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## Decreased Susceptibility of *Neisseria gonorrhoeae* to Fluoroquinolones — Ohio and Hawaii, 1992–1994

Until 1992, virtually all strains of *N. gonorrhoeae* tested were susceptible to fluoroquinolones, including ciprofloxacin (minimal inhibitory concentrations [MICs] of ≤0.06 μg/mL) (*1*). However, gonococcal strains with decreased susceptibilities to ciprofloxacin (MICs of 0.13–0.25 μg/mL) have been isolated sporadically from patients in the United States through the Gonococcal Isolate Surveillance Project (GISP), which measures antimicrobial susceptibilities of urethral isolates from men each month (*2*). This report describes findings from Ohio and Hawaii that suggest the emergence of fluoroquinolone resistance in *N. gonorrhoeae*.

**Ohio.** From January 1992 through June 1993, 450 isolates of *N. gonorrhoeae* in the GISP sample were tested; 25 (5.6%) had decreased susceptibilities to ciprofloxacin. When tested at CDC, these isolates had MICs of 0.13–0.25 μg/mL of ciprofloxacin. Expanded screening of all isolates from men at one sexually transmitted disease (STD) clinic during November–December 1993 identified 17 (13.7%) of 124 isolates with MICs of 0.13–0.25 μg/mL of ciprofloxacin. Infections caused by strains with these MICs apparently were not linked to recent travel outside the United States by the patients or their sex partners and may have been transmitted locally. All patients were treated with ceftriaxone and doxycycline.

**Hawaii.** From May 1993 through February 1994, gonococcal strains exhibiting MICs of 2.0 μg/mL of ciprofloxacin were isolated from three patients in Hawaii. These strains were detected during an evaluation of antimicrobial resistance in 37 penicillinase-producing *N. gonorrhoeae* isolates. All three infected persons had traveled to or had had sex partners who had recently traveled to Southeast Asia. The three patients were treated with ceftriaxone and doxycycline.

**Analysis of findings.** Agar dilution and disk-diffusion susceptibilities to ciprofloxacin and ofloxacin of the isolates from Ohio and Hawaii were determined as recommended by the National Committee for Clinical Laboratory Standards (Table 1) (*1,3*). Disk-diffusion susceptibility testing of isolates from Ohio produced zone diameters similar to those of susceptible strains (i.e., ≥36 mm and ≥31 mm for ciprofloxacin and ofloxacin, respectively) (*3*). Inhibition zone diameters for strains from Hawaii were smaller. All isolates were susceptible to ceftriaxone and cefixime.

*Reported by: R Ohye, MS, H Higa, R Vogt, MD, State Epidemiologist, State of Hawaii Dept of Health. JA Washington, MD, L Doyle, Cleveland Clinic Foundation; D Sayers, TJ Halpin, MD,*

Neisseria gonorrhoeae — *Continued*

**TABLE 1. Agar dilution and disk-diffusion susceptibilities to ciprofloxacin and ofloxacin of strains of *Neisseria gonorrhoeae* with decreased susceptibilities to ciprofloxacin — Ohio and Hawaii**

| Source | Agent | MIC* range (μg/mL)† | Zone diameters (mm)†§ |
|---|---|---|---|
| **Ohio** | Ciprofloxacin | 0.13–0.25 | 31–39 |
| | Ofloxacin | 0.13–0.50 | 28–35 |
| **Hawaii** | Ciprofloxacin | 2.0 | 22–24 |
| | Ofloxacin | 2.0 | 18–20 |

* Minimal inhibitory concentration.
† Susceptibility testing performed on GC II agar base supplemented with 1% IsoVitaleX according to the methods recommended by the National Committee for Clinical Laboratory Standards (*1,3*).
§ Ciprofloxacin and ofloxacin disks, each 5 μg mass.

*State Epidemiologist, Ohio Dept of Health. Molecular Epidemiology and Pathogenesis Br, Div of Sexually Transmitted Diseases Laboratory Research, Office of the Director, National Center for Infectious Diseases; Epidemiology Research Br and Surveillance and Information Systems Br, Div of Sexually Transmitted Diseases and HIV Prevention, National Center for Prevention Svcs, CDC.*

**Editorial Note:** The reports from Ohio and Hawaii suggest that the epidemiology of gonorrhea caused by strains with decreased susceptibility to fluoroquinolones may be changing. The Ohio report is the first that describes the repeated isolation of strains with this resistance phenotype in a community in the United States and indicates that, in that community, these strains may have become endemic. The Hawaii report documents MICs higher than those previously reported in the United States; strains with similar MICs have been reported in Thailand and Australia (*4,5*). As a result of these findings, Ohio and Hawaii have expanded surveillance efforts to detect gonococcal strains with decreased susceptibilities to fluoroquinolones.

Gonococcal organisms with decreased in vitro susceptibilities to ciprofloxacin have decreased susceptibilities to all fluoroquinolones, including ofloxacin, enoxacin, lomefloxacin, and norfloxacin (*6*). However, pharmacokinetics, as well as susceptibilities, must be considered in evaluating the potential for treatment failure. Reported treatment failures have resulted from decreased susceptibility of the infecting strain to enoxacin and norfloxacin (*7,8*) and have occurred after treatment with ciprofloxacin (500 mg) (*5*).

Although the MICs of strains from Ohio exceed the National Committee for Clinical Laboratory Standards criterion for susceptibility to ciprofloxacin, serum levels achieved with the recommended dose of this agent suggest that these strains should respond to therapy (*9*). However, no treatment efficacy data are available to confirm this interpretation. In contrast, strains that have MICs of 2.0 μg/mL ciprofloxacin may not respond to therapy with the recommended dose of ciprofloxacin (or other fluoroquinolones) (*5*).

Because treatment failure can occur following any antimicrobial regimen, patients treated for gonorrhea should be advised to return for reevaluation if symptoms persist. Reevaluated patients who have a gonococcal infection within 2 weeks after treatment should be interviewed regarding possible reinfection, and a specimen should be collected for culture and susceptibility testing (*1,3*). If susceptibility testing

Neisseria gonorrhoeae — *Continued*

cannot be performed locally, isolates should be forwarded to a reference laboratory for testing. Thus, local laboratories that routinely use nonculture tests for the diagnosis of gonorrhea should maintain the ability to isolate *N. gonorrhoeae* to facilitate susceptibility testing of posttreatment isolates.

Antimicrobial resistance in *N. gonorrhoeae* is an increasing and costly public health problem. Because of increasing resistance to inexpensive therapeutic antimicrobial agents (e.g., penicillin and tetracycline), in 1989 CDC recommended alternative but more costly regimens, including fluoroquinolones, for the treatment of gonorrhea (*10*). The findings in these reports of *N. gonorrhoeae* strains with decreased susceptibilities to fluoroquinolones do not justify changes at this time in recommendations for the routine treatment of gonorrhea in the United States. However, because infections with *N. gonorrhoeae* strains with MICs of 1.0–2.0 μg/mL of ciprofloxacin have been acquired in Southeast Asia and Australia (*4,5*), clinicians treating persons believed to have been infected in these areas should consider using other antimicrobials.

Clinics using fluoroquinolones to treat gonorrhea should monitor the susceptibilities of gonococcal isolates to these agents. CDC will continue to monitor the susceptibilities of *N. gonorrhoeae* strains to fluoroquinolones and other antimicrobial agents through GISP and other surveillance systems and is reassessing the appropriateness of fluoroquinolones in gonorrhea therapy in the United States.

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## Frequent Alcohol Consumption Among Women of Childbearing Age — Behavioral Risk Factor Surveillance System, 1991

Alcohol use during pregnancy can cause fetal alcohol syndrome and other congenital anomalies (*1,2*). Substantial prenatal alcohol use can occur before a woman knows she is pregnant, and teratogenic risk increases if she continues to drink during pregnancy. Characterization of alcohol consumption patterns among women of childbearing age (i.e., age 18–44 years) can help identify the magnitude of this problem, the subpopulations at greatest risk, and the geographic areas in which increased prevention efforts are needed. This report presents state-specific data on the prevalence of frequent alcohol consumption among women of childbearing age.

