

MNWR

MORBIDITY AND MORTALITY WEEKLY REPORT

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Emerging Infectious Diseases

Outbreak of Acute Illness — Southwestern United States, 1993

Beginning in May 1993, cases of acute illness characterized by fever, myalgias, headache, and cough, followed by rapid development of respiratory failure, have been reported to the New Mexico Department of Health (NMDOH), Arizona Department of Health Services (ADHS), Colorado Department of Health (CDH), and Utah Department of Health (UDH). This report presents preliminary findings from an ongoing investigation of this problem, which suggest this illness is associated with a previously unrecognized hantavirus.

On May 14, the NMDOH was notified by the Office of the Medical Investigator that two persons living in the same household had died within 5 days of each other. Their illnesses were characterized by abrupt onset of fever, myalgias, headache, and cough, followed by the rapid development of respiratory failure. Tests for *Yersinia pestis* and other bacterial and viral pathogens were negative. After additional persons who had recently died following a similar clinical course were reported to the the NMDOH by the Indian Health Service (IHS), the ADHS, CDH, and UDH were contacted by the NMDOH seeking other possible cases.

To identify cases, public health officials established a provisional surveillance case definition of 1) radiographic evidence of unexplained bilateral pulmonary interstitial infiltrates with hypoxemia (arterial oxygen saturation of <90% while breathing room air) or 2) an autopsy finding of unexplained noncardiogenic pulmonary edema occurring during 1993. Through June 7, a total of 24 case-patients have been identified. Case-patients had onsets of illness beginning in December 1992; most (14) had onset in May (Figure 1). The most recent case-patient had onset of illness June 1. Case-patients resided in New Mexico (17), Arizona (five), Utah (one), and Colorado (one). Their median age was 34 years (range: 13–87 years; 17 were aged 18–50 years). Thirteen were male. Fourteen case-patients were American Indians, nine were white, and one was Hispanic. Twelve (50%) case-patients have died.

Clinical and autopsy specimens are being processed and analyzed by CDC. Preliminary results include detection of rising titers of antibodies to hantaviruses in paired serum specimens from two of the nine case-patients; elevated single antibody titers were present in four other of the nine case-patients. The pattern of cross-reactivity to

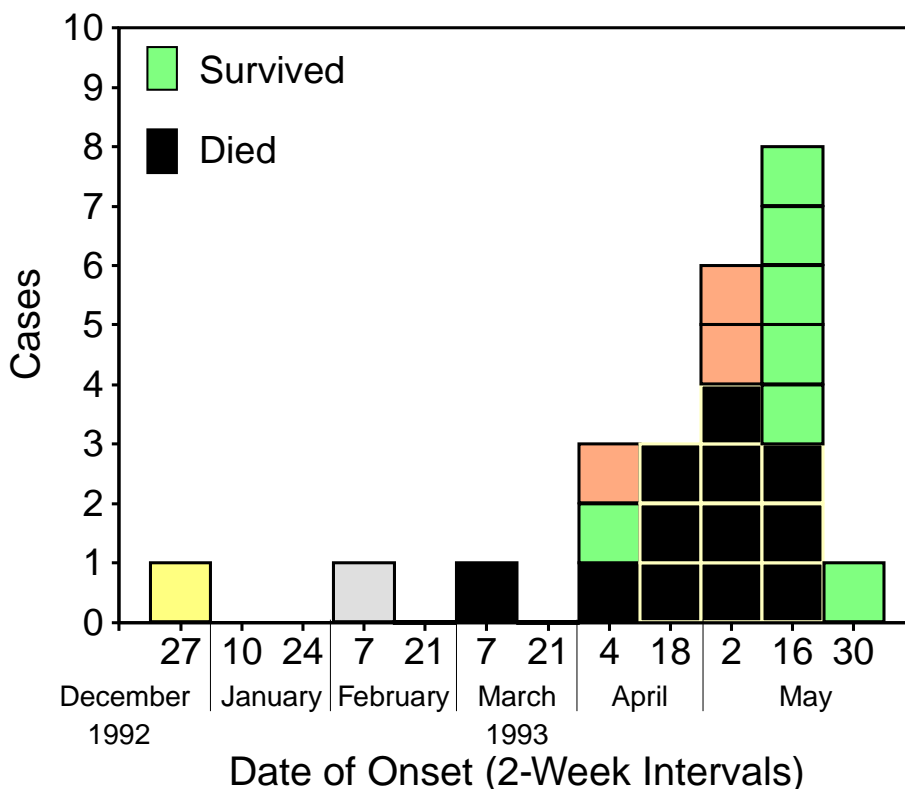
Unexplained Acute Illness — Continued

four different hantaviruses suggests that the infection is due to a previously unknown hantavirus. The NMDOH, ADHS, CDH, UDH, IHS, and CDC, with the assistance of the Navajo Nation Division of Health, are conducting intensive epidemiologic, laboratory, and environmental investigations to further define this unexplained illness cluster, determine the etiology of the illness, identify the source and mode of transmission, and develop prevention and control measures.

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Editorial Note: The preliminary laboratory findings of this investigation suggest a possible role for a hantavirus or related agent as a cause of this outbreak. Although this unexplained illness shares some clinical features with syndromes caused by hanta-

FIGURE 1. Cases of acute illness, by 2-week interval of onset — Arizona, Colorado, New Mexico, and Utah, December 27, 1992–June 5, 1993



Unexplained Acute Illness — Continued

viruses, it lacks the prominent renal involvement and hemorrhagic manifestations previously reported with these agents (1). Additional data are necessary to confirm these preliminary results. If verified, the role of this agent in the pathogenesis of the illnesses will require further study.

Isolation of the first recognized hantavirus (Hantaan virus) was reported from Korea in 1978 (2). Although there are four recognized members (Hantaan, Puumala, Seoul, and Prospect Hill) of the genus *Hantavirus* of the family *Bunyaviridae* (3), additional unidentified members likely exist. Hantaan, Puumala, and Seoul viruses are known human pathogens; Prospect Hill has not been associated with disease. Since the 1930s, epidemic and sporadic hantavirus-associated disease has been described throughout Eurasia, especially in Scandinavia and northeastern Asia. In the 1950s, thousands of United Nations military personnel were infected with hantaviruses during the Korean conflict (1); more recently, transmission has been documented among U.S. military personnel training in Korea (4). Hantaviruses have been isolated from rodents in the United States (5), and serologic studies have documented human infections with hantaviruses (6). However, acute disease associated with infection by pathogenic hantaviruses has not previously been reported in the Western Hemisphere.

The clinical manifestations of infection with these viruses vary; illness resulting from Hantaan virus infection generally includes fever, renal abnormalities, and in severe cases, shock, bleeding, and pulmonary edema (1). The incubation period for the known pathogenic hantaviruses, although highly variable, generally ranges from 2 to 4 weeks (3).

Rodents are the natural hosts for all known hantaviruses (3). Humans are thought to be at risk for infection after exposure to rodent excreta, either through the aerosol route or direct inoculation. There is no evidence of person-to-person transmission for any of the known hantaviruses, nor has occupational transmission been documented to health-care workers. Laboratory workers practicing universal precautions while processing routine clinical materials (such as blood, urine, and respiratory specimens) are not considered to be at increased risk for hantavirus infection. However, laboratory-acquired infections have occurred among persons who handled infected wild or laboratory rodents (7). Therefore, laboratory work that may result in propagation of hantaviruses should be conducted in a biosafety level 3 facility (8).

No restriction of travel to areas affected by this outbreak is considered necessary; however, activities that may disrupt rodent burrows or result in contact with rodents or aerosolization of rodent excreta should be avoided. In the affected area, measures prudent for rodent control should be carried out in domestic settings, including wetting of rodent nests and dead rodents with disinfectant before their removal, securing foods from rodent access, and trapping rodents indoors. Broader measures to control rodents will be recommended once the specific rodent host(s) has been identified and the expected effects on the ecology of local rodentborne diseases, particularly plague, have been considered.

In one controlled study, intravenous administration of the antiviral drug ribavirin was effective in treating severe cases of hantavirus infection when administered early in the course of illness (9). However, intravenous ribavirin is not licensed for use in the United States. Therefore, in the affected areas of the Southwest, clinicians considering

Unexplained Acute Illness — Continued

use of ribavirin for treatment of potential cases should consult with their state health department.

The surveillance case definition used in this investigation is provisional. As additional information is gathered and the etiologic agent is characterized, the definition may require revision. Suspected cases should be reported immediately to public health authorities for further investigation. CDC has established a hotline to provide updated information on the unexplained illness outbreak and to report suspected cases; the number is (800) 532-9929.

This cluster of unexplained acute illnesses in the Southwest illustrates the potential for new infectious disease problems to emerge at any time within the United States (10). These diseases may emerge because of microbial adaptation, environmental disturbances or changes, or population shifts. Vigilance and surveillance are required to rapidly recognize and determine the etiology of these emerging microbial threats to health so that prevention and control strategies can be implemented.

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Current Trends

Selective Screening to Augment Syphilis Case-Finding — Dallas, 1991

Increased use of crack cocaine and the exchange of sex for drugs have been major contributors to the increased occurrence of syphilis in U.S. urban, minority populations (1-3). Because many persons who use drugs do not voluntarily seek health care (1,4), and because their sex partners are often difficult to locate (5), a substantial number of persons may have undiagnosed syphilis infections, thereby contributing to continuing transmission. Because of the continuing increase in the number of persons

Syphilis Case-Finding — Continued

in Dallas County (1990 population: 1.8 million), Texas, in whom early syphilis* had been diagnosed, and who had reported having had sex partners at crack motels and crack houses (i.e., places where crack cocaine was sold), in February 1991, the Dallas Countywide Health Department (DCHD) developed a sexually transmitted disease (STD) screening program aimed specifically at those sites. This report describes Dallas County's selective screening program and summarizes results of the program from March 1 through December 31, 1991.

