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Cigarette Smoking Among Adults — United States, 1995

One of the national health objectives for 2000 is to reduce the prevalence of cigarette smoking among adults to no more than 15% (objective 3.4) (*1*). To assess progress toward meeting this objective, CDC analyzed self-reported information about cigarette smoking among U.S. adults from the Year 2000 Objectives Supplement of the 1995 National Health Interview Survey (NHIS). This report summarizes the findings of this analysis, which indicate that, in 1995, 24.7% (47.0 million) of adults were current smokers.

The 1995 NHIS was administered to a nationally representative sample (n=17,213) of the U.S. noninstitutionalized civilian population aged ≥18 years; the overall response rate for the supplement was 80.9%. Participants were asked, "Have you smoked at least 100 cigarettes in your entire life?" and "Do you now smoke cigarettes every day, some days, or not at all?" Current smokers were persons who reported having smoked ≥100 cigarettes during their lifetimes and who smoked every day or some days at the time of interview. Former smokers were those who had smoked ≥100 cigarettes during their lifetimes but who did not smoke currently. Interest in quitting was determined by asking current smokers, "Would you like to completely quit smoking cigarettes?" Attempts to quit were determined by asking current every-day smokers, "During the past 12 months, have you stopped smoking for one day or longer?" Data were adjusted for nonresponse and weighted to provide national estimates. Confidence intervals (CIs) were calculated using SUDAAN.

In 1995, an estimated 47.0 million adults (24.7% [95% CI=±0.8 percentage points]), including 24.5 million men (27.0% of adult men [95% CI=±1.2]), were current smokers (Table 1). Overall, 20.1% (95% CI=±0.8) were every-day smokers, and 4.6% (95% CI=±0.4) were some-day smokers (every-day smokers constituted 81.2% [95% CI=±1.5] of all smokers). Prevalences of current smoking were higher among American Indians/Alaskan Natives (36.2% [95% CI=±10.6]), non-Hispanic blacks (25.8% [95% CI=±2.6], and non-Hispanic whites (25.6% [95% CI=±1.0]) than among Hispanics (18.3% [95% CI=±1.8]) and Asians/Pacific Islanders (16.6% [95% CI=±4.6]). Current smoking prevalence was highest among persons with nine to 11 years of education (37.5% [95% CI=±2.9]) and lowest among persons with ≥16 years of education (14.0% [95%

Cigarette Smoking — Continued

TABLE 1. Percentage of persons aged ≥18 years who were current cigarette smokers*, by selected characteristics — United States, Year 2000 Objectives Supplement of the National Health Interview Survey, 1995

	Men (n=7,423)		Women (n=9,790)		Total (n=17,213)	
Characteristic	**%**	**(95% CI†)**	**%**	**(95% CI)**	**%**	**(95% CI)**
Race/Ethnicity§						
White, non-Hispanic	27.1	(± 1.5)	24.1	(± 1.3)	**25.6**	**(± 1.0)**
Black, non-Hispanic	28.8	(± 3.7)	23.5	(± 3.1)	**25.8**	**(± 2.6)**
Hispanic	21.7	(± 2.9)	14.9	(± 2.1)	**18.3**	**(± 1.8)**
American Indian/ Alaskan Native¶	37.3	(±17.2)	35.4	(±13.9)	**36.2**	**(±10.6)**
Asian/Pacific Islander	29.4	(± 8.6)	4.3	(± 3.1)	**16.6**	**(± 4.6)**
Education (yrs)**						
≤8	28.4	(± 4.2)	17.8	(± 2.8)	**22.6**	**(± 2.5)**
9–11	41.9	(± 4.4)	33.7	(± 3.5)	**37.5**	**(± 2.9)**
12	33.7	(± 2.3)	26.2	(± 1.8)	**29.5**	**(± 1.4)**
13–15	25.0	(± 2.6)	22.5	(± 2.2)	**23.6**	**(± 1.6)**
≥16	14.3	(± 1.8)	13.7	(± 1.8)	**14.0**	**(± 1.4)**
Age group (yrs)						
18–24	27.8	(± 3.9)	21.8	(± 3.0)	**24.8**	**(± 2.4)**
25–44	30.5	(± 1.8)	26.8	(± 1.6)	**28.6**	**(± 1.2)**
45–64	27.1	(± 2.1)	24.0	(± 2.0)	**25.5**	**(± 1.5)**
≥65	14.3	(± 2.1)	11.5	(± 1.5)	**13.0**	**(± 1.3)**
Poverty status††						
At or Above	25.9	(± 1.3)	21.8	(± 1.1)	**23.8**	**(± 0.9)**
Below	36.9	(± 4.3)	29.3	(± 2.9)	**32.5**	**(± 2.5)**
Unknown	26.9	(± 5.7)	21.0	(± 3.5)	**23.5**	**(± 3.2)**
Total	**27.0**	**(± 1.2)**	**22.6**	**(± 1.1)**	**24.7**	**(± 0.8)**

*Persons who reported having smoked ≥100 cigarettes and who reported now smoking every day or some days. Excludes 104 respondents for whom smoking status was unknown.
†Confidence interval.
§Excludes 192 respondents in unknown, multiple, and other racial/ethnic categories.
¶Wide variances on estimates reflect the small sample sizes.
**Persons aged ≥25 years. Excludes 60 persons with unknown years of education.
††Poverty statistics are based on definitions developed by the Social Security Administration in 1964 (which were subsequently modified by federal interagency committees in 1969 and 1980) and prescribed by the Office of Management and Budget as the standard to be used by federal agencies for statistical purposes.

CI=±1.4]) and was higher among persons living below the poverty level* (32.5% [95% CI=±2.5]) than among those living at or above the poverty level (23.8% [95% CI=±0.9]).

In 1995, an estimated 44.3 million adults (23.3% [95% CI=±0.8]) were former smokers, including 25 million men and 19.3 million women. Former smokers constituted 48.6% (95% CI=±1.4) of persons who had ever smoked at least 100 cigarettes. Among current smokers in 1995, an estimated 32 million (68.2% [95% CI=±1.8]) wanted to quit smoking completely, and 17.3 million (45.8% [95% CI=±2.0]) current every-day smokers had stopped smoking for at least 1 day during the preceding 12 months.

*Poverty statistics are based on definitions developed by the Social Security Administration in 1964 (which were subsequently modified by federal interagency committees in 1969 and 1980) and prescribed by the Office of Management and Budget as the standard to be used by federal agencies for statistical purposes.

Cigarette Smoking — Continued

Reported by: Epidemiology Br, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.

Editorial Note: The prevalence of smoking in 1995 (24.7% [95% CI=±0.8]) was similar to that in 1994 (25.5% [95% CI=±0.7]) (*2*). The findings in this report and previous trends (*3*) suggest that the goal of reducing the prevalence of cigarette smoking among adults to ≤15% by 2000 will not be attained. Smoking prevalence can be reduced by decreasing the rate of smoking initiation and by increasing the rate of smoking cessation. Methods for decreasing the rate of smoking initiation among adolescents include increases in prices of tobacco products, education, counter advertising campaigns, and efforts to restrict access to and limit the appeal of tobacco products (*4*).

Effective efforts to assist smokers to quit permanently produce substantial and immediate health and economic benefits (*5*). Despite the desire of most smokers to stop smoking completely and the existence of proven interventions (*6*), most smokers may not have easy access to such interventions. One of the national health objectives for 2000 is to increase to 100% the proportion of health plans that offer treatment for nicotine addiction (objective 3.24) (*1*). Based on a survey of 105 large health-maintenance organizations in 1995, a substantial proportion (two thirds) reported offering some level of smoking-cessation program or product as a covered member service (*7*). However, coverage of cessation services and products was subject to restrictions; for example, only 23% of plans covered nicotine replacement therapy (NRT) as a standard drug benefit (*7*). Indemnity plans are less likely than managed-care plans to cover preventive services such as smoking cessation (*8*). In addition, more than half of corporations self-insure for their employees' health insurance benefits, and few corporations include coverage for smoking-cessation services in their benefit designs (*8*). As of March 1997, only five state Medicaid programs provided reimbursement for smoking-cessation counseling or group programs (L. Dixon, Health Policy Tracking Service, National Conference of State Legislatures, personal communication, 1997). Although Medicare pays for medically necessary services furnished by a physician or other Medicare provider, it does not pay for either special smoking-cessation programs or for over-the-counter drugs, including NRT (J. Stieber, Office of Legislation, Health Care Financing Administration, US Department of Health and Human Services, personal communication, 1997).

Advice from health-care providers to smokers to quit smoking increases cessation rates by 30% (*6*), and guidelines published by the Agency for Health Care Policy and Research state that all smokers should be advised by their health-care provider to quit (*6*). In addition, one of the national health objectives for 2000 is to increase to at least 75% the proportion of primary-care and oral health-care providers who routinely advise cessation and provide assistance and follow-up for tobacco-using patients (objective 3.16) (*1*). In 1996, for the first time, the Health Plan Employer Data Information Set (HEDIS), a managed-care "report card," included a measure of smokers' receipt of medical advice to quit.[†] In 1996, the plan average for smokers reporting receipt of advise from health-care providers to quit was 61%; however, advice rates were as low as 30% for some plans (*9*).

[†]The source for data contained in this article is Quality Compass™ and is used with the permission of the National Committee for Quality Assurance (NCQA). Any analysis, interpretation, or conclusion based on these data is solely that of CDC, and NCQA specifically disclaims responsibility for any such analysis, interpretation, or conclusion.

Cigarette Smoking — Continued

Racial/ethnic variations in smoking prevalence are influenced by differences in educational level and cultural factors (e.g., the ceremonial use of tobacco among American Indians). Proven smoking-cessation treatments need to be culturally and language-appropriate (*6*).

Effective smoking-cessation interventions are less costly than other preventive medical interventions (e.g., treatment of hypercholesterolemia) (*10*). Although all proven types of cessation are cost-effective, those involving more intense counseling and the nicotine patch are most cost-effective (*10*). The prevalence of current smoking can be decreased by intensifying efforts to establish proven smoking cessation treatments (both pharmacotherapy and counseling) as a covered medical benefit and to reimburse clinicians for providing effective cessation interventions (*6*). Other priorities include the needs to train health-care providers and health-system administrators about the current cessation guideline recommendations, evaluate cessation interventions for children and adolescents, and better inform smokers about the availability and variety of proven smoking-cessation interventions.