Data were analyzed from 26,829 women aged 18–44 years who resided in 47 states and the District of Columbia and participated in the 1991 Behavioral Risk Factor Surveillance System (BRFSS) survey. The BRFSS is a state-based, random-digit–dialed telephone survey that collects self-reported data from a representative sample of civilian, noninstitutionalized persons aged ≥18 years (*3*). In 1991, the BRFSS included questions about the amount of alcohol consumed and the number of times alcohol was consumed during the month preceding the survey. Women of childbearing age were classified as nondrinker (no alcohol use reported during the preceding month), light drinker (≤30 drinks during the preceding month), moderate drinker (31–59 drinks during the preceding month), and heavy drinker (≥60 drinks during the preceding month). The survey also asked about the prevalence of binge drinking (five or more drinks on at least one occasion during the preceding month). All women who reported moderate, heavy, or binge drinking during the preceding month were classified as frequent drinkers. Weighted prevalence estimates were age-adjusted using the 1991 U.S. census of women aged 18–44 years (*4*). States were grouped into four categories according to quartiles of the prevalence of frequent alcohol consumption (3.6%–8.6%, 8.7%–11.4%, 11.5%–14.3%, and 14.4%–21.0%).

Alcohol consumption patterns during the month preceding the survey could be determined for 26,615 respondents. A total of 13,389 (50%) were nondrinkers; 11,927 (45%), light drinkers; 899 (3%), moderate drinkers; and 400 (2%), heavy drinkers. Among all drinkers, 2778 (21%) reported binge drinking. Among the binge drinkers, 1907 (69%) were light drinkers; 581 (21%), moderate drinkers; and 291 (11%), heavy drinkers. A total of 3205 (12%) were frequent drinkers.

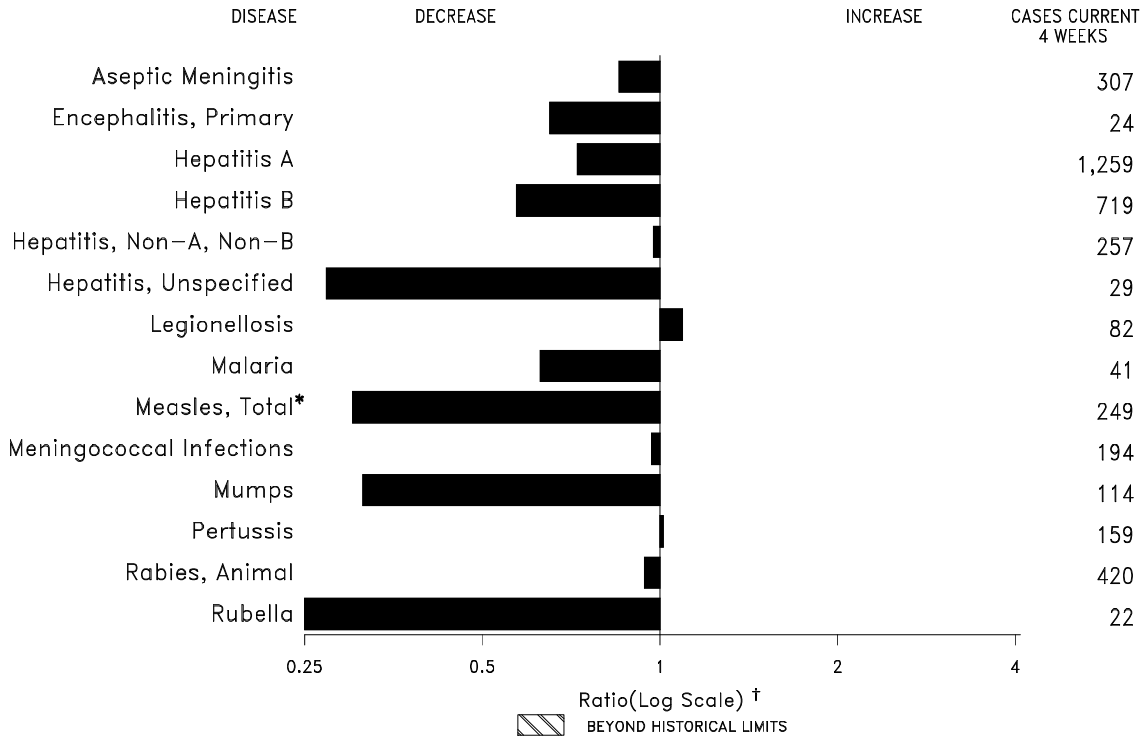
A total of 1067 women reported being pregnant at the time of the interview. Of these, 14 (1.3%) reported binge drinking. A total of 143 (13.4%) reported light drinking; three (0.3%), heavy drinking; and one (0.1%), moderate drinking.

Estimates of frequent alcohol consumption varied widely between states, with a median of 11.5%. The highest prevalences of frequent drinking were reported in Wisconsin (21.0%), New Hampshire (20.4%), Massachusetts (19.8%), Minnesota (18.2%), and Alaska (17.6%) (Figure 1). The lowest prevalences were reported in Mississippi (3.6%), Tennessee (3.9%), North Carolina (6.3%), Kentucky (6.9%), and Oklahoma (6.9%).

*Reported by the following BRFSS coordinators: L Eldridge, Alabama; P Owen, Alaska; J Contreras, PhD, Arizona; J Senner, Arkansas; L Lund, PhD, California; M Leff, Colorado; M Adams, Connecticut; F Breukelman, Delaware; C Mitchell, District of Columbia; D McTague, Florida; E Pledger, Georgia; VF Ah Cook, Hawaii; J Mitten, Idaho; B Steiner, Illinois; R Guest, Indiana;*

*S Schoon, Iowa; K Bramblett, Kentucky; S Kirkconnell, Louisiana; R Schwartz, Maine; A Wein-*

**FIGURE I. Notifiable disease reports, comparison of 4-week totals ending May 7, 1994, with historical data — United States**




*The large apparent decrease in reported cases of measles (total) reflects dramatic fluctuations in the historical baseline.

† 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 — cases of specified notifiable diseases, United States, cumulative, week ending May 7, 1994 (18th Week)**

| | Cum. 1994 | | Cum. 1994 |
|---|---|---|---|
| AIDS* | 26,335 | Measles: imported | 186 |
| Anthrax | - | indigenous | 189 |
| Botulism: Foodborne | 17 | Plague | 1 |
| Infant | 25 | Poliomyelitis, Paralytic§ | - |
| Other | 7 | Psittacosis | 8 |
| Brucellosis | 20 | Rabies, human | - |
| Cholera | 4 | Syphilis, primary & secondary | 7,095 |
| Congenital rubella syndrome | 3 | Syphilis, congenital, age < 1 year | - |
| Diphtheria | - | Tetanus | 13 |
| Encephalitis, post-infectious | 41 | Toxic shock syndrome | 89 |
| Gonorrhea | 125,190 | Trichinosis | 24 |
| *Haemophilus influenzae* (invasive disease)† | 420 | Tuberculosis | 6,178 |
| Hansen Disease | 36 | Tularemia | 4 |
| Leptospirosis | 11 | Typhoid fever | 120 |
| Lyme Disease | 1,209 | Typhus fever, tickborne (RMSF) | 45 |

*Updated monthly; last update April 26, 1994.
†Of 394 cases of known age, 113 (29%) were reported among children less than 5 years of age.
§No cases of suspected poliomyelitis have been reported in 1994; 3 cases of suspected poliomyelitis have been reported in 1993; 4 of the 5 suspected cases with onset in 1992 were confirmed; the confirmed cases were vaccine associated.

