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Chronic Disease Reports: Deaths from Breast Cancer among Women — United States, 1986

In 1986, breast cancer (*International Classification of Diseases, Ninth Revision, Clinical Modification* [ICD-9-CM] 174) was the underlying cause of death for 40,534 women in the United States. Breast cancer accounted for 32% of diagnosed cancers and 20% of cancer deaths among women (*1*).* Breast cancer incidence and mortality in the United States and worldwide have increased in cohorts of women born since 1900, for reasons not well understood (*3,4*).

Breast cancer mortality increases with age; 54% of deaths from breast cancer in the United States in 1986 occurred in women ≥65 years of age (*2*). Age-adjusted rates of breast cancer mortality were 12% higher in black women than in white women (*5*).

When age-adjusted to the 1986 U.S. population, breast cancer mortality rates in 1986 were generally lower in southern states and higher in northern states (Table 1, Figure 1). Age-adjusted mortality rates were lowest in Hawaii (23.0 per 100,000 females) and highest in Delaware (40.6 per 100,000).

According to the National Cancer Institute, overall 5-year survival with breast cancer is now 75%; 5-year survival in women diagnosed with localized breast cancer is 90%; and survival in women diagnosed with "regional" or "distant" breast cancer is substantially lower. Survival is lower in black women than in white women at all stages of diagnosis (*1*).

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Editorial Note: Risk factors for breast cancer among women include exposure to radiation, a history of breast cancer in close female relatives, early menarche and late menopause, nulliparity, and childbearing at older ages (*6*). Other possible risk factors remain controversial; the consumption of animal fat and protein (*7*) and alcohol (*8*), nonbreastfeeding (*9*), and use of oral contraceptives (*10*) and estrogen replacement therapy (*11*) have all been suggested. Bilateral oophorectomy, sometimes performed concurrently with hysterectomy (*12*), lowers the risk of breast cancer (*6*).

*Men also die from breast cancer (ICD-9-CM 175), but at less than 1/100th the rate among women (*2*).

Breast Cancer Deaths — Continued

CHRONIC DISEASE REPORTS: BREAST CANCER IN WOMEN, TABLE 1. Breast cancer deaths, age-adjusted mortality rates, and rank by rate, by area — United States, 1986

Area	Deaths	Rate per 100,000 females	Rank by rate
Alabama	557	26.6	47
Alaska	44	37.5	6
Arizona	491	29.6	38
Arkansas	351	26.3	49
California	4,103	32.3	25
Colorado	434	31.9	27
Connecticut	656	36.6	8
Delaware	131	40.6	1
District of Columbia	123	34.7	15
Florida	2,333	30.1	34
Georgia	841	29.7	37
Hawaii	103	23.0	51
Idaho	113	25.7	50
Illinois	2,102	35.3	11
Indiana	944	33.7	19
Iowa	480	29.4	40
Kansas	428	31.6	30
Kentucky	584	30.9	33
Louisiana	561	28.1	43
Maine	209	32.5	22
Maryland	764	35.7	10
Massachusetts	1,248	36.8	7
Michigan	1,544	34.5	17
Minnesota	689	32.4	24
Mississippi	358	27.6	46
Missouri	862	29.8	36
Montana	130	33.4	20
Nebraska	269	31.0	31
Nevada	134	32.4	23
New Hampshire	177	34.6	16
New Jersey	1,613	38.1	3
New Mexico	180	28.5	42
New York	3,769	37.7	5
North Carolina	1,036	32.0	26
North Dakota	99	29.9	35
Ohio	2,067	36.5	9
Oklahoma	487	29.0	41
Oregon	440	31.8	29
Pennsylvania	2,455	34.9	14
Rhode Island	229	39.2	2
South Carolina	472	29.5	39
South Dakota	134	35.1	13
Tennessee	702	27.9	45
Texas	2,015	28.0	44
Utah	153	26.4	48
Vermont	103	37.9	4
Virginia	895	32.8	21
Washington	680	31.9	28
West Virginia	323	30.9	32
Wisconsin	856	34.0	18
Wyoming	63	35.2	12
Total	**40,534**	**32.8**	

Breast Cancer Deaths — Continued

Although several risk factors have been identified, approaches to primary prevention are limited. The two principal modes established for secondary prevention are clinical breast examination and mammography (*13*).

To assess the efficacy of combined mammography and physical breast examination in reducing breast cancer mortality, a large randomized clinical trial was conducted at the Health Insurance Plan in New York City in the mid-1960s (*14*). Based on this study, at least 19% of breast cancer deaths among women in the United States can be estimated to be attributable to nonuse of mammography (Table 2). Other studies indicate similar results (*15,16*).

Mammographic techniques have improved markedly during the last 25 years. The dose of radiation used has decreased 100-fold (*17*), and the sensitivity of mammographic screening has increased (*18*). However, >60% of U.S. women ≥40 years of age report never having had a mammogram (*19*), and many of the women who have had mammograms have not fully complied with recommended screening intervals. Nonuse increases with age and is thus inversely associated with risk of breast cancer mortality. The challenge remains to increase use of effective technology.

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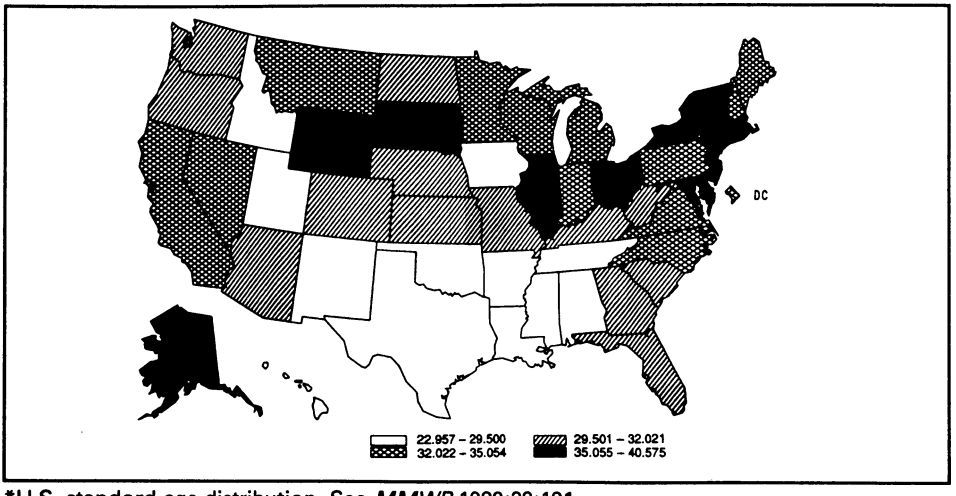
CHRONIC DISEASE REPORTS: BREAST CANCER IN WOMEN, FIGURE 1. Age-adjusted breast cancer mortality rates per 100,000 women, by quartile — United States, 1986*



*U.S. standard age distribution. See *MMWR* 1989;38:191.

Breast Cancer Deaths — Continued

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CHRONIC DISEASE REPORTS: BREAST CANCER IN WOMEN, TABLE 2. Breast cancer (ICD-9-CM 174) indices — United States, 1986

Index	No.	Rate per 100,000 women
Mortality		
Underlying cause	40,534	32.8
Multiple cause*	48,415	39.1
Incidence†	139,816	113.0
Hospitalizations§	202,975	164.0
Years of potential life lost before age 65¶	227,702	184.0

Risk factor	Crude prevalence (%)	Relative risk	Population-attributable risk (%)**	Estimated attributable deaths††
Nonuse of mammography	63§§	1.4¶¶	19.3	9,344

*NCHS. Vital statistics mortality data, multiple cause of death detail, 1986 [machine-readable public-use data tape]. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988 (ICD-9-CM 174).

†Estimated from age-specific incidence and 1986 intercensal estimates of the U.S. population. National Cancer Institute/NCHS. 1988 Annual cancer statistics review. Washington, DC: US Department of Health and Human Services, National Institutes of Health/CDC, 1989. Irwin R. 1980–1986 Intercensal population estimates by race, sex, and age [machine-readable data file]. Alexandria, Virginia: Demo-Detail, 1987.

§NCHS. National Hospital Discharge Survey, 1987 [machine-readable public-use data tape]. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1987 (ICD-9-CM 174).

¶CDC. Years of potential life lost before age 65—United States, 1987. MMWR 1989;38:27–9 (ICD-9-CM 174).

**Population-attributable risk (PAR) = percentage of mortality from breast cancer attributable to the specific risk factor in the population. CDC. Chronic disease reports in the *Morbidity and Mortality Weekly Report* (*MMWR*). MMWR 1989;38(no. S-1).

††Estimated preventable deaths = PAR × multiple cause mortality.

§§CDC. Provisional estimates from the National Health Interview Survey supplement on cancer control—United States, January–March 1987. MMWR 1988;37:417–20,425.