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Use of Unvented Residential Heating Appliances — United States, 1988–1994

Many heating appliances rely on combustion of carbon-based fuels and therefore are potential sources of health-threatening indoor air pollution. Most combustion heating appliances are vented to the outside of buildings to facilitate removal of the products of combustion, which include carbon monoxide (CO), carbon dioxide, nitrogen dioxide, and water vapor (*1*). However, some combustion heating devices may be unvented (e.g., kerosene- and propane-fueled space heaters, some gas-fueled log sets, and cooking devices used improperly for heating), and the use of such unvented devices in closed settings may be associated with risks for exposure to toxic gases and other emissions. This report presents an analysis of data from the Third National Health and Nutrition Examination Survey (NHANES III) to estimate the number and regional distribution of adults using unvented residential heating appliances and stoves or ovens misused as heating devices in the United States during 1988–1994. The findings indicate that the percentage of adults using these devices was higher in the South, among low-income groups, among blacks, and among rural residents, and underscore the need for public education about the health risks associated with exposure to elevated levels of combustion by-products.

NHANES III collected data from approximately 20,000 adults about household characteristics, including the prevalence of various types of residential heating appliances, the use of unvented combustion space heaters, and use of stoves or ovens specifically for heating during the previous year. NHANES weights (*2*) were used to obtain national estimates based on these responses. Because responses by race/ethnicity other than for whites and blacks were too small for reliable estimates, responses from all others were combined.

National Estimates

During 1988–1994, an unvented combustion space heater was used by an estimated 13.7 million adults, and electric space heaters were used by 23.1 million adults; space heaters were not used by 150.4 million adults. Unvented combustion space heaters were used more commonly by adults living in rural areas than by those living in urban areas (10.0 million [10.6%] compared with 3.7 million [4.0%]), by adults with an annual household income ≤$20,000 (low income) than by adults with an annual household income >$20,000 (high income) (9.3% compared with 6.3%), and by black adults (11.0%) than by white adults (7.0%) or by adults of all other races (3.7%). In each income group, household use of these devices was reported more commonly by blacks than whites (low income: 12.2% compared with 9.1%; and high income: 9.6% compared with 6.1%).

Of the estimated 83.1 million adults who used a gas stove or oven for cooking, approximately 7.7 million (9.3%) had used the stove or oven for heat at least once during the previous year. Improper use of the stove or oven as a heating device was more common among rural than among urban residents (12.2% compared with 7.4%). Stoves or ovens were used for heating in approximately 14.5% of low-income households compared with 6.1% of high-income households. Use of gas stoves and ovens as heating devices was reported more commonly by black adults (15.6%) than by white adults (8.1%) or by adults of other races (9.2%).

Unvented Residential Heating Appliances — Continued

Regional Estimates

Unvented combustion space heaters were used by an estimated 13.2% of adults in the South; 5.9%, in the Midwest; 4.2%, in the Northeast; and 2.5%, in the West.* The types of fuel used in combustion space heaters also varied by region (Figure 1), with propane being used predominantly in the South. Low-income households in the South and West used unvented combustion heating appliances more frequently than did high-income households in those regions (in the South: 16.3% compared with 11.2%; and in the West: 3.8% compared with 2.0%). Use of unvented combustion heating appliances was similar in low-income households and high-income households in the Midwest and Northeast (in the Midwest, 6.0% compared with 5.8%, and in the Northeast, 4.2% compared with 4.2%).

Use of a gas stove or oven as a heating device was higher among adults in the South (14.4%) than in any other region (West, 8.7%; Northeast, 7.6%; and Midwest, 5.9%). In all regions, the use of such devices in low-income households was approximately twice that in high-income households.

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Editorial Note: Unvented combustion appliances and gas stoves or ovens improperly used as heating devices often produce levels of combustion by-products that exceed acceptable limits (*1,3*), degrade indoor air quality, and may cause unnecessary exposure to toxic gases such as CO. Unintentional, nonfire, nonautomobile poisonings from CO exposure in permanent dwellings result in approximately 200 deaths and 5900 injuries (treated in emergency departments) annually (K. Long, U.S. Consumer Product Safety Commission, memorandum to E. Leland, September 4, 1996). Symptoms characteristic of CO poisoning include headache, nausea, fatigue, weakness, abdominal pain, and confusion. Severe poisoning may result in seizures, coma, and death (*4*).

The findings in this report indicate that, although the use of unvented combustion heating appliances is common throughout the United States, the percentage of adults using these devices is higher in the South, among low-income groups, among blacks, and among rural residents. Because these estimates are based on adults reporting usage of these appliances and may not reflect the true prevalence of household use, the number of persons potentially exposed may be underestimated. The increased race-specific usage among blacks reflects, in part, a higher percentage of blacks living in the South (18.2%) compared with the Northeast (9.9%), Midwest (9.4%) and West (5.4%). These findings also indicate that the use of gas stoves and ovens as heating devices is common, especially among low-income and rural residents, even though these appliances were not designed or intended for such purposes (*2*).

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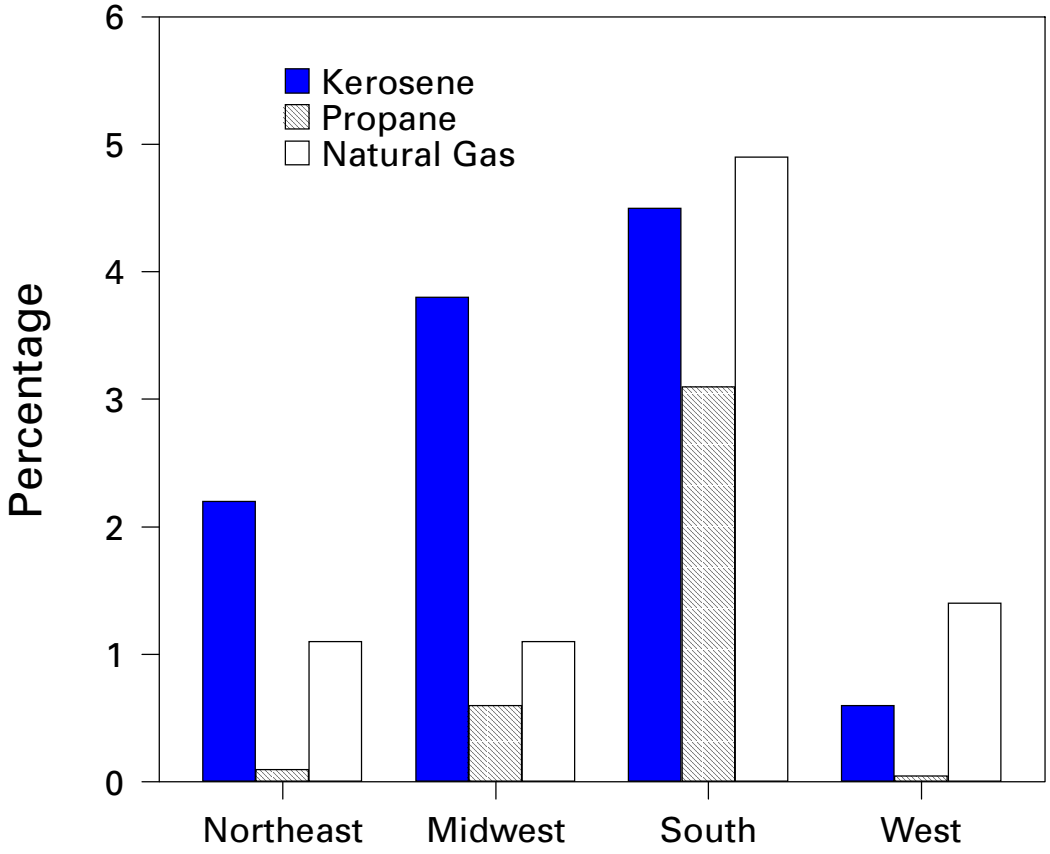
* *Northeast*=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; *Midwest*=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; *South*=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and *West*=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Unvented Residential Heating Appliances — Continued

FIGURE 1. Percentage of households using unvented combustion heaters, by type of fuel, stratified by region* — United States, Third National Health and Nutrition Examination Survey, 1988–1994



* *Northeast*=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; *Midwest*=Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; *South*=Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and *West*=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Since 1992, use of unvented combustion heaters has increased because in many states, regulations prohibiting the use of these devices have been rescinded. As of November 1997, five states prohibit the use of unvented gas-fueled or liquid-fueled heaters (Alaska, Massachusetts, and Minnesota; and Colorado and Utah at high altitude only) (M. Carson, Vent-Free Gas Products Association, personal communication, December 2, 1997). Manufacturers recommend that these devices be used for short periods of time with a nearby window open for ventilation (*5*; M. Carson, Vent-Free Gas Products Association, personal communication, December 2, 1997). Failure to follow these instructions could result in elevated levels of combustion by-products.

Both unvented and vented heating appliances must be properly maintained to reduce the risk for associated health hazards. Persons who use unvented combustion space heaters should follow manufacturers' recommendations and use these devices only for short periods in well-ventilated areas to prevent the accumulation of toxic

Unvented Residential Heating Appliances — Continued

gases in living spaces. Other prevention strategies include conducting media campaigns detailing the potential hazards of unvented combustion space heaters during the colder months and encouraging the proper use of CO detectors in homes.

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Outdoor Carbon Monoxide Poisoning Attributed to Tractor Exhaust — Kentucky, 1997

Carbon monoxide (CO) intoxication is a common cause of reported unintentional fatal poisonings in the United States (*1*). From 1979 through 1988, an average of 1140 deaths per year were attributed to unintentional CO poisoning (*2*). Most of these deaths resulted from exposures in enclosed spaces; CO poisoning associated with outdoor activities occurs rarely. This report describes the investigation of CO poisoning in a farmer in Kentucky resulting from exposure to exhaust from a tractor in an open field and provides recommendations for preventing similar exposures.

In June 1997, a 37-year-old female farmer who had been working in a field for 5 hours was admitted to a Kentucky hospital emergency department (ED) because of CO inhalation, dehydration, and heat exhaustion. A nurse from the Community Partners for Healthy Farming (CPHF) Project* was notified of the incident, and an investigation was conducted by the CPHF nurse, staff from the Kentucky Injury Prevention and Research Center (KIPRC), and CDC's National Institute for Occupational Safety and Health (NIOSH).

