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Regional Variations in Suicide Rates — United States, 1990–1994

In 1994, suicides were committed by 31,142 persons in the United States (crude rate: 12.0 suicides per 100,000 population), and suicide was the ninth leading cause of death (*1*). Although rates of suicide have varied by geographic region (e.g., rates have consistently been higher in western states [*2*]), reasons for these regional variations are unknown but may reflect regional differences in certain demographic variables. For example, suicide rates have been higher for males, for the elderly, and for certain racial/ethnic groups (e.g., non-Hispanic whites and American Indians/Alaskan Natives) (*2*). CDC examined U.S. suicide rates from 1990 through 1994 to determine whether regional variations in suicide rates are affected by differences in age, race/Hispanic-ethnicity, and sex and to examine whether method-specific rates varied by region. This report summarizes the results of that analysis, which indicate that, despite adjustments for certain demographic variables, regional differences persist.

Suicides in each state were identified using final mortality data from CDC's underlying cause-of-death files for each year during 1990–1994. Suicide and methods of fatal self-inflicted injury were classified using the *International Classification of Diseases, Ninth Revision,* (codes E950–E959). The three leading methods of suicide (firearms [E955.0–E955.4], strangulation [E953], and overdose [E950]) and all other methods (inhalation [E951–E952], cutting [E956], drowning [E954], falls [E957], and others [E958–E959]) combined were examined. Rates were calculated for 1990–1994 using population data from the 1990 Census enumerations and postcensal year estimates compiled by the U.S. Bureau of the Census. Crude suicide rates for each state were adjusted for age, race/Hispanic-ethnicity, and sex. Overall- and method-specific adjusted suicide rates were examined by region*.

During 1990–1994, a total of 154,444 persons committed suicide in the United States; 23,734 (15%) suicides occurred in the Northeast, 34,492 (22%) in the Midwest,

* *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.

Suicide Rates — Continued

38,709 (25%) in the West, and 57,509 (37%) in the South (Table 1). When state-specific crude suicide rates for the U.S. were ranked by quartiles, the rates from 10 of the 13 western states ranked in the highest quartile. This pattern persisted after adjustments for age, race/Hispanic-ethnicity, and sex (Figure 1).

Regional crude suicide rates were highest for persons residing in the West (14.1 per 100,000 population), followed by the South (13.1), Midwest (11.4), and Northeast (9.3). After adjusting for age, race/Hispanic-ethnicity, and sex, rates remained highest in the West (14.7), followed by the South (13.1), Midwest (10.9), and Northeast (8.6). All regional rates were significantly different from the total U.S. adjusted suicide rate (11.8 per 100,000 population) and from each other. Adjusted suicide rates were approximately 70% higher in the West than in the Northeast (rate ratio [RR]=1.7) (*3*).

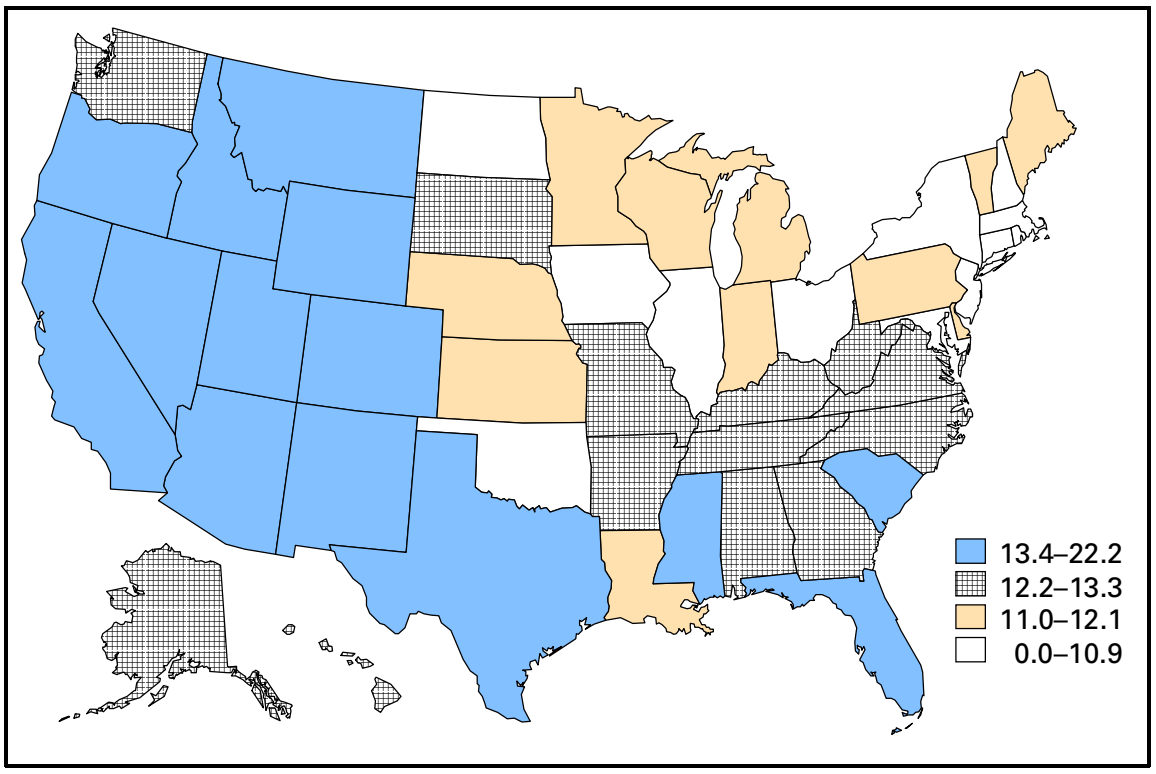
When suicide rates in each region were stratified by method, rates were highest in the West for all methods except firearms. Firearms were the leading method in all regions, accounting for 69.8% of all suicides in the South, 58.3% in the West, 57.8% in the Midwest, and 44.9% in the Northeast.

Regional variations were greatest for overdose- and firearm-related suicide rates. For overdose, the adjusted suicide rate in the West was approximately 100% higher than in the Northeast, which had the lowest rate (RR=2.1). Adjusted firearm suicide rates were highest in the South and were 130% higher than in the Northeast (RR=2.3).

Reported by: Div of Violence Prevention, National Center for Injury Prevention and Control, CDC.

Editorial Note: The findings in this report are consistent with previous studies that documented regional differences in suicide rates in the United States. In particular,

FIGURE 1. Rate* of suicide† — United States, 1990–1994



*Per 100,000 population. Adjusted to the age, sex, and race/ethnicity distribution of the 1980 U.S. population.

†*International Classification of Diseases, Ninth Revision,* codes E950–E959.

Suicide Rates — Continued

TABLE 1. Number and rate* of suicides†, by region and state — United States, 1990–1994

Region/State	No. deaths	Crude rate	Adjusted rate§	(95% CI¶)
Northeast				
Connecticut	1,553	9.5	8.3	(7.9– 8.7)
Maine	838	13.6	11.3	(10.5–12.1)
Massachusetts	2,530	8.4	7.7	(7.4– 8.0)
New Hampshire	697	12.5	NC**	NC
New Jersey	2,729	7.0	6.8	(6.5– 7.1)
New York	7,551	8.4	7.6	(7.4– 7.8)
Pennsylvania	6,976	11.6	11.0	(10.7–11.3)
Rhode Island	454	9.1	8.9	(8.1– 9.7)
Vermont	406	14.2	11.4	(10.3–12.5)
Total	**23,734**	**9.3**	**8.6**	**(8.5– 8.7)**
Midwest				
Illinois	5,717	9.9	9.8	(9.5–10.1)
Indiana	3,575	12.7	12.0	(11.6–12.4)
Iowa	1,598	11.4	10.8	(10.3–11.3)
Kansas	1,546	12.3	11.4	(10.8–12.0)
Michigan	5,403	11.5	11.0	(10.7–11.3)
Minnesota	2,562	11.5	11.1	(10.7–11.5)
Missouri	3,448	13.3	12.6	(12.2–13.0)
Nebraska	958	12.0	11.4	(10.7–12.1)
North Dakota	371	11.7	10.2	(9.1–11.3)
Ohio	5,875	10.7	10.1	(9.8–10.4)
South Dakota	479	13.5	12.2	(11.1–13.3)
Wisconsin	2,960	11.9	11.3	(10.9–11.7)
Total	**34,492**	**11.4**	**10.9**	**(10.8–11.0)**
South				
Alabama	2,659	12.9	13.0	(12.5–13.5)
Arkansas	1,550	12.9	12.3	(11.7–12.9)
Delaware	421	12.2	11.7	(10.6–12.8)
District of Columbia	177	6.0	6.7	(5.7– 7.7)
Florida	10,413	15.4	14.3	(14.0–14.6)
Georgia	4,275	12.6	13.2	(12.8–13.6)
Kentucky	2,572	13.7	12.5	(12.0–13.0)
Louisiana	2,727	12.8	NC	NC
Maryland	2,433	9.9	9.9	(9.5–10.3)
Mississippi	1,589	12.1	13.4	(12.7–14.1)
North Carolina	4,319	12.6	12.4	(12.0–12.8)
Oklahoma	2,248	14.0	NC	NC
South Carolina	2,278	12.7	13.4	(12.8–14.0)
Tennessee	3,298	13.1	12.5	(12.1–12.9)
Texas	11,316	12.8	14.2	(13.9–14.5)
Virginia	4,008	12.6	12.3	(11.9–12.7)
West Virginia	1,226	13.6	12.3	(11.6–13.0)
Total	**57,509**	**13.1**	**13.1**	**(13.0–13.2)**
West				
Alaska	451	15.5	11.6	(10.5–12.7)
Arizona	3,495	18.1	18.0	(17.4–18.6)
California	18,734	12.2	13.8	(13.6–14.0)
Colorado	2,936	16.9	16.3	(15.7–16.9)
Hawaii	619	10.8	11.3	(10.4–12.2)
Idaho	915	17.1	16.6	(15.5–17.7)
Montana	794	19.2	18.6	(17.3–19.9)
Nevada	1,606	24.1	22.2	(21.1–23.3)
New Mexico	1,459	18.4	18.5	(17.5–19.5)
Oregon	2,367	15.9	14.8	(14.2–15.4)
Utah	1,357	15.0	15.7	(14.9–16.5)
Washington	3,512	13.7	12.7	(12.3–13.1)
Wyoming	464	20.0	19.8	(18.0–21.6)
Total	**38,709**	**14.1**	**14.7**	**(14.6–14.8)**
Total	**154,444**	**12.0**	**11.8**	**(11.7–11.9)**

