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MORBIDITY AND MORTALITY WEEKLY REPORT

National Diabetes Awareness Month — November 1997

November is National Diabetes Awareness Month. In the United States, an estimated 15.7 million persons have diabetes; approximately one third of the cases are undiagnosed (*1*). CDC highlighted National Diabetes Awareness Month with the national satellite broadcast, "Diabetes: Control is Prevention." The broadcast emphasized increasing awareness of the impact of diabetes, existing efforts to reduce the burden of diabetes, and mobilizing communities to improve diabetes outcomes.

Additional activities will emphasize the new guidelines regarding the diagnosis and classification of diabetes. These guidelines were developed by an international Expert Committee on the Diagnosis and Classification of Diabetes Mellitus, sponsored by the American Diabetes Association (*2*); CDC recommends that health-care providers use the new diagnostic and classification criteria. The following major changes are included in the committee's report:

Diagnosis. Lower the current fasting diagnostic criteria from ≥140 mg/dL of plasma glucose to ≥126 mg/dL, and eliminate the routine clinical use of oral glucose tolerance tests, which are more difficult and more expensive to perform than fasting glucose tests. This change does not alter the criteria for gestational diabetes mellitus.

Classification. Eliminate the terms "insulin-dependent diabetes mellitus (IDDM)" and "non-insulin-dependent diabetes mellitus (NIDDM)." Type 1 diabetes replaces IDDM or juvenile-onset diabetes, and type 2 diabetes replaces NIDDM or adult-onset diabetes. The other two types are "gestational diabetes mellitus" and "other specific types," which includes cases of hyperglycemia associated with specific genetic defects, surgery, or drugs.

Additional information about diabetes is available from CDC's Division of Diabetes Translation, National Center for Chronic Disease Prevention and Health Promotion, 4770 Buford Highway, N.E., Atlanta, GA 30341-3724, and from CDC's World-Wide Web site, http://www.cdc.gov/diabetes, and other sites (*3*).

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3. CDC. Diabetes information on the Internet. MMWR 1997;46:1027–8.

Trends in the Prevalence and Incidence of Self-Reported Diabetes Mellitus — United States, 1980–1994

Diabetes mellitus is associated with severe microvascular complications (e.g., kidney disease and eye disease) and macrovascular complications (e.g., stroke and ischemic heart disease) (*1,2*). These complications can result in severe long-term complications (e.g., amputation, disability, and blindness) and account for a substantial economic burden (*3*). This report uses data from CDC's National Health Interview Survey (NHIS) to examine trends in the incidence and prevalence of self-reported diabetes in the United States during 1980–1994. The findings document increases in both the incidence and prevalence of diabetes during this period and suggest that most of the increase was attributable to factors other than the aging of the U.S. population.

Estimates of the prevalence and incidence of self-reported diabetes in the United States were obtained from the NHIS of CDC's National Center for Health Statistics for 1980–1994 (the most recent year for which data were available). The NHIS is a multistage probability-designed household survey of approximately 120,000 U.S. civilian, noninstitutionalized adults (aged ≥18 years) (*4*). Each year, a one-sixth subsample of NHIS respondents is asked whether during the preceding 12 months any family member has had diabetes. If a household member is reported to have had diabetes, the respondent is asked for the time since diagnosis. In this report, the prevalence of diagnosed diabetes is derived from the number of persons reported to have had diabetes, and the incidence of diabetes is derived from the number of persons reported to have had diabetes diagnosed within the previous 12 months. Race-specific comparisons were restricted to whites and blacks because numbers for other racial/ethnic groups were too small for meaningful analysis. NHIS data were weighted to reflect the U.S. civilian, noninstitutionalized population, and standard errors of the estimates were calculated by using SUDAAN. Weighted linear regression was used for analysis of temporal trends. Prevalence and incidence data were age-adjusted by the direct method using the 1980 resident population as the standard.

In 1994, approximately 7.7 million persons in the U.S. civilian, noninstitutionalized population reported having diabetes; this total is an increase of 2.2 million since 1980 (Table 1). From 1980 to 1994, the crude prevalence of diagnosed diabetes increased 17%, from 25.4 to 29.8 per 1000 population ($p<0.01$), respectively. The age-adjusted prevalence of diagnosed diabetes increased 15%, from 25.5 to 29.3 per 1000 ($p<0.01$).

During the 1990s, the number of new cases of diagnosed diabetes has averaged 727,000 per year (Table 1). During 1992–1994, both the crude and age-adjusted incidence of diagnosed diabetes increased significantly ($p<0.01$). In 1994, the crude incidence of diagnosed diabetes was 48% higher than that in 1980 (3.7 versus 2.5 per 1000) ($p<0.01$).

The prevalence of diagnosed diabetes increased with increasing age (Figure 1). From 1980 to 1994, prevalence increased in each of the three age groups examined (≤44 years, 45–64 years, and ≥65 years) (Figure 1) ($p<0.01$ for each age group). The absolute change in prevalence increased with increasing age ($p<0.01$, weighted least squares regression, F test).

The age-adjusted prevalence of diagnosed diabetes was higher among blacks than among whites during 1980–1994 (Figure 2). During this period, the age-adjusted

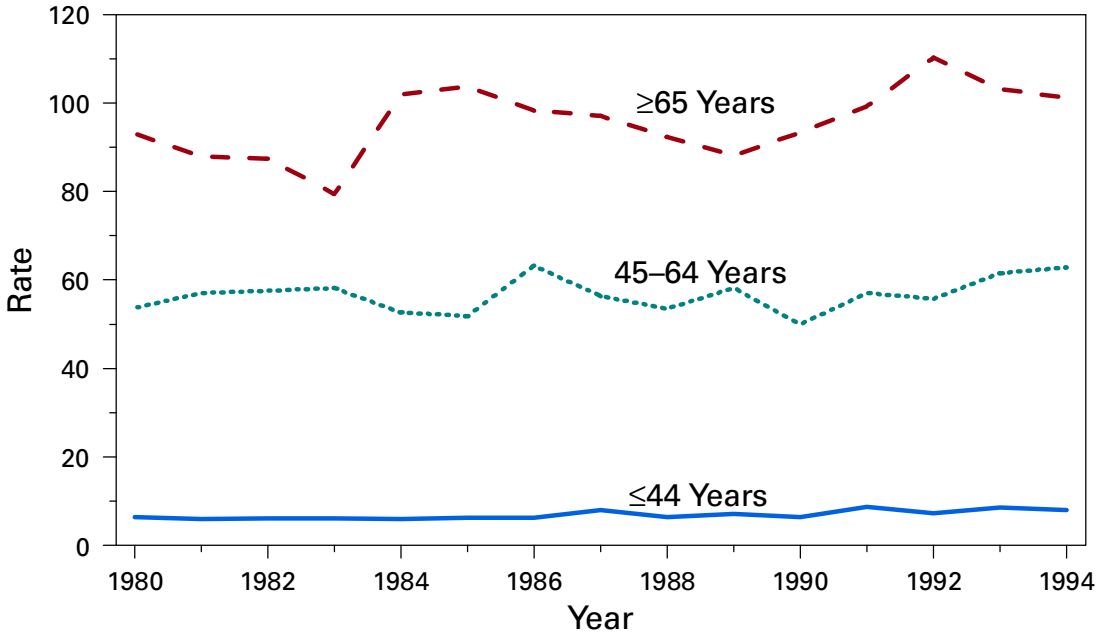
Self-Reported Diabetes Mellitus — Continued

TABLE 1. Prevalence and incidence of self-reported diabetes mellitus, by year — United States, National Health Interview Survey, 1980–1994

Year	Prevalence			Incidence		
	No. existing cases*	Crude rate†	Age-adjusted rate†	No. existing cases*	Crude rate§	Age-adjusted rate§
1980	5528	25.4	25.5	541	2.5	2.5
1981	5645	25.1	25.3	501	2.2	2.2
1982	5729	25.2	25.4	713	3.1	3.2
1983	5613	24.5	24.7	690	3.0	3.0
1984	6004	25.9	26.0	645	2.8	2.8
1985	6134	26.2	26.2	679	2.9	2.9
1986	6563	27.8	27.8	644	2.7	2.7
1987	6609	27.7	27.6	715	3.0	3.0
1988	6162	25.6	25.4	678	2.8	2.8
1989	6467	26.6	26.3	677	2.8	2.8
1990	6212	25.2	24.8	521	2.1	2.1
1991	7206	29.0	28.5	672	2.7	2.7
1992	7365	29.3	28.5	613	2.4	2.4
1993	7783	30.6	29.7	865	3.4	3.3
1994	7744	29.8	29.3	965	3.7	3.7

*In thousands.
†The number of persons who reported having diabetes per 1000 population.
§The number of persons who reported having had diabetes diagnosed within the previous 12 months per 1000 population.

