

# MMWR™

MORBIDITY AND MORTALITY WEEKLY REPORT

- 389 National Arthritis Month — May 1997
- 389 Prevalence of Leisure-Time Physical Activity Among Persons with Arthritis and Other Rheumatic Conditions — United States, 1990–1991
- 393 Monthly Estimates of Leisure-Time Physical Inactivity — United States, 1994
- 397 Human Rabies — Kentucky and Montana, 1996

## National Arthritis Month — May 1997

May is National Arthritis Month. Arthritis, a leading cause of disability, affects an estimated 40 million persons in the United States and may affect nearly 60 million by 2020. This year's theme is "Stay Active with Arthritis Through Physical Activity and Education<sup>SM</sup>". The Arthritis Foundation promotes the messages of the 1996 Surgeon General's report on physical activity and health by emphasizing that regular physical activity can help persons with arthritis control pain and disability. The foundation also encourages all persons to build and maintain healthy bones, muscles, and joints through regular physical activity.

Additional information about arthritis, National Arthritis Month activities, and ongoing local Arthritis Foundation programs and services is available from the Arthritis Foundation, telephone (800) 283-7800, or on the World-Wide Web, <http://www.arthritis.org>. A National Arthritis Month media kit also is available, telephone (404) 872-7100, extension 6225.

## Prevalence of Leisure-Time Physical Activity Among Persons with Arthritis and Other Rheumatic Conditions — United States, 1990–1991

Although regular physical activity is associated with important physical and mental health benefits (1), an estimated 53 million U.S. adults are inactive during their leisure time—the period most amenable to efforts to increase physical activity. The presence of chronic conditions, especially those associated with disabilities, may reduce levels of leisure-time physical activity (LTPA). Arthritis and other rheumatic conditions (e.g., osteoarthritis, rheumatoid arthritis, gout, fibromyalgia, and other diseases of the joints) are leading causes of disability (2) and are among the most prevalent chronic conditions in the United States, affecting approximately 40 million persons in 1995 and a projected 60 million persons in 2020 (3). This report uses data from the Health Promotion and Disease Prevention (HPDP) supplement of the 1990–1991 National Health Interview Survey (NHIS) to provide estimates of LTPA among persons with arthritis and other rheumatic conditions by disability status and compares these esti-

*Arthritis — Continued*

mates with those for persons without arthritis and other rheumatic conditions. The findings indicate that the prevalence of LTPA among persons with arthritis and other rheumatic conditions is less than that among persons without arthritis and other rheumatic conditions.

NHIS is a probability sample of the U.S. civilian, noninstitutionalized population. In 1990 and 1991, approximately 120,000 persons in 47,000 households were surveyed each year (4). The survey population was persons in the one-sixth sample of respondents who were asked questions about the presence of musculoskeletal conditions during the preceding 12 months. Each condition was assigned an *International Classification of Diseases, Ninth Revision* (ICD-9), code. The category arthritis and other rheumatic conditions was classified as a condition that matched ICD-9 codes\* selected by the National Arthritis Data Workgroup; this definition excludes other musculoskeletal conditions such as tumors, bone disorders, fractures, and back and neck disorders. In this report, "arthritis" denotes arthritis and other rheumatic conditions.

Responses to core NHIS questions were used to determine disability, defined as long-term reduction in a person's capacity to perform the average kind or amount of activities associated with his or her age group and typically resulting from chronic disease or impairment. Responses to the HPDP supplement were used to determine LTPA. For the HPDP supplement, one adult (aged  $\geq 18$  years) per household was randomly selected to answer questions; only those who self-reported were included (response rate for combined NHIS and HPDP supplement: 83%). Each respondent was asked whether he or she had engaged in any of 21 physically active hobbies, sports, or exercises during the 2 weeks preceding the interview; the respondent also was allowed to list two additional hobbies, sports, or exercises in which he or she had participated. For each activity, frequency, duration, and relative intensity were assessed. LTPA was divided into four categories: no reported LTPA, regular vigorous LTPA, regular light-to-moderate LTPA, and less than regular LTPA.<sup>†</sup> To account for the complex sample design, variances were computed using SUDAAN, and rates were compared using a two-tailed t-test.

In 1990 and 1991, arthritis was present in approximately 20% (95% confidence interval= $\pm 0.4\%$ ) of the U.S. population aged  $\geq 18$  years. Among these persons, the rate of no reported LTPA was higher than that for persons without arthritis; the rates of less than regular LTPA and regular light-to-moderate LTPA were similar to that for persons without arthritis; and the rate of regular vigorous LTPA was lower than that for persons without arthritis (Table 1). Persons with nondisabling arthritis had higher rates of no reported LTPA, similar rates of less than regular LTPA and regular light-to-moderate LTPA, and lower rates of regular vigorous LTPA when compared with persons without

\*ICD-9 codes 95.6, 95.7, 98.5, 99.3, 136.1, 274, 277.2, 287.0, 344.6, 353.0, 354.0, 355.5, 357.1, 390, 391, 437.4, 443.0, 446, 447.6, 696.0, 710–716, 719.0, 719.2–719.9, 720–721, 725–727, 728.0–728.3, 728.6–728.9, 729.0–729.1, and 729.4.

<sup>†</sup>*Regular vigorous*=any reported LTPA engaged in three or more times per week for  $\geq 20$  minutes per occasion at a level  $\geq 6.0$  metabolic equivalents (METs) (MET=3.5 mL of oxygen consumed/kg body weight/minute) among persons aged  $\geq 60$  years or  $\geq 7.0$  METs among persons aged 18–59 years. *Regular light-to-moderate*=any reported LTPA engaged in on  $\geq 5$  days per week for an accumulation of  $\geq 30$  minutes per day (minimum of any bout of activity of  $\geq 10$  minutes) at a level of exertion  $< 6.0$  METs among persons aged  $\geq 60$  years or  $< 7.0$  METs among those aged 18–59 years. *Less than regular*=any reported LTPA less than that required for regular light-to-moderate LTPA.

## Arthritis — Continued

**TABLE 1. Prevalence rates\* of participation in leisure-time physical activity (LTPA)<sup>†</sup> during the 2 weeks preceding interview among persons aged  $\geq 18$  years, for all persons, those with and without arthritis<sup>§</sup>, and those with and without disability<sup>¶</sup> — Health Promotion and Disease Prevention Supplement, National Health Interview Survey, United States, 1990–1991\*\***

Category	Sample size	Weighted population <sup>††</sup>	% Engaging in LTPA			
			No reported	Less than regular	Regular	
					Light-to-moderate	Vigorous
<b>Total population</b>	14,071	181,829	29.1	34.9	21.4	14.5
With arthritis	3,223	36,917	34.8 <sup>§§</sup>	34.1	20.5	10.7 <sup>§§</sup>
Without arthritis	10,848	144,913	27.7	35.2	21.7	15.5
With nondisabling arthritis	2,512	29,282	31.5 <sup>§§</sup>	35.7	21.1	11.6 <sup>§§</sup>
Without arthritis and without disability	9,631	130,116	26.4	35.4	22.2	15.9
With disabling arthritis	711	7,635	47.4 <sup>§§</sup>	27.8 <sup>§§</sup>	17.8	7.1 <sup>§§</sup>
Without arthritis and with a disability caused by another condition	1,217	14,796	38.5	33.1	16.7	11.7

\*95% confidence intervals ranged from  $\pm 0.8\%$  to  $\pm 4.2\%$ .

<sup>†</sup>During the interview, each respondent was asked whether he or she had engaged in any of 21 physically active hobbies, sports, or exercises during the 2 weeks preceding the interview; the respondent also was allowed to list two additional hobbies, sports, or exercises in which he or she had participated. For each activity, frequency, duration, and relative intensity were assessed. LTPA was divided into four categories: no reported LTPA; regular vigorous LTPA (i.e., any reported LTPA engaged in three or more times per week for  $\geq 20$  minutes per occasion at a level  $\geq 6.0$  metabolic equivalents [METs] [MET=3.5 mL of oxygen consumed/kg body weight/minute] among persons aged  $\geq 60$  years or  $\geq 7.0$  METs among those aged 18–59 years); regular light-to-moderate LTPA (i.e., any reported LTPA engaged in on  $\geq 5$  days per week for an accumulation of  $\geq 30$  minutes per day (minimum of any bout of activity of  $\geq 10$  minutes) at a level of exertion  $< 6.0$  METs among persons aged  $\geq 60$  years or  $< 7.0$  METs among those aged 18–59 years); and less than regular LTPA (i.e., any reported LTPA less than that required for regular light-to-moderate LTPA).

<sup>§</sup>Arthritis is defined using the following *International Classification of Diseases, Ninth Revision*, codes selected by the National Arthritis Data Workgroup: 95.6, 95.7, 98.5, 99.3, 136.1, 274, 277.2, 287.0, 344.6, 353.0, 354.0, 355.5, 357.1, 390, 391, 437.4, 443.0, 446, 447.6, 696.0, 710–716, 719.0, 719.2–719.9, 720–721, 725–727, 728.0–728.3, 728.6–728.9, 729.0–729.1, and 729.4. The definition excludes other musculoskeletal conditions such as tumors, bone disorders, fractures, and back and neck disorders. In this table, “arthritis” denotes arthritis and other rheumatic conditions.