Program Development

The Dallas County STD Program (DCSTDP) modified a previously used approach (1) to address needs specific to the target population in Dallas and to augment other STD intervention methods employed by the DCHD. To reach the high-risk population, the DCSTDP identified 21 sites for STD screening—predominantly crack motels and crack houses named by persons with early syphilis during interviews with disease intervention specialists. Information sought during interviews included not only the identity of sex partners of syphilis patients but locations where syphilis may have been acquired.

A team consisting of a supervisor and two disease intervention specialists familiar with the community visited the sites and was responsible for 1) obtaining specimens on-site for serologic testing for syphilis and human immunodeficiency virus (HIV); 2) ensuring treatment of all persons determined to have been infected with or exposed to an STD; and 3) collecting and maintaining data for case-finding and follow-up, including names and aliases of identified syphilis patients and their sex partners and sites where high-risk sexual contact or illicit drug use were known to occur (e.g., lists of crack motels or crack houses).

Two physicians in private practice in the affected communities assisted in the screening program. These physicians examined patients, obtained serologic tests for syphilis and HIV, and treated patients referred by the health department for syphilis; the STD program provided medication and a monetary stipend to the physicians. The DCHD also developed cooperative agreements with social service and community-based organizations[†] to provide comprehensive care for persons using crack cocaine. Care included, for example, HIV pretest counseling at the time of syphilis screening and drug rehabilitation referrals.

Selective Screening Activities

All persons tested for syphilis also received HIV pretest counseling; patients were offered a choice of either confidential or anonymous voluntary testing[§]. To decrease the number of persons lost to follow-up, the team emphasized establishing rapport between public health workers and persons at each site. The team also distributed condoms and business cards and conducted demonstrations for individuals and groups on the correct use of condoms.

*Syphilis with a duration of less than 1 year.

[†]These included the Behavior Modification Research Project of the HIV Census Tract, Project Impact and the Parent Mentor Project of the Texas Department of Human Services, the Minority HIV Prevention Project of the Dallas Urban League, and the Dallas Council on Alcohol and Drug Abuse.

[§]State law requires that every patient be offered the choice of either anonymous or confidential HIV-antibody testing.

Syphilis Case-Finding — Continued

From March 1 through December 31, 1991, 250 persons were serologically tested by rapid plasma reagin tests at the 21 sites. Persons were identified for testing if they either had sexual contact with a person who had early syphilis or had been identified during a cluster interview[¶] (6) as having other risk factors for syphilis. Of the 250 persons, 78 (31%) tested positive and were treated for early syphilis (six with primary syphilis; 29, secondary syphilis; and 43, early latent syphilis), 42 (17%) were preventively treated, 15 (6%) were determined to have been treated previously, and 112 (45%) were uninfected; three (1%) persons were lost to follow-up.

Of the 250, 126 chose to receive an HIV-antibody test. Of those, six (5%) tested positive. Four of the six reported injecting-drug use, and all six reported high-risk sexual exposure.

Of the 78 persons identified with untreated syphilis, 61 (78%) received clinical examination and treatment at the DCHD clinic; of these, 38 (62%) also had other STDs: 13 had gonorrhea; 12, pelvic inflammatory disease; seven, nongonococcal urethritis; two, herpes; two, chancroid; one, human papillomavirus infection; and one, lymphogranuloma venereum.

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Editorial Note: The Dallas project successfully employed nontraditional outreach methods to facilitate identification and serologic testing of persons at high risk for syphilis and HIV infection because of behaviors associated with their crack cocaine use. For example, because sex-partner notification is difficult among this population, community-based efforts focused on the identification of specific sex-for-drugs locations rather than named sex partners of persons with early syphilis. Because most crack-related activities occur within well-defined areas (7), the recognition of these locations facilitated identification, testing, and appropriate follow-up of sex partners and other persons at high risk for syphilis. In addition, the team approach and the involvement of private-sector physicians established in the community and of community-based organizations appeared to contribute to the high follow-up rate for persons who were tested. During a similar outreach effort in Philadelphia (1), 33% of seroreactive persons could not be located, compared with the 1% who were lost to follow-up in the Dallas project.

The approach of the Dallas project combined innovative methods, traditional partner notification, and cluster investigation methods. Measures to improve relations between the DCSTDP and the target community also may have contributed to the success of the project. Efforts to identify and treat infected persons in Dallas were considered effective when compared with methods employed in other locations (1,6,8). In addition, this approach permitted DCSTDP to identify and work effectively with a previously inaccessible high-risk population.

The findings in this report underscore the potential effectiveness of a team approach in disease-control strategies and the role for community coalitions in the

[¶]Cluster investigation methods and the cluster interview are methods to identify persons at high risk for syphilis other than those who were sex partners of the person being interviewed.

Syphilis Case-Finding — Continued

identification, treatment, and follow-up of persons belonging to disenfranchised groups (9). The Dallas project may serve as a model for other health departments and communities with high rates of syphilis and other STDs, although future projects should consider including data and design elements necessary to fully evaluate efficacy and cost-effectiveness.

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*Emerging Infectious Diseases***Outbreak of Multidrug-Resistant Tuberculosis
at a Hospital — New York City, 1991**

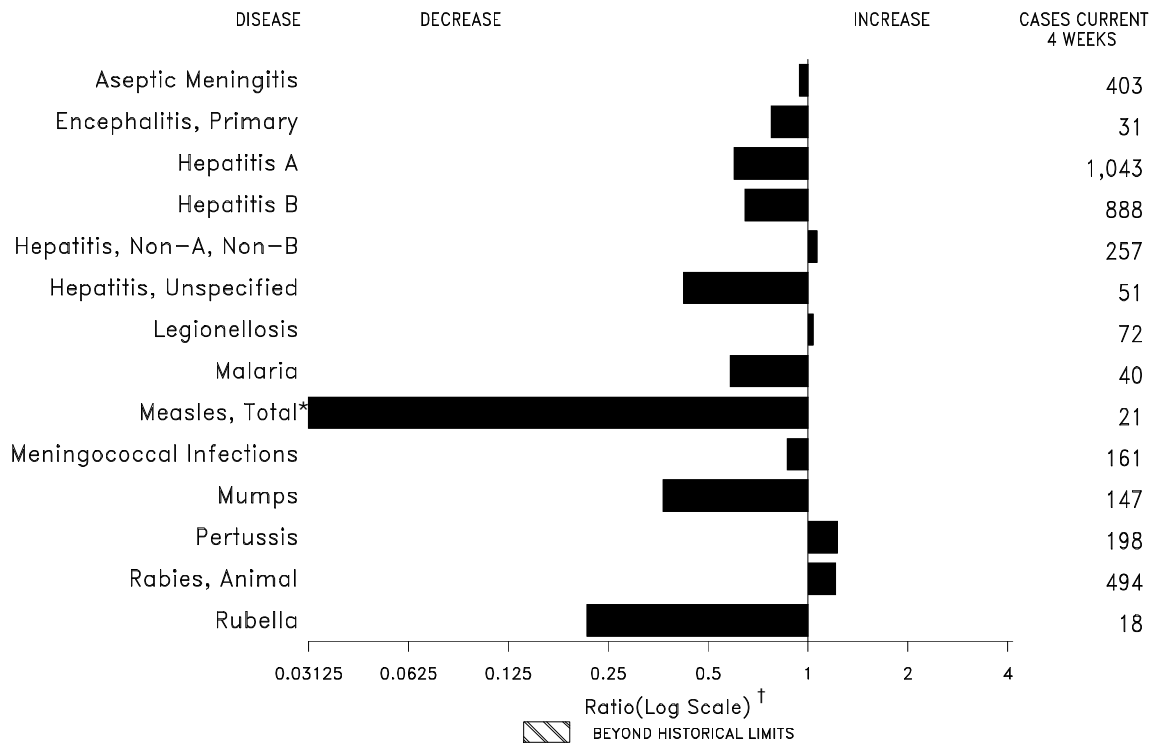
From January 1991 through July 1992, multidrug-resistant (i.e., resistant to at least isoniazid [INH] and rifampin [RIF]) *Mycobacterium tuberculosis* (MDR-TB) was isolated from 43 (22%) of 198 patients with newly diagnosed TB at a New York City hospital. This report summarizes an epidemiologic investigation by the hospital infection-control, infectious diseases, and employee services staffs and presents information for the 32 patients in whom MDR-TB was diagnosed during January 1991–March 1992 (these were the only patients for whom complete information was available and analyzed).

A case was defined as a TB isolate resistant to at least INH and RIF from a person who had been treated as an inpatient from December 1990 through March 1992. Sixteen (50%) patients were men; mean age was 37 years (range: 22–78 years). Of the 32 patients, 29 (91%) have died; all 29 were seropositive for human immunodeficiency virus (HIV). Of those remaining, one was seronegative, and two refused testing. Thirty-one had been patients on the HIV ward and had been treated for complications of HIV infection. In addition to INH and RIF resistance, isolates from 29 (91%) of the 32 patients were resistant to ethambutol and streptomycin.