# TABLE II. Cases of selected notifiable diseases, United States, weeks ending May 7, 1994, and May 8, 1993 (18th Week)

| Reporting Area | AIDS* | Aseptic Meningitis | Encephalitis | | Gonorrhea | | Hepatitis (Viral), by type | | | | Legionellosis | Lyme Disease |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Primary | Post-infectious | | | A | B | NA,NB | Unspecified | | |
| | Cum. 1994 | Cum. 1994 | Cum. 1994 | Cum. 1994 | Cum. 1994 | Cum. 1993 | Cum. 1994 | Cum. 1994 | Cum. 1994 | Cum. 1994 | Cum. 1994 | Cum. 1994 |
| UNITED STATES | 26,335 | 1,650 | 182 | 41 | 125,190 | 131,320 | 6,677 | 3,868 | 1,479 | 133 | 527 | 1,209 |
| NEW ENGLAND | 994 | 59 | 6 | 2 | 2,780 | 2,660 | 120 | 174 | 48 | 14 | 16 | 112 |
| Maine | 30 | 7 | 1 | - | 24 | 32 | 11 | 6 | - | - | - | - |
| N.H. | 24 | 2 | - | 1 | - | 18 | 4 | 8 | 6 | - | - | 4 |
| Vt. | 15 | 10 | - | - | 8 | 11 | - | - | - | - | - | 2 |
| Mass. | 513 | 19 | 4 | - | 1,018 | 1,012 | 57 | 136 | 31 | 13 | 12 | 49 |
| R.I. | 93 | 21 | 1 | 1 | 153 | 130 | 12 | 3 | 11 | 1 | 4 | 23 |
| Conn. | 319 | - | - | - | 1,577 | 1,457 | 36 | 21 | - | - | - | 34 |
| MID. ATLANTIC | 7,735 | 165 | 22 | 11 | 15,413 | 13,553 | 398 | 385 | 201 | 4 | 72 | 833 |
| Upstate N.Y. | 582 | 68 | 8 | 1 | 2,911 | 2,918 | 172 | 130 | 94 | - | 17 | 530 |
| N.Y. City | 4,921 | 6 | 1 | - | 4,459 | 4,329 | 37 | 20 | - | - | - | 1 |
| N.J. | 1,532 | - | - | - | 1,650 | 1,986 | 113 | 128 | 85 | - | 9 | 93 |
| Pa. | 700 | 91 | 13 | 10 | 6,393 | 4,320 | 76 | 107 | 22 | 4 | 46 | 209 |
| E.N. CENTRAL | 1,859 | 286 | 50 | 8 | 23,505 | 25,905 | 593 | 390 | 106 | 2 | 155 | 13 |
| Ohio | 346 | 78 | 16 | - | 8,060 | 7,883 | 189 | 68 | 4 | - | 68 | 10 |
| Ind. | 285 | 54 | 2 | - | 2,712 | 2,707 | 121 | 77 | 3 | - | 49 | 2 |
| Ill. | 768 | 41 | 15 | 2 | 5,269 | 8,116 | 145 | 61 | 13 | 1 | 4 | - |
| Mich. | 342 | 109 | 16 | 6 | 5,696 | 4,985 | 89 | 128 | 86 | 1 | 26 | 1 |
| Wis. | 118 | 4 | 1 | - | 1,768 | 2,214 | 49 | 56 | - | - | 8 | - |
| W.N. CENTRAL | 550 | 113 | 8 | 1 | 6,605 | 6,884 | 294 | 196 | 70 | 3 | 57 | 19 |
| Minn. | 134 | 7 | 1 | - | 1,119 | 922 | 66 | 23 | 5 | - | - | 7 |
| Iowa | 22 | 39 | - | - | 454 | 600 | 11 | 12 | 7 | 2 | 20 | 1 |
| Mo. | 237 | 31 | - | - | 3,692 | 3,582 | 138 | 138 | 50 | 1 | 25 | 8 |
| N. Dak. | 5 | 1 | 2 | - | 7 | 18 | 1 | - | - | - | 2 | - |
| S. Dak. | 9 | - | 1 | - | 45 | 78 | 14 | - | - | - | - | - |
| Nebr. | 31 | 5 | 3 | 1 | - | 421 | 31 | 10 | 3 | - | 8 | - |
| Kans. | 112 | 30 | 1 | - | 1,288 | 1,263 | 33 | 13 | 5 | - | 2 | 3 |
| S. ATLANTIC | 5,517 | 367 | 30 | 12 | 34,767 | 36,041 | 451 | 941 | 320 | 11 | 136 | 176 |
| Del. | 78 | 2 | - | - | 620 | 472 | 8 | 11 | 19 | - | 1 | 40 |
| Md. | 489 | 56 | 6 | 1 | 6,466 | 6,045 | 59 | 121 | 13 | 4 | 32 | 47 |
| D.C. | 422 | 12 | - | - | 2,685 | 1,827 | 9 | 16 | - | - | 4 | 1 |
| Va. | 414 | 52 | 10 | 5 | 4,361 | 3,495 | 42 | 36 | 15 | 2 | 2 | 13 |
| W. Va. | 10 | 7 | - | - | 243 | 202 | 4 | 9 | 11 | - | 1 | 5 |
| N.C. | 455 | 53 | 13 | - | 8,253 | 7,940 | 37 | 101 | 24 | - | 8 | 23 |
| S.C. | 444 | 11 | - | - | 4,258 | 3,171 | 11 | 14 | 2 | - | 3 | - |
| Ga. | 684 | 15 | 1 | - | - | 4,660 | 34 | 386 | 150 | - | 63 | 43 |
| Fla. | 2,521 | 159 | - | 6 | 7,881 | 8,229 | 247 | 247 | 86 | 5 | 22 | 4 |
| E.S. CENTRAL | 714 | 111 | 18 | 1 | 15,298 | 13,555 | 155 | 401 | 279 | 1 | 23 | 9 |
| Ky. | 126 | 40 | 7 | 1 | 1,527 | 1,593 | 71 | 26 | 8 | - | 3 | 5 |
| Tenn. | 213 | 22 | 7 | - | 4,650 | 3,454 | 45 | 349 | 266 | 1 | 13 | 3 |
| Ala. | 210 | 37 | 4 | - | 5,468 | 5,085 | 22 | 26 | 5 | - | 5 | 1 |
| Miss. | 165 | 12 | - | - | 3,653 | 3,423 | 17 | - | - | - | 2 | - |
| W.S. CENTRAL | 2,841 | 126 | 9 | 1 | 14,105 | 15,007 | 955 | 424 | 126 | 30 | 11 | 22 |
| Ark. | 78 | 7 | - | - | 2,277 | 1,829 | 20 | 7 | 3 | - | 4 | - |
| La. | 306 | 7 | 2 | - | 4,313 | 3,934 | 35 | 67 | 34 | 1 | - | - |
| Okla. | 91 | - | - | - | 496 | 1,265 | 84 | 116 | 65 | - | 7 | 13 |
| Tex. | 2,366 | 112 | 7 | 1 | 7,019 | 7,979 | 816 | 234 | 24 | 29 | - | 9 |
| MOUNTAIN | 846 | 48 | 4 | - | 2,981 | 4,012 | 1,366 | 173 | 132 | 12 | 28 | 4 |
| Mont. | 10 | - | - | - | 29 | 18 | 10 | 7 | 2 | - | 11 | - |
| Idaho | 15 | 1 | - | - | 25 | 58 | 117 | 28 | 37 | 1 | - | 1 |
| Wyo. | 10 | - | - | - | 30 | 28 | 6 | 7 | 38 | - | 1 | - |
| Colo. | 362 | 7 | 1 | - | 850 | 1,322 | 93 | 10 | 9 | 4 | 1 | - |
| N. Mex. | 59 | 7 | - | - | 367 | 338 | 398 | 71 | 26 | 3 | 1 | 3 |
| Ariz. | 208 | 18 | - | - | 975 | 1,443 | 516 | 17 | 4 | 3 | 1 | - |
| Utah | 52 | 4 | - | - | 115 | 117 | 149 | 13 | 12 | - | 1 | - |
| Nev. | 130 | 11 | 3 | - | 590 | 688 | 77 | 20 | 4 | 1 | 12 | - |
| PACIFIC | 5,279 | 375 | 35 | 5 | 9,736 | 13,703 | 2,345 | 784 | 197 | 56 | 29 | 21 |
| Wash. | 324 | - | - | - | 1,032 | 1,368 | 135 | 29 | 26 | - | 5 | - |
| Oreg. | 225 | - | - | - | 337 | 526 | 113 | 18 | 2 | 1 | - | - |
| Calif. | 4,636 | 310 | 34 | 4 | 7,817 | 11,470 | 2,006 | 711 | 164 | 53 | 22 | 21 |
| Alaska | 15 | 12 | 1 | - | 304 | 174 | 77 | 6 | - | - | - | - |
| Hawaii | 79 | 53 | - | 1 | 246 | 165 | 14 | 20 | 5 | 2 | 2 | - |
| Guam | 1 | 6 | - | - | 46 | 41 | 3 | - | - | 4 | 2 | - |
| P.R. | 719 | 10 | - | - | 177 | 191 | 25 | 108 | 28 | 3 | - | - |
| V.I. | 7 | - | - | - | 9 | 29 | - | 1 | - | - | - | - |
| Amer. Samoa | - | - | - | - | 14 | 9 | 4 | - | - | - | - | - |
| C.N.M.I. | 1 | - | - | - | 19 | 25 | 2 | - | - | - | - | - |

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly; last update April 26, 1994.

## TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending May 7, 1994, and May 8, 1993 (18th Week)

| Reporting Area | Malaria | Measles (Rubeola) | | | | | Menin-gococcal Infections | Mumps | | Pertussis | | | Rubella | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Indigenous | | Imported* | | Total | | | | | | | | | |
| | Cum. 1994 | 1994 | Cum. 1994 | 1994 | Cum. 1994 | Cum. 1993 | Cum. 1994 | 1994 | Cum. 1994 | 1994 | Cum. 1994 | Cum. 1993 | 1994 | Cum. 1994 | Cum. 1993 |
| UNITED STATES | 313 | 17 | 189 | 164 | 186 | 104 | 1,142 | 29 | 481 | 71 | 1,129 | 1,016 | 2 | 133 | 70 |
| NEW ENGLAND | 27 | - | 9 | 2 | 5 | 53 | 68 | - | 10 | - | 108 | 208 | - | 90 | 1 |
| Maine | 1 | - | - | 2§ | 2 | - | 10 | - | 3 | - | 2 | 5 | - | - | 1 |
| N.H. | 3 | - | - | - | - | - | 4 | - | 4 | - | 30 | 55 | - | - | - |
| Vt. | 2 | - | - | - | 1 | 30 | 2 | - | - | - | 20 | 41 | - | - | - |
| Mass. | 9 | - | 3 | - | - | 14 | 29 | - | - | - | 47 | 96 | - | 90 | - |
| R.I. | 4 | - | 3 | - | 2 | 1 | - | - | 1 | - | 2 | 3 | - | - | - |
| Conn. | 8 | - | 3 | - | - | 8 | 23 | - | 2 | - | 7 | 8 | - | - | - |
| MID. ATLANTIC | 41 | 1 | 26 | - | 2 | 9 | 113 | 1 | 59 | 2 | 318 | 156 | 1 | 8 | 20 |
| Upstate N.Y. | 13 | 1 | 6 | - | - | 1 | 37 | 1 | 10 | 2 | 91 | 54 | 1 | 8 | 1 |
| N.Y. City | 3 | - | 1 | - | - | 2 | 4 | - | - | - | 62 | 5 | - | - | 12 |
| N.J. | 15 | - | 18 | - | 1 | 6 | 27 | - | 4 | - | 6 | 29 | - | - | 6 |
| Pa. | 10 | - | 1 | - | 1 | - | 45 | - | 45 | - | 159 | 68 | - | - | 1 |
| E.N. CENTRAL | 33 | - | 12 | 23 | 31 | 4 | 182 | 1 | 82 | - | 148 | 231 | - | 8 | 2 |
| Ohio | 5 | - | 6 | - | - | - | 44 | - | 19 | - | 61 | 80 | - | - | 1 |
| Ind. | 9 | - | - | - | 1 | - | 46 | - | 5 | - | 31 | 12 | - | - | - |
| Ill. | 8 | - | - | 23§ | 30 | 4 | 58 | - | 33 | - | 20 | 40 | - | 3 | - |
| Mich. | 10 | - | 3 | - | - | - | 16 | 1 | 22 | - | 21 | 15 | - | 5 | - |
| Wis. | 1 | - | 3 | - | - | - | 18 | - | 3 | - | 15 | 84 | - | - | 1 |
| W.N. CENTRAL | 17 | - | - | 137 | 138 | 3 | 80 | 2 | 22 | - | 40 | 57 | - | - | 1 |
| Minn. | 5 | - | - | - | - | - | 8 | - | 4 | - | 16 | 22 | - | - | - |
| Iowa | 3 | - | - | - | - | - | 8 | 2 | 6 | - | 3 | 1 | - | - | - |
| Mo. | 7 | - | - | 137† | 137 | 1 | 39 | - | 9 | - | 11 | 17 | - | - | 1 |
| N. Dak. | - | - | - | - | - | - | - | - | 1 | - | 1 | 3 | - | - | - |
| S. Dak. | - | - | - | - | - | - | 6 | - | - | - | - | 1 | - | - | - |
| Nebr. | 1 | - | - | - | 1 | - | 6 | - | 2 | - | 3 | 4 | - | - | - |
| Kans. | 1 | - | - | - | - | 2 | 13 | - | - | - | 6 | 9 | - | - | - |
| S. ATLANTIC | 72 | 1 | 5 | - | - | 17 | 190 | 5 | 82 | 6 | 140 | 80 | - | 5 | 6 |
| Del. | 3 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | 2 |
| Md. | 30 | - | - | - | - | 4 | 14 | 1 | 19 | 2 | 48 | 28 | - | - | 1 |
| D.C. | 7 | - | - | - | - | - | 1 | - | - | - | 3 | 1 | - | - | - |
| Va. | 8 | - | 1 | - | - | 1 | 26 | 1 | 19 | - | 13 | 6 | - | - | - |
| W. Va. | - | - | - | - | - | - | 8 | - | 3 | - | 2 | 3 | - | - | - |
| N.C. | 2 | - | - | - | - | - | 33 | - | 25 | 1 | 40 | 14 | - | - | - |
| S.C. | 2 | - | - | - | - | - | 6 | - | 5 | - | 8 | 5 | - | - | - |
| Ga. | 8 | 1 | 1 | - | - | - | 39 | 3 | 6 | 3 | 10 | 10 | - | - | - |
| Fla. | 12 | - | 3 | - | - | 12 | 63 | - | 5 | - | 16 | 12 | - | 5 | 3 |
| E.S. CENTRAL | 8 | - | 28 | - | - | - | 78 | - | 5 | 38 | 73 | 45 | - | - | - |
| Ky. | 2 | - | - | - | - | - | 17 | - | - | 37 | 52 | 9 | - | - | - |
| Tenn. | 4 | - | 28 | - | - | - | 21 | - | - | - | 13 | 21 | - | - | - |
| Ala. | 1 | - | - | - | - | - | 34 | - | - | 1 | 7 | 11 | - | - | - |
| Miss. | 1 | - | - | - | - | - | 6 | - | 5 | - | 1 | 4 | - | - | - |
| W.S. CENTRAL | 7 | - | 7 | - | 4 | 1 | 145 | 15 | 122 | 1 | 33 | 15 | - | 7 | 9 |
| Ark. | - | - | - | - | - | - | 20 | - | - | - | 1 | 1 | - | - | - |
| La. | - | - | - | - | 1 | 1 | 20 | 1 | 10 | 1 | 5 | 4 | - | - | 1 |
| Okla. | 2 | - | - | - | - | - | 12 | - | 21 | - | 20 | 10 | - | 4 | 1 |
| Tex. | 5 | - | 7 | - | 3 | - | 93 | 14 | 91 | - | 7 | - | - | 3 | 7 |
| MOUNTAIN | 11 | - | 81 | - | 1 | 2 | 81 | 4 | 14 | 3 | 60 | 62 | - | 2 | 4 |
| Mont. | - | - | - | - | - | - | 2 | - | - | 1 | 3 | - | - | - | - |
| Idaho | 2 | - | - | - | - | - | 11 | - | 3 | 1 | 23 | 11 | - | 1 | 1 |
| Wyo. | - | - | - | - | - | - | 2 | - | - | - | - | 1 | - | - | - |
| Colo. | 2 | - | 12 | - | 1 | 2 | 8 | - | - | - | 14 | 22 | - | - | - |
| N. Mex. | 2 | - | - | - | - | - | 8 | N | N | - | 6 | 14 | - | - | - |
| Ariz. | 1 | - | - | - | - | - | 35 | 3 | 3 | 1 | 10 | 8 | - | - | - |
| Utah | 3 | - | 69 | - | - | - | 11 | 1 | 4 | - | 4 | 6 | - | 1 | 2 |
| Nev. | 1 | - | - | - | - | - | 4 | - | 3 | - | - | - | - | - | 1 |
| PACIFIC | 97 | 15 | 21 | 2 | 5 | 15 | 205 | 1 | 85 | 21 | 209 | 162 | 1 | 13 | 27 |
| Wash. | 3 | - | - | - | - | - | 16 | - | 3 | - | 12 | 14 | - | - | - |
| Oreg. | 7 | - | - | - | - | - | 35 | N | N | - | 22 | - | - | - | 1 |
| Calif. | 77 | 15 | 21 | 2†§ | 4 | 4 | 148 | 1 | 73 | 21 | 171 | 141 | 1 | 12 | 15 |
| Alaska | - | - | - | - | - | - | 1 | - | 2 | - | - | 1 | - | - | 1 |
| Hawaii | 10 | - | - | - | 1 | 11 | 5 | - | 7 | - | 4 | 6 | - | 1 | 10 |
| Guam | - | U | 155 | U | - | 1 | - | U | 2 | U | - | - | U | 1 | - |
| P.R. | - | - | 13 | - | - | 172 | 3 | - | 2 | - | 1 | - | - | - | - |
| V.I. | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Amer. Samoa | - | - | - | - | - | 1 | - | - | 1 | - | 1 | 2 | - | - | - |
| C.N.M.I. | 1 | U | 26 | U | - | 1 | - | U | - | U | - | - | U | - | - |