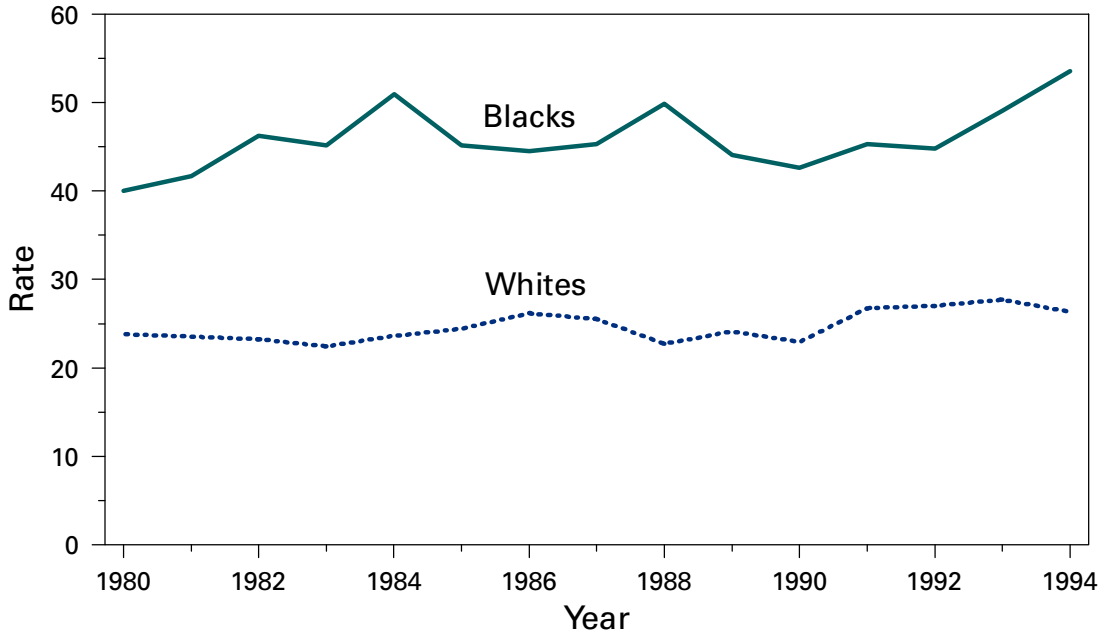
FIGURE 1. Prevalence* of self-reported diabetes, by age group — United States, 1980–1994



*Rate per 1000 population.

Self-Reported Diabetes Mellitus — Continued

FIGURE 2. Age-adjusted prevalence* of self-reported diabetes, by race† — United States, 1980–1994



*Rate per 1000 population.
†Numbers for racial/ethnic groups other than black and white were too small for meaningful analysis.

prevalence of diagnosed diabetes increased 33% (from 40.1 to 53.5 per 1000) among blacks (p=0.05) and increased 11% (from 23.8 to 26.4 per 1000) among whites (p<0.01).

Reported by: Epidemiology and Statistics Br, Div of Diabetes Translation, National Center for Chronic Disease Prevention and Health Promotion, CDC.

Editorial Note: Type 2 diabetes (which accounts for 90%–95% of all diagnosed diabetes) is associated with risk factors that are modifiable (e.g., obesity and physical inactivity) and nonmodifiable (e.g., genetic factors, older age, race/ethnicity, and positive family history) (*2*). Therefore, variations in patterns of some of these risk factors (e.g., increases in the prevalence of obesity [*5,6*], aging of the total U.S. population, and increases in some U.S. racial/ethnic minority groups) probably will affect the prevalence and incidence of diagnosed diabetes.

The increasing prevalence and incidence of diabetes documented in this report underscore the urgent need for effective intervention strategies to prevent diabetes and its complications. These data also highlight the need to intensify prevention efforts among blacks as a group in which diabetes and its complications have occurred at disproportionately higher levels. The frequency of diabetes among blacks is influenced by the same modifiable and nonmodifiable risk factors that are associated with diabetes in whites (*7*), and the higher prevalence of diabetes among blacks may reflect higher levels of these risk factors among blacks compared with whites.

The findings in this report indicate that most of the increase in the prevalence of diabetes during 1980–1994 and the recent increase in incidence of diagnosed diabetes are not entirely attributable to the aging of the U.S. population. However, because

Self-Reported Diabetes Mellitus — Continued

these findings are based on cross-sectional surveillance data, this analysis cannot determine whether the recent increase in diabetes incidence reflects sampling variability, a true increase in disease incidence, improved ascertainment of cases, or a combination of these factors. In addition, this analysis cannot determine the relative influence of diabetes incidence and mortality on the increase in the prevalence of diagnosed diabetes. However, findings of a recent prospective cohort study indicate that survival among persons with diabetes did not increase at a greater rate than that among the total population, suggesting that the increased prevalence of diagnosed diabetes may reflect increased disease incidence (*8*).

Because the NHIS estimates are based on self-reports of diabetes, these findings probably underestimate the true prevalence of diabetes. Although the validity of self-reported diabetes is high for those with diagnosed diabetes (*9*), millions of persons with diabetes do not know they have the disease (*10*). In addition, the sampling variability of the estimated prevalence of diabetes among blacks and the incidence in the total population was large; therefore, failure to achieve statistical significance in some trends may reflect small sample sizes instead of a lack of true trends.

CDC and other organizations are collaborating on development and implementation of primary-prevention (prevention of diabetes), secondary-prevention (prevention of diabetes complications), and tertiary-prevention (prevention of disability) efforts directed at diabetes and its complications. CDC's efforts include 1) providing technical assistance and support to diabetes-control programs in all 50 states, the District of Columbia, and the U.S. territories; 2) conducting surveillance, health services research, and cost-effectiveness research to provide information for public health decision-making; 3) sponsoring Project DIRECT (Diabetes Intervention Reaching and Educating Communities Together), a community-based demonstration project in a predominantly black community aimed at secondary and tertiary prevention by reducing modifiable risk factors for diabetes; 4) participating in a clinical trial sponsored by the National Institutes of Health to test the effectiveness of interventions—including dietary and physical activity lifestyle changes—in the primary prevention of type 2 diabetes; and 5) participating in the National Diabetes Education Program, a coalition of organizations formed to increase awareness of the risk factors for diabetes and to reduce the burden of diabetes in the U.S. population through secondary and tertiary prevention. Monitoring trends in diabetes provides critical information for developing a public health response to diabetes. Therefore, CDC will continue efforts to improve diabetes surveillance data to assure effective and timely public health responses to this disease.

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Self-Reported Diabetes Mellitus — Continued

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Diabetes-Specific Preventive-Care Practices Among Adults in a Managed-Care Population — Colorado, Behavioral Risk Factor Surveillance System, 1995

The prevalence of diagnosed diabetes in the United States is 3%; however, diabetes accounts for approximately 15% of total U.S. health-care expenditures (*1*). Preventive-care practices (e.g., glycemic control and regular foot and ophthalmic examinations) can reduce the occurrence and progression of diabetic complications (*2–4*). Although managed-care organizations (MCOs) have assessed the use of such practices through chart reviews (*5*), telephone surveys of MCO patients with diabetes are a less expensive method for collecting accurate data (*6*). The ongoing, state-based Behavioral Risk Factor Surveillance System (BRFSS) telephone survey can be used to assess levels of care provided by MCOs and self-care practices among persons with diabetes in MCO populations (*6*). In 1995, a Colorado-based MCO collaborated with the Colorado Diabetes Control Program (CDCP) to use the state-based BRFSS to assess care practices among MCO enrollees. This report presents findings from the CDCP analysis of data on MCO enrollees aged ≥30 years who had diabetes; the findings indicate that, although approximately three fourths of enrollees reported most preventive-care practices, two thirds had never heard the term hemoglobin "A-one-C," one fourth had not had their feet examined during the preceding year, and nearly one fifth did not receive an annual dilated-eye examination.

A 12% stratified random sample was selected of 500 MCO enrollees aged ≥30 years who had been enrolled for at least 3 years and were receiving care in any one of five main medical facilities operated by the MCO (total eligible: n=4240). Enrollees who had obtained insulin or oral hypoglycemic agents from the MCO pharmacy were considered to have diabetes. The type of diabetes was derived from self-reported data: enrollees were classified as having 1) type 1 diabetes if they were aged <30 years when diabetes was diagnosed and were using insulin currently or 2) type 2 diabetes if they were aged ≥30 years when diabetes was diagnosed or were not using insulin currently. Self-monitoring of blood glucose (SMBG) and visiting a health-care provider

Diabetes-Specific Preventive-Care Practices — Continued

(HCP) for diabetes care at least once during the year preceding the interview were used as indicators of self-care. Awareness of the term hemoglobin "A one C" (HbA_{1c})* was used as an indicator of having received diabetes education. Use of HbA_{1c} to monitor long-term glycemic control, foot examinations, and dilated-eye examinations were used as indicators of preventive care received from HCP during the previous year. Level of care was estimated as the percentage of respondents that reported each preventive-care practice. Chi-square tests were used to determine whether insulin use, duration of diabetes, and selected sociodemographic characteristics were associated with level of self-care or HCP-preventive care. Analyses were conducted using Statistical Analysis System (SAS) (*7*).

Of the 469 (93.8%) persons who participated in the survey, 86.1% were aged ≥45 years, 85.3% were white, 53.7% were educated beyond high school, and 54.1% reported having had diabetes for ≥10 years (Table 1). A total of 349 (74.4%) respondents had type 2 diabetes, 66 (14.1%) had type 1, and 54 (11.5%) had diabetes that could not be categorized. Among persons with type 2 diabetes, 253 (72.5%) reported currently using insulin.