Of the 32 inpatients with MDR-TB, 28 (88%) had documented exposure to an infectious MDR-TB patient while in the hospital 30 or more days before being diagnosed with TB. Transmission of MDR-TB was not documented to patients other than those on wards with other MDR-TB patients. Isolates from 18 patients studied with restric-

(Continued on page 433)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending June 5, 1993, with historical data — United States



*The large apparent decrease in reported cases of measles (total) reflects dramatic fluctuations in the historical baseline. (Ratio [log scale] for week twenty-two is 0.02164).

[†]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 June 5, 1993 (22nd Week)

| | Cum. 1993 | | Cum. 1993 |
|---|-----------|---------------------------------------|-----------|
| AIDS* | 51,608 | Measles: imported | 18 |
| Anthrax | - | indigenous | 115 |
| Botulism: Foodborne | 6 | Plague | 3 |
| Infant | 11 | Poliomyelitis, Paralytic [§] | - |
| Other | 2 | Psittacosis | 22 |
| Brucellosis | 30 | Rabies, human | - |
| Cholera | 11 | Syphilis, primary & secondary | 11,368 |
| Congenital rubella syndrome | 5 | Syphilis, congenital, age < 1 year | - |
| Diphtheria | - | Tetanus | 11 |
| Encephalitis, post-infectious | 74 | Toxic shock syndrome | 105 |
| Gonorrhea | 160,868 | Trichinosis | 7 |
| <i>Haemophilus influenzae</i> (invasive disease) [†] | 605 | Tuberculosis | 8,262 |
| Hansen Disease | 73 | Tularemia | 30 |
| Leptospirosis | 15 | Typhoid fever | 141 |
| Lyme Disease | 1,322 | Typhus fever, tickborne (RMSF) | 52 |

*Updated monthly; last update June 5, 1993.

[†]Of 511 cases of known age, 181 (35%) were reported among children less than 5 years of age.

[§]No cases of suspected poliomyelitis have been reported in 1993; 4 cases of suspected poliomyelitis were reported in 1992; 6 of the 9 suspected cases with onset in 1991 were confirmed; the confirmed cases were vaccine associated.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending June 5, 1993, and May 30, 1992 (22nd Week)

| Reporting Area | AIDS* | Aseptic Meningitis | Encephalitis | | Gonorrhea | | Hepatitis (Viral), by type | | | | Legionellosis | Lyme Disease |
|----------------|--------|--------------------|--------------|-----------------|-----------|-----------|----------------------------|-----------|-----------|-------------|---------------|--------------|
| | | | Primary | Post-infectious | | | A | B | NA,NB | Unspecified | | |
| | | | Cum. 1993 | Cum. 1993 | Cum. 1993 | Cum. 1993 | Cum. 1993 | Cum. 1992 | Cum. 1993 | Cum. 1993 | | |
| UNITED STATES | 51,608 | 2,750 | 220 | 74 | 160,868 | 205,964 | 8,776 | 4,870 | 1,942 | 268 | 458 | 1,322 |
| NEW ENGLAND | 2,166 | 56 | 5 | 4 | 3,054 | 4,243 | 227 | 203 | 175 | 7 | 19 | 185 |
| Maine | 59 | 6 | 1 | - | 35 | 35 | 8 | 8 | - | - | 3 | 1 |
| N.H. | 63 | 7 | - | 1 | 16 | 53 | 12 | 43 | 167 | 1 | 2 | 20 |
| Vt. | 14 | 6 | 1 | - | 13 | 11 | 3 | 3 | 2 | - | - | - |
| Mass. | 1,188 | 30 | 3 | 3 | 1,203 | 1,546 | 127 | 108 | 3 | 6 | 11 | 39 |
| R.I. | 104 | 7 | - | - | 154 | 331 | 46 | 12 | 3 | - | 3 | 33 |
| Conn. | 738 | - | - | - | 1,633 | 2,267 | 31 | 29 | - | - | - | 92 |
| MID. ATLANTIC | 11,379 | 278 | 7 | 6 | 17,627 | 21,388 | 522 | 616 | 129 | 4 | 92 | 888 |
| Upstate N.Y. | 1,938 | 101 | - | 3 | 3,553 | 4,733 | 138 | 152 | 69 | 1 | 23 | 600 |
| N.Y. City | 6,197 | 104 | 1 | - | 4,260 | 7,055 | 177 | 121 | 1 | - | 3 | 3 |
| N.J. | 2,072 | - | - | - | 2,897 | 2,976 | 137 | 177 | 41 | - | 14 | 95 |
| Pa. | 1,172 | 73 | 6 | 3 | 6,917 | 6,624 | 70 | 166 | 18 | 3 | 52 | 190 |
| E.N. CENTRAL | 4,160 | 369 | 70 | 15 | 31,473 | 39,256 | 854 | 471 | 338 | 6 | 122 | 12 |
| Ohio | 662 | 112 | 24 | 3 | 8,727 | 11,812 | 133 | 103 | 28 | - | 66 | 10 |
| Ind. | 502 | 49 | 4 | 7 | 3,310 | 3,598 | 378 | 73 | 5 | 1 | 21 | 1 |
| Ill. | 1,442 | 79 | 15 | - | 10,988 | 12,627 | 232 | 89 | 18 | 2 | 3 | 1 |
| Mich. | 1,083 | 120 | 24 | 5 | 6,358 | 9,500 | 106 | 201 | 267 | 3 | 24 | - |
| Wis. | 471 | 9 | 3 | - | 2,090 | 1,719 | 5 | 5 | 20 | - | 8 | - |
| W.N. CENTRAL | 2,163 | 164 | 8 | - | 7,603 | 11,248 | 1,164 | 307 | 84 | 5 | 30 | 29 |
| Minn. | 431 | 44 | 5 | - | 320 | 1,250 | 190 | 31 | 3 | 4 | 1 | 4 |
| Iowa | 130 | 39 | - | - | 602 | 733 | 15 | 11 | 3 | 1 | 5 | 5 |
| Mo. | 1,270 | 30 | - | - | 4,784 | 6,142 | 759 | 229 | 61 | - | 10 | 3 |
| N. Dak. | - | 3 | 2 | - | 23 | 38 | 36 | - | - | - | 1 | 1 |
| S. Dak. | 20 | 7 | 1 | - | 116 | 77 | 10 | - | - | - | - | - |
| Nebr. | 100 | 2 | - | - | 170 | 596 | 107 | 7 | 8 | - | 10 | - |
| Kans. | 212 | 39 | - | - | 1,588 | 2,412 | 47 | 29 | 9 | - | 3 | 16 |
| S. ATLANTIC | 10,888 | 661 | 41 | 29 | 44,779 | 65,451 | 529 | 879 | 241 | 34 | 75 | 141 |
| Del. | 208 | 5 | 3 | - | 552 | 723 | 4 | 62 | 59 | - | 6 | 71 |
| Md. | 1,216 | 55 | 10 | - | 6,978 | 6,138 | 75 | 127 | 6 | 3 | 20 | 20 |
| D.C. | 548 | 19 | - | - | 2,421 | 3,121 | 2 | 13 | - | - | 8 | 2 |
| Va. | 731 | 73 | 12 | 3 | 4,817 | 7,764 | 60 | 65 | 19 | 11 | 2 | 16 |
| W. Va. | 38 | 5 | 7 | - | 246 | 384 | 3 | 17 | 13 | - | 1 | 2 |
| N.C. | 453 | 53 | 8 | - | 10,536 | 10,214 | 21 | 138 | 28 | - | 8 | 15 |
| S.C. | 673 | 4 | - | - | 4,114 | 4,937 | 5 | 17 | - | 1 | 8 | 1 |
| Ga. | 1,562 | 43 | 1 | - | 4,660 | 21,000 | 44 | 33 | 20 | - | 12 | - |
| Fla. | 5,459 | 404 | - | 26 | 10,455 | 11,170 | 315 | 407 | 96 | 19 | 10 | 14 |
| E.S. CENTRAL | 1,396 | 130 | 9 | 4 | 18,045 | 19,986 | 111 | 475 | 379 | 1 | 18 | 5 |
| Ky. | 161 | 55 | 4 | 4 | 1,893 | 2,079 | 61 | 42 | 4 | - | 7 | 2 |
| Tenn. | 528 | 20 | 4 | - | 5,461 | 6,240 | 17 | 383 | 367 | - | 9 | 1 |
| Ala. | 463 | 36 | 1 | - | 6,451 | 6,930 | 23 | 47 | 3 | 1 | - | 2 |
| Miss. | 244 | 19 | - | - | 4,240 | 4,737 | 10 | 3 | 5 | - | 2 | - |
| W.S. CENTRAL | 5,311 | 222 | 18 | - | 19,261 | 19,481 | 733 | 628 | 90 | 70 | 13 | 11 |
| Ark. | 227 | 14 | - | - | 3,532 | 3,541 | 22 | 26 | 2 | - | - | 1 |
| La. | 727 | 20 | - | - | 4,884 | 2,903 | 33 | 83 | 33 | - | 2 | - |
| Okla. | 423 | - | 4 | - | 1,504 | 1,955 | 49 | 94 | 22 | 6 | 8 | 6 |
| Tex. | 3,934 | 188 | 14 | - | 9,341 | 11,082 | 629 | 425 | 33 | 64 | 3 | 4 |
| MOUNTAIN | 2,599 | 162 | 11 | 3 | 4,531 | 5,085 | 1,780 | 254 | 139 | 45 | 44 | 3 |
| Mont. | 15 | - | - | 1 | 20 | 41 | 50 | 4 | - | - | 5 | - |
| Idaho | 43 | 5 | - | - | 70 | 54 | 84 | 19 | - | 1 | 1 | - |
| Wyo. | 28 | 3 | - | - | 39 | 21 | 10 | 12 | 45 | - | 5 | 2 |
| Colo. | 868 | 37 | 3 | - | 1,444 | 1,942 | 419 | 28 | 20 | 26 | 3 | - |
| N. Mex. | 212 | 30 | 3 | 2 | 399 | 387 | 142 | 110 | 43 | 1 | 2 | - |
| Ariz. | 881 | 63 | 4 | - | 1,643 | 1,673 | 633 | 40 | 9 | 7 | 8 | - |
| Utah | 185 | 5 | 1 | - | 146 | 98 | 414 | 17 | 18 | 10 | 7 | 1 |
| Nev. | 367 | 19 | - | - | 770 | 869 | 28 | 24 | 4 | - | 13 | - |
| PACIFIC | 11,546 | 708 | 51 | 13 | 14,495 | 19,826 | 2,856 | 1,037 | 367 | 96 | 45 | 48 |
| Wash. | 764 | - | - | - | 1,579 | 1,790 | 307 | 88 | 89 | 7 | 5 | 1 |
| Oreg. | 502 | - | - | - | 868 | 629 | 50 | 20 | 7 | - | - | - |
| Calif. | 10,149 | 668 | 48 | 13 | 11,618 | 16,875 | 2,101 | 915 | 265 | 87 | 35 | 46 |
| Alaska | 12 | 4 | 2 | - | 195 | 305 | 359 | 6 | 4 | - | - | - |
| Hawaii | 119 | 36 | 1 | - | 235 | 227 | 39 | 8 | 2 | 2 | 5 | 1 |
| Guam | - | 2 | - | - | 32 | 36 | 2 | 1 | - | 1 | - | - |
| P.R. | 1,561 | 25 | - | - | 197 | 72 | 33 | 136 | 21 | 1 | - | - |
| V.I. | 33 | - | - | - | 48 | 44 | - | 2 | - | - | - | - |
| Amer. Samoa | - | - | - | - | 11 | 17 | 10 | - | - | - | - | - |
| C.N.M.I. | - | 2 | - | - | 40 | 22 | - | - | - | 1 | - | - |

