CENTERS FOR DISEASE CONTROL

December 2, 1988 / Vol. 37 / No. 47

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT



*Current Trends*

## HIV-Related Beliefs, Knowledge, and Behaviors among High School Students

In 1987, CDC began to assist state and local departments of education in assessing human immunodeficiency virus (HIV)-related beliefs, knowledge, and behaviors among high school students in states and cities with the highest cumulative incidence of acquired immunodeficiency syndrome (AIDS) (*1,2*). Departments of education will use the results of these surveys to plan school HIV education programs and to monitor temporal changes in HIV-related beliefs, knowledge, and behaviors among high school students. This report presents selected baseline data from surveys conducted during the spring of 1988.

A questionnaire for anonymous self-administration was developed collaboratively by representatives of 24 state and local departments of education, with technical assistance from CDC. The questionnaire contained 49 core questions: four to assess demographic characteristics of respondents, 33 to assess HIV-related beliefs and knowledge, and 12 to assess behaviors associated with HIV transmission. Each department of education that conducted the survey first completed the appropriate state or local survey review and approval process.

The survey included samples of students in grades 9–12 (ages 13–18 years) in each of six cities (Chicago, Los Angeles, New Orleans, New York City, San Francisco, and Seattle) and in each of nine states (California, District of Columbia*, Kentucky, Michigan, New Jersey, New York, Ohio, Pennsylvania, and Washington). Samples from California, New York, and Washington excluded students in Los Angeles, San Francisco, New York City, and Seattle; data from these four cities were collected and analyzed separately. Each site chose which of the 49 questions to administer; nearly

*District of Columbia is categorized as a state for funding purposes.

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every site obtained information using all the questions regarding demographic characteristics and HIV-related beliefs and knowledge. Four sites (California, District of Columbia, Michigan, and San Francisco) used the 12 questions to assess the extent to which students engage in behaviors that may result in HIV infection.

Sampling strategies were designed to obtain a representative sample of students and varied among sites. Most sites used a geographically stratified cluster sample, randomly selecting schools within strata, then selecting classes within each selected school. Other sites used a random sample of schools, then randomly selected students at each school. Using standardized procedures, classroom teachers or department heads administered questionnaires in required classes, e.g., health education or homeroom.

Sample sizes in each site ranged from 778 to 7013 students, and the response rate of schools from each site ranged from 52% to 100% (Table 1). Because response rates of schools from some sites were less than 100%, results cannot be generalized, and comparison of the results among sites should be made with caution. Results are presented by site as unweighted crude rates.

Almost all respondents believed students their age should be taught about AIDS[†] in school (range, 89.0% to 96.8%). Knowledge about sources for correct information about AIDS varied greatly among sites (range, 41.1% to 70.5%).

The range of students who knew that AIDS is not transmitted through shaking hands was 85.5% to 95.6%; through giving blood, 27.8% to 53.3%; from mosquito or other insect bites, 28.9% to 46.8%; from using public toilets, 41.8% to 64.6%; and from having a blood test, 49.6% to 75.4% (Table 2). A range of 83.8% to 98.4% of students knew that AIDS is transmitted by sharing needles or syringes used to inject drugs; 88.3% to 98.1% knew that AIDS is transmitted through sexual intercourse.

High school students from four sites reported variable rates of intravenous (IV)-drug use and sexual intercourse (Table 3): 2.8% to 6.3% reported ever injecting cocaine, heroin, or other illegal drugs; 28.6% to 76.4% reported having had sexual intercourse at least once. At each site, more male than female students and more older than younger students reported ever injecting illegal drugs or ever having had sexual intercourse.

The percentage of students who reported having had three or more sex partners ranged from 15.1% to 42.6%. At each site, more male than female students (range for males, 24.2% to 67.3%; for females, 8.3% to 25.6%) and more older than younger students reported three or more sex partners (range for 13- and 14-year-olds, 7.5% to 45.5%; for 15- and 16-year-olds, 13.0% to 39.4%; and for 17- and 18-year-olds, 29.9% to 47.7%).

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[†]When the questionnaire was developed in 1987, representatives of state and local departments of education believed students would not understand the term "HIV infection"; thus, the term "AIDS" was used.

**TABLE 1. Demographic characteristics and response rates of schools in selected cities and states, 1988**

| Site* | Sample size | School-level response rate† (%) | Gender (%) | | Age group (yrs) (%) | | | Race/ethnicity (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Female | Male | 13–14 | 15–16 | 17–18 | White | Black | Hispanic | Asian | Other |
| **State** | | | | | | | | | | | | |
| California | 7013 | 64 | 51 | 49 | 10 | 49 | 42 | 59 | 7 | 20 | 9 | 5 |
| District of Columbia | 1275 | 100 | 55 | 45 | 2 | 70 | 28 | 3 | 90 | 3 | 3 | 2 |
| Kentucky | 778 | 73 | 55 | 45 | 26 | 71 | 3 | 91 | 8 | 0 | 1 | 1 |
| Michigan | 991 | 100 | 51 | 49 | 7 | 49 | 43 | 75 | 19 | 3 | 1 | 2 |
| New Jersey | 2287 | 100 | 53 | 47 | 16 | 30 | 55 | 56 | 27 | 13 | 2 | 1 |
| New York | 3841 | 100 | 49 | 51 | 10 | 50 | 39 | NA§ | NA | NA | NA | NA |
| Ohio | 803 | 57 | 53 | 47 | 8 | 55 | 37 | 88 | 9 | 1 | 1 | 1 |
| Pennsylvania | 6668 | 97 | 52 | 48 | 32 | 43 | 25 | 68 | 21 | 6 | 2 | 2 |
| Washington | 1137 | 52 | 48 | 52 | 45 | 52 | 3 | NA | NA | NA | NA | NA |
| **City** | | | | | | | | | | | | |
| Chicago | 1254 | 100 | 48 | 52 | 19 | 53 | 29 | 11 | 64 | 19 | 4 | 2 |
| Los Angeles | 2142 | 100 | 49 | 51 | 1 | 83 | 17 | 21 | 24 | 33 | 15 | 7 |
| New Orleans | 2366 | 100 | 54 | 46 | 37 | 46 | 16 | 9 | 84 | 2 | 4 | 1 |
| New York City | 2813 | 100 | 58 | 42 | 10 | 50 | 40 | NA | NA | NA | NA | NA |
| San Francisco | 802 | 88 | 52 | 48 | 10 | 75 | 14 | 12 | 13 | 14 | 56 | 6 |
| Seattle | 1069 | 100 | 47 | 53 | 22 | 37 | 41 | 52 | 18 | 3 | 22 | 6 |

*District of Columbia is categorized as a state for funding purposes.
†Number of schools conducting survey/number of schools sampled.
§Data not available.