At 1 p.m. on June 20, the woman and two family members who were co-workers on a family farm began planting tobacco in a 4½-acre field. The outdoor ambient temperature exceeded 90 F (32 C), with humid conditions and minimal breeze. The woman and one co-worker (co-worker A) rode on a two-seat tobacco setter, a device on which workers sit side by side with their backs to the tractor and set tobacco plants into the ground as the tractor tows the setter at 2–3 mph. The tractor was driven by the other co-worker (co-worker B). The woman sat on the side nearest the tractor's exhaust

*CPHF is a national program conducted by CDC's National Institute for Occupational Safety and Health (NIOSH) that brings together rural communities with researchers and state health departments. NIOSH supports 16 such surveillance and intervention research projects to assist in reducing the risk for occupational illness and injury in agricultural populations.

Outdoor Carbon Monoxide Poisoning — Continued

pipe, which was beneath the tractor and directed exhaust gases toward the setter riders.

By 4 p.m., both the woman and co-worker A had had onset of headaches, and the woman reported dizziness and fatigue. Co-worker A stopped work at 4:30 p.m., at which time another family member (co-worker C) replaced him on the setter. The woman continued to work despite an increasingly severe headache, drowsiness, and dizziness. Her co-workers noticed that she appeared drowsy and had begun to fail setting some of the plants, a task requiring good hand-eye coordination; however, the woman insisted on continuing the job. At 6:30 p.m., she collapsed while on the setter.

Co-worker B notified emergency medical services (EMS) at 7:30 p.m., reporting that he thought the woman had CO poisoning. Initial vital signs, obtained by EMS at 7:42 p.m., were blood pressure, 140/100 mm Hg; heart rate, 96 beats per minute; and respiratory rate, 20 breaths per minute. She was transported to the local ED, where she reported dizziness, light headedness, headache, nausea, "heart pounding," and wheezing. Diagnostic studies were initiated and treatment instituted, including 100% oxygen through a non-rebreathing mask and intravenous fluids; albuterol was administered because of a history of asthma. Her initial arterial carboxyhemoglobin (COHb) level was 23.3% (normal COHb concentrations are <2% for nonsmokers and 5%–9% for smokers). All other laboratory and diagnostic tests were normal. Repeat COHb at 11:05 p.m. was 7.2%, and she was discharged from the ED at 12:10 a.m.

During the follow-up investigation, environmental CO sampling was performed. With the tractor stationary and its engine running, a monitor was placed where someone working on the setter would sit; CO levels of an average of 477 parts per million (ppm) were detected during a 15-minute sampling period.[†] Four other gasoline-powered tractors with comparable exhaust configurations, manufactured between 1947 and 1979 (the tractor used while the woman was working was manufactured in 1967), were similarly tested. Fifteen-minute CO levels were 38, 364, 507, and 706 ppm. Tests conducted on a diesel-powered tractor resulted in zero ppm CO for the 15-minute testing period. Finally, CO sampling performed using the woman's equipment and simulating planting procedures detected levels of 384 ppm in 15 minutes.

Reported by: TW Struttmann, MSPH, V Brandt, A Scheerer, MSPH, Kentucky Injury Prevention and Research Center; Southeast Center for Agricultural Health and Injury Prevention, Univ of Kentucky, Lexington; R Leach, MD, Commissioner, Dept for Public Health, Kentucky Cabinet for Health Svcs. Div of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, CDC.

Editorial Note: CO is a colorless, odorless gas that induces its toxic effects by binding to hemoglobin to form COHb. Because the affinity between hemoglobin and CO is substantially greater than that of hemoglobin and oxygen, CO does not dissociate from hemoglobin as readily as does oxygen, which results in a reduction of oxygen-carrying capacity and tissue hypoxia. Diagnosis of CO poisoning may be missed or delayed because symptoms are nonspecific (e.g., headache, dizziness, weakness, nausea, visual disturbances, confusion, dry mouth, diarrhea, and vomiting) (*1,5*). The relations among CO exposure, COHb levels, and symptoms are functions of 1) the concentration of CO in the environment; 2) the duration of exposure to CO; and 3) the

[†]The NIOSH-recommended ceiling limit for CO exposure, which should not be exceeded at any time, is 200 ppm (*4*). The Occupational Safety and Health Administration permissible exposure limit for CO is 50 ppm as an 8-hour time-weighted average (*3*), and the NIOSH-recommended exposure limit for CO is 35 ppm as an 8-hour time-weighted average (*4*).

Outdoor Carbon Monoxide Poisoning — Continued

interval between exposure and clinical assessment (*1*). Although the first measured COHb level in the patient described in this report was 23.3%, based on back-extrapolation (using the half lives of COHb in 100% oxygen and in room air conditions), the patient's estimated COHb probably exceeded 40% at the end of her exposure, which is consistent with her reported symptoms. Treatment recommendations for moderate to severe CO poisoning frequently include hyperbaric oxygen therapy (*6*); however, access to facilities equipped to provide such therapy may not be readily available in rural areas.

CO poisoning is rare in nonenclosed spaces. In the on-site investigation of this case, other possible sources of exposure to CO (e.g., home appliances and motor vehicles) were sought but not identified. On the day of this episode, the woman had smoked four to five cigarettes. Although she and her co-workers had used the equipment on previous occasions, none had reported symptoms of CO poisoning. Co-worker A, who reported a headache, and co-worker C, who was asymptomatic, also may have been exposed to high levels of CO during this episode; however, the duration of their exposure was shorter, and they were farther from the exhaust source during the exposure.

The risk for episodes such as that described in this report can be reduced through use of a tractor equipped with an upward-directed exhaust or by reconfiguring an existing rearward-directed exhaust system to vent upward. The cost of retrofitting the tractor involved in this case to direct its exhaust upward would be approximately $576 for parts, with additional costs for installation. Additional precautions to prevent excessive exposure, particularly if such structural modifications are prohibitive, should include informing workers of the potential hazard and alerting them to the symptoms of CO poisoning; encouraging workers to take frequent breaks; rotating positions to limit exposure time; and promptly removing workers from exposure if any symptoms appear. Although emissions may be reduced by keeping the engine properly tuned, this measure is not a substitute for other preventive measures. Use of diesel tractors may be associated with a smaller risk for CO poisoning than gasoline models. Health-care providers in regions where similar equipment is used (e.g., in orchards, tree planting, and strawberry and tomato operations) should consider CO poisoning when workers present with characteristic symptoms, and a thorough occupational history should be obtained. Other agricultural occupationally associated illnesses mimicking CO poisoning are pesticide poisoning, heat stroke, dehydration, and green tobacco sickness.

In this investigation, only five additional tractors (including only one diesel) were monitored for potential CO exposure. Because these tractors were monitored in a stationary position, the results may not represent actual CO exposure during the setting process, and weather conditions during testing may not have duplicated those during the episode. To assess the broader implications of this episode, the CPHF project and NIOSH will continue active surveillance for similar cases and will monitor CO emissions on a larger sample of tractors with rear-directed and upward-directed exhaust systems. The Kentucky Department for Public Health through KIPRC will disseminate information on CO poisoning to health-care professionals, poison-control centers, equipment manufacturers, and agricultural safety organizations. The Kentucky Cooperative Extension Service will disseminate information on potential hazards and prevention measures to farm operators and workers. Information about cases identified

Outdoor Carbon Monoxide Poisoning — Continued

in other states can assist in estimating and evaluating the extent of this hazard and can be reported to the KIPRC, telephone (606) 257-4955.

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As part of its commemoration of CDC's 50th anniversary in July 1996, MMWR *is reprinting selected* MMWR *articles of historical interest to public health, accompanied by current editorial notes. Reprinted below is a report dated March 6, 1971, and released March 12 as a rare supplement. This report was the first publication presenting information about what would later be recognized as the largest and most lethal known outbreak of nosocomial infection associated with widespread distribution of a contaminated medical product in the United States. The report demonstrates the benefit of the emphasis that CDC had placed on nosocomial infection surveillance and control programs starting in the 1960s and illustrates the importance of being able to rapidly assemble data from multiple, widely scattered sites to resolve complex outbreaks.*

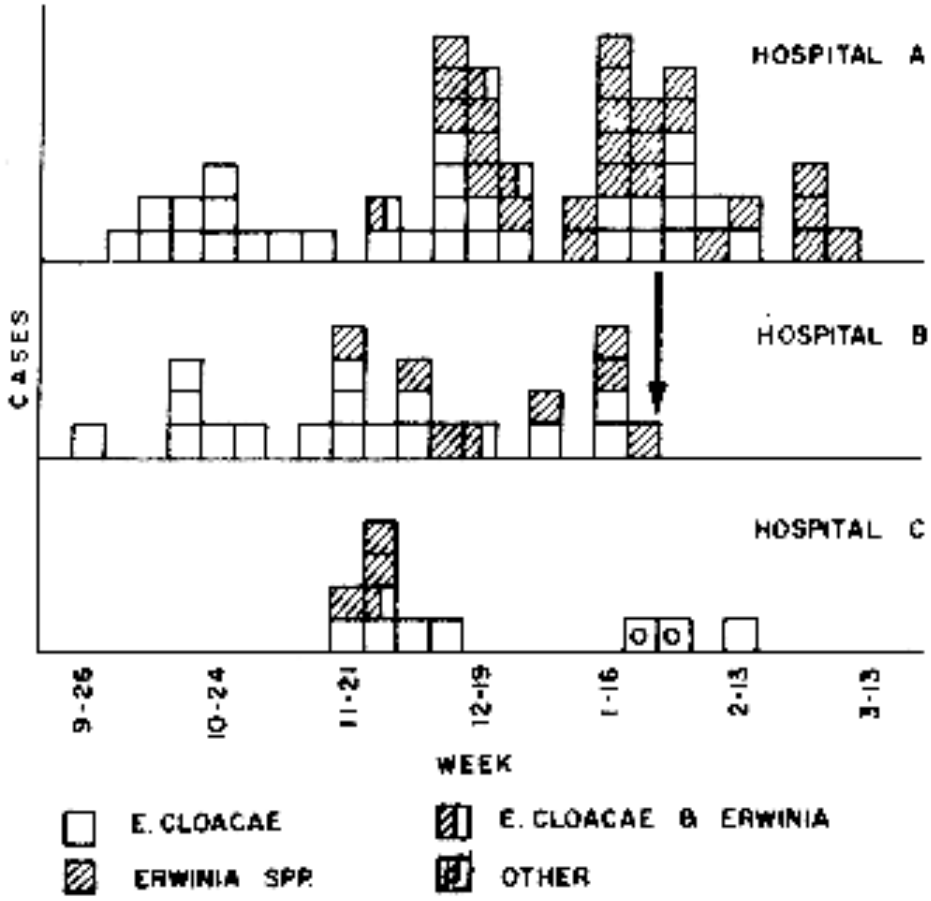
EPIDEMIOLOGIC NOTES AND REPORTS
NOSOCOMIAL BACTEREMIAS ASSOCIATED WITH INTRAVENOUS FLUID THERAPY — USA

Between October 1970 and March 1, 1971, eight United States Hospitals in seven states experienced 150 bacteremias caused by *Enterobacter cloacae* or Gram-negative organisms of the Erwinia group. There were nine deaths; all were associated with intravenous (IV) fluid therapy. The Enterobacter bacteremias in all hospitals were substantially increased as compared to previous time periods. Four hospitals which isolated and identified Erwinia had not previously encountered infections with these organisms. In-depth epidemiologic investigations were performed in three of the hospitals (Figure 1).