Overall, 90.4% of respondents reported that they performed SMBG (Table 2). Reported SMBG was higher among those who used insulin (among persons with type 1 diabetes, 98.5%, and among persons with type 2, 93.7%) than among nonusers (78.1%) (difference=16%, 95% confidence interval [CI]=7%–27%), increased directly with duration of diabetes ($p<0.01$) and level of education ($p<0.01$), and decreased with increasing age ($p<0.01$). Overall, 33.1% of respondents recalled ever having heard the term HbA_{1c}. Reported awareness of HbA_{1c} was highest among those who used insulin (among persons with type 1 diabetes, 69.7%, and among persons with type 2, 30.0%) than among nonusers (22.9%) (difference=13%, 95% CI=3%–23%) and was two times higher among persons with type 1 diabetes than among persons with type 2 (difference=40%, 95% CI=28%–52%), five times higher among college graduates than among persons who had not completed high school ($p<0.01$), and four times higher among persons aged ≥65 years than among those aged 30–44 years ($p<0.01$). Of all respondents, 83.4% reported at least one visit for diabetes care during the year preceding the interview. Reporting at least one visit during the preceding year was higher among those who used insulin (among persons with type 1 diabetes, 89.4%, and among persons with type 2, 84.6%) than among nonusers (74.0%) (difference=12%, 95% CI=2%–14%) and decreased significantly with increasing age ($p<0.01$).

A total of 28.8% of respondents reported that their HbA_{1c} had been checked by an HCP at least once during the preceding year, and 76.1% reported that an HCP had examined their feet at least once during the same period (Table 2). Reported foot examination was higher among those who used insulin (among persons with type 1 diabetes, 86.4%, and among persons with type 2, 77.9%) than among nonusers (64.6%) (difference=24%, 95% CI=11%–35%) and among whites (78.0%) than among races other than white (65.2%) (difference=13%, 95% CI=1%–25%), and decreased with increasing age ($p<0.01$). Finally, 84.0% of respondents reported having had a dilated-eye examination during the year preceding the interview; the percentage increased with increasing duration of diabetes ($p<0.01$).

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*HbA_{1c} is a glycosylated hemoglobin used to monitor long-term glycemic control because it reflects average blood glucose levels during the preceding 6–8 weeks.

Diabetes-Specific Preventive-Care Practices — Continued

TABLE 1. Percentage distribution of selected characteristics among managed-care organization enrollees aged ≥30 years who had diabetes — Colorado, 1995

Characteristic	Sample size	%*	(95% CI†)
Age group (yrs)			
30–44	62	13.2%	(4.8%–21.6%)
45–64	197	42.0%	(35.1%–48.9%)
≥65	207	44.1%	(37.3%–50.9%)
Unknown	3	0.6%	—
Sex			
Men	236	50.3%	(43.9%–56.7%)
Women	229	48.8%	(42.3%–55.3%)
Unknown	4	0.9%	—
Race§			
White	400	85.3%	(81.8%–88.8%)
Other	69	14.7%	(6.3%–23.1%)
Education level			
Less than high school diploma	79	16.8%	(8.6%–25.0%)
High school graduate	137	29.2%	(21.6%–36.8%)
Some college	131	27.9%	(20.2%–35.6%)
College graduate	121	25.8%	(18.0%–33.6%)
Unknown	1	0.2%	—
Type of diabetes			
Type 1	66	14.1%	(5.7%–22.5%)
Type 2			
Insulin use	253	53.9%	(47.8%–60.0%)
No insulin use	96	20.5%	(12.4%–28.6%)
Unknown	54	11.5%	(3.0%–20.0%)
Duration of diabetes (yrs)			
≤9	162	34.5%	(27.2%–41.8%)
10–19	146	31.1%	(23.6%–38.6%)
≥20	108	23.0%	(15.1%–30.9%)
Unknown	53	11.3%	(2.8%–19.8%)
Total	**469**	**100.0%**	

*Percentages may not total 100% because of rounding.
†Confidence interval.
§Numbers for racial/ethnic groups other than white were too small for meaningful analysis.

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Editorial Note: Preventive-care practices are essential to efforts to reduce the burden of diabetes. Routine use of SMBG or HCP-monitoring of HbA_{1C} can improve glycemic control and reduce the occurrence of complications of diabetes (*2*). In addition, foot-care programs can reduce the risk for foot complications by 50%–60% (*3*), and early detection and treatment of retinopathy can reduce the risk for severe vision loss by approximately 60% in persons with macular edema and approximately 90% in persons with proliferative retinopathy (*4*). Furthermore, some of these medical interventions are cost-effective (*4,8*).

TABLE 2. Percentage of managed-care organization enrollees aged ≥30 years who had diabetes and who reported diabetes-specific self-care practices and preventive-care practices of health-care providers, by selected characteristics — Colorado, 1995*

	Self-care practices						Preventive-care practices					
	Self-monitoring of blood-glucose		Awareness of HbA_{1c}†		At least one visit to a health-care provider		HbA_{1c} checked		Examination			
									Dilated-eye		Foot	
Characteristic	%	(95% CI§)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Type of diabetes												
Type 1	98.5	(95.6%–101.4%)	69.7	(58.6%–80.8%)	89.4	(82.0%– 96.8%)	65.2	(53.7%–76.7%)	87.9	(80.0%–95.8%)	86.4	(78.1%–94.7%)
Type 2												
Insulin use	93.7	(90.7%– 96.7%)	30.0	(24.4%–35.6%)	84.6	(80.2%– 89.0%)	25.7	(20.3%–31.1%)	84.6	(80.2%–89.0%)	77.9	(72.8%–83.0%)
No insulin use	78.1	(69.8%– 86.4%)	22.9	(14.5%–31.3%)	74.0	(65.2%– 82.0%)	18.8	(11.0%–26.6%)	77.1	(68.7%–84.1%)	64.6	(59.7%–69.5%)
Duration of diabetes (yrs)												
≤9	85.8	(80.4%– 91.5%)	30.9	(23.8%–38.0%)	81.5	(75.5%– 87.5%)	27.2	(20.3%–34.1%)	75.3	(68.7%–81.9%)	72.8	(65.9%–79.7%)
10–19	93.2	(89.1%– 97.3%)	34.9	(27.2%–42.6%)	86.3	(80.7%– 91.9%)	29.5	(22.1%–36.9%)	88.4	(83.2%–93.6%)	76.0	(69.1%–82.9%)
≥20	95.4	(91.4%– 99.4%)	39.8	(30.6%–49.0%)	80.6	(73.1%– 88.1%)	36.1	(27.0%–45.2%)	89.8	(84.1%–95.5%)	80.6	(73.1%–88.1%)
Age group (yrs)												
30–44	96.8	(92.4%–101.1%)	69.4	(57.9%–80.9%)	96.8	(92.4%–101.2%)	64.5	(52.6%–76.4%)	77.4	(72.1%–82.7%)	87.1	(78.8%–95.4%)
45–64	94.9	(91.8%– 98.0%)	39.1	(32.3%–45.9%)	88.8	(84.4%– 93.2%)	37.1	(30.4%–43.8%)	87.3	(82.7%–91.9%)	81.2	(75.4%–86.7%)
≥65	84.5	(79.6%– 89.4%)	16.9	(11.8%–22.0%)	73.9	(67.9%– 79.9%)	10.6	(6.4%–14.8%)	83.6	(78.6%–88.6%)	68.1	(61.8%–74.4%)
Sex												
Men	91.5	(87.9%– 95.1%)	32.6	(26.6%–38.6%)	84.3	(79.7%– 88.9%)	28.4	(22.6%–34.2%)	83.5	(78.8%–88.2%)	78.4	(73.1%–83.7%)
Women	90.0	(86.1%– 93.9%)	34.1	(28.0%–40.2%)	82.1	(77.1%– 87.1%)	29.7	(23.8%–35.6%)	84.7	(80.0%–89.4%)	73.8	(68.1%–79.5%)
Race¶												
White	90.1	(87.2%– 93.0%)	33.8	(29.2%–38.4%)	83.5	(79.9%– 87.1%)	30.3	(25.8%–34.8%)	84.5	(81.0%–88.0%)	78.0	(73.9%–82.1%)
Other	90.0	(82.9%– 97.1%)	29.0	(18.3%–39.7%)	82.6	(73.7%– 91.5%)	20.3	(10.8%–29.8%)	81.2	(72.0%–90.4%)	65.2	(54.0%–76.4%)
Education level												
Less than high school diploma	82.3	(73.9%– 90.7%)	11.4	(0.7%–21.8%)	65.8	(55.3%– 76.3%)	6.3	(0.9%–11.7%)	74.7	(65.1%–84.3%)	67.1	(56.7%–77.5%)
High school graduate	89.1	(83.9%– 94.3%)	24.1	(16.9%–31.3%)	86.1	(80.3%– 91.9%)	20.4	(13.7%–27.1%)	83.9	(77.7%–90.1%)	72.3	(64.8%–79.8%)
Some college	93.9	(89.8%– 98.0%)	34.4	(26.3%–42.5%)	87.8	(82.2%– 93.4%)	30.5	(22.6%–38.4%)	87.0	(81.2%–92.8%)	78.6	(71.6%–85.6%)
College graduate	93.4	(89.0%– 92.8%)	56.2	(47.4%–65.0%)	86.8	(80.8%– 92.8%)	51.2	(42.3%–60.1%)	86.8	(80.8%–92.8%)	83.5	(76.9%–90.1%)
Total	**90.4**	**(87.7%– 93.1%)**	**33.1**	**(28.8%–37.4%)**	**83.4**	**(80.0%– 86.8%)**	**28.8**	**(24.7%–32.9%)**	**84.0**	**(80.7%–87.3%)**	**76.1**	**(72.2%–80.0%)**

* n=469.
† Hemoglobin "A one C".
§ Confidence interval.
¶ Numbers for racial/ethnic groups other than white were too small for meaningful analysis.