*HIV — Continued*

**TABLE 2. Percentage of correct responses for questions measuring knowledge of HIV transmission, by selected cities and states, 1988**

| Site* | Nonrisk factor | | | | | Risk factor | |
|---|---|---|---|---|---|---|---|
| | Shaking hands | Giving blood | Insect bites | Using public toilets | Having a blood test | IV-drug use | Sexual intercourse |
| **State** | | | | | | | |
| California | 92.4 | 44.5 | 36.4 | 56.2 | 62.3 | 94.8 | 95.7 |
| District of Columbia | 89.3 | 36.4 | 37.1 | 55.7 | 58.5 | 91.7 | 91.5 |
| Kentucky | 91.6 | 48.8 | 37.6 | 50.8 | 64.4 | 95.6 | 94.3 |
| Michigan | 93.5 | 49.1 | 37.3 | 54.4 | 66.6 | 96.4 | 96.2 |
| New Jersey | 93.7 | 45.3 | 40.7 | 59.5 | 61.6 | 95.9 | 96.5 |
| New York | 95.6 | 39.5 | 41.7 | 61.7 | 56.2 | 98.4 | 98.1 |
| Ohio | 92.0 | 53.3 | 39.1 | 59.4 | 64.6 | 96.6 | 95.7 |
| Pennsylvania | 93.0 | 49.0 | 46.8 | 64.6 | 63.9 | NA† | NA |
| Washington | 94.3 | NA | 40.1 | 59.7 | 75.4 | 97.7 | 96.5 |
| **City** | | | | | | | |
| Chicago | 89.3 | 28.0 | 30.4 | 54.1 | 58.1 | 89.1 | 88.3 |
| Los Angeles | 86.9 | 27.8 | 28.9 | 45.8 | 49.6 | 91.2 | 93.8 |
| New Orleans | 85.5 | 29.0 | 33.5 | 41.8 | 49.8 | 83.8 | 88.3 |
| New York City | 94.8 | 29.8 | 41.9 | 60.1 | 56.0 | 98.4 | 96.9 |
| San Francisco | 90.2 | 40.3 | 38.4 | 58.5 | 57.4 | 88.6 | 89.8 |
| Seattle | 91.7 | 41.9 | 42.8 | 60.0 | 59.9 | 96.4 | 95.9 |

*District of Columbia is categorized as a state for funding purposes.
†Data not available.

**TABLE 3. Percentage of students reporting ever using IV drugs and ever having had sexual intercourse, by sex, age group, and selected cities and states, 1988**

| Site | Total (%) | Gender (%) | | Age group (yrs) (%) | | |
|---|---|---|---|---|---|---|
| | | Female | Male | 13–14 | 15–16 | 17–18 |
| | IV-drug use | | | | | |
| California | 4.1 | 2.6 | 5.7 | 2.8 | 3.9 | 4.3 |
| District of Columbia | 6.3 | 4.6 | 8.7 | * | 4.0 | 8.9 |
| Michigan | 2.8 | 2.1 | 3.4 | 3.2 | 3.2 | 1.3 |
| San Francisco | 3.7 | 2.4 | 5.1 | 1.4 | 3.9 | 2.4 |
| | Sexual intercourse | | | | | |
| California | 55.6 | 48.1 | 64.3 | 23.2 | 50.1 | 69.0 |
| District of Columbia | 76.4 | 65.6 | 90.7 | * | 71.4 | 89.8 |
| Michigan | 58.7 | 56.6 | 60.9 | 34.5 | 49.1 | 72.7 |
| San Francisco | 28.6 | 22.1 | 37.3 | 15.9 | 26.7 | 48.0 |

*Less than 5% of subgroup in sample.

*HIV — Continued*

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**Editorial Note:** In the fall of 1987, CDC began providing fiscal and technical assistance to 15 state and 12 local departments of education that serve areas with the highest cumulative incidence of AIDS. The purpose of this assistance was to help schools implement effective HIV education programs. In the fall of 1988, this assistance was extended to departments of education in the remaining states and territories and in four other local departments of education. Some state and local departments of education are initiating a unique school-based system to assess whether important HIV-related beliefs, knowledge, and behaviors of high school students in their respective states and cities change over time. In ensuing years, department of education staff plan to improve the representativeness and response rate of samples and to begin assessing changes in other important health behaviors (e.g., drinking and driving, cigarette smoking, exercise) among high school students.

Baseline data reported here suggest that HIV-related beliefs, knowledge, and behaviors among the adolescents surveyed in 15 states and cities are generally similar. Many students incorrectly thought that HIV infection may be acquired from giving blood, using public toilets, or having a blood test or from mosquito and other insect bites. Most students knew sexual intercourse and IV-drug use can result in HIV infection. Students who reported using IV drugs or having sexual intercourse, particularly with multiple partners, are at risk for HIV infection. Departments of education should implement programs to correct misperceptions about HIV transmission, to reduce behaviors resulting in HIV infection, and to assess periodically whether these misperceptions and behaviors change among high school students over time (*3*).

*References*

1. Kolbe L, Jones J, Nelson G, et al. School health education to prevent the spread of AIDS: overview of a national program. Hygie 1988;7(3):10–3.
2. Kann L, Nelson GD, Jones JT, Kolbe L. Establishing a system of complementary school-based surveys to periodically assess AIDS-related knowledge, beliefs, and behaviors among adolescents. J Sch Health 1989 (in press).
3. CDC. Guidelines for effective school health education to prevent the spread of AIDS. MMWR 1988;37(suppl S-2).

## *Epidemiologic Notes and Reports*

### Update: Influenza — United States, 1988–89 Season

National surveillance for the 1988–89 influenza season (*1*) began in October. As of November 26, one outbreak in Ohio and culture-confirmed, sporadically occurring cases in Arizona, Hawaii, Maryland, Michigan, and Texas have been reported to CDC.

On November 22, the first outbreak of the season was reported from Ohio. At the beginning of the school year, the Ohio Department of Health provides each school district with guidelines on recognizing possible outbreaks of influenza and other

*Influenza — Continued*

diseases and requests that such outbreaks be reported promptly to the local or state health department. On November 14, an outbreak of influenza-like illness was reported to the state health department from one elementary and one middle school in the same school district. On November 16, throat swabs were obtained from eight ill children and a 25-year-old teacher in the elementary school. Influenza type B was recovered from the specimens obtained from the teacher and four of the children. All persons have recovered without complications.

Six cases of influenza type B virus have also been reported in children in Texas. The first case occurred in Houston in a 5-year-old boy who had onset of an upper respiratory infection (URI) with fever of 100 F (37.8 C) on October 11. A throat swab was taken 2 days later, and influenza type B virus was isolated on October 17. Although the patient's 11-year-old brother had symptoms of influenza-like illness on October 19, a specimen obtained from him on October 21 did not yield influenza virus.

*(Continued on page 727)*

## TABLE I. Summary — cases of specified notifiable diseases, United States

| Disease | 47th Week Ending | | | Cumulative, 47th Week Ending | | |
|---|---|---|---|---|---|---|
| | Nov. 26, 1988 | Nov. 28, 1987 | Median 1983-1987 | Nov. 26, 1988 | Nov. 28, 1987 | Median 1983-1987 |
| Acquired Immunodeficiency Syndrome (AIDS) | 358 | U* | 189 | 27,540 | 18,192 | 7,152 |
| Aseptic meningitis | 141 | 163 | 163 | 6,115 | 10,385 | 9,919 |
| Encephalitis: Primary (arthropod-borne & unspec) | 9 | 33 | 27 | 698 | 1,202 | 1,202 |
| Post-infectious | - | - | 1 | 110 | 92 | 98 |
| Gonorrhea: Civilian | 10,329 | 12,261 | 16,898 | 624,853 | 695,703 | 804,825 |
| Military | 203 | 146 | 383 | 10,523 | 14,828 | 19,130 |
| Hepatitis: Type A | 475 | 503 | 407 | 23,366 | 22,227 | 20,581 |
| Type B | 398 | 464 | 484 | 20,241 | 22,943 | 23,325 |
| Non A, Non B | 39 | 41 | 65 | 2,258 | 2,664 | 3,202 |
| Unspecified | 69 | 47 | 99 | 2,102 | 2,801 | 4,643 |
| Legionellosis | 8 | 9 | 14 | 872 | 870 | 693 |
| Leprosy | 4 | 4 | 4 | 154 | 180 | 217 |
| Malaria | 12 | 9 | 17 | 906 | 818 | 911 |
| Measles: Total† | 77 | 15 | 32 | 2,716 | 3,538 | 2,670 |
| Indigenous | 23 | 14 | 16 | 2,397 | 3,119 | 2,238 |
| Imported | 54 | 1 | 1 | 319 | 419 | 303 |
| Meningococcal infections | 21 | 45 | 45 | 2,516 | 2,632 | 2,406 |
| Mumps | 60 | 114 | 59 | 4,141 | 11,635 | 2,987 |
| Pertussis | 86 | 41 | 33 | 2,585 | 2,285 | 2,285 |
| Rubella (German measles) | - | 3 | 12 | 187 | 324 | 597 |
| Syphilis (Primary & Secondary): Civilian | 620 | 726 | 556 | 36,311 | 32,049 | 25,198 |
| Military | 2 | 3 | 3 | 144 | 147 | 147 |
| Toxic Shock syndrome | 6 | 3 | 6 | 313 | 303 | 338 |
| Tuberculosis | 280 | 453 | 453 | 19,003 | 19,306 | 19,306 |
| Tularemia | - | 2 | 2 | 170 | 185 | 185 |
| Typhoid Fever | 10 | 13 | 6 | 356 | 314 | 341 |
| Typhus fever, tick-borne (RMSF) | 3 | 1 | 3 | 596 | 582 | 729 |
| Rabies, animal | 29 | 87 | 83 | 3,867 | 4,281 | 4,919 |