All eight hospitals utilize fluids and systems manufactured by Abbott Laboratories, which produces approximately 45 percent of all IV fluids sold within the United States. In approximately 30 cases, the same organisms were isolated from blood cultures and

Nosocomial Bacteremias — Continued

Figure 1
IV-ASSOCIATED SEPTICEMIAS, BY WEEK OF ONSET, 1970-1971



contaminated in-use IV fluids. In hospital B (see arrow, Figure 1) no further cases were observed after discontinuance of Abbott products.

Enterobacter cloacae is occasionally encountered as an agent of bacteremia in American hospitals. However, unless fully speciated, this organism will not be identified. Erwinia, most well known as a plant pathogen, has only very rarely been isolated from human infection *(1)*. Erwinia may be confused with members of the Klebsiella-Enterobacter group, and a rather detailed series of biochemical tests, with special emphasis on decarboxylase reactions, are needed to reliably differentiate the organisms.

These septicemias were constantly characterized by intermittent high fever, although shock was infrequent. Young individuals or other patients without predisposing host factors were frequently afflicted. The great majority of cases simultaneously manifested extensive phlebitis at the site of infusion which occurred even when polyethylene catheters had been in place for only brief periods, and also occurred where only scalp vein needles were used. Discontinuance of IV therapy has resulted in dramatic clinical improvement; if such therapy is continued, however, antimicrobials have frequently been without apparent effect on the course of the infection.

Nosocomial Bacteremias — Continued

Studies of IV systems by CDC have shown a minimum of 6 percent prevalence of contamination within the tubing or bottles after the system has been in use. A significantly greater risk of contamination was noted in all systems where administration apparatus remained unchanged for greater than 48 hours. The studies also revealed that routine once-daily complete change of all IV administration apparatus, especially at the time of replacement of infusion devices (polyethylene catheters, needles, etc.) can greatly decrease the hazard of extrinsic contamination by preventing introduced organisms from propagating to dangerous levels.

Bacterial contamination of the outer surface of the insert discs (synthetic cap liner) of unopened Abbott bottles has recently been demonstrated by CDC, which ranges from 0 to 52 percent among sampled lots. Bacillis species, *S. epidermidis*, *Pseudomonas maltophillia* and yeasts have been most frequently isolated, however, *E. cloacae* or Erwinia species have been isolated from 12 of 212 caps tested. Between April and September 1970, Abbott Laboratories partially converted to a new type of cap liner.

Direct sampling of fluids from intact non-manipulated bottles by CDC has been negative, but transfer of organisms from contaminated caps to the fluid has been effected approximately 25 percent of the time by sequentially striking the cap several times, unscrewing and replacing it, and then hanging the bottle inverted for 24 to 48 hours. Transfer of organisms from contaminated caps to the fluid of bottles, where the cap has not been manipulated, has not been demonstrated, but is currently under further investigation. Once inoculated into commercial dextrose containing solutions, organisms of the Klebsiella-enterobacter group are capable of proliferating at room temperature, whereas other tested members of the Enterobacteriacae or Staphylococci either fail to grow or die.

(Reported by the Food and Drug Administration and the Center for Disease Control.)

Reference:

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Editorial Comment:

The following press release was issued March 13, 1971:

The Commissioner of Food and Drugs, Dr. Charles C. Edwards, and the Director of the Center for Disease Control, Dr. David J. Sencer, today announced that special precautions must be taken in hospitals, nursing homes, and other health care facilities to reduce the risk of septicemia from the use of Abbott Laboratories intravenous (IV) infusion products. While contamination resulting in septicemia can occur in the use of infusion products from any manufacturer, recent Abbott production appears to present a unique problem. These products will be replaced as rapidly as possible by Abbott, however, these solutions are essential for patient care and cannot be withdrawn before replacement is in hand.

A rising incidence of septicemia caused by organisms rarely associated with septicemia has been found in connection with the use of intravenous fluids in eight hospitals surveyed by the CDC. All eight were users of the Abbott infusion system. CDC has been closely examining the fluids, the infusion apparatus, and clinical reports of septicemia. The plastic liners in some Abbott bottle caps have been found contaminated by the implicated organisms. A tentative conclusion is that the organisms can enter the fluid from the plastic cap liners when the caps are opened and replaced while the bottle is held for later use. There is no evidence that the closure system allows or

Nosocomial Bacteremias — Continued

contributes to contamination before it is opened. It has been shown that when the cap has been removed and replaced that migration of bacterial organism from the cap lining may occur.

The bottles of fluid known to be involved have been manufactured from February 1970 and they bear codes beginning with 842 through 855.

Teams of experts from CDC, FDA, and Abbott Labs are reviewing all aspects of the problem. This review will be completed within a few days and it is expected that a resolution will be developed rapidly.

Meanwhile, with cooperation of the American Hospital Association, hospitals and other users of these solutions are being advised of special procedures to reduce the contamination hazard to a minimum. These procedures include: opening the containers at the point of use only; not replacing the cap; and using the contents of the containers immediately upon opening. Hospitals also are being advised to change IV apparatus at least every 24 hours. The CDC studies have demonstrated that any brand of IV apparatus is more likely to cause infection if left in place longer.

CDC and FDA conclude that the joint actions being taken are reasonable and necessary in the interest of patient care and to prevent a disruption in the availability of these essential drugs.

On the basis of the studies conducted thus far, several additional specific measures which might minimize the risk of contamination from Abbott products are recommended:

1. At the first suspicion of clinical septicemia or fever which might be associated with contaminated intravenous fluid, all existent IV apparatus should be removed and microbiologically sampled; if continued IV therapy is necessary, it should be reinitiated with entirely new equipment and solutions.
2. Bottle caps should not be struck or otherwise traumatized to effect removal. If a cap is not easily removed, the bottle should be discarded.
3. A cap should never be replaced after the bottle has been opened.

Editorial Note—1997: In December 1970, CDC's Hospital Infections Section, Bacterial Diseases Branch, first received reports of episodes of nosocomial *Enterobacter* sp. bloodstream infection (BSI). There was early concern about an association with receipt of intravenous (IV) fluids because the patients had no primary infections or cultures yielding *Enterobacter*. Initially, it was hypothesized that this was caused by the vulnerability of IV solution bottle screw-cap closures to extrinsic contamination. By January 1971, several hospitals across the United States reported patients with BSIs caused by *E. cloacae* and an organism then uncharacterized as a human pathogen, *E. agglomerans*. Furthermore, many of the episodes occurred in patients more healthy than those who ordinarily were at risk for nosocomial BSIs, and all of the hospitals used IV fluids manufactured by one company, Abbott Laboratories, Inc. On-site epidemiologic investigations were initiated at two hospitals by Epidemic Intelligence Service (EIS) officers from CDC's Hospital Infection Section. The investigations could not relate the IV-associated BSIs at these hospitals to a particular additive or to any IV system component and could not identify any defect in IV system management leading to extrinsic contamination.

In general, contamination outbreaks involve a single organism; in these investigations, two bacterial species were involved. Nevertheless, the finding of these same two unusual organisms causing BSIs at multiple hospitals decreased the likelihood of

Nosocomial Bacteremias — Continued

extrinsic contamination and raised the possibility of a common source. By February 1971, epidemic organisms were found in the caps of IV solution bottles. Opened and unopened bottles of IV solution were obtained, and cultures of these IV fluid bottles were initiated at CDC. In vitro studies documented that simple, commonly performed manipulations, such as unscrewing the cap, adding a medication, replacing the cap, and inverting the bottle for mixing would transfer the contaminating organisms from the cap to the fluid. After the warning published in *MMWR* on March 6, 1971, CDC and Food and Drug Administration (FDA) teams conducted investigations at both of the Abbott manufacturing plants (*1*). Ultimately, CDC isolated the epidemic strains directly from the solutions in 13 (0.7%) of 1825 1-liter bottles (*2*).

By March 1971, *E. cloacae* and *E. agglomerans* BSIs had been reported from eight hospitals across the United States. Approximately 20 persons at CDC were involved in assembling data from these hospitals, culturing IV bottles and working with Abbott and FDA on the appropriate response to the situation. The bases for action were the occurrence of unexpected primary nosocomial BSIs in multiple hospitals exclusively among patients receiving Abbott IV solutions, the recovery of epidemic organism from bottle caps and several hanging IV bottles, and the termination of an outbreak in a hospital after changing from Abbott IV fluids. Meetings in Washington, D.C., led to the decision to issue the joint press release on March 13 by Charles Edwards, M.D., Commissioner of Food and Drugs, and David Sencer, M.D., Director of CDC. The need for an *MMWR* special supplement, without precedent for this publication, arose because the *MMWR* dated March 13 had been finalized by Wednesday, March 11. The decision to issue the press release was not made until Thursday and the data underlying it could not have been added to the *MMWR* dated March 13.