<sup>¶</sup>Long-term reduction in a person’s capacity to perform the average kind or amount of activity associated with his or her age group and typically resulting from chronic disease or impairment.

\*\* 2-year average.

<sup>††</sup>In thousands.

<sup>§§</sup>Significantly different for persons with arthritis compared with persons without arthritis for the corresponding category of total population, persons without disability, and persons with disability at  $p < 0.05$ , using a two-tailed t-test.

*Arthritis — Continued*

arthritis and without disability. Persons with disabling arthritis had higher rates of no reported LTPA, similar rates of light-to-moderate LTPA, and lower rates of less than regular and regular vigorous LTPA when compared with persons without arthritis and with a disability caused by another condition.

*Reported by: MP LaPlante, Dept of Social and Behavioral Sciences and the Institute for Health and Aging, Univ of California, San Francisco. Health Care and Aging Studies Br, Div of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.*

**Editorial Note:** The findings in this report indicate that, independent of the presence of disability, compared with persons without arthritis, persons with arthritis had substantially higher rates of no reported LTPA and lower rates of regular vigorous LTPA. Rates of LTPA among persons with arthritis may be low because some of these persons may have been advised not to exercise to avoid a perceived risk for exacerbating their underlying rheumatic condition. However, previous studies indicate that persons with arthritis can adapt to increased levels of physical activity without adverse effects (5); that physical activity produces improvements in muscle function, cardiorespiratory capacity, and physical performance (6); and that older adults with arthritis have had subjective and objective improvement in their condition as a result of physical activity (7). In addition, for persons with osteoarthritis, regular physical activity is necessary for maintaining normal muscle strength, joint structure, and joint function and is not associated with joint damage or further progression of osteoarthritis. As in the total population, physical activity among persons with osteoarthritis can reduce the risk for premature death, heart disease, diabetes, high blood pressure, colon cancer, overweight, depression, and anxiety (1).

Although self-reported data sometimes can produce unreliable or incomplete estimates, previous studies have documented the validity and reliability of self-reported data for LTPA (8). In addition, self-reported data provide a more complete assessment of the occurrence of arthritis than do medical records (9).

Persons with arthritis have low rates of physical activity and, therefore, should be a priority for programs to improve overall levels of physical activity (1,10). However, these persons should consult their physicians before increasing LTPA to determine optimally sustainable regimens of physical activity. Health-care providers and organizations should encourage these patients to increase their LTPA. Information about land- and water-based exercise programs and individualized and group approaches to increasing physical activity is available from the Arthritis Foundation, telephone (800) 283-7800, or on the World-Wide Web, <http://www.arthritis.org>.

*References*

1. US Department of Health and Human Services. Physical activity and health: a report of the Surgeon General. Atlanta: US Department of Health and Human Services, Public Health Service, CDC, 1996.
2. LaPlante MP, Carlson D. Disability in the United States: prevalence and causes, 1992. Disability Statistics Report 1996;7:1-177.
3. CDC. Arthritis prevalence and activity limitations—United States, 1990. MMWR 1994;43:433-8.
4. Massey JT, Moore TF, Parsons VL, Tadros W. Design and estimation for the National Health Interview Survey, 1985-94. Vital Health Stat 1989;2:1-4.
5. Minor MA. Physical activity and management of arthritis. Annals of Behavioral Medicine 1991;13:117-24.
6. Stenstrom CH. Therapeutic exercise in rheumatoid arthritis. Arthritis Care Res 1994;7:190-7.

*Arthritis — Continued*

7. Panush RS, Holtz HA. Is exercise good or bad for arthritis in the elderly? *South Med J* 1994;87:S74–S78.
8. Jacobs DR Jr, Ainsworth BE, Hartman TJ, Leon AS. A simultaneous evaluation of 10 commonly used physical activity questionnaires. *Med Sci Sports Exerc* 1993;25:81–91.
9. Anonymous. Evaluation of the National Health Survey Diagnostic Reporting. *Vital Health Stat* 1994;2:1–116.
10. Public Health Service. Healthy people 2000: national health promotion and disease prevention objectives—full report, with commentary. Washington, DC: US Department of Health and Human Services, Public Health Service, 1991; DHHS publication no. (PHS)91-50212.

### Monthly Estimates of Leisure-Time Physical Inactivity — United States, 1994

Physical inactivity increases the risk for heart disease, diabetes, colon cancer, high blood pressure, obesity, osteoporosis, muscle and joint disorders, and symptoms of anxiety and depression (1). However, approximately one third of adults in the United States report no leisure-time physical activity, and rates of inactivity have been higher in January than in June (1). Among adults, the prevalence of leisure-time physical inactivity is highest among those who are older, Hispanic, and residing in southern states (1). A national health objective for the year 2000 is to reduce to  $\leq 15\%$  the proportion of persons reporting no leisure-time physical activity (objective 1.5) (2). To assist in monitoring efforts to achieve this objective, CDC analyzed data from the 1994 Behavioral Risk Factor Surveillance System (BRFSS) and estimated for each month the proportion of adults from selected demographic groups who reported no leisure-time physical activity. The findings indicate seasonal patterns in the prevalence of reported leisure-time physical inactivity; however, monthly rates of inactivity were higher and more stable among older persons, Hispanics, and residents of southern states.

The BRFSS is a population-based, random-digit-dialed telephone survey of the civilian, noninstitutionalized U.S. population aged  $\geq 18$  years, with samples drawn monthly. During 1994, a total of 105,853 respondents in 50 states and the District of Columbia were asked whether they participated in exercise, recreation, or physical activities other than their regular job duties (e.g., running, calisthenics, golf, gardening, or walking for exercise) during the past month. Respondents were classified as having no leisure-time physical activity if they reported no such participation. Data were weighted and aggregated, and composite estimates and standard errors were calculated using SESUDAAN. Prevalence estimates and 95% confidence intervals were calculated for each month by demographic group and by residence in selected northern or southern states\* in the contiguous 48 states; northern states were those generally north of 41 degrees latitude, and southern states were those generally south of 37 degrees latitude.

During 1994, an overall proportion of 29.4% of adults reported no leisure-time physical activity; prevalence rates were highest in January (35.3%) and lowest in June (24.7%) (Table 1). Seasonal patterns (high prevalences during winter months and low

---

\* *Northern states*—Connecticut, Idaho, Maine, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New York, North Dakota, Oregon, South Dakota, Vermont, Washington, Wisconsin, and Wyoming; *Southern states*—Alabama, Arizona, Arkansas, Florida, Georgia, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas.

**TABLE 1. Percentage\* of respondents who reported no leisure-time physical activity,† by month and selected characteristics — United States, Behavioral Risk Factor Surveillance System, 1994‡**

Characteristic	Month												Percentage point range
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
<b>Sex</b>													
Men	32.5	32.6	26.9	25.7	24.3	23.4	24.9	23.8	25.9	25.5	28.7	30.4	9.2
Women	37.9	37.2	33.0	29.2	27.7	26.0	28.7	29.6	29.4	31.9	31.8	36.2	11.9
<b>Age group (yrs)</b>													
18–29	25.2	22.8	21.1	18.6	18.0	18.9	20.2	20.2	22.1	19.1	25.3	26.4	8.4
30–44	34.0	34.2	28.5	24.3	22.9	20.8	22.3	24.7	24.3	27.3	27.8	33.0	13.4
45–64	40.8	39.3	34.1	32.4	30.6	27.4	32.4	28.2	30.6	32.8	32.4	33.9	13.4
65–74	41.1	42.5	37.3	34.0	33.3	35.0	32.9	34.7	34.7	36.0	33.2	43.9	11.0
≥75	46.0	55.8	46.1	46.5	43.8	42.8	45.6	45.0	44.5	47.9	45.7	43.3	13.0¶
<b>Race/Ethnicity</b>													
White, non-Hispanic	34.4	32.7	27.5	26.0	24.3	22.4	25.0	24.4	26.5	26.7	27.6	31.4	12.0
Black, non-Hispanic	43.5	46.4	45.6	37.1	31.3	33.9	35.6	41.0	30.8	38.5	40.2	44.0	15.6
Hispanic	39.5	43.7	38.2	34.9	40.0	39.5	34.9	35.0	39.4	42.1	43.2	41.6	8.8
Other**	28.3	35.5	27.3	21.3	26.7	23.5	28.7	32.4	28.0	26.0	34.6	33.2	14.2
<b>Total</b>	<b>35.3</b>	<b>35.0</b>	<b>30.0</b>	<b>27.5</b>	<b>26.1</b>	<b>24.7</b>	<b>26.8</b>	<b>26.9</b>	<b>27.8</b>	<b>28.9</b>	<b>30.3</b>	<b>33.5</b>	<b>10.6</b>

\*95% confidence intervals ranged from  $\pm 1.4\%$  to  $\pm 10.6\%$ .

† Defined as no participation in exercise, recreation, or physical activities other than regular job duties (e.g., running, calisthenics, golf, gardening, or walking for exercise.)

‡ n=105,853.

¶ When February is excluded, the range is 5.1 percentage points.