N: Not notifiable

U: Unavailable

C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly; last update June 5, 1993.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending June 5, 1993, and May 30, 1992 (22nd Week)

| Reporting Area | Malaria | Measles (Rubeola) | | | | | Menin- gococcal infections | Mumps | | Pertussis | | | Rubella | | |
|----------------|---------|-------------------|--------------|-----------|--------------|--------------|----------------------------------|-------|--------------|-----------|--------------|--------------|---------|--------------|--------------|
| | | Indigenous | | Imported* | | Total | | 1993 | Cum. 1993 | 1993 | Cum. 1993 | Cum. 1992 | 1993 | Cum. 1993 | Cum. 1992 |
| | | 1993 | Cum. 1993 | 1993 | Cum. 1993 | Cum. 1992 | | | | | | | | | |
| UNITED STATES | 376 | 10 | 115 | - | 18 | 1,004 | 1,200 | 48 | 761 | 53 | 1,068 | 577 | 1 | 91 | 84 |
| NEW ENGLAND | 29 | - | 45 | - | 4 | 14 | 74 | - | 5 | 8 | 263 | 57 | - | 1 | 5 |
| Maine | 1 | - | - | - | - | - | 4 | - | - | - | 7 | 2 | - | 1 | - |
| N.H. | 4 | - | - | - | - | 1 | 9 | - | - | 4 | 138 | 20 | - | - | - |
| Vt. | 1 | - | 30 | - | 1 | - | 4 | - | - | - | 42 | - | - | - | - |
| Mass. | 10 | - | 7 | - | 2 | 8 | 40 | - | 2 | 1 | 55 | 26 | - | - | - |
| R.I. | 2 | - | - | - | 1 | 1 | 1 | - | 2 | - | 2 | - | - | - | 4 |
| Conn. | 11 | - | 8 | - | - | 4 | 16 | - | 1 | 3 | 19 | 9 | - | - | 1 |
| MID. ATLANTIC | 71 | - | 6 | - | 2 | 187 | 142 | - | 55 | 1 | 167 | 72 | - | 27 | 11 |
| Upstate N.Y. | 23 | - | - | - | 1 | 96 | 58 | - | 17 | 1 | 63 | 23 | - | 3 | 8 |
| N.Y. City | 24 | - | 2 | - | - | 34 | 19 | - | - | - | 12 | 9 | - | 17 | - |
| N.J. | 17 | - | 4 | - | 1 | 52 | 20 | - | 8 | - | 21 | 18 | - | 6 | 2 |
| Pa. | 7 | - | - | - | - | 5 | 45 | - | 30 | - | 71 | 22 | - | 1 | 1 |
| E.N. CENTRAL | 22 | - | - | - | - | 31 | 162 | 8 | 118 | 20 | 159 | 49 | - | 2 | 7 |
| Ohio | 6 | - | - | - | - | 5 | 52 | 6 | 50 | 17 | 102 | 15 | - | 1 | - |
| Ind. | 3 | - | - | - | - | 19 | 25 | 1 | 2 | 3 | 24 | 11 | - | - | - |
| Ill. | 11 | - | - | - | - | 5 | 50 | - | 27 | - | 15 | 7 | - | - | 7 |
| Mich. | 2 | - | - | - | - | 1 | 34 | 1 | 39 | - | 16 | 1 | - | 1 | - |
| Wis. | - | - | - | - | - | 1 | 1 | - | - | - | 2 | 15 | - | - | - |
| W.N. CENTRAL | 9 | - | 1 | - | 2 | 6 | 74 | - | 24 | 4 | 79 | 43 | - | 1 | 5 |
| Minn. | 2 | - | - | - | - | 5 | 2 | - | - | - | 39 | 15 | - | - | - |
| Iowa | 1 | - | - | - | - | 1 | 15 | - | 7 | - | 1 | 1 | - | - | - |
| Mo. | 2 | - | 1 | - | - | - | 29 | - | 12 | 3 | 20 | 16 | - | 1 | 1 |
| N. Dak. | - | - | - | - | - | - | 3 | - | 4 | - | 2 | 6 | - | - | - |
| S. Dak. | 2 | - | - | - | - | - | 3 | - | - | - | 1 | 2 | - | - | - |
| Nebr. | 1 | - | - | - | - | - | 3 | - | 1 | 1 | 5 | 2 | - | - | - |
| Kans. | 1 | - | - | - | 2 | - | 19 | - | - | - | 11 | 1 | - | - | 4 |
| S. ATLANTIC | 110 | - | 19 | - | 3 | 99 | 242 | 32 | 229 | 13 | 108 | 59 | 1 | 7 | 3 |
| Del. | 1 | - | 3 | - | - | 1 | 10 | - | 4 | - | 1 | - | - | 2 | - |
| Md. | 11 | - | - | - | 2 | 10 | 21 | 3 | 42 | 2 | 35 | 12 | - | 1 | - |
| D.C. | 5 | - | - | - | - | - | 4 | - | - | - | 1 | - | - | - | - |
| Va. | 8 | - | - | - | 1 | 6 | 20 | - | 14 | - | 9 | 4 | - | - | - |
| W. Va. | 2 | - | - | - | - | - | 9 | - | 6 | - | 6 | 2 | - | - | - |
| N.C. | 59 | - | - | - | - | 21 | 43 | 19 | 119 | 5 | 18 | 14 | - | - | - |
| S.C. | - | - | - | - | - | 29 | 18 | - | 13 | - | 5 | 7 | - | - | - |
| Ga. | 2 | - | - | - | - | - | 57 | 9 | 9 | 2 | 5 | 6 | - | - | - |
| Fla. | 22 | - | 16 | - | - | 32 | 60 | 1 | 22 | 4 | 28 | 14 | 1 | 4 | 3 |
| E.S. CENTRAL | 7 | - | - | - | - | 410 | 76 | 1 | 31 | 3 | 43 | 11 | - | - | 1 |
| Ky. | - | - | - | - | - | 393 | 15 | - | - | - | 3 | - | - | - | - |
| Tenn. | 3 | - | - | - | - | - | 15 | - | 9 | 3 | 26 | 5 | - | - | 1 |
| Ala. | 2 | - | - | - | - | - | 28 | 1 | 17 | - | 13 | 6 | - | - | - |
| Miss. | 2 | - | - | - | - | 17 | 18 | - | 5 | - | 1 | - | - | - | - |
| W.S. CENTRAL | 10 | - | 1 | - | - | 170 | 99 | 4 | 106 | 1 | 31 | 18 | - | 12 | - |
| Ark. | 2 | - | - | - | - | - | 12 | 1 | 4 | - | 2 | 6 | - | - | - |
| La. | - | - | 1 | - | - | - | 21 | 3 | 10 | 1 | 5 | - | - | 1 | - |
| Okla. | 3 | - | - | - | - | 9 | 9 | - | 2 | - | 11 | 12 | - | 1 | - |
| Tex. | 5 | U | - | U | - | 161 | 57 | U | 90 | U | 13 | - | U | 10 | - |
| MOUNTAIN | 12 | - | 2 | - | - | 7 | 104 | 1 | 33 | 2 | 69 | 98 | - | 4 | 3 |
| Mont. | 1 | - | - | - | - | - | 7 | - | - | - | - | 1 | - | - | - |
| Idaho | - | - | - | - | - | - | 6 | - | 5 | - | 10 | 14 | - | 1 | 1 |
| Wyo. | - | - | - | - | - | 1 | 2 | - | 2 | - | 1 | - | - | - | - |
| Colo. | 7 | - | 2 | - | - | 6 | 14 | - | 8 | - | 25 | 20 | - | - | - |
| N. Mex. | 4 | - | - | - | - | - | 3 | N | N | 2 | 18 | 20 | - | - | - |
| Ariz. | - | - | - | - | - | - | 61 | - | 6 | - | 8 | 37 | - | 1 | 1 |
| Utah | - | - | - | - | - | - | 4 | - | 3 | - | 7 | 5 | - | 1 | 1 |
| Nev. | - | - | - | - | - | - | 7 | 1 | 9 | - | - | 1 | - | 1 | - |
| PACIFIC | 106 | 10 | 41 | - | 7 | 80 | 227 | 2 | 160 | 1 | 149 | 170 | - | 37 | 49 |
| Wash. | 5 | - | - | - | - | 10 | 34 | - | 8 | - | 17 | 47 | - | - | 6 |
| Oreg. | 3 | - | - | - | - | - | 17 | N | N | 1 | 1 | 12 | - | 1 | 2 |
| Calif. | 96 | 10 | 31 | - | 2 | 41 | 160 | 2 | 134 | - | 121 | 107 | - | 18 | 34 |
| Alaska | - | - | - | - | - | 9 | 9 | - | 5 | - | 3 | - | - | 1 | - |
| Hawaii | 2 | - | 10 | - | 5 | 20 | 7 | - | 13 | - | 7 | 4 | - | 17 | 7 |
| Guam | 1 | U | 1 | U | - | 10 | 1 | U | 6 | U | - | - | U | - | 1 |
| P.R. | - | - | 122 | - | - | 204 | 5 | - | 1 | 1 | 1 | 9 | - | - | - |
| V.I. | - | - | - | - | - | - | - | - | 3 | - | - | - | - | - | - |
| Amer. Samoa | - | - | 1 | - | - | - | - | - | - | - | 2 | 6 | - | - | - |
| C.N.M.I. | - | - | - | - | 1 | - | - | - | 1 | 11 | - | 1 | - | - | - |