¶¶Risk of death from breast cancer from nonuse of mammography (relative to use of mammography). Recalculated from Shapiro S, Venet W, Strax P, Venet L. Current results of the breast cancer screening randomized trial: the Health Insurance Plan (HIP) of Greater New York Study. In: Day NE, Miller AB, eds. Screening for breast cancer. Lewiston, New York: Hans Huber Publishers, 1988.

Breast Cancer Deaths — Continued

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Trends in Breast Cancer Screening — Rhode Island, 1987–1989

In November 1987, the Rhode Island Department of Health initiated the Breast Cancer Screening Program in an effort to reduce breast cancer mortality by promoting regular screening for breast cancer, including physical breast examination and mammography, for women aged ≥40 years (*1*). The program involves promotion, quality assurance, reduced charge for screening mammograms, and a system to facilitate self-referral for mammography. State legislation was independently enacted to require all private health insurers to cover screening mammograms as of September 1988.

To evaluate the program, surveys of Rhode Island women aged ≥40 years were conducted before (September and October 1987) and after (January–April 1989) the program started. In both surveys, women were interviewed about their knowledge, attitudes, and practices related to screening for breast cancer; in the second survey, questions about awareness of the program were added. The two independent samples of Rhode Island households were selected by random-digit-dialing. Households that could be contacted were assessed for the presence of women aged ≥40 years. In households with more than one possible respondent, one respondent was selected randomly. (Because the percentage of such households was 6% in 1987 and 5% in 1989, the analysis was not adjusted for the lower probability of selecting women living in households with other potential respondents.) In 1987, 852 interviews were completed (response rate of 78%); in 1989, 856 interviews were completed (response rate of 79%).

In 1989, 46% of women aged ≥40 years reported having had a mammogram (screening *or* diagnostic) within the past year, compared with 37% in 1987. The proportion who reported having had a screening mammogram increased from 31% to 40% ($p<0.05$). In contrast, the proportion who reported having had a physical breast examination changed from 70% in 1987 to 73% in 1989.

For 1989, mammography use rates varied with age, education, and income level (Table 1). For example, the proportion of women below the poverty level who had had a mammogram within the past year increased from 21% in 1987 to 41% in 1989 ($p<0.05$), and the proportion having had a physical breast examination rose from 59% to 73% ($p<0.05$).

Breast Cancer Screening — Continued

The proportion of women aged ≥40 years who reported that a health professional had ever recommended a screening mammogram as part of a regular examination increased from 44% in 1987 to 57% in 1989 ($p<0.05$). In particular, 48% of women with incomes below the poverty level reported ever receiving such a recommendation in 1989, compared with 29% in 1987. In 1989, 58% of all women receiving such a recommendation had had a screening mammogram within the past year; in 1987, the proportion was 60%. However, in both surveys, the proportion of women reporting that a health professional had ever recommended a mammogram because of a breast problem was 17%, and the proportion who reported asking for a mammogram was 8% in 1987 and 9% in 1989. Among women who reported that a health professional had never recommended a screening mammogram, 16% in 1989 reported having had a screening mammogram in the past year, compared with 8% in 1987 ($p<0.05$).

The promotional efforts of the Rhode Island program reached >60% of the target group in a relatively short time. Awareness of the program was high, and 33% of women surveyed specifically remembered receiving a promotional letter and brochure by direct mail.

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TABLE 1. Percentage of women ≥40 years of age who, in the past year, saw a physician, had a physical breast examination (PE), had a mammogram, or had both PE and a mammogram, by age, years of education, and income level — Rhode Island, 1989

Group	Percentage in sample* (n=856)	Saw physician	PE	Mammogram	PE and mammogram
All respondents	100	89	73	46	44
Age (yrs)					
40–49	34	86	74	43	42
50–59	22	91	78	54	52
60–69	24	91	72	51	48
≥70	19	89	67	38	35
Yrs of education					
0–11	28	87	67	40	38
12–15	54	89	76	49	47
≥16	17	89	74	46	43
Income level†					
Below poverty level (PL)	11	88	73	41	38
1–1.9 times PL	19	92	70	39	37
2–2.9 times PL	13	81	68	43	41
≥3.0 times PL	37	89	77	53	50

*Items may not add to 100% because of nonresponses or rounding.
†Income levels are expressed in relation to poverty income. Poverty income varies with family size and is based on annual guidelines established by the U.S. Department of Health and Human Services for July 1, 1988, through June 30, 1989 (*2*).

Breast Cancer Screening – Continued

Editorial Note: Screening with mammography reduces breast cancer mortality among women aged ≥50 years and possibly among women aged 40–49 years (*3–7*). Eleven national public and private agencies, including the National Cancer Institute and the American Cancer Society, have recommended that breast cancer screening include annual physical breast examinations for women aged ≥40 years, annual mammograms for women aged ≥50 years, and mammograms every 1 or 2 years for women aged 40–49 years.

Nationally, rates of participation in breast cancer screening are low (*8,9*); <30% of eligible women reported having had a mammogram in the previous year. The results from the Rhode Island surveys and from the 1987 Behavioral Risk Factor Surveillance System (*10*) indicate that participation rates can change dramatically over short periods. Low-income and less-educated women (who typically are less likely to undergo regular breast cancer screening than women in other groups) can increase their participation in screening (*1*). The use rates for mammography are only one of many outcome measures appropriate for the evaluation of a program of this kind. The effects of the program will be evaluated using additional data and a variety of analytic methods.

Physicians' recommendations may account for much of the increase in screening rates. However, nearly half of the women surveyed in 1989 reported that no health professional has ever recommended they get a screening mammogram, and an increasing proportion of women who were not referred by a physician for mammography are being screened through self-referral; special attention should be devoted to ensure appropriate follow-up of these women. Many factors may have contributed to the increase in screening rates, e.g., program effects, changes in policy and practice (including the availability of insurance coverage for screening), and national attention to breast cancer. In Rhode Island, adherence to screening guidelines by women and physicians is improving. These trends must continue if breast cancer screening is to become common practice among women at risk.

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Current Trends

Update: HIV-2 Infection – United States

Human immunodeficiency virus type 2 (HIV-2) infection was first described in 1985 in asymptomatic West African prostitutes (*1*) and, in 1986, was reported in two West Africans with acquired immunodeficiency syndrome (AIDS) (*2*). The first confirmed case of HIV-2 infection in the United States was reported in late 1987 in a West African woman with AIDS (*3*). Since then, six additional cases of HIV-2 infection have been reported to CDC—three from Massachusetts, and one each from Connecticut, Rhode Island, and Florida. This article summarizes information about the six cases reported since 1987 (*4–7*).

Case 1. In May 1988, a 34-year-old woman developed fever, night sweats, headache, and focal seizures. Evaluation, including an open brain biopsy, led to the diagnosis of cerebral toxoplasmosis. An enzyme immunoassay (EIA) for HIV-1 antibody and an HIV-1 Western blot (WB) assay were both negative, but an HIV-2–specific EIA and an HIV-2–specific WB were positive for HIV-2 antibody.

The woman, originally from West Africa, had married twice and had children from each marriage. Her first husband reportedly had many extramarital sex partners. She moved to the United States in the late 1970s; her second marriage was to an expatriate from her native country. She denied intravenous (IV)-drug use, extramarital sex partners, and receipt of transfusions. Her second husband and the four children who were tested had no serologic evidence of HIV-1 or HIV-2 infection.

Case 2. As part of the required medical screening process for immigration to the United States, a West African woman was tested for HIV infection in 1988 in Canada. The EIA for HIV-1 antibody was reactive, but the WB was indeterminate. Testing for HIV-2 antibody was positive by both HIV-2–specific EIA and HIV-2–specific WB. She had no history of AIDS or other HIV-related illnesses.

Before moving to the United States in 1984, the woman had had repeated sexual contact with a West African man who had had numerous female sex partners, including prostitutes. After moving to the United States, she married an expatriate from her native country. She denied IV-drug use, receipt of transfusions, and known occupational exposure to HIV-infected persons.

The woman was pregnant when HIV-2 antibody was detected, and she elected to terminate her pregnancy. Fetal tissue in poor condition was submitted for viral culture, but HIV-2 was not recovered. The woman had had a full-term stillborn infant in 1985 and a healthy infant in 1986. Her husband declined testing for himself and for their 2-year-old child.

Case 3. In August 1988, as part of ongoing unlinked testing of blood specimens from all newborn infants in Massachusetts, HIV-1 antibody was detected by EIA in a specimen, although HIV-1 WB was indeterminate. Because crossreactivity with HIV-2 was possible, the specimen was retested and found positive for HIV-2 by EIA and WB. The specimen was from a baby born in an inner-city Boston hospital. However, because of the unlinked survey, further testing and demographic characterization of the baby and HIV-2–infected mother are not possible.