*Per 100,000 population.
† *International Classification of Diseases, Ninth Revision,* codes E950–E959.
§ Adjusted to the age, sex, and race/Hispanic ethnicity of the 1980 U.S. population.
¶ Confidence interval.
**Not calculated because of incomplete reporting.

Suicide Rates — Continued

during 1990–1994, both crude and adjusted suicide rates were significantly higher in the West than in the South, Midwest, and Northeast, and firearms were the leading method employed in all regions. Factors that may account for regional differences in suicide rates are varied and complex. Regional differences in demographic patterns (i.e., age, race/Hispanic-ethnicity, and sex) and in suicide methods do not completely account for variations in suicide, and additional analyses are required to clarify reasons for these differences and to develop tailored prevention strategies.

The findings in this report are limited by the constraints inherent in mortality data. Mortality files provide a limited number of variables that may explain regional variations in suicide rates, and reporting levels for some of these variables differ among the states. For example, even though educational attainment is contained in mortality files, this variable was not examined in this analysis because of concerns about quality and completeness of the data in some states. Marital status also is presented on death certificates but was not examined for this report because it is not consistently available in detailed state-level census data. Suicide rates are inversely related to level of education, and are substantially lower among married persons than among persons who are single, separated, divorced, or widowed (*2*). However, available census data reflect little variation in marital status and educational attainment across regions, and it is unlikely that these variables account for the differences in suicide rates.

Despite these limitations, this report documented important region-specific differences in suicide rates both overall and when stratified by method. For example, firearms were the leading method in all regions, accounting for more than half the suicides committed in every region except the Northeast (44.9%). The availability of firearms in homes of suicidal or potentially suicidal persons is associated with increased risk for suicide (*4*). Although differences in firearm ownership or the availability of firearms may account for some of the regional variation in suicide rates, they do not explain the higher method-specific rates in the West for strangulation, overdose, or other methods.

A spectrum of social and environmental factors have been associated with suicidal behavior. For example, levels of residential instability, unemployment, and other indicators of limited economic opportunity may be higher in communities with higher rates of suicide (*5,6*). Similarly, suicide rates are higher in communities with low levels of social integration and unstable social environments (*5–7*). Additional efforts are necessary to determine the relation between these factors and variations in regional suicide rates.

Arizona, Washington, and other states in the West have initiated prevention strategies designed to reduce the impact of injuries from suicidal behavior (*8,9*). For example, in Washington, the suicide prevention plan includes multiple interventions such as improving suicide surveillance efforts, public education campaigns, crisis intervention services, and family support programs (*10*). These strategies should be evaluated and, if documented effective, adapted for use in other states, particularly those with the highest suicide rates.

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Suicide Rates — Continued

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Progress Toward Poliomyelitis Eradication — Eastern Mediterranean Region, 1996–1997

In 1988, the Regional Committee of the Eastern Mediterranean Region (EMR)* of the World Health Organization (WHO) adopted a resolution to eliminate poliomyelitis from the region by 2000. This report summarizes progress toward this goal in EMR countries through June 30, 1997 (*1*), and indicates that nearly all countries in the EMR are conducting National Immunizations Days (NIDs)† and that surveillance for acute flaccid paralysis (AFP) is improving rapidly.

Routine vaccination coverage. In 1996, a total of 21 of 23 member countries reported routine vaccination coverage; among all reporting countries combined, routine coverage with at least three doses of oral poliovirus vaccine (OPV3) by age 1 year was 85% (range: 49%–100%), an increase compared with coverage during 1993–1995 (79%, 78%, and 80%, respectively). OPV3 coverage was ≥90% in 17 (73%) countries. However, reported OPV3 coverage was 80% in Sudan, 79% in Pakistan, 54% in Yemen, and 49% in Djibouti. Coverage data were not available for Afghanistan and Somalia, where estimated OPV3 coverage was <50%.

Supplemental immunization activities. NIDs were conducted in two countries (Egypt and Syria) in 1993, five countries (Egypt, Iran, Pakistan, Sudan, and Syria) in 1994, and 18 countries in 1995. During 1996 and early 1997, except for Cyprus and Somalia, all countries in the region conducted NIDs; these included NIDs in Yemen,

* Member countries are Djibouti, Egypt, Libya, Morocco, Somalia, Sudan, and Tunisia in northern and eastern Africa; the Arab Gulf states of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates, and Yemen; Iraq, Jordan, Lebanon, Syria, and the Palestinian people in the Middle East; Afghanistan, Iran, and Pakistan in Asia; and Cyprus.

† Mass campaigns over a short period (days to weeks) in which two doses of oral poliovirus vaccine are administered to all children in the target age group (usually age <5 years) regardless of previous vaccination history, with an interval of 4–6 weeks between doses.

Poliomyelitis Eradication — Continued

the first national campaigns in Afghanistan and Djibouti, and resumption of NIDs in Sudan. During the 1996–1997 NIDs, 13 countries reported achieving coverage rates of ≥95% in each round, and two countries (Djibouti and United Arab Emirates) reported coverage rates of <90% in each round. In addition to coordinated campaigns in countries within EMR subregions, NIDs in several countries have been coordinated with countries in the European Region under "Operation MECACAR," and the last NIDs in Pakistan were coordinated with the campaigns in Southeast Asia (*2,3*).

Surveillance. By 1996, all member countries (except Afghanistan, Somalia, and Yemen) had established AFP surveillance. From 1995 through June 1997, eight countries (Bahrain, Iran, Jordan, Kuwait, Oman, Saudi Arabia, Syria, and Tunisia) have achieved or exceeded the WHO-established minimum AFP reporting rate indicative of a sensitive surveillance system (≥1 nonpolio AFP case per 100,000 children aged <15 years) (Table 1). Egypt and Morocco are approaching the minimum level of sensitivity. The regional average rate for nonpolio AFP in 1996 was 0.7 cases per 100,000 population (range: 0–1.6), compared with 0.2 in 1993 when AFP surveillance was initiated in the region. During 1997, a total of 11 countries, including Cyprus, Iraq, and Palestine, have reached or exceeded the expected rate of nonpolio AFP. From 1996 through June 30, 1997, two adequate stool samples[§] were collected from 63% of the reported AFP cases in EMR, compared with 45% in 1995 (Table 1). During 1996 and 1997, Bahrain, Cyprus, Egypt, Jordan, Oman, and Palestine achieved the WHO-recommended target of two adequate stool specimens collected from at least 80% of AFP cases.

EMR laboratory network. The EMR laboratory network comprises 12 laboratories (eight national and four regional reference laboratories). During 1996, AFP cases from 17 of the 20 EMR countries also were investigated in the laboratory. Of all the AFP cases reported during 1996, 92% were investigated in a network laboratory, compared with 75% in 1995. The regional average nonpolio enterovirus (NPEV) isolation rate (an indicator of the adequacy of laboratory technique and specimen handling) increased from 1995 (11%) to 1996 (12%), compared with 7% in 1994 (the WHO-recommended target is an NPEV isolation rate of at least 10% from stool specimens). Four laboratories (the regional reference laboratory in Egypt and national laboratories in Iran, Sudan, and Syria) achieved the target in 1996. Of the 10 laboratories that underwent proficiency testing during 1996, nine rated a passing score (80%), compared with seven of the 10 laboratories in 1995. Laboratory results were reported on time (within 28 days of receipt of specimen) for 53% of stool specimens during 1996, compared with 46% during 1995.