The March 13 governmental action was not a total recall of all Abbott IV fluids because it was not clear that there was sufficient substitute IV solution from alternate manufacturers to meet the nation's needs. To reduce the risk for BSI, instructions on proper IV bottle manipulation were issued to minimize transfer of organisms from the cap to the fluid. On March 22, FDA issued a recall of all Abbott IV fluids when it became clear that the scope of the epidemic was larger than initially recognized, that some hospitals continued to have episodes of BSI despite implementation of the March 13 recommendations, and that sufficient substitute IV fluids were available (*3*). By March 31, a total of 405 patients with BSI had been reported, of whom none had had onset after the March 22 recall (*1*). The full epidemiologic analysis published in 1976 (*4*) was delayed in part because of medicolegal considerations, and underscored the exceptional magnitude of the outbreak: estimates of the magnitude ranged from 2000 to 8000 episodes of BSI caused by these contaminated IV fluids. Approximately 10% of the case-patients in the studied hospitals died while bacteremic or soon thereafter.

The cause of this outbreak was ultimately attributed to unexpected consequences of a new cap design for IV solution bottles (*1*). After the March 13 warning, it was learned that the company had been phasing in a new cap type since approximately March 1970, although substantial production did not occur until about November 1970. The old cap liner incorporated a natural red rubber disc between the metal cap and a thin Gilsonite® wafer that was pressed against the bottle orifice by the natural rubber. Fortuitously, the rubber had antibacterial properties against *E. agglomerans* and *E. cloacae*, two organisms unusual among bacteria in their ability to proliferate in acidic, nitrogen-poor, dextrose-containing fluids (*5*). In vitro studies showed that

Nosocomial Bacteremias — Continued

these organisms were drawn up into the cap as cooling occurred after autoclaving but were not destroyed by the new elastomer lined cap. Manufacturing plant environmental cultures documented that these organisms were abundant in the manufacturing plant environment because of spillage of glucose-containing solution that favored their growth. It is uncertain whether the organisms may have been drawn into the fluid itself during cooling or whether it was impossible to remove the caps without transferring organism to the fluid. Furthermore, the United States Pharmacopeia (USP) sampling procedures did not require identification of contaminating organisms, and the required two-step sampling scheme was too insensitive—missing 98% of lots contaminated at a 1% rate. Identification of recovered organisms would probably have revealed the problem earlier.

Surveillance of nosocomial infections had begun at CDC in 1965 when the Hospital Infection Section initiated the Comprehensive Hospital Infections Program (CHIP) study in six community hospitals. CHIP produced high-quality data on infection rates in hospitalized patients and was used to develop nosocomial infection surveillance methods applicable to U.S. community hospitals. In May 1969, CDC initiated the National Nosocomial Infections Surveillance (NNIS) system, a substantially larger program that accepted data from up to 80 hospitals nationwide. These efforts helped establish nosocomial infection surveillance programs in U.S. hospitals. Without such programs, the detection of this outbreak would have been more difficult, and the outbreak likely would have resulted in additional deaths. While several hospitals recognized the phenomenon independently because of clustering of BSIs and/or by the involvement of the unusual organisms, most involved hospitals had small numbers of infected patients and recognized their involvement only in retrospect (*6*).

This outbreak required a compilation of national prospective data to detect, investigate, and terminate. The epidemiologic expertise and laboratory resources required to carry out multiple onsite investigations and in vitro microbiologic studies in a timely fashion were only available at CDC, a national public health institution. During February–April 1971, approximately 3000 cultures of large volume parenteral fluids were performed by CDC laboratory personnel—the extraordinarily large number of cultures resulted in a national shortage of brain heart infusion broth. The necessary and synergistic interaction between epidemiologists and microbiologists in solving the outbreak is still recognized by the prestigious Mackel Award, offered annually to EIS officers in honor of the competence and dedication of the late Donald C. Mackel, who directed the laboratory studies. This outbreak also resulted in development of more sensitive and restrictive USP requirements for monitoring contamination of large volume parenterals by manufacturers and the development of the first guidelines by CDC on the prevention of nosocomial infection (*7,8*). These guidelines were the precursors to the current Hospital Infections Program Nosocomial Infection Prevention Guidelines.

One consequence of this outbreak was the media attention and litigation incurred by some of the involved hospitals. Ironically, it was the active surveillance for nosocomial infections at these hospitals and the quality of their infection-control programs that facilitated recognition of this outbreak. Headlines about BSIs in hospitalized patients were not mitigated by the hospitals' ultimate medicolegal exoneration. The manufacturer incurred considerable economic consequence from this outbreak, even though this outbreak occurred before the era of cooperation between plaintiff's

Nosocomial Bacteremias — Continued

attorneys in product liability suits. The trials were conducted in 1976, and most of the epidemiologic evidence was not admitted. Judgments turned on whether an individual lot could be demonstrated to be contaminated and whether the patient could be proven to have received fluid from that lot. Since lot numbers were not often recorded, few plaintiffs prevailed.

One of the special features of the CDC in response to this crisis was the compression of hierarchy, including the open information channels throughout CDC. For example, during the most intense period of the investigation, the CDC Director was in frequent direct conversation with front-line EIS officers. In negotiating sessions with FDA in Washington, data presentations were made by EIS officers.

This large nationwide outbreak of nosocomial BSIs traced to intrinsic contamination of IV solutions led to widespread changes at industry, hospital, state, and federal levels. Expansion of nosocomial infection surveillance and control programs occurred at the hospital and federal level. There was enhancement of FDA and CDC surveillance for outbreaks attributable to potentially contaminated products, expansion of training programs for infection-control professionals and hospital epidemiologists, development of guidelines for the prevention of nosocomial infection, strengthening of CDC core epidemiologic and laboratory capacity to respond to nationwide outbreaks, and strengthening of FDA and USP requirements for monitoring potential product contamination. Since the institution of these measures, no large nationwide outbreak of BSIs traced to intrinsically contaminated IV solutions has occurred in the United States.

1997 Editorial Note by Frank S Rhame, MD, Abbott Northwestern Hospital, Minneapolis; Dennis G Maki, MD, Professor of Medicine, University of Wisconsin, Madison; former EIS officers in the Hospital Infections Section, Bacterial Diseases Branch, CDC, John V Bennett, MD, former Director, Division of Bacterial Diseases, CDC; and William R Jarvis, MD, Acting Director, Hospital Infections Program, National Center for Infectious Diseases, CDC.

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4. Maki DG, Rhame FS, Mackel DC, Bennett JV. Nationwide epidemic of septicemia caused by contaminated intravenous solutions. I. Epidemiologic and clinical features. Am J Med 1976;60: 471–32.
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6. Goldmann DA, Dixon RE, Fulkerson CC, Maki DG, Martin SM, Bennett JV. The role of nationwide nosocomial infection surveillance in detecting epidemic bacteremia due to contaminated intravenous fluids. Am J Epidemiol 1978;108:207–13.
7. Maki DG, Goldmann DA, Rhame FS. Infection control in intravenous therapy. Ann Intern Med 1973;79:867–87.
8. Goldmann DA, Maki DG, Rhame FS, Kaiser AB, Tenney JH, Bennett JV. Guidelines for infection control in intravenous therapy. Ann Intern Med 1973;79:848–50.

Notice to Readers

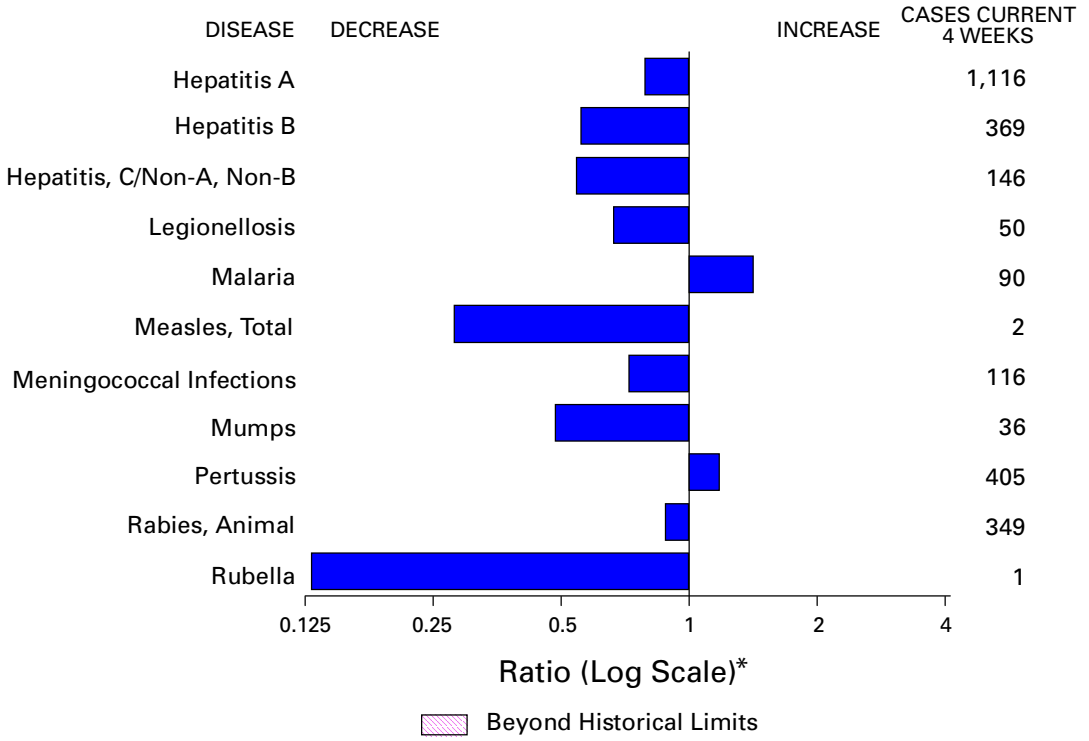
Combined Issues of *MMWR*

A January 2, 1998, *MMWR* will not be published. The next issue will be Volume 46, Numbers 52 and 53, dated January 9, 1998. It will include the figure and tables of notifiable diseases and deaths for the weeks ending December 27, 1997, and January 3, 1998.

Erratum: Vol. 46, No. 50

In the notice, "Satellite Broadcast on Women with Vaginal Infection" (page 1207), in the third line of the first paragraph, the date of the broadcast should have read "Thursday, March 12, *1998*."