## TABLE II. Notifiable diseases of low frequency, United States

| | Cum. 1988 | | Cum. 1988 |
|---|---|---|---|
| Anthrax | - | Leptospirosis | 41 |
| Botulism: Foodborne | 26 | Plague | 14 |
| Infant (Pa. 1) | 33 | Poliomyelitis, Paralytic | 1 |
| Other | 3 | Psittacosis (Mich. 1, Colo. 1) | 80 |
| Brucellosis (Tex. 4) | 62 | Rabies, human | - |
| Cholera (Nev. 1) | 7 | Tetanus | 48 |
| Congenital rubella syndrome | 4 | Trichinosis | 40 |
| Congenital syphilis, ages < 1 year | 426 | | |
| Diphtheria | - | | |

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.
†Three of the 77 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

# TABLE III. Cases of specified notifiable diseases, United States, weeks ending November 26, 1988 and November 28, 1987 (47th Week)

| Reporting Area | AIDS | Aseptic Meningitis | Encephalitis | | Gonorrhea (Civilian) | | Hepatitis (Viral), by type | | | | Legionellosis | Leprosy |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Primary | Post-infectious | | | A | B | NA,NB | Unspecified | | |
| | Cum. 1988 | Cum. 1988 | Cum. 1988 | Cum. 1988 | Cum. 1988 | Cum. 1987 | Cum. 1988 | Cum. 1988 | Cum. 1988 | Cum. 1988 | Cum. 1988 | Cum. 1988 |
| UNITED STATES | 27,540 | 6,115 | 698 | 110 | 624,853 | 695,703 | 23,366 | 20,241 | 2,258 | 2,102 | 872 | 154 |
| NEW ENGLAND | 1,179 | 385 | 24 | 4 | 19,620 | 21,570 | 770 | 1,049 | 111 | 86 | 49 | 15 |
| Maine | 26 | 19 | 2 | - | 358 | 622 | 18 | 50 | 5 | 1 | 4 | - |
| N.H. | 35 | 40 | 1 | 3 | 241 | 361 | 42 | 66 | 10 | 4 | 4 | - |
| Vt. | 10 | 29 | 7 | - | 107 | 201 | 14 | 39 | 6 | 4 | 5 | - |
| Mass. | 650 | 157 | 8 | 1 | 6,576 | 7,567 | 365 | 657 | 71 | 62 | 33 | 14 |
| R.I. | 81 | 87 | - | - | 1,852 | 1,971 | 82 | 76 | 11 | - | 3 | 1 |
| Conn. | 377 | 53 | 6 | - | 10,486 | 10,848 | 249 | 161 | 8 | 15 | - | - |
| MID. ATLANTIC | 9,179 | 663 | 53 | 4 | 97,443 | 109,519 | 1,780 | 2,943 | 177 | 290 | 205 | 8 |
| Upstate N.Y. | 1,185 | 361 | 34 | 1 | 14,458 | 15,900 | 690 | 701 | 69 | 19 | 77 | - |
| N.Y. City | 5,070 | 129 | 8 | 3 | 39,700 | 58,378 | 329 | 1,234 | 18 | 212 | 45 | 7 |
| N.J. | 2,152 | 61 | 11 | - | 14,267 | 14,848 | 410 | 670 | 60 | 42 | 40 | 1 |
| Pa. | 772 | 112 | - | - | 29,018 | 20,393 | 351 | 338 | 30 | 17 | 43 | - |
| E.N. CENTRAL | 1,969 | 1,020 | 182 | 13 | 106,065 | 106,355 | 1,544 | 2,137 | 195 | 118 | 205 | 6 |
| Ohio | 442 | 404 | 62 | 3 | 23,969 | 24,246 | 309 | 508 | 33 | 19 | 80 | - |
| Ind. | 80 | 95 | 28 | - | 8,119 | 8,359 | 152 | 311 | 19 | 27 | 28 | - |
| Ill. | 925 | 92 | 32 | 10 | 32,090 | 30,486 | 506 | 450 | 68 | 31 | - | 5 |
| Mich. | 417 | 382 | 43 | - | 33,722 | 34,020 | 368 | 624 | 51 | 38 | 57 | - |
| Wis. | 105 | 47 | 17 | - | 8,165 | 9,244 | 209 | 244 | 24 | 3 | 40 | 1 |
| W.N. CENTRAL | 669 | 249 | 52 | 11 | 26,849 | 28,102 | 1,252 | 906 | 98 | 32 | 72 | 1 |
| Minn. | 146 | 30 | 11 | 3 | 3,556 | 4,187 | 90 | 123 | 21 | 3 | 4 | - |
| Iowa | 39 | 36 | 9 | 3 | 2,034 | 2,715 | 43 | 77 | 13 | 2 | 18 | - |
| Mo. | 350 | 101 | 1 | - | 15,446 | 14,955 | 758 | 540 | 44 | 17 | 21 | - |
| N. Dak. | 4 | 5 | 4 | - | 165 | 262 | 6 | 14 | 3 | 5 | 1 | - |
| S. Dak. | 7 | 18 | 5 | 2 | 448 | 555 | 26 | 4 | 3 | - | 14 | - |
| Nebr. | 34 | 11 | 12 | 2 | 1,410 | 1,857 | 46 | 40 | 2 | - | 5 | - |
| Kans. | 89 | 48 | 10 | 1 | 3,790 | 3,571 | 283 | 108 | 12 | 5 | 9 | 1 |
| S. ATLANTIC | 4,908 | 1,320 | 103 | 40 | 176,986 | 182,235 | 2,161 | 4,240 | 351 | 326 | 134 | 1 |
| Del. | 62 | 43 | 3 | - | 2,785 | 3,115 | 44 | 128 | 7 | 4 | 13 | - |
| Md. | 497 | 190 | 10 | 3 | 18,371 | 20,880 | 268 | 649 | 38 | 25 | 19 | 1 |
| D.C. | 434 | 20 | 1 | 1 | 13,412 | 12,174 | 16 | 42 | 4 | 1 | 1 | - |
| Va. | 328 | 195 | 32 | 4 | 12,905 | 13,332 | 341 | 303 | 72 | 224 | 11 | - |
| W. Va. | 16 | 36 | 22 | - | 1,223 | 1,286 | 14 | 65 | 5 | 4 | - | - |
| N.C. | 264 | 162 | 21 | - | 25,173 | 26,986 | 301 | 769 | 85 | - | 31 | - |
| S.C. | 166 | 21 | - | 1 | 14,039 | 14,192 | 40 | 485 | 12 | 5 | 26 | - |
| Ga. | 669 | 144 | 1 | 2 | 33,411 | 32,456 | 564 | 624 | 14 | 6 | 21 | - |
| Fla. | 2,472 | 509 | 13 | 29 | 55,667 | 57,814 | 573 | 1,175 | 114 | 57 | 12 | - |
| E.S. CENTRAL | 707 | 413 | 60 | 8 | 49,839 | 52,393 | 706 | 1,307 | 169 | 13 | 48 | 2 |
| Ky. | 88 | 143 | 20 | 1 | 5,039 | 5,292 | 464 | 261 | 59 | 2 | 20 | - |
| Tenn. | 324 | 48 | 15 | - | 17,375 | 18,465 | 154 | 596 | 40 | - | 8 | - |
| Ala. | 190 | 166 | 25 | 2 | 14,989 | 16,442 | 55 | 336 | 59 | 10 | 14 | 2 |
| Miss. | 105 | 56 | - | 5 | 12,436 | 12,194 | 33 | 114 | 11 | 1 | 6 | - |
| W.S. CENTRAL | 2,348 | 731 | 84 | 3 | 66,663 | 78,577 | 2,901 | 1,865 | 196 | 504 | 26 | 33 |
| Ark. | 76 | 15 | 5 | - | 6,603 | 8,887 | 314 | 99 | 5 | 17 | 4 | - |
| La. | 340 | 117 | 24 | 1 | 13,449 | 13,119 | 150 | 331 | 25 | 16 | 7 | 1 |
| Okla. | 127 | 68 | 8 | - | 6,402 | 8,479 | 459 | 163 | 42 | 28 | 15 | - |
| Tex. | 1,805 | 531 | 47 | 2 | 40,209 | 48,092 | 1,978 | 1,272 | 124 | 443 | - | 32 |
| MOUNTAIN | 810 | 217 | 27 | 3 | 13,453 | 18,132 | 3,101 | 1,477 | 233 | 158 | 44 | 1 |
| Mont. | 11 | 4 | - | - | 376 | 505 | 39 | 53 | 10 | 4 | 2 | - |
| Idaho | 10 | 1 | - | - | 305 | 631 | 125 | 101 | 9 | 4 | - | - |
| Wyo. | 6 | 2 | - | - | 183 | 390 | 5 | 12 | 3 | - | 3 | - |
| Colo. | 300 | 69 | 3 | - | 2,969 | 4,089 | 215 | 182 | 64 | 69 | 8 | 1 |
| N. Mex. | 49 | 23 | 3 | 1 | 1,338 | 1,987 | 503 | 217 | 18 | 1 | 4 | - |
| Ariz. | 261 | 76 | 12 | 1 | 4,883 | 6,160 | 1,717 | 581 | 71 | 53 | 19 | - |
| Utah | 58 | 25 | 4 | 1 | 495 | 565 | 284 | 128 | 37 | 18 | 3 | - |
| Nev. | 115 | 17 | 5 | - | 2,904 | 3,805 | 213 | 203 | 21 | 9 | 5 | - |
| PACIFIC | 5,771 | 1,117 | 113 | 24 | 67,935 | 98,820 | 9,151 | 4,317 | 728 | 575 | 89 | 87 |
| Wash. | 342 | - | 7 | 4 | 6,366 | 8,140 | 2,073 | 781 | 179 | 70 | 21 | 7 |
| Oreg. | 163 | - | - | - | 2,952 | 3,637 | 1,249 | 532 | 84 | 21 | 4 | 1 |
| Calif. | 5,150 | 989 | 101 | 20 | 57,114 | 84,771 | 5,291 | 2,905 | 452 | 468 | 61 | 67 |
| Alaska | 19 | 25 | 3 | - | 963 | 1,517 | 526 | 49 | 8 | 11 | - | 1 |
| Hawaii | 97 | 103 | 2 | - | 540 | 755 | 12 | 50 | 5 | 5 | 3 | 11 |
| Guam | 1 | - | - | - | 122 | 179 | 9 | 13 | - | 2 | 1 | 5 |
| P.R. | 1,230 | 69 | 4 | 1 | 1,145 | 1,763 | 51 | 240 | 41 | 40 | - | 3 |
| V.I. | 32 | - | - | - | 404 | 260 | 1 | 7 | 2 | - | - | - |
| Amer. Samoa | - | - | - | - | 65 | 80 | 3 | 2 | - | 5 | - | 2 |
| C.N.M.I. | - | - | - | - | 39 | - | 1 | 3 | - | 4 | - | 1 |

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

## TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending November 26, 1988 and November 28, 1987 (47th Week)

| Reporting Area | Malaria | Measles (Rubeola) | | | | | Menin-gococcal Infections | Mumps | | Pertussis | | | Rubella | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Indigenous | | Imported* | | Total | | | | | | | | | |
| | Cum. 1988 | 1988 | Cum. 1988 | 1988 | Cum. 1988 | Cum. 1987 | Cum. 1988 | 1988 | Cum. 1988 | 1988 | Cum. 1988 | Cum. 1987 | 1988 | Cum. 1988 | Cum. 1987 |
| UNITED STATES | 906 | 23 | 2,397 | 54 | 319 | 3,538 | 2,516 | 60 | 4,141 | 86 | 2,585 | 2,285 | - | 187 | 324 |
| NEW ENGLAND | 68 | - | 83 | - | 54 | 281 | 218 | - | 117 | 1 | 176 | 157 | - | 9 | 1 |
| Maine | 3 | - | 7 | - | - | 3 | 10 | - | - | - | 24 | 28 | - | - | 1 |
| N.H. | 3 | - | 67 | - | 44 | 162 | 23 | - | 105 | - | 47 | 39 | - | 5 | - |
| Vt. | 4 | - | - | - | - | 26 | 16 | - | 5 | 1 | 5 | 4 | - | - | - |
| Mass. | 33 | - | 2 | - | 2 | 66 | 95 | - | 7 | - | 60 | 54 | - | 3 | - |
| R.I. | 6 | - | - | - | - | 2 | 21 | - | - | - | 17 | 3 | - | 1 | - |
| Conn. | 19 | - | 7 | - | 8 | 22 | 53 | - | - | - | 23 | 29 | - | - | - |
| MID. ATLANTIC | 161 | 10 | 903 | - | 49 | 582 | 265 | 7 | 347 | 34 | 228 | 273 | - | 14 | 12 |
| Upstate N.Y. | 38 | - | 19 | - | 18 | 40 | 126 | - | 96 | 26 | 138 | 156 | - | 2 | 10 |
| N.Y. City | 89 | - | 46 | - | 6 | 463 | 64 | - | 101 | 2 | 8 | 13 | - | 7 | 1 |
| N.J. | 11 | 10 | 309 | - | 11 | 39 | 63 | - | 53 | - | 15 | 17 | - | 3 | 1 |
| Pa. | 23 | - | 529 | - | 14 | 40 | 12 | 7 | 97 | 6 | 67 | 87 | - | 2 | - |
| E.N. CENTRAL | 48 | - | 141 | 51 | 108 | 383 | 349 | 5 | 812 | 1 | 238 | 255 | - | 31 | 40 |
| Ohio | 11 | - | 2 | 51§ | 83 | 5 | 127 | - | 113 | - | 49 | 74 | - | 1 | - |
| Ind. | 4 | - | 57 | - | - | - | 26 | - | 73 | - | 74 | 17 | - | - | - |
| Ill. | 3 | - | 56 | - | 16 | 203 | 74 | - | 295 | - | 44 | 17 | - | 26 | 29 |
| Mich. | 23 | - | 26 | - | 5 | 29 | 82 | 5 | 215 | 1 | 35 | 47 | - | 4 | 9 |
| Wis. | 7 | - | - | - | 4 | 146 | 40 | - | 116 | - | 36 | 100 | - | - | 2 |
| W.N. CENTRAL | 18 | - | 11 | - | 3 | 230 | 91 | - | 191 | 3 | 127 | 135 | - | 2 | 2 |
| Minn. | 6 | - | 10 | - | 1 | 39 | 19 | - | - | - | 49 | 13 | - | - | - |
| Iowa | 2 | - | - | - | 1 | - | - | - | 34 | 3 | 33 | 57 | - | - | 1 |
| Mo. | 6 | - | 1 | - | 1 | 189 | 34 | - | 40 | - | 22 | 33 | - | - | - |
| N. Dak. | - | - | - | - | - | 1 | 1 | - | - | - | 11 | 13 | - | - | - |
| S. Dak. | - | - | - | - | - | - | 4 | - | 1 | - | 5 | 3 | - | - | - |
| Nebr. | 1 | - | - | - | - | - | 12 | - | 11 | - | - | 1 | - | - | - |
| Kans. | 3 | - | - | - | - | 1 | 21 | - | 105 | - | 7 | 15 | - | 2 | 1 |
| S. ATLANTIC | 119 | 11 | 395 | - | 22 | 167 | 434 | 9 | 674 | - | 239 | 305 | - | 18 | 19 |
| Del. | 1 | - | - | - | - | 32 | 2 | - | 1 | - | 7 | 5 | - | - | 2 |
| Md. | 20 | - | 11 | - | 5 | 7 | 52 | - | 129 | - | 46 | 19 | - | 1 | 3 |
| D.C. | 12 | - | - | - | - | 1 | 8 | 5 | 269 | - | 1 | - | - | - | 1 |
| Va. | 20 | 11 | 218 | - | 2 | 1 | 51 | - | 136 | - | 23 | 52 | - | 11 | 1 |
| W. Va. | 3 | - | 6 | - | - | - | 7 | - | 17 | - | 8 | 39 | - | - | - |
| N.C. | 16 | - | - | - | 5 | 6 | 67 | - | 51 | - | 65 | 119 | - | 1 | 1 |
| S.C. | 10 | - | - | - | - | 2 | 36 | - | 6 | - | 1 | - | - | - | - |
| Ga. | 6 | - | - | - | - | 10 | 68 | 2 | 31 | - | 36 | 23 | - | 2 | 2 |
| Fla. | 31 | - | 160 | - | 10 | 108 | 143 | 2 | 34 | - | 52 | 48 | - | 3 | 9 |
| E.S. CENTRAL | 19 | - | 70 | - | - | 8 | 238 | 3 | 442 | - | 100 | 48 | - | 2 | 3 |
| Ky. | - | - | 35 | - | - | - | 54 | - | 210 | - | 12 | 2 | - | - | 2 |
| Tenn. | - | - | 1 | - | - | - | 130 | 3 | 214 | - | 29 | 15 | - | 2 | 1 |
| Ala. | 10 | - | - | - | - | 4 | 39 | - | 15 | - | 55 | 24 | - | - | - |
| Miss. | 9 | - | 34 | - | - | 4 | 15 | N | N | - | 4 | 7 | - | - | - |
| W.S. CENTRAL | 78 | - | 14 | - | 3 | 448 | 171 | 24 | 813 | - | 203 | 276 | - | 11 | 11 |
| Ark. | 4 | - | - | - | 1 | - | 20 | 9 | 125 | - | 25 | 13 | - | 4 | 2 |
| La. | 12 | - | - | - | - | - | 48 | 9 | 297 | - | 18 | 50 | - | - | - |
| Okla. | 10 | - | 8 | - | - | 4 | 19 | - | 197 | - | 62 | 162 | - | 1 | 5 |
| Tex. | 52 | - | 6 | - | 2 | 444 | 84 | 6 | 194 | - | 98 | 51 | - | 6 | 4 |
| MOUNTAIN | 42 | 1 | 118 | 3 | 33 | 496 | 75 | 2 | 204 | 39 | 779 | 203 | - | 6 | 25 |
| Mont. | 5 | 1 | 6 | 3† | 31 | 128 | 2 | - | 2 | - | 2 | 6 | - | - | 8 |
| Idaho | 2 | - | - | - | 1 | - | 8 | 1 | 5 | 5 | 328 | 71 | - | - | 1 |
| Wyo. | - | - | - | - | - | 2 | - | 1 | 4 | - | 2 | 5 | - | - | 1 |
| Colo. | 14 | - | 112 | - | 1 | 9 | 19 | - | 32 | - | 29 | 66 | - | 2 | - |
| N. Mex. | 2 | - | - | - | - | 317 | 11 | N | N | 1 | 52 | 12 | - | - | - |
| Ariz. | 13 | - | - | - | - | 36 | 18 | - | 137 | 32 | 338 | 33 | - | - | 5 |
| Utah | 4 | - | - | - | - | 1 | 15 | - | 7 | 1 | 27 | 10 | - | 3 | 10 |
| Nev. | 2 | - | - | - | - | 3 | 2 | - | 17 | - | 1 | - | - | 1 | - |
| PACIFIC | 353 | 1 | 662 | - | 47 | 943 | 675 | 10 | 541 | 8 | 495 | 633 | - | 94 | 211 |
| Wash. | 22 | - | 7 | - | - | 44 | 62 | 5 | 57 | 1 | 111 | 95 | - | - | 2 |
| Oreg. | 16 | - | 6 | - | 2 | 100 | 41 | N | N | 2 | 48 | 71 | - | - | 2 |
| Calif. | 301 | 1 | 645 | - | 37 | 794 | 549 | 3 | 442 | 5 | 271 | 225 | - | 66 | 135 |
| Alaska | 3 | - | 1 | - | - | 1 | 6 | - | 13 | - | 7 | 6 | - | - | 2 |
| Hawaii | 11 | - | 3 | - | 8 | 4 | 17 | 2 | 18 | - | 58 | 236 | - | 28 | 70 |
| Guam | - | - | - | - | 1 | 2 | - | - | 2 | - | - | - | - | 1 | 1 |
| P.R. | 2 | - | 226 | - | - | 771 | 11 | - | 10 | - | 15 | 20 | - | 3 | 3 |
| V.I. | - | - | - | - | - | - | - | - | 33 | - | - | - | - | - | 1 |
| Amer. Samoa | - | - | - | - | - | 1 | 2 | - | 3 | - | - | - | - | - | - |
| C.N.M.I. | 1 | - | - | - | - | - | 1 | - | 2 | - | - | - | - | - | - |

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

## TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending November 26, 1988 and November 28, 1987 (47th Week)

| Reporting Area | Syphilis (Civilian) (Primary & Secondary) | | Toxic-shock Syndrome | Tuberculosis | | Tula-remia | Typhoid Fever | Typhus Fever (Tick-borne) (RMSF) | Rabies, Animal |
|---|---|---|---|---|---|---|---|---|---|
| | Cum. 1988 | Cum. 1987 | Cum. 1988 | Cum. 1988 | Cum. 1987 | Cum. 1988 | Cum. 1988 | Cum. 1988 | Cum. 1988 |
| UNITED STATES | 36,311 | 32,049 | 313 | 19,003 | 19,306 | 170 | 356 | 596 | 3,867 |
| NEW ENGLAND | 1,079 | 576 | 24 | 501 | 577 | 4 | 35 | 12 | 15 |
| Maine | 12 | 1 | 4 | 20 | 22 | - | - | - | 1 |
| N.H. | 6 | 3 | 5 | 11 | 18 | - | - | - | 5 |
| Vt. | 3 | 4 | 2 | 4 | 14 | - | 1 | - | - |
| Mass. | 397 | 273 | 10 | 298 | 317 | 3 | 21 | 7 | - |
| R.I. | 30 | 11 | - | 39 | 58 | - | 6 | 2 | - |
| Conn. | 631 | 284 | 3 | 129 | 148 | 1 | 7 | 3 | 9 |
| MID. ATLANTIC | 8,713 | 5,923 | 46 | 3,892 | 3,535 | - | 69 | 19 | 449 |
| Upstate N.Y. | 542 | 225 | 22 | 499 | 467 | - | 15 | 11 | 43 |
| N.Y. City | 6,058 | 4,392 | 6 | 2,175 | 1,734 | - | 41 | 6 | - |
| N.J. | 903 | 650 | 3 | 604 | 623 | - | 11 | - | 14 |
| Pa. | 1,210 | 656 | 15 | 614 | 711 | - | 2 | 2 | 392 |
| E.N. CENTRAL | 1,051 | 799 | 45 | 2,128 | 2,137 | 1 | 33 | 36 | 139 |
| Ohio | 98 | 101 | 31 | 403 | 382 | - | 8 | 24 | 5 |
| Ind. | 49 | 54 | 1 | 220 | 219 | - | 2 | 2 | 29 |
| Ill. | 483 | 403 | 1 | 929 | 962 | - | 17 | 7 | 29 |
| Mich. | 390 | 187 | 12 | 480 | 487 | 1 | 4 | 2 | 34 |
| Wis. | 31 | 54 | - | 96 | 87 | - | 2 | 1 | 42 |
| W.N. CENTRAL | 220 | 166 | 43 | 471 | 559 | 77 | 4 | 91 | 419 |
| Minn. | 17 | 18 | 5 | 77 | 110 | 3 | 2 | 2 | 124 |
| Iowa | 23 | 26 | 7 | 52 | 38 | - | - | - | 13 |
| Mo. | 145 | 76 | 12 | 231 | 302 | 47 | 2 | 55 | 20 |
| N. Dak. | 1 | 1 | 3 | 15 | 13 | 1 | - | - | 97 |
| S. Dak. | - | 11 | 4 | 33 | 24 | 16 | - | 7 | 112 |
| Nebr. | 28 | 14 | 4 | 14 | 25 | 3 | - | 1 | 18 |
| Kans. | 6 | 20 | 8 | 49 | 47 | 7 | - | 26 | 35 |
| S. ATLANTIC | 12,870 | 10,985 | 19 | 4,065 | 4,100 | 5 | 42 | 197 | 1,337 |
| Del. | 94 | 65 | 1 | 38 | 38 | 2 | - | 1 | 57 |
| Md. | 651 | 566 | 3 | 386 | 357 | - | 3 | 22 | 293 |
| D.C. | 621 | 359 | - | 175 | 144 | - | 2 | - | 13 |
| Va. | 399 | 297 | - | 372 | 397 | 2 | 12 | 17 | 338 |
| W. Va. | 37 | 13 | - | 66 | 93 | - | 1 | 2 | 92 |
| N.C. | 748 | 657 | 9 | 466 | 503 | - | 2 | 107 | 8 |
| S.C. | 671 | 668 | 3 | 438 | 420 | - | - | 22 | 115 |
| Ga. | 2,306 | 1,527 | - | 656 | 721 | 1 | 7 | 23 | 275 |
| Fla. | 7,343 | 6,833 | 3 | 1,468 | 1,427 | - | 15 | 3 | 146 |
| E.S. CENTRAL | 1,828 | 1,748 | 24 | 1,548 | 1,740 | 11 | 3 | 89 | 276 |
| Ky. | 59 | 23 | 10 | 337 | 399 | 5 | 1 | 29 | 111 |
| Tenn. | 796 | 699 | 10 | 476 | 526 | 5 | - | 38 | 69 |
| Ala. | 524 | 456 | 3 | 467 | 503 | - | 1 | 10 | 88 |
| Miss. | 449 | 570 | 1 | 268 | 312 | 1 | 1 | 12 | 8 |
| W.S. CENTRAL | 3,988 | 4,003 | 29 | 2,403 | 2,266 | 53 | 8 | 137 | 493 |
| Ark. | 225 | 233 | 2 | 278 | 269 | 34 | - | 30 | 83 |
| La. | 785 | 746 | - | 306 | 285 | - | 4 | 2 | 10 |
| Okla. | 137 | 164 | 9 | 218 | 216 | 16 | - | 89 | 31 |
| Tex. | 2,841 | 2,860 | 18 | 1,601 | 1,496 | 3 | 4 | 16 | 369 |
| MOUNTAIN | 782 | 646 | 35 | 510 | 581 | 11 | 11 | 11 | 346 |
| Mont. | 3 | 9 | - | 31 | 15 | - | 1 | 6 | 192 |
| Idaho | 3 | 5 | 5 | 19 | 29 | - | - | 1 | 11 |
| Wyo. | 1 | 3 | - | 5 | 2 | 2 | - | 3 | 38 |
| Colo. | 99 | 112 | 3 | 57 | 142 | 5 | 3 | 1 | 28 |
| N. Mex. | 47 | 54 | 2 | 88 | 85 | 2 | 1 | - | 11 |
| Ariz. | 153 | 274 | 16 | 225 | 252 | 1 | 6 | - | 41 |
| Utah | 15 | 23 | 9 | 29 | 25 | 1 | - | - | 9 |
| Nev. | 461 | 166 | - | 56 | 31 | - | - | - | 16 |
| PACIFIC | 5,780 | 7,203 | 48 | 3,485 | 3,811 | 8 | 151 | 4 | 393 |
| Wash. | 196 | 148 | 8 | 204 | 221 | 1 | 13 | 1 | - |
| Oreg. | 279 | 276 | 1 | 135 | 117 | 1 | 7 | 1 | - |
| Calif. | 5,263 | 6,761 | 38 | 2,959 | 3,238 | 4 | 126 | 2 | 376 |
| Alaska | 14 | 4 | - | 41 | 56 | 2 | - | - | 17 |
| Hawaii | 28 | 14 | 1 | 146 | 179 | - | 5 | - | - |
| Guam | 3 | 2 | - | 21 | 26 | - | - | - | - |
| P.R. | 605 | 832 | - | 216 | 270 | - | 5 | - | 64 |
| V.I. | 2 | 9 | - | 6 | 2 | - | - | - | - |
| Amer. Samoa | - | - | - | 3 | 9 | - | 1 | - | - |
| C.N.M.I. | 1 | - | - | 17 | - | - | - | - | - |