Incidence of polio. From 1988 to 1996, the number of confirmed cases of polio reported in the EMR decreased 77%, from 2342 to 532. Of 23 EMR countries, 15 reported zero cases during 1996 (Table 1), including two (Saudi Arabia and Syria) that reported zero cases for the first time. Pakistan continued to report the largest number of cases of any country and, during 1995 and 1996, accounted for approximately two thirds of all cases in the region. In addition to Pakistan, during 1996, five other countries reporting cases included Egypt (19%), Sudan (10%), Iraq (4%), Iran (2%), and Yemen (1%). However, during 1996, reports were not received for all periods from Afghanistan, Somalia, and Yemen, and information provided by nongovernmental organizations and other sources suggests that wild poliovirus may be widely endemic in these countries.

[§]Two stool specimens collected at an interval of at least 24 hours within 14 days of onset of paralysis.

Poliomyelitis Eradication — Continued

TABLE 1. Number of reported cases of acute flaccid paralysis (AFP) and confirmed poliomyelitis* and key surveillance indicators, by country — Eastern Mediterranean Region, World Health Organization, 1996–June 1997

	1996				1997			
Country	No. AFP cases	No. confirmed cases	Nonpolio AFP rate†	% AFP cases with two stool specimens§	No. AFP cases	No. confirmed cases	Nonpolio AFP rate¶	% AFP cases with two stool specimens
Afghanistan	2	NR**	NR	NR	NR	NR	NR	NR
Bahrain	2	0	1.0	100%	1	0	1.0	100%
Cyprus	1	0	0.4	100%	3	0	3.0	NR
Djibouti	0	100	0	0	NR	NR	NR	NR
Egypt	309	12	0.9	85%	76	7	0.6	86%
Iran	472	21	1.6	66%	193	15	1.3	69%
Iraq	59	0	0.4	39%	95	20	1.7	75%††
Jordan	20	0	1.0	85%	15	0	1.6	87%
Kuwait	10	0	1.6	60%	8	0	2.6	38%
Lebanon	5	0	0.4	60%	2	0	0.3	50%
Libya	2	0	0.1	50%	2	0	NR	NR
Morocco	76	0	0.8	42%	36	0	0.7	38%
Oman	10	0	1.6	90%	5	0	1.6	100%
Pakistan	546	341	0.3	56%††	402††	37	NR	58%††
Palestine	8	0	0.6	75%	7	0	1.1	85%
Qata	1	0	0.5	0	3	0	3.0	0
Saudi Arabia	75	0	1.0	60%	48	0	1.3	63%††
Somalia	NR	NR	NR	NR	1	1	NR	NR
Sudan	54	51	<0.1	35%	15	2	<0.1	57%
Syria	76	0	1.2	67%	47	0	1.5	62%
Tunisia	41	0	1.4	44%	18	0	0.9	61%
United Arab Emirates	0	0	0	0	NR	NR	NR	NR
Yemen	7	7	0	0	NR	NR	NR	NR
Total	**1776**	**532**	**0.7§§**	**63%**	**977**	**82**	**0.9¶¶**	**64%*** **

*A confirmed case of polio is defined as AFP and at least one of the following: 1) laboratory-confirmed wild poliovirus infection, 2) residual paralysis at 60 days, 3) death, or 4) no follow-up investigation at 60 days.
†Number of AFP cases per 100,000 population aged <15 years. Minimum expected rate is one case of nonpolio AFP per 100,000 per year.
§Two stool specimens collected at an interval of at least 24 hours within 14 days of paralysis onset from 80% or more of AFP cases.
¶Annualized nonpolio AFP rate.
**Not reported.
††Based on quarterly reports from the Regional Reference Poliovirus Laboratory in Pakistan.
§§Excludes from denominator the expected nonpolio AFP cases from Afghanistan, Somalia, and Yemen.
¶¶Excludes from denominator the expected nonpolio AFP cases from Pakistan since final classification of most cases is pending.
***Countries that did not report surveillance indicator data are excluded from the denominator.

Through June 30, 1997, cases of polio have been confirmed in Pakistan (37), Iraq (20), Iran (15), Egypt (seven), and Sudan (two). In Iran, 27 virologically confirmed cases were detected from April 1996 through April 1997; however, some of these cases have been linked to importation of wild virus from neighboring countries with endemic polio.

Although wild poliovirus type 2 was not isolated in EMR during 1995 and 1996, isolates have been identified in three cases associated with an outbreak in Pakistan in

Poliomyelitis Eradication — Continued

1997. Of the 146 wild poliovirus type 1 isolates reported in 1996, 92 were from Egypt, 37 from Pakistan¶, 11 from Iran, and six from Sudan. Wild poliovirus type 3 isolates were reported from these countries, including Egypt (eight), Pakistan (two), and Iran (one).

Reported by: Expanded Program on Immunization, Regional Office for the Eastern Mediterranean Region, Alexandria, Egypt. Global Program for Vaccines and Immunization, World Health Organization, Geneva, Switzerland. Respiratory and Enteric Viruses Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases; Polio Eradication Activity, National Immunization Program, CDC.

Editorial Note: Because of persistent problems with routine vaccination delivery, increased reliance has been placed on high-quality supplementary vaccination campaigns to rapidly interrupt wild poliovirus transmission in several EMR countries. As of June 1997, all countries in EMR, except Cyprus and Somalia, have conducted NIDs, with reported coverage rates of ≥90% in nearly all countries. During 1996–1997, NIDs also were conducted in Afghanistan, Sudan, and Yemen despite ongoing civil unrest and/or substantial logistical constraints. Subnational immunization days targeting children in the accessible parts of northern Somalia are planned for late 1997.

The quality of AFP surveillance in most EMR countries has improved substantially since 1993. The most rapid progress occurred during 1995 and 1996, especially in Egypt, Iran, Iraq, Pakistan, Saudi Arabia, and Syria. The EMR laboratory network is well established and is able to provide virologic information to the national immunization programs for targeting prevention and control activities.

The incidence of polio is at record low levels in EMR, and polio-free zones are beginning to emerge in the western part of north Africa, the Arab Gulf subregion, and the Middle East. However, the risk for importations of wild poliovirus continues to challenge those countries in EMR and geographically contiguous areas that have either become polio-free or have reduced virus transmission to very low levels. Interregional and intercountry activities are ongoing to coordinate and synchronize surveillance and vaccination campaigns in key border areas and in countries with similar patterns of poliovirus transmission (*2,3*). However, despite several years of NIDs in Egypt and Pakistan, widespread circulation of wild poliovirus persisted in 1996, and in Pakistan, two outbreaks of polio were identified during 1997; in these two countries, cases occurred primarily among undervaccinated or unvaccinated children.

The governments of EMR countries have provided the largest share of the resources needed for polio eradication in the region. In addition, critical technical and financial support have been provided by WHO; United Nations Chidren's Fund (UNICEF); and other partner agencies, especially CDC, Rotary International, the government of Japan, ODA (government of the United Kingdom), and DANIDA (government of Denmark).

EMR priorities to achieve polio eradication by 2000 include 1) ensuring that high-quality NIDs are conducted in countries with persistent wild poliovirus circulation and low vaccination coverage, particularly in countries experiencing ongoing armed conflict and/or with severe political and administrative constraints; 2) establishing and strengthening sensitive and effective AFP surveillance systems in Afghanistan, Somalia, and Yemen and other EMR countries where these systems remain rudimentary; 3) implementing coordinated AFP surveillance and supplementary vaccination activi-

¶Complete data on characterization of polioviruses isolated during 1996–1997 in Pakistan are pending, including all type 3 strains from 1997.

Poliomyelitis Eradication — Continued

ties among key border area populations; 4) strengthening political commitment to ensure that NIDs are continued annually in countries that have become polio-free and that the sensitivity and quality of AFP surveillance continues to improve in all EMR countries; 5) maintaining and strengthening the political commitment of governments for polio eradication; and 6) consolidating support of donor governments and partner agencies for the financial and human resources needed to successfully implement polio-eradication strategies in the region.

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Multiple Misdiagnoses of Tuberculosis Resulting from Laboratory Error — Wisconsin, 1996

A positive culture for *Mycobacterium tuberculosis* confirms a diagnosis of tuberculosis disease (TB); however, false-positive cultures have resulted from laboratory error (*1–8*). In 1996, the Division of Health (DOH), Wisconsin Department of Health and Family Services, became aware of five possible incidents of laboratory error associated with the processing of *M. tuberculosis* cultures; these incidents resulted in the potential misdiagnosis of TB in 11 persons. This report summarizes the findings from the investigation of the five incidents, which suggest that four incidents were associated with cross-contamination of specimens in the laboratory and one with the inadvertent inoculation of a subculture from the incorrect broth medium; these errors resulted in adverse effects on patients and on the medical and public health systems.