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending December 20, 1997, with historical data — United States



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

TABLE I. Summary — provisional cases of selected notifiable diseases, United States, cumulative, week ending December 20, 1997 (51st Week)

	Cum. 1997		Cum. 1997
Anthrax	-	Plague	4
Brucellosis	74	Poliomyelitis, paralytic¶	-
Cholera	10	Psittacosis	38
Congenital rubella syndrome	4	Rabies, human	2
Cryptosporidiosis*	1,921	Rocky Mountain spotted fever (RMSF)	394
Diphtheria	5	Streptococcal disease, invasive Group A	1,376
Encephalitis: California*	118	Streptococcal toxic-shock syndrome*	31
eastern equine*	10	Syphilis, congenital**	525
St. Louis*	12	Tetanus	42
western equine*	-	Toxic-shock syndrome	129
Hansen Disease	108	Trichinosis	9
Hantavirus pulmonary syndrome*†	17	Typhoid fever	343
Hemolytic uremic syndrome, post-diarrheal*	60	Yellow fever	-
HIV infection, pediatric*§	214		

-:no reported cases
*Not notifiable in all states.
†Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases (NCID).
§Updated monthly to the Division of HIV/AIDS Prevention–Surveillance, and Epidemiology, National Center for HIV, STD, and TB Prevention (NCHSTP), last update November 25, 1997.
¶One suspected case of polio with onset in 1997 has also been reported to date.
**Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending December 20, 1997, and December 21, 1996 (51st Week)

Reporting Area	AIDS		Chlamydia		*Escherichia coli* O157:H7		Gonorrhea		Hepatitis C/NA,NB	
					NETSS†	PHLIS§				
	Cum. 1997*	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1997	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996
UNITED STATES	53,031	65,247	450,283	419,345	2,261	1,511	280,048	310,418	3,068	3,415
NEW ENGLAND	2,252	2,739	17,157	16,707	196	126	5,630	6,200	55	104
Maine	51	42	1,025	897	17	-	66	54	-	-
N.H.	40	93	764	737	13	16	94	161	8	7
Vt.	32	19	414	384	8	3	49	46	2	26
Mass.	808	1,306	7,289	6,751	105	92	2,093	2,144	38	65
R.I.	142	171	1,791	1,793	10	-	383	480	7	6
Conn.	1,179	1,108	5,874	6,145	43	15	2,945	3,315	-	-
MID. ATLANTIC	16,043	18,044	58,685	56,895	141	52	36,824	41,193	352	296
Upstate N.Y.	2,390	2,421	N	N	97	-	6,100	7,167	271	235
N.Y. City	8,610	9,942	30,377	26,307	15	8	14,213	12,960	-	3
N.J.	3,044	3,516	9,509	12,132	29	25	7,129	8,666	-	-
Pa.	1,999	2,165	18,799	18,456	N	19	9,382	12,400	81	58
E.N. CENTRAL	3,957	5,040	68,753	82,590	402	276	42,122	56,837	499	468
Ohio	798	1,118	19,828	20,468	107	52	12,498	14,830	20	33
Ind.	488	591	9,235	9,780	81	46	5,994	6,336	11	8
Ill.	1,715	2,192	10,661	22,312	68	31	5,196	15,741	82	92
Mich.	716	875	20,151	19,995	146	103	14,488	15,128	386	335
Wis.	240	264	8,878	10,035	N	44	3,946	4,802	-	-
W.N. CENTRAL	1,055	1,536	31,824	30,768	515	400	14,338	15,021	161	99
Minn.	194	304	7,300	5,096	213	201	2,717	2,205	4	5
Iowa	100	92	4,569	4,165	118	74	1,210	1,144	33	49
Mo.	505	793	11,717	11,905	55	69	7,565	8,356	108	22
N. Dak.	12	12	623	963	15	12	44	38	3	-
S. Dak.	8	14	1,428	1,470	28	32	169	171	-	-
Nebr.	90	93	2,233	2,723	60	-	907	1,064	3	8
Kans.	146	228	3,954	4,446	26	12	1,726	2,043	10	15
S. ATLANTIC	13,084	16,205	88,731	48,552	214	135	87,330	90,180	268	200
Del.	214	285	1,276	1,148	5	4	1,220	1,419	-	1
Md.	1,811	2,232	7,319	U	25	14	12,771	10,976	22	4
D.C.	955	1,196	N	N	2	-	4,247	4,372	-	-
Va.	1,113	1,144	11,091	11,504	N	41	8,560	8,878	24	16
W. Va.	121	121	2,856	2,232	N	1	917	805	17	9
N.C.	795	898	17,097	U	74	38	16,675	18,085	49	46
S.C.	754	842	12,278	U	13	8	11,166	10,984	38	34
Ga.	1,604	2,421	12,244	11,642	41	-	14,384	17,650	U	-
Fla.	5,717	7,066	24,570	22,026	46	29	17,390	17,011	118	90
E.S. CENTRAL	1,908	2,247	31,221	32,145	95	39	31,408	35,564	327	575
Ky.	338	401	6,153	6,597	30	-	3,923	4,162	14	29
Tenn.	745	821	12,328	12,932	46	39	10,860	11,583	228	389
Ala.	512	608	8,468	8,282	15	-	11,768	13,147	13	8
Miss.	313	417	4,272	4,334	4	-	4,857	6,672	72	149
W.S. CENTRAL	5,663	6,768	55,929	55,456	69	17	36,968	37,227	472	391
Ark.	216	267	2,117	1,663	9	5	3,519	3,813	11	8
La.	997	1,442	9,904	7,276	7	3	9,720	7,913	225	227
Okla.	275	261	7,110	7,162	11	6	4,575	4,738	7	1
Tex.	4,175	4,798	36,798	39,355	42	3	19,154	20,763	229	155
MOUNTAIN	1,527	1,993	22,640	25,894	238	132	7,909	7,354	477	543
Mont.	41	34	1,084	1,222	24	-	47	34	22	18
Idaho	50	38	1,639	1,494	37	23	156	98	82	97
Wyo.	14	7	611	606	17	12	52	40	230	177
Colo.	352	505	1,896	3,775	83	57	2,138	1,349	40	64
N. Mex.	163	205	3,262	3,862	7	-	1,120	891	57	74
Ariz.	374	591	10,550	10,527	N	30	3,596	3,639	25	73
Utah	134	188	1,717	1,543	59	-	269	279	5	19
Nev.	399	425	1,881	2,865	11	10	531	1,024	16	21
PACIFIC	7,542	10,674	75,343	70,338	391	330	17,519	20,842	457	739
Wash.	617	762	9,194	9,194	118	131	1,882	2,014	27	51
Oreg.	286	461	4,913	5,244	83	93	725	860	3	8
Calif.	6,510	9,224	58,004	52,862	178	94	14,064	17,064	266	465
Alaska	40	30	1,533	1,291	12	3	370	443	-	3
Hawaii	89	197	1,699	1,747	N	9	478	461	161	212
Guam	2	4	193	355	N	-	27	63	-	6
P.R.	1,975	2,238	U	U	41	U	526	632	147	151
V.I.	95	18	N	N	N	U	-	-	-	-
Amer. Samoa	-	-	-	-	N	U	-	-	-	-
C.N.M.I.	1	-	N	N	N	U	17	11	2	-

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

*Updated monthly to the Division of HIV/AIDS Prevention–Surveillance, and Epidemiology, National Center for HIV, STD, and TB Prevention, last update November 25, 1997.

†National Electronic Telecommunications System for Surveillance.

§Public Health Laboratory Information System.

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending December 20, 1997, and December 21, 1996 (51st Week)

Reporting Area	Legionellosis		Lyme Disease		Malaria		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal
	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997
UNITED STATES	1,001	1,107	10,536	15,221	1,725	1,607	7,660	11,127	16,639	19,201	7,604
NEW ENGLAND	81	77	2,851	3,996	96	76	127	188	436	426	1,222
Maine	2	5	8	55	1	10	2	1	11	20	221
N.H.	7	4	38	47	10	3	-	1	15	15	43
Vt.	13	5	8	24	2	8	-	-	5	2	113
Mass.	27	32	365	265	30	27	67	85	251	222	277
R.I.	15	31	400	518	11	10	2	4	35	32	41
Conn.	17	N	2,032	3,087	42	18	56	97	119	135	527
MID. ATLANTIC	214	242	6,195	9,569	433	452	352	503	3,030	3,535	1,636
Upstate N.Y.	72	76	2,437	4,422	70	85	39	71	432	430	1,192
N.Y. City	12	19	119	401	252	266	83	133	1,551	1,808	U
N.J.	20	15	1,636	2,156	78	68	122	176	656	743	186
Pa.	110	132	2,003	2,590	33	33	108	123	391	554	258
E.N. CENTRAL	294	353	95	411	132	167	659	1,558	1,564	1,934	177
Ohio	119	113	60	30	19	14	208	582	244	301	116
Ind.	54	50	29	32	16	15	160	205	150	186	13
Ill.	14	36	6	10	39	82	71	420	743	973	20
Mich.	92	108	-	20	43	40	128	176	307	373	28
Wis.	15	46	U	319	15	16	92	175	120	101	-
W.N. CENTRAL	70	64	232	234	66	43	178	333	571	492	485
Minn.	3	10	196	124	36	19	22	41	151	114	61
Iowa	12	11	9	18	10	3	8	23	73	68	154
Mo.	31	18	20	52	11	10	111	223	235	195	25
N. Dak.	2	-	-	1	3	1	-	-	12	8	84
S. Dak.	2	3	1	-	1	-	1	-	19	17	74
Nebr.	15	17	2	5	1	3	7	10	22	21	2
Kans.	5	5	4	34	4	7	29	36	59	69	85
S. ATLANTIC	129	168	761	703	356	303	3,123	3,718	3,173	3,534	3,004
Del.	13	12	105	173	5	4	20	35	18	38	54
Md.	28	38	484	355	86	86	864	702	305	285	588
D.C.	4	7	9	3	20	8	112	123	101	132	5
Va.	27	41	62	52	68	58	232	385	305	293	663
W. Va.	N	N	10	12	1	6	3	9	53	56	87
N.C.	14	12	34	65	20	30	721	1,046	429	548	852
S.C.	8	8	3	9	18	12	360	384	260	339	175
Ga.	2	3	7	1	52	27	521	678	595	636	311
Fla.	32	47	47	33	86	72	290	356	1,107	1,207	269
E.S. CENTRAL	53	55	79	79	34	41	1,592	2,397	1,187	1,332	269
Ky.	12	10	13	26	8	11	134	154	184	240	28
Tenn.	33	23	41	21	10	14	732	837	357	438	148
Ala.	4	5	11	8	10	8	409	528	410	420	88
Miss.	4	17	14	24	6	8	317	878	236	234	5
W.S. CENTRAL	36	41	95	120	57	70	1,135	1,727	2,383	2,464	323
Ark.	-	1	25	22	5	2	128	234	171	197	54
La.	6	2	6	8	16	8	363	484	270	290	5
Okla.	7	11	29	25	8	-	116	174	168	172	109
Tex.	23	27	35	65	28	60	528	835	1,774	1,805	155
MOUNTAIN	62	57	23	8	65	62	179	157	467	644	188
Mont.	1	1	-	-	2	7	-	-	17	19	50
Idaho	2	-	4	1	-	-	1	4	16	10	-
Wyo.	1	7	5	3	2	7	-	2	2	6	31
Colo.	17	11	6	-	30	25	14	24	75	104	28
N. Mex.	3	2	1	1	8	3	16	7	53	84	12
Ariz.	12	21	4	-	11	7	134	97	226	238	53
Utah	19	8	1	1	3	5	5	3	32	51	6
Nev.	7	7	2	2	9	8	9	20	46	132	8
PACIFIC	62	50	205	101	486	393	315	546	3,828	4,840	300
Wash.	9	6	10	18	49	22	13	9	249	277	-
Oreg.	-	-	21	19	24	24	9	9	154	182	14
Calif.	52	38	172	63	399	333	291	524	3,207	4,112	262
Alaska	-	1	2	-	5	3	1	-	73	70	24
Hawaii	1	5	-	1	9	11	1	4	145	199	-
Guam	-	1	-	-	-	-	3	3	13	94	-
P.R.	-	-	-	-	6	2	238	206	212	201	66
V.I.	-	1	-	-	-	1	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	-	9	1	2	-	-

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

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending December 20, 1997, and December 21, 1996 (51st Week)

Reporting Area	*H. influenzae*, invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
			A		B		Indigenous		Imported†		Total	
	Cum. 1997*	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	1997	Cum. 1997	1997	Cum. 1997	Cum. 1997	Cum. 1996
UNITED STATES	1,014	1,034	27,077	28,646	8,514	9,703	-	73	-	55	128	496
NEW ENGLAND	61	48	622	425	146	225	-	11	-	8	19	16
Maine	5	-	59	25	6	2	-	-	-	1	1	-
N.H.	10	12	34	21	17	20	U	1	U	-	1	-
Vt.	3	2	15	12	7	13	-	-	-	-	-	2
Mass.	38	32	241	205	55	96	-	10	-	6	16	12
R.I.	3	2	129	25	16	12	-	-	-	-	-	-
Conn.	2	-	144	137	45	82	-	-	-	1	1	2
MID. ATLANTIC	141	206	1,827	1,911	1,257	1,366	-	19	-	8	27	37
Upstate N.Y.	38	47	351	424	304	329	-	2	-	3	5	11
N.Y. City	35	55	694	602	428	484	-	9	-	2	11	11
N.J.	48	63	246	368	201	277	-	3	-	-	3	3
Pa.	20	41	536	517	324	276	-	5	-	3	8	12
E.N. CENTRAL	157	182	2,795	2,557	904	1,083	-	6	-	3	9	21
Ohio	84	94	318	765	93	119	-	-	-	-	-	6
Ind.	19	14	321	362	93	138	-	-	-	-	-	-
Ill.	37	50	687	739	222	329	-	6	-	1	7	3
Mich.	15	11	1,317	500	451	408	-	-	-	2	2	3
Wis.	2	13	152	191	45	89	-	-	-	-	-	9
W.N. CENTRAL	65	48	2,144	2,534	466	537	-	12	-	5	17	23
Minn.	44	33	196	147	44	70	-	3	-	5	8	18
Iowa	7	4	478	327	47	74	-	-	-	-	-	1
Mo.	10	8	1,086	1,359	321	318	-	1	-	-	1	3
N. Dak.	-	-	11	138	5	2	-	-	-	-	-	-
S. Dak.	2	1	24	42	1	5	-	8	-	-	8	-
Nebr.	1	1	96	145	15	38	-	-	-	-	-	-
Kans.	1	1	253	376	33	30	-	-	-	-	-	1
S. ATLANTIC	173	202	2,096	1,397	1,255	1,317	-	2	-	13	15	11
Del.	-	2	31	21	6	9	-	-	-	-	-	1
Md.	58	64	209	243	182	164	-	-	-	2	2	2
D.C.	-	5	36	36	30	32	-	-	-	1	1	-
Va.	13	10	225	190	127	137	-	-	-	1	1	3
W. Va.	4	10	12	18	16	33	-	-	-	-	-	-
N.C.	21	25	205	176	252	327	-	-	-	2	2	2
S.C.	4	5	108	57	97	101	-	-	-	1	1	-
Ga.	42	35	656	153	148	32	-	-	-	1	1	2
Fla.	31	46	614	503	397	482	-	2	-	5	7	1
E.S. CENTRAL	46	26	603	1,246	670	870	-	-	-	-	-	2
Ky.	6	6	73	53	37	75	-	-	-	-	-	-
Tenn.	25	10	376	763	436	489	-	-	-	-	-	2
Ala.	15	9	86	207	77	74	-	-	-	-	-	-
Miss.	-	1	68	223	120	232	U	-	U	-	-	-
W.S. CENTRAL	51	43	5,448	5,856	1,168	1,229	-	3	-	5	8	26
Ark.	1	-	211	469	59	81	-	-	-	-	-	-
La.	13	5	229	213	165	151	-	-	-	-	-	-
Okla.	32	32	1,396	2,427	50	24	U	-	U	1	1	-
Tex.	5	6	3,612	2,747	894	973	-	3	-	4	7	26
MOUNTAIN	93	56	4,228	4,426	872	1,132	-	6	-	2	8	157
Mont.	-	1	71	113	12	17	-	-	-	-	-	-
Idaho	1	1	141	240	53	86	-	-	-	-	-	1
Wyo.	4	-	41	40	40	44	-	-	-	-	-	1
Colo.	19	15	401	509	153	128	-	-	-	-	-	7
N. Mex.	10	11	353	350	252	413	-	-	-	-	-	17
Ariz.	33	20	2,267	1,684	198	229	-	5	-	-	5	8
Utah	3	8	547	1,057	92	121	-	-	-	1	1	118
Nev.	23	-	407	433	72	94	U	1	U	1	2	5
PACIFIC	227	223	7,314	8,294	1,776	1,944	-	14	-	11	25	203
Wash.	5	4	616	759	74	113	-	1	-	1	2	38
Oreg.	35	33	370	861	107	129	-	-	-	-	-	14
Calif.	173	178	6,161	6,506	1,563	1,674	-	11	-	8	19	46
Alaska	7	6	33	50	21	16	-	-	-	-	-	63
Hawaii	7	2	134	118	11	12	-	2	-	2	4	42
Guam	-	-	-	7	3	1	U	-	U	-	-	-
P.R.	-	2	256	248	1,358	1,003	-	-	-	-	-	3
V.I.	-	-	-	38	-	42	U	-	U	-	-	-
Amer. Samoa	-	-	-	-	-	-	U	-	U	-	-	-
C.N.M.I.	6	10	1	1	34	5	U	1	U	-	1	-

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

*Of 232 cases among children aged <5 years, serotype was reported for 123 and of those, 49 were type b.

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

TABLE III. (Cont'd.) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending December 20, 1997, and December 21, 1996 (51st Week)

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996
UNITED STATES	3,024	3,214	6	588	699	143	5,301	6,936	1	158	229
NEW ENGLAND	196	157	-	12	4	31	946	1,709	-	1	27
Maine	18	15	-	-	-	4	11	54	-	-	-
N.H.	16	11	U	1	-	U	126	185	U	-	-
Vt.	4	4	-	-	1	5	253	258	-	-	2
Mass.	98	66	-	4	1	16	504	1,141	-	1	21
R.I.	20	16	-	6	1	-	17	32	-	-	-
Conn.	40	45	-	1	1	6	35	39	-	-	4
MID. ATLANTIC	312	350	1	57	89	1	373	748	-	31	13
Upstate N.Y.	70	87	1	12	26	1	141	477	-	4	5
N.Y. City	45	53	-	3	18	-	62	56	-	27	5
N.J.	69	77	-	7	4	-	11	31	-	-	2
Pa.	128	133	-	35	41	-	159	184	-	-	1
E.N. CENTRAL	446	453	-	80	131	12	503	767	-	5	3
Ohio	163	156	-	35	49	-	159	279	-	-	-
Ind.	55	58	-	14	8	-	76	94	-	-	-
Ill.	143	135	-	13	23	11	124	171	-	2	1
Mich.	51	46	-	15	48	1	61	54	-	-	2
Wis.	34	58	-	3	3	-	83	169	-	3	-
W.N. CENTRAL	224	248	-	18	23	51	561	466	1	1	-
Minn.	34	35	-	6	6	47	354	353	-	-	-
Iowa	47	54	-	10	3	1	106	23	-	-	-
Mo.	101	92	-	-	10	3	67	57	1	1	-
N. Dak.	2	5	-	-	2	-	2	1	-	-	-
S. Dak.	5	10	-	-	-	-	5	4	-	-	-
Nebr.	14	26	-	2	-	-	14	15	-	-	-
Kans.	21	26	-	-	2	-	13	13	-	-	-
S. ATLANTIC	547	608	-	85	109	1	432	691	-	83	98
Del.	5	2	-	-	-	-	1	26	-	-	-
Md.	42	56	-	10	36	1	120	270	-	-	-
D.C.	9	5	-	-	-	-	3	4	-	1	1
Va.	58	61	-	19	16	-	56	99	-	1	2
W. Va.	18	17	-	-	-	-	6	7	-	-	-
N.C.	91	77	-	12	21	-	118	129	-	59	84
S.C.	59	65	-	11	7	-	30	49	-	19	1
Ga.	105	135	-	10	3	-	13	20	-	-	-
Fla.	160	190	-	23	26	-	85	87	-	3	10
E.S. CENTRAL	233	234	-	27	22	1	141	198	-	-	2
Ky.	48	30	-	3	-	-	61	142	-	-	-
Tenn.	83	61	-	6	1	1	39	21	-	-	-
Ala.	83	90	-	9	6	-	33	26	-	-	2
Miss.	19	53	U	9	15	U	8	9	U	-	N
W.S. CENTRAL	276	322	-	62	59	-	248	157	-	4	8
Ark.	32	34	-	1	1	-	60	8	-	-	-
La.	47	59	-	16	18	-	20	11	-	-	1
Okla.	42	43	U	-	1	U	48	19	U	-	-
Tex.	155	186	-	45	39	-	120	119	-	4	7
MOUNTAIN	181	181	1	56	25	44	1,266	622	-	6	7
Mont.	9	9	-	-	-	-	19	36	-	-	-
Idaho	13	25	1	4	-	17	613	110	-	1	2
Wyo.	4	4	-	1	1	-	7	8	-	-	-
Colo.	48	43	-	3	5	14	338	309	-	-	3
N. Mex.	28	27	N	N	N	7	190	63	-	-	-
Ariz.	46	37	-	33	1	5	41	32	-	5	1
Utah	15	17	-	8	3	1	25	23	-	-	-
Nev.	18	19	U	7	15	U	33	41	U	-	1
PACIFIC	609	661	4	191	237	2	831	1,578	-	27	71
Wash.	86	99	-	19	22	-	398	720	-	5	15
Oreg.	124	120	N	N	N	2	12	64	-	-	1
Calif.	389	427	4	145	182	-	393	757	-	14	52
Alaska	3	9	-	4	3	-	14	3	-	-	-
Hawaii	7	6	-	23	30	-	14	34	-	8	3
Guam	1	5	U	1	10	U	-	-	U	-	-
P.R.	10	13	-	7	2	-	2	3	-	-	-
V.I.	-	-	U	-	2	U	-	-	U	-	-
Amer. Samoa	-	-	U	-	-	U	-	-	U	-	-
C.N.M.I.	-	-	U	4	-	U	-	-	U	-	-