*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 June 5, 1993, and May 30, 1992 (22nd Week)

| Reporting Area | Syphilis (Primary & Secondary) | | Toxic-Shock Syndrome | Tuberculosis | | Tula- remia | Typhoid Fever | Typhus Fever (Tick-borne) (RMSF) | Rabies, Animal |
|----------------|-----------------------------------|--------------|-------------------------|--------------|--------------|----------------|------------------|--|-------------------|
| | Cum. 1993 | Cum. 1992 | Cum. 1993 | Cum. 1993 | Cum. 1992 | Cum. 1993 | Cum. 1993 | Cum. 1993 | Cum. 1993 |
| UNITED STATES | 11,368 | 14,634 | 105 | 8,262 | 8,400 | 30 | 141 | 52 | 3,211 |
| NEW ENGLAND | 163 | 273 | 7 | 161 | 127 | - | 10 | 2 | 556 |
| Maine | 2 | - | 1 | 7 | 10 | - | - | - | - |
| N.H. | 5 | 22 | 2 | 1 | - | - | - | - | 29 |
| Vt. | - | 1 | - | 3 | 2 | - | - | - | 15 |
| Mass. | 79 | 127 | 3 | 87 | 64 | - | 8 | 2 | 193 |
| R.I. | 7 | 15 | 1 | 28 | - | - | - | - | - |
| Conn. | 70 | 108 | - | 35 | 51 | - | 2 | - | 319 |
| MID. ATLANTIC | 1,088 | 2,045 | 21 | 1,801 | 2,033 | - | 43 | 3 | 1,164 |
| Upstate N.Y. | 95 | 182 | 11 | 154 | 284 | - | 8 | 1 | 866 |
| N.Y. City | 541 | 1,087 | 1 | 1,100 | 1,150 | - | 26 | - | - |
| N.J. | 158 | 287 | - | 273 | 337 | - | 6 | 2 | 180 |
| Pa. | 294 | 489 | 9 | 274 | 262 | - | 3 | - | 118 |
| E.N. CENTRAL | 1,827 | 2,181 | 34 | 865 | 850 | 3 | 13 | 1 | 28 |
| Ohio | 510 | 299 | 15 | 127 | 139 | 1 | 5 | - | 3 |
| Ind. | 164 | 104 | 1 | 91 | 74 | 1 | 1 | - | - |
| Ill. | 700 | 993 | 3 | 428 | 413 | - | 4 | 1 | 4 |
| Mich. | 288 | 448 | 15 | 186 | 192 | 1 | 3 | - | 2 |
| Wis. | 165 | 337 | - | 33 | 32 | - | - | - | 19 |
| W.N. CENTRAL | 696 | 573 | 8 | 164 | 189 | 7 | 2 | 6 | 151 |
| Minn. | 14 | 40 | 2 | 26 | 46 | - | - | - | 21 |
| Iowa | 32 | 15 | 4 | 16 | 15 | - | - | - | 25 |
| Mo. | 569 | 435 | - | 79 | 81 | 2 | 2 | 5 | 4 |
| N. Dak. | - | 1 | - | 2 | 3 | - | - | - | 30 |
| S. Dak. | - | - | - | 9 | 14 | 3 | - | 1 | 19 |
| Nebr. | 7 | 17 | - | 8 | 9 | - | - | - | 2 |
| Kans. | 74 | 65 | 2 | 24 | 21 | 2 | - | - | 50 |
| S. ATLANTIC | 3,030 | 4,088 | 12 | 1,444 | 1,619 | 1 | 15 | 10 | 833 |
| Del. | 60 | 95 | 1 | 16 | 23 | - | 1 | - | 68 |
| Md. | 163 | 299 | - | 164 | 109 | - | 3 | - | 259 |
| D.C. | 177 | 183 | - | 74 | 51 | - | - | - | 6 |
| Va. | 276 | 344 | 2 | 176 | 116 | - | 1 | 1 | 166 |
| W. Va. | 2 | 9 | - | 37 | 25 | - | - | - | 36 |
| N.C. | 828 | 996 | 3 | 185 | 217 | - | - | 6 | 32 |
| S.C. | 466 | 547 | - | 164 | 170 | - | - | - | 74 |
| Ga. | 521 | 862 | - | 350 | 355 | - | 1 | 1 | 172 |
| Fla. | 537 | 753 | 6 | 278 | 553 | 1 | 9 | 2 | 20 |
| E.S. CENTRAL | 1,547 | 1,938 | 4 | 562 | 468 | 3 | 2 | 5 | 40 |
| Ky. | 126 | 64 | 2 | 148 | 164 | - | - | 3 | 5 |
| Tenn. | 437 | 529 | 1 | 131 | - | 2 | - | - | - |
| Ala. | 363 | 795 | 1 | 196 | 169 | 1 | 2 | - | 35 |
| Miss. | 621 | 550 | - | 87 | 135 | - | - | 2 | - |
| W.S. CENTRAL | 2,456 | 2,508 | 1 | 775 | 791 | 13 | 2 | 23 | 248 |
| Ark. | 439 | 386 | - | 73 | 38 | 7 | - | - | 15 |
| La. | 1,032 | 1,067 | - | - | 55 | - | 1 | - | - |
| Okla. | 154 | 113 | 1 | 135 | 57 | 4 | - | 23 | 48 |
| Tex. | 831 | 942 | - | 567 | 641 | 2 | 1 | - | 185 |
| MOUNTAIN | 99 | 182 | 4 | 183 | 221 | 1 | 4 | 2 | 41 |
| Mont. | 1 | 2 | - | 5 | - | - | - | - | 9 |
| Idaho | - | 1 | 1 | 5 | 11 | - | - | - | - |
| Wyo. | 3 | 1 | - | 1 | - | 1 | - | 2 | 6 |
| Colo. | 31 | 25 | 1 | 8 | 17 | - | 3 | - | 1 |
| N. Mex. | 17 | 19 | - | 18 | 31 | - | - | - | 2 |
| Ariz. | 40 | 88 | - | 96 | 103 | - | 1 | - | 23 |
| Utah | 2 | 5 | 2 | 9 | 33 | - | - | - | - |
| Nev. | 5 | 41 | - | 41 | 26 | - | - | - | - |
| PACIFIC | 462 | 846 | 14 | 2,307 | 2,102 | 2 | 50 | - | 150 |
| Wash. | 25 | 49 | 1 | 111 | 126 | 1 | 3 | - | - |
| Oreg. | 46 | 23 | - | 40 | 40 | - | - | - | - |
| Calif. | 387 | 767 | 13 | 2,020 | 1,801 | 1 | 45 | - | 134 |
| Alaska | 2 | 3 | - | 17 | 34 | - | - | - | 16 |
| Hawaii | 2 | 4 | - | 119 | 101 | - | 2 | - | - |
| Guam | - | 2 | - | 28 | 34 | - | - | - | - |
| P.R. | 239 | 125 | - | 64 | 55 | - | - | - | 22 |
| V.I. | 24 | 23 | - | 2 | 3 | - | - | - | - |
| Amer. Samoa | - | - | - | 1 | - | - | - | - | - |
| C.N.M.I. | 2 | 4 | - | 13 | 12 | - | - | - | - |