Diabetes-Specific Preventive-Care Practices — Continued

The findings in this report indicate that, although approximately three fourths of enrollees reported most preventive-care practices, two thirds had never heard the term hemoglobin "A-one-C," one fourth had not had their feet examined during the preceding year, and nearly one fifth did not receive an annual dilated-eye examination. Findings from previous studies indicate that HCPs check HbA_{1c} infrequently (*5*). However, among persons with diabetes who received care from the Colorado MCO, a substantial proportion (87.0%) of those who were aware of HbA_{1c} (33.1%) also reported the test was performed at least once during the preceding year, and chart reviews indicated that at least one HbA_{1c} test had been recorded for approximately 90% of persons in the study (N. Calonge, Kaiser Permanente, personal communication, 1996). In Colorado, one reason for the reported low level of HbA_{1c} checks by HCPs (28.8%) was the respondents' low level of familiarity with the term (33.1%). Therefore, until the general public is more familiar with the name of the test, medical records and laboratory data may provide more accurate information about use of the HbA_{1c} test.

The findings in this report are subject to at least two other limitations. First, the findings are not generalizable to MCO enrollees with diabetes who used nonpharmacologic therapy, obtained diabetes medication from pharmacies outside the MCO, or who were enrolled for <3 years. Overall, approximately 10% of preventive services received by MCO enrollees were performed outside the MCO (N. Calonge, Kaiser Permanente, personal communication, 1996). Thus, for some preventive-care indicators, telephone surveys may provide more comprehensive information than chart reviews regarding levels of preventive care in an MCO population. Second, self-reported data may be subject to recall bias. The accuracy of these data requires further assessment through comparison with data from medical records or other sources.

In the United States, the number of persons with diabetes who receive medical care from MCOs is increasing (*9*). The findings in this report regarding diabetes-specific self-care and HCP preventive-care practices in an MCO population illustrate the usefulness of the BRFSS to assess diabetes care and to monitor care practices (*10*), particularly in MCO populations. In addition, MCOs can use the BRFSS to monitor the quality of diabetes care to ensure a level of care that can reduce the effects associated with preventable acute and chronic complications and to foster collaboration between MCOs and state health departments to reduce the impact of diabetes. In Colorado, these findings are being used to target interventions to improve diabetes care and reduce complications among enrollees with diabetes in the MCO population.

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Preventive-Care Knowledge and Practices Among Persons with Diabetes Mellitus — North Carolina, Behavioral Risk Factor Surveillance System, 1994–1995

Diabetes mellitus is the leading cause of lower-extremity amputation, end-stage renal disease, and blindness among persons aged 18–65 years in the United States. Diabetes preventive care resulting in improved self-care, better glycemic control, and regular foot and eye examinations can substantially reduce the complications of diabetes (*1–4*). Assessment of the level of preventive care among persons with diabetes can assist in targeting public health efforts to reduce complications. To estimate the prevalence of diabetes and the levels of preventive-care knowledge and practices among persons with diabetes in North Carolina, the North Carolina Office of Epidemiology and the state Diabetes Control Program (DCP), in collaboration with CDC, analyzed data from the Behavioral Risk Factor Surveillance System (BRFSS) for 1994–1995. This report summarizes the results of that analysis, which indicate a low level of diabetes preventive-care knowledge and practices among persons with diabetes in North Carolina.

The BRFSS is a state-based, random-digit–dialed telephone survey of the U.S. civilian, noninstitutionalized population aged ≥18 years. The DCP used aggregated data from the 1994 and 1995 BRFSS in North Carolina (n=5477). Respondents were considered to have diabetes if they answered "yes" to the core question, "Has a doctor ever told you that you have diabetes?" (women who were told they had diabetes only during pregnancy were not classified as having diabetes). Preventive-care knowledge and practices included whether respondents ever had performed any self-monitoring of blood glucose (SMBG); were aware of glycosylated hemoglobin or hemoglobin "A one C" (HbA_{1c}); or during the preceding year had visited a health-care professional (HCP) for their diabetes, had had a dilated-eye examination, or had had an HCP examine their feet at least once. Data were analyzed using SUDAAN, which allows for the complex survey design of BRFSS. All estimates were weighted to reflect the adult population of North Carolina. Chi-square tests were used to determine statistically significant differences in preventive-care knowledge and practices stratified by insulin use and other characteristics of persons with diabetes. Logistic regression was used to test for trends by age.

Overall, 4.4% (95% confidence interval [CI]=3.9%–5.0%) of adults in North Carolina (230,200 persons) reported that a doctor had told them they had diabetes. Among persons with diabetes, 38% were treated with insulin, 41% were aged ≥65 years, 56% were women, 65% were non-Hispanic white, 57% had at least a high school education, and 89% had some form of health insurance (Table 1).

Preventive-Care Knowledge and Practices — Continued

TABLE 1. Distribution of selected characteristics among adults with diabetes — North Carolina, Behavioral Risk Factor Surveillance System, 1994–1995*

Characteristic	Sample size†	Weighted no.§	(%¶)	(95% CI**)
Insulin use				
Insulin	106	87,800	(38.4)	(32.2%–44.6%)
No insulin	171	140,900	(61.6)	(55.4%–67.8%)
Age group (yrs)				
18–44	42	39,400	(17.2)	(12.0%–22.3%)
45–64	102	97,000	(42.2)	(35.5%–48.9%)
≥65	133	93,400	(40.6)	(34.2%–47.1%)
Sex				
Women	168	128,100	(55.6)	(49.0%–62.3%)
Men	110	102,100	(44.4)	(37.3%–51.0%)
Race/Ethnicity††				
White, non-Hispanic	180	149,800	(65.1)	(58.5%–71.3%)
Black, non-Hispanic	80	65,300	(28.4)	(22.5%–34.3%)
Other	18	15,100	(6.6)	(3.3%– 9.8%)
Education level				
Less than high school diploma	127	97,700	(42.8)	(36.1%–49.4%)
High school graduate or more	149	130,700	(57.2)	(50.6%–63.9%)
Health insurance coverage				
Yes	250	204,400	(88.8)	(84.3%–93.3%)
No	28	25,800	(11.2)	(6.8%–15.7%)
Total	**278**	**230,200**	**(100.0)**	

* Data for 1994 and 1995 were aggregated.
† For some characteristics, the sample size may not equal 278 because of missing data or categories not shown.
§ Two-year average.
¶ For some characteristics, the percentages may not add to 100 because of rounding.
** Confidence interval.
†† Numbers for racial/ethnic groups other than black and white were too small for meaningful analysis.

Levels of knowledge and preventive-care practices differed significantly for insulin use and age (Table 2). Overall, 83% of persons with diabetes reported that they performed SMBG, and SMBG was more common among persons treated with insulin than among persons not treated with insulin (94% versus 76%, $p<0.05$). Approximately one fourth (26%) of persons with diabetes were aware of HbA_{1c}; however, knowledge of HbA_{1c} decreased with increasing age ($p<0.05$) (range: 42% among those aged 18–44 years to 18% among those aged ≥65 years).

Overall, 93% of adults with diabetes had visited a HCP for diabetes care at least once during the preceding year, and persons treated with insulin were more likely than persons not treated with insulin to have made a visit for diabetes care (99% versus 89%, $p<0.05$). Although the likelihood of having made a diabetes care visit increased with increasing age ($p<0.05$), the likelihood was high (>85%) for all age groups and across all other characteristics. A total of 65% of adults with diabetes had had a dilated-eye examination during the preceding year; the prevalence of examinations was higher among persons treated with insulin than among those not treated with insulin (73% versus 60%, $p<0.05$) and increased with increasing age ($p<0.05$) (range:

Preventive-Care Knowledge and Practices — Continued

TABLE 2. Prevalence* of diabetes knowledge and preventive-care practices among adults with diabetes, by selected characteristics — North Carolina, Behavioral Risk Factor Surveillance System, 1994–1995†

Characteristic	Monitored blood glucose§	Heard of HbA_{1c}	Diabetes care visit**	Examination	
				Dilated-eye**	Foot**††
Insulin use					
Insulin	93.6§§	32.5	98.5§§	73.2§§	74.1§§
No insulin	75.9	21.8	89.3	60.1	53.2
Age group (yrs)					
18–44 (Referent)	81.0	42.2	87.9	53.5	45.6
45–64	81.1	26.6	91.4	61.4	62.0
≥65	85.3	18.1¶¶	96.9¶¶	73.9¶¶	68.5¶¶
Sex					
Women	83.2	30.3	93.0	64.5	60.8
Men	82.3	20.6	92.7	66.2	62.7
Race/Ethnicity* **					
White, non-Hispanic	86.0	24.6	92.0	65.6	59.3
Black, non-Hispanic	77.3	26.3	94.7	63.2	66.7
Education level					
Less than high school diploma	79.7	23.8	92.0	60.3	60.4
High school graduate or more	85.6	27.8	93.4	68.5	62.2
Health insurance coverage					
Yes	81.7	24.7	93.0	66.0	63.6
No	91.0	35.4	91.9	58.4	46.4
Total	**82.8**	**25.9**	**92.9**	**65.2**	**61.7**
(95% Confidence interval)	*(77.6–87.9)*	*(19.9–31.9)*	*(89.5–96.2)*	*(58.8–71.6)*	*(54.6–68.7)*

*Per 100 persons aged ≥18 years; 2-year average.
†Data for 1994 and 1995 were aggregated.
§Performed any self-monitoring of blood glucose.
¶Hemoglobin "A one C."
**At least once during preceding year.
††Among persons who visited a health-care professional for diabetes care during the preceding year.
§§$p<0.05$, chi-square.
¶¶$p<0.05$, test of trend.
***Numbers for racial/ethnic groups other than black and white were too small for meaningful analysis.