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

TABLE IV. Deaths in 122 U.S. cities,* week ending December 20, 1997 (51st Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	598	441	108	21	13	15	48
Boston, Mass.	143	90	31	8	5	9	11
Bridgeport, Conn.	52	34	14	4	-	-	3
Cambridge, Mass.	22	15	6	1	-	-	2
Fall River, Mass.	32	25	4	1	2	-	3
Hartford, Conn.	59	46	9	1	2	1	3
Lowell, Mass.	17	16	1	-	-	-	1
Lynn, Mass.	19	14	4	1	-	-	3
New Bedford, Mass.	22	19	3	-	-	-	-
New Haven, Conn.	34	26	3	3	2	-	1
Providence, R.I.	58	42	12	1	1	2	3
Somerville, Mass.	6	5	1	-	-	-	1
Springfield, Mass.	47	36	9	1	-	1	6
Waterbury, Conn.	26	19	6	-	1	-	2
Worcester, Mass.	61	54	5	-	-	2	9
MID. ATLANTIC	2,334	1,626	431	180	42	55	116
Albany, N.Y.	50	36	7	3	1	3	-
Allentown, Pa.	21	20	-	1	-	-	-
Buffalo, N.Y.	79	63	11	3	1	1	5
Camden, N.J.	29	18	5	4	-	2	3
Elizabeth, N.J.	23	15	5	3	-	-	-
Erie, Pa.	40	32	6	1	-	1	3
Jersey City, N.J.	37	21	11	3	1	1	-
New York City, N.Y.	1,258	881	231	104	21	21	63
Newark, N.J.	47	23	11	5	2	6	4
Paterson, N.J.	21	12	4	4	1	-	-
Philadelphia, Pa.	304	182	68	33	9	12	13
Pittsburgh, Pa.§	70	48	15	3	-	4	3
Reading, Pa.	29	25	3	-	1	-	3
Rochester, N.Y.	137	96	32	3	4	2	6
Schenectady, N.Y.	27	17	4	5	-	1	-
Scranton, Pa.	29	26	2	-	-	1	1
Syracuse, N.Y.	58	49	9	-	-	-	6
Trenton, N.J.	25	17	3	5	-	-	4
Utica, N.Y.	21	20	1	-	-	-	1
Yonkers, N.Y.	29	25	3	-	1	-	1
E.N. CENTRAL	2,145	1,485	412	141	57	47	113
Akron, Ohio	45	38	5	2	-	-	-
Canton, Ohio	38	33	5	-	-	-	2
Chicago, Ill.	466	266	119	54	17	9	24
Cincinnati, Ohio	153	110	18	12	6	7	10
Cleveland, Ohio	U	U	U	U	U	U	U
Columbus, Ohio	169	114	39	8	5	3	9
Dayton, Ohio	142	100	28	5	6	3	10
Detroit, Mich.	236	139	63	20	4	8	8
Evansville, Ind.	63	49	9	1	-	4	7
Fort Wayne, Ind.	59	47	7	4	1	-	1
Gary, Ind.	11	8	2	-	1	-	-
Grand Rapids, Mich.	62	44	9	7	1	1	4
Indianapolis, Ind.	223	170	37	9	5	2	-
Lansing, Mich.	38	25	8	1	3	1	5
Milwaukee, Wis.	124	95	17	8	2	2	10
Peoria, Ill.	42	37	3	1	1	-	7
Rockford, Ill.	59	44	11	1	1	2	4
South Bend, Ind.	52	43	7	2	-	-	5
Toledo, Ohio	94	69	15	4	2	4	6
Youngstown, Ohio	69	54	10	2	2	1	1
W.N. CENTRAL	861	652	121	43	18	17	50
Des Moines, Iowa	U	U	U	U	U	U	U
Duluth, Minn.	29	25	4	-	-	-	4
Kansas City, Kans.	28	18	7	1	2	-	-
Kansas City, Mo.	113	64	22	10	6	1	4
Lincoln, Nebr.	34	30	4	-	-	-	3
Minneapolis, Minn.	257	205	33	10	6	3	20
Omaha, Nebr.	94	72	11	6	-	5	5
St. Louis, Mo.	105	76	16	8	1	4	-
St. Paul, Minn.	101	81	11	4	3	2	9
Wichita, Kans.	100	81	13	4	-	2	5
S. ATLANTIC	957	660	167	98	15	17	65
Atlanta, Ga.	U	U	U	U	U	U	U
Baltimore, Md.	167	106	34	21	5	1	14
Charlotte, N.C.	115	88	14	11	-	2	19
Jacksonville, Fla.	148	94	33	15	1	5	8
Miami, Fla.	119	79	19	17	2	2	-
Norfolk, Va.	25	15	6	2	-	2	1
Richmond, Va.	77	52	14	6	3	2	3
Savannah, Ga.	60	38	10	10	2	-	6
St. Petersburg, Fla.	56	46	6	2	1	1	1
Tampa, Fla.	174	134	28	9	1	2	13
Washington, D.C.	U	U	U	U	U	U	U
Wilmington, Del.	16	8	3	5	-	-	-
E.S. CENTRAL	713	507	133	46	16	11	48
Birmingham, Ala.	U	U	U	U	U	U	U
Chattanooga, Tenn.	74	59	11	3	1	-	10
Knoxville, Tenn.	98	71	15	8	1	3	8
Lexington, Ky.	87	61	14	6	4	2	11
Memphis, Tenn.	200	143	37	10	9	1	14
Mobile, Ala.	51	31	10	9	-	1	-
Montgomery, Ala.	52	37	10	2	1	2	3
Nashville, Tenn.	151	105	36	8	-	2	2
W.S. CENTRAL	1,520	1,010	309	114	64	23	82
Austin, Tex.	94	62	12	8	7	5	5
Baton Rouge, La.	37	26	8	2	1	-	-
Corpus Christi, Tex.	U	U	U	U	U	U	U
Dallas, Tex.	216	134	45	22	13	2	3
El Paso, Tex.	69	48	16	3	2	-	6
Ft. Worth, Tex.	115	80	21	6	5	3	6
Houston, Tex.	392	244	90	33	20	5	32
Little Rock, Ark.	95	62	20	7	4	2	2
New Orleans, La.	111	65	31	11	3	1	-
San Antonio, Tex.	228	170	35	15	6	2	11
Shreveport, La.	52	37	8	4	1	2	5
Tulsa, Okla.	111	82	23	3	2	1	12
MOUNTAIN	975	696	184	57	24	14	91
Albuquerque, N.M.	118	82	27	7	2	-	5
Boise, Idaho	47	36	7	3	1	-	4
Colo. Springs, Colo.	49	36	11	1	1	-	4
Denver, Colo.	102	70	17	11	2	2	16
Las Vegas, Nev.	203	142	39	14	4	4	14
Ogden, Utah	21	17	2	2	-	-	8
Phoenix, Ariz.	157	113	27	9	4	4	16
Pueblo, Colo.	23	15	7	-	1	-	1
Salt Lake City, Utah	113	78	23	5	3	4	11
Tucson, Ariz.	142	107	24	5	6	-	12
PACIFIC	1,047	738	184	88	22	15	102
Berkeley, Calif.	19	17	1	1	-	-	3
Fresno, Calif.	76	51	15	7	2	1	14
Glendale, Calif.	U	U	U	U	U	U	U
Honolulu, Hawaii	59	42	15	2	-	-	1
Long Beach, Calif.	61	50	8	3	-	-	13
Los Angeles, Calif.	U	U	U	U	U	U	U
Pasadena, Calif.	34	30	4	-	-	-	2
Portland, Oreg.	U	U	U	U	U	U	U
Sacramento, Calif.	U	U	U	U	U	U	U
San Diego, Calif.	154	92	36	20	2	4	19
San Francisco, Calif.	141	88	24	18	8	3	14
San Jose, Calif.	198	145	31	14	6	2	23
Santa Cruz, Calif.	28	19	4	4	1	-	1
Seattle, Wash.	125	90	20	13	1	1	-
Spokane, Wash.	63	47	13	1	-	2	8
Tacoma, Wash.	89	67	13	5	2	2	4
TOTAL	11,150¶	7,815	2,049	788	271	214	715

U: Unavailable -: no reported cases

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

†Pneumonia and influenza.

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

¶Total includes unknown ages.

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