Incident 1

In March, laboratory A referred mycobacterial isolates to the Wisconsin State Laboratory of Hygiene (SLH). After two of the referred isolates—one from patient 1 and the other from patient 2—demonstrated low-level resistance to isoniazid, SLH staff contacted laboratory A staff to inform them of the results. Three weeks earlier, on notification that *M. tuberculosis* had been isolated from a sputum sample obtained from patient 1, the patient's physician had informed staff of DOH's TB Program that TB had not been suspected, that a sputum specimen obtained from the patient had grown *Streptococcus pneumoniae*, and that the patient's symptoms had abated with treatment for pneumococcal pneumonia. Further inquiry revealed that only one of three specimens from patient 1 was culture-positive for *M. tuberculosis*, that the positive specimen had been processed immediately after that of a smear- and culture-positive specimen obtained from patient 2 who had clinically obvious TB, and that growth was present on both solid and broth media. Restriction fragment length polymorphism (RFLP) patterns of the two isolates were identical, and there was no evidence of contact between the two patients. Based on these findings, DOH concluded that patient 1's culture was false-positive as the result of cross-contamination and that contamination occurred during the initial processing of specimens.

Tuberculosis — Continued

Incidents 2 and 3

In March, the TB Program, SLH, and laboratory B staff noted a substantial increase in the number of *M. tuberculosis* isolates reported by laboratory B. Review of laboratory B logs identified two clusters of positive cultures processed 5 days apart. During the morning shift of the first day, a laboratory proficiency test sample containing *M. tuberculosis* had been processed. The second, third, and fifth specimens (each from different patients) processed during the afternoon shift were each acid-fast bacilli (AFB) smear-negative but were *M. tuberculosis* culture-positive. The RFLP patterns for these three isolates were identical to that of the laboratory proficiency isolate. Five days later, the first specimen processed that day was an AFB smear-positive specimen that had been obtained from a patient with clinically obvious TB. The third, fourth, seventh, and 15th specimens (each from different patients) processed were AFB smear-negative but were *M. tuberculosis* culture-positive. The RFLP patterns for these four isolates were identical to that of the first, and there was no evidence that the patients had had contact with one another.

A total of seven patients had suspected false-positive cultures processed in laboratory B. Record review indicated diagnoses other than TB for six patients. The seventh patient was lost to follow-up after an AFB culture had been requested for the patient as part of routine bronchoscopy procedures rather than because of clinical suspicion of TB. Based on these findings, DOH concluded that cross-contamination had occurred during incidents 2 and 3. Because laboratory B used the BACTEC 9000* system, which measures mycobacterial growth noninvasively, cross-contamination probably occurred during initial processing of the specimens rather than during mycobacterial growth measurements.

Incident 4

In July, laboratory C and TB Program staff noted a cluster of three cases of multidrug-resistant TB (MDR-TB) reported from one hospital. MDR-TB is rare in Wisconsin: during 1991–1995, only four cases were reported. The culture-positive specimens from these three patients had been processed in laboratory C on 2 consecutive days. The third and fifth specimens processed on the first day had been obtained from patient 1, who had AFB smear-positive pulmonary TB. The sixth (and last) specimen of the day was AFB smear-negative and the only *M. tuberculosis* culture-positive specimen among five specimens obtained from patient 2. The first specimen of the second day was AFB smear-negative and the only *M. tuberculosis* culture-positive specimen among four specimens obtained from patient 3. The RFLP patterns were identical for isolates from patients 1, 2, and 3. Patient 2 had cryptococcal pneumonia diagnosed, and no evidence of TB was detected in patient 3 during postmortem examination. In addition, laboratory C used the BACTEC 460 system, which has needles that enter vials during sampling. Based on these findings, DOH concluded that the specimens from patients 2 and 3 had been cross-contaminated by the specimen from patient 1, possibly from contaminated reagent or from carryover in the BACTEC 460 machine.

Incident 5

In May, a physician called laboratory D about the report of a positive *M. tuberculosis* subculture from a bronchoalveolar lavage (BAL) specimen obtained during

*Use of trade names and commercial sources is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

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bronchoscopy to evaluate a mass present on chest radiograph. A biopsy specimen of the mass showed lung cancer. The BAL specimen was AFB smear-negative with no growth on solid media or in the original broth medium. At the time the subculture was inoculated, the original broth medium was in an incubator next to a broth culture that was growing *M. tuberculosis* and was from a patient with clinically obvious TB. RFLP analysis of the subculture was not possible. Based on these findings, DOH concluded that the patient's subculture had probably been inoculated with the broth medium growing *M. tuberculosis* from the patient with active TB.

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Editorial Note: Incidents 1–5 resulted in false-positive cultures for *M. tuberculosis* for 11 patients.* Before recognition that these cultures were false-positive, 10 patients or their families had been informed of the diagnosis of TB, and eight patients received unnecessary medical treatments including hospitalization in respiratory isolation (one), bronchoscopy (two), and anti-TB medication (seven). Ten of these false-positive cases were reported to local health departments. As a result, 108 family and social contacts received tuberculin skin tests (TSTs); all were negative. The case management and contact investigations of these cases accounted for approximately 240 person-hours of labor by local and state health department staff. In addition, 328 hospital employees and patients received TSTs, and nine had chest radiographs; no evidence of transmission was found. Hospital infection-control and employee health staff expended an additional estimated 330 person-hours as a result of these episodes.

These findings in Wisconsin are similar to those in other recent reports that have documented the occurrence of false-positive *M. tuberculosis* cultures. The percentage of false-positive cultures in these reports ranged from 1.2% to 4.0% (*1–3,5,8*). False-positive results may be even more common in outbreak situations: based on a review of records for 223 MDR-TB culture-positive patients in outbreaks in five states, the clinical course was inconsistent with TB in 26% of patients (*7*).

False-positive cultures can adversely affect patients, their contacts, hospitals, and the public health system. Examples of these effects include psychological stress, social stigmatization of patients and their families (*3*), unnecessary and costly medical treatment (e.g., additional physician visits, radiographic studies, and additional specimen collection and culturing), and adverse side effects resulting from unnecessary anti-TB treatment (*1–4,6*).

Potential mechanisms resulting in contamination and laboratory error include mislabeling or switching specimens during handling (*4*), and instrument or reagent contamination resulting in carryover of mycobacteria from one sample to another during initial processing, processing for susceptibility testing, or sampling of sequential vials by the BACTEC 460 system (*2,3,6,7*). Primary prevention of laboratory error requires use of standardized laboratory procedures (*6*) that minimize the potential for errors.

*If these 11 cases had been included with the 114 true incident cases of TB in Wisconsin in 1996, they would have represented 9% of statewide reported cases.

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The process of culturing mycobacteria is inherently prone to errors because of factors including the ability of some culture systems to identify mycobacteria when few organisms are present, the multiple steps involved in processing mycobacterial cultures, the viability of *M. tuberculosis* for long periods in laboratory environments, and the large number of mycobacteria present in some specimens (*2*). In addition, some laboratories may process a volume of specimens that exceeds their capabilities (*6*). The potential for errors underscores the need for prompt recognition of false-positives. Indicators of potential false-positive *M. tuberculosis* cultures are that:

- All specimens from a patient are AFB smear-negative, and only one is *M. tuberculosis* culture-positive;
- The patient's signs, symptoms, and clinical course are inconsistent with TB;
- An *M. tuberculosis* culture-positive specimen, also likely to be AFB smear-positive, was processed the same day as the suspected specimen;
- The DNA fingerprint pattern of the suspected isolate is identical to that of the putative source isolate;
- There are no known epidemiologic links between the patient with the suspected isolate and the patient with the putative source isolate; and
- The duration of time for detection of growth in the suspected culture was prolonged, or only sparse colonies were detected on solid medium.

Timely recognition and investigation of false-positive cultures of *M. tuberculosis* requires the cooperation of and communication between clinicians, public health and private laboratories, and local and state health departments. When culture results are inconsistent with the patient's signs and symptoms or clinical course, clinicians should discuss *M. tuberculosis* results with the laboratory and the responsible local or state health department (*1*). Laboratory staff should record the date and order of processing to enable easy identification of clusters of positive cultures and should prospectively track positivity rates and establish a threshold which, when exceeded, will prompt an investigation (*6*). If false-positive cultures and/or contamination are suspected, laboratory staff should notify their local or state health department and the patient's physician and should consider obtaining DNA fingerprinting of the putative source and the potentially contaminated specimens (*1*). Finally, TB-control program staff should routinely analyze surveillance data for clusters of positive cultures from a laboratory and for case-patients associated with predictors for false-positive cultures.

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Perceptions of Child Sexual Abuse as a Public Health Problem — Vermont, September 1995

CDC and the World Health Organization have declared violence prevention a public health priority (*1,2*). One particular form of violent victimization, child sexual abuse*, is a risk factor for suicide attempts, depression, sexually transmitted diseases, and subsequent sexual assault (*3*). The public health approaches to child sexual abuse are intervention (e.g., treatment) and prevention. To assist in developing public health measures for preventing child sexual abuse in Vermont, in September 1995, STOP IT NOW! and Market Street Research, Inc.†, surveyed a representative sample of households in Vermont to assess knowledge and attitudes about child sexual abuse as a public health problem. This report summarizes the survey findings, which indicate that levels of awareness of child sexual abuse are high among Vermont residents.

The random-digit–dialed telephone survey of Vermont households employed a randomizing matrix procedure to select the specific household respondent aged ≥18 years to be interviewed based on the number of men and women of different ages within the household. Of the 297 eligible participants, 200 (67%) were interviewed. Demographic characteristics of respondents were similar to the total population of Vermont in 1990 based on the U.S. Census profile. Of all respondents, 54% were female, 44% had a high school diploma or less, and 30% had college degrees; the median age was 41.7 years. The standard error for all results ranged from 0.7 to 3.5.

Overall, 97% of the respondents were familiar with the term "child sexual abuse." Most (90%) had seen or heard news media reports about the subject during the year preceding the survey, and nearly half (49%) had discussed the topic during the preceding year.

A total of 74% of the respondents described child sexual abuse as either a "major problem" or "somewhat of a problem" in Vermont, compared with 92% who described alcohol and drug abuse and 94% who described drinking and driving as major problems. In addition, although nearly all respondents had heard about child sexual abuse, 53% were unable to define the term or repeated the term as the definition (e.g., "Child sexual abuse is the sexual abuse of children."). Approximately three fourths of

*Defined by STOP IT NOW! as any sexual touching or sexual assault of a child by an adult, adolescent, or older child. In addition, sexual abuse includes nontouching sexual actions, such as exposing oneself, showing pornography to a child, and photographing a child in sexual poses.

†STOP IT NOW! is a nonprofit organization, and Market Street Research, Inc., is a market research and evaluation company.

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the respondents did not know the behavioral characteristics of an adult who may be sexually abusing a child[§]. Six percent reported knowing an adult who they suspected was sexually abusing a child, and 14% reported knowing a child who they suspected was being sexually abused.

Most survey respondents believed that child sexual abuse exists in Vermont (73%), that treatment programs can help stop child sexual abuse (79%), and that persons who sexually abuse children should "get help" while in prison (87%). A total of 31% believed that adults who sexually abuse children can stop if motivated to do so.

When asked what they would do if confronted with a potentially harmful situation involving either drunk driving or potential sexual abuse of a child, 75% of the respondents reported they would confront someone who was drinking and trying to drive (e.g., by taking the car keys); in comparison, only 9% reported they would directly confront someone who was sexually abusing a child. In addition, 65% of the respondents reported that they would confront the problem by contacting police or local child protective services.

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Editorial Note: Previous studies have reported comparable estimates of the occurrence of child sexual abuse in the United States. In a national study in 1985, sexual abuse during childhood was reported by 27% of adult females and 16% of adult males (*4*). In addition, a nationwide poll commissioned by the National Committee to Prevent Child Abuse in 1995 indicated that 23% of parents (30% of mothers and 9% of fathers) reported that as a child, they had been "forced to touch an adult or older child or had been forcibly touched by an adult or older child in a sexual way; or that they had been forced to have sex with such an individual" (*5*).

Attitudes are one important indicator of the level of public knowledge about child sexual abuse and willingness to act to prevent it. In Vermont, most respondents believed that child sexual abuse is a problem and reported that they would respond to a hypothetical situation of child sexual abuse by directly confronting the abuser or by reporting it. However, a previous study in Kentucky reported a discrepancy between attitude and behavior under circumstances of real abuse: in that study, although 99% of respondents accurately defined as an example of abuse a man having sex with his 15-year-old step-daughter, only 31% of those who had reason to suspect child abuse during the previous 2 years had actually reported it (*6*).

The findings in this report are subject to at least two limitations. First, because of the small sample size, differences across demographic groups (e.g., urban versus rural) could not be analyzed. Second, because persons without telephones were excluded from the survey, the results may not be generalizable to Vermont households without telephones.

A substantial proportion of rapes among females in the United States are classified as child sexual abuse. Based on findings of the National Women's Study during 1989–1990, of all forcible rapes, 29% occurred when the victim was aged <11 years, and 32% when the victim was aged 11–17 years. Overall, 84% of all rape victims did not report the crime to police (*7*). The discrepancy in the number of rapes committed and the

[§]A group of related characteristics, including insistence on hugging or kissing a child when the child does not want the attention and asking intrusive questions about the sexual activities of adolescents.

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number reported underscores the need for intervention strategies to encourage persons to question suspicious behaviors and report abuse. STOP IT NOW! educates the public about child sexual abuse, encourages adults who suspect or perpetrate child sexual abuse to report the incident(s), and refers abusers to treatment programs. Because treatment programs may be effective for some sex offenders, the general public should be educated about the importance of identifying and referring sex offenders to effective intervention programs (*8*).

For many public health problems, one important prevention strategy is to increase public awareness about the issue. For example, social marketing campaigns have been components of programs successful in reducing deaths caused by drinking and driving and acquired immunodeficiency syndrome (*9,10*). Prevention programs for child sexual abuse may be effective if the public views child sexual abuse as a problem relevant in their communities. In Vermont, STOP IT NOW! addresses child sexual abuse systematically as a public health issue by using social marketing and public education to emphasize the responsibility of adults for prevention. Specific goals of this innovative approach to prevention are to educate the public about child sexual abusers and to motivate adults to action to prevent child sexual abuse. The findings in this report are being used by STOP IT NOW! to monitor the impact of the social marketing strategy on attitudes and knowledge about appropriate intervention strategies for child sexual abusers in Vermont.

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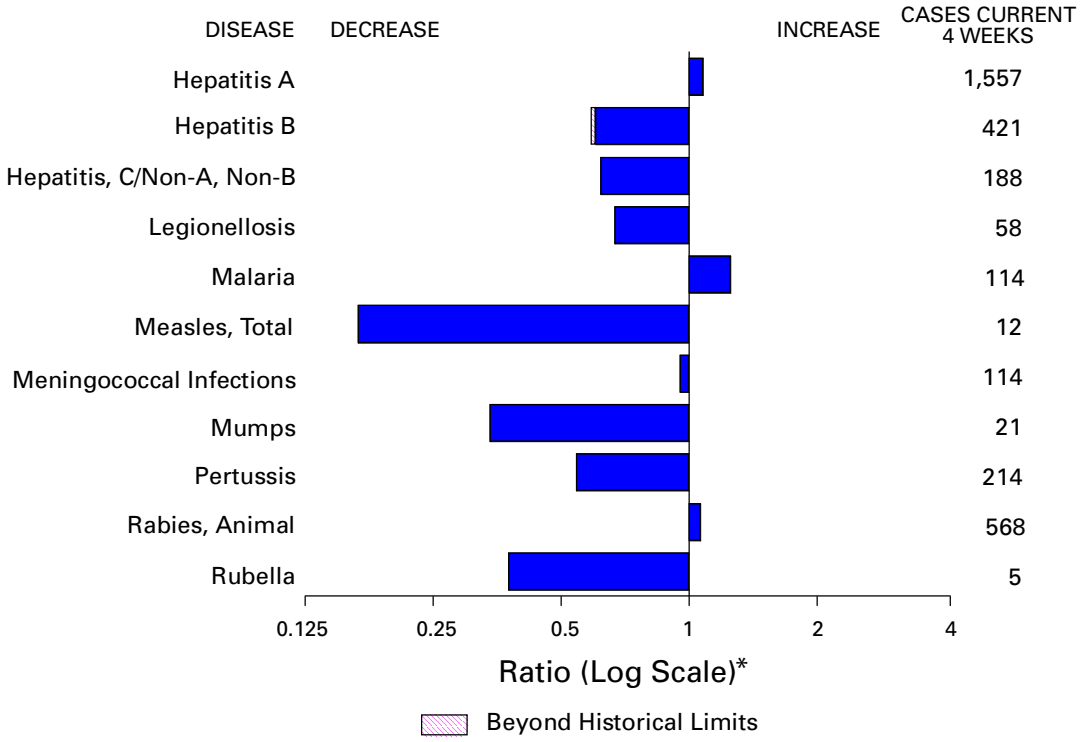
FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending August 23, 1997, with historical data — United States



*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 August 23, 1997 (34th Week)

	Cum. 1997		Cum. 1997
Anthrax	-	Plague	2
Brucellosis	47	Poliomyelitis, paralytic	-
Cholera	6	Psittacosis	30
Congenital rubella syndrome	3	Rabies, human	2
Cryptosporidiosis*	911	Rocky Mountain spotted fever (RMSF)	230
Diphtheria	5	Streptococcal disease, invasive Group A	1,025
Encephalitis: California*	28	Streptococcal toxic-shock syndrome*	23
eastern equine*	2	Syphilis, congenital¶	190
St. Louis*	1	Tetanus	29
western equine*	1	Toxic-shock syndrome	81
Hansen Disease	67	Trichinosis	6
Hantavirus pulmonary syndrome*†	14	Typhoid fever	202
Hemolytic uremic syndrome, post-diarrheal*	32	Yellow fever	-
HIV infection, pediatric*§	150		