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending
June 5, 1993 (22nd Week)

| Reporting Area | All Causes, By Age (Years) | | | | | | P&I [†] Total | Reporting Area | All Causes, By Age (Years) | | | | | | P&I [†] Total |
|---------------------|----------------------------|-------|-------|-------|------|----|---------------------------|-----------------------|----------------------------|-------|-------|-------|------|-----|---------------------------|
| | All Ages | ≥65 | 45-64 | 25-44 | 1-24 | <1 | | | All Ages | ≥65 | 45-64 | 25-44 | 1-24 | <1 | |
| NEW ENGLAND | 493 | 325 | 93 | 48 | 13 | 14 | 36 | S. ATLANTIC | 1,211 | 717 | 261 | 147 | 43 | 42 | 63 |
| Boston, Mass. | 168 | 105 | 36 | 17 | 4 | 6 | 23 | Atlanta, Ga. | 149 | 85 | 30 | 27 | 5 | 2 | 7 |
| Bridgeport, Conn. | 29 | 18 | 4 | 4 | 1 | 2 | 1 | Baltimore, Md. | 175 | 102 | 48 | 17 | 7 | - | 13 |
| Cambridge, Mass. | 16 | 14 | 1 | 1 | - | - | - | Charlotte, N.C. | 89 | 52 | 17 | 6 | 4 | 10 | 4 |
| Fall River, Mass. | 19 | 14 | 4 | - | 1 | - | 1 | Jacksonville, Fla. | 100 | 68 | 19 | 8 | 4 | 1 | 5 |
| Hartford, Conn. | 29 | 12 | 7 | 6 | 3 | 1 | - | Miami, Fla. | 108 | 68 | 22 | 14 | 1 | 3 | 1 |
| Lowell, Mass. | 11 | 8 | 3 | - | - | - | - | Norfolk, Va. | 59 | 37 | 9 | 5 | 3 | 5 | 2 |
| Lynn, Mass. | 20 | 14 | 3 | 3 | - | - | - | Richmond, Va. | 66 | 41 | 11 | 11 | 3 | - | 6 |
| New Bedford, Mass. | 24 | 19 | 3 | 2 | - | - | - | Savannah, Ga. | 62 | 46 | 9 | 4 | 1 | 2 | 3 |
| New Haven, Conn. | 45 | 27 | 9 | 4 | 2 | 3 | 4 | St. Petersburg, Fla. | 41 | 26 | 11 | 2 | 1 | 1 | 5 |
| Providence, R.I. | 31 | 21 | 7 | 2 | 1 | - | 2 | Tampa, Fla. | 124 | 77 | 33 | 7 | 4 | 3 | 12 |
| Somerville, Mass. | 6 | 5 | 1 | - | - | - | - | Washington, D.C. | 216 | 102 | 45 | 45 | 10 | 14 | 5 |
| Springfield, Mass. | U | U | U | U | U | U | U | Wilmington, Del. | 22 | 13 | 7 | 1 | - | 1 | - |
| Waterbury, Conn. | 34 | 25 | 5 | 3 | 1 | - | 3 | E.S. CENTRAL | 633 | 398 | 122 | 63 | 31 | 19 | 50 |
| Worcester, Mass. | 61 | 43 | 10 | 6 | - | 2 | 2 | Birmingham, Ala. | 89 | 52 | 16 | 7 | 7 | 7 | 4 |
| MID. ATLANTIC | 2,339 | 1,530 | 430 | 258 | 58 | 63 | 92 | Chattanooga, Tenn. | 54 | 36 | 10 | 2 | 5 | 1 | 3 |
| Albany, N.Y. | 46 | 39 | 3 | 2 | 1 | 1 | 3 | Knoxville, Tenn. | 77 | 50 | 18 | 5 | 3 | 1 | 5 |
| Allentown, Pa. | 19 | 16 | 2 | 1 | - | - | - | Lexington, Ky. | 70 | 50 | 14 | 4 | 2 | - | 10 |
| Buffalo, N.Y. | 100 | 64 | 20 | 10 | 5 | 1 | 2 | Memphis, Tenn. | 181 | 111 | 33 | 25 | 9 | 3 | 11 |
| Camden, N.J. | 32 | 19 | 5 | 3 | 2 | 3 | - | Mobile, Ala. | 38 | 23 | 7 | 5 | 2 | 1 | 2 |
| Elizabeth, N.J. | 10 | 7 | 3 | - | - | - | - | Montgomery, Ala. | U | U | U | U | U | U | U |
| Erie, Pa.‡ | 48 | 39 | 6 | - | - | 3 | 2 | Nashville, Tenn. | 124 | 76 | 24 | 15 | 3 | 6 | 15 |
| Jersey City, N.J. | 44 | 29 | 11 | 4 | - | - | 2 | W.S. CENTRAL | 840 | 555 | 152 | 81 | 26 | 23 | 44 |
| New York City, N.Y. | 1,211 | 772 | 221 | 166 | 31 | 21 | 43 | Austin, Tex. | 48 | 30 | 10 | 6 | 1 | 1 | 1 |
| Newark, N.J. | 73 | 26 | 25 | 12 | 7 | 3 | 2 | Baton Rouge, La. | 41 | 34 | 4 | 2 | 1 | - | 3 |
| Paterson, N.J. | 30 | 16 | 7 | 5 | 1 | 1 | - | Corpus Christi, Tex. | 23 | 16 | 4 | 2 | - | 1 | 1 |
| Philadelphia, Pa. | 302 | 187 | 54 | 35 | 5 | 21 | 21 | Dallas, Tex. | 152 | 88 | 25 | 27 | 6 | 6 | 4 |
| Pittsburgh, Pa.‡ | 91 | 66 | 16 | 2 | 1 | 6 | 3 | El Paso, Tex. | 52 | 36 | 11 | 4 | 1 | - | 6 |
| Reading, Pa. | 12 | 9 | - | 2 | 1 | - | - | Ft. Worth, Tex. | 96 | 63 | 13 | 12 | 2 | 6 | 3 |
| Rochester, N.Y. | 127 | 103 | 16 | 5 | - | 3 | 8 | Houston, Tex. | U | U | U | U | U | U | U |
| Schenectady, N.Y. | 27 | 22 | 3 | 1 | 1 | - | 1 | Little Rock, Ark. | 49 | 36 | 9 | 1 | 2 | 1 | 5 |
| Scranton, Pa.‡ | 24 | 17 | 3 | 4 | - | - | - | New Orleans, La. | 68 | 39 | 12 | 8 | 3 | 3 | - |
| Syracuse, N.Y. | 61 | 43 | 16 | 1 | 1 | - | 2 | San Antonio, Tex. | 186 | 132 | 33 | 13 | 6 | 2 | 6 |
| Trenton, N.J. | 26 | 17 | 6 | 3 | - | - | 2 | Shreveport, La. | 43 | 26 | 13 | 1 | 1 | 2 | 7 |
| Utica, N.Y. | 20 | 16 | 4 | - | - | - | - | Tulsa, Okla. | 82 | 55 | 18 | 5 | 3 | 1 | 8 |
| Yonkers, N.Y. | 36 | 23 | 9 | 2 | 2 | - | 1 | MOUNTAIN | 743 | 462 | 150 | 87 | 20 | 23 | 50 |
| E.N. CENTRAL | 1,674 | 1,051 | 337 | 152 | 85 | 49 | 84 | Albuquerque, N.M. | 87 | 52 | 18 | 10 | 3 | 4 | 1 |
| Akron, Ohio | 62 | 44 | 13 | 3 | 1 | 1 | - | Colo. Springs, Colo. | 46 | 27 | 11 | 6 | 2 | - | 5 |
| Canton, Ohio | 38 | 33 | 5 | - | - | - | 5 | Denver, Colo. | 93 | 55 | 15 | 14 | 3 | 6 | 7 |
| Chicago, Ill. | 343 | 135 | 73 | 73 | 52 | 10 | 14 | Las Vegas, Nev. | 99 | 57 | 30 | 8 | 2 | 1 | 7 |
| Cincinnati, Ohio | 97 | 70 | 16 | 6 | 2 | 3 | 7 | Ogden, Utah | 21 | 17 | 3 | 1 | - | - | - |
| Cleveland, Ohio | 130 | 84 | 31 | 10 | 1 | 4 | 4 | Phoenix, Ariz. | 190 | 117 | 37 | 24 | 5 | 7 | 12 |
| Columbus, Ohio | 113 | 79 | 21 | 8 | 5 | - | 9 | Pueblo, Colo. | 18 | 13 | 3 | 2 | - | - | - |
| Dayton, Ohio | 90 | 67 | 19 | 3 | - | 1 | 1 | Salt Lake City, Utah | 85 | 55 | 13 | 9 | 5 | 3 | 10 |
| Detroit, Mich. | 141 | 75 | 35 | 15 | 11 | 5 | 4 | Tucson, Ariz. | 104 | 69 | 20 | 13 | - | 2 | 8 |
| Evansville, Ind. | 32 | 26 | 4 | 1 | - | 1 | 2 | PACIFIC | 1,721 | 1,146 | 277 | 194 | 57 | 43 | 113 |
| Fort Wayne, Ind. | 32 | 23 | 6 | 2 | - | 1 | 1 | Berkeley, Calif. | 17 | 15 | 1 | - | 1 | - | 2 |
| Gary, Ind. | 11 | 7 | 1 | 2 | 1 | - | - | Fresno, Calif. | 84 | 46 | 19 | 15 | 2 | 2 | 2 |
| Grand Rapids, Mich. | 50 | 34 | 11 | 1 | 1 | 3 | 5 | Glendale, Calif. | 24 | 15 | 8 | - | 1 | - | 1 |
| Indianapolis, Ind. | 159 | 102 | 40 | 10 | 3 | 4 | 10 | Honolulu, Hawaii | 72 | 54 | 10 | 4 | 3 | 1 | 2 |
| Madison, Wis. | 31 | 19 | 8 | 2 | 1 | 1 | 1 | Long Beach, Calif. | 72 | 38 | 18 | 12 | - | 4 | 10 |
| Milwaukee, Wis. | 95 | 71 | 11 | 4 | 1 | 8 | 5 | Los Angeles, Calif. | 417 | 265 | 81 | 39 | 21 | 8 | 21 |
| Peoria, Ill. | 34 | 28 | 4 | 1 | - | 1 | 2 | Pasadena, Calif. | 32 | 22 | 4 | 4 | - | 2 | 5 |
| Rockford, Ill. | 37 | 27 | 5 | 2 | 2 | 1 | 1 | Portland, Ore. | 131 | 96 | 11 | 17 | 2 | 5 | 4 |
| South Bend, Ind. | 33 | 22 | 9 | 2 | - | - | 1 | Sacramento, Calif. | 137 | 92 | 23 | 16 | 3 | 3 | 14 |
| Toledo, Ohio | 82 | 53 | 17 | 5 | 3 | 4 | 9 | San Diego, Calif. | 143 | 92 | 23 | 13 | 7 | 8 | 14 |
| Youngstown, Ohio | 64 | 52 | 8 | 2 | 1 | 1 | 3 | San Francisco, Calif. | 171 | 100 | 23 | 41 | 2 | 4 | 1 |
| W.N. CENTRAL | 734 | 540 | 114 | 47 | 24 | 9 | 29 | San Jose, Calif. | 141 | 101 | 21 | 10 | 7 | 2 | 14 |
| Des Moines, Iowa | 118 | 88 | 20 | 2 | 6 | 2 | 8 | Santa Cruz, Calif. | 34 | 28 | 3 | 3 | - | - | 5 |
| Duluth, Minn. | 16 | 10 | 5 | - | - | 1 | - | Seattle, Wash. | 135 | 93 | 20 | 13 | 6 | 3 | 3 |
| Kansas City, Kans. | 18 | 13 | 4 | - | - | 1 | 1 | Spokane, Wash. | 58 | 44 | 8 | 3 | 2 | 1 | 10 |
| Kansas City, Mo. | 126 | 92 | 20 | 9 | 5 | - | 1 | Tacoma, Wash. | 53 | 45 | 4 | 4 | - | - | 5 |
| Lincoln, Nebr. | 30 | 24 | 4 | 1 | 1 | - | 2 | TOTAL | 10,388 [§] | 6,724 | 1,936 | 1,077 | 357 | 285 | 561 |
| Minneapolis, Minn. | 173 | 128 | 26 | 15 | 2 | 2 | 13 | | | | | | | | |
| Omaha, Nebr. | 73 | 52 | 12 | 7 | 1 | 1 | - | | | | | | | | |
| St. Louis, Mo. | 104 | 77 | 11 | 9 | 5 | 2 | 4 | | | | | | | | |
| St. Paul, Minn. | 39 | 26 | 9 | 3 | 1 | - | - | | | | | | | | |
| Wichita, Kans. | 37 | 30 | 3 | 1 | 3 | - | - | | | | | | | | |