54% among those aged 18–44 years to 74% among those aged ≥65 years). Among persons with diabetes who had visited an HCP during the preceding year for diabetes care, 62% had had at least one foot examination during the preceding year, and foot examinations were more common among persons treated with insulin than among persons not treated with insulin (74% versus 53%, $p<0.05$); the prevalence of examinations increased with increasing age ($p<0.05$) (range: 46% among those aged 18–44 years to 69% among those aged ≥65 years).

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Preventive-Care Knowledge and Practices — Continued

Editorial Note: Diabetes-related preventive-care practices are important for reducing the development and progression of diabetes complications and disability and some are cost-effective (*5,6*). Efforts that result in improved glycemic control can reduce the onset of diabetic eye disease, kidney disease, and neuropathy (*1–4*). Early detection and treatment of eye disease can prevent blindness, and foot care can prevent conditions that require amputations (*3,4*).

Despite the importance of diabetes-related preventive-care knowledge and practices, the BRFSS findings documented low levels of some knowledge and practices in North Carolina. The lower proportion of any SMBG among those who were not treated with insulin may have reflected limited understanding of the severity of diabetes and the importance of monitoring glucose levels or barriers within the health system (e.g., noncoverage of monitoring supplies for persons with diabetes who are not treated with insulin). The low level of knowledge of HbA_{1c} suggests that comprehensive diabetes education has not been provided effectively to persons with diabetes. Although most persons with diabetes had visited a health-care provider during the preceding year, only 65% and 62% had received a dilated-eye examination or foot examination, respectively, underscoring the need for incorporation of comprehensive preventive-care practices into routine health care for all persons with diabetes.

The findings in this report are subject to at least two potential limitations. First, data about diabetes status were self-reported; however, self-reported data about diabetes status have been established to be both valid and reliable (*7–9*). Second, despite some differences in prevalences of knowledge and preventive-care practices by sex, race/ethnicity, education, and health insurance status, these differences were not statistically significant. However, the failure to achieve statistically significant differences may reflect small sample sizes instead of the lack of true differences.

The North Carolina Diabetes Advisory Council is developing diabetes-care guidelines for primary-care practitioners in that state. In particular, the council has updated the North Carolina Diabetes Self-Management Education Curriculum to include findings from the Diabetes Control and Complications Trial (*1,6*) and has fostered partnerships between schools, health departments, and communities to provide diabetes self-management education for residents of North Carolina and their families at no cost. In addition, to facilitate diabetes self-management, in 1997 the legislature enacted a law requiring state-licensed health insurance payers and health-maintenance organizations to cover the cost of medically appropriate and necessary services, including diabetes outpatient self-management training, educational services, equipment, supplies, medications, and laboratory procedures used in the treatment of diabetes.

CDC encourages state diabetes-control programs to use BRFSS data and to include the diabetes module for the surveillance of diabetes and related preventive-care practices. From 1994 to 1997, the number of states that included the diabetes module in their BRFSS questionnaire increased from 22 to 43. In North Carolina, BRFSS data are essential for the surveillance of diabetes, and the North Carolina DCP has used these data to increase awareness of the prevalence of diabetes, identify groups for which knowledge and preventive-care practices need to be improved, and evaluate progress toward achievement of disease-prevention and -control objectives. BRFSS data also can be used to provide comparison data for managed-care organizations serving

Preventive-Care Knowledge and Practices — Continued

patients with diabetes (*10*) and to monitor the quality of care for patients with diabetes who are Medicare recipients.

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Notice to Readers

Availability of Diabetes Information on the Internet

Take Charge of Your Diabetes, updated guidelines for persons with diabetes, is available on the World-Wide Web site of CDC's Division of Diabetes Translation, National Center for Chronic Disease Prevention and Health Promotion, at http://www.cdc.gov/nccdphp/ddt/tcoyd.htm. This document provides information about the value of teamwork to control glucose, community and family support, and steps to help promote health and prevent complications.

Additional information about diabetes is available from web sites of the following organizations:

- CDC's National Center for Chronic Disease Prevention and Health Promotion, Division of Diabetes Translation—http://www.cdc.gov/diabetes
- CDC's National Center for Health Statistics—http://www.cdc.gov/nchswww/nchshome.htm
- Department of Veterans Affairs—http://www.va.gov/health/diabetes
- Health Resources and Services Administration—http://www.hrsa.dhhs.gov

Notices to Readers — Continued

- Indian Health Service—http://www.ihs.gov/IHSmain.html
- National Diabetes Information Clearinghouse, National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health—http://www.niddk.nih.gov
- Office of Minority Health, US Department of Health and Human Services—http://www.omhrc.gov
- American Association of Diabetes Educators—http://www.diabetesnet.com/aade.html
- American Diabetes Association—http://diabetes.org
- Juvenile Diabetes Foundation International—http://www.jdfcure.com

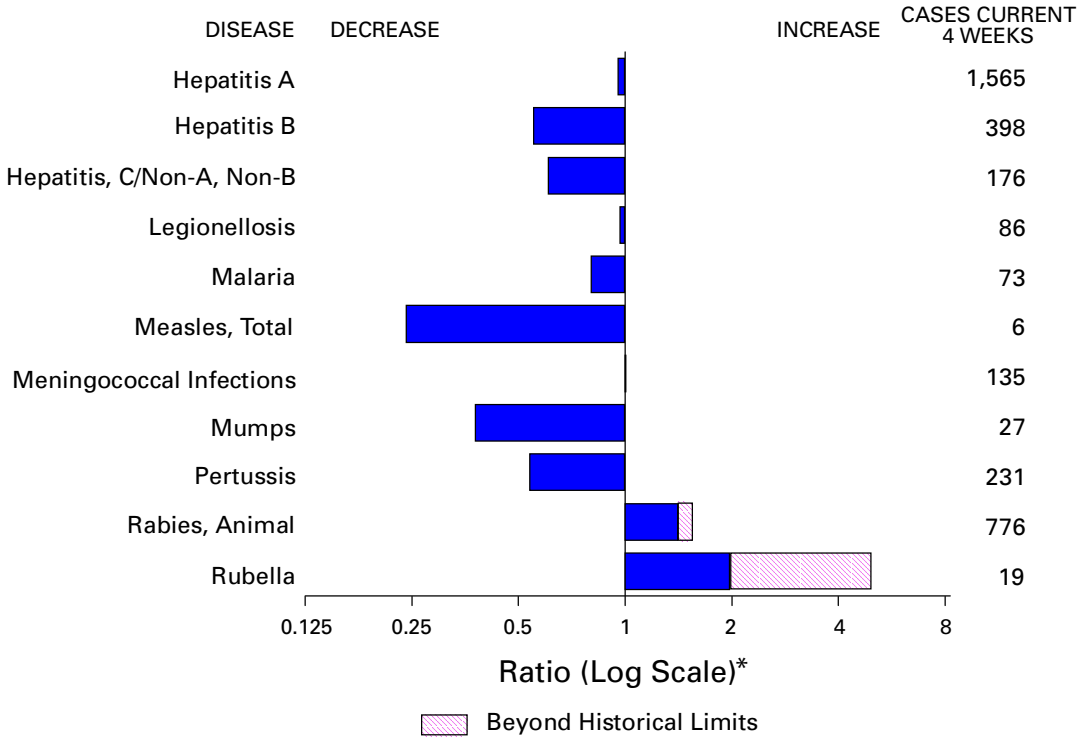
Notice to Readers

Conference on Vaccine Research

The *First Annual Conference on Vaccine Research: Basic Science—Product Development—Clinical and Field Studies* will be held May 30–June 1, 1998, in Washington, D.C. Cosponsors are CDC, the National Foundation for Infectious Diseases (NFID); the National Institute of Allergy and Infectious Disease, National Institutes of Health; and the International Society for Vaccines. This meeting will focus on current scientific data and issues in the diverse disciplines involved in the research and development of vaccines and associated technologies for disease control through vaccination.

Additional information about program announcements, registration, reservations, and abstract submission is available from Kip Kantelo, NFID, 4733 Bethesda Avenue, Suite 750, Bethesda, MD 20814-5228; telephone (301) 656-0003; fax (301) 907-0878; e-mail: kkantelo@aol.com.; or the World-Wide Web site, http://www.medscape.com/NFID/conferences/vaccine98/.

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending October 25, 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 October 25, 1997 (43rd Week)

	Cum. 1997		Cum. 1997
Anthrax	-	Plague	2
Brucellosis	60	Poliomyelitis, paralytic	-
Cholera	8	Psittacosis	38
Congenital rubella syndrome	4	Rabies, human	2
Cryptosporidiosis*	1,474	Rocky Mountain spotted fever (RMSF)	358
Diphtheria	5	Streptococcal disease, invasive Group A	1,148
Encephalitis: California*	93	Streptococcal toxic-shock syndrome*	29
eastern equine*	6	Syphilis, congenital¶	430
St. Louis*	10	Tetanus	35
western equine*	-	Toxic-shock syndrome	107
Hansen Disease	84	Trichinosis	7
Hantavirus pulmonary syndrome*†	16	Typhoid fever	278
Hemolytic uremic syndrome, post-diarrheal*	48	Yellow fever	-
HIV infection, pediatric*§	182		

-: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 October 5, 1997.
¶Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending October 25, 1997, and October 26, 1996 (43rd 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	44,447	54,854	368,529	358,110	1,985	1,255	233,187	265,203	2,596	2,894
NEW ENGLAND	1,903	2,294	14,442	14,377	178	110	4,768	5,367	51	90
Maine	46	38	820	736	16	-	55	50	-	-
N.H.	29	73	614	618	12	14	75	134	8	7
Vt.	31	18	348	321	7	2	43	42	2	23
Mass.	646	1,132	6,071	5,754	95	79	1,792	1,804	34	54
R.I.	119	128	1,644	1,603	8	-	369	425	7	6
Conn.	1,032	905	4,945	5,345	40	15	2,434	2,912	-	-
MID. ATLANTIC	13,720	15,514	49,893	49,347	119	41	30,578	35,745	291	246
Upstate N.Y.	2,137	2,072	N	N	81	-	5,061	6,101	217	197
N.Y. City	7,308	8,630	26,129	24,297	11	6	11,829	11,694	-	3
N.J.	2,667	2,927	7,306	10,371	27	23	5,722	7,392	-	-
Pa.	1,608	1,885	16,458	14,679	N	12	7,966	10,558	74	46
E.N. CENTRAL	3,255	4,366	57,357	71,524	364	224	35,396	49,369	429	395
Ohio	683	919	16,330	17,127	100	48	10,199	12,510	17	32
Ind.	447	464	7,664	8,063	64	35	5,062	5,320	10	8
Ill.	1,356	1,980	8,777	20,201	62	-	4,364	14,478	69	77
Mich.	564	778	17,202	17,382	138	99	12,497	12,960	333	278
Wis.	205	225	7,384	8,751	N	42	3,274	4,101	-	-
W.N. CENTRAL	859	1,271	20,316	26,424	467	357	9,320	12,795	138	82
Minn.	157	225	U	4,494	208	185	U	1,881	3	3
Iowa	86	75	3,753	3,581	108	71	969	941	28	37
Mo.	392	667	9,836	10,380	47	57	6,016	7,224	93	21
N. Dak.	13	11	572	777	12	11	39	26	2	-
S. Dak.	8	11	1,134	1,220	28	23	129	153	-	-
Nebr.	83	83	2,011	2,298	43	-	827	907	2	7
Kans.	120	199	3,010	3,674	21	10	1,340	1,663	10	14
S. ATLANTIC	10,879	13,636	74,697	41,334	178	121	74,069	77,070	228	163
Del.	184	246	1,276	1,148	4	4	1,003	1,209	-	1
Md.	1,695	1,983	5,933	U	21	10	10,913	9,266	15	2
D.C.	767	1,009	N	N	2	-	3,686	3,760	-	-
Va.	879	924	9,180	9,603	N	40	6,759	7,819	24	15
W. Va.	92	88	2,372	1,798	N	1	738	664	16	9
N.C.	680	746	15,274	U	62	30	15,081	15,664	43	44
S.C.	631	692	10,425	U	8	7	9,595	9,007	35	27
Ga.	1,267	1,873	10,286	9,798	38	-	11,932	15,096	U	-
Fla.	4,684	6,075	19,951	18,987	40	29	14,362	14,585	95	65
E.S. CENTRAL	1,561	1,888	26,900	25,959	88	34	27,126	28,081	289	478
Ky.	290	343	5,230	5,588	28	-	3,390	3,504	12	28
Tenn.	638	669	10,410	11,292	43	34	9,091	10,012	204	344
Ala.	384	510	7,083	6,926	14	-	9,907	11,092	10	4
Miss.	249	366	4,177	2,153	3	-	4,738	3,473	63	102
W.S. CENTRAL	4,694	5,648	47,921	46,637	62	16	31,968	32,003	407	331
Ark.	180	225	2,068	1,523	9	5	3,461	3,386	8	8
La.	797	1,215	7,987	6,211	6	3	7,800	6,572	190	192
Okla.	240	227	6,169	6,285	9	5	4,002	4,064	7	1
Tex.	3,477	3,981	31,697	32,618	38	3	16,705	17,981	202	130
MOUNTAIN	1,277	1,619	20,055	21,423	222	130	6,973	6,281	386	481
Mont.	35	34	878	1,033	23	-	36	31	21	13
Idaho	41	31	1,340	1,253	30	21	123	87	59	94
Wyo.	13	5	492	505	16	12	44	37	180	148
Colo.	299	434	1,896	2,684	77	56	1,824	1,199	35	53
N. Mex.	141	139	2,571	3,339	7	6	983	728	48	69
Ariz.	323	488	9,627	8,922	N	25	3,211	3,082	25	66
Utah	104	142	1,396	1,279	58	-	224	247	4	19
Nev.	321	346	1,855	2,408	11	10	528	870	14	19
PACIFIC	6,299	8,617	56,948	61,085	307	222	12,989	18,492	377	628
Wash.	532	585	7,575	7,815	103	54	1,608	1,711	22	49
Oreg.	248	411	4,007	4,496	70	81	605	705	3	6
Calif.	5,434	7,434	42,772	46,255	123	77	10,067	15,342	217	390
Alaska	37	28	1,249	1,022	11	3	313	360	-	3
Hawaii	48	159	1,345	1,497	N	7	396	374	135	180
Guam	2	4	193	315	N	-	27	58	-	6
P.R.	1,511	1,830	U	U	38	U	489	549	129	131
V.I.	80	17	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 October 5, 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 October 25, 1997, and October 26, 1996 (43rd 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	790	859	8,814	12,808	1,406	1,370	6,584	9,753	13,851	15,959	6,537
NEW ENGLAND	68	62	2,623	3,669	72	63	113	149	348	342	1,003
Maine	2	2	8	51	1	7	-	-	11	18	174
N.H.	7	3	37	42	8	2	-	1	13	11	32
Vt.	12	5	8	21	2	6	-	-	5	1	109
Mass.	21	25	286	229	25	24	55	67	207	171	227
R.I.	9	27	356	438	5	7	2	3	31	27	26
Conn.	17	N	1,928	2,888	31	17	56	78	81	114	435
MID. ATLANTIC	157	198	4,984	7,715	361	411	316	441	2,566	2,979	1,383
Upstate N.Y.	45	62	1,990	3,464	58	75	31	62	333	373	1,025
N.Y. City	8	18	55	362	211	248	71	123	1,329	1,539	U
N.J.	20	13	1,297	1,776	70	60	119	150	536	620	143
Pa.	84	105	1,642	2,113	22	28	95	106	368	447	215
E.N. CENTRAL	236	267	80	389	121	156	567	1,399	1,333	1,639	166
Ohio	104	86	52	23	17	13	175	521	228	243	109
Ind.	40	45	23	25	16	14	139	177	129	149	12
Ill.	14	31	5	8	39	76	60	400	645	853	17
Mich.	67	66	-	17	37	37	111	142	241	308	28
Wis.	11	39	U	316	12	16	82	159	90	86	-
W.N. CENTRAL	58	47	120	157	47	39	135	301	447	404	404
Minn.	2	5	89	58	19	17	U	38	119	91	43
Iowa	11	9	7	18	10	2	7	19	45	53	137
Mo.	24	14	17	45	9	10	100	208	190	160	22
N. Dak.	2	-	-	1	3	1	-	-	10	8	65
S. Dak.	2	2	1	-	1	-	-	-	10	17	62
Nebr.	12	12	2	5	1	2	5	10	17	20	2
Kans.	5	5	4	30	4	7	23	26	56	55	73
S. ATLANTIC	105	137	646	610	290	256	2,679	3,194	2,750	3,005	2,639