*For measles only, imported cases include both out-of-state and international importations.
N: Not notifiable U: Unavailable † International § Out-of-state

## TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending May 7, 1994, and May 8, 1993 (18th Week)

| Reporting Area | Syphilis (Primary & Secondary) | | Toxic-Shock Syndrome | Tuberculosis | | Tula-remia | Typhoid Fever | Typhus Fever (Tick-borne) (RMSF) | Rabies, Animal |
|---|---|---|---|---|---|---|---|---|---|
| | Cum. 1994 | Cum. 1993 | Cum. 1994 | Cum. 1994 | Cum. 1993 | Cum. 1994 | Cum. 1994 | Cum. 1994 | Cum. 1994 |
| UNITED STATES | 7,095 | 9,295 | 89 | 6,178 | 6,955 | 4 | 120 | 45 | 2,030 |
| NEW ENGLAND | 69 | 153 | 2 | 125 | 122 | - | 11 | 3 | 646 |
| Maine | 4 | 2 | - | - | 7 | - | - | - | - |
| N.H. | - | 14 | - | 7 | 7 | - | - | - | 77 |
| Vt. | - | - | - | - | 2 | - | - | - | 60 |
| Mass. | 22 | 71 | 2 | 59 | 50 | - | 7 | 3 | 248 |
| R.I. | 6 | 3 | - | 11 | 24 | - | 1 | - | 5 |
| Conn. | 37 | 63 | - | 48 | 32 | - | 3 | - | 256 |
| MID. ATLANTIC | 487 | 720 | 15 | 1,110 | 1,391 | - | 34 | - | 242 |
| Upstate N.Y. | 61 | - | 7 | 76 | 198 | - | 6 | - | 45 |
| N.Y. City | 218 | 507 | - | 689 | 835 | - | 20 | - | - |
| N.J. | 65 | 142 | - | 224 | 128 | - | 8 | - | 117 |
| Pa. | 143 | 71 | 8 | 121 | 230 | - | - | - | 80 |
| E.N. CENTRAL | 892 | 1,513 | 22 | 656 | 724 | - | 22 | 6 | 11 |
| Ohio | 380 | 404 | 10 | 86 | 102 | - | 1 | 2 | - |
| Ind. | 89 | 143 | 2 | 51 | 64 | - | 1 | 1 | 1 |
| Ill. | 210 | 546 | 4 | 353 | 381 | - | 11 | 1 | 3 |
| Mich. | 115 | 247 | 6 | 151 | 148 | - | 3 | 2 | 4 |
| Wis. | 98 | 173 | - | 15 | 29 | - | 6 | - | 3 |
| W.N. CENTRAL | 431 | 610 | 11 | 157 | 126 | 3 | - | 3 | 57 |
| Minn. | 16 | 34 | - | 36 | 14 | - | - | - | 5 |
| Iowa | 16 | 32 | 6 | 12 | 10 | - | - | 1 | 23 |
| Mo. | 369 | 471 | 3 | 71 | 69 | 3 | - | - | 6 |
| N. Dak. | - | - | - | 1 | 4 | - | - | - | - |
| S. Dak. | - | - | - | 9 | 6 | - | - | 2 | 8 |
| Nebr. | - | 8 | 1 | 4 | 8 | - | - | - | - |
| Kans. | 30 | 65 | 1 | 24 | 15 | - | - | - | 15 |
| S. ATLANTIC | 2,091 | 2,508 | 5 | 955 | 1,511 | - | 19 | 27 | 672 |
| Del. | 9 | 51 | - | - | 14 | - | 1 | - | 9 |
| Md. | 90 | 133 | - | 115 | 133 | - | 4 | - | 210 |
| D.C. | 97 | 148 | - | 40 | 60 | - | 1 | - | 2 |
| Va. | 242 | 219 | - | 119 | 170 | - | 1 | - | 150 |
| W. Va. | 8 | 1 | - | 33 | 25 | - | - | - | 28 |
| N.C. | 644 | 660 | 1 | 140 | 137 | - | - | 10 | 66 |
| S.C. | 253 | 413 | - | 139 | 130 | - | - | - | 60 |
| Ga. | 423 | 439 | - | 310 | 258 | - | 1 | 17 | 139 |
| Fla. | 325 | 444 | 4 | 59 | 584 | - | 11 | - | 8 |
| E.S. CENTRAL | 1,352 | 1,148 | 1 | 309 | 457 | - | - | 3 | 38 |
| Ky. | 86 | 100 | - | 111 | 114 | - | - | - | 3 |
| Tenn. | 330 | 254 | 1 | 1 | 99 | - | - | 2 | - |
| Ala. | 255 | 291 | - | 135 | 156 | - | - | - | 35 |
| Miss. | 681 | 503 | - | 62 | 88 | - | - | 1 | - |
| W.S. CENTRAL | 1,413 | 1,973 | - | 753 | 588 | - | 5 | 3 | 259 |
| Ark. | 184 | 235 | - | 85 | 54 | - | - | 1 | 11 |
| La. | 663 | 861 | - | - | - | - | 2 | - | 41 |
| Okla. | 15 | 124 | - | 72 | 51 | - | 1 | 2 | 17 |
| Tex. | 551 | 753 | - | 596 | 483 | - | 2 | - | 190 |
| MOUNTAIN | 109 | 87 | 4 | 144 | 175 | 1 | 6 | - | 25 |
| Mont. | - | - | - | - | 5 | - | - | - | - |
| Idaho | 1 | - | 1 | 6 | 3 | - | - | - | - |
| Wyo. | - | 2 | - | 2 | 1 | - | - | - | 6 |
| Colo. | 52 | 28 | 1 | 1 | 28 | - | 2 | - | - |
| N. Mex. | 5 | 14 | - | 26 | 18 | 1 | - | - | - |
| Ariz. | 23 | 36 | - | 77 | 75 | - | 1 | - | 18 |
| Utah | 5 | 2 | 2 | - | 9 | - | 1 | - | - |
| Nev. | 23 | 5 | - | 32 | 36 | - | 2 | - | 1 |
| PACIFIC | 251 | 583 | 29 | 1,969 | 1,861 | - | 23 | - | 80 |
| Wash. | 14 | 21 | - | 75 | 89 | - | 1 | - | - |
| Oreg. | 12 | 26 | - | 45 | 30 | - | - | - | - |
| Calif. | 223 | 532 | 26 | 1,758 | 1,617 | - | 21 | - | 56 |
| Alaska | 1 | 2 | - | 24 | 21 | - | - | - | 24 |
| Hawaii | 1 | 2 | 3 | 67 | 104 | - | 1 | - | - |
| Guam | 1 | - | - | 18 | 25 | - | - | - | - |
| P.R. | 97 | 188 | - | 21 | 64 | - | - | - | 26 |
| V.I. | 19 | 18 | - | - | 2 | - | - | - | - |
| Amer. Samoa | - | - | - | 2 | 1 | - | 1 | - | - |
| C.N.M.I. | 1 | - | - | 14 | 7 | - | 1 | - | - |