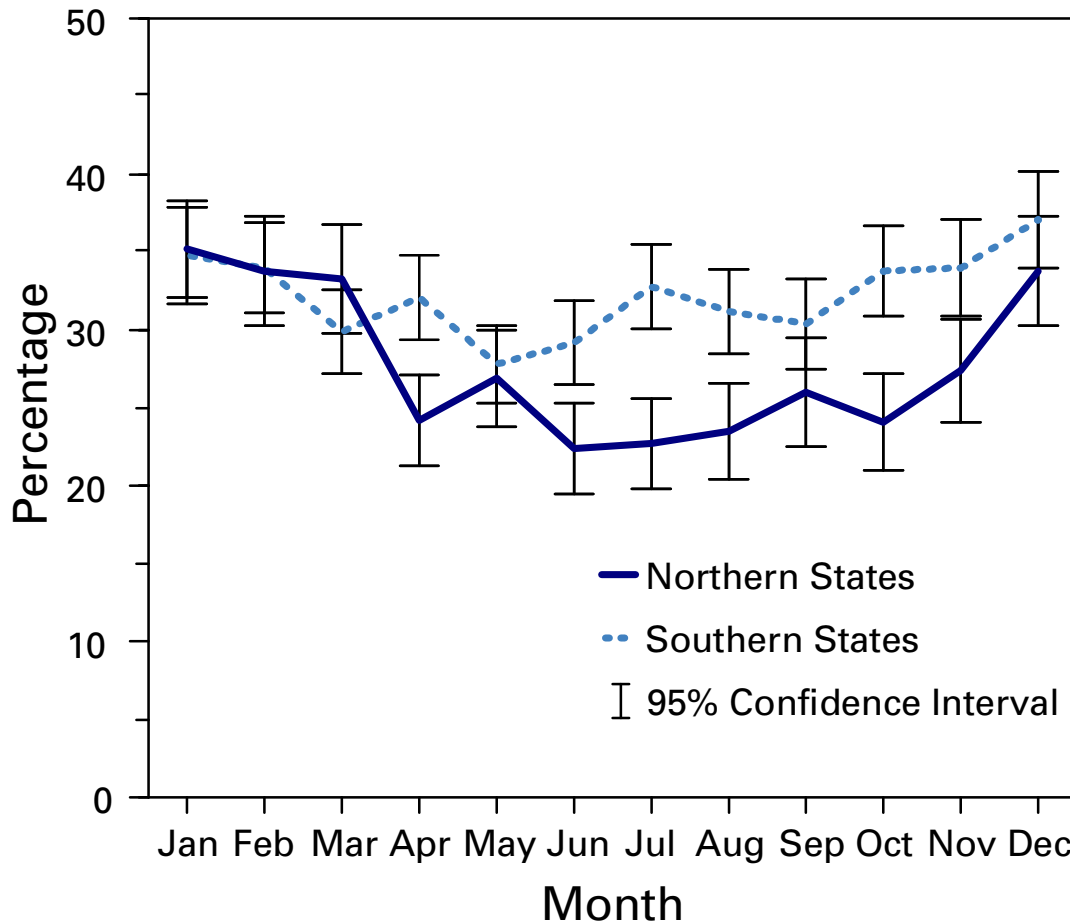
\*\*Numbers for other racial groups were too small for meaningful analysis.

*Physical Inactivity — Continued*

prevalences during summer months) were consistent for both sexes, among all age and racial/ethnic groups, and by region of residence. Monthly variations in prevalence were small for persons aged  $\geq 75$  years (range: 5.1 percentage points when February is excluded; the range is 13.0 percentage points when February is included), and was  $\leq 10$  percentage points among Hispanics and residents in southern states. In addition, prevalences were higher among residents in southern states than among those in northern states during April–November; however, for May and September, confidence intervals for the prevalences overlapped (Figure 1).

*Reported by the following BRFSS coordinators: J Cook, MPA, Alabama; P Owen, Alaska; B Bender, Arizona; J Senner, PhD, Arkansas; B Davis, PhD, California; M Leff, MSPH, Colorado; M Adams, MPH, Connecticut; F Breukelman, Delaware; C Mitchell, District of Columbia; D McTague, MS, Florida; E Pledger, MPA, Georgia; J Cooper, MA, Hawaii; C Johnson, MPH, Idaho; B Steiner, MS, Illinois; N Costello, MPA, Indiana; A Wineski, Iowa; M Perry, Kansas; K Asher, Kentucky; R Meriweather, MD, Louisiana; D Maines, Maine; A Weinstein, MA, Mary-*

**FIGURE 1. Percentage of adults residing in selected northern and southern states\* who reported no leisure-time physical activity, by month — Behavioral Risk Factor Surveillance System, United States, 1994**



\* *Northern states*—Connecticut, Idaho, Maine, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New York, North Dakota, Oregon, South Dakota, Vermont, Washington, Wisconsin, and Wyoming; *Southern states*—Alabama, Arizona, Arkansas, Florida, Georgia, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas.

*Physical Inactivity — Continued*

land; D Brooks, MPH, Massachusetts; H McGee, MPH, Michigan; N Salem, PhD, Minnesota; P Arbuthnot, Mississippi; T Murayi, PhD, Missouri; P Smith, Montana; S Huffman, Nebraska; E DeJan, MPH, Nevada; K Zaso, MPH, New Hampshire; G Boeselager, MS, New Jersey; W Honey, MPH, New Mexico; T Melnik, DrPH, New York; K Passaro, PhD, North Carolina; J Kaske, MPH, North Dakota; R Indian, MS, Ohio; N Hann, MPH, Oklahoma; J Grant-Worley, MS, Oregon; L Mann, Pennsylvania; Y Gladman, South Carolina; M Gildemaster, South Dakota; D Ridings, Tennessee; K Condon, Texas; R Giles, Utah; R McIntyre, PhD, Vermont; L Redman, Virginia; K Wynkoop-Simmons, PhD, Washington; F King, West Virginia; E Cautley, MS, Wisconsin; M Futa, MA, Wyoming. Physical Activity and Health Br, Div of Nutrition and Physical Activity, National Center for Chronic Disease Prevention and Health Promotion, CDC.

**Editorial Note:** The findings in this report indicate that leisure-time physical inactivity was higher during winter months and lower during summer months for both sexes and among most age and racial/ethnic groups. Such differences are consistent with previous surveys in Canada and Scotland (3,4) and may reflect changes in temperature, amount of daylight, and annual precipitation. In addition, this report documents less monthly change in physical activity among older adults, Hispanics, and residents of southern states. Older adults may be socially isolated or have chronic diseases, and for some Hispanic adults, physical activity messages and promotional strategies may be constrained by barriers in communication. The difference between residents of southern states and residents of northern states probably reflects smaller declines in inactivity during spring and summer months resulting from differing demographic or environmental factors (e.g., higher temperatures and humidity).

The findings in this report are subject to at least two limitations. First, because BRFSS data are cross-sectional, different persons report their activity patterns for each month of the year; longitudinal follow-up would provide more accurate and reliable measurements of the changes in this behavior over time. Second, the monthly results by demographic group and state of residence were not adjusted for potential confounding variables (e.g., social, demographic, and climatic factors).

To achieve the national health objective for increasing leisure-time physical activity, comprehensive public health efforts are needed to reduce reported levels of leisure-time physical inactivity for all population groups for all months of the year. Examples of strategies and approaches to increase leisure-time physical activity include encouragement to climb stairs and to avoid the use of labor-saving devices (5); organization of health education classes for the elderly to stimulate interest and participation in physical activity (6); facilitation of indoor activities (e.g., walking in malls) during inclement weather, darker winter months, or hot, humid summer months (7); establishment at worksites of leisure-time physical-activity challenges for workers throughout the year (8); and the implementation of community-based physical-activity programs (9) to promote regular activity (e.g., brisk walking) in conjunction with other seasonal activities, such as gardening and outdoor sports during spring and summer, raking and bagging leaves during fall, and indoor dancing or outdoor ice skating during winter. Interventions also can be developed for and tailored to racial/ethnic and other high-risk groups (10).

*References*

1. US Department of Health and Human Services. Physical activity and health: a report of the Surgeon General. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, CDC, National Center for Chronic Disease Prevention and Health Promotion, 1996.



*Physical Inactivity — Continued*

2. Public Health Service. Healthy people 2000: national health promotion and disease prevention objectives—full report, with commentary. Washington, DC: US Department of Health and Human Services, Public Health Service, 1991; DHHS publication no. (PHS)91-50212.
3. Stephens T, Craig CL, Ferris BF. Adult physical activity in Canada: findings from the Canada Fitness Survey I. *Can Public Health* 1986;77:285–90.
4. Uitenbroek DG. Seasonal variation in leisure time physical activity. *Med Sci Sports Exerc* 1993;25:755–60.
5. Blamey A, Mutrie N, Aitchison T. Health promotion by encouraged use of stairs. *Br Med J* 1995;311:289–90.
6. Mayer JA, Jermanovich A, Wright BL, Elder JP, Drew JA, Williams SJ. Changes in health behaviors of older adults: the San Diego Medicare Preventive Health Project. *Prev Med* 1994;23:127–33.
7. Duncan HH, Travis SS, McAuley WJ. An emergent theoretical model for interventions encouraging physical activity (mall walking) among older adults. *J Appl Gerontol* 1995;34:64–77.
8. Blake SM, Caspersen CJ, Finnegan J, et al. The Shape Up Challenge: a community-based worksite exercise competition. *Am J Health Promot* 1996;11:23–34.
9. Blake SM, Jeffery RW, Finnegan JR, et al. Process evaluation of a community-based physical activity campaign: The Minnesota Heart Health Program experience. *Health Educ Res* 1987;2:115–21.
10. Avila P, Hovell MF. Physical activity training for weight loss in Latinos: a controlled trial. *Int J Obes* 1994;18:476–82.