Del.	9	11	67	168	5	3	17	34	18	34	54
Md.	20	27	440	289	79	72	760	586	263	242	491
D.C.	4	7	7	3	18	8	95	108	80	114	5
Va.	21	34	53	47	64	41	199	344	254	282	565
W. Va.	N	N	8	11	-	5	3	9	47	50	81
N.C.	13	10	32	62	16	27	599	898	346	420	773
S.C.	7	6	2	6	17	12	318	322	242	301	159
Ga.	1	3	1	1	30	26	434	571	499	536	277
Fla.	29	39	36	23	61	62	254	322	1,001	1,026	234
E.S. CENTRAL	39	43	69	69	30	36	1,427	2,098	1,003	1,121	246
Ky.	6	6	8	23	8	9	116	125	138	188	27
Tenn.	26	19	37	20	7	13	638	703	358	393	133
Ala.	3	4	10	7	10	6	369	468	351	346	81
Miss.	4	14	14	19	5	8	304	802	156	194	5
W.S. CENTRAL	30	19	83	100	46	41	985	1,542	1,899	1,998	283
Ark.	-	1	24	21	5	-	124	209	154	162	27
La.	6	2	3	2	12	7	308	429	185	194	5
Okla.	4	6	22	20	4	-	107	153	150	138	96
Tex.	20	10	34	57	25	34	446	751	1,410	1,504	155
MOUNTAIN	55	40	20	8	62	52	159	131	416	505	170
Mont.	1	1	-	-	2	7	-	-	7	15	45
Idaho	2	-	4	1	-	-	1	4	11	7	-
Wyo.	1	5	4	3	2	7	-	2	2	6	31
Colo.	17	7	6	-	27	21	12	24	70	73	19
N. Mex.	3	2	1	1	8	2	16	7	53	72	12
Ariz.	12	16	2	-	11	6	116	75	202	188	49
Utah	12	3	1	1	3	4	5	2	25	39	6
Nev.	7	6	2	2	9	5	9	17	46	105	8
PACIFIC	42	46	189	91	377	316	203	498	3,089	3,966	243
Wash.	7	6	8	14	19	21	9	9	225	228	-
Oreg.	-	-	17	19	20	20	9	8	125	136	14
Calif.	34	35	162	57	329	263	183	478	2,545	3,378	206
Alaska	-	1	2	-	3	3	1	-	62	60	23
Hawaii	1	4	-	1	6	9	1	3	132	164	-
Guam	-	1	-	-	-	-	3	3	13	73	-
P.R.	-	-	-	-	5	2	213	182	164	137	60
V.I.	-	-	-	-	-	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 October 25, 1997, and October 26, 1996 (43rd 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	855	856	22,732	23,686	7,084	8,023	-	67	-	53	120	475
NEW ENGLAND	51	30	545	341	117	183	-	11	-	6	17	16
Maine	5	-	52	18	6	2	-	-	-	1	1	-
N.H.	8	11	30	15	15	15	-	1	-	-	1	-
Vt.	3	1	12	11	5	11	-	-	-	-	-	2
Mass.	31	16	205	167	45	71	-	10	-	4	14	12
R.I.	2	2	126	19	14	9	-	-	-	-	-	-
Conn.	2	-	120	111	32	75	-	-	-	1	1	2
MID. ATLANTIC	115	176	1,563	1,615	1,064	1,175	-	17	-	8	25	37
Upstate N.Y.	30	44	270	374	234	284	-	2	-	3	5	11
N.Y. City	30	46	579	493	371	418	-	8	-	2	10	11
N.J.	39	47	238	302	195	231	-	2	-	-	2	3
Pa.	16	39	476	446	264	242	-	5	-	3	8	12
E.N. CENTRAL	138	152	2,243	2,096	721	904	-	7	-	3	10	20
Ohio	76	81	270	645	65	109	-	-	-	-	-	5
Ind.	14	12	254	278	79	117	-	-	-	-	-	-
Ill.	33	42	509	631	177	291	-	6	-	1	7	3
Mich.	14	9	1,078	368	361	306	-	-	-	2	2	3
Wis.	1	8	132	174	39	81	-	1	-	-	1	9
W.N. CENTRAL	47	37	1,840	2,090	376	426	-	12	-	5	17	22
Minn.	33	23	165	111	36	54	-	3	-	5	8	18
Iowa	6	4	398	295	36	59	-	-	-	-	-	-
Mo.	4	7	930	1,084	260	246	-	1	-	-	1	3
N. Dak.	-	-	10	113	4	2	-	-	-	-	-	-
S. Dak.	2	1	19	41	1	5	-	8	-	-	8	-
Nebr.	1	1	81	125	12	33	-	-	-	-	-	-
Kans.	1	1	237	321	27	27	-	-	-	-	-	1
S. ATLANTIC	139	155	1,625	1,130	1,062	1,097	-	1	-	13	14	11
Del.	-	2	28	16	6	9	-	-	-	-	-	1
Md.	49	54	191	200	154	137	-	-	-	2	2	2
D.C.	-	5	21	35	28	30	-	-	-	1	1	-
Va.	12	9	194	147	106	119	-	-	-	1	1	3
W. Va.	3	9	10	13	14	24	-	-	-	-	-	-
N.C.	21	23	171	141	215	278	-	-	-	2	2	2
S.C.	4	4	95	46	88	81	-	-	-	1	1	-
Ga.	27	32	425	149	110	32	-	-	-	1	1	2
Fla.	23	17	490	383	341	387	-	1	-	5	6	1
E.S. CENTRAL	38	25	510	1,100	560	712	-	-	-	-	-	2
Ky.	5	6	67	43	32	65	-	-	-	-	-	-
Tenn.	21	9	315	706	372	398	-	-	-	-	-	2
Ala.	12	9	77	165	60	60	-	-	-	-	-	-
Miss.	-	1	51	186	96	189	-	-	-	-	-	-
W.S. CENTRAL	43	36	4,828	4,780	1,020	1,050	-	3	-	5	8	26
Ark.	1	-	202	384	53	71	-	-	-	-	-	-
La.	11	4	199	170	133	128	-	-	-	-	-	-
Okla.	27	28	1,256	2,009	39	24	-	-	-	1	1	-
Tex.	4	4	3,171	2,217	795	827	-	3	-	4	7	26
MOUNTAIN	81	47	3,695	3,728	760	956	-	7	-	2	9	157
Mont.	-	1	66	102	9	14	-	-	-	-	-	-
Idaho	1	1	117	208	39	80	-	-	-	-	-	1
Wyo.	4	-	32	29	27	38	-	-	-	-	-	1
Colo.	12	13	348	389	137	111	-	-	-	-	-	7
N. Mex.	8	10	307	322	226	350	-	-	-	-	-	17
Ariz.	30	15	1,966	1,429	178	209	-	5	-	-	5	8
Utah	3	7	502	883	79	80	-	-	-	1	1	118
Nev.	23	-	357	366	65	74	U	2	U	1	3	5
PACIFIC	203	198	5,883	6,806	1,404	1,520	-	9	-	11	20	184
Wash.	5	4	541	575	57	83	-	1	-	1	2	38
Oreg.	29	26	322	763	92	90	-	-	-	-	-	13
Calif.	156	160	4,868	5,360	1,227	1,324	-	6	-	8	14	40
Alaska	6	6	27	39	19	11	-	-	-	-	-	63
Hawaii	7	2	125	69	9	12	-	2	-	2	4	30
Guam	-	-	-	7	3	1	U	-	U	-	-	-
P.R.	-	2	238	192	1,238	800	-	-	-	-	-	2
V.I.	-	-	-	32	-	35	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 191 cases among children aged <5 years, serotype was reported for 102 and of those, 40 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 October 25, 1997, and October 26, 1996 (43rd 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	2,668	2,617	3	465	585	65	4,133	4,952	2	160	219
NEW ENGLAND	168	116	-	8	1	4	741	1,072	-	1	26
Maine	17	10	-	-	-	-	6	38	-	-	-
N.H.	14	7	-	-	-	3	106	108	-	-	-
Vt.	4	4	-	-	-	-	200	114	-	-	2
Mass.	80	47	-	2	1	1	387	753	-	1	20
R.I.	17	13	-	5	-	-	16	30	-	-	-
Conn.	36	35	-	1	-	-	26	29	-	-	4
MID. ATLANTIC	266	278	-	44	78	1	296	416	-	30	12
Upstate N.Y.	56	74	-	8	23	-	100	230	-	3	4
N.Y. City	42	39	-	3	18	1	59	40	-	27	5
N.J.	56	57	-	5	4	-	9	28	-	-	2
Pa.	112	108	-	28	33	-	128	118	-	-	1
E.N. CENTRAL	389	385	1	53	112	13	362	623	-	5	3
Ohio	147	133	1	25	39	12	140	232	-	-	-
Ind.	45	52	-	9	8	-	50	56	-	-	-
Ill.	121	112	-	10	21	-	63	145	-	2	1
Mich.	45	39	-	9	41	1	44	38	-	-	2
Wis.	31	49	-	-	3	-	65	152	-	3	-
W.N. CENTRAL	194	198	-	14	17	13	354	326	-	-	-
Minn.	34	25	-	5	5	-	221	251	-	-	-
Iowa	41	40	-	7	2	9	52	17	-	-	-
Mo.	85	76	-	-	7	2	54	33	-	-	-
N. Dak.	2	3	-	-	2	-	2	1	-	-	-
S. Dak.	5	10	-	-	-	-	4	4	-	-	-
Nebr.	9	20	-	2	-	2	8	7	-	-	-
Kans.	18	24	-	-	1	-	13	13	-	-	-
S. ATLANTIC	473	412	-	63	96	4	388	522	-	82	91
Del.	5	2	-	-	-	-	1	22	-	-	-
Md.	41	52	-	4	31	-	106	189	-	-	-
D.C.	-	5	-	-	-	-	3	1	-	1	1
Va.	47	51	-	10	14	-	42	76	-	1	2
W. Va.	16	14	-	-	-	-	6	2	-	-	-
N.C.	84	67	-	10	20	3	109	97	-	59	77
S.C.	51	52	-	10	6	1	25	38	-	19	1
Ga.	92	121	-	10	3	-	13	19	-	-	-
Fla.	137	48	-	19	22	-	83	78	-	2	10
E.S. CENTRAL	211	198	1	23	20	2	115	188	-	-	2
Ky.	42	26	-	3	-	-	46	136	-	-	-
Tenn.	81	54	1	6	1	1	36	20	-	-	-
Ala.	70	71	-	8	4	1	25	23	-	-	2
Miss.	18	47	-	6	15	-	8	9	-	-	N
W.S. CENTRAL	262	287	-	50	42	5	200	136	2	9	8
Ark.	31	30	-	1	1	2	40	7	2	5	-
La.	46	55	-	12	13	-	18	9	-	-	1
Okla.	35	33	-	-	-	-	27	11	-	-	-
Tex.	150	169	-	37	28	3	115	109	-	4	7
MOUNTAIN	158	157	-	54	23	19	996	439	-	6	6
Mont.	9	9	-	-	-	1	17	33	-	-	-
Idaho	10	22	-	3	-	14	559	100	-	1	2
Wyo.	4	3	-	1	-	-	7	6	-	-	-
Colo.	43	33	-	3	4	2	258	162	-	-	2
N. Mex.	23	24	N	N	N	-	87	61	-	-	-
Ariz.	41	35	-	32	1	1	35	28	-	5	1
Utah	12	15	-	8	3	1	17	18	-	-	-
Nev.	16	16	U	7	15	U	16	31	U	-	1
PACIFIC	547	586	1	156	196	4	681	1,230	-	27	71
Wash.	70	88	1	18	20	4	316	539	-	5	15
Oreg.	107	103	N	N	N	-	17	56	-	-	1
Calif.	361	382	-	111	145	-	321	600	-	14	52
Alaska	2	8	-	4	3	-	14	3	-	-	-
Hawaii	7	5	-	23	28	-	13	32	-	8	3
Guam	1	4	U	1	8	U	-	-	U	-	-
P.R.	10	11	-	7	1	-	1	3	-	-	-
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 October 25, 1997 (43rd Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	565	404	88	46	15	12	46
Boston, Mass.	137	88	31	8	4	6	14
Bridgeport, Conn.	48	37	5	3	3	-	2
Cambridge, Mass.	17	13	3	1	-	-	4
Fall River, Mass.	25	20	3	2	-	-	-
Hartford, Conn.	57	35	10	9	1	2	2
Lowell, Mass.	16	11	3	1	1	-	-
Lynn, Mass.	13	8	3	2	-	-	-
New Bedford, Mass.	22	20	1	1	-	-	-
New Haven, Conn.	35	21	3	5	3	3	4
Providence, R.I.	65	50	11	2	1	1	11
Somerville, Mass.	4	4	-	-	-	-	-
Springfield, Mass.	44	34	5	5	-	-	4
Waterbury, Conn.	23	16	3	3	1	-	-
Worcester, Mass.	59	47	7	4	1	-	5
MID. ATLANTIC	2,331	1,568	465	206	48	44	107
Albany, N.Y.	52	35	8	5	1	3	2
Allentown, Pa.	15	14	1	-	-	-	-
Buffalo, N.Y.	57	46	8	-	1	2	2
Camden, N.J.	33	16	6	5	4	2	3
Elizabeth, N.J.	21	11	5	4	-	1	-
Erie, Pa.	40	30	4	4	1	1	2
Jersey City, N.J.	55	38	11	4	2	-	5
New York City, N.Y.	1,130	748	241	109	15	17	37
Newark, N.J.	78	35	20	13	6	4	-
Paterson, N.J.	22	13	7	1	-	1	1
Philadelphia, Pa.	399	251	87	40	13	8	21
Pittsburgh, Pa.§	67	46	15	5	1	-	4
Reading, Pa.	41	32	5	2	2	-	2
Rochester, N.Y.	124	97	21	4	-	2	10
Schenectady, N.Y.	36	29	5	-	2	-	4
Scranton, Pa.	30	23	3	4	-	-	3
Syracuse, N.Y.	83	65	12	4	-	2	9
Trenton, N.J.	28	21	4	2	-	1	2
Utica, N.Y.	20	18	2	-	-	-	-
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	2,005	1,316	415	155	65	54	108
Akron, Ohio	41	32	7	1	-	1	-
Canton, Ohio	45	41	3	1	-	-	4
Chicago, Ill.	366	206	90	40	15	15	17
Cincinnati, Ohio	109	73	18	10	4	4	8
Cleveland, Ohio	143	86	33	12	6	6	6
Columbus, Ohio	179	123	33	16	5	2	12
Dayton, Ohio	133	86	36	7	1	3	10
Detroit, Mich.	199	126	37	20	10	6	9
Evansville, Ind.	50	34	9	3	2	2	3
Fort Wayne, Ind.	70	53	12	3	1	1	2
Gary, Ind.	11	2	4	3	2	-	-
Grand Rapids, Mich.	49	31	13	1	1	3	2
Indianapolis, Ind.	173	109	39	17	3	5	10
Lansing, Mich.	30	22	5	1	2	-	5
Milwaukee, Wis.	113	77	30	5	-	1	7
Peoria, Ill.	48	30	14	3	1	-	-
Rockford, Ill.	52	37	7	5	2	1	5
South Bend, Ind.	41	27	8	2	4	-	2
Toledo, Ohio	100	78	13	3	3	3	5
Youngstown, Ohio	53	43	4	2	3	1	1
W.N. CENTRAL	754	539	109	51	20	23	44
Des Moines, Iowa	47	34	9	1	2	1	3
Duluth, Minn.	30	25	4	1	-	-	-
Kansas City, Kans.	27	18	4	4	-	1	1
Kansas City, Mo.	105	64	12	13	2	2	4
Lincoln, Nebr.	27	23	4	-	-	-	3
Minneapolis, Minn.	161	122	18	12	5	4	7
Omaha, Nebr.	105	76	13	8	6	2	6
St. Louis, Mo.	135	90	25	7	2	11	12
St. Paul, Minn.	73	54	14	1	2	2	7
Wichita, Kans.	44	33	6	4	1	-	1
S. ATLANTIC	1,271	781	275	125	49	38	63
Atlanta, Ga.	177	100	50	11	5	11	7
Baltimore, Md.	242	151	52	21	11	7	14
Charlotte, N.C.	80	45	25	5	-	5	4
Jacksonville, Fla.	105	63	27	13	1	1	4
Miami, Fla.	98	57	19	14	6	2	-
Norfolk, Va.	34	19	8	3	-	4	1
Richmond, Va.	74	39	20	7	5	-	2
Savannah, Ga.	61	44	11	5	1	-	3
St. Petersburg, Fla.	77	57	8	6	6	-	9
Tampa, Fla.	152	105	23	17	2	5	13
Washington, D.C.	150	85	28	22	12	3	4
Wilmington, Del.	21	16	4	1	-	-	2
E.S. CENTRAL	705	475	143	53	16	17	32
Birmingham, Ala.	214	149	40	13	3	8	14
Chattanooga, Tenn.	75	54	16	2	3	-	3
Knoxville, Tenn.	109	70	25	9	2	3	6
Lexington, Ky.	67	42	16	7	-	2	4
Memphis, Tenn.	U	U	U	U	U	U	U
Mobile, Ala.	80	51	23	5	1	-	-
Montgomery, Ala.	30	20	5	2	2	1	-
Nashville, Tenn.	130	89	18	15	5	3	5
W.S. CENTRAL	1,618	990	339	163	77	49	74
Austin, Tex.	65	44	12	6	3	-	1
Baton Rouge, La.	25	18	4	3	-	-	1
Corpus Christi, Tex.	67	45	13	4	3	2	4
Dallas, Tex.	231	145	45	19	14	8	2
El Paso, Tex.	53	26	13	8	5	1	1
Ft. Worth, Tex.	97	56	21	11	5	4	5
Houston, Tex.	528	308	124	58	24	14	37
Little Rock, Ark.	52	32	13	5	1	1	1
New Orleans, La.	122	57	25	15	13	12	-
San Antonio, Tex.	193	126	39	19	4	5	10
Shreveport, La.	76	58	10	6	1	1	5
Tulsa, Okla.	109	75	20	9	4	1	7
MOUNTAIN	962	660	152	86	35	28	68
Albuquerque, N.M.	106	78	14	11	3	-	10
Boise, Idaho	41	26	7	5	2	1	5
Colo. Springs, Colo.	44	29	7	3	1	4	1
Denver, Colo.	103	69	18	8	5	3	8
Las Vegas, Nev.	178	120	32	17	6	3	7
Ogden, Utah	33	23	5	4	1	-	3
Phoenix, Ariz.	161	97	30	16	11	7	12
Pueblo, Colo.	30	24	4	1	-	1	2
Salt Lake City, Utah	99	75	12	2	2	7	8
Tucson, Ariz.	167	119	23	19	4	2	12
PACIFIC	2,018	1,388	377	152	58	42	158
Berkeley, Calif.	13	9	2	-	-	2	1
Fresno, Calif.	134	83	29	7	7	8	12
Glendale, Calif.	37	34	2	1	-	-	1
Honolulu, Hawaii	65	42	14	5	2	2	4
Long Beach, Calif.	68	43	17	6	1	1	10
Los Angeles, Calif.	679	458	135	59	23	4	28
Pasadena, Calif.	33	24	7	-	2	-	6
Portland, Oreg.	103	71	22	6	3	1	4
Sacramento, Calif.	147	110	19	11	4	3	27
San Diego, Calif.	148	104	27	9	2	5	13
San Francisco, Calif.	113	76	24	11	2	-	13
San Jose, Calif.	166	120	28	13	1	4	17
Santa Cruz, Calif.	29	21	5	3	-	-	4
Seattle, Wash.	124	77	22	12	4	9	-
Spokane, Wash.	63	48	9	3	3	-	6
Tacoma, Wash.	96	68	15	6	4	3	12
TOTAL	12,229¶	8,121	2,363	1,037	383	307	700

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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