Case 4. As part of the U.S. immigration process, a 45-year-old West African woman was tested for HIV in September 1988. She requested both an EIA and WB. The EIA was nonreactive, but the HIV-1 WB was positive. A subsequent EIA for HIV-2 antibody

HIV-2 Infection — Continued

and an HIV-2–specific WB were both positive. The woman was in good health with no symptoms or signs of HIV-related illness.

The woman, who left West Africa in 1985, had been married to a native of her country who had no known risk factors for HIV infection. Her husband and their seven children, who remained in West Africa, were reported to be in good health. She married again within the year before her HIV-antibody test in 1988; HIV-1– and HIV-2–antibody tests were nonreactive for her second husband. She denied IV-drug use, history of transfusions, and occupational exposure to HIV.

Case 5. In January 1988, a 39-year-old West African man with a 3-month history of diarrhea and weight loss was diagnosed with *Isospora belli* infection. An HIV-1 antibody EIA was nonreactive. In August 1988, he was retested after the isosporiasis recurred, and had an indeterminate HIV-1 WB and positive HIV-2 WB. HIV-2–associated AIDS was confirmed by viral isolation; the man subsequently developed *Candida* esophagitis and *Pneumocystis carinii* pneumonia. He also has a chronic hepatitis B infection.

This man was born in West Africa and traveled throughout the world before moving to the United States in the early 1980s. His wife and four children remained in West Africa and are reportedly in good health but have not been tested for HIV. The man had multiple female sex partners in West Africa, southeast Asia, and the Caribbean but denied other risk behaviors for HIV infection.

Case 6. As part of the U.S. immigration process, a 32-year-old West African man was tested for HIV antibody. Initial EIA tests for HIV-1 antibody were reactive, but an HIV-1 WB was indeterminate. HIV-2–specific EIA and WB were positive. Although he had no history of HIV-associated illnesses, a tuberculin skin test and serologic tests for syphilis were positive; a chest radiograph showed no evidence of active tuberculosis.

In 1977, he was treated for a genital sore. In 1986, he had sexual contact with a woman from his country who had multiple sex partners. In late 1988, he entered the United States after living in Europe for 2 years. His wife and children remained in his native country and are in good health. He denied other risk behaviors for HIV infection.

Other cases. Five additional cases of HIV-2 infection are under investigation by the New York City Department of Health and another by the New York State Department of Health. Four of these persons are West Africans; the nationalities of the other two persons are unknown.

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HIV-2 Infection — Continued

Editorial Note: Infection with HIV-2 appears to be rare in the United States and is, largely or entirely, limited to imported cases. HIV-2 infection appears to be most prevalent in West Africa (*8*). Persons infected with HIV-2 have also been reported from Central Africa (*9*), Western Europe (*8*), Canada (*5*), and Brazil (*10*). In the United States (Table 1, page 579), all identified HIV-2–infected persons have been West Africans. All evidence suggests that these persons became infected through heterosexual contact with other infected West Africans. All but one of these cases of HIV-2 infection have been reported from northeastern states, reflecting, in part, the settlement pattern of West African expatriates in the United States.

Because HIV-1 and HIV-2 are closely related, tests for antibody to one virus may crossreact with antibody to the other (*11*). Among Food and Drug Administration (FDA)-licensed tests, the sensitivity of HIV-1 EIAs for detecting HIV-2 antibody ranges from approximately 60% to >90%, depending on the specific HIV-1 EIA employed and the clinical status of the infected person (*12,13*). When tested for antibody to HIV-1, persons infected with HIV-2 may be reactive by EIA but indeterminate or negative by

(Continued on page 579)

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

Disease	33rd Week Ending			Cumulative, 33rd Week Ending		
	Aug. 19, 1989	Aug. 20, 1988	Median 1984-1988	Aug. 19, 1989	Aug. 20, 1988	Median 1984-1988
Acquired Immunodeficiency Syndrome (AIDS)	92	U*	187	21,457	19,850	8,048
Aseptic meningitis	272	222	397	4,052	3,347	4,241
Encephalitis: Primary (arthropod-borne & unspec)	24	25	38	424	495	616
Post-infectious	2	4	1	61	83	80
Gonorrhea: Civilian	11,942	16,031	18,012	410,356	431,783	514,507
Military	164	224	362	6,660	7,785	10,640
Hepatitis: Type A	684	505	434	21,284	15,602	13,833
Type B	336	466	497	14,210	14,161	15,957
Non A, Non B	32	51	71	1,505	1,675	2,312
Unspecified	30	52	87	1,467	1,341	2,915
Legionellosis	21	29	21	603	618	451
Leprosy	3	5	5	99	108	146
Malaria	29	22	23	732	546	576
Measles: Total†	276	50	58	9,502	2,096	2,300
Indigenous	263	47	48	9,087	1,878	1,947
Imported	13	3	3	415	218	258
Meningococcal infections	16	40	28	1,854	2,036	1,944
Mumps	50	34	34	3,836	3,347	3,248
Pertussis	78	64	73	1,752	1,581	1,514
Rubella (German measles)	3	2	8	287	144	402
Syphilis (Primary & Secondary): Civilian	645	709	594	25,210	25,869	17,526
Military	2	3	3	154	109	116
Toxic Shock syndrome	8	9	8	233	224	232
Tuberculosis	491	452	452	13,177	13,077	13,288
Tularemia	5	9	6	99	130	128
Typhoid Fever	9	5	7	298	218	209
Typhus fever, tick-borne (RMSF)	24	17	35	366	394	431
Rabies, animal	89	82	99	3,022	2,696	3,337

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1989		Cum. 1989
Anthrax	-	Leptospirosis	64
Botulism: Foodborne	15	Plague	3
Infant	8	Poliomyelitis, Paralytic	-
Other	5	Psittacosis (Mich. 1, Wyo. 1)	64
Brucellosis	55	Rabies, human	1
Cholera	-	Tetanus	31
Congenital rubella syndrome	1	Trichinosis	14
Congenital syphilis, ages < 1 year	81		
Diphtheria (Calif. 1)	2		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.
†Ten of the 276 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending August 19, 1989 and August 20, 1988 (33rd Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	21,457	4,052	424	61	410,356	431,783	21,284	14,210	1,505	1,467	603	99
NEW ENGLAND	921	219	17	2	12,281	13,216	456	695	51	55	41	6
Maine	41	12	5	-	169	248	10	38	4	1	5	-
N.H.	31	18	-	-	108	164	42	42	8	4	1	-
Vt.	9	16	2	-	43	86	26	53	5	-	-	-
Mass.	517	70	5	2	4,795	4,576	136	410	23	41	27	4
R.I.	53	42	-	-	895	1,151	24	45	3	3	8	1
Conn.	270	61	5	-	6,271	6,991	218	107	8	6	-	1
MID. ATLANTIC	6,056	367	50	5	51,920	68,135	2,466	2,136	137	193	150	12
Upstate N.Y.	585	166	17	4	9,191	8,762	556	410	54	6	46	2
N.Y. City	3,315	81	2	1	22,797	30,551	263	831	28	163	20	8
N.J.	1,418	-	31	-	9,670	9,716	264	394	18	5	29	1
Pa.	738	120	-	-	10,262	19,106	1,383	501	37	19	55	1
E.N. CENTRAL	1,712	663	138	6	77,577	70,844	1,219	1,804	173	61	163	3
Ohio	287	145	42	2	20,165	15,761	253	340	28	14	79	-
Ind.	251	114	26	3	5,480	5,436	142	309	20	23	32	1
Ill.	769	122	28	1	25,752	20,661	540	474	66	14	14	2
Mich.	326	248	32	-	20,249	22,796	185	429	37	10	26	-
Wis.	79	34	10	-	5,931	6,190	99	252	22	-	12	-
W.N. CENTRAL	471	182	18	3	19,219	17,740	765	617	65	17	26	1
Minn.	107	6	-	1	2,109	2,401	80	73	13	3	2	-
Iowa	38	29	6	-	1,653	1,336	55	23	11	2	5	-
Mo.	219	76	-	-	11,656	10,103	424	430	22	7	10	-
N. Dak.	6	7	1	-	83	112	4	17	3	1	1	-
S. Dak.	4	6	3	-	163	344	10	7	5	-	1	-
Nebr.	16	6	4	-	890	1,005	58	17	-	2	2	1
Kans.	81	52	4	2	2,665	2,439	134	50	11	2	5	-
S. ATLANTIC	4,500	823	69	25	115,701	122,677	1,993	2,753	232	221	77	1
Del.	61	36	1	-	1,943	1,837	27	99	5	5	7	-
Md.	475	101	13	2	13,051	12,568	517	468	20	23	19	-
D.C.	358	8	-	-	7,797	9,059	4	19	2	-	-	-
Va.	319	150	29	2	9,722	8,653	207	204	51	125	6	-
W. Va.	29	18	17	-	903	884	14	67	8	3	-	-
N.C.	352	92	4	1	17,290	17,624	288	683	59	-	22	1
S.C.	214	23	-	-	10,674	9,264	45	377	3	8	3	-
Ga.	654	72	1	-	22,502	23,490	225	271	9	7	11	-
Fla.	2,038	323	4	20	31,819	39,298	666	565	75	50	9	-
E.S. CENTRAL	478	380	18	1	33,946	33,928	241	1,010	103	4	31	-
Ky.	75	115	6	1	3,260	3,344	76	272	34	3	8	-
Tenn.	156	56	-	-	11,277	11,440	91	542	21	-	14	-
Ala.	140	147	12	-	10,901	10,618	53	144	44	1	9	-
Miss.	107	62	-	-	8,508	8,526	21	52	4	-	-	-
W.S. CENTRAL	1,920	527	44	2	44,771	47,848	2,367	1,386	100	339	33	16
Ark.	57	17	5	-	5,174	4,606	155	48	10	6	1	-
La.	311	43	10	-	9,461	9,307	183	243	11	1	4	-
Okla.	101	48	11	-	3,902	4,393	264	138	22	22	19	-
Tex.	1,451	419	18	2	26,234	29,542	1,765	957	57	310	9	16
MOUNTAIN	644	165	7	2	9,071	9,538	3,214	928	150	107	34	2
Mont.	10	5	-	-	127	302	45	35	6	2	2	1
Idaho	16	-	-	1	122	240	115	81	11	3	-	-
Wyo.	13	3	-	-	60	136	32	4	2	-	-	-
Colo.	224	77	1	1	1,927	2,181	361	114	40	44	3	-
N. Mex.	52	7	1	-	881	883	401	138	28	2	2	-
Ariz.	176	53	2	-	3,444	3,423	1,677	348	35	47	16	1
Utah	42	12	1	-	281	370	319	69	18	4	7	-
Nev.	111	8	2	-	2,229	2,003	264	139	10	5	4	-
PACIFIC	4,755	726	63	15	45,870	47,857	8,563	2,881	494	470	48	58
Wash.	312	-	2	1	4,023	4,411	2,053	652	144	36	14	6
Oreg.	153	-	-	-	1,955	2,042	1,529	313	51	9	1	1
Calif.	4,167	674	53	13	38,938	40,319	4,345	1,819	287	412	30	47
Alaska	11	11	7	-	631	676	499	41	5	3	1	-
Hawaii	112	41	1	1	323	409	137	56	7	10	2	4
Guam	1	-	-	-	-	97	-	-	-	-	-	-
P.R.	884	64	2	1	659	880	129	158	15	19	-	8
V.I.	26	-	-	-	437	278	-	5	-	-	-	-
Amer. Samoa	-	-	-	-	-	65	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	34	-	-	-	-	-	-

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

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending August 19, 1989 and August 20, 1988 (33rd Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	1989	Cum. 1989	Cum. 1988
UNITED STATES	732	263	9,087	13	415	2,096	1,854	50	3,836	78	1,752	1,581	3	287	144
NEW ENGLAND	41	2	270	2	25	107	138	-	67	4	248	190	-	6	5
Maine	-	-	-	-	-	7	13	-	-	-	6	11	-	-	-
N.H.	2	-	8	1§	1	87	15	-	12	-	5	33	-	4	3
Vt.	1	-	1	-	-	-	6	-	1	-	6	3	-	1	-
Mass.	23	2	27	1†	17	3	72	-	47	3	208	123	-	1	1
R.I.	8	-	38	-	3	-	1	-	-	-	11	6	-	-	1
Conn.	7	-	196	-	4	10	31	-	7	1	12	14	-	-	-
MID. ATLANTIC	126	6	587	7	168	819	262	2	356	9	106	84	-	23	12
Upstate N.Y.	22	1	42	-	96	32	88	-	131	1	43	46	-	10	2
N.Y. City	46	2	68	-	14	42	33	-	18	-	3	2	-	13	7
N.J.	29	-	284	-	-	214	55	-	158	-	21	4	-	-	1
Pa.	29	3	193	7†	58	531	86	2	49	8	39	32	-	-	2
E.N. CENTRAL	60	108	2,091	-	63	179	227	4	430	13	175	182	-	22	23
Ohio	9	82	708	-	35	24	85	2	118	12	45	25	-	3	-
Ind.	7	26	77	-	-	57	26	2	40	1	18	57	-	-	-
Ill.	26	-	858	-	-	71	64	-	135	-	62	30	-	17	19
Mich.	11	-	285	-	14	23	39	-	106	-	26	25	-	1	4
Wis.	7	-	163	-	14	4	13	-	31	-	24	45	-	1	-
W.N. CENTRAL	24	-	560	-	4	13	70	3	362	-	84	92	-	6	-
Minn.	8	-	15	-	-	11	12	-	1	-	18	36	-	-	-
Iowa	2	-	6	-	1	-	2	2	29	-	13	19	-	1	-
Mo.	8	-	299	-	-	2	23	1	51	-	46	15	-	4	-
N. Dak.	1	-	-	-	-	-	-	-	-	-	-	11	-	-	-
S. Dak.	1	-	-	-	-	-	7	-	-	-	1	5	-	-	-
Nebr.	1	-	108	-	2	-	15	-	5	-	3	-	-	-	-
Kans.	3	-	132	-	1	-	11	-	276	-	3	6	-	1	-
S. ATLANTIC	129	-	478	1	36	295	316	26	641	7	159	151	-	8	16
Del.	3	-	64	-	1	-	2	-	1	-	1	7	-	-	-
Md.	23	-	40	1†	21	14	55	-	347	-	16	26	-	2	1
D.C.	8	-	7	-	3	-	15	5	102	-	-	-	-	-	-
Va.	23	-	19	-	3	143	34	19	94	-	9	16	-	-	11
W. Va.	2	-	51	-	-	6	12	-	10	-	20	6	-	-	-
N.C.	17	-	168	-	-	2	44	1	27	7	40	40	-	1	-
S.C.	5	-	2	-	-	-	19	-	19	-	-	1	-	-	-
Ga.	9	-	1	-	1	-	55	-	14	-	21	25	-	-	1
Fla.	39	-	126	-	7	130	80	1	27	-	52	30	-	5	3
E.S. CENTRAL	8	9	197	-	-	68	59	1	191	2	78	48	-	2	-
Ky.	-	8	31	-	-	35	35	-	9	-	1	12	-	-	-
Tenn.	1	-	120	-	-	-	4	1	63	-	27	16	-	2	-
Ala.	5	1	46	-	-	-	17	-	16	2	48	16	-	-	-
Miss.	2	-	-	-	-	33	3	N	N	-	2	4	-	-	-
W.S. CENTRAL	38	-	3,084	-	42	14	127	5	1,223	26	160	90	-	36	6
Ark.	-	-	-	-	5	1	8	-	124	-	17	9	-	-	2
La.	2	-	9	-	-	-	33	3	498	-	11	15	-	5	-
Okla.	5	-	121	-	-	8	19	-	181	-	25	39	-	1	1
Tex.	31	-	2,954	-	37	5	67	2	420	26	107	27	-	30	3
MOUNTAIN	17	6	337	1	24	138	57	7	147	14	459	441	-	34	6
Mont.	1	-	12	-	1	23	1	-	2	-	26	1	-	1	-
Idaho	2	-	-	-	2	1	2	-	14	-	56	260	-	31	-
Wyo.	1	-	-	-	-	-	-	-	7	-	-	1	-	1	-
Colo.	2	-	64	1§	5	114	18	1	22	5	32	14	-	-	2
N. Mex.	1	-	16	-	15	-	1	N	N	1	17	22	-	-	-
Ariz.	7	6	130	-	-	-	23	1	89	8	313	120	-	-	-
Utah	-	-	114	-	-	-	5	5	8	-	14	22	-	-	3
Nev.	3	-	1	-	1	-	7	-	5	-	1	1	-	1	1
PACIFIC	289	132	1,483	2	53	463	598	2	419	3	283	303	3	150	76
Wash.	24	-	20	-	12	2	62	1	36	2	111	64	-	-	-
Oreg.	17	9	9	-	19	3	42	N	N	-	7	20	-	2	-
Calif.	238	123	1,436	2†§	14	446	488	1	370	1	160	164	3	125	54
Alaska	4	-	-	-	-	-	4	-	2	-	-	7	-	-	-
Hawaii	6	-	18	-	8	12	2	-	11	-	5	48	-	23	22
Guam	-	U	-	U	-	1	-	U	-	U	-	-	U	-	1
P.R.	1	-	436	-	-	190	4	-	8	-	4	12	1	7	2
V.I.	-	-	4	-	-	-	-	1	12	-	-	-	-	-	-
Amer. Samoa	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
C.N.M.I.	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending August 19, 1989 and August 20, 1988 (33rd Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	25,210	25,869	233	13,177	13,077	99	298	366	3,022
NEW ENGLAND	1,067	689	10	345	326	2	24	6	7
Maine	8	9	3	12	17	-	-	-	2
N.H.	9	6	-	16	7	-	-	-	1
Vt.	-	3	-	5	2	-	-	-	-
Mass.	327	268	3	179	184	2	14	3	2
R.I.	20	22	1	37	30	-	5	1	-
Conn.	703	381	3	96	86	-	5	2	2
MID. ATLANTIC	4,527	6,607	35	2,499	2,560	2	88	44	471
Upstate N.Y.	540	337	6	208	343	1	20	8	37
N.Y. City	2,347	4,846	2	1,391	1,360	-	45	3	-
N.J.	864	579	9	451	451	-	17	19	-
Pa.	776	845	18	449	406	1	6	14	434
E.N. CENTRAL	1,177	717	35	1,423	1,412	3	30	48	71
Ohio	85	65	11	251	268	-	5	25	5
Ind.	43	36	5	114	145	1	2	16	2
Ill.	507	341	6	635	602	-	17	5	18
Mich.	380	238	13	339	328	1	4	2	7
Wis.	162	37	-	84	69	1	2	-	39
W.N. CENTRAL	208	146	28	334	344	39	5	55	399
Minn.	31	15	7	68	57	-	1	-	81
Iowa	22	16	4	28	32	-	2	1	110
Mo.	108	87	6	152	172	28	1	44	28
N. Dak.	2	2	-	11	10	-	-	1	42
S. Dak.	-	-	3	18	24	6	-	1	66
Nebr.	17	20	5	14	9	1	-	-	36
Kans.	28	6	3	43	40	4	1	8	36
S. ATLANTIC	9,277	8,910	21	2,803	2,811	4	29	107	930
Del.	108	73	1	25	23	-	2	1	23
Md.	494	483	1	234	269	-	8	10	264
D.C.	588	429	1	131	125	-	2	-	2
Va.	341	262	4	223	254	4	4	6	179
W. Va.	11	7	-	51	51	-	-	2	41
N.C.	635	508	6	337	272	-	2	53	5
S.C.	540	439	3	321	310	-	2	22	147
Ga.	1,955	1,482	3	427	467	-	3	11	157
Fla.	4,605	5,227	2	1,054	1,040	-	6	2	112
E.S. CENTRAL	1,709	1,223	4	1,074	1,098	6	2	36	246
Ky.	35	41	1	254	261	1	1	11	106
Tenn.	724	520	2	321	309	4	-	23	55
Ala.	540	370	1	306	339	-	1	2	84
Miss.	410	292	-	193	189	1	-	-	1
W.S. CENTRAL	3,661	2,712	21	1,574	1,622	31	12	48	434
Ark.	233	147	1	161	178	22	-	12	60
La.	861	514	-	212	190	-	1	-	5
Okla.	60	98	11	137	155	9	1	32	70
Tex.	2,507	1,953	9	1,064	1,099	-	10	4	299
MOUNTAIN	467	458	36	290	363	8	6	20	165
Mont.	1	3	-	11	12	-	-	14	59
Idaho	1	2	3	20	11	-	-	2	4
Wyo.	3	1	2	-	2	1	-	1	49
Colo.	53	76	5	12	56	2	2	3	14
N. Mex.	20	35	5	53	71	2	-	-	16
Ariz.	145	109	9	140	161	-	3	-	19
Utah	12	11	9	26	18	2	1	-	2
Nev.	232	221	3	28	32	1	-	-	2
PACIFIC	3,117	4,407	43	2,835	2,541	4	102	2	299
Wash.	252	145	2	154	129	-	6	-	-
Oreg.	160	187	-	94	94	2	5	1	-
Calif.	2,692	4,044	40	2,445	2,194	2	87	1	237
Alaska	4	9	-	33	25	-	-	-	62
Hawaii	9	22	1	109	99	-	4	-	-
Guam	-	3	-	-	16	-	-	-	-
P.R.	360	385	-	200	138	-	1	-	44
V.I.	8	1	-	4	5	-	-	-	-
Amer. Samoa	-	-	-	-	3	-	-	-	-
C.N.M.I.	-	1	-	-	17	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending August 19, 1989 (33rd Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	567	386	98	46	16	21	44
Boston, Mass.	156	92	28	11	10	15	14
Bridgeport, Conn.	48	28	16	3	-	1	-
Cambridge, Mass.	31	27	3	1	-	-	7
Fall River, Mass.	26	20	5	1	-	-	-
Hartford, Conn.	42	31	7	3	-	1	2
Lowell, Mass.	20	15	-	5	-	-	2
Lynn, Mass.	17	12	5	-	-	-	-
New Bedford, Mass.	23	18	2	2	1	-	2
New Haven, Conn.	36	18	7	11	-	-	7
Providence, R.I.	39	33	4	2	-	-	2
Somerville, Mass.§	6	6	-	-	-	-	-
Springfield, Mass.	45	32	5	4	3	1	5
Waterbury, Conn.	23	18	3	1	1	-	-
Worcester, Mass.	55	36	13	2	1	3	3
MID. ATLANTIC	2,746	1,680	522	339	73	132	164
Albany, N.Y.	55	39	7	7	-	2	2
Allentown, Pa.	18	13	2	2	1	-	-
Buffalo, N.Y.§	123	86	25	7	2	3	8
Camden, N.J.	45	21	13	5	3	3	-
Elizabeth, N.J.	23	15	5	2	1	-	2
Erie, Pa.†	45	36	6	2	1	-	3
Jersey City, N.J.	63	42	10	7	2	2	3
N.Y. City, N.Y.	1,418	833	288	222	38	37	86
Newark, N.J.	54	23	12	13	5	1	8
Paterson, N.J.	28	19	-	5	-	4	-
Philadelphia, Pa.	426	233	75	33	11	74	23
Pittsburgh, Pa.†	63	49	9	5	-	-	3
Reading, Pa.	22	19	2	-	1	-	2
Rochester, N.Y.	128	87	26	9	3	3	5
Schenectady, N.Y.	29	24	3	2	-	-	1
Scranton, Pa.†	40	25	8	4	3	-	3
Syracuse, N.Y.	82	59	15	4	1	3	9
Trenton, N.J.	27	17	8	2	-	-	1
Utica, N.Y.	18	13	1	3	1	-	-
Yonkers, N.Y.	39	27	7	5	-	-	5
E.N. CENTRAL	2,132	1,391	442	166	62	69	66
Akron, Ohio	51	42	2	2	1	4	-
Canton, Ohio	33	23	6	1	2	1	-
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	97	60	21	10	6	-	9
Cleveland, Ohio	149	95	32	10	5	7	4
Columbus, Ohio	147	99	29	12	3	4	2
Dayton, Ohio	98	70	19	4	3	2	5
Detroit, Mich.	253	135	66	32	10	8	3
Evansville, Ind.	38	29	6	2	1	-	2
Fort Wayne, Ind.	53	38	10	3	2	-	3
Gary, Ind.	21	9	9	2	-	1	2
Grand Rapids, Mich.	47	27	9	3	6	2	5
Indianapolis, Ind.	155	95	39	13	3	5	-
Madison, Wis.	14	11	-	3	-	-	1
Milwaukee, Wis.	137	106	22	8	-	1	3
Peoria, Ill.	37	17	9	3	4	4	2
Rockford, Ill.	46	29	10	2	1	4	3
South Bend, Ind.	39	29	7	2	1	-	2
Toledo, Ohio	94	68	13	6	3	4	2
Youngstown, Ohio	59	47	8	3	1	-	2
W.N. CENTRAL	823	559	153	53	30	28	36
Des Moines, Iowa	67	45	14	3	3	2	5
Duluth, Minn.	28	24	4	-	-	-	4
Kansas City, Kans.§	63	48	10	4	1	-	2
Kansas City, Mo.	110	71	25	6	6	2	4
Lincoln, Nebr.	32	21	6	3	2	-	2
Minneapolis, Minn.	170	112	27	15	8	8	13
Omaha, Nebr.	86	51	21	9	4	1	4
St. Louis, Mo.	147	98	28	8	3	10	-
St. Paul, Minn.	67	48	10	1	3	5	2
Wichita, Kans.	53	41	8	4	-	-	-
S. ATLANTIC	1,130	642	262	126	51	49	64
Atlanta, Ga.	165	99	40	16	5	5	5
Baltimore, Md.	137	80	35	11	6	5	9
Charlotte, N.C.	88	48	23	8	4	5	6
Jacksonville, Fla.	118	71	30	11	4	2	16
Miami, Fla.	97	39	30	19	5	4	4
Norfolk, Va.	61	29	18	4	4	6	3
Richmond, Va.	61	37	13	8	2	1	9
Savannah, Ga.	43	28	8	2	4	1	1
St. Petersburg, Fla.	61	48	6	3	2	2	-
Tampa, Fla.	73	46	14	9	2	2	4
Washington, D.C.	189	93	35	32	13	16	3
Wilmington, Del.	37	24	10	3	-	-	4
E.S. CENTRAL	759	499	161	53	22	24	32
Birmingham, Ala.	142	82	37	9	4	10	6
Chattanooga, Tenn.	65	42	14	7	2	-	3
Knoxville, Tenn.	60	38	13	-	4	5	3
Louisville, Ky.	94	66	14	9	2	3	1
Memphis, Tenn.	168	116	33	11	4	4	11
Mobile, Ala.	81	50	19	8	4	-	2
Montgomery, Ala.	39	27	11	1	-	-	1
Nashville, Tenn.	110	78	20	8	2	2	5
W.S. CENTRAL	1,719	1,065	365	169	65	54	70
Austin, Tex.	60	45	7	4	3	1	6
Baton Rouge, La.	37	29	4	4	-	-	4
Corpus Christi, Tex.§	43	30	9	3	-	1	-
Dallas, Tex.	212	127	42	20	13	10	4
El Paso, Tex.	58	42	11	2	-	3	3
Fort Worth, Tex	98	64	15	7	7	5	7
Houston, Tex.§	734	436	169	89	24	16	18
Little Rock, Ark.	73	45	20	4	-	4	3
New Orleans, La.	80	43	22	10	1	4	-
San Antonio, Tex.	166	102	36	17	8	3	11
Shreveport, La.	56	33	12	3	4	3	7
Tulsa, Okla.	102	69	18	6	5	4	7
MOUNTAIN	700	424	138	71	27	40	24
Albuquerque, N. Mex.	79	51	12	10	2	4	3
Colo. Springs, Colo.	37	25	6	6	-	-	3
Denver, Colo.	127	76	31	14	1	5	4
Las Vegas, Nev.	111	58	27	12	10	4	5
Ogden, Utah	8	6	1	-	-	1	-
Phoenix, Ariz.	169	97	32	13	10	17	4
Pueblo, Colo.	26	18	6	2	-	-	1
Salt Lake City, Utah	40	20	4	7	2	7	1
Tucson, Ariz.	103	73	19	7	2	2	3
PACIFIC	1,730	1,088	323	205	62	46	88
Berkeley, Calif.	26	16	5	2	-	3	-
Fresno, Calif.	70	55	6	4	1	4	6
Glendale, Calif.	20	15	2	3	-	-	3
Honolulu, Hawaii	69	38	15	12	4	-	6
Long Beach, Calif.	49	27	12	5	2	3	4
Los Angeles Calif.	463	264	89	73	25	7	13
Oakland, Calif.	49	33	10	3	2	1	3
Pasadena, Calif.	15	10	4	1	-	-	1
Portland, Oreg.	138	93	26	9	6	4	5
Sacramento, Calif.	135	83	33	12	1	6	11
San Diego, Calif.	140	92	21	13	9	4	7
San Francisco, Calif.	154	88	35	28	-	3	8
San Jose, Calif.	174	119	26	21	4	4	11
Seattle, Wash.	139	91	21	15	7	5	2
Spokane, Wash.	59	40	14	3	-	2	4
Tacoma, Wash.	30	24	4	1	1	-	4
TOTAL	12,306††	7,734	2,464	1,228	408	463	588

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza.

†Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

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

HIV-2 Infection — Continued

WB (*11*). Therefore, confirmation of HIV-2 infection requires both HIV-1 and HIV-2 WB testing. Even when both tests are performed, however, HIV-2 may be difficult todifferentiate from HIV-1 infections (*14*). Assays for HIV-1– and HIV-2–specific peptides (*15*), the polymerase chain reaction procedure (*16,17*), or viral cultures (*18*) may be helpful in this situation.

HIV-2 infection should be considered in persons with clinical evidence of HIV infection who are HIV-1 EIA-nonreactive or who are HIV-1 EIA-reactive and HIV-1 WB-negative or -indeterminate. Persons from West Africa who have evidence of HIV infection should be evaluated for HIV-2 infection, regardless of HIV-1 EIA or WB results. HIV-2–specific EIAs and WBs have not yet been licensed by FDA. Testing is performed by CDC and other research laboratories.

Because the modes of transmission for HIV-2 and HIV-1 are likely to be the same, the recommended preventive measures are identical. CDC is monitoring the epidemiology of HIV-2 infection in the United States through case surveillance and serologic surveys of groups such as Peace Corps volunteers returning from Africa, sexually transmitted disease clinic patients, drug-treatment center patients, counseling and testing site clients, patients from sentinel hospitals, and potential blood donors.

Surveillance at blood collection agencies relies on the crossreactivity that exists between EIA tests for antibodies to HIV-1 and HIV-2. Among approximately 4 million potential U.S. blood donors per year, specimens reactive by HIV-1–specific EIA will be tested for HIV-2 infection with HIV-2–specific EIA and WB tests. However, few, if any, potential blood donors infected with HIV-2 are expected because FDA revised its recommendations to blood collection agencies in April 1988 to exclude donors who recently immigrated from sub-Saharan Africa or who are recent sexual contacts of West Africans (FDA, personal communication). None of the six HIV-2–infected persons reported here were actual or prospective blood donors.

From late 1986 to early 1988, CDC, FDA, and collaborating organizations tested >22,000 serologic specimens, including >10,000 specimens from persons at risk for HIV-1 infection, for serologic evidence of HIV-2 infection (*3*). Specimens were tested with HIV-1– and HIV-2–specific EIA, WB, and synthetic peptide tests. None of the specimens were positive for HIV-2 alone, although 10 specimens were reactive to both HIV-1– and HIV-2–specific synthetic peptides (Genetic Systems Corporation,

TABLE 1. Reported cases of HIV-2 infection — United States*

Case	Region of origin	Clinical status	HIV-1† EIA	HIV-1† WB	HIV-2† EIA	HIV-2† WB	Date of diagnosis	Entered United States	Ref.
§	West Africa	AIDS	–	I	+	+	Dec. 1987	1987	(*3*)
1	West Africa	AIDS	–	–	+	+	May 1988	1979	(*4*)
2	West Africa	Asymptomatic	+	I	+	+	May 1988	1984	(*5*)
3	Unknown	Unknown	+	I	+	+	Aug. 1988	?	(*6*)
4	West Africa	Asymptomatic	–	I	+	+	Sept. 1988	1986	–
5	West Africa	AIDS	–	I	ND	+	Aug. 1988	1983	(*7*)
6	West Africa	Asymptomatic	+	I	+	+	March 1989	1988	–

*Does not include six cases that are under investigation.
†(+) = reactive, (–) = nonreactive, (I) = indeterminate.
§First case reported in the United States (not included in this report).

HIV-2 Infection — Continued

unpublished data). These 10 persons might be infected with HIV-1 alone, HIV-2 alone, or both viruses. On the basis of this survey and the small number of known cases of HIV-2 infection, HIV-2 infection in the United States appears to be limited.

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Prevalence of Drug Use among Applicants for Military Service — United States, June–December 1988

Since June 1988, the U.S. Department of Defense has screened all applicants for military service (including the U.S. Coast Guard) for evidence of marijuana and/or cocaine use as mandated by the National Defense Authorization Act of 1988. Applicants confirmed as cocaine-positive are not eligible for military service for 1 year from the date of screening; those confirmed as marijuana-positive are not eligible for military service for 6 months from the date of screening. Persons who tested positive

Drug Screening — Continued

twice for either drug are not eligible for military service for 2 years from the date of the second test (*1*).

A pilot study was conducted during March and April 1988 to determine the prevalence of marijuana and/or cocaine use among applicants before the initiation of the program in June. For the pilot study, applicants were not informed about the drug test. However, because personal identifiers were not recorded, results could not be linked to individual applicants. Urine specimens collected as part of the induction physical examination were sent to three of nine military laboratories and screened by radioimmunoassay (Roche Diagnostic Systems Abuscreen Test Kits*) for marijuana and cocaine. Six thousand (42%) urine specimens were selected at random from approximately 14,200 obtained from 12 of 70 Military Entrance Processing Stations. Four hundred thirty-seven (7.3%) and 108 (1.8%) screened positive for marijuana or cocaine, respectively, or their metabolites, and 42 (0.7%) were positive for both marijuana and cocaine (Office of the Army Surgeon General, unpublished data). Although positive specimens were not confirmed, data from military drug-screening laboratories indicate that at least 85% of cocaine and 90% of marijuana users would have been confirmed positive (Office of the Assistant Secretary of Defense for Health Affairs, unpublished data).

From June through December 1988, 322,256 applicants were informed that a urine specimen would be collected for drug screening at the induction physical examination. Positive specimens were confirmed by gas chromatography/mass spectrometry.† The Headquarters for the U.S. Military Entrance Processing Command (*2*) provided demographic data (Table 1).

Of all applicants tested, 3.5% were positive for marijuana and/or cocaine (Table 1). Men were 2.6 times more likely than women (3.9%, compared with 1.5%, respectively) to be positive for marijuana and/or cocaine. Blacks were 1.9 times and Hispanics 1.4 times more likely than whites to test positive (5.6% for blacks and 4.0% for Hispanics, compared with 2.9% for whites). The percentage positive for either drug increased with age (1.3% in 17- and 18-year-olds, compared with 5.3% in ≥26-year-olds). Geographic variation for cocaine and/or marijuana ranged from 2.5% in the West North Central to 5.3% in the Mid-Atlantic states. The percentage screened positive for marijuana and/or cocaine varied inversely with education level: the highest prevalence was in applicants who had not graduated from high school (7.5%) and the lowest in those educated beyond a 4-year college degree (0.7%).

Reported by: WF Vogl, CDR, USN (MSC), MR Peterson, LT COL, USAF, BSC, Office of the Assistant Secretary of Defense (Health Affairs), Washington, DC. JS Jewell, LTC, USA, Office of the Army Surgeon General, Washington, DC. Div of Environmental Hazards and Health Effects, Center for Environmental Health and Injury Control, CDC.

Editorial Note: This report summarizes the findings of the largest nonrandom drug-testing program in the United States and characterizes evidence of drug use by age, race, and sex in a defined population. Applicants for U.S. military service are a geographically diverse sample of young persons. Extrapolation of marijuana and/or cocaine use in this group to the U.S. population may not be reliable because of social

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

†In the initial screening, the following levels indicated positivity: ≥100 ng/mL for marijuana and ≥300 ng/mL for cocaine. Positivity was confirmed at ≥15 ng/mL for marijuana and ≥150 ng/mL for cocaine.

Drug Screening — Continued

and demographic differences of military applicants in the same age groups. Men and racial and ethnic minorities are overrepresented among applicants.

The decrease in percentage of positives among applicants from the pilot study to the systematic screening program indicates that notifying applicants of the drug-testing program may deter continued use, prompt users to withdraw from the application process, or discourage application for military service.

References

1. Secretary of Defense. Memorandum: policy on pre-accession drug, chemical, and alcohol use and dependency testing. January 15, 1988.

TABLE 1. Drug positivity in applicants for military service — United States, June 1988–December 1988

Group	No. screened	Marijuana-positive No.	(%)	Cocaine-positive No.	(%)	Marijuana- and cocaine-positive No.	(%)	Total positive No.	(%)
Total	**322,256**	**7,616**	**(2.4)**	**2,853**	**(0.9)**	**955**	**(0.3)**	**11,424**	**(3.5)**
Sex									
Male	275,175	7,198	(2.6)	2,609	(0.9)	897	(0.3)	10,704	(3.9)
Female	47,081	418	(0.9)	244	(0.5)	58	(0.1)	720	(1.5)
Race/Ethnicity									
White	224,199	5,213	(2.3)	968	(0.4)	353	(0.2)	6,534	(2.9)
Black	69,278	1,740	(2.5)	1,620	(2.3)	508	(0.7)	3,868	(5.6)
Hispanic	18,871	467	(2.5)	212	(1.1)	76	(0.4)	755	(4.0)
Other	9,908	196	(2.0)	53	(0.5)	18	(0.2)	267	(2.7)
Age (yrs)									
17–18	75,911	872	(1.2)	93	(0.1)	48	(0.1)	1,013	(1.3)
19–20	118,797	2,981	(2.5)	577	(0.5)	297	(0.3)	3,855	(3.3)
21–25	80,915	2,509	(3.1)	1,203	(1.5)	395	(0.5)	4,107	(5.1)
≥26	46,633	1,254	(2.7)	980	(2.1)	215	(0.5)	2,449	(5.3)
Region									
New England	11,870	318	(2.7)	160	(1.3)	56	(0.5)	534	(4.4)
Mid-Atlantic	37,453	875	(2.3)	878	(2.3)	243	(0.6)	1,996	(5.3)
E.N. Central	56,548	1,571	(2.8)	379	(0.7)	147	(0.3)	2,097	(3.7)
W.N. Central	24,768	511	(2.1)	76	(0.3)	26	(0.1)	613	(2.5)
S. Atlantic	58,249	1,019	(1.7)	527	(0.9)	132	(0.2)	1,678	(2.9)
E.S. Atlantic	23,896	553	(2.3)	101	(0.4)	44	(0.2)	698	(2.9)
W.S. Atlantic	43,659	1,079	(2.5)	215	(0.5)	109	(0.2)	1,403	(3.2)
Mountain	21,085	461	(2.2)	70	(0.3)	37	(0.2)	568	(2.7)
Pacific	41,506	1,179	(2.8)	414	(1.0)	148	(0.4)	1,741	(4.2)
Other	3,222	50	(1.6)	33	(1.0)	13	(0.4)	96	(3.0)
Education level									
Non-HS graduate	30,420	1,686	(5.5)	426	(1.4)	183	(0.6)	2,295	(7.5)
HS senior	93,884	1,300	(1.4)	190	(0.2)	109	(0.1)	1,599	(1.7)
HS graduate	162,360	4,197	(2.6)	1,973	(1.2)	607	(0.4)	6,777	(4.2)
1 yr college	9,980	175	(1.8)	66	(0.7)	19	(0.2)	260	(2.6)
2 yrs college	11,016	159	(1.4)	94	(0.9)	23	(0.2)	276	(2.5)
3 yrs college	3,780	36	(1.0)	50	(1.3)	6	(0.2)	92	(2.4)
4 yrs college	9,451	55	(0.6)	52	(0.6)	8	(0.1)	115	(1.2)
Postgraduate	1,365	8	(0.6)	2	(0.1)	0	(0.0)	10	(0.7)

Drug Screening — Continued

2. US Department of Defense. Headquarters, US Military Entrance Processing Command memorandum: Department of Defense Pre-accession Drug and Alcohol Testing Program. January 13, 1989.

Epidemiologic Notes and Reports

Fatalities Attributed to Methane Asphyxia in Manure Waste Pits — Ohio, Michigan, 1989

In June and July 1989, a total of seven farm workers in two separate incidents died after they were asphyxiated by methane gas in manure pits. Brief reports follow.

Ohio. On June 26, 1989, a 31-year-old male dairy farmer and his 33-year-old brother died after entering a 25-foot-square by 4½-foot–deep manure pit inside a building on their farm. A pump intake pipe in the pit had clogged, and the farmer descended into the pit to clear the obstruction. While in the pit, he was overcome by lack of oxygen and collapsed. His brother apparently saw him collapse and entered the pit in an attempt to rescue him. The brother, too, was overcome and collapsed inside the pit. Four hours later, another family member discovered the two men, and the local fire department was called to rescue them. The coroner's report attributed the cause of death in both cases to drowning, secondary to loss of consciousness from methane asphyxia.

Michigan. On July 26, 1989, five farm workers in one family died after consecutively entering an outdoor manure pit on a farm. The pit measured 20 feet by 24 feet by 10 feet deep. The victims were a 65-year-old male dairy farmer, his two sons (aged 37 and 28 years), a 15-year-old grandson, and a 63-year-old nephew. The index victim, the 37-year-old son, initially entered the pit by ladder to replace a shear pin on an agitator shaft. While attempting to climb out of the pit, he was overcome and fell to the bottom of the pit. The grandson then entered the pit to attempt rescue. He, too, was overcome and collapsed. One by one, the nephew, the younger son, and the dairy farmer entered the pit in attempts to rescue the others, were overcome by lack of oxygen, and collapsed. A carpet installer working at the farm then entered the pit as a rescuer and was overcome; however, he was rescued by his assistant and subsequently recovered. Finally, the owner of a nearby business arrived with two additional workers and, using a rope, extricated the five victims from the pit. When paramedics arrived, they began cardiopulmonary resuscitation. The nephew was pronounced dead at the scene, and the other four victims were transported to the emergency room of a nearby hospital. The dairy farmer and his younger son were pronounced dead on arrival at the hospital; the 37-year-old son died 1 hour after reaching the emergency room. The grandson was transferred by helicopter to a major trauma center but died within 6 hours of his removal from the pit. For the four older victims, the medical examiner attributed the cause of death to methane asphyxia. Assignment of the official cause of death for the grandson awaits completion of the autopsy report.

