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Foreword

The purpose of the *CDC Surveillance Summaries* is to make available up-to-date information on conditions of public health interest for which CDC has major responsibility. The *Summaries* are published quarterly and provide detailed analysis of the most current available data obtained for CDC surveillance programs. These reports complement other data published by CDC in the *Morbidity and Mortality Weekly Report (MMWR),* the *MMWR Annual Summary,* and various disease-surveillance reports. This volume contains epidemiologic information on five conditions reportable to CDC; these reports are derived from surveillance forms, special investigations, and other sources of information collected at the state and national levels.

History of CDC Surveillance Activities

CDC has been actively involved in disease-surveillance activities since the formation of the Communicable Disease Center in 1946. The original scope of the National Surveillance Program included the study of malaria, murine typhus, smallpox, psittacosis, diphtheria, leprosy, and sylvatic plague. In 1954, a surveillance section was established within the Epidemiology Branch of CDC, primarily concerned with planning and conducting continuing surveillance and making periodic reports. National emergencies such as the Asian influenza pandemic and the discovery of Legionnaires' disease have prompted the involvement of CDC in new surveillance activities. Over the years the surveillance activities of CDC have expanded to include not only new areas in infectious disease but also programs in human reproduction, environmental health, chronic disease, risk reduction, and occupational safety and health. Ongoing evaluation of these programs has led to new methods of data collection and analysis and has prompted examination of how data are disseminated to the public health community.

In 1980 and 1981, a survey of CDC staff and state epidemiologