2, DEN-3, and DEN-4) and characterized by the sudden onset of fever, headache, myalgia, arthralgia, rash, nausea, and vomiting. This disease is endemic in most tropical areas of the world and has occurred in U.S. residents returning from travel to such areas. CDC maintains a laboratory-based passive surveillance system for imported dengue among U.S. residents. This report summarizes information about cases of imported dengue among U.S. residents for 1996, which indicated that most persons for whom travel history was known probably acquired infection in the Caribbean islands or Asia.

Serum samples from 179 persons who had suspected dengue with onset of symptoms in 1996 were submitted to CDC for diagnostic testing from 32 states and the District of Columbia. From these samples, 43 (24%) cases from 18 states and the District of Columbia were diagnosed serologically as dengue (single high titers of IgG in acute serum samples or by IgM detection in early convalescent samples) or by isolation of dengue virus. A diagnosis of dengue infection was negative in 102 (57%) patients and could not be determined in 34 (19%) patients because of unavailability of convalescent samples for serologic testing (*1*).

Of the 43 persons with laboratory-diagnosed dengue, sex was known in 39; 22 (56%) were male. Age was reported for 30 persons and ranged from 5 to 69 years (median: 33 years). The virus serotype (DEN-1 and DEN-2) was identified for five cases (Table 1). Travel histories, available for 37 persons, indicated that infections probably were acquired in the Caribbean islands (19 cases), Asia (11), Africa (three), the Pacific islands (two), Central America (one), and South America (one).

Clinical information was available for 28 patients with laboratory-diagnosed dengue. The most commonly reported symptoms were consistent with classic dengue fever (e.g., fever [93%], headache [61%], myalgia [57%], rash [57%], and arthralgia [18%]). Less frequently reported manifestations included diarrhea (five); eye pain (four); skin hemorrhages (two); and jaundice and depression (one each); low platelet counts (61,000–127,000/mm^3, average 98,000/mm^3 [normal: 150,000–450,000/mm^3])

Imported Dengue — Continued

(eight); low white blood cell count (1900–3100/mm^3, average 2550/mm^3 [normal: 3200–9800/mm^3]) (six); and elevated liver enzymes (one). At least two patients were hospitalized, and no deaths were reported.

Reported by: State and territorial health depts. Dengue Br, Div of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, CDC.

TABLE 1. Suspected and laboratory-diagnosed cases of imported dengue, by state — United States, 1996

State	Cases		Travel history, if known, of persons with laboratory-diagnosed dengue (serotype, if known)
	Suspected	Laboratory-diagnosed	
Alabama	4	0	
Alaska	1	0	
Arkansas	1	0	
California	10	0	
Colorado	8	2	India (DEN-2), Malaysia
District of Columbia	5	1	Ivory Coast
Florida	5	1	Trinidad
Georgia	11	1	Grenadine Islands
Hawaii	6	2	Samoa (two cases)
Illinois	6	0	
Indiana	1	0	
Maine	1	1	U.S. Virgin Islands (DEN-1)
Maryland	9	6	U.S. Virgin Islands, British Virgin Islands (five cases)
Massachusetts	20	7	U.S. and British Virgin Islands and Puerto Rico, U.S. Virgin Islands, Malaysia, India (two cases)
Michigan	3	0	
Minnesota	3	0	
Montana	1	0	
Nebraska	1	0	
New Hampshire	1	0	
New Jersey	3	1	India
New Mexico	4	0	
New York	18	6	Jamaica, U.S. and British Virgin Islands, Anguilla, India (DEN-2), Trinidad and Tobago
North Carolina	4	2	India, Senegal
Ohio	1	1	Philippines
Oregon	8	1	Burma and Thailand
Pennsylvania	7	3	Puerto Rico and British Virgin Islands, British Virgin Islands (two cases)
Rhode Island	3	3	(DEN-1, two cases)
South Carolina	2	0	
Texas	23	2	Honduras, Nigeria
Vermont	2	1	Barbados
Virginia	1	0	
Washington	2	1	Southeast Asia
Wisconsin	4	1	Ecuador
Total	**179**	**43**	

Imported Dengue — Continued

Editorial Note: Dengue is transmitted by the mosquito *Aedes aegypti*, which is present in most tropical urban areas of the world. In the United States, the mosquito can be found during the summer in southeastern states, including parts of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas. Dengue transmission in the United States is rare; however, autochthonous transmission of dengue was documented in Texas in 1980, 1986, and 1995 (*2*).

The incubation period of dengue is 4–7 days (range: 3–14 days). Most cases are characterized by mild manifestations, but infections in some persons can result in the more severe forms of the disease. Dengue hemorrhagic fever (DHF) is characterized by fever, low platelet count (≤100,000/mm^3), hemorrhagic manifestations, and evidence of increased vascular permeability (e.g., hemoconcentration [hematocrit increased by ≥20% from baseline], pleural or abdominal effusions, or hypoalbuminemia). Dengue shock syndrome (DSS) is DHF plus narrow pulse pressure (≤20 mm Hg), hypotension, or shock (*3*). The fatality rate for patients with DSS can be as high as 44% (*4*).

During 1987–1993, the average annual number of laboratory-diagnosed cases reported to CDC was 20, but in 1994 the number increased to 38 (*1*). In 1995, an unusually high number (n=86) of imported laboratory-diagnosed cases of dengue was identified by CDC, reflecting the occurrence of outbreaks in Central American and Caribbean countries and the high number of cases detected by an active surveillance system in Texas (*5,6*). In 1996, the number of dengue and DHF cases reported to the Pan American Health Organization (n=276,758) was lower than the total for 1995 (n=316,187). Among persons in the United States with imported cases in 1996, five persons with history of travel to India reflect the DEN-2 epidemic that occurred in India (*7*). Among the imported infections acquired in the Caribbean islands during 1996, seven were diagnosed in persons from Maryland and Pennsylvania who traveled to the Caribbean during January (*8*).

The number of cases in this report represents a minimum estimate of the number of U.S. travelers with dengue. Because dengue is not a notifiable disease nationally or in most states, diagnostic samples may not be sent for testing or they may be sent to laboratories other than CDC; therefore, many imported cases may not be counted. To provide a better estimate of the total number of cases, state epidemiologists were asked to provide a listing of all dengue cases reported in their state with onset of illness in 1996. Nineteen states reported 51 cases; 22 (43%) cases had not been reported previously.

There is no vaccine for preventing dengue, and persons traveling to areas where dengue is endemic should avoid exposure to mosquito bites by using mosquito repellents and protective clothing and remaining in well screened or air conditioned areas. *Ae. aegypti* is an urban mosquito usually found in or near human dwellings. In domestic settings, the mosquito can be found resting in dark areas including closets, bathrooms, behind curtains, and under beds. The species bites usually during the early morning and late afternoon (*9*). The risk for exposure is higher in urban residential areas, but may be lower for tourists in some settings (e.g., beaches, hotels with well-kept grounds, and areas away from human habitation).

The incidence and geographic distribution of dengue have increased greatly in recent years, and health-care providers should consider dengue in the differential

Imported Dengue — Continued

diagnosis of illness in all patients who have fever and a history of travel to tropical areas within 2 weeks of onset of symptoms. Because of the anticoagulant properties of acetylsalicylic acid (i.e., aspirin) and other nonsteroidal anti-inflammatory agents, only acetaminophen products are recommended for the management of pain and fever. For diagnosis, acute- and convalescent-phase serum samples should be obtained and sent through state or territorial health departments to CDC's Dengue Branch, Division of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, 2 Calle Casia, San Juan, PR 00921-3200; telephone (787) 766-5181; fax (787) 766-6596. Serum samples should be accompanied by a summary of clinical and epidemiologic information, including date of onset of disease, date of collection of sample, and a detailed recent travel history.

References

1. Rigau-Pérez JG, Gubler DJ, Vorndam AV, Clark GG. Dengue in travelers from the United States, 1986–1994. J Travel Med 1997;4:65–71.
2. CDC. Dengue fever at the U.S.–Mexico border, 1995–1996. MMWR 1996;45:841–4.
3. Pan American Health Organization. Guidelines for the prevention and control of dengue and dengue hemorrhagic fever in the Americas. Washington, DC: Pan American Health Organization, 1994.
4. Tassniyom S, Vasanawathana S, Chirawatkul A, Rojanasuphot S. Failure of high-dose methylprednisolone in established dengue shock syndrome: a placebo-controlled, double-blind study. Pediatrics 1993;92:111–5.
5. CDC. Imported dengue—United States, 1995. MMWR 1996;45:988–91.
6. Pinheiro FP, Corber SJ. Global situation of dengue and dengue haemorrhagic fever, and its emergence in the Americas. World Health Stat 1997;50:161–9.
7. World Health Organization. Dengue and dengue haemorrhagic fever, India. Wkly Epidemiol Rec 1996;71:335.
8. Karp BE. Dengue fever: a risk to travelers. Maryland Medical Journal 1997;46:299–302.
9. CDC. Biology and control of *Aedes aegypti*. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, CDC, 1979:7,13. (Vector topics no. 4).

National, State, and Urban Area Vaccination Coverage Levels Among Children Aged 19–35 Months — United States, 1997

CDC's National Immunization Survey (NIS) provides ongoing national estimates of vaccination coverage among children aged 19–35 months, based on the data for the most recent 12 months, for each of the 50 states and for 28 selected urban areas (*1*). The NIS was implemented 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 (*2*). This report presents the findings of the 1997 NIS*, which indicate that vaccination coverage among U.S. children aged 19–35 months remains at the highest levels ever, but that some new vaccines or recommended vaccine doses are below 90% coverage levels.

NIS uses a quarterly random-digit–dialing sample of telephone numbers for each survey area to collect vaccination information for all age-eligible children. During 1997, a total of 32,433 household interviews were completed, representing 32,742 children (mean: 420 children per survey area). The overall response rate for households

*For this reporting period (January–December 1997), NIS included children born during February 1994–May 1996 (median age: 27 months).

Vaccination Coverage Levels — Continued

with children aged 19–35 months for all 78 survey areas was 69% (range: 56%–89%). For completeness and verification, vaccination data are requested from vaccination providers with consent of parents. 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 among children in households without telephones (*1,3*). The demographic characteristics and reported vaccination histories were similar for children with and without provider information.

Compared with 1996, national vaccination coverage during 1997 increased slightly for three or more doses of *Haemophilus influenzae* type b vaccine (Hib3) (from 92% to 93%) and for three or more doses of hepatitis B vaccine (HepB3) (from 82% to 84%) (Table 1). Coverage with varicella vaccine (VAR) increased from 16% in 1996 to 26% in 1997. During 1997, VAR coverage increased from 18% in the first quarter to 33% in the last quarter. As in 1996, coverage with three or more doses of diphtheria and tetanus toxoids and pertussis vaccine/diphtheria and tetanus toxoids (DTP3), three or more doses of poliovirus vaccine (Polio3), one or more doses of measles-containing vaccine

TABLE 1. Vaccination coverage levels among children aged 19–35 months, by selected vaccines — United States, National Immunizaton Survey, 1994–1997

	April–December 1994*		January–December 1995†		January–December 1996§		January–December 1997¶	
Vaccine/Dose	**%**	**(95% CI**)**	**%**	**(95% CI)**	**%**	**(95% CI)**	**%**	**(95% CI)**
DTP/DT††								
≥3 Doses	94	(±0.6)	95	(±0.6)	95	(±0.4)	95	(±0.4)
≥4 Doses	76	(±1.1)	79	(±1.0)	81	(±0.7)	81	(±0.7)
Poliovirus								
≥3 Doses	83	(±1.0)	88	(±0.8)	91	(±0.5)	91	(±0.5)
Hib§§								
≥3 Doses	86	(±0.8)	92	(±0.6)	92	(±0.5)	93	(±0.5)
MCV¶¶								
≥1 Doses	89	(±0.8)	90	(±0.7)	91	(±0.5)	91	(±0.5)
Hepatitis B								
≥3 Doses	37	(±1.2)	68	(±1.0)	82	(±0.7)	84	(±0.6)
Varicella								
≥1 Doses	NA***		NA		16	(±0.7)†††	26	(±0.7)
Combined series								
4 DTP/3 Polio/1 MCV§§§	74	(±1.1)	76	(±1.0)	78	(±0.8)	78	(±0.7)
4 DTP/3 Polio/1 MCV/3 Hib¶¶¶	69	(±1.2)	74	(±1.0)	77	(±0.8)	76	(±0.8)

* Children in this survey period were born during May 1991–May 1993.
† Children in this survey period were born during February 1992–May 1994.
§ Children in this survey period were born during February 1993–May 1995.
¶ Children in this survey period were born during February 1994–May 1996.
** Confidence interval.
†† Diphtheria and tetanus toxoids and pertussis vaccine/diphtheria and tetanus toxoids (DTP/DT).
§§ *Haemophilus influenzae* type b (Hib) vaccine.
¶¶ Includes any measles-containing vaccine (MCV).
*** Data not available in this reporting period. Data collection for varicella vaccine began in July 1996.
††† Estimate based on data collected during July–December 1996 for children born during August 1993–May 1995.
§§§ Four or more doses of DTP/DT, three or more doses of poliovirus vaccine, and one or more doses of MCV.
¶¶¶ Four of 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.

Vaccination Coverage Levels — Continued

(MCV), and Hib3 exceeded 90% in 1997; coverage with four or more doses of DTP (DTP4) remained at 81%.

For the 4:3:1[†] and 4:3:1:3[§] series, national coverage remained stable (78% and 76%, respectively). The range of state-specific coverage for the 4:3:1 series narrowed from 64% to 88% (median: 79%) in 1996 to 71% to 87% (median: 78%) in 1997 (Table 2). For selected urban areas, coverage for the 4:3:1 series ranged from 63% to 84% (median: 79%) in 1996 to 66% to 88% (median: 76%) in 1997. Although the median coverge levels remained stable, the low end of the ranges increased.

Coverage levels for Polio3, MCV, and Hib3 ranged from 84% to 97% among states and from 81% to 96% among urban areas (Table 3). For DTP4, coverage ranged from 75% to 91% among states and 69% to 91% among urban areas. For HepB3, coverage ranged from 73% to 91% among states and 76% to 90% among urban areas.

During 1997, all states and 27 of the 28 selected urban areas achieved 90% coverage with DTP3. Four states and one urban area achieved 90% coverage with DTP4, and eight of the 46 remaining states and two of the 27 remaining urban areas had coverage levels of 85% to 89% (Table 3).

Compared with 1996, 90% coverage with Polio3 during 1997 increased from 38 to 41 states and decreased from 17 to 12 urban areas; all remaining states and 12 of the remaining 16 urban areas had coverage of 85% to 89% (*1*). For MCV, 90% coverage decreased from 32 to 31 states and from 19 to 17 urban areas; 18 of the 19 remaining states and nine of the 11 remaining urban areas had coverage of 85% to 89%. For Hib3, 90% coverage increased from 41 to 48 states and from 19 to 20 urban areas; all remaining states and six of the remaining eight urban areas had coverage levels of 85% to 89%. In 1997, two states and one urban area achieved 90% coverage for HepB3; 17 of the remaining 48 states and seven of the remaining 27 urban areas had HepB3 coverage levels of 85% to 89%. Compared with July 1996–June 1997, the median VAR coverage during 1997 increased from 17% (range: 3%–33%) to 23% (range: 4%–40%) among states and from 16% (range: 7%–33%) to 26% (range: 13%–43%) among urban areas (Table 3). Compared with 1996, the number that reached or exceeded 90% coverage goals (70% for HepB3) in 1997 remained unchanged at 30 states and decreased from 14 to 10 urban areas (*1*).

Reported by: National Center for Health Statistics; Assessment Br, Data Management Div, National Immunization Program, CDC.

Editorial Note: The findings in this report indicate that national coverage for the recommended vaccines remained the highest ever recorded, with four of the antigens at >90% coverage levels. This accomplishment reflects improvements in the vaccination delivery system since the low coverage levels reported during the 1989–1991 measles epidemic. The findings also suggest that several challenges remain: coverage levels for DTP4 have not changed since 1996, HepB3 coverage increased only slightly in 1997, and VAR coverage levels are increasing but remain at relatively low levels.

The low coverage levels with DTP4 may reflect in part the difficulty of getting children to return to providers in the second year of life when receipt of DTP4 is recommended. Reminding parents or recalling children that are overdue by using reminder

[†]Four or more doses of diphtheria and tetanus toxoids and pertussis vaccine/diphtheria and tetanus toxoids (DTP/DT), three or more doses of poliovirus vaccine, and one or more doses of measles-containing vaccine (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 *Haemophilus influenzae* type b vaccine.

Vaccination Coverage Levels — Continued

TABLE 2. Estimated vaccination coverage with the 4:3:1 series* and 4:3:1:3 series† among children aged 19–35 months, by coverage level and state and selected urban area — United States, National Immunization Survey, 1997§

Coverage Level/ State/Urban area	Series 4:3:1 %	Series 4:3:1 (95% CI¶)	Coverage Level/ State/Urban area	Series 4:3:1:3 %	Series 4:3:1:3 (95% CI¶)
≥85%			**≥85%**		
Alabama	86	(±3.2)	Alabama	85	(±3.2)
Jefferson Co.	84	(±4.2)	Jefferson Co.	82	(±4.3)
Connecticut	87	(±3.6)	Connecticut	85	(±3.8)
Maine	87	(±3.4)	Massachusetts	86	(±3.1)
Massachusetts	87	(±2.9)	Boston	86	(±3.6)
Boston	88	(±3.4)	**75%–84%**		
New Hampshire	85	(±3.8)	Alaska	75	(±4.8)
Vermont	86	(±3.1)	Arkansas	77	(±4.4)
75%–84%			Delaware	79	(±4.8)
Alaska	77	(±4.7)	Florida	77	(±3.6)
Arkansas	77	(±4.4)	Dade Co.	75	(±5.0)
California	76	(±3.0)	Duval Co.	70	(±5.1)
Los Angeles Co.	73	(±5.5)	Georgia	79	(±3.6)
San Diego Co.	80	(±4.3)	Fulton/DeKalb cos.	75	(±4.9)
Santa Clara Co.	75	(±4.7)	Hawaii	79	(±4.7)
Delaware	81	(±4.6)	Iowa	76	(±4.3)
District of Columbia	76	(±5.3)	Kansas	82	(±3.8)
Florida	79	(±3.5)	Kentucky	79	(±4.4)
Dade Co.	77	(±4.9)	Louisiana	76	(±4.1)
Duval Co.	71	(±5.1)	Orleans Parish	69	(±6.0)
Georgia	81	(±3.6)	Maine	84	(±3.6)
Fulton/DeKalb cos.	78	(±4.7)	Maryland	80	(±3.6)
Hawaii	81	(±4.6)	Baltimore	83	(±4.7)
Illinois	76	(±3.7)	Michigan	75	(±3.7)
Chicago	71	(±5.3)	Detroit	65	(±5.6)
Iowa	76	(±4.3)	Minnesota	78	(±4.4)
Kansas	82	(±3.8)	Mississippi	80	(±4.4)
Kentucky	81	(±4.3)	Missouri	77	(±4.4)
Louisiana	77	(±4.1)	Nebraska	75	(±4.3)
Orleans Parish	71	(±5.9)	New Hampshire	84	(±3.8)
Maryland	82	(±3.5)	New Jersey	76	(±4.2)
Baltimore	85	(±4.5)	Newark	66	(±6.3)
Michigan	77	(±3.6)	New Mexico	75	(±4.8)
Detroit	70	(±5.4)	New York	76	(±3.5)
Minnesota	81	(±4.2)	New York City	75	(±5.1)
Mississippi	81	(±4.4)	North Carolina	80	(±4.2)
Missouri	78	(±4.4)	North Dakota	82	(±3.9)
Montana	75	(±4.3)	Pennsylvania	80	(±3.7)
Nebraska	77	(±4.2)	Philadelphia Co.	78	(±5.1)
New Jersey	78	(±4.1)	Rhode Island	81	(±4.1)
Newark	70	(±6.1)	South Carolina	79	(±4.2)
New Mexico	77	(±4.6)	South Dakota	76	(±4.3)
New York	79	(±3.3)	Tennessee	77	(±3.1)
New York City	79	(±4.8)	Davidson Co.	77	(±4.6)
North Carolina	81	(±4.2)	Shelby Co.	70	(±5.3)
North Dakota	83	(±3.8)	Vermont	84	(±3.3)
Ohio	75	(±3.6)	Washington	79	(±3.2)
Franklin Co.	75	(±5.0)	King Co.	77	(±4.6)
Cuyahoga Co.	74	(±5.3)	West Virginia	80	(±4.1)
Pennsylvania	82	(±3.6)	Wisconsin	79	(±3.1)
Philadelphia Co.	80	(±4.9)	Milwaukee Co.	70	(±4.9)
Rhode Island	84	(±3.9)	**65%–74%**		
South Carolina	80	(±4.2)	Arizona	73	(±3.4)
South Dakota	78	(±4.3)	Maricopa Co.	72	(±4.8)

* Four or more doses of diphtheria and tetanus toxoids and pertussis vaccine/diphtheria and tetanus toxoids (DTP/DT), three or more doses of poliovirus vaccine, and one or more doses of measles-containing vaccine (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 *Haemophilus influenzae* type b vaccine.

§ Children in this survey period were born during February 1994–May 1996.

¶ Confidence interval.

Vaccination Coverage Levels — Continued

TABLE 2. Estimated vaccination coverage with the 4:3:1 series* and 4:3:1:3: series† among children aged 19–35 months, by coverage level and state and selected urban area — United States, National Immunization Survey, 1997§ — Continued

Coverage Level/ State/Urban area	Series 4:3:1 %	Series 4:3:1 (95% CI¶)	Coverage Level/ State/Urban area	Series 4:3:1:3 %	Series 4:3:1:3 (95% CI)
Tennessee	78	(±3.1)	California	74	(±3.1)
Davidson Co.	77	(±4.6)	Los Angeles Co.	71	(±5.5)
Shelby Co.	73	(±5.1)	San Diego Co.	78	(±4.3)
Texas	75	(±3.1)	Santa Clara Co.	73	(±4.8)
Bexar Co.	81	(±4.7)	Colorado	72	(±5.0)
Dallas Co.	77	(±5.2)	District of Columbia	73	(±5.4)
El Paso Co.	67	(±5.2)	Idaho	70	(±4.7)
Houston	66	(±6.1)	Illinois	74	(±3.8)
Washington	80	(±3.1)	Chicago	68	(±5.5)
King Co.	79	(±4.8)	Indiana	72	(±3.7)
West Virginia	82	(±4.0)	Marion Co.	81	(±4.5)
Wisconsin	80	(±3.0)	Montana	74	(±4.4)
Milwaukee Co.	73	(±4.8)	Nevada	71	(±4.9)
65%–74%			Ohio	73	(±3.6)
Arizona	74	(±3.4)	Cuyahoga Co.	73	(±5.3)
Maricopa Co.	74	(±4.7)	Franklin Co.	74	(±5.0)
Colorado	74	(±4.9)	Oklahoma	71	(±4.9)
Idaho	72	(±4.6)	Oregon	72	(±4.7)
Indiana	74	(±3.6)	Texas	74	(±3.1)
Marion Co.	82	(±4.4)	Bexar Co.	79	(±4.8)
Nevada	73	(±4.8)	Dallas Co.	74	(±5.4)
Oklahoma	72	(±4.9)	El Paso Co.	65	(±5.3)
Oregon	73	(±4.6)	Houston	64	(±6.1)
Utah	71	(±4.7)	Utah	69	(±4.7)
Virginia	73	(±4.7)	Virginia	72	(±4.8)
Wyoming	74	(±4.4)	Wyoming	72	(±4.4)
Total	**78**	**(±0.7)**	**Total**	**76**	**(±0.8)**

* Four or more doses of diphtheria and tetanus toxoids and pertussis vaccine/diphtheria and tetanus toxoids (DTP/DT), three or more doses of poliovirus vaccine, and one or more doses of measles-containing vaccine (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 *Haemophilus influenzae* type b vaccine.
§ Children in this survey period were born during February 1994–May 1996.
¶ Confidence interval.

and recall systems may further increase coverage with the fourth dose of DTP. Acellular-based DTP4 also can be administered to children as early as age 12 months if providers believe that the child is unlikely to return for a vaccination visit at age 15–18 months and if at least 6 months has elapsed since the third dose (*4*). Coverage with DTP4 is particularly low among children living below the poverty level (*5*). Conducting vaccine assessment and referral in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is an effective strategy to address this gap in coverage (*6*).

Achieving high coverage with HepB3 vaccine since the 1991 ACIP recommendation for universal administration in infancy initially may have been hampered by provider resistance to vaccination of children at low immediate risk for disease (*7*) and the lack of adequate resources for vaccine purchase. During the mid-1990s, the federal government and several state governments enhanced the availability of HepB vaccine, and coverage with three or more doses increased from 37% in 1994 to 82% in 1996. Strategies that may further increase coverage with HepB3 include greater provider and parental education on the reasons for vaccination of infants, vaccination assessment and referral for needed vaccines at WIC sites (*6*), provider assessment

TABLE 3. Estimated vaccination coverage with individual vaccines among children aged 19–35 months, by state and selected urban area — United States, National Immunization Survey, 1997*

State/Urban area	≥3 DTP/DT†		≥4 DTP/DT§		≥3 Poliovirus¶		≥1 MCV**		≥3 Hib††		≥3 Hepatitis B		≥1 Varicella§§	
	%	(95%CI¶¶)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Alabama***	98	(±1.2)	89	(±2.9)	95	(±1.8)	92	(±2.5)	97	(±1.5)	86	(±3.1)	27	(±3.5)
Jefferson Co.***	98	(±1.8)	87	(±3.8)	93	(±2.9)	93	(±2.9)	96	(±2.2)	89	(±3.5)	34	(±5.3)
Alaska†††	93	(±2.9)	80	(±4.5)	91	(±3.2)	87	(±3.9)	90	(±3.5)	87	(±3.3)	12	(±3.3)
Arizona†††	91	(±2.3)	79	(±3.3)	88	(±2.7)	88	(±2.6)	90	(±2.4)	79	(±3.1)	28	(±3.4)
Maricopa Co.†††	91	(±3.2)	79	(±4.5)	87	(±3.8)	89	(±3.5)	89	(±3.4)	79	(±4.3)	29	(±4.8)
Arkansas***	95	(±2.4)	81	(±4.1)	91	(±3.0)	92	(±2.8)	93	(±2.7)	85	(±3.3)	16	(±3.7)
California†††	94	(±1.8)	79	(±3.0)	90	(±2.2)	89	(±2.4)	91	(±2.2)	83	(±2.4)	35	(±2.9)
Los Angeles Co.†††	93	(±3.4)	76	(±5.4)	89	(±3.9)	90	(±3.7)	91	(±3.6)	82	(±4.6)	40	(±5.5)
Santa Clara Co.†††	97	(±2.0)	83	(±4.1)	89	(±3.6)	91	(±3.0)	93	(±2.8)	87	(±3.2)	37	(±5.1)
San Diego Co.***	96	(±2.2)	83	(±4.1)	91	(±3.1)	94	(±2.4)	93	(±2.7)	86	(±3.4)	33	(±4.6)
Colorado†††	94	(±2.7)	79	(±4.6)	88	(±3.7)	94	(±2.7)	91	(±3.4)	80	(±4.4)	20	(±4.2)
Connecticut***	98	(±1.3)	91	(±3.0)	94	(±2.6)	94	(±2.7)	95	(±2.2)	84	(±3.9)	27	(±4.6)
Delaware***	97	(±1.9)	84	(±4.4)	94	(±2.8)	91	(±3.5)	94	(±2.8)	83	(±4.1)	28	(±4.8)
District of Columbia†††	94	(±3.0)	80	(±5.0)	89	(±3.9)	91	(±3.6)	90	(±3.8)	79	(±4.8)	36	(±5.6)
Florida***	96	(±1.7)	82	(±3.3)	91	(±2.4)	91	(±2.4)	93	(±2.2)	85	(±3.0)	27	(±3.3)
Duval Co.†††	95	(±2.4)	75	(±4.8)	90	(±3.4)	89	(±3.6)	93	(±3.0)	88	(±3.2)	34	(±5.0)
Dade Co.†††	96	(±2.4)	81	(±4.6)	89	(±3.7)	91	(±3.4)	93	(±2.9)	82	(±4.3)	23	(±4.7)
Georgia***	98	(±1.2)	85	(±3.3)	94	(±1.9)	92	(±2.5)	95	(±1.8)	87	(±2.9)	25	(±3.4)
Fulton/DeKalb cos.†††	95	(±2.5)	84	(±4.2)	88	(±3.8)	93	(±2.9)	92	(±3.2)	83	(±4.2)	35	(±5.3)
Hawaii***	94	(±2.8)	84	(±4.3)	90	(±3.5)	93	(±3.0)	92	(±3.3)	88	(±3.4)	34	(±5.2)
Idaho†††	92	(±2.9)	75	(±4.6)	89	(±3.2)	89	(±3.4)	88	(±3.5)	79	(±4.1)	6	(±2.4)
Illinois†††	95	(±1.9)	81	(±3.4)	89	(±2.8)	89	(±2.7)	92	(±2.3)	81	(±3.2)	20	(±3.2)
Chicago†††	94	(±3.0)	75	(±5.2)	88	(±3.9)	87	(±4.0)	89	(±3.8)	80	(±4.7)	17	(±4.0)
Indiana†††	95	(±1.9)	77	(±3.5)	89	(±2.7)	89	(±2.7)	91	(±2.5)	80	(±3.1)	16	(±2.7)
Marion Co.***	96	(±2.3)	84	(±4.3)	92	(±3.1)	91	(±3.4)	93	(±2.9)	82	(±4.4)	20	(±4.4)
Iowa†††	96	(±1.9)	82	(±3.9)	91	(±2.9)	89	(±3.3)	95	(±2.2)	85	(±3.3)	18	(±3.8)
Kansas***	96	(±2.1)	85	(±3.6)	93	(±2.6)	93	(±2.5)	94	(±2.4)	81	(±4.3)	25	(±4.5)
Kentucky***	95	(±2.3)	83	(±4.1)	92	(±2.9)	90	(±3.3)	94	(±2.6)	83	(±4.0)	28	(±4.6)
Louisiana†††	96	(±1.6)	81	(±3.8)	92	(±2.4)	88	(±3.2)	94	(±2.1)	86	(±3.1)	16	(±3.2)
Orleans Parish†††	90	(±4.1)	75	(±5.8)	82	(±5.2)	86	(±4.7)	86	(±4.7)	77	(±5.4)	19	(±5.0)
Maine***	98	(±1.3)	90	(±3.0)	95	(±2.1)	95	(±2.2)	96	(±1.8)	84	(±3.4)	13	(±3.2)
Maryland***	97	(±1.4)	86	(±3.2)	93	(±2.3)	94	(±2.0)	95	(±2.0)	85	(±3.1)	40	(±4.1)
Baltimore***	97	(±2.2)	89	(±4.0)	93	(±3.1)	94	(±3.1)	95	(±2.7)	83	(±4.5)	26	(±5.3)
Massachusetts***	98	(±1.2)	91	(±2.4)	94	(±2.0)	95	(±1.8)	96	(±1.8)	88	(±2.8)	21	(±3.3)
Boston***	98	(±1.5)	91	(±3.0)	96	(±2.0)	95	(±2.3)	96	(±2.2)	90	(±2.9)	20	(±4.4)
Michigan†††	95	(±1.9)	79	(±3.5)	91	(±2.4)	89	(±2.8)	91	(±2.4)	84	(±2.8)	17	(±3.1)
Detroit†††	90	(±3.7)	73	(±5.3)	82	(±4.7)	84	(±4.4)	82	(±4.7)	76	(±4.9)	15	(±4.2)
Minnesota***	96	(±2.0)	84	(±4.0)	93	(±2.5)	92	(±2.9)	93	(±2.7)	77	(±4.3)	36	(±4.7)
Mississippi***	95	(±2.4)	83	(±4.2)	92	(±3.1)	90	(±3.4)	94	(±2.6)	86	(±3.7)	11	(±3.6)
Missouri***	97	(±1.9)	83	(±4.1)	90	(±3.2)	90	(±3.3)	95	(±2.2)	83	(±3.8)	25	(±4.4)
Montana†††	96	(±2.2)	80	(±4.1)	91	(±3.0)	87	(±3.5)	92	(±2.8)	80	(±3.9)	19	(±3.6)
Nebraska†††	95	(±2.2)	81	(±4.0)	90	(±3.0)	89	(±3.3)	92	(±2.7)	82	(±3.6)	22	(±3.9)

Nevada†††	93	(±2.9)	78	(±4.6)	90	(±3.4)	89	(±3.6)	91	(±3.3)	84	(±3.5)	13	(±3.7)
New Hampshire***	99	(±1.0)	89	(±3.3)	95	(±2.3)	95	(±2.3)	97	(±1.7)	87	(±3.2)	27	(±4.3)
New Jersey***	98	(±1.3)	82	(±3.9)	93	(±2.6)	93	(±2.5)	94	(±2.2)	91	(±2.1)	29	(±4.3)
Newark†††	92	(±4.0)	74	(±6.0)	81	(±5.4)	85	(±4.9)	84	(±5.1)	78	(±5.4)	15	(±4.4)
New Mexico†††	93	(±3.0)	81	(±4.4)	88	(±3.8)	87	(±3.9)	89	(±3.6)	82	(±4.2)	20	(±4.1)
New York***	98	(±1.2)	83	(±3.1)	91	(±2.3)	94	(±2.0)	93	(±2.2)	86	(±2.4)	26	(±3.3)
New York City***	97	(±1.9)	83	(±4.5)	92	(±3.2)	93	(±2.9)	92	(±3.4)	85	(±3.6)	22	(±4.6)
North Carolina***	98	(±1.3)	84	(±4.0)	96	(±2.0)	94	(±2.4)	95	(±2.2)	90	(±2.8)	30	(±4.8)
North Dakota***	98	(±1.5)	87	(±3.4)	93	(±2.6)	91	(±3.0)	96	(±2.0)	87	(±3.0)	24	(±4.0)
Ohio†††	97	(±1.4)	80	(±3.4)	90	(±2.6)	89	(±2.7)	95	(±1.8)	83	(±2.9)	23	(±3.0)
Cuyahoga Co.***	95	(±2.7)	78	(±5.1)	90	(±3.7)	91	(±3.5)	93	(±3.2)	83	(±4.3)	26	(±4.9)
Franklin Co.†††	96	(±2.4)	79	(±4.7)	88	(±3.8)	90	(±3.6)	94	(±2.8)	78	(±4.5)	30	(±5.0)
Oklahoma†††	95	(±2.5)	77	(±4.7)	90	(±3.3)	88	(±3.7)	93	(±2.8)	83	(±3.7)	26	(±4.4)
Oregon†††	94	(±2.5)	78	(±4.4)	88	(±3.4)	88	(±3.4)	92	(±2.9)	83	(±3.7)	29	(±4.5)
Pennsylvania***	96	(±1.9)	84	(±3.5)	90	(±2.9)	91	(±2.7)	93	(±2.4)	83	(±3.3)	39	(±3.9)
Philadelphia Co.***	95	(±2.8)	82	(±4.8)	91	(±3.5)	92	(±3.3)	93	(±3.2)	81	(±4.7)	43	(±5.9)
Rhode Island***	99	(±0.6)	89	(±3.2)	95	(±2.3)	95	(±2.3)	96	(±2.0)	87	(±3.3)	35	(±4.8)
South Carolina***	96	(±2.1)	83	(±4.0)	91	(±3.0)	91	(±3.2)	95	(±2.3)	86	(±3.4)	26	(±4.5)
South Dakota***	96	(±1.9)	81	(±4.1)	92	(±2.8)	91	(±3.0)	95	(±2.2)	79	(±4.0)	4	(±1.9)
Tennessee***	96	(±1.5)	83	(±2.9)	91	(±2.0)	90	(±2.3)	94	(±1.6)	84	(±2.5)	22	(±2.9)
Shelby Co.†††	95	(±2.6)	79	(±4.7)	88	(±3.8)	89	(±3.7)	91	(±3.5)	84	(±4.0)	24	(±4.6)
Davidson Co.†††	95	(±2.5)	83	(±4.1)	89	(±3.4)	89	(±3.5)	93	(±2.9)	79	(±4.1)	30	(±4.6)
Texas†††	92	(±2.1)	78	(±3.0)	88	(±2.4)	89	(±2.3)	90	(±2.2)	82	(±2.5)	23	(±2.5)
Bexar Co.***	95	(±2.7)	83	(±4.5)	94	(±2.8)	91	(±3.4)	94	(±2.9)	88	(±3.3)	25	(±4.6)
Dallas Co.†††	95	(±2.5)	79	(±5.1)	91	(±3.4)	88	(±4.1)	91	(±3.4)	86	(±3.8)	27	(±5.1)
El Paso Co.†††	89	(±3.5)	69	(±5.2)	87	(±3.7)	84	(±4.2)	87	(±3.8)	79	(±3.9)	18	(±3.9)
Houston†††	90	(±4.1)	69	(±6.0)	84	(±4.8)	86	(±4.7)	85	(±4.8)	78	(±4.9)	21	(±4.5)
Utah†††	93	(±2.7)	75	(±4.6)	90	(±3.2)	86	(±3.7)	90	(±3.2)	73	(±4.5)	14	(±3.6)
Vermont***	99	(±0.5)	91	(±2.6)	95	(±1.9)	94	(±2.1)	96	(±1.6)	83	(±3.2)	22	(±3.9)
Virginia***	94	(±2.5)	76	(±4.6)	90	(±3.2)	90	(±3.1)	92	(±2.9)	84	(±3.7)	32	(±4.7)
Washington***	97	(±1.3)	84	(±2.9)	93	(±1.9)	91	(±2.3)	93	(±1.9)	81	(±3.0)	13	(±2.5)
King Co.***	94	(±2.7)	83	(±4.2)	90	(±3.3)	92	(±3.1)	90	(±3.4)	79	(±4.4)	13	(±3.6)
West Virginia***	98	(±1.2)	87	(±3.6)	95	(±2.2)	91	(±3.0)	97	(±1.7)	86	(±3.3)	19	(±3.9)
Wisconsin***	95	(±1.8)	83	(±2.9)	92	(±2.1)	91	(±2.4)	93	(±1.9)	82	(±2.8)	20	(±2.8)
Milwaukee Co.†††	94	(±2.7)	77	(±4.6)	88	(±3.6)	93	(±2.7)	88	(±3.6)	77	(±4.5)	23	(±4.2)
Wyoming†††	93	(±2.6)	78	(±4.2)	89	(±3.1)	84	(±3.8)	91	(±2.9)	82	(±3.6)	10	(±3.0)
Total	**95**	**(±0.4)**	**81**	**(±0.7)**	**91**	**(±0.5)**	**91**	**(±0.5)**	**93**	**(±0.5)**	**84**	**(±0.6)**	**26**	**(±0.7)**

* Children in this survey period were born during February 1994–May 1996.
† Three or more doses of diphtheria and tetanus toxoids and pertussis vaccine/diphtheria and tetanus toxoids (DTP/DT).
§ Four or more doses of DTP/DT.
¶ Three or more doses of poliovirus vaccine.
** One or more doses of measles-containing vaccine.
†† Three or more doses of *Haemophilus influenzae* type b vaccine.
§§ One dose of varicella vaccine on or after the first birthday. Data collection for varicella vacine began in July 1996.
¶¶ Confidence interval.
*** Achieved the 1996 Childhood Immunization Initiative (CII) goals for three or more doses of DTP/DT, three or more doses of poliovirus vaccine, one or more doses of MCV, three or more doses of Hib, and three or more doses of hepatitis B vaccine.
††† Did not achieve the 1996 CII goals for at least one of the following: three or more doses of DTP/DT, three or more doses of poliovirus vaccine, one or more doses of MCV, or three or more doses of Hib, but achieved the 1996 goal for three or more doses of hepatitis B vaccine.

Vaccination Coverage Levels — Continued

and feedback (*8*), use of reminder and recall systems for vaccination administration (*9*), and state laws requiring vaccination for day care and school entry.

Although VAR coverage increased substantially in 1997, the wide variation among states and urban areas indicates a need for special efforts in most areas. Among children, varicella is the leading cause of vaccine-preventable deaths in the United States, resulting in approximately 1 death per week. Increased coverage with VAR will be enhanced by promotional and education programs to address the lack of knowledge of the health burden associated with varicella in the United States and lack of provider knowledge about vaccine safety, efficacy, and duration of immunity (*10*). The national estimate for the last quarter of this reporting period suggests a continuing upward trend in coverage with VAR.

Although national coverage levels of 90% have been attained for several individual vaccines, substantial variation remains at the state and urban area level, and many states have not achieved 90% coverage levels for specific vaccines. Achieving the national goal of 90% coverage by 2000 will require states to achieve and maintain high coverage levels for each vaccine. Public health efforts must focus on implementing effective strategies that achieve and sustain high vaccination coverage.

References

1. CDC. Status report on the Childhood Immunization Initiative: national, state, and urban area vaccination coverage levels among children aged 19–35 months—United States, 1996. MMWR 1997;46:657–64.
2. CDC. Reported vaccine-preventable diseases—United States, 1993, and the Childhood Immunization Initiative. MMWR 1994;43:57–60.
3. CDC. Sample design and procedures to produce estimates of vaccination coverage in the National Immunization Survey. Atlanta, Georgia: US Department of Health and Human Services, CDC, National Immunization Program, April 18, 1996.
4. CDC. Immunization schedule—United States, 1998. MMWR 1998;47:8–12.
5. CDC. Vaccination coverage by race/ethnicity and poverty level among children aged 19–35 months—United States, 1996. MMWR 1997;46:963–9.
6. Shefer A, Maes E, Brink E, Mize J, Passino JP. Assessment and related immunization issues in the Special Supplemental Nutrition Program for Women, Infants, and Children: a status report. Journal of Public Health Management Practice 1996;2:34–44.
7. Freed GL, Freeman VA, Clark SJ, Konrad TR, Pathman DE. Pediatrician and family physician agreement with and adoption of universal hepatitis B immunization. J Fam Pract 1996;42: 587–92.
8. LeBaron CW, Chaney M, Baughman AL, et al. Impact of measurement and feedback on vaccination in public clinics, 1988–1994. JAMA 1997;277:631–5.
9. Linkins RW, Dini EF, Watson G, Patriarca PA. A randomized trial of the effectiveness of computer-generated telephone messages in increasing immunization visits among preschool children. Archive of Pediatric and Adolescent Medicine 1994;148:908–14.
10. CDC. Varicella-related deaths among children—United States, 1997. MMWR 1998;47:365–8.

Notice to Readers

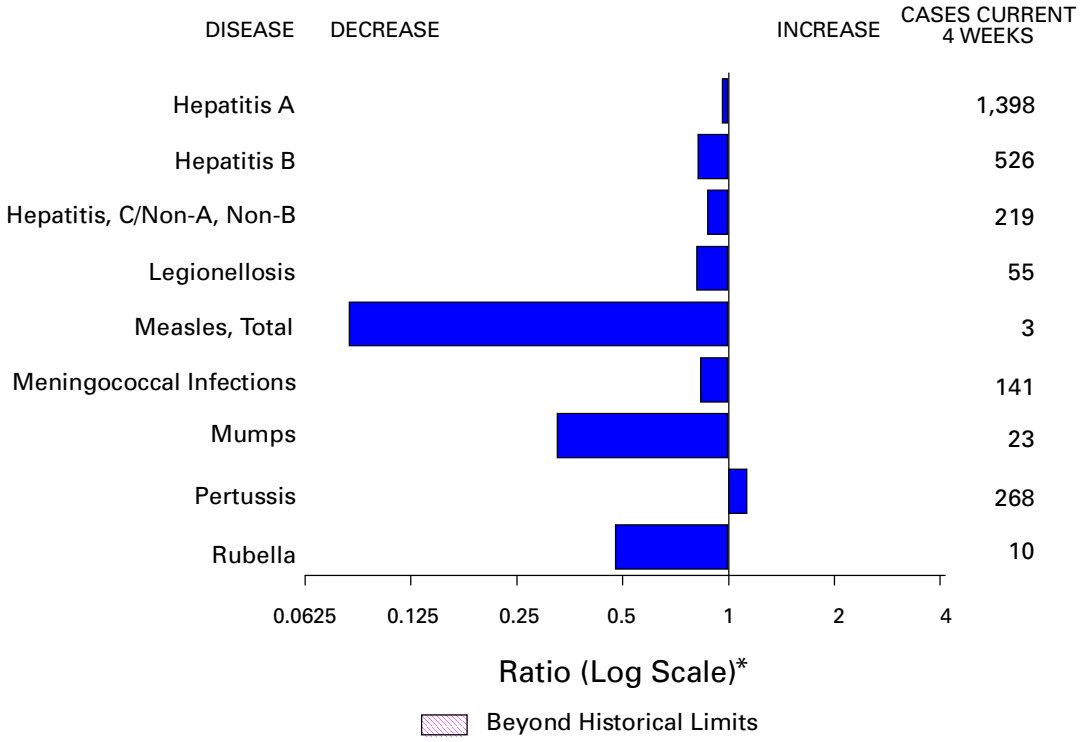
International Symposium on Tuberculosis Vaccine Development and Evaluation

The 1998 International Symposium on Tuberculosis Vaccine Development and Evaluation will be held August 26–28, 1998, in San Francisco, California. The symposium, cosponsored by CDC's National Vaccine Program Office, the National Institute of Allergy and Infectious Diseases, the American Lung Association, the World Health Organization, the American Thoracic Society, and the International Union Against Tuberculosis and Lung Disease, is for scientists, public health practitioners, infectious disease and pulmonary physicians, other health-care providers, vaccine manufacturers and distributors, and biotechnology firms. Symposium topics will include public health implications of tuberculosis (TB), the status of TB vaccine development, preclinical obstacles for TB candidate vaccines, challenges in TB vaccine evaluation, strategies for overcoming barriers for field testing, and criteria for field site selection. Information on the symposium is available from CDC's National Vaccine Program Office, telephone (404) 639-4168.

Erratum: Vol. 47, No. SS-2

In the CDC Surveillance Summaries, "Postneonatal Mortality Surveillance—United States, 1980–1994," on page 15, information was incorrectly presented in the results section of the abstract. The third sentence of that section should read, "The PNM *ratio between blacks and whites remained steady at approximately 2.1 during 1982–1988* and gradually increased to 2.4 by 1994." This corrected sentence also replaces the fifth sentence under the Results heading on pages 16–17.

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending July 4, 1998, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — provisional cases of selected notifiable diseases, United States, cumulative, week ending July 4, 1998 (26th Week)

	Cum. 1998		Cum. 1998
Anthrax	-	Plague	3
Brucellosis	36	Poliomyelitis, paralytic¶	-
Cholera	4	Psittacosis	25
Congenital rubella syndrome	3	Rabies, human	-
Cryptosporidiosis*	917	Rocky Mountain spotted fever (RMSF)	89
Diphtheria	1	Streptococcal disease, invasive Group A	1,287
Encephalitis: California*	2	Streptococcal toxic-shock syndrome*	33
eastern equine*	-	Syphilis, congenital**	128
St. Louis*	-	Tetanus	14
western equine*	-	Toxic-shock syndrome	67
Hansen Disease	60	Trichinosis	6
Hantavirus pulmonary syndrome*†	5	Typhoid fever	139
Hemolytic uremic syndrome, post-diarrheal*	19	Yellow fever	-
HIV infection, pediatric*§	127		

-:no reported cases
*Not notifiable in all states.
† Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases (NCID).
§ Updated monthly to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention (NCHSTP), last update June 28, 1998.
¶ One suspected case of polio with onset in 1998 has been reported to date.
**Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending July 4, 1998, and June 28, 1997 (26th Week)

Reporting Area	AIDS		Chlamydia		*Escherichia coli* O157:H7		Gonorrhea		Hepatitis C/NA,NB	
					NETSS†	PHLIS§				
	Cum. 1998*	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997
UNITED STATES	23,929	30,843	258,443	247,851	812	405	149,101	144,806	2,012	1,678
NEW ENGLAND	830	1,267	9,401	8,621	114	90	2,497	2,929	27	35
Maine	18	28	467	484	9	-	34	29	-	-
N.H.	22	17	459	388	18	18	46	58	-	-
Vt.	10	24	194	196	4	4	13	25	-	1
Mass.	386	462	4,144	3,546	59	52	993	1,095	25	30
R.I.	67	81	1,230	1,019	3	1	180	242	2	4
Conn.	327	655	2,907	2,988	21	15	1,231	1,480	-	-
MID. ATLANTIC	6,951	9,739	31,057	27,085	80	18	17,179	17,404	212	150
Upstate N.Y.	849	1,620	N	N	57	-	2,961	2,979	162	112
N.Y. City	3,910	4,965	17,038	13,136	3	6	7,401	6,547	-	-
N.J.	1,232	2,006	4,885	4,858	20	11	2,734	3,579	-	-
Pa.	960	1,148	9,134	9,091	N	1	4,083	4,299	50	38
E.N. CENTRAL	1,768	2,131	42,769	35,869	149	78	29,361	21,283	256	327
Ohio	331	409	12,419	10,775	36	16	7,564	6,659	6	7
Ind.	326	360	2,706	4,204	51	22	1,769	2,820	3	9
Ill.	706	760	12,462	6,476	33	-	10,038	3,206	11	54
Mich.	305	473	10,844	9,052	29	20	8,269	6,404	236	239
Wis.	100	129	4,338	5,362	N	20	1,721	2,194	-	18
W.N. CENTRAL	444	603	14,744	15,679	97	51	7,085	6,942	111	34
Minn.	65	99	2,401	3,271	38	26	858	1,139	6	2
Iowa	49	69	2,010	2,285	25	-	638	614	11	17
Mo.	209	294	5,634	5,762	10	17	4,034	3,725	90	4
N. Dak.	4	6	290	427	2	5	29	30	-	2
S. Dak.	9	3	809	621	6	1	129	66	-	-
Nebr.	39	49	1,095	1,007	7	-	366	371	2	2
Kans.	69	83	2,505	2,306	9	2	1,031	997	2	7
S. ATLANTIC	5,900	7,638	54,111	46,356	66	29	43,470	45,229	101	112
Del.	75	144	1,241	-	-	1	673	566	-	-
Md.	718	949	4,129	3,647	12	4	4,703	5,790	5	3
D.C.	481	533	N	N	1	-	1,758	2,076	-	-
Va.	425	599	5,342	5,533	N	7	3,046	4,003	5	11
W. Va.	57	57	1,322	1,431	N	2	371	474	4	9
N.C.	390	423	10,900	8,329	12	10	9,143	7,996	12	29
S.C.	386	403	9,309	6,151	2	-	6,043	5,590	2	26
Ga.	616	970	12,196	8,513	22	-	10,026	9,806	9	-
Fla.	2,752	3,560	9,672	12,752	14	5	7,707	8,928	64	34
E.S. CENTRAL	936	1,018	17,829	16,924	43	11	16,851	16,625	77	188
Ky.	127	177	3,052	3,336	10	-	1,753	2,089	14	8
Tenn.	333	413	6,228	6,287	22	10	5,297	5,241	60	120
Ala.	274	239	4,889	3,986	11	-	6,113	5,619	3	6
Miss.	202	189	3,660	3,315	U	1	3,688	3,676	U	54
W.S. CENTRAL	2,899	3,145	36,049	28,793	51	8	20,551	18,959	514	197
Ark.	104	120	1,647	1,416	4	3	1,153	2,315	5	6
La.	512	562	6,429	4,142	-	2	5,274	3,865	10	104
Okla.	170	138	4,875	3,662	6	3	2,656	2,330	2	4
Tex.	2,113	2,325	23,098	19,573	41	-	11,468	10,449	497	83
MOUNTAIN	831	900	9,212	13,886	84	50	3,331	3,749	237	152
Mont.	15	22	632	513	6	-	23	20	5	10
Idaho	15	28	917	709	9	1	83	52	87	23
Wyo.	2	13	330	284	2	-	15	26	43	40
Colo.	147	224	-	3,108	22	18	1,132	1,050	14	18
N. Mex.	130	80	1,878	1,925	10	6	371	441	52	32
Ariz.	329	227	4,002	5,052	N	9	1,457	1,598	3	18
Utah	65	73	1,144	836	15	10	112	121	20	3
Nev.	128	233	309	1,459	7	6	138	441	13	8
PACIFIC	3,370	4,402	43,271	54,638	128	70	8,776	11,686	477	483
Wash.	236	288	5,583	4,628	27	22	953	973	10	14
Oreg.	93	144	2,821	2,388	33	27	367	362	2	2
Calif.	2,962	3,912	32,903	46,050	66	18	7,097	9,895	410	382
Alaska	12	22	946	724	2	-	156	210	1	-
Hawaii	67	36	1,018	848	N	3	203	246	54	85
Guam	-	2	8	193	N	-	2	27	-	-
P.R.	1,001	1,019	U	U	-	U	216	335	-	-
V.I.	17	51	N	N	N	U	U	U	U	U
Amer. Samoa	-	-	U	U	N	U	U	U	U	U
C.N.M.I.	-	1	N	N	N	U	14	16	-	2

N: Not notifiable U: Unavailable -: no reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention, last update June 28, 1998.

†National Electronic Telecommunications System for Surveillance.

§Public Health Laboratory Information System.

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending July 4, 1998, and June 28, 1997 (26th Week)

Reporting Area	Legionellosis		Lyme Disease		Malaria		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal
	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998*	Cum. 1997	Cum. 1998
UNITED STATES	506	418	2,735	2,361	541	757	3,273	4,304	5,962	8,473	3,457
NEW ENGLAND	25	27	805	524	20	39	38	87	157	216	655
Maine	1	1	3	3	4	1	1	-	U	15	113
N.H.	3	4	17	7	3	2	1	-	6	6	33
Vt.	1	4	4	3	-	2	3	-	1	3	30
Mass.	10	8	175	89	11	17	24	40	120	117	222
R.I.	4	5	32	43	2	3	-	2	30	16	36
Conn.	6	5	574	379	-	14	9	45	U	59	221
MID. ATLANTIC	109	70	1,532	1,442	135	225	101	210	1,118	1,482	779
Upstate N.Y.	32	18	815	503	36	35	16	24	148	207	541
N.Y. City	19	4	10	80	65	139	23	40	690	782	U
N.J.	4	14	238	370	20	38	19	90	280	303	97
Pa.	54	34	469	489	14	13	43	56	U	190	141
E.N. CENTRAL	154	149	43	36	46	79	462	363	459	867	50
Ohio	66	65	37	12	3	9	74	112	5	149	37
Ind.	23	26	5	10	2	7	100	75	6	79	4
Ill.	14	5	-	4	15	35	174	45	276	439	2
Mich.	31	32	1	10	25	17	89	59	172	145	6
Wis.	20	21	U	U	1	11	25	72	U	55	1
W.N. CENTRAL	37	28	22	29	33	24	71	88	119	262	368
Minn.	3	1	9	15	17	9	3	13	U	69	69
Iowa	4	7	9	1	3	6	-	3	U	30	82
Mo.	14	3	1	11	9	5	55	51	82	100	17
N. Dak.	-	2	-	-	2	1	-	-	U	5	74
S. Dak.	1	2	-	-	-	-	1	-	14	7	66
Nebr.	12	10	1	1	-	1	4	1	5	12	3
Kans.	3	3	2	1	2	2	8	20	18	39	57
S. ATLANTIC	70	55	235	209	133	123	1,374	1,694	924	1,605	1,080
Del.	7	7	5	41	1	2	15	15	-	17	17
Md.	14	11	159	135	44	42	331	477	142	146	263
D.C.	4	3	4	7	10	9	39	65	58	50	-
Va.	7	11	21	4	22	32	87	139	118	165	336
W. Va.	N	N	5	1	-	-	2	3	24	27	42
N.C.	6	6	13	8	12	7	383	360	205	196	136
S.C.	5	2	2	1	4	9	161	211	159	187	77
Ga.	2	-	2	1	15	14	240	271	218	286	102
Fla.	24	15	24	11	25	8	116	153	U	531	107
E.S. CENTRAL	21	28	25	38	14	16	554	920	160	634	130
Ky.	12	7	7	5	2	4	59	76	U	95	19
Tenn.	6	14	8	15	8	4	284	385	U	234	79
Ala.	3	2	10	4	4	5	132	238	160	201	32
Miss.	U	5	U	14	U	3	79	221	U	104	U
W.S. CENTRAL	16	5	10	27	17	8	410	649	53	1,261	106
Ark.	-	-	5	8	1	2	54	96	53	107	21
La.	1	1	-	1	4	4	150	200	-	85	-
Okla.	6	1	-	4	2	2	25	57	U	114	85
Tex.	9	3	5	14	10	-	181	296	U	955	-
MOUNTAIN	31	29	4	4	27	37	102	82	223	255	82
Mont.	1	1	-	-	-	2	-	-	12	6	29
Idaho	-	2	1	-	3	-	-	-	8	7	-
Wyo.	1	1	-	1	-	2	1	-	2	2	41
Colo.	6	9	2	-	7	18	8	4	U	49	1
N. Mex.	2	1	-	-	11	5	12	4	28	19	2
Ariz.	4	7	-	1	5	4	76	65	111	115	7
Utah	16	5	-	-	1	2	3	3	33	11	2
Nev.	1	3	1	2	-	4	2	6	29	46	-
PACIFIC	43	27	59	52	116	206	161	211	2,749	1,891	207
Wash.	5	6	2	1	9	8	12	7	120	146	-
Oreg.	-	-	8	10	11	10	2	4	58	83	1
Calif.	37	20	48	41	95	181	147	198	2,464	1,523	186
Alaska	-	-	1	-	-	3	-	1	25	44	20
Hawaii	1	1	-	-	1	4	-	1	82	95	-
Guam	-	-	-	-	-	-	-	3	-	13	-
P.R.	-	-	-	-	-	3	114	122	46	88	28
V.I.	U	U	U	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	-	-	-	-	-	98	9	54	2	-

N: Not notifiable U: Unavailable -: no reported cases

*Additional information about areas displaying "U" for cumulative 1998 Tuberculosis cases can be found in Notice to Readers, *MMWR* Vol. 47, No. 2, p. 39.

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending July 4, 1998, and June 28, 1997 (26th Week)

Reporting Area	*H. influenzae*, invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
			A		B		Indigenous		Imported†		Total	
	Cum. 1998*	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	1998	Cum. 1998	1998	Cum. 1998	Cum. 1998	Cum. 1997
UNITED STATES	563	617	10,981	13,854	3,908	4,610	-	24	-	13	37	73
NEW ENGLAND	33	35	140	312	62	84	-	1	-	1	2	10
Maine	2	3	13	41	2	6	-	-	-	-	-	-
N.H.	5	5	7	18	10	5	-	-	-	-	-	1
Vt.	2	3	13	7	1	5	-	-	-	-	-	-
Mass.	22	21	42	154	17	37	-	1	-	1	2	8
R.I.	2	2	9	28	32	8	-	-	-	-	-	-
Conn.	-	1	56	64	-	23	-	-	-	-	-	1
MID. ATLANTIC	80	84	706	1,148	575	670	-	9	-	2	11	16
Upstate N.Y.	33	19	166	157	158	127	-	2	-	-	2	4
N.Y. City	15	23	188	512	143	266	-	-	-	-	-	5
N.J.	28	28	161	177	105	128	-	7	-	1	8	2
Pa.	4	14	191	302	169	149	-	-	-	1	1	5
E.N. CENTRAL	84	92	1,356	1,481	385	774	-	9	-	3	12	8
Ohio	34	46	177	200	37	42	-	-	-	1	1	-
Ind.	23	8	89	146	37	55	-	2	-	1	3	-
Ill.	23	25	219	374	67	146	-	-	-	-	-	6
Mich.	-	13	773	650	228	234	-	7	-	1	8	2
Wis.	4	-	98	111	16	297	-	-	-	-	-	-
W.N. CENTRAL	51	30	875	1,021	176	265	-	-	-	-	-	11
Minn.	37	21	69	90	18	23	-	-	-	-	-	2
Iowa	1	3	374	159	33	20	-	-	-	-	-	-
Mo.	8	3	346	556	98	194	U	-	U	-	-	1
N. Dak.	-	-	3	9	4	3	-	-	-	-	-	-
S. Dak.	-	2	16	14	1	-	-	-	-	-	-	8
Nebr.	-	1	15	41	7	8	-	-	-	-	-	-
Kans.	5	-	52	152	15	17	-	-	-	-	-	-
S. ATLANTIC	119	101	946	748	569	548	-	2	-	5	7	3
Del.	-	-	2	16	-	3	-	-	-	1	1	-
Md.	38	42	173	118	83	82	-	-	-	1	1	1
D.C.	-	-	30	14	6	21	-	-	-	-	-	1
Va.	12	7	129	99	53	64	-	-	-	2	2	-
W. Va.	4	3	1	6	3	9	-	-	-	-	-	-
N.C.	15	17	51	105	111	121	-	-	-	-	-	1
S.C.	4	3	17	65	8	60	-	-	-	-	-	-
Ga.	24	20	253	173	92	57	-	-	-	1	1	-
Fla.	22	9	290	152	213	131	-	2	-	-	2	-
E.S. CENTRAL	31	37	180	347	189	359	-	-	-	-	-	1
Ky.	4	4	12	44	22	22	-	-	-	-	-	-
Tenn.	20	23	123	212	135	240	-	-	-	-	-	-
Ala.	7	8	45	52	32	38	-	-	-	-	-	1
Miss.	U	2	U	39	U	59	U	U	U	U	U	-
W.S. CENTRAL	30	29	2,072	2,832	646	547	-	-	-	-	-	4
Ark.	-	2	43	127	46	41	-	-	-	-	-	-
La.	13	6	41	110	47	63	-	-	-	-	-	-
Okla.	15	19	283	845	31	18	-	-	-	-	-	-
Tex.	2	2	1,705	1,750	522	425	-	-	-	-	-	4
MOUNTAIN	67	64	1,732	2,048	434	447	-	-	-	-	-	7
Mont.	-	-	56	50	3	5	-	-	-	-	-	-
Idaho	-	1	142	77	18	15	-	-	-	-	-	-
Wyo.	-	1	23	20	2	14	-	-	-	-	-	-
Colo.	14	9	131	231	52	85	-	-	-	-	-	-
N. Mex.	5	6	85	162	176	149	-	-	-	-	-	-
Ariz.	38	23	1,108	957	119	96	-	-	-	-	-	5
Utah	4	3	118	346	39	53	-	-	-	-	-	-
Nev.	6	21	69	205	25	30	U	-	U	-	-	2
PACIFIC	68	145	2,974	3,917	872	916	-	3	-	2	5	13
Wash.	4	2	573	280	64	39	-	-	-	1	1	-
Oreg.	29	24	209	193	58	57	-	-	-	-	-	-
Calif.	28	113	2,155	3,345	739	803	-	3	-	1	4	10
Alaska	1	1	14	22	6	11	-	-	-	-	-	-
Hawaii	6	5	23	77	5	6	-	-	-	-	-	3
Guam	-	-	-	-	-	3	U	-	U	-	-	-
P.R.	2	-	23	180	238	391	-	-	-	-	-	-
V.I.	U	U	U	U	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	5	1	1	28	26	U	-	U	-	-	1

N: Not notifiable U: Unavailable -: no reported cases

*Of 132 cases among children aged <5 years, serotype was reported for 74 and of those, 32 were type b.

†For imported measles, cases include only those resulting from importation from other countries.

TABLE III. (Cont'd.) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending July 4, 1998, and June 28, 1997 (26th Week)

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 1998	Cum. 1997	1998	Cum. 1998	Cum. 1997	1998	Cum. 1998	Cum. 1997	1998	Cum. 1998	Cum. 1997
UNITED STATES	1,540	2,002	7	243	354	60	2,135	2,645	1	252	87
NEW ENGLAND	69	123	-	1	7	3	373	548	-	33	1
Maine	4	12	-	-	-	-	5	6	-	-	-
N.H.	4	12	-	-	-	-	34	62	-	-	-
Vt.	1	2	-	-	-	-	36	172	-	-	-
Mass.	34	64	-	1	2	3	282	285	-	6	1
R.I.	3	8	-	-	4	-	3	12	-	-	-
Conn.	23	25	-	-	1	-	13	11	-	27	-
MID. ATLANTIC	144	205	-	16	43	10	274	212	-	112	24
Upstate N.Y.	37	58	-	3	9	10	140	78	-	105	4
N.Y. City	16	36	-	4	3	-	4	50	-	2	20
N.J.	39	41	-	1	7	-	5	11	-	4	-
Pa.	52	70	-	8	24	-	125	73	-	1	-
E.N. CENTRAL	221	297	1	42	37	9	196	252	-	-	4
Ohio	83	106	-	19	14	1	72	74	-	-	-
Ind.	41	33	1	5	4	8	61	29	-	-	-
Ill.	47	89	-	1	8	-	14	34	-	-	-
Mich.	26	41	-	17	10	-	32	31	-	-	-
Wis.	24	28	-	-	1	-	17	84	-	-	4
W.N. CENTRAL	125	147	-	20	12	-	168	153	-	13	-
Minn.	24	24	-	10	5	-	100	98	-	-	-
Iowa	20	31	-	6	6	-	39	8	-	-	-
Mo.	48	68	U	3	-	U	12	25	U	2	-
N. Dak.	-	1	-	1	-	-	-	1	-	-	-
S. Dak.	6	4	-	-	-	-	4	3	-	-	-
Nebr.	4	5	-	-	1	-	5	3	-	-	-
Kans.	23	14	-	-	-	-	8	15	-	11	-
S. ATLANTIC	278	335	2	34	41	2	130	232	1	8	29
Del.	1	4	-	-	-	-	1	-	-	-	-
Md.	23	35	-	-	1	-	26	79	-	-	-
D.C.	-	5	-	-	-	-	1	2	-	-	-
Va.	23	34	1	5	6	-	6	25	-	-	1
W. Va.	9	14	-	-	-	-	1	4	-	-	-
N.C.	40	62	-	8	7	-	44	68	-	5	22
S.C.	44	38	-	4	10	-	15	11	-	-	6
Ga.	61	62	-	1	5	-	6	6	-	-	-
Fla.	77	81	1	16	12	2	30	37	1	3	-
E.S. CENTRAL	107	148	-	1	19	2	50	51	-	-	1
Ky.	16	38	-	-	3	2	20	13	-	-	-
Tenn.	42	48	-	1	3	-	17	20	-	-	-
Ala.	49	45	-	-	6	-	13	12	-	-	1
Miss.	U	17	U	U	7	U	U	6	U	U	-
W.S. CENTRAL	180	192	3	34	42	4	139	83	-	68	3
Ark.	22	25	-	-	-	1	19	6	-	-	-
La.	35	38	3	5	11	-	1	11	-	-	-
Okla.	27	23	-	-	-	-	13	9	-	-	-
Tex.	96	106	-	29	31	3	106	57	-	68	3
MOUNTAIN	86	118	1	22	46	21	483	688	-	5	5
Mont.	3	7	-	-	-	-	1	8	-	-	-
Idaho	4	8	-	3	2	1	189	433	-	-	1
Wyo.	3	1	-	1	1	-	7	4	-	-	-
Colo.	19	30	-	4	3	1	97	182	-	-	-
N. Mex.	15	19	N	N	N	-	64	32	-	1	-
Ariz.	30	30	1	5	29	18	89	15	-	1	4
Utah	9	11	-	3	6	1	24	4	-	2	-
Nev.	3	12	U	6	5	U	12	10	U	1	-
PACIFIC	330	437	-	73	107	9	322	426	-	13	20
Wash.	41	52	-	5	12	9	148	182	-	9	5
Oreg.	56	89	N	N	N	-	19	22	-	-	-
Calif.	228	293	-	53	78	-	149	209	-	2	8
Alaska	1	1	-	2	5	-	2	2	-	-	-
Hawaii	4	2	-	13	12	-	4	11	-	2	7
Guam	-	1	U	-	1	U	-	-	U	-	-
P.R.	5	8	-	1	4	-	2	-	-	-	-
V.I.	U	U	U	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	-	U	2	4	U	1	-	U	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE IV. Deaths in 122 U.S. cities,* week ending July 4, 1998 (26th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	514	358	102	29	15	10	30
Boston, Mass.	118	76	27	4	6	5	13
Bridgeport, Conn.	48	37	6	4	1	-	1
Cambridge, Mass.	17	13	3	1	-	-	-
Fall River, Mass.	30	24	5	1	-	-	-
Hartford, Conn.	30	17	8	1	2	2	-
Lowell, Mass.	25	19	6	-	-	-	2
Lynn, Mass.	11	7	2	2	-	-	-
New Bedford, Mass.	20	18	2	-	-	-	-
New Haven, Conn.	32	17	12	3	-	-	-
Providence, R.I.	48	37	5	-	5	1	2
Somerville, Mass.	4	4	-	-	-	-	-
Springfield, Mass.	44	28	9	6	-	1	6
Waterbury, Conn.	29	21	4	4	-	-	-
Worcester, Mass.	58	40	13	3	1	1	6
MID. ATLANTIC	2,059	1,443	386	160	41	29	82
Albany, N.Y.	35	21	11	1	1	1	1
Allentown, Pa.	U	U	U	U	U	U	U
Buffalo, N.Y.	71	53	13	3	2	-	11
Camden, N.J.	19	14	2	1	-	2	-
Elizabeth, N.J.	7	5	1	1	-	-	-
Erie, Pa.	51	38	8	5	-	-	-
Jersey City, N.J.	34	23	7	3	1	-	-
New York City, N.Y.	1,117	757	224	104	22	10	35
Newark, N.J.	18	10	7	1	-	-	-
Paterson, N.J.	29	19	6	1	-	3	-
Philadelphia, Pa.	300	201	58	24	9	8	11
Pittsburgh, Pa.§	40	31	6	3	-	-	3
Reading, Pa.	22	21	1	-	-	-	1
Rochester, N.Y.	101	86	10	3	1	1	5
Schenectady, N.Y.	26	20	3	1	2	-	-
Scranton, Pa.	33	29	4	-	-	-	2
Syracuse, N.Y.	92	67	18	2	3	2	10
Trenton, N.J.	39	27	4	6	-	2	3
Utica, N.Y.	25	21	3	1	-	-	-
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	1,719	1,130	351	133	61	44	96
Akron, Ohio	36	25	6	4	1	-	-
Canton, Ohio	48	33	13	2	-	-	10
Chicago, Ill.	423	231	101	52	23	16	22
Cincinnati, Ohio	44	28	11	2	1	2	13
Cleveland, Ohio	101	74	19	4	2	2	2
Columbus, Ohio	212	155	42	8	6	1	16
Dayton, Ohio	106	69	25	6	5	1	6
Detroit, Mich.	156	97	33	19	5	2	5
Evansville, Ind.	36	29	4	3	-	-	2
Fort Wayne, Ind.	70	54	8	4	1	3	3
Gary, Ind.	7	4	-	1	2	-	-
Grand Rapids, Mich.	56	39	13	3	-	1	3
Indianapolis, Ind.	118	68	33	5	2	10	-
Lansing, Mich.	39	31	3	1	2	2	3
Milwaukee, Wis.	85	65	9	6	3	2	3
Peoria, Ill.	67	40	15	9	3	-	3
Rockford, Ill.	43	32	7	-	2	2	2
South Bend, Ind.	22	18	2	1	1	-	1
Toledo, Ohio	U	U	U	U	U	U	U
Youngstown, Ohio	50	38	7	3	2	-	2
W.N. CENTRAL	582	403	107	21	18	15	35
Des Moines, Iowa	U	U	U	U	U	U	U
Duluth, Minn.	17	12	5	-	-	-	1
Kansas City, Kans.	48	34	11	1	2	-	1
Kansas City, Mo.	110	65	22	-	2	3	2
Lincoln, Nebr.	43	35	6	2	-	-	3
Minneapolis, Minn.	104	72	18	6	3	5	3
Omaha, Nebr.	U	U	U	U	U	U	U
St. Louis, Mo.	80	53	15	4	6	2	6
St. Paul, Minn.	51	40	8	-	1	2	9
Wichita, Kans.	129	92	22	8	4	3	10

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
S. ATLANTIC	1,010	662	206	105	24	13	49
Atlanta, Ga.	U	U	U	U	U	U	U
Baltimore, Md.	168	96	44	22	3	3	8
Charlotte, N.C.	94	66	17	5	2	4	12
Jacksonville, Fla.	104	72	16	11	3	2	2
Miami, Fla.	122	78	26	15	3	-	-
Norfolk, Va.	41	31	7	2	-	1	-
Richmond, Va.	58	33	18	5	2	-	4
Savannah, Ga.	70	45	12	9	3	1	6
St. Petersburg, Fla.	68	49	10	6	2	1	4
Tampa, Fla.	177	134	26	13	3	1	11
Washington, D.C.	102	55	27	17	3	-	2
Wilmington, Del.	6	3	3	-	-	-	-
E.S. CENTRAL	1,115	693	259	98	25	39	60
Birmingham, Ala.	155	102	33	13	3	4	10
Chattanooga, Tenn.	65	48	8	6	1	2	6
Knoxville, Tenn.	92	67	13	9	2	1	4
Lexington, Ky.	65	32	19	7	3	4	3
Memphis, Tenn.	257	153	67	21	6	10	11
Memphis, Tenn.	257	153	67	21	6	10	11
Mobile, Ala.	63	40	15	6	-	2	2
Montgomery, Ala.	41	26	10	1	1	3	5
Nashville, Tenn.	120	72	27	14	3	3	8
W.S. CENTRAL	1,223	808	252	85	43	34	64
Austin, Tex.	71	46	10	6	5	3	3
Baton Rouge, La.	12	9	2	-	-	1	-
Corpus Christi, Tex.	38	27	6	3	2	-	2
Dallas, Tex.	147	91	38	11	4	3	3
El Paso, Tex.	117	94	17	3	2	1	4
Ft. Worth, Tex.	72	48	14	6	1	3	7
Houston, Tex.	303	198	68	20	8	9	24
Little Rock, Ark.	50	29	8	2	7	4	2
New Orleans, La.	134	81	31	12	7	3	-
San Antonio, Tex.	185	127	34	13	4	7	15
Shreveport, La.	U	U	U	U	U	U	U
Tulsa, Okla.	94	58	24	9	3	-	4
MOUNTAIN	859	566	170	78	23	22	73
Albuquerque, N.M.	92	58	21	10	2	1	4
Boise, Idaho	35	21	9	3	2	-	2
Colo. Springs, Colo.	57	42	10	3	1	1	8
Denver, Colo.	113	71	21	14	3	4	10
Las Vegas, Nev.	171	113	33	15	4	6	5
Ogden, Utah	28	21	6	-	1	-	5
Phoenix, Ariz.	148	98	31	11	4	4	14
Pueblo, Colo.	18	15	1	2	-	-	3
Salt Lake City, Utah	101	59	21	12	3	6	11
Tucson, Ariz.	96	68	17	8	3	-	11
PACIFIC	1,713	1,255	290	104	36	28	150
Berkeley, Calif.	17	12	2	2	1	-	1
Fresno, Calif.	46	36	5	-	3	2	10
Glendale, Calif.	28	23	4	1	-	-	4
Honolulu, Hawaii	63	49	11	3	-	-	2
Long Beach, Calif.	50	34	8	7	1	-	8
Los Angeles, Calif.	543	399	92	32	12	8	32
Pasadena, Calif.	23	23	-	-	-	-	5
Portland, Oreg.	69	43	14	9	1	2	-
Sacramento, Calif.	179	132	26	12	3	6	29
San Diego, Calif.	135	97	24	8	5	1	15
San Francisco, Calif.	107	75	20	10	2	-	8
San Jose, Calif.	191	142	34	10	3	2	20
Santa Cruz, Calif.	24	20	1	1	-	2	3
Seattle, Wash.	101	63	22	8	5	3	3
Spokane, Wash.	39	34	5	-	-	-	4
Tacoma, Wash.	98	73	22	1	-	2	6
TOTAL	10,794¶	7,318	2,123	813	286	234	639

U: Unavailable -: no reported cases

*Mortality data in this table are voluntarily reported from 122 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

†Pneumonia and influenza.

§Because of changes in reporting methods in this Pennsylvania city, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

Contributors to the Production of the *MMWR* (Weekly)

Weekly Notifiable Disease Morbidity Data and 122 Cities Mortality Data

Samuel L. Groseclose, D.V.M., M.P.H.

State Support Team

Robert Fagan
Karl A. Brendel
Harry Holden
Gerald Jones
Felicia Perry
Carol A. Worsham

CDC Operations Team

Carol M. Knowles
Deborah A. Adams
Willie J. Anderson
Patsy A. Hall
Myra A. Montalbano
Angela Trosclair, M.S.

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format and on a paid subscription basis for paper copy. To receive an electronic copy on Friday of each week, send an e-mail message to *listserv@listserv.cdc.gov*. The body content should read *SUBscribe mmwr-toc*. Electronic copy also is available from CDC's World-Wide Web server at *http://www.cdc.gov/* or from CDC's file transfer protocol server at *ftp.cdc.gov*. To subscribe for paper copy, contact Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone (202) 512-1800.

Data in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the following Friday. Address inquiries about the *MMWR* Series, including material to be considered for publication, to: Editor, *MMWR* Series, Mailstop C-08, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333; telephone (888) 232-3228.

☆**U.S. Government Printing Office: 1998-633-228/87012 Region IV**