Reported by: Industrial Commission of Ohio, Columbus. Water Pollution Control Federation, Washington, DC. Div of Safety Research, National Institute for Occupational Safety and Health, CDC.

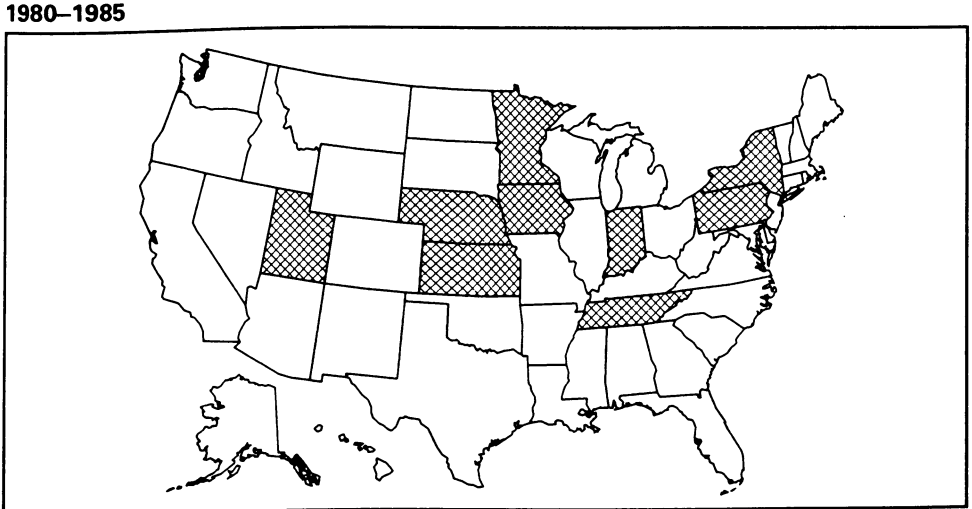
Methane Asphyxia — Continued

Editorial Note: Acute traumatic occupational deaths* in the United States are monitored by the Division of Safety Research, National Institute for Occupational Safety and Health (NIOSH), CDC, through the National Traumatic Occupational Fatalities (NTOF) file (*1*). For 1980 through 1985, the NTOF data file includes 16 work-related deaths that involved asphyxiation of workers in manure pits (or similar waste tanks) on farms. These deaths resulted from nine separate incidents in nine different states (Figure 1). Five of these episodes resulted in multiple fatalities. Because NTOF only includesdeaths of workers ≥16 years of age that are clearly identified as work-related, these 16 deaths represent the minimum number of asphyxiation fatalities that occurred during this period among U.S. farmers, farm family members, farm workers, and others working in manure pits.

A farm manure waste pit is a confined space, defined by NIOSH (*2*) as a space that "by design has limited openings for entry and exit; unfavorable natural ventilation which could contain or produce dangerous air contaminants; and which is not intended for continuous worker occupancy." Manure pits are fermentation tanks where raw animal wastes undergo anaerobic bacterial decay. This bacterial action generates methane, hydrogen sulfide, and other gases. Methane is a colorless, odorless, and flammable gaseous hydrocarbon. It can displace oxygen in confined areas, resulting in an oxygen-deficient atmosphere. Hydrogen sulfide is a highly toxic, colorless gas that at concentrations of ≥300 ppm can cause unconsciousness, respiratory failure, and sudden death (*3*). If these gases are not properly vented from a tank or other confined space, an oxygen-deficient or toxic atmosphere may be created. In industrial settings, the Occupational Safety and Health Administration (OSHA) limits permissible peak exposures to hydrogen sulfide to a ceiling of 50 ppm (for ≤10 minutes); NIOSH recommends a ceiling of 10 ppm (for ≤10 minutes) (*4*).

**International Classification of Diseases, Ninth Revision*, E800–E999.

FIGURE 1. States with fatal work-related incidents in manure pits — United States, 1980–1985



Source: National Traumatic Occupational Fatalities database.

Methane Asphyxia — Continued

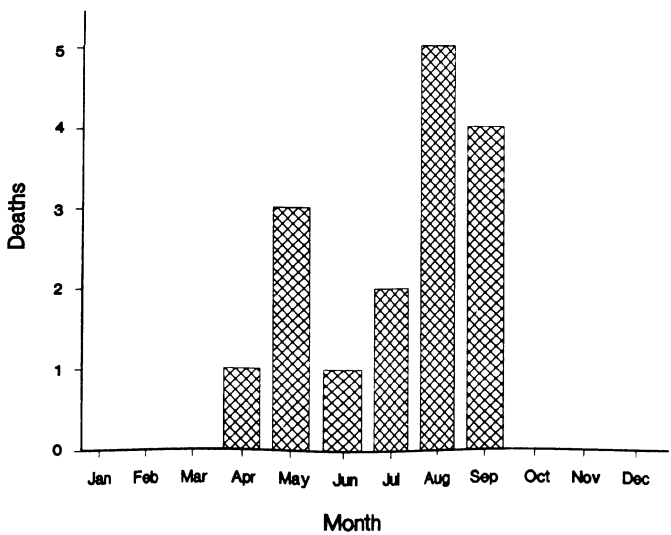
There is no OSHA permissible exposure limit for methane. OSHA exposure standards are not enforceable on farms with ≤10 employees.

The apparent tendency for episodes such as those described here to result in multiple fatalities is of major concern. Fatal incidents resulting from entry into manure pits often involve more than one victim; the deaths of any additional workers occur during rescue attempts conducted without use of appropriate equipment and safety precautions. Investigations performed by NIOSH as part of the Fatal Accident Circumstances and Epidemiology Project show that approximately 43% of confined-space–related deaths involved co-workers or other persons who were attempting to rescue the initial victim(s) (NIOSH, unpublished data). The hazards of confined spaces and improper rescue methods have been addressed in previous NIOSH publications, including a guide to safe work practices in confined spaces (*2,5,6*).

In the two events reported here, hot humid weather may have contributed to the generation of methane gas and increased the amount of gas in the manure pits. The possible connection between hot weather and increased gas accumulation in manure tanks is also suggested by the NTOF data (Figure 2). All 16 deaths identified in the NTOF file occurred in April through September, with the highest number occurring in August. Farmers should be made aware of the particular hazards of entering manure pits during the summer months.

NIOSH is preparing information for farm operators on the hazards of manure pits and recommendations for safely evaluating, ventilating, and entering (when absolutely necessary) manure pits. Recommendations will also be provided for the safe conduct of rescue operations in circumstances such as those described in this report. NIOSH will disseminate this information during the fall.

FIGURE 2. Work-related deaths in manure pits, by month of year — United States, 1980–1985



Source: National Traumatic Occupational Fatalities database.

Methane Asphyxia – Continued

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Notice to Readers

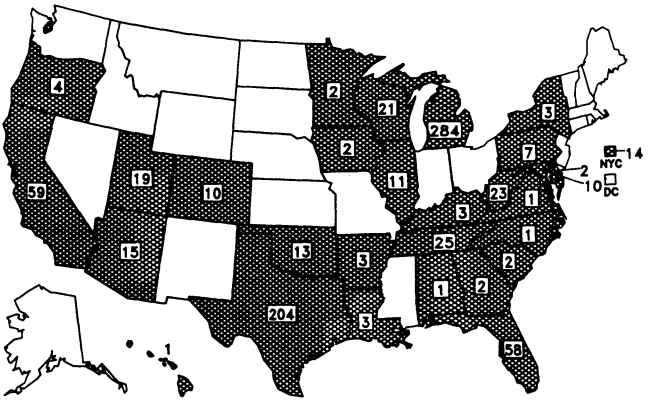
Workshop on Environmental and Occupational Asthma

The Interagency Education Program Liaison Group of the congressionally mandated Task Force on Environmental Cancer and Heart and Lung Disease is sponsoring a Workshop on Environmental and Occupational Asthma to be held November 28 through December 1, 1989, in Long Beach, California. The purpose of the workshop is to identify research needs on environmentally and occupationally related asthma and to promote communication links between pulmonary medicine specialists and primary-care providers. For further information, contact Ms. Willie Sanderson, Technical Resources, Inc., Suite 200, 3202 Tower Oaks Boulevard, Rockville, MD 20852; telephone (301) 231-5250. Preregistration is required.

Erratum: Vol. 38, No. 24

In the article, "Update: Heterosexual Transmission of Acquired Immunodeficiency Syndrome and Human Immunodeficiency Virus Infection – United States," two errors appeared in Table 1 on page 429: 1) the total (%) for "Heterosexual contact" should be 66%; 2) the total (%) for "Born in country where heterosexual contact is the major route of transmission" should be 34%.

FIGURE 1. Reported measles cases — United States, weeks 29–32, 1989



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The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333; telephone (404) 332-4555.

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