U: Unavailable

# TABLE IV. Deaths in 121 U.S. cities,* week ending November 26, 1988 (47th Week)

| Reporting Area | All Causes, By Age (Years) | | | | | | P&I** |
|---|---|---|---|---|---|---|---|
| | All Ages | ≥65 | 45-64 | 25-44 | 1-24 | <1 | Total |
| NEW ENGLAND | 558 | 383 | 104 | 41 | 14 | 16 | 40 |
| Boston, Mass. | 160 | 101 | 28 | 14 | 10 | 7 | 19 |
| Bridgeport, Conn. | 33 | 23 | 7 | 2 | - | 1 | 2 |
| Cambridge, Mass. | 15 | 12 | 3 | - | - | - | 3 |
| Fall River, Mass. | 21 | 17 | 3 | 1 | - | - | 1 |
| Hartford, Conn.§ | 59 | 36 | 12 | 7 | 2 | 2 | 2 |
| Lowell, Mass. | 26 | 16 | 7 | 3 | - | - | 1 |
| Lynn, Mass. | 23 | 19 | 3 | 1 | - | - | - |
| New Bedford, Mass. | 25 | 23 | 2 | - | - | - | 1 |
| New Haven, Conn. | 24 | 13 | 6 | 3 | 2 | - | 7 |
| Providence, R.I. | 27 | 20 | 4 | 3 | - | - | - |
| Somerville, Mass. | 8 | 6 | 2 | - | - | - | - |
| Springfield, Mass. | 39 | 20 | 12 | 4 | - | 3 | 1 |
| Waterbury, Conn. | 29 | 25 | 4 | - | - | - | 1 |
| Worcester, Mass. | 69 | 52 | 11 | 3 | - | 3 | 2 |
| MID. ATLANTIC | 2,503 | 1,667 | 472 | 232 | 64 | 67 | 121 |
| Albany, N.Y. | 42 | 31 | 8 | 2 | 1 | - | 3 |
| Allentown, Pa. | 17 | 14 | 1 | 1 | 1 | - | 1 |
| Buffalo, N.Y. | 100 | 73 | 18 | 6 | 2 | 1 | 9 |
| Camden, N.J. | 43 | 26 | 6 | 4 | 3 | 4 | 2 |
| Elizabeth, N.J. | 8 | 3 | 4 | 1 | - | - | 1 |
| Erie, Pa.† | 29 | 28 | - | 1 | - | - | 1 |
| Jersey City, N.J.§ | 57 | 39 | 10 | 6 | 1 | 1 | 1 |
| N.Y. City, N.Y. | 1,451 | 926 | 279 | 161 | 45 | 40 | 61 |
| Newark, N.J. | 41 | 15 | 7 | 10 | - | 8 | 6 |
| Paterson, N.J. | 23 | 13 | 6 | 3 | 1 | - | 2 |
| Philadelphia, Pa. | 297 | 203 | 64 | 17 | 4 | 9 | 11 |
| Pittsburgh, Pa.† | 67 | 49 | 14 | 4 | - | - | 2 |
| Reading, Pa. | 28 | 21 | 5 | 1 | 1 | - | 3 |
| Rochester, N.Y. | 88 | 66 | 16 | 5 | - | 1 | 8 |
| Schenectady, N.Y. | 42 | 35 | 6 | 1 | - | - | 1 |
| Scranton, Pa.† | 21 | 17 | 3 | 1 | - | - | 2 |
| Syracuse, N.Y. | 85 | 59 | 15 | 5 | 3 | 3 | 5 |
| Trenton, N.J. | 13 | 10 | 2 | 1 | - | - | 1 |
| Utica, N.Y.§ | 23 | 19 | 2 | 1 | 1 | - | - |
| Yonkers, N.Y. | 28 | 20 | 6 | 1 | 1 | - | 1 |
| E.N. CENTRAL | 1,893 | 1,289 | 370 | 131 | 33 | 70 | 80 |
| Akron, Ohio | 39 | 23 | 6 | 3 | 2 | 5 | 1 |
| Canton, Ohio | 20 | 15 | 4 | 1 | - | - | 3 |
| Chicago, Ill.§ | 564 | 362 | 125 | 45 | 10 | 22 | 16 |
| Cincinnati, Ohio | 143 | 103 | 20 | 9 | 6 | 5 | 18 |
| Cleveland, Ohio | 118 | 80 | 26 | 7 | 1 | 4 | 7 |
| Columbus, Ohio | 123 | 77 | 28 | 11 | 3 | 4 | 1 |
| Dayton, Ohio | 77 | 54 | 11 | 7 | 1 | 4 | 1 |
| Detroit, Mich. | 144 | 98 | 24 | 14 | 1 | 7 | 2 |
| Evansville, Ind. | 35 | 28 | 2 | 3 | - | 2 | - |
| Fort Wayne, Ind. | 43 | 28 | 10 | 3 | 1 | 1 | 3 |
| Gary, Ind. | 17 | 11 | 3 | 1 | 2 | - | - |
| Grand Rapids, Mich. | 44 | 30 | 7 | 2 | 2 | 3 | 7 |
| Indianapolis, Ind. | 151 | 102 | 28 | 13 | - | 8 | 1 |
| Madison, Wis. | 36 | 30 | 5 | - | 1 | - | 3 |
| Milwaukee, Wis. | 84 | 67 | 13 | 4 | - | - | 3 |
| Peoria, Ill.§ | 53 | 42 | 8 | 2 | - | 1 | 4 |
| Rockford, Ill. | 36 | 22 | 10 | 1 | 1 | 2 | 2 |
| South Bend, Ind. | 33 | 16 | 13 | 2 | 1 | 1 | - |
| Toledo, Ohio | 73 | 53 | 18 | 1 | 1 | - | 7 |
| Youngstown, Ohio | 60 | 48 | 9 | 2 | - | 1 | 1 |
| W.N. CENTRAL | 658 | 473 | 115 | 36 | 19 | 15 | 39 |
| Des Moines, Iowa | 36 | 29 | 5 | 1 | 1 | - | 1 |
| Duluth, Minn. | 20 | 14 | 5 | 1 | - | - | - |
| Kansas City, Kans. | 24 | 17 | 3 | 2 | 2 | - | 1 |
| Kansas City, Mo. | 116 | 74 | 25 | 6 | 4 | 7 | 9 |
| Lincoln, Nebr. | 36 | 24 | 11 | 1 | - | - | 3 |
| Minneapolis, Minn. | 142 | 103 | 26 | 10 | 1 | 2 | 13 |