*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.

MDR-TB Outbreak — Continued

tion fragment length polymorphism analysis had the same DNA pattern, suggesting transmission of a common strain.

During November 1991, tuberculin skin tests (TSTs) were administered to the 21 health-care workers (HCWs) with negative TSTs in the previous year but who were regularly assigned to the HIV inpatient unit. Of these, TSTs were reactive (i.e., ≥ 5 mm induration) for 12 (57%): seven nurses, four aides, and one clerical worker. Chest roentgenograms performed on all TST-reactive HCWs were negative, and none had become symptomatic as of mid-July 1992. HCWs had not used respiratory protection during the period transmission was documented (January 1991–March 1992).

Hospital charts of all persons with MDR-TB were reviewed to determine patients' HIV status, drug use, and previous history of TB diagnosis and hospitalization. TB was not initially suspected in 16 case-patients, and acid-fast bacillus (AFB) precautions either had not been used or were instituted late during hospitalization. Health-care workers observed that MDR-TB patients (before and/or after diagnosis) frequently left their rooms to visit other patients, meet visitors, or walk to the day room. Doors to the patient rooms in the HIV ward were frequently left open.

An environmental investigation of the ventilation system for the HIV unit revealed that all rooms were at positive pressure with respect to the hall. The exhaust vents were nonfunctional because they were obstructed with dust and dirt.

Control measures implemented since January 1991 have included repairs of the ventilation system and restoration of negative pressure to the isolation rooms, educating clinicians regarding the need to consider TB in all patients with fever and respiratory symptoms, institution of AFB isolation (i.e., placing patients in negative-pressure rooms) for any patient with suspected or confirmed TB, and rapid microbiologic evaluation of HIV-infected patients for TB. In April 1993, the hospital opened one ward that had been modified to serve as a TB unit; all rooms meet the CDC AFB isolation room recommendations (i.e., negative pressure, at least six air exchanges per hour, and air exhausted to the outside away from intake vents, persons, and animals [1]).

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Editorial Note: Since 1989, eight nosocomial MDR-TB outbreaks have been documented by CDC in the United States (2–4; CDC, unpublished data). The outbreak described in this report involved HIV-infected patients who were not recognized as being infected with TB or were not suspected of having MDR-TB and who had been housed on a dedicated HIV ward; delays in disease recognition consequently delayed initiation of appropriate isolation (i.e., negative-pressure rooms or confinement to rooms).

In this report, HCWs also were at risk for infection. Factors that may have contributed to infection of the HCWs were the inability to properly isolate patients with MDR-TB in negative-pressure rooms, exposure to inadequately masked infectious MDR-TB patients, and/or inadequate respiratory protection of HCWs. Identification of HCWs infected with TB requires active surveillance and TST programs (1).

MDR-TB Outbreak — Continued

The findings in this report and investigation of other MDR-TB outbreaks underscore the importance of fully implementing CDC guidelines for preventing TB transmission in health-care settings (1). In one national survey, approximately 27% of U.S. hospitals had no rooms with AFB isolation facilities (5), and capabilities of many laboratories to isolate, identify, and determine antimicrobial susceptibility of *M. tuberculosis* isolates are limited (6).

The morbidity and mortality associated with MDR-TB outbreaks emphasize the need for implementation of guidelines that include 1) education of clinicians to consider TB in any patient with fever and respiratory symptoms, particularly among immunocompromised persons; 2) effective AFB isolation of suspected/confirmed TB patients; 3) early institution of effective treatment regimens; and 4) appropriate follow-up of discharged patients (7). Consideration should be given to treating all patients with directly observed therapy to insure that all antituberculous medications are taken for the full course of therapy (8). In addition, patients exposed to other patients with infectious TB for whom effective AFB isolation was not in place should be identified, evaluated for TB infection and disease, and evaluated for preventive therapy once active TB has been ruled out (1,8).

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*Epidemiologic Notes and Reports***Comprehensive Assessment of Health Needs
2 Months After Hurricane Andrew — Dade County, Florida, 1992**

On August 24, 1992, Hurricane Andrew struck southern Florida. More than 28,000 houses, mobile homes, and apartment buildings were destroyed, and approximately 107,000 additional dwellings sustained major damage (1). An estimated 180,000 persons were left homeless; insured damages were estimated at \$15.5 billion and total damages at more than \$30 billion. During the recovery period, many private and pub-