-: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 July 29, 1997.
¶Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending August 23, 1997, and August 24, 1996 (34th 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	34,732	43,326	281,004	279,071	1,314	749	174,751	204,115	2,035	2,296
NEW ENGLAND	1,478	1,732	11,166	10,984	111	52	3,727	4,155	46	66
Maine	36	29	648	594	9	-	37	33	-	-
N.H.	19	58	499	466	4	7	67	103	8	7
Vt.	23	14	255	264	5	1	36	38	2	17
Mass.	533	871	4,677	4,254	65	44	1,424	1,380	29	36
R.I.	99	122	1,260	1,299	3	-	284	334	7	6
Conn.	768	638	3,827	4,107	25	-	1,879	2,267	-	-
MID. ATLANTIC	11,041	12,336	38,743	41,561	68	28	23,264	27,254	223	185
Upstate N.Y.	1,754	1,479	N	N	49	6	3,732	4,869	169	147
N.Y. City	5,750	7,039	19,959	21,769	8	-	8,880	10,064	-	3
N.J.	2,211	2,321	6,050	7,928	11	16	4,575	5,551	-	-
Pa.	1,326	1,497	12,734	11,864	N	6	6,077	6,770	54	35
E.N. CENTRAL	2,441	3,501	37,872	56,057	250	141	23,956	37,508	362	333
Ohio	525	754	7,361	13,461	58	32	5,096	9,525	12	24
Ind.	396	430	5,758	6,268	45	-	3,853	4,016	10	7
Ill.	899	1,571	6,951	15,730	43	-	3,329	11,069	51	63
Mich.	460	565	12,070	13,680	104	78	9,183	9,758	289	239
Wis.	161	181	5,732	6,918	N	31	2,495	3,140	-	-
W.N. CENTRAL	650	980	15,294	20,303	296	194	7,125	9,781	112	66
Minn.	128	188	U	3,128	145	132	U	1,381	3	1
Iowa	75	64	2,857	2,643	60	9	758	668	22	30
Mo.	275	485	7,493	8,332	31	40	4,737	5,577	72	17
N. Dak.	9	11	520	603	9	6	36	20	2	-
S. Dak.	4	9	829	939	17	-	92	119	-	-
Nebr.	67	65	1,147	1,771	21	-	426	674	2	6
Kans.	92	158	2,448	2,887	13	7	1,076	1,342	11	12
S. ATLANTIC	8,425	10,507	59,424	32,658	127	83	57,553	60,865	188	123
Del.	159	189	1,276	1,148	3	3	764	952	-	-
Md.	1,075	1,315	4,624	U	11	3	8,593	6,671	11	2
D.C.	598	727	N	N	1	-	2,600	2,982	-	-
Va.	719	750	7,520	7,095	N	18	5,198	6,029	19	9
W. Va.	62	83	1,922	1,410	N	-	614	491	13	8
N.C.	503	600	11,996	U	42	26	11,662	12,363	38	33
S.C.	484	526	7,461	U	4	6	6,651	7,010	27	21
Ga.	1,064	1,416	9,021	7,626	30	-	10,077	12,708	U	-
Fla.	3,761	4,901	15,604	15,379	35	27	11,394	11,659	80	50
E.S. CENTRAL	1,193	1,512	21,423	19,842	70	30	21,277	21,033	232	397
Ky.	211	268	4,253	4,408	21	-	2,688	2,686	11	25
Tenn.	501	534	8,195	8,675	35	30	6,932	7,502	161	297
Ala.	285	430	5,476	5,487	11	-	7,651	8,806	6	3
Miss.	196	280	3,499	1,272	3	-	4,006	2,039	54	72
W.S. CENTRAL	3,615	4,518	35,665	34,414	44	8	22,558	23,857	281	242
Ark.	131	185	872	1,151	8	1	1,802	2,715	-	8
La.	622	1,028	6,132	4,611	6	3	5,733	4,807	139	134
Okla.	188	187	4,894	5,007	3	1	3,080	3,147	6	1
Tex.	2,674	3,118	23,767	23,645	27	3	11,943	13,188	136	99
MOUNTAIN	1,022	1,315	14,806	16,452	151	82	4,769	5,153	270	394
Mont.	26	23	661	808	18	-	27	24	15	11
Idaho	34	29	993	1,022	15	8	78	73	37	91
Wyo.	13	4	375	408	10	-	35	26	120	122
Colo.	250	360	1,896	1,417	59	39	1,289	1,106	26	36
N. Mex.	104	116	2,124	2,633	6	4	886	535	33	53
Ariz.	255	370	6,184	7,251	N	23	1,857	2,523	24	45
Utah	82	124	1,045	991	35	-	156	200	3	18
Nev.	258	289	1,528	1,922	8	8	441	666	12	18
PACIFIC	4,867	6,924	46,611	46,800	197	131	10,522	14,509	321	490
Wash.	421	507	5,888	6,410	45	22	1,231	1,379	19	39
Oreg.	188	312	3,134	3,614	55	61	483	551	2	6
Calif.	4,187	5,955	35,625	34,887	88	41	8,256	11,991	196	308
Alaska	36	16	959	754	9	1	250	278	-	2
Hawaii	35	134	1,005	1,135	N	6	302	310	104	135
Guam	2	4	31	255	N	-	3	45	-	6
P.R.	1,199	1,337	U	U	28	U	403	433	82	124
V.I.	71	16	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 July 29, 1997.

†National Electronic Telecommunications System for Surveillance.

§Public Health Laboratory Information System.