**Human Rabies — Kentucky and Montana, 1996**

In October and December 1996, a woman in Kentucky and a man in Montana died from rabies. This report summarizes the clinical courses and epidemiologic investigations of these cases, which indicate that a bat was the probable source of exposure for each case.

**Case 1**

On September 28, 1996, a 42-year-old female resident of Cumberland County, Kentucky, visited a local emergency department (ED) because of dizziness, shoulder pain, and an inability to swallow; pharyngitis was presumptively diagnosed, and she was discharged. She returned to the ED that day and was admitted to the hospital. Findings on admission included an oral temperature of 100.6 F (38.1 C), a peripheral white blood cell (WBC) count of 7700/mm<sup>3</sup> (normal: 5000–10,000/mm<sup>3</sup>), and the presence of ketonuria and bacteriuria. A lumbar puncture was performed to rule out primary neurologic involvement. The cerebrospinal fluid (CSF) contained 5 WBCs/mm<sup>3</sup> (normal: 0–5 WBCs/mm<sup>3</sup>), 22 red blood cells (RBCs)/mm<sup>3</sup> (normal: 0 RBCs/mm<sup>3</sup>), total protein of 45 mg/dL (normal: <40 mg/dL), and a glucose level of 111 mg/dL (normal: 70–110 mg/dL). Computerized tomography (CT) of the brain was within normal limits. During the next several hours, she gagged and vomited frequently, had continued difficulty swallowing and right arm pain, and became anxious and agitated; she was treated for anxiety, pharyngitis, pain, nausea, and vomiting.

On September 29, the patient was transferred to a referral hospital because of dysphagia and involuntary motor activity of her upper extremities, neck, face, and eyes. She had a temperature of 105.7 F (40.9 C), and a sample of CSF and complete blood counts were within normal limits. Viral encephalitis was presumptively diagnosed, and treatment with acyclovir was initiated. However, her condition continued

*Human Rabies — Continued*

to deteriorate, and on the evening of September 30, she was intubated because of progressive bulbar dysfunction.

On October 1, the patient was transferred to another referral hospital where she was treated with mechanical ventilation and cardiopulmonary stabilization for shock. Findings on physical examination included a temperature of 102.2 F (39.0 C), low systolic blood pressure (80 mm Hg), injected sclerae, bilateral proptosis, coarse thoracic breath sounds, and cyanotic extremities with pitting edema; in addition, her pupils were reactive, ocular-cephalic reflex was present, and all spinal reflexes were intact. An electroencephalogram (EEG) subsequently revealed status epilepticus, which required treatment with phenytoin, benzodiazepines, and pentobarbital. Chest radiographs obtained on October 2 revealed bilateral infiltrates consistent with pneumonia or adult respiratory distress syndrome, and broad-spectrum antibiotic therapy was initiated. CT revealed extensive diffuse cerebral edema. Although septic syndrome was considered, all cultures remained negative. Even though the EEG normalized, over the next 4 days there was no clinical improvement of neurologic function, and on October 10, there was no evidence of brainstem activity, and reflexes could not be elicited.

On October 10, a serum specimen was collected and submitted to a private laboratory for rabies testing; rabies neutralizing antibody subsequently was detected. On October 15, mechanical ventilation and vasopressor support were withdrawn, and the patient died.

The diagnosis of rabies subsequently was confirmed at CDC by detection of rabies antibodies in the serum sample obtained on October 10; however, a serum sample drawn on October 2 was negative for rabies antibodies. Vitreous humor fluid and serum obtained at autopsy on October 15 also were tested at CDC; both were positive for rabies antibodies by indirect immunofluorescence, and the vitreous fluid was positive for rabies virus nucleic acid by reverse transcriptase-polymerase chain reaction (RT-PCR) analysis. Nucleotide sequence analysis of the viral nucleic acid implicated a variant associated with the silver-haired bat (*Lasionycteris noctivagans*).

While hospitalized, the patient denied any history of animal bites, and an interview with the patient's husband on November 15 did not establish a history of contact with bats or other animals. The couple lived in an old house in a rural area and reported frequently hearing noises in the chimney that sounded like birds. However, investigation of the residence by the local health department did not detect evidence of bats in the house or chimney.

Rabies postexposure prophylaxis (PEP) was administered to 87 persons (five family members and 82 health-care workers) because of possible percutaneous or mucous membrane exposure to the patient's saliva.

**Case 2**

On December 4, a 49-year-old male resident of Missoula County, Montana, was evaluated in a local ED because of fever, sore throat, productive cough, and severe right-sided supraorbital pressure and tenderness of several weeks' duration. An antibiotic was prescribed for sinusitis, and he was discharged. On December 9, he returned to the ED and was admitted to the hospital for evaluation of confusion, ataxia, persistent fever, cough, and sinus pressure. Findings on admission included an oral temperature of 102.9 F (39.4 C); pulse rate of 114 beats per minute; respiratory rate of

*Human Rabies — Continued*

28 breaths per minute; and the presence of bilateral conjunctival suffusion, rhinorrhea, pharyngeal hyperemia, and bibasilar rales. A chest roentgenogram revealed bilateral interstitial infiltrates and a small left pleural effusion. A standard neurologic evaluation and brain CT were performed to rule out primary neurologic involvement: both were within normal limits. Abnormal laboratory findings included a peripheral WBC count of 17,500/mm<sup>3</sup> and a serum sodium level of 120 mmol/L (normal: 135–147 mmol/L). Pneumonia and severe hyponatremia were diagnosed; treatment included antibiotics and rehydration.

On December 10, the patient exhibited ataxia and had diminished deep pain reflexes and decreased sensation in his right hand. A lumbar puncture was performed, and his CSF contained 121 WBCs/mm<sup>3</sup> (51% macrophages, 48% lymphocytes, and 1% polymorphonuclear cells), a total protein level of 52 mg/dL, and a glucose level of 102 mg/dL. Magnetic resonance imaging (MRI) of the brain with gallium revealed no abnormalities. Later that day, severe hypercapnia developed, and intubation was required.

On December 14, the patient had multiple seizures followed by coma and loss of brain stem reflexes, doll's eye, and corneal reflexes; his pupils were mid-range and unresponsive to light. Analysis of a sample of CSF revealed 38 WBCs/mm<sup>3</sup>, a total protein of 49 mg/dL, and glucose of 136 mg/dL. Viral encephalitis was presumptively diagnosed, and intravenous acyclovir therapy was initiated.

Rabies was clinically suspected on December 17, and serum, saliva, and nuchal skin biopsy specimens were obtained and submitted to CDC for rabies testing. On December 18, rabies antibodies were detected in the serum specimen, and on December 19, the nuchal biopsy and saliva specimens were positive for rabies virus nucleic acid by RT-PCR analysis. Mechanical ventilatory support was discontinued, and the patient died. On December 20, nucleotide sequence analysis of viral RNA implicated a variant associated with the silver-haired bat (*L. noctivagans*).

The patient and his family lived in a rural area and reported occasionally seeing bats outside their home but denied having had physical contact with bats. In addition, the patient was employed as a custodian for a wood and paper mill and denied contact with bats at his workplace. Although coworkers reported that bats were sometimes observed near the mill premises, the Missoula City-County Health Department inspected the site after the patient's death and found no evidence of bats.

Rabies PEP was administered to 26 persons (three family members and 23 health-care workers) because of possible percutaneous or mucous membrane exposure to the patient's saliva.

*Reported by: M Slocum, MD, P Disney, Cumberland County Hospital, Burkesville; S Rice, MD, L Martin, TJ Samson County Hospital, Glasgow; M Auslander, DVM, R Finger, MD, State Epidemiologist, Kentucky Cabinet for Health Svcs, Dept for Public Health. W Schaffner, MD, Vanderbilt Univ Medical Center, Nashville; G Swinger, DVM, W Moore, MD, State Epidemiologist, Tennessee Dept of Health. G Risi, MD, E Leahy, G Oliver, B Goode, Missoula City-County Health Dept, Missoula; T Damrow, PhD, State Epidemiologist, Montana State Dept of Public Health and Human Svcs. Viral and Rickettsial Zoonoses Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases; Div of Applied Public Health Training (proposed), Epidemiology Program Office, CDC.*

**Editorial Note:** In 1996, four cases of human rabies were documented in the United States, including the two cases described in this report. In both of these cases, the rabies virus variant was associated with the silver-haired bat, *L. noctivagans*, and in

*Human Rabies — Continued*

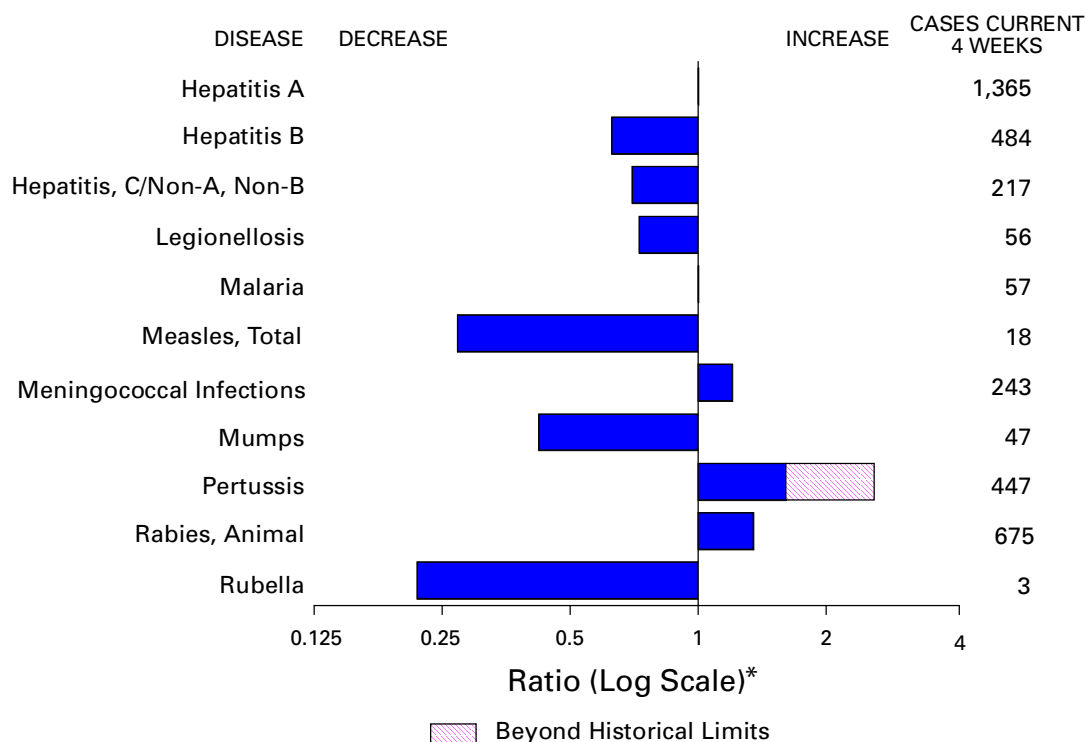
neither case, could a definite history of bat bite or contact be established. These findings are consistent with the emerging pattern in the epidemiology of human rabies in the United States: bat-related virus variants have been identified from 17 (53%) of the 32 cases of human rabies diagnosed in the United States since 1980. Of these 17 bat-related cases, 12 (71%) were infected with a rabies virus variant primarily associated with the silver-haired bat. A definite bite history could be documented in only one of these 17 bat-related cases; in eight of these instances, although contact with a bat was reported by the patient, a family member, or friends, in none of these cases was a bite recognized or a wound evident. These findings suggest that limited or seemingly insignificant physical contact with rabid bats may result in transmission of virus, even without a definite history of animal bite. Therefore, rabies PEP should now be considered in all situations in which there is reasonable probability that contact with a bat may have occurred, unless prompt laboratory testing of the bat has ruled out rabies infection. Examples of potential contacts include a sleeping person awakes to find a bat in the room, an adult finds a bat in the room with a previously unattended child, or a bat is detected in the presence of an unattended child or a mentally disabled or intoxicated person. Adherence to this recommendation and guidelines from the Advisory Committee for Immunization Practices (1) should maximize a health provider's ability to respond to situations in which there is difficulty in obtaining accurate exposure histories, while still minimizing the inappropriate administration of PEP. Persons with other exposures, including animal bite or scratch or mucous membrane contact with potentially infectious material, should continue to be considered for PEP.

Because bat rabies is enzootic in the contiguous United States (2) and reduction of bat populations is not a feasible or desirable strategy for rabies control in bats, human and domestic animal contact with bats should be minimized by physical exclusion of bats from houses and surrounding structures by sealing entrances used by bats (3). Bats should not be routinely captured or handled and should never be kept as pets. In addition, rabies vaccination should be kept current for all dogs and cats to provide a barrier to indirect human exposures to wildlife rabies through domestic animals.

*References*

1. ACIP. Rabies prevention—United States, 1991: recommendations of the Immunization Practices Advisory Committee (ACIP). *MMWR* 1991;40(no. RR-3).
2. Krebs JW, Strine TW, Smith JS, Noah DL, Rupprecht CE, Childs JE. Rabies surveillance in the United States during 1995. *J Am Vet Med Assoc* 1996;209:2031–44.
3. CDC. Compendium of animal rabies control, 1997: National Association of State Public Health Veterinarians, Inc. *MMWR* 1997;46(no. RR-3).

**FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending May 3, 1997, 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 May 3, 1997 (18th Week)**

	Cum. 1997		Cum. 1997
Anthrax	-	Plague	-
Brucellosis	12	Poliomyelitis, paralytic	-
Cholera	2	Psittacosis	14
Congenital rubella syndrome	2	Rabies, human	2
Cryptosporidiosis*	375	Rocky Mountain spotted fever (RMSF)	40
Diphtheria	4	Streptococcal disease, invasive Group A	470
Encephalitis: California*	4	Streptococcal toxic-shock syndrome*	11
eastern equine*	-	Syphilis, congenital <sup>†</sup>	44
St. Louis*	-	Tetanus	10
western equine*	-	Toxic-shock syndrome	33
Hansen Disease	36	Trichinosis	5
Hantavirus pulmonary syndrome* <sup>‡</sup>	3	Typhoid fever	93
Hemolytic uremic syndrome, post-diarrheal*	14	Yellow fever	-
HIV infection, pediatric* <sup>§</sup>	92		

-:no reported cases

\*Not notifiable in all states.

<sup>†</sup>Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases (NCID).

<sup>§</sup>Updated monthly to the Division of HIV/AIDS Prevention—Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention (NCHSTP), last update April 29, 1997.

<sup>‡</sup>Updated from reports to the Division of STD Prevention, NCHSTP.

**TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending May 3, 1997, and May 4, 1996 (18th Week)**

Reporting Area	AIDS		Chlamydia		Escherichia coli O157:H7		Gonorrhea		Hepatitis C/NA,NB	
	Cum. 1997*	Cum. 1996	Cum. 1997	Cum. 1996	NETSS <sup>†</sup>	PHLIS <sup>§</sup>	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996
					Cum. 1997	Cum. 1997				
UNITED STATES	20,222	21,817	116,994	136,114	325	147	77,127	102,017	981	1,086
NEW ENGLAND	671	870	5,261	6,490	29	13	1,706	2,625	17	37
Maine	25	15	331	U	1	-	14	15	-	-
N.H.	8	25	233	234	-	-	45	43	3	3
Vt.	16	8	136	168	2	1	17	22	-	11
Mass.	282	487	2,466	2,270	22	12	791	743	12	20
R.I.	55	61	723	742	1	-	182	192	2	3
Conn.	285	274	1,372	3,076	3	-	657	1,610	-	-
MID. ATLANTIC	6,683	5,709	7,510	20,097	21	4	5,742	11,163	108	87
Upstate N.Y.	1,143	570	N	N	13	3	1,666	47	87	74
N.Y. City	3,308	3,282	U	8,288	5	-	-	4,404	-	1
N.J.	1,444	1,143	2,265	5,318	3	-	1,359	3,249	-	-
Pa.	788	714	5,245	6,491	N	1	2,717	3,463	21	12
E.N. CENTRAL	1,416	1,879	20,495	30,965	58	20	12,371	20,141	201	184
Ohio	270	441	4,878	7,208	17	9	3,077	5,146	5	4
Ind.	302	305	2,812	3,309	13	2	1,945	2,311	5	6
Ill.	509	770	3,882	9,070	11	-	1,957	5,922	16	41
Mich.	259	253	6,464	7,492	17	2	4,306	5,072	175	133
Wis.	76	110	2,459	3,886	N	7	1,086	1,690	-	-
W.N. CENTRAL	383	530	7,659	11,316	42	31	3,574	4,337	60	20
Minn.	79	108	U	1,806	23	18	U	-	-	-
Iowa	59	43	1,699	1,277	10	5	445	359	22	7
Mo.	150	231	3,754	4,951	3	5	2,490	2,920	25	8
N. Dak.	4	4	300	355	3	2	22	9	2	-
S. Dak.	2	7	384	473	-	-	39	73	-	-
Nebr.	35	39	258	780	2	-	89	157	1	2
Kans.	54	98	1,264	1,674	1	1	489	819	10	3
S. ATLANTIC	4,846	5,746	26,709	18,991	46	11	27,230	35,037	91	62
Del.	69	113	-	-	1	1	377	499	-	-
Md.	576	658	2,420	2,078	2	1	4,366	4,641	6	-
D.C.	282	376	N	N	-	-	1,319	1,515	-	-
Va.	421	316	3,848	4,136	N	4	2,824	3,315	7	5
W. Va.	27	32	-	747	N	-	236	386	3	4
N.C.	281	279	5,962	U	12	5	5,463	6,765	20	18
S.C.	270	278	3,964	U	-	-	3,465	3,961	16	13
Ga.	683	865	2,574	4,178	15	-	3,625	7,932	U	-
Fla.	2,237	2,829	7,941	7,852	16	-	5,555	6,023	39	22
E.S. CENTRAL	609	771	11,025	9,736	27	7	11,153	10,554	128	213
Ky.	60	119	2,233	2,313	9	-	1,515	1,378	6	12
Tenn.	285	281	4,024	4,170	13	7	3,425	3,629	67	176
Ala.	151	243	2,578	2,982	2	-	3,588	4,652	5	1
Miss.	113	128	2,190	271	3	-	2,625	895	50	24
W.S. CENTRAL	2,040	2,090	11,757	7,824	13	1	8,365	7,490	88	112
Ark.	83	97	443	533	1	-	875	1,366	-	2
La.	385	554	2,304	2,388	3	1	2,228	2,732	66	57
Okla.	116	67	2,563	2,470	-	-	1,639	1,564	4	26
Tex.	1,456	1,372	6,447	2,433	9	-	3,623	1,828	18	27
MOUNTAIN	601	638	7,262	4,983	31	22	2,528	2,681	122	234
Mont.	16	8	311	463	3	-	14	10	4	8
Idaho	18	10	520	571	4	-	39	32	15	62
Wyo.	11	2	178	246	2	-	20	10	47	71
Colo.	156	178	100	8	13	8	554	610	16	23
N. Mex.	58	43	1,232	1,365	4	3	501	313	24	29
Ariz.	158	192	3,348	812	N	8	1,051	1,297	11	26
Utah	41	77	541	550	2	-	62	113	2	7
Nev.	143	128	1,032	968	3	3	287	296	3	8
PACIFIC	2,973	3,584	19,316	25,712	58	36	4,458	7,989	166	137
Wash.	241	309	3,174	3,451	9	4	706	819	9	26
Oreg.	128	188	1,154	1,863	14	12	178	143	4	3
Calif.	2,570	3,024	13,968	19,457	32	17	3,267	6,663	103	47
Alaska	12	10	489	297	3	-	162	177	-	2
Hawaii	22	53	531	644	N	3	145	187	50	59
Guam	2	3	-	134	N	-	-	26	-	3
P.R.	520	418	N	N	22	U	227	91	37	13
V.I.	29	6	N	N	N	U	-	-	-	-
Amer. Samoa	-	-	-	-	N	U	-	-	-	-
C.N.M.I.	-	-	N	N	N	U	11	11	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 April 29, 1997.

†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 May 3, 1997, and May 4, 1996 (18th Week)**

Reporting Area	Legionellosis		Lyme Disease		Malaria		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal
	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997
UNITED STATES	285	263	806	1,466	389	348	2,622	4,189	4,452	5,626	2,346
NEW ENGLAND	21	13	149	126	12	9	55	63	109	188	368
Maine	1	1	3	-	1	3	-	-	-	8	82
N.H.	3	-	4	2	1	1	-	1	1	3	18
Vt.	3	1	2	-	1	1	-	-	-	-	58
Mass.	7	6	42	11	7	3	31	27	68	53	70
R.I.	3	5	32	21	2	1	-	-	7	18	7
Conn.	4	N	66	92	-	-	24	35	33	106	133
MID. ATLANTIC	46	55	521	1,178	89	90	88	181	967	975	503
Upstate N.Y.	10	10	60	453	19	19	12	25	112	106	359
N.Y. City	-	1	4	235	44	40	U	53	521	498	-
N.J.	5	7	122	118	17	24	39	67	190	217	46
Pa.	31	37	335	372	9	7	37	36	144	154	98
E.N. CENTRAL	109	95	16	11	28	47	243	661	548	625	28
Ohio	61	33	12	7	4	6	86	270	110	87	23
Ind.	14	23	4	4	3	3	56	90	47	57	2
Ill.	-	13	-	-	5	22	24	178	281	375	1
Mich.	29	16	-	-	14	8	35	50	76	85	2
Wis.	5	10	U	U	2	8	42	73	34	21	-
W.N. CENTRAL	25	17	10	32	9	5	50	182	151	153	144
Minn.	1	-	7	1	4	1	U	39	41	37	16
Iowa	4	2	1	5	2	1	3	8	20	17	55
Mo.	5	4	-	9	2	2	31	119	59	55	7
N. Dak.	2	-	-	-	-	-	-	-	2	2	20
S. Dak.	1	2	-	-	-	-	-	-	2	11	17
Nebr.	8	7	2	-	1	-	-	6	4	9	1
Kans.	4	2	-	17	-	1	16	10	23	22	28
S. ATLANTIC	42	31	71	71	100	59	1,113	1,411	893	953	1,055
Del.	4	2	-	24	2	2	8	13	7	16	14
Md.	14	5	52	29	26	18	290	212	93	94	190
D.C.	2	1	5	-	6	3	41	50	28	44	1
Va.	4	9	-	-	21	7	106	177	86	82	216
W. Va.	-	1	-	3	-	1	-	3	18	20	25
N.C.	5	3	2	10	5	7	264	382	117	122	337
S.C.	2	3	1	2	5	3	128	159	122	116	57
Ga.	-	-	1	-	12	7	185	284	154	190	99
Fla.	11	7	10	3	23	11	91	131	268	269	116
E.S. CENTRAL	8	17	20	20	11	10	642	995	336	451	94
Ky.	-	2	2	6	2	3	63	53	60	78	10
Tenn.	3	7	5	6	3	5	253	326	63	140	60
Ala.	1	1	2	1	3	1	156	199	138	154	24
Miss.	4	7	11	7	3	1	170	417	75	79	-
W.S. CENTRAL	4	2	4	6	5	10	292	436	104	560	58
Ark.	-	-	-	4	1	-	27	104	64	61	17
La.	1	-	1	-	4	-	137	201	-	-	-
Okla.	-	2	2	2	-	-	42	57	40	57	41
Tex.	3	-	1	-	-	10	86	74	-	442	-
MOUNTAIN	16	14	1	-	24	22	58	50	162	196	21
Mont.	1	1	-	-	2	1	-	-	2	7	6
Idaho	1	-	-	-	-	-	-	1	4	3	-
Wyo.	1	2	-	-	1	2	-	1	2	1	3
Colo.	3	5	-	-	10	12	1	15	37	33	-
N. Mex.	1	-	-	-	4	1	-	-	8	28	1
Ariz.	4	3	1	-	3	3	49	29	66	81	10
Utah	4	-	-	-	1	2	2	-	6	10	-
Nev.	1	3	-	-	3	1	6	4	37	33	1
PACIFIC	14	19	14	22	111	96	81	210	1,182	1,525	75
Wash.	3	1	-	-	5	5	6	2	74	84	-
Oreg.	-	-	7	6	7	8	3	3	45	60	1
Calif.	10	18	7	15	96	79	70	204	967	1,293	66
Alaska	-	-	-	-	2	1	1	-	32	30	8
Hawaii	1	-	-	1	1	3	1	1	64	58	-
Guam	-	-	-	-	-	-	-	3	-	45	-
P.R.	-	-	-	-	3	-	73	37	-	47	17
V.I.	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	-	4	1	-	-	-