| Omaha, Nebr. | 44 | 29 | 10 | 3 | - | 2 | 6 |
| St. Louis, Mo. | 122 | 98 | 9 | 6 | 8 | 1 | - |
| St. Paul, Minn. | 62 | 49 | 9 | 2 | - | 2 | 3 |
| Wichita, Kans. | 56 | 36 | 12 | 4 | 3 | 1 | 3 |
| S. ATLANTIC | 1,105 | 654 | 250 | 110 | 32 | 59 | 46 |
| Atlanta, Ga. | 120 | 59 | 33 | 13 | 4 | 11 | 2 |
| Baltimore, Md. | 295 | 185 | 57 | 30 | 8 | 15 | 10 |
| Charlotte, N.C. | 64 | 43 | 15 | 5 | - | 1 | 9 |
| Jacksonville, Fla. | 76 | 40 | 20 | 7 | 7 | 2 | 2 |
| Miami, Fla. | 82 | 42 | 21 | 15 | 2 | 2 | 1 |
| Norfolk, Va. | 53 | 29 | 14 | 2 | 2 | 6 | 3 |
| Richmond, Va. | 63 | 37 | 17 | 7 | 1 | 1 | 9 |
| Savannah, Ga. | 59 | 41 | 12 | 5 | 1 | - | 4 |
| St. Petersburg, Fla. | 63 | 54 | 6 | 2 | - | 1 | 1 |
| Tampa, Fla. | 60 | 36 | 15 | 6 | 1 | 2 | 4 |
| Washington, D.C. | 152 | 75 | 35 | 18 | 6 | 18 | 1 |
| Wilmington, Del. | 18 | 13 | 5 | - | - | - | - |
| E.S. CENTRAL | 561 | 358 | 109 | 50 | 13 | 30 | 33 |
| Birmingham, Ala. | 93 | 55 | 21 | 6 | 1 | 10 | 1 |
| Chattanooga, Tenn. | 59 | 45 | 10 | - | 1 | 3 | 2 |
| Knoxville, Tenn.§ | 80 | 55 | 16 | 5 | 4 | - | 7 |
| Louisville, Ky. | 45 | 33 | 5 | 5 | - | 2 | 3 |
| Memphis, Tenn. | 138 | 78 | 30 | 16 | 4 | 10 | 17 |
| Mobile, Ala. | 38 | 32 | 3 | 2 | 1 | - | - |
| Montgomery, Ala. | 21 | 16 | 3 | 1 | - | 1 | - |
| Nashville, Tenn. | 87 | 44 | 21 | 15 | 2 | 4 | 3 |
| W.S. CENTRAL | 1,494 | 920 | 331 | 151 | 52 | 38 | 50 |
| Austin, Tex. | 45 | 35 | 3 | 5 | 1 | 1 | 6 |
| Baton Rouge, La. | 31 | 20 | 8 | - | - | 3 | 1 |
| Corpus Christi, Tex.§ | 48 | 37 | 10 | 1 | - | - | 1 |
| Dallas, Tex. | 154 | 91 | 33 | 18 | 7 | 5 | 6 |
| El Paso, Tex. | 25 | 10 | 11 | - | 3 | 1 | 1 |
| Fort Worth, Tex | 92 | 68 | 13 | 5 | 3 | 3 | 3 |
| Houston, Tex.§ | 734 | 436 | 169 | 89 | 24 | 16 | 18 |
| Little Rock, Ark. | 33 | 17 | 12 | 2 | 2 | - | 1 |
| New Orleans, La. | 112 | 64 | 29 | 13 | 4 | 2 | - |
| San Antonio, Tex. | 111 | 66 | 20 | 14 | 5 | 4 | 4 |
| Shreveport, La. | 27 | 18 | 6 | 2 | - | 1 | 2 |
| Tulsa, Okla. | 82 | 58 | 17 | 2 | 3 | 2 | 7 |
| MOUNTAIN | 556 | 350 | 122 | 49 | 15 | 20 | 21 |
| Albuquerque, N. Mex. | 53 | 26 | 12 | 11 | 4 | - | 1 |
| Colo. Springs, Colo. | 19 | 12 | 5 | 1 | 1 | - | 2 |
| Denver, Colo. | 82 | 47 | 16 | 7 | 3 | 9 | 3 |
| Las Vegas, Nev. | 82 | 54 | 20 | 6 | 2 | - | 6 |
| Ogden, Utah | 19 | 14 | 3 | 1 | - | 1 | - |
| Phoenix, Ariz. | 152 | 93 | 37 | 12 | 3 | 7 | 3 |
| Pueblo, Colo. | 19 | 17 | 2 | - | - | - | 1 |
| Salt Lake City, Utah | 42 | 27 | 10 | 3 | - | 2 | - |
| Tucson, Ariz. | 88 | 60 | 17 | 8 | 2 | 1 | 5 |
| PACIFIC | 1,472 | 974 | 259 | 148 | 50 | 38 | 77 |
| Berkeley, Calif. | 10 | 8 | - | 2 | - | - | - |
| Fresno, Calif. | 34 | 24 | 4 | 1 | - | 5 | 2 |
| Glendale, Calif.§ | 15 | 13 | 2 | - | - | - | - |
| Honolulu, Hawaii | 62 | 43 | 12 | 4 | 3 | - | 7 |
| Long Beach, Calif. | 58 | 36 | 14 | 7 | - | 1 | 3 |
| Los Angeles Calif.§ | 420 | 282 | 65 | 47 | 19 | 4 | 17 |
| Oakland, Calif. | 45 | 28 | 7 | 5 | 3 | 2 | 1 |
| Pasadena, Calif. | 26 | 19 | 6 | 1 | - | - | 1 |
| Portland, Oreg. | 131 | 92 | 21 | 8 | 5 | 5 | 8 |
| Sacramento, Calif. | 78 | 54 | 13 | 6 | 3 | 2 | 8 |
| San Diego, Calif. | 143 | 88 | 23 | 14 | 8 | 10 | 6 |
| San Francisco, Calif. | 110 | 66 | 23 | 15 | 2 | 4 | 3 |
| San Jose, Calif. | 153 | 98 | 27 | 23 | 4 | 1 | 10 |
| Seattle, Wash. | 102 | 56 | 27 | 13 | 3 | 3 | - |
| Spokane, Wash. | 59 | 50 | 7 | 1 | - | 1 | 10 |
| Tacoma, Wash. | 26 | 17 | 8 | 1 | - | - | 1 |
| TOTAL | 10,800†† | 7,068 | 2,132 | 948 | 292 | 353 | 507 |