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending August 23, 1997, and August 24, 1996 (34th 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	550	566	4,454	8,354	1,033	978	5,133	7,773	10,976	12,415	4,873
NEW ENGLAND	43	30	1,049	2,461	55	35	100	110	274	273	749
Maine	2	2	8	22	1	6	-	-	11	16	136
N.H.	4	1	9	32	1	1	-	1	10	9	25
Vt.	9	4	6	13	2	2	-	-	4	1	94
Mass.	10	15	176	125	20	12	47	51	160	128	157
R.I.	5	8	221	303	5	6	2	1	20	24	16
Conn.	13	N	629	1,966	26	8	51	57	69	95	321
MID. ATLANTIC	98	133	2,632	4,875	252	283	253	329	2,046	2,274	1,004
Upstate N.Y.	26	43	1,122	2,377	48	55	21	50	272	264	757
N.Y. City	4	10	30	256	137	164	57	97	1,061	1,171	U
N.J.	12	9	706	1,022	49	48	101	115	414	473	107
Pa.	56	71	774	1,220	18	16	74	67	299	366	140
E.N. CENTRAL	167	185	55	319	86	126	419	1,183	1,080	1,305	102
Ohio	81	57	35	15	13	9	126	452	196	191	72
Ind.	29	38	17	15	10	12	93	151	91	114	8
Ill.	5	27	3	8	29	62	42	328	533	715	7
Mich.	44	32	-	6	26	29	93	122	181	218	15
Wis.	8	31	U	275	8	14	65	130	79	67	-
W.N. CENTRAL	44	28	75	115	32	31	102	236	354	320	322
Minn.	1	3	55	38	10	14	U	26	92	74	31
Iowa	11	5	5	13	9	2	6	15	43	43	113
Mo.	12	5	9	34	6	8	70	168	145	133	15
N. Dak.	2	-	-	-	2	1	-	-	8	5	47
S. Dak.	2	2	1	-	-	-	-	-	7	14	51
Nebr.	12	10	2	2	1	2	5	10	14	14	1
Kans.	4	3	3	28	4	4	21	17	45	37	64
S. ATLANTIC	79	75	398	382	218	165	2,133	2,523	2,088	2,301	1,971
Del.	7	9	30	138	3	3	16	25	11	30	45
Md.	17	15	276	136	61	48	576	443	206	193	359
D.C.	3	7	7	3	11	7	77	96	60	88	4
Va.	14	13	31	27	49	30	161	289	194	178	395
W. Va.	N	N	3	10	-	3	3	2	39	41	63
N.C.	10	7	23	55	12	19	485	698	270	326	593
S.C.	3	4	1	3	10	9	237	265	199	229	103
Ga.	-	3	1	1	22	16	358	448	401	419	210
Fla.	25	17	26	9	50	30	220	257	708	797	199
E.S. CENTRAL	35	31	49	56	21	25	1,166	1,706	819	914	212
Ky.	5	2	7	18	4	6	95	90	117	153	22
Tenn.	24	15	26	16	6	10	523	562	273	311	127
Ala.	2	3	5	6	8	3	303	375	277	290	63
Miss.	4	11	11	16	3	6	245	679	152	160	-
W.S. CENTRAL	13	16	55	75	13	23	705	1,190	1,507	1,445	225
Ark.	-	1	15	20	4	-	71	172	126	126	27
La.	2	1	2	1	8	3	239	349	138	10	2
Okla.	3	4	11	7	1	-	83	128	118	113	72
Tex.	8	10	27	47	-	20	312	541	1,125	1,196	124
MOUNTAIN	36	31	13	6	52	40	101	104	322	407	106
Mont.	1	1	-	-	2	6	-	-	7	14	32
Idaho	2	-	2	-	-	-	-	4	8	6	-
Wyo.	1	3	3	3	2	3	-	2	2	5	22
Colo.	11	7	4	-	26	16	8	24	61	52	-
N. Mex.	2	1	1	1	7	2	8	4	18	57	9
Ariz.	8	12	1	-	7	5	73	56	163	155	36
Utah	7	2	-	1	3	4	5	2	17	39	3
Nev.	4	5	2	1	5	4	7	12	46	79	4
PACIFIC	35	37	128	65	304	250	154	392	2,486	3,176	182
Wash.	6	5	5	11	13	15	7	7	190	173	-
Oreg.	-	-	13	12	15	16	5	6	109	116	8
Calif.	28	28	110	41	271	209	140	377	2,022	2,719	153
Alaska	-	1	-	-	3	3	1	-	55	50	21
Hawaii	1	3	-	1	2	7	1	2	110	118	-
Guam	-	1	-	-	-	-	-	3	5	55	-
P.R.	-	-	-	-	5	1	169	157	129	130	46
V.I.	-	-	-	-	-	-	-	-	-	-	-
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 August 23, 1997, and August 24, 1996 (34th 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	715	746	17,818	17,783	5,581	6,244	-	59	-	42	101	419
NEW ENGLAND	39	25	429	231	100	143	-	10	-	6	16	14
Maine	4	-	47	13	6	2	-	-	-	1	1	-
N.H.	5	10	21	10	7	9	-	1	-	-	1	-
Vt.	3	1	8	4	5	11	-	-	-	-	-	2
Mass.	23	13	168	121	38	48	-	9	-	4	13	11
R.I.	2	1	103	9	12	8	-	-	-	-	-	-
Conn.	2	-	82	74	32	65	-	-	-	1	1	1
MID. ATLANTIC	83	153	1,277	1,184	825	960	-	14	-	8	22	34
Upstate N.Y.	18	37	200	274	176	232	-	2	-	3	5	8
N.Y. City	23	41	481	363	297	346	-	5	-	2	7	11
N.J.	32	39	193	241	155	183	-	2	-	-	2	3
Pa.	10	36	403	306	197	199	-	5	-	3	8	12
E.N. CENTRAL	118	127	1,681	1,661	589	726	-	6	-	3	9	17
Ohio	69	72	226	560	57	86	-	-	-	-	-	2
Ind.	12	7	205	227	70	97	-	-	-	-	-	-
Ill.	26	35	384	441	140	219	-	6	-	1	7	3
Mich.	10	8	768	285	294	258	-	-	-	2	2	3
Wis.	1	5	98	148	28	66	-	-	-	-	-	9
W.N. CENTRAL	40	33	1,395	1,445	312	321	-	9	-	3	12	19
Minn.	27	20	128	85	26	38	-	-	-	3	3	16
Iowa	5	3	286	241	28	43	-	-	-	-	-	-
Mo.	4	7	697	731	221	191	-	1	-	-	1	2
N. Dak.	-	-	10	35	3	1	-	-	-	-	-	-
S. Dak.	2	1	17	40	1	3	-	8	-	-	8	-
Nebr.	1	1	61	101	10	21	-	-	-	-	-	-
Kans.	1	1	196	212	23	24	-	-	-	-	-	1
S. ATLANTIC	126	138	1,131	764	826	833	-	2	-	9	11	10
Del.	-	2	24	11	4	6	-	-	-	-	-	1
Md.	46	48	163	125	116	111	-	-	-	2	2	2
D.C.	2	5	17	22	25	26	-	-	-	1	1	-
Va.	10	6	143	107	82	95	-	-	-	1	1	2
W. Va.	3	6	8	12	11	17	-	-	-	-	-	-
N.C.	17	22	126	99	171	231	-	1	-	1	2	2
S.C.	3	4	71	42	62	54	U	-	U	1	1	-
Ga.	24	31	238	86	86	8	-	-	-	1	1	2
Fla.	21	14	341	260	269	285	-	1	-	2	3	1
E.S. CENTRAL	37	22	420	950	444	535	-	-	-	-	-	1
Ky.	5	5	54	29	26	49	-	-	-	-	-	-
Tenn.	24	8	265	629	299	293	-	-	-	-	-	1
Ala.	8	8	61	133	46	42	-	-	-	-	-	-
Miss.	-	1	40	159	73	151	U	-	U	-	-	-
W.S. CENTRAL	33	32	3,721	3,481	705	761	-	3	-	4	7	24
Ark.	1	-	175	309	41	55	-	-	-	-	-	-
La.	7	3	142	106	96	77	-	-	-	-	-	-
Okla.	22	25	1,068	1,485	26	24	-	-	-	-	-	-
Tex.	3	4	2,336	1,581	542	605	-	3	-	4	7	24
MOUNTAIN	76	39	2,895	2,869	604	751	-	8	-	1	9	154
Mont.	-	-	59	81	6	8	-	-	-	-	-	-
Idaho	1	1	95	150	18	69	-	-	-	-	-	1
Wyo.	3	-	26	26	28	30	-	-	-	-	-	1
Colo.	11	11	297	298	112	86	-	-	-	-	-	7
N. Mex.	8	9	223	281	190	264	-	1	-	-	1	14
Ariz.	29	12	1,484	1,119	142	171	-	5	-	-	5	8
Utah	3	6	429	649	66	68	-	1	-	-	1	118
Nev.	21	-	282	265	42	55	-	1	-	1	2	5
PACIFIC	163	177	4,869	5,198	1,176	1,214	-	7	-	8	15	146
Wash.	3	2	328	327	48	62	-	1	-	-	1	38
Oreg.	27	24	248	623	68	79	-	-	-	-	-	8
Calif.	122	145	4,183	4,160	1,035	1,058	-	4	-	7	11	34
Alaska	4	4	25	33	17	7	-	-	-	-	-	63
Hawaii	7	2	85	55	8	8	-	2	-	1	3	3
Guam	-	-	-	6	1	-	U	-	U	-	-	-
P.R.	-	1	215	151	1,004	669	-	-	-	-	-	2
V.I.	-	-	-	28	-	26	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 155 cases among children aged <5 years, serotype was reported for 83 and of those, 34 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 August 23, 1997, and August 24, 1996 (34th 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	2,286	2,235	4	381	465	53	3,187	3,040	-	128	209
NEW ENGLAND	143	94	-	8	1	8	608	649	-	1	25
Maine	16	10	-	-	-	-	6	23	-	-	-
N.H.	13	3	-	-	-	6	73	53	-	-	-
Vt.	3	3	-	-	-	2	185	30	-	-	2
Mass.	70	36	-	2	1	-	318	516	-	1	20
R.I.	13	10	-	5	-	-	12	8	-	-	-
Conn.	28	32	-	1	-	-	14	19	-	-	3
MID. ATLANTIC	209	242	1	41	56	2	224	202	-	28	10
Upstate N.Y.	53	63	-	7	17	1	75	105	-	2	4
N.Y. City	38	35	-	3	13	-	54	22	-	26	4
N.J.	44	53	-	5	2	-	9	13	-	-	2
Pa.	74	91	1	26	24	1	86	62	-	-	-
E.N. CENTRAL	320	318	1	41	98	10	250	382	-	4	3
Ohio	125	117	-	18	33	3	103	132	-	-	-
Ind.	35	46	1	7	6	3	38	26	-	-	-
Ill.	97	89	-	7	19	3	40	82	-	1	1
Mich.	37	31	-	9	38	1	34	29	-	-	2
Wis.	26	35	-	-	2	-	35	113	-	3	-
W.N. CENTRAL	171	180	-	13	12	16	223	168	-	-	-
Minn.	29	25	-	5	3	8	142	127	-	-	-
Iowa	38	38	-	6	1	-	22	4	-	-	-
Mo.	76	67	-	-	5	7	36	20	-	-	-
N. Dak.	1	3	-	-	2	-	2	1	-	-	-
S. Dak.	4	9	-	-	-	-	3	3	-	-	-
Nebr.	7	16	-	2	-	1	5	5	-	-	-
Kans.	16	22	-	-	1	-	13	8	-	-	-
S. ATLANTIC	404	351	-	52	76	4	313	322	-	63	91
Del.	5	2	-	-	-	-	1	17	-	-	-
Md.	36	39	-	4	25	2	95	124	-	-	-
D.C.	1	5	-	-	-	-	3	-	-	-	1
Va.	37	41	-	9	10	-	34	31	-	1	2
W. Va.	14	13	-	-	-	-	5	2	-	-	-
N.C.	76	60	-	8	17	-	85	54	-	51	77
S.C.	44	42	U	10	5	U	14	19	U	9	1
Ga.	76	103	-	5	2	-	9	17	-	-	-
Fla.	115	46	-	16	17	2	67	58	-	2	10
E.S. CENTRAL	180	161	-	18	19	4	71	168	-	-	2
Ky.	38	21	-	3	-	-	15	134	-	-	-
Tenn.	71	47	-	3	1	1	28	15	-	-	-
Ala.	55	54	-	6	3	3	19	12	-	-	2
Miss.	16	39	U	6	15	U	9	7	U	-	N
W.S. CENTRAL	219	246	-	34	32	3	132	87	-	4	7
Ark.	26	28	-	1	1	-	16	3	-	-	-
La.	45	46	-	11	11	-	13	6	-	-	1
Okla.	24	23	-	-	-	2	16	8	-	-	-
Tex.	124	149	-	22	20	1	87	70	-	4	6
MOUNTAIN	134	132	-	50	19	6	847	287	-	5	6
Mont.	8	6	-	-	-	-	16	16	-	-	-
Idaho	8	20	-	2	-	1	535	89	-	1	2
Wyo.	1	3	-	1	-	-	6	2	-	-	-
Colo.	36	25	-	3	3	1	181	86	-	-	2
N. Mex.	22	21	N	N	N	4	61	40	-	-	-
Ariz.	38	30	-	31	1	-	24	16	-	4	1
Utah	11	12	-	7	3	-	12	10	-	-	-
Nev.	10	15	-	6	12	-	12	28	-	-	1
PACIFIC	506	511	2	124	152	-	519	775	-	23	65
Wash.	59	72	-	14	18	-	224	279	-	5	15
Oreg.	98	90	N	N	N	-	17	42	-	-	1
Calif.	344	341	1	90	111	-	254	430	-	10	46
Alaska	1	5	-	3	2	-	13	1	-	-	-
Hawaii	4	3	1	17	21	-	11	23	-	8	3
Guam	-	4	U	1	4	U	-	-	U	-	-
P.R.	9	11	-	5	1	-	-	2	-	-	-
V.I.	-	-	U	-	1	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 August 23, 1997 (34th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	531	370	90	42	18	11	42
Boston, Mass.	141	81	32	16	9	3	12
Bridgeport, Conn.	35	26	4	2	1	2	1
Cambridge, Mass.	10	7	2	-	1	-	1
Fall River, Mass.	26	19	4	3	-	-	-
Hartford, Conn.	43	28	9	3	1	2	3
Lowell, Mass.	30	23	4	3	-	-	1
Lynn, Mass.	9	4	4	1	-	-	2
New Bedford, Mass.	24	20	2	2	-	-	2
New Haven, Conn.	32	24	5	2	-	1	6
Providence, R.I.	63	46	10	5	2	-	1
Somerville, Mass.	3	3	-	-	-	-	-
Springfield, Mass.	34	27	3	1	1	2	5
Waterbury, Conn.	27	22	2	3	-	-	-
Worcester, Mass.	54	40	9	1	3	1	8
MID. ATLANTIC	2,019	1,382	396	167	39	35	82
Albany, N.Y.	44	29	7	5	2	1	4
Allentown, Pa.	17	16	1	-	-	-	-
Buffalo, N.Y.	57	43	10	1	1	2	-
Camden, N.J.	20	12	4	2	1	1	-
Elizabeth, N.J.	19	15	2	2	-	-	-
Erie, Pa.	42	31	8	3	-	-	1
Jersey City, N.J.	41	24	13	2	-	2	-
New York City, N.Y.	1,034	696	211	92	22	13	39
Newark, N.J.	45	20	14	8	1	2	2
Paterson, N.J.	25	15	5	5	-	-	-
Philadelphia, Pa.	300	215	58	20	4	3	12
Pittsburgh, Pa.§	80	46	16	13	1	4	5
Reading, Pa.	4	3	1	-	-	-	-
Rochester, N.Y.	102	80	15	3	3	1	9
Schenectady, N.Y.	29	24	5	-	-	-	1
Scranton, Pa.	29	23	5	-	-	1	1
Syracuse, N.Y.	70	52	8	4	3	3	4
Trenton, N.J.	14	5	6	2	-	1	-
Utica, N.Y.	23	18	3	2	-	-	-
Yonkers, N.Y.	24	15	4	3	1	1	4
E.N. CENTRAL	1,872	1,245	373	166	45	43	88
Akron, Ohio	55	40	10	3	-	2	1
Canton, Ohio	28	19	6	1	-	2	3
Chicago, Ill.	410	256	89	42	12	11	17
Cincinnati, Ohio	92	61	20	6	1	4	5
Cleveland, Ohio	159	90	37	28	1	3	1
Columbus, Ohio	160	106	31	16	3	4	10
Dayton, Ohio	108	82	17	3	3	3	7
Detroit, Mich.	204	120	43	26	13	2	9
Evansville, Ind.	41	32	7	2	-	-	1
Fort Wayne, Ind.	48	33	8	4	2	1	5
Gary, Ind.	U	U	U	U	U	U	U
Grand Rapids, Mich.	63	47	10	2	4	-	5
Indianapolis, Ind.	167	111	34	17	2	3	6
Lansing, Mich.	33	24	5	3	1	-	3
Milwaukee, Wis.	109	81	20	6	-	2	11
Peoria, Ill.	30	19	8	-	-	3	1
Rockford, Ill.	42	26	12	2	1	1	1
South Bend, Ind.	38	31	4	2	-	1	-
Toledo, Ohio	85	67	12	3	2	1	2
Youngstown, Ohio	U	U	U	U	U	U	U
W.N. CENTRAL	652	460	102	42	20	19	29
Des Moines, Iowa	49	36	8	3	1	1	6
Duluth, Minn.	U	U	U	U	U	U	U
Kansas City, Kans.	30	19	6	3	2	-	1
Kansas City, Mo.	87	53	14	3	5	3	2
Lincoln, Nebr.	26	21	3	2	-	-	1
Minneapolis, Minn.	159	114	32	9	2	2	8
Omaha, Nebr.	75	51	15	4	-	5	5
St. Louis, Mo.	103	76	8	10	6	3	-
St. Paul, Minn.	46	37	5	2	-	2	3
Wichita, Kans.	77	53	11	6	4	3	3