N: Not notifiable

U: Unavailable

-: no reported cases

**TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending May 3, 1997, and May 4, 1996 (18th Week)**

Reporting Area	<i>H. influenzae</i> , invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
	Cum. 1997*	Cum. 1996	A		B		Indigenous		Imported†		Total	
			Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	1997	Cum. 1997	1997	Cum. 1997	Cum. 1997	Cum. 1996
UNITED STATES	398	417	8,529	9,126	2,708	3,131	9	25	-	12	37	111
NEW ENGLAND	22	10	190	109	67	75	-	-	-	-	-	6
Maine	3	-	26	10	4	2	-	-	-	-	-	-
N.H.	2	6	12	3	5	4	-	-	-	-	-	-
Vt.	-	-	5	2	1	4	-	-	-	-	-	1
Mass.	15	4	82	53	40	17	-	-	-	-	-	4
R.I.	1	-	17	3	6	4	-	-	-	-	-	-
Conn.	1	-	48	38	11	44	-	-	-	-	-	1
MID. ATLANTIC	46	61	637	681	366	524	-	6	-	3	9	10
Upstate N.Y.	3	5	83	128	70	112	-	1	-	2	3	3
N.Y. City	17	9	236	286	119	216	-	4	-	1	5	6
N.J.	17	26	125	139	85	107	-	-	-	-	-	-
Pa.	9	21	193	128	92	89	-	1	-	-	1	1
E.N. CENTRAL	58	76	766	862	300	381	-	4	-	2	6	9
Ohio	35	45	159	348	34	45	-	-	-	-	-	2
Ind.	5	2	111	121	30	43	-	-	-	-	-	-
Ill.	11	20	173	199	54	118	-	4	-	1	5	-
Mich.	6	4	274	120	170	142	-	-	-	1	1	2
Wis.	1	5	49	74	12	33	-	-	-	-	-	5
W.N. CENTRAL	21	14	650	694	211	150	8	9	-	1	10	6
Minn.	12	7	47	27	9	6	-	-	-	1	1	5
Iowa	3	2	92	155	45	20	-	-	-	-	-	-
Mo.	2	3	348	339	133	99	-	1	-	-	1	1
N. Dak.	-	-	7	17	1	-	-	-	-	-	-	-
S. Dak.	2	1	6	29	-	-	8	8	-	-	8	-
Nebr.	1	1	47	80	9	10	-	-	-	-	-	-
Kans.	1	-	103	47	14	15	-	-	-	-	-	-
S. ATLANTIC	98	83	507	308	422	436	-	1	-	2	3	2
Del.	-	1	10	5	2	1	-	-	-	-	-	1
Md.	32	29	111	70	61	107	-	-	-	1	1	-
D.C.	2	1	13	12	18	14	-	-	-	1	1	-
Va.	6	3	64	52	40	52	-	-	-	-	-	-
W. Va.	3	4	5	8	6	10	-	-	-	-	-	-
N.C.	12	12	68	42	86	129	-	-	-	-	-	-
S.C.	4	3	37	29	36	36	-	-	-	-	-	-
Ga.	16	25	43	7	38	5	-	-	-	-	-	-
Fla.	23	5	156	83	135	82	-	1	-	-	1	1
E.S. CENTRAL	27	13	266	644	253	303	-	-	-	-	-	-
Ky.	5	3	25	9	11	28	-	-	-	-	-	-
Tenn.	15	4	169	471	147	194	-	-	-	-	-	-
Ala.	7	5	37	81	27	20	-	-	-	-	-	-
Miss.	-	1	35	83	68	U	-	-	-	-	-	-
W.S. CENTRAL	20	14	1,456	1,413	190	253	-	1	-	1	2	2
Ark.	1	-	99	180	16	32	-	-	-	-	-	-
La.	2	-	74	45	40	38	-	-	-	-	-	-
Okla.	13	13	578	660	8	18	-	-	-	-	-	-
Tex.	4	1	705	528	126	165	-	1	-	1	2	2
MOUNTAIN	35	24	1,469	1,374	319	381	1	1	-	-	1	8
Mont.	-	-	43	50	4	4	-	-	-	-	-	-
Idaho	-	1	62	116	10	48	-	-	-	-	-	-
Wyo.	-	-	16	13	13	11	-	-	-	-	-	-
Colo.	2	5	169	143	62	53	-	-	-	-	-	2
N. Mex.	2	7	102	183	113	136	-	-	-	-	-	-
Ariz.	12	7	689	451	63	68	1	1	-	-	1	2
Utah	3	4	283	305	37	42	-	-	-	-	-	-
Nev.	16	-	105	113	17	19	-	-	-	-	-	4
PACIFIC	71	122	2,588	3,041	580	628	-	3	-	3	6	68
Wash.	1	1	195	200	19	40	-	-	-	-	-	4
Oreg.	17	16	129	450	47	44	-	-	-	-	-	-
Calif.	50	103	2,200	2,337	497	541	-	-	-	3	3	-
Alaska	1	-	14	24	12	1	-	-	-	-	-	63
Hawaii	2	2	50	30	5	2	-	3	-	-	3	1
Guam	-	-	-	3	-	-	U	-	U	-	-	-
P.R.	-	-	114	21	426	60	-	-	-	-	-	1
V.I.	-	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	U	-	U	-	-	-
C.N.M.I.	4	10	1	1	19	5	U	1	U	-	1	-

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

\*Of 79 cases among children aged <5 years, serotype was reported for 36 and of those, 15 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 May 3, 1997, and May 4, 1996 (18th Week)**

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996
UNITED STATES	1,454	1,337	13	204	230	81	1,718	1,067	1	12	72
NEW ENGLAND	88	52	-	6	-	9	396	222	-	-	10
Maine	9	7	-	-	-	-	6	8	-	-	-
N.H.	9	1	-	-	-	4	54	16	-	-	-
Vt.	2	2	-	-	-	4	144	7	-	-	1
Mass.	48	18	-	1	-	1	175	188	-	-	7
R.I.	5	5	-	4	-	-	12	-	-	-	-
Conn.	15	19	-	1	-	-	5	3	-	-	2
MID. ATLANTIC	121	127	2	24	30	13	125	84	-	1	5
Upstate N.Y.	32	31	-	4	7	-	46	41	-	-	3
N.Y. City	20	21	-	-	6	-	19	14	-	1	1
N.J.	26	29	-	-	2	-	-	4	-	-	1
Pa.	43	46	2	20	15	13	60	25	-	-	-
E.N. CENTRAL	186	205	1	24	61	4	140	166	-	2	3
Ohio	82	67	1	9	23	2	57	54	-	-	-
Ind.	20	27	-	4	5	-	19	10	-	-	-
Ill.	50	63	-	7	11	1	20	49	-	-	1
Mich.	17	25	-	4	21	1	26	11	-	-	2
Wis.	17	23	-	-	1	-	18	42	-	2	-
W.N. CENTRAL	112	104	-	8	3	2	99	48	-	-	-
Minn.	12	9	-	3	-	-	59	31	-	-	-
Iowa	24	21	-	3	-	-	16	2	-	-	-
Mo.	58	46	-	-	1	2	14	9	-	-	-
N. Dak.	-	2	-	-	2	-	2	-	-	-	-
S. Dak.	3	3	-	-	-	-	1	1	-	-	-
Nebr.	5	10	-	2	-	-	2	1	-	-	-
Kans.	10	13	-	-	-	-	5	4	-	-	-
S. ATLANTIC	260	198	4	33	22	5	162	99	-	2	11
Del.	4	2	-	-	-	-	-	9	-	-	-
Md.	26	23	-	4	10	3	59	41	-	-	-
D.C.	1	3	-	-	-	-	2	-	-	-	-
Va.	23	22	2	4	3	1	18	5	-	1	-
W. Va.	9	6	-	-	-	-	3	2	-	-	-
N.C.	41	31	-	6	-	1	35	24	-	-	-
S.C.	34	28	-	4	3	-	7	1	-	1	1
Ga.	52	64	2	4	1	-	2	2	-	-	-
Fla.	70	19	-	11	5	-	36	15	-	-	10
E.S. CENTRAL	110	110	2	14	9	-	35	120	-	-	-
Ky.	26	14	2	2	-	-	2	110	-	-	-
Tenn.	40	34	-	4	1	-	16	6	-	-	-
Ala.	28	33	-	4	3	-	9	1	-	-	-
Miss.	16	29	-	4	5	-	8	3	-	-	N
W.S. CENTRAL	156	150	1	23	20	-	23	38	-	1	7
Ark.	21	20	-	-	-	-	3	2	-	-	-
La.	27	30	1	7	8	-	7	3	-	-	1
Okla.	13	14	-	-	-	-	1	4	-	-	-
Tex.	95	86	-	16	12	-	12	29	-	1	6
MOUNTAIN	83	82	1	10	12	32	495	117	-	-	4
Mont.	5	1	-	-	-	-	2	4	-	-	-
Idaho	5	11	-	2	-	15	369	36	-	-	2
Wyo.	-	-	-	1	-	-	3	-	-	-	-
Colo.	25	12	-	2	1	7	88	23	-	-	-
N. Mex.	14	18	N	N	N	9	20	25	-	-	-
Ariz.	16	25	-	-	1	-	9	5	-	-	1
Utah	12	8	1	3	1	1	2	3	-	-	-
Nev.	6	7	-	2	9	-	2	21	-	-	1
PACIFIC	338	309	2	62	73	16	243	173	1	6	32
Wash.	43	39	-	5	8	12	129	72	-	-	1
Oreg.	68	58	1	1	-	-	7	22	-	-	-
Calif.	226	206	1	46	51	4	102	71	-	1	29
Alaska	-	4	-	1	2	-	1	-	-	-	-
Hawaii	1	2	-	9	12	-	4	8	1	5	2
Guam	-	1	U	-	3	U	-	-	U	-	-
P.R.	6	2	-	4	1	-	-	-	-	-	-
V.I.	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	U	-	-	U	-	-	U	-	-
C.N.M.I.	-	-	U	1	-	U	-	-	U	-	-

N: Not notifiable

U: Unavailable

-: no reported cases

**TABLE IV. Deaths in 122 U.S. cities,\* week ending  
April May 3, 1997 (18th Week)**

Reporting Area	All Causes, By Age (Years)						P&J† Total	Reporting Area	All Causes, By Age (Years)						P&J† Total
	All Ages	>65	45-64	25-44	1-24	<1			All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	606	442	107	34	8	15	44	S. ATLANTIC	1,295	855	258	127	38	17	61
Boston, Mass.	153	106	24	12	3	8	12	Atlanta, Ga.	153	91	35	16	8	3	3
Bridgeport, Conn.	36	28	5	1	1	1	5	Baltimore, Md.	207	125	44	29	8	1	12
Cambridge, Mass.	17	12	4	1	-	-	2	Charlotte, N.C.	110	78	18	9	-	5	8
Fall River, Mass.	22	17	5	-	-	-	-	Jacksonville, Fla.	136	102	16	16	1	1	3
Hartford, Conn.	47	38	7	-	1	1	3	Miami, Fla.	100	63	26	5	5	1	-
Lowell, Mass.	25	18	4	3	-	-	1	Norfolk, Va.	61	38	9	9	2	3	3
Lynn, Mass.	19	16	3	-	-	-	-	Richmond, Va.	71	48	11	8	3	1	4
New Bedford, Mass.	29	26	3	-	-	-	1	Savannah, Ga.	40	23	8	4	4	1	3
New Haven, Conn.	47	28	11	7	-	1	1	St. Petersburg, Fla.	62	46	11	4	1	-	3
Providence, R.I.	61	46	10	2	-	3	2	Tampa, Fla.	173	121	39	10	2	1	19
Somerville, Mass.	5	4	1	-	-	-	1	Washington, D.C.	160	104	35	17	4	-	3
Springfield, Mass.	44	30	9	4	1	-	5	Wilmington, Del.	22	16	6	-	-	-	-
Waterbury, Conn.	38	28	8	1	1	-	3	E.S. CENTRAL	681	465	131	56	14	14	48
Worcester, Mass.	63	45	13	3	1	1	8	Birmingham, Ala.	U	U	U	U	U	U	U
MID. ATLANTIC	2,116	1,479	377	170	45	45	99	Chattanooga, Tenn.	92	66	20	3	3	-	7
Albany, N.Y.	49	40	5	1	1	2	1	Knoxville, Tenn.	110	76	18	14	2	-	7
Allentown, Pa.	20	18	2	-	-	-	-	Lexington, Ky.	55	39	11	2	2	-	7
Buffalo, N.Y.	54	40	10	2	-	2	2	Memphis, Tenn.	182	126	33	14	3	6	15
Camden, N.J.	31	15	5	7	2	2	3	Mobile, Ala.	64	44	12	6	1	1	-
Elizabeth, N.J.	23	17	4	1	-	1	-	Montgomery, Ala.	37	24	7	3	2	1	5
Erie, Pa.	33	30	2	1	-	-	2	Nashville, Tenn.	141	90	30	14	1	6	7
Jersey City, N.J.	35	21	10	4	-	-	-	W.S. CENTRAL	1,292	865	247	90	53	36	67
New York City, N.Y.	1,121	779	211	89	22	20	45	Austin, Tex.	81	56	15	3	4	3	4
Newark, N.J.	67	34	17	11	4	1	1	Baton Rouge, La.	45	30	7	2	5	1	3
Paterson, N.J.	23	18	4	-	-	-	-	Corpus Christi, Tex.	46	33	6	5	1	1	3
Philadelphia, Pa.	295	199	45	33	8	10	13	Dallas, Tex.	206	122	45	22	12	5	7
Pittsburgh, Pa.‡	52	34	7	7	1	3	3	El Paso, Tex.	75	41	20	6	7	1	1
Reading, Pa.	9	7	1	1	-	-	2	Ft. Worth, Tex.	116	81	24	3	2	6	1
Rochester, N.Y.	131	101	23	6	-	1	11	Houston, Tex.	148	106	20	15	3	4	9
Schenectady, N.Y.	20	12	5	2	-	1	-	Little Rock, Ark.	84	52	22	5	2	3	3
Scranton, Pa.	22	18	3	-	1	-	-	New Orleans, La.	88	58	17	7	4	2	-
Syracuse, N.Y.	78	60	14	3	1	-	8	San Antonio, Tex.	245	171	45	16	6	6	23
Trenton, N.J.	28	16	4	2	4	2	6	Shreveport, La.	61	43	13	3	-	2	2
Utica, N.Y.	25	20	5	-	-	-	2	Tulsa, Okla.	97	72	13	3	7	2	11
Yonkers, N.Y.	U	U	U	U	U	U	U	MOUNTAIN	774	512	162	59	26	14	58
E.N. CENTRAL	2,188	1,505	426	154	44	58	145	Albuquerque, N.M.	108	74	16	14	3	1	1
Akron, Ohio	53	39	8	2	-	4	-	Boise, Idaho	34	27	5	1	-	1	1
Canton, Ohio	36	24	8	4	-	-	2	Colo. Springs, Colo.	59	38	13	5	1	2	9
Chicago, Ill.	459	291	110	42	6	9	36	Denver, Colo.	U	U	U	U	U	U	U
Cincinnati, Ohio	94	66	16	6	4	2	9	Las Vegas, Nev.	149	88	36	13	8	4	9
Cleveland, Ohio	180	118	39	16	3	4	2	Ogden, Utah	20	17	3	-	-	-	1
Columbus, Ohio	183	131	32	12	2	6	16	Phoenix, Ariz.	159	93	44	12	7	2	13
Dayton, Ohio	131	92	25	8	2	4	9	Pueblo, Colo.	18	13	5	-	-	-	5
Detroit, Mich.	211	116	54	24	8	9	5	Salt Lake City, Utah	83	49	19	11	1	3	5
Evansville, Ind.	54	46	5	1	-	2	3	Tucson, Ariz.	144	113	21	3	6	1	14
Fort Wayne, Ind.	72	53	14	3	1	1	3	PACIFIC	1,567	1,100	282	114	37	33	151
Gary, Ind.	U	U	U	U	U	U	U	Berkeley, Calif.	13	8	3	1	-	1	1
Grand Rapids, Mich.	68	50	10	5	1	2	5	Fresno, Calif.	62	39	17	6	-	-	7
Indianapolis, Ind.	189	125	37	12	7	8	10	Glendale, Calif.	9	6	1	1	-	1	-
Lansing, Mich.	40	29	8	2	1	-	1	Honolulu, Hawaii	72	53	14	2	1	2	8
Milwaukee, Wis.	117	88	18	5	3	3	16	Long Beach, Calif.	86	57	20	6	1	2	9
Peoria, Ill.	28	22	4	1	1	-	5	Los Angeles, Calif.	271	199	38	18	9	7	6
Rockford, Ill.	50	35	7	2	4	2	3	Pasadena, Calif.	33	21	8	2	1	1	1
South Bend, Ind.	56	45	10	1	-	-	12	Portland, Oreg.	131	89	25	14	2	1	7
Toledo, Ohio	106	85	10	8	1	2	6	Sacramento, Calif.	199	137	33	19	7	3	40
Youngstown, Ohio	61	50	11	-	-	-	2	San Diego, Calif.	120	88	18	7	2	4	18
W.N. CENTRAL	854	613	148	52	19	15	75	San Francisco, Calif.	110	77	19	9	-	5	11
Des Moines, Iowa	83	65	13	5	-	-	6	San Jose, Calif.	145	99	29	11	4	2	20
Duluth, Minn.	29	23	3	1	2	-	3	Santa Cruz, Calif.	20	15	3	2	-	-	2
Kansas City, Kans.	36	22	8	4	2	-	2	Seattle, Wash.	137	88	27	12	8	2	2
Kansas City, Mo.	98	72	11	10	-	1	6	Spokane, Wash.	65	55	8	1	1	-	9
Lincoln, Nebr.	41	32	6	2	1	-	1	Tacoma, Wash.	94	69	19	3	1	2	10
Minneapolis, Minn.	243	186	35	5	7	7	31	TOTAL	11,373 <sup>§</sup>	7,836	2,138	856	284	247	748
Omaha, Nebr.	79	55	17	6	-	1	8								
St. Louis, Mo.	100	66	22	7	2	3	12								
St. Paul, Minn.	67	45	18	2	1	1	5								
Wichita, Kans.	78	47	15	10	4	2	1								

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**

Denise Koo, M.D., M.P.H.

***State Support Team***

Robert Fagan  
Jill Andrews  
Karl A. Brendel  
Siobhan Gilchrist, M.P.H.  
Harry Holden  
Gerald Jones  
Felicia Perry  
Svati Shah, M.P.H.

***CDC Operations Team***

Carol M. Knowles  
Deborah A. Adams  
Willie J. Anderson  
Christine R. Burgess  
Timothy M. Copeland  
Patsy A. Hall  
Myra A. Montalbano  
Angela Trosclair, M.S.

**Desktop Publishing and Graphics Support**

Morie M. Higgins  
Peter M. Jenkins

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](mailto: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 (404) 332-4555.

All material in the *MMWR* Series is in the public domain and may be used and reprinted without permission; citation as to source, however, is appreciated.

Director, Centers for Disease Control  
and Prevention  
David Satcher, M.D., Ph.D.  
Deputy Director, Centers for Disease Control  
and Prevention  
Claire V. Broome, M.D.  
Director, Epidemiology Program Office  
Stephen B. Thacker, M.D., M.Sc.

Editor, *MMWR* Series  
Richard A. Goodman, M.D., M.P.H.  
Managing Editor, *MMWR* (weekly)  
Karen L. Foster, M.A.  
Writers-Editors, *MMWR* (weekly)  
David C. Johnson  
Darlene D. Rumph Person  
Teresa F. Rutledge  
Caran R. Wilbanks