U: Unavailable

# TABLE III. Deaths in 121 U.S. cities,* week ending May 7, 1994 (18th Week)

| Reporting Area | All Causes, By Age (Years) | | | | | | P&I† Total |
|---|---|---|---|---|---|---|---|
| | All Ages | ≥65 | 45-64 | 25-44 | 1-24 | <1 | |
| NEW ENGLAND | 538 | 379 | 93 | 50 | 7 | 9 | 47 |
| Boston, Mass. | 151 | 100 | 29 | 18 | 1 | 3 | 19 |
| Bridgeport, Conn. | 18 | 11 | 3 | 3 | - | 1 | 2 |
| Cambridge, Mass. | 28 | 19 | 6 | 3 | - | - | 1 |
| Fall River, Mass. | 21 | 16 | 3 | 1 | 1 | - | - |
| Hartford, Conn. | 49 | 28 | 11 | 8 | 1 | 1 | 3 |
| Lowell, Mass. | 35 | 26 | 4 | 3 | - | 2 | 3 |
| Lynn, Mass. | 12 | 10 | 2 | - | - | - | 2 |
| New Bedford, Mass. | 28 | 18 | 7 | 2 | - | 1 | - |
| New Haven, Conn. | 21 | 14 | 4 | 2 | - | 1 | 1 |
| Providence, R.I. | 44 | 35 | 6 | 1 | 2 | - | 5 |
| Somerville, Mass. | 5 | 4 | - | 1 | - | - | - |
| Springfield, Mass. | 45 | 37 | 5 | 3 | - | - | 4 |
| Waterbury, Conn. | 23 | 19 | 3 | 1 | - | - | 1 |
| Worcester, Mass. | 58 | 42 | 10 | 4 | 2 | - | 6 |
| MID. ATLANTIC | 2,759 | 1,830 | 488 | 313 | 65 | 63 | 129 |
| Albany, N.Y. | 45 | 33 | 4 | 3 | 1 | 4 | 1 |
| Allentown, Pa. | 32 | 19 | 9 | 3 | 1 | - | - |
| Buffalo, N.Y. | 108 | 79 | 19 | 5 | 4 | 1 | 2 |
| Camden, N.J. | 38 | 22 | 5 | 7 | 2 | 2 | 2 |
| Elizabeth, N.J. | 18 | 10 | 5 | - | - | 3 | - |
| Erie, Pa.§ | 38 | 29 | 7 | 2 | - | - | 2 |
| Jersey City, N.J. | 40 | 18 | 8 | 12 | 1 | 1 | 1 |
| New York City, N.Y. | 1,272 | 838 | 221 | 172 | 23 | 18 | 44 |
| Newark, N.J. | 100 | 38 | 29 | 26 | 2 | 5 | 9 |
| Paterson, N.J. | 34 | 17 | 9 | 5 | 3 | - | 5 |
| Philadelphia, Pa. | 597 | 396 | 107 | 56 | 20 | 18 | 31 |
| Pittsburgh, Pa.§ | 79 | 62 | 10 | 2 | 3 | 2 | 7 |
| Reading, Pa. | 12 | 9 | 3 | - | - | - | 2 |
| Rochester, N.Y. | 129 | 101 | 13 | 8 | 2 | 5 | 11 |
| Schenectady, N.Y. | 30 | 22 | 5 | 3 | - | - | - |
| Scranton, Pa.§ | 29 | 24 | 4 | - | 1 | - | - |
| Syracuse, N.Y. | 89 | 61 | 23 | 2 | - | 3 | 6 |
| Trenton, N.J. | 26 | 17 | 4 | 3 | 1 | 1 | 3 |
| Utica, N.Y. | 21 | 18 | 2 | 1 | - | - | - |
| Yonkers, N.Y. | 22 | 17 | 1 | 3 | 1 | - | 3 |
| E.N. CENTRAL | 2,578 | 1,551 | 503 | 289 | 175 | 60 | 116 |
| Akron, Ohio | 77 | 57 | 15 | 3 | - | 2 | - |
| Canton, Ohio | 39 | 29 | 6 | 3 | - | 1 | 5 |
| Chicago, Ill. | 687 | 275 | 147 | 134 | 117 | 14 | 19 |
| Cincinnati, Ohio | 166 | 108 | 32 | 18 | 4 | 4 | 17 |
| Cleveland, Ohio | 160 | 102 | 36 | 14 | 4 | 4 | 1 |
| Columbus, Ohio | 168 | 120 | 22 | 18 | 5 | 3 | 8 |
| Dayton, Ohio | 122 | 80 | 28 | 12 | 1 | 1 | 7 |
| Detroit, Mich. | 252 | 144 | 59 | 34 | 9 | 6 | 6 |
| Evansville, Ind. | 52 | 38 | 5 | 3 | 4 | 2 | 4 |
| Fort Wayne, Ind. | 55 | 42 | 4 | 5 | 2 | 2 | 1 |
| Gary, Ind. | 13 | 6 | 3 | 3 | 1 | - | - |
| Grand Rapids, Mich. | 58 | 39 | 6 | 4 | 6 | 3 | 6 |
| Indianapolis, Ind. | 230 | 162 | 48 | 13 | 4 | 3 | 12 |
| Madison, Wis. | 52 | 35 | 7 | 4 | 4 | 2 | 4 |
| Milwaukee, Wis. | 134 | 90 | 28 | 9 | 4 | 3 | 6 |
| Peoria, Ill. | 25 | 16 | 6 | - | 2 | 1 | - |
| Rockford, Ill. | 49 | 33 | 8 | 4 | 3 | 1 | 2 |
| South Bend, Ind. | 44 | 29 | 12 | - | 1 | 2 | 6 |
| Toledo, Ohio | 108 | 85 | 15 | 4 | 2 | 2 | 11 |
| Youngstown, Ohio | 87 | 61 | 16 | 4 | 2 | 4 | 1 |
| W.N. CENTRAL | 750 | 551 | 118 | 48 | 19 | 14 | 36 |
| Des Moines, Iowa | 56 | 43 | 9 | 2 | 1 | 1 | 7 |
| Duluth, Minn. | 29 | 23 | 6 | - | - | - | 2 |
| Kansas City, Kans. | 37 | 24 | 7 | 3 | 2 | 1 | 1 |
| Kansas City, Mo. | 103 | 76 | 12 | 14 | 1 | - | 5 |
| Lincoln, Nebr. | 43 | 26 | 12 | 3 | 1 | 1 | 5 |
| Minneapolis, Minn. | 156 | 122 | 20 | 6 | 5 | 3 | 8 |
| Omaha, Nebr. | 63 | 50 | 7 | 4 | 1 | 1 | 3 |
| St. Louis, Mo. | 129 | 97 | 19 | 7 | 2 | 4 | - |
| St. Paul, Minn. | 65 | 49 | 11 | 2 | 1 | 2 | 5 |
| Wichita, Kans. | 69 | 41 | 15 | 7 | 5 | 1 | - |