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
S. ATLANTIC	1,050	681	215	108	31	15	54
Atlanta, Ga.	159	87	41	19	7	5	4
Baltimore, Md.	189	105	39	34	8	3	19
Charlotte, N.C.	89	67	18	4	-	-	4
Jacksonville, Fla.	150	111	21	12	3	3	2
Miami, Fla.	99	63	21	12	1	2	-
Norfolk, Va.	47	32	9	4	1	1	2
Richmond, Va.	U	U	U	U	U	U	U
Savannah, Ga.	45	31	7	4	3	-	5
St. Petersburg, Fla.	32	26	3	2	1	-	3
Tampa, Fla.	157	105	36	11	4	1	15
Washington, D.C.	66	40	17	6	3	-	-
Wilmington, Del.	17	14	3	-	-	-	-
E.S. CENTRAL	833	529	190	64	26	22	62
Birmingham, Ala.	182	116	34	21	4	5	9
Chattanooga, Tenn.	66	48	10	3	4	1	4
Knoxville, Tenn.	100	69	23	5	2	1	11
Lexington, Ky.	65	39	20	4	-	2	11
Memphis, Tenn.	170	112	36	15	5	2	16
Mobile, Ala.	69	42	17	5	-	5	3
Montgomery, Ala.	35	24	5	3	3	-	2
Nashville, Tenn.	146	79	45	8	8	6	6
W.S. CENTRAL	1,396	890	276	134	48	48	62
Austin, Tex.	59	43	9	5	1	1	4
Baton Rouge, La.	15	10	3	1	1	-	-
Corpus Christi, Tex.	47	29	13	2	1	2	3
Dallas, Tex.	187	110	32	31	5	9	1
El Paso, Tex.	69	42	17	8	1	1	2
Ft. Worth, Tex.	107	65	17	15	6	4	7
Houston, Tex.	366	232	77	34	13	10	25
Little Rock, Ark.	70	50	14	2	1	3	4
New Orleans, La.	110	56	27	14	9	4	-
San Antonio, Tex.	206	141	37	11	8	9	7
Shreveport, La.	59	43	11	2	-	3	2
Tulsa, Okla.	101	69	19	9	2	2	7
MOUNTAIN	827	537	143	85	40	19	43
Albuquerque, N.M.	92	60	16	8	5	2	-
Boise, Idaho	29	23	3	1	2	-	2
Colo. Springs, Colo.	45	30	8	3	2	2	3
Denver, Colo.	117	70	23	12	6	6	8
Las Vegas, Nev.	133	88	30	10	3	2	6
Ogden, Utah	U	U	U	U	U	U	U
Phoenix, Ariz.	145	88	29	21	4	3	10
Pueblo, Colo.	21	14	2	2	2	1	-
Salt Lake City, Utah	100	60	11	19	6	2	6
Tucson, Ariz.	145	104	21	9	10	1	8
PACIFIC	1,934	1,345	346	150	48	45	131
Berkeley, Calif.	17	7	8	2	-	-	1
Fresno, Calif.	43	30	6	2	-	5	3
Glendale, Calif.	34	27	3	4	-	-	2
Honolulu, Hawaii	84	55	16	8	-	5	4
Long Beach, Calif.	98	61	26	6	1	4	10
Los Angeles, Calif.	617	422	110	55	19	11	23
Pasadena, Calif.	29	23	-	2	1	3	4
Portland, Oreg.	128	95	20	10	2	1	6
Sacramento, Calif.	212	156	29	16	6	5	26
San Diego, Calif.	137	97	22	13	3	2	15
San Francisco, Calif.	112	75	18	15	2	2	12
San Jose, Calif.	133	90	32	7	2	2	16
Santa Cruz, Calif.	28	21	6	-	1	-	2
Seattle, Wash.	136	96	27	7	5	1	2
Spokane, Wash.	54	35	12	2	2	3	3
Tacoma, Wash.	72	55	11	1	4	1	2
TOTAL	11,114¶	7,439	2,131	958	315	257	593

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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