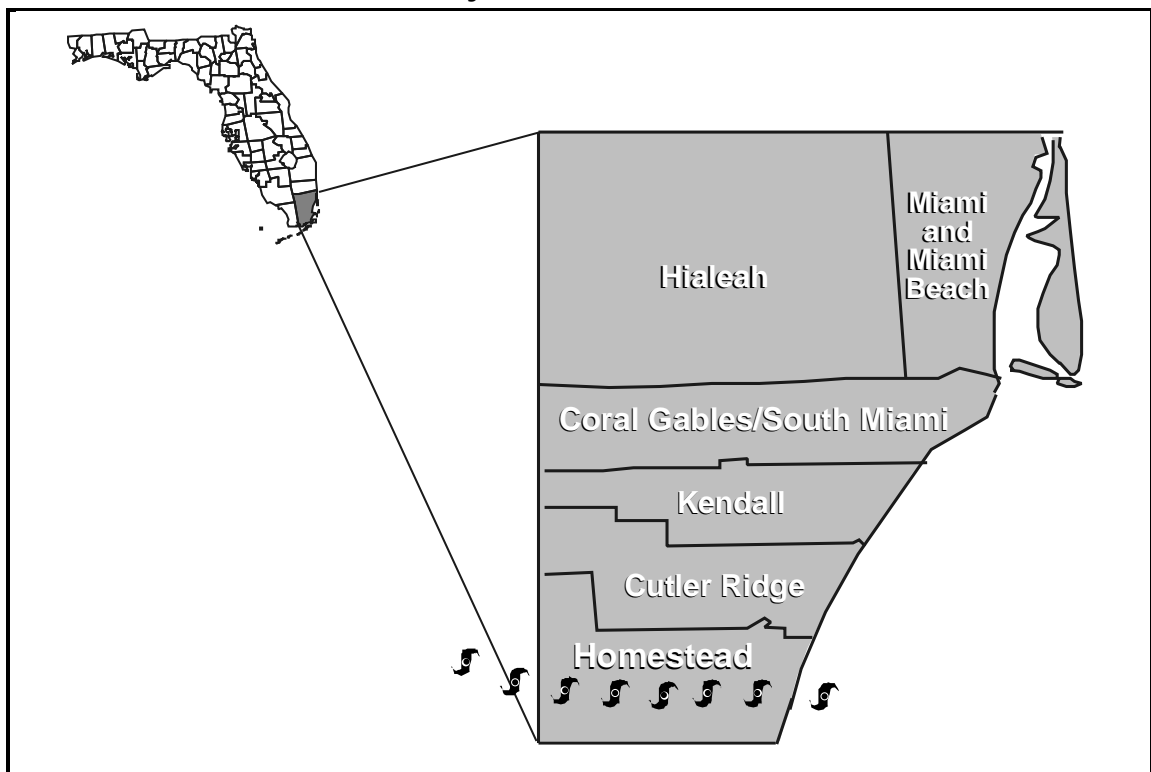
Hurricane Andrew — Continued

lic health-care facilities damaged or destroyed in the storm were not functional. During November 3–13, to help prioritize health needs and direct public health resources, the Dade County Public Health Unit of the Florida Department of Health and Rehabilitative Services conducted a survey to assess health needs and the availability of health-care services during the recovery phase with funds provided by the Federal Emergency Management Agency (FEMA). This report summarizes the results of the survey.

For this survey, the county was divided into six zones according to the extent of hurricane damage (Figure 1)—Hialeah and Miami/Miami Beach (the northernmost zones) sustained the least damage and Homestead (the southernmost zone) was affected most severely. Within each zone, a two-stage cluster design was used to randomly select households for interview. Information was obtained by interviewing one member of each selected household who was considered capable of understanding the questions. Respondents were asked about demographic characteristics, transportation, environmental problems, food supplies, health insurance status, sources of health care (primary medical, dental, mental, and emergency care), barriers to adequate care, indicators of mental health status, and evacuation behaviors.

Questionnaires were completed by 1353 (75%) of the 1800 selected households. Overcrowding (i.e., at least one new person living in the household since the storm) was greatest in the Homestead zone (38%) and decreased progressively with distance from the storm track (Table 1). The proportion of households in which at least one person had symptoms of stress or anxiety also was highest in the Homestead zone (53%) and decreased progressively to 18% in the northernmost zones. The proportion

FIGURE 1. Six zones that were established to assess health service needs following Hurricane Andrew — Dade County, Florida, 1992



Hurricane Andrew — Continued

of households reporting that at least one person needed counseling services ranged from 5% in the northernmost zone to 13% in the Homestead zone.

In the Homestead zone, 12% of households reported that at least one person had lost health insurance because of the hurricane, compared with 5%–6% for other zones in the county (Table 1). More than twice the number of households in the Homestead zone (14%) had at least one person who needed unemployment compensation than in other zones (3%–7%). Twenty-eight percent of households in the Homestead zone reported they used community or neighborhood health centers for primary health care, including preventive care, compared with 11% of households in the entire county. Use of public programs for dental care was also greatest in the Homestead zone.

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Editorial Note: Approximately every 5 years, a hurricane with catastrophic potential makes landfall in the United States (3). Hurricane Andrew was one of the most devastating in 25 years. Although hurricane warning systems in the United States are well developed, the population density in hurricane-vulnerable areas has increased substantially during the past 20 years (4). Adequate means of evacuation and safe refuge are necessary for residents in communities on barrier islands and other vulnerable coastal communities to minimize injury and death associated with future hurricanes. However, as the findings in this report indicate, even if effective evacuation procedures are in place, the long-term health and economic impact of hurricanes may be substantial.

This assessment indicates that 2 months after Hurricane Andrew, unmet health needs—particularly mental health—persisted in Dade County. This information has

TABLE 1. Key findings* from comprehensive assessment of health needs 2 months after Hurricane Andrew, by zone — Dade County, Florida, 1992

| Zone | Households with new member(s) since storm | | Households in which at least one person had indicators of stress or anxiety | | Households in which one person lost health insurance because of storm | |
|--------------------------|---|-----------------------|---|----------------|---|---------------|
| | % | (95% CI) [†] | % | (95% CI) | % | (95% CI) |
| Hialeah | 17 | (11–23) | 18 | (12–25) | 5 | (2– 8) |
| Miami/Miami Beach | 15 | (10–20) | 18 | (14–22) | 5 | (3– 8) |
| Coral Gables/South Miami | 23 | (17–28) | 22 | (16–27) | 5 | (2– 8) |
| Kendall | 23 | (18–28) | 39 | (32–46) | 6 | (3– 9) |
| Cutler Ridge | 26 | (20–32) | 46 | (39–53) | 6 | (3– 9) |
| Homestead | 38 | (30–45) | 53 | (46–60) | 12 | (8–16) |
| Entire county | 19 | (17–22) | 24 | (21–26) | 6 | (4– 7) |

* Data were entered and analyzed using a module in Epi Info (2) for analyzing complex sample survey data to adjust variance estimates and allow weighting of the results using 1990 census information.

[†] Confidence interval.

Hurricane Andrew — Continued

been used to target health services more effectively, particularly in areas with a high degree of dependence on public programs. Based in part on these findings, community health centers in southernmost zones were rebuilt and enlarged. Health and social services also were expanded through community health teams that provided vaccinations, counseling, information on financial assistance and health and social services.

Health needs assessments during the early part of the recovery phase are effective in ensuring that decisions regarding the allocation of resources are based on actual needs (5). In both Florida and Louisiana, rapid needs assessments conducted 3–10 days after the storm were used to direct relief efforts in the early part of the recovery phase (6). This survey is the first for which FEMA has allocated relief funds for evaluating health-care needs and resources in the latter part of a recovery phase of a disaster. A second survey to further guide continued recovery efforts is planned.

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*Current Trends***Adult Blood Lead Epidemiology and Surveillance —
United States, First Quarter, 1993**

The Adult Blood Lead Epidemiology and Surveillance (ABLES) program of CDC's National Institute for Occupational Safety and Health (NIOSH) monitors elevated blood lead levels (BLLs) in adults through laboratory reports received by state-based surveillance programs and summarizes these results quarterly in *MMWR* (Table 1). The goals of ABLES are to 1) describe the magnitude of occupational lead poisoning, 2) monitor trends in the incidence and prevalence of this condition, 3) identify new or unrecognized sources of lead exposure, 4) focus public health attention on this ongoing problem, and 5) effectively target worksites for intervention to reduce excessive lead exposure.

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*Lead Epidemiology and Surveillance — Continued***TABLE 1. Reports of elevated blood lead levels (BLLs) in adults — 16 states,* first quarter, 1993**

| Reported BLL ($\mu\text{g/dL}$) | First quarter, 1993 | Cumulative, 1993 | Cumulative, 1992† |
|--------------------------------------|---------------------|------------------|-------------------|
| 25–39 | 3,360 | 3,360 | 15,279 |
| 40–49 | 846 | 846 | 4,288 |
| 50–59 | 162 | 162 | 1,089 |
| ≥60 | 79 | 79 | 585 |
| Total | 4,447 | 4,447 | 21,241 |

*Alabama, Connecticut, Illinois, Iowa, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Oregon, South Carolina, Texas, Utah, Vermont, and Wisconsin.

†Cumulative totals for 1992 include data from Colorado and Pennsylvania, which provide only annual reports.

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Editorial Note: State-based ABLES programs recognize that parents' exposure to lead at the workplace can be a source of "take-home" exposure (e.g., contaminated clothing, automobiles, and other items brought home from the worksite) for their children (1). During case follow-up of lead-poisoned workers, states participating in the ABLES program gather information on the children and/or other at-risk family members living in the household; when appropriate, children are referred for blood lead monitoring.

Conversely, cases of lead poisoning in children detected through community lead screening efforts may provide important information regarding parental occupational exposure to lead. For example, in 1991, the first year of the Alabama lead surveillance program, follow-up reports for 46 children aged 6 months–16 years with BLLs >15 $\mu\text{g/dL}$ revealed that 11 (24%) had a potential parental occupational source for their lead exposure (C. Woernle, Alabama Department of Public Health, personal communication, 1993). Similarly, follow-up investigation of two siblings (aged 3 and 7 years) in Colorado with BLLs of 38 and 36 $\mu\text{g/dL}$, respectively, found that the children received day care at their parents' radiator repair shop. In addition, the parents regularly wore lead-contaminated clothing home (J. McCammon, Colorado Department of Health, personal communication, 1993). The father's BLL was 52 $\mu\text{g/dL}$, and the mother's, 20 $\mu\text{g/dL}$; a co-worker at the shop had a level of 79 $\mu\text{g/dL}$. The overall magnitude of take-home lead exposure and the frequency at which children are exposed to lead through parental contact with lead at work or at home remain unknown.

Compliance with current Occupational Safety and Health Administration (OSHA) standards mandates the removal of lead-contaminated protective clothing and shoes before leaving the workplace, which should substantially reduce or eliminate these

Lead Epidemiology and Surveillance — Continued

take-home exposures (2). Furthermore, a new interim final OSHA standard on “Lead Exposure in Construction” (effective June 3, 1993) extends regulatory coverage to workers in the construction trades, providing health and safety provisions similar to those required under the OSHA lead standard for general industry (3).

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