| Reporting Area | All Causes, By Age (Years) | | | | | | P&I† Total |
|---|---|---|---|---|---|---|---|
| | All Ages | ≥65 | 45-64 | 25-44 | 1-24 | <1 | |
| S. ATLANTIC | 1,562 | 940 | 298 | 208 | 60 | 53 | 68 |
| Atlanta, Ga. | 185 | 105 | 35 | 31 | 8 | 6 | 9 |
| Baltimore, Md. | 221 | 134 | 48 | 35 | 3 | 1 | 14 |
| Charlotte, N.C. | 78 | 40 | 18 | 13 | 5 | 2 | 2 |
| Jacksonville, Fla. | 119 | 77 | 20 | 13 | 3 | 6 | 6 |
| Miami, Fla. | 147 | 94 | 25 | 19 | 5 | 4 | 1 |
| Norfolk, Va. | 63 | 41 | 13 | 4 | 5 | - | 1 |
| Richmond, Va. | 87 | 58 | 10 | 15 | 3 | 1 | 6 |
| Savannah, Ga. | 48 | 32 | 6 | 2 | 4 | 4 | 9 |
| St. Petersburg, Fla. | 70 | 52 | 11 | 4 | - | 3 | 5 |
| Tampa, Fla. | 201 | 126 | 48 | 20 | 4 | 3 | 10 |
| Washington, D.C. | 329 | 171 | 61 | 52 | 20 | 22 | 5 |
| Wilmington, Del. | 14 | 10 | 3 | - | - | 1 | - |
| E.S. CENTRAL | 779 | 513 | 161 | 60 | 26 | 17 | 61 |
| Birmingham, Ala. | 116 | 79 | 25 | 7 | 3 | 2 | 7 |
| Chattanooga, Tenn. | 74 | 48 | 18 | 3 | 3 | 2 | 5 |
| Knoxville, Tenn. | 71 | 50 | 15 | 4 | 1 | 1 | 7 |
| Lexington, Ky. | 93 | 60 | 23 | 6 | 2 | 2 | 9 |
| Memphis, Tenn. | 200 | 133 | 38 | 18 | 8 | 2 | 20 |
| Mobile, Ala. | 53 | 34 | 8 | 6 | 4 | 1 | 2 |
| Montgomery, Ala. | 56 | 37 | 9 | 7 | 2 | 1 | 2 |
| Nashville, Tenn. | 116 | 72 | 25 | 9 | 3 | 6 | 9 |
| W.S. CENTRAL | 1,367 | 827 | 278 | 170 | 53 | 39 | 93 |
| Austin, Tex. | 54 | 38 | 6 | 9 | 1 | - | 4 |
| Baton Rouge, La. | 42 | 27 | 10 | 3 | - | 2 | 1 |
| Corpus Christi, Tex. | 45 | 32 | 8 | 3 | - | 2 | 3 |
| Dallas, Tex. | 166 | 94 | 39 | 18 | 11 | 4 | 7 |
| El Paso, Tex. | 61 | 40 | 16 | 2 | 1 | 2 | 7 |
| Ft. Worth, Tex. | 102 | 65 | 18 | 9 | 5 | 5 | 6 |
| Houston, Tex. | 386 | 210 | 74 | 74 | 14 | 14 | 25 |
| Little Rock, Ark. | 82 | 39 | 24 | 11 | 4 | 4 | 4 |
| New Orleans, La. | 100 | 58 | 22 | 12 | 7 | 1 | - |
| San Antonio, Tex. | 176 | 120 | 28 | 19 | 8 | 1 | 24 |
| Shreveport, La. | 70 | 48 | 14 | 4 | 2 | 2 | 7 |
| Tulsa, Okla. | 83 | 56 | 19 | 6 | - | 2 | 5 |
| MOUNTAIN | 812 | 517 | 146 | 89 | 44 | 16 | 61 |
| Albuquerque, N.M. | 72 | 39 | 21 | 2 | 7 | 3 | 4 |
| Colo. Springs, Colo. | 48 | 29 | 11 | 5 | 3 | - | 2 |
| Denver, Colo. | 98 | 66 | 16 | 12 | 1 | 3 | 8 |
| Las Vegas, Nev. | 145 | 87 | 33 | 18 | 6 | 1 | 7 |
| Ogden, Utah | 17 | 15 | 1 | 1 | - | - | 5 |
| Phoenix, Ariz. | 182 | 90 | 35 | 35 | 20 | 2 | 21 |
| Pueblo, Colo. | 23 | 17 | 4 | 1 | - | 1 | 2 |
| Salt Lake City, Utah | 96 | 73 | 9 | 7 | 3 | 4 | 7 |
| Tucson, Ariz. | 131 | 101 | 16 | 8 | 4 | 2 | 5 |
| PACIFIC | 1,926 | 1,269 | 319 | 219 | 75 | 37 | 129 |
| Berkeley, Calif. | 18 | 10 | 4 | 2 | 2 | - | 1 |
| Fresno, Calif. | 86 | 64 | 4 | 8 | 8 | 2 | 9 |
| Glendale, Calif. | 37 | 30 | 6 | 1 | - | - | 3 |
| Honolulu, Hawaii | 74 | 55 | 10 | 4 | 3 | 2 | 7 |
| Long Beach, Calif. | 90 | 59 | 21 | 6 | 1 | 3 | 8 |
| Los Angeles, Calif. | 732 | 458 | 119 | 104 | 33 | 11 | 26 |
| Pasadena, Calif. | 32 | 23 | 4 | 3 | 1 | 1 | 4 |
| Portland, Oreg. | 115 | 76 | 19 | 14 | 4 | 2 | 7 |
| Sacramento, Calif. | 158 | 97 | 36 | 18 | 6 | 1 | 15 |
| San Diego, Calif. | 126 | 81 | 23 | 11 | 8 | 3 | 13 |
| San Francisco, Calif. | U | U | U | U | U | U | U |
| San Jose, Calif. | 173 | 117 | 24 | 23 | 3 | 6 | 19 |
| Santa Cruz, Calif. | 24 | 18 | 5 | 1 | - | - | - |
| Seattle, Wash. | 128 | 83 | 23 | 15 | 3 | 4 | 6 |
| Spokane, Wash. | 47 | 35 | 5 | 5 | - | 2 | 4 |
| Tacoma, Wash. | 86 | 63 | 16 | 4 | 3 | - | 7 |
| TOTAL | 13,071¶ | 8,377 | 2,404 | 1,446 | 524 | 308 | 740 |

*Mortality data in this table are voluntarily reported from 121 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 these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

U: Unavailable.

*Alcohol — Continued*

lies and lower intelligence quotients (*6,7*). Because no known safe level of alcohol use has been determined for pregnant women, those who are pregnant or who may become pregnant should abstain from alcohol.

The findings in this report are subject to at least two limitations. First, the estimates of frequent drinking are based on self-reported data, which usually underestimate actual alcohol use. Second, because the BRFSS does not include households without a telephone, the findings may not reflect patterns among population subgroups (e.g., low income and less educated women).

The findings in this report can assist states in targeting women of childbearing age and educating them about the importance of abstaining from alcohol during pregnancy and in planning health-promotion programs that help reduce alcohol use among women of childbearing age. Further analysis of these data is being conducted to determine patterns of alcohol use by demographic characteristics (e.g., income, education, and race).

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## Increasing Incidence of Low Birthweight — United States, 1981–1991

A national health objective for the year 2000 is to reduce low birthweight (LBW) (<2500 g [<5 lbs, 8 oz]) to an incidence of no more than 5% of live-born infants (50.0 per 1000) (objective 14.5) (*1*). During 1970–1985, the incidence of LBW in the United States declined steadily (*2*); however, from 1985 to 1991, the incidence increased slightly, from 67.5 to 71.2 (*2,3*). In 1991, disorders relating to short gestation and LBW were the primary cause of death among black infants and the third leading cause among white infants (*4*). To characterize trends in the race-specific incidence of LBW by period of gestation from 1981 to 1991, data from birth certificates were analyzed. This report summarizes the results of that analysis.

Data were derived from birth certificates for live-born U.S. infants during 1981–1991. For this analysis, LBW infants were categorized as term-LBW (≥37 completed weeks gestation) and preterm-LBW (<37 completed weeks gestation). The date of last normal menstrual period (LMP), the basis for computing the period of gestation, was

*Low Birthweight — Continued*

reported by 49 states and the District of Columbia (DC) from 1981 through 1984 and all states and DC from 1985 through 1991. Weeks of gestation were imputed only when the day of LMP was missing. During 1989–1991, the clinical estimate of gestational age was used when month and/or year of LMP were missing or when gestational age based on date of LMP was not compatible with birthweight. During 1981–1988, approximately 4% of births were excluded from the analysis because of missing data; during 1989–1991, 1.0%–1.5% of births were excluded. Because both demographics and underlying risk factors for LBW vary by race (*2,5*), the analysis was stratified by race of mother. Data are presented only for blacks and whites because of the small number of births to women of other races.

From 1981 to 1991, the incidence of LBW for infants with known gestation increased 6.6%, from 66.4 per 1000 live-born infants in 1981 to 70.8 in 1991 (Table 1). The rate of term-LBW infants decreased 8.6%, from 29.0 to 26.5; for both black and white infants, the rate of term-LBW infants decreased 9.8% (from 52.3 and 24.4, respectively, to 47.2 and 22.0, respectively,). However, the rate of preterm-LBW infants increased 18.1%, from 37.5 to 44.3; for black infants, the rate of preterm-LBW infants increased 21.6% (from 72.1 to 87.7) and for white infants, 15.2% (from 31.0 to 35.7) (Table 1).

Changes occurred in the distributions of selected maternal (i.e., age, marital status, and receipt of prenatal care) and infant (i.e., singleton status) characteristics during 1981–1991 that can affect birthweight (*6*) (Table 2). Among women aged ≥35 years, the percentage of births increased 100% (from 4.7% in 1981 to 9.4% in 1991); among women who were unmarried, 58% (from 18.6% in 1981 to 29.4% in 1991); and among women who had received no prenatal care, 50% (from 1.2% in 1981 to 1.8% in 1991). Nonsingleton births (e.g., twins) increased 20% (from 2.0% in 1981 to 2.4% in 1991). The direction of trends was similar for both blacks and whites; however, the magnitude varied by race. For example, the percentage of births among women who had received no prenatal care increased 1.6 times more rapidly for black women than for white women.

To control for the changing distributions from 1981 to 1991, incidences of LBW for both years were directly standardized by using the combined 1981 and 1991 population distributions of maternal age, marital status, receipt of prenatal care, and infant's singleton status (Table 3). Combined, the changes in the distributions of maternal and infant factors explained 68.0% of the increase in incidence of preterm-LBW infants for white women and 42.9% of that for black women. The change in the distribution of maternal age alone explained few or none of the LBW trends for either race.

*Reported by: Div of Nutrition, National Center for Chronic Disease Prevention and Health Promotion; Div of Vital Statistics, National Center for Health Statistics, CDC.*

**Editorial Note:** The findings in this report indicate that the increase in incidence of LBW from 1981 to 1991 resulted from the increase in preterm-LBW infants. Compared with infants of normal birthweight (≥2500 g [≥5 lbs, 8 oz]), LBW infants are five to 10 times more likely to die within the first year of life; furthermore, preterm-LBW infants are approximately three times more likely to die than term-LBW infants (*7*).

The findings in this analysis are subject to at least one limitation—the change to include clinical estimates in the computation of gestational age in 1989. The greatest increase in the incidence of preterm-LBW infants occurred that year. However, when these estimates were removed from the computations for 1991, the increase in incidence was reduced 13% for all infants, 9% for white infants, and 6% for black infants.

**TABLE 1. Rate* of low birthweight (LBW)†, by year, race of mother, and gestation§ — United States, 1981–1991**

| Race/Gestation | Year | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1981** | **1982** | **1983** | **1984** | **1985** | **1986** | **1987** | **1988** | **1989** | **1990** | **1991** |
| **White** | | | | | | | | | | | |
| LBW, term | 24.4 | 23.7 | 23.6 | 23.2 | 23.0 | 22.9 | 22.9 | 22.8 | 22.4 | 22.0 | 22.0 |
| LBW, preterm | 31.0 | 31.3 | 31.7 | 31.2 | 31.9 | 32.0 | 32.3 | 32.0 | 34.4 | 34.7 | 35.7 |
| **Total** | **55.4** | **55.0** | **55.3** | **54.5** | **54.8** | **54.8** | **55.2** | **54.8** | **56.8** | **56.7** | **57.8** |
| **Black** | | | | | | | | | | | |
| LBW, term | 52.3 | 50.6 | 50.5 | 49.9 | 48.7 | 48.6 | 48.2 | 48.7 | 48.3 | 46.5 | 47.2 |
| LBW, preterm | 72.1 | 72.7 | 74.6 | 72.8 | 74.2 | 75.5 | 77.4 | 79.2 | 85.7 | 85.3 | 87.7 |
| **Total** | **124.4** | **123.3** | **125.2** | **122.7** | **122.9** | **124.1** | **125.6** | **127.9** | **134.0** | **131.8** | **134.9** |
| **Overall¶** | | | | | | | | | | | |
| **LBW, term** | **29.0** | **28.1** | **28.0** | **27.6** | **27.1** | **27.1** | **27.1** | **27.2** | **27.0** | **26.3** | **26.5** |
| **LBW, preterm** | **37.5** | **37.7** | **38.4** | **37.8** | **38.4** | **38.9** | **39.6** | **39.6** | **42.9** | **43.0** | **44.3** |
| **Total** | **66.4** | **65.9** | **66.4** | **65.4** | **65.5** | **66.0** | **66.7** | **66.9** | **69.9** | **69.4** | **70.8** |

*Per 1000 live-born infants.
†<2500 g (<5 lbs, 8 oz).
§Term is ≥37 completed weeks of gestation; preterm is <37 completed weeks of gestation.
¶Comprises white, black, and other races.

*Low Birthweight — Continued*

**TABLE 2. Percentage distribution of selected maternal and infant characteristics, by race of mother — United States,* 1981–1991†**

| Characteristic | White | | Black | | Overall§ | |
|---|---|---|---|---|---|---|
| | 1981 | 1991 | 1981 | 1991 | 1981 | 1991 |
| **Age group (yrs)** | | | | | | |
| <18 | 4.2% | 3.8% | 11.6% | 10.2% | **5.3%** | **4.9%** |
| 18–19 | 8.5% | 7.2% | 14.0% | 12.8% | **9.3%** | **8.0%** |
| 20–24 | 33.3% | 25.6% | 35.4% | 32.1% | **33.3%** | **26.5%** |
| 25–29 | 32.6% | 30.9% | 23.6% | 23.9% | **31.2%** | **29.7%** |
| 30–34 | 16.7% | 22.8% | 11.4% | 14.6% | **16.1%** | **21.6%** |
| 35–39 | 4.0% | 8.4% | 3.4% | 5.5% | **4.0%** | **8.1%** |
| ≥40 | 0.7% | 1.3% | 0.7% | 0.9% | **0.7%** | **1.3%** |
| **Marital status** | | | | | | |
| Married | 88.5% | 78.3% | 43.4% | 32.1% | **81.4%** | **70.6%** |
| Not married | 11.5% | 21.7% | 56.6% | 67.9% | **18.6%** | **29.4%** |
| **Prenatal care** | | | | | | |
| First trimester | 79.7% | 79.6% | 62.5% | 62.0% | **76.8%** | **76.4%** |
| Second trimester | 16.2% | 15.8% | 28.7% | 27.5% | **18.3%** | **18.0%** |
| Third trimester | 3.1% | 3.3% | 6.2% | 6.1% | **3.7%** | **3.8%** |
| None | 0.9% | 1.3% | 2.6% | 4.4% | **1.2%** | **1.8%** |
| **Singleton birth** | | | | | | |
| Yes | 98.1% | 97.7% | 97.5% | 97.2% | **98.0%** | **97.6%** |
| No | 1.9% | 2.3% | 2.5% | 2.8% | **2.0%** | **2.4%** |

*New Mexico did not report date of last normal menstrual period on birth certificates in 1981.
†Percentages may not add to 100 because of rounding.
§Comprises white, black, and other races.

**TABLE 3. Actual and standardized incidence* of low birthweight† (LBW) and change in incidence, by race of mother and gestation§ — United States, 1981–1991**

| Race/Gestation | Actual | | | Standardized¶ | | |
|---|---|---|---|---|---|---|
| | Incidence | | Absolute change from | Incidence | | Absolute change from |
| | 1981 | 1991 | 1981 to 1991 | 1981 | 1991 | 1981 to 1991 |
| **White** | | | | | | |
| LBW, term | 24.4 | 22.0 | –2.4 | 25.5 | 21.4 | –4.1 |
| LBW, preterm | 31.0 | 35.7 | 4.7 | 32.7 | 34.2 | 1.5 |
| **Total** | **55.4** | **57.8** | **2.4** | **58.1** | **55.5** | **–2.6** |
| **Black** | | | | | | |
| LBW, term | 52.3 | 47.2 | –5.1 | 54.0 | 45.8 | –8.2 |
| LBW, preterm | 72.1 | 87.7 | 15.6 | 75.2 | 84.2 | 9.0 |
| **Total** | **124.4** | **134.9** | **10.5** | **129.2** | **129.9** | **0.7** |
| **Overall**** | | | | | | |
| **LBW, term** | **29.0** | **26.5** | **–2.5** | **30.6** | **25.4** | **–5.2** |
| **LBW, preterm** | **37.5** | **44.3** | **6.8** | **40.1** | **41.8** | **1.7** |
| **Total** | **66.4** | **70.8** | **4.4** | **70.7** | **67.3** | **–3.4** |

*Per 1000 live-born infants.
†<2500 g (<5 lbs, 8 oz).
§Term is ≥37 completed weeks of gestation; preterm is <37 weeks of gestation.
¶Standardized incidences were calculated by direct standardization using the 1981 and 1991 combined population distributions of maternal age, marital status, receipt of prenatal care, and infant's singleton status.
**Comprises white, black, and other races.

*Low Birthweight — Continued*

Thus, 87%–94% of the increases in the incidence of preterm-LBW infants from 1981 to 1991 were unrelated to the inclusion of clinical estimates in the computation of gestational age.

The etiology of term-LBW infants and preterm-LBW infants differs (*8*). For term-LBW infants, most underlying causes (e.g., maternal smoking, weight at conception, and gestational weight gain) have been identified; for preterm-LBW infants, the etiology largely remains unexplained (*6,8*). In the United States, the increase in incidence of preterm-LBW infants during 1981–1991 reflects in part changes in the distribution of selected maternal and infant characteristics. In particular, the percentage of births to unmarried women and women receiving no prenatal care may be markers for behavioral risk factors (e.g., cocaine use), psychosocial risk factors (e.g., stress), and environmental risk factors (e.g., infection) for preterm delivery (6,9 ). In addition, race may be a marker for these factors. Risk markers may be useful for identifying groups at greatest risk for preterm delivery and for targeting prevention and education efforts. Moreover, race-specific variation in the rate of preterm-LBW infants may reflect differences in these behavioral, psychosocial, or environmental factors.

In the United States, race-specific differences in the incidences of LBW, particularly preterm-LBW infants, and infant mortality have increased (*3,10*). Further studies are needed to evaluate the relative importance of risk factors and to test strategies for prevention of preterm delivery (e.g., increasing access to comprehensive health care) in specific population subgroups.

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