*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.

§Data not available. Figures are estimates based on average of past available 4 weeks.

*Influenza — Continued*

Two other isolates of influenza B reported from Houston were recovered from specimens obtained from two children, aged 5 and 10 years, on November 1 and 2, respectively; these children were patients of a pediatrician serving as a sentinel physician for the Baylor College of Medicine Influenza Research Center. In addition, three isolates of influenza type B have been recovered from specimens obtained from children 9, 11, and 12 years of age in Austin, Texas, since late October. Influenza B virus has also been isolated from a 4-year-old child in Arizona and a 1-year-old child in Michigan.

Influenza type A virus has been reported from Maryland and Hawaii. The first case occurred in a 27-year-old male student in Bethesda, Maryland. He had onset of severe headache, sore throat, myalgias, arthralgias, and fever of 103 F (39.4 C) on November 9. A throat swab obtained on November 10 by a physician participating in the Sentinel Physician Surveillance Network yielded influenza type A virus, identified by rapid culture confirmation on November 14. The health center at the student's university has since noted an increase in cases of influenza-like illness, but specimens obtained from other ill persons at the university have not yielded influenza viruses. One other case of influenza type A has been reported; this case occurred in a 33-year-old woman in Hawaii during early November.

Further antigenic analysis of the isolates obtained from the sporadically occurring cases and the cases in the outbreak of influenza B continues. Also, subtyping of the influenza A viruses is pending.

*Reported by: L McAllister, T Payton, Ohio Dept of Health. Participating state and territorial epidemiologists and state laboratory directors. WHO Collaborating Laboratories. Sentinel Physicians of the American Academy of Family Physicians. Influenza Research Center, Baylor College of Medicine, Houston, Texas. Div of Surveillance and Epidemiologic Studies, Epidemiology Program Office; WHO Collaborating Center for Influenza, Influenza Br, and Epidemiology Office, Div of Viral Diseases, Center for Infectious Diseases, CDC.*

*Reference*

1. CDC. Influenza—United States, 1987–88 season. MMWR 1988;37:497–503.

## Periconceptional Use of Multivitamins and the Occurrence of Anencephaly and Spina Bifida

In 1988, CDC completed the analysis of data collected in 1982 and 1983 from a population-based case-control study to evaluate the association between periconceptional multivitamin use* and the occurrence of anencephaly or spina bifida (neural tube defects [NTDs]). Results of this study suggest that mothers who were periconceptional multivitamin users were at lower risk of having babies with NTDs than were mothers who did not use multivitamins (*1*).

In 1982 and 1983, the Atlanta Birth Defects Case-Control (ABDCC) Study obtained information from parents of babies with serious malformations identified through the Metropolitan Atlanta Congenital Defects Program. Information was gathered also from a randomly selected group of parents of babies without birth defects from the

*Periconceptional multivitamin use was defined as regular multivitamin or prenatal vitamin use during every month of a 6-month periconceptional period (i.e., 3 months before conception through the first 3 months of pregnancy).

*Multivitamins — Continued*

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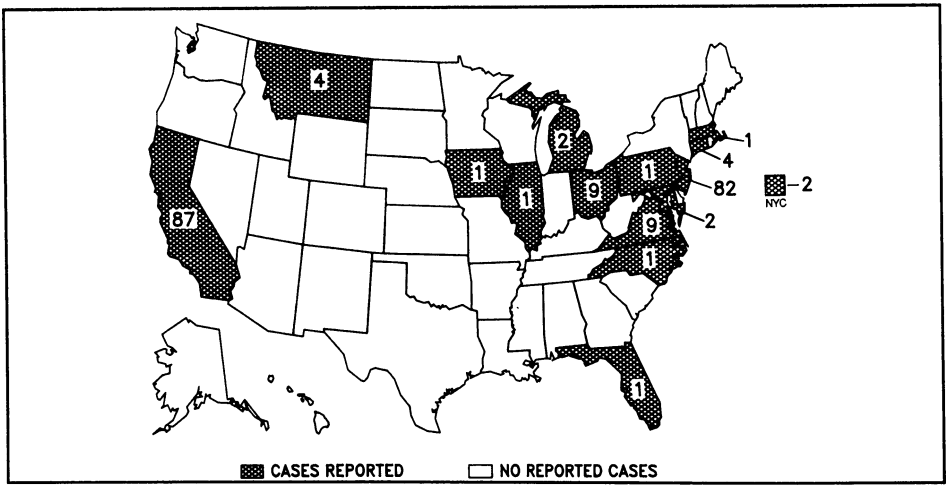
**FIGURE I. Reported measles cases — United States, Weeks 43–46, 1988**




The *Morbidity and Mortality Weekly Report* is prepared by the Centers for Disease Control, Atlanta, Georgia, and available on a paid subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238.

The data in this report 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 succeeding Friday. The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

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☆U.S. Government Printing Office: 1989-631-108/81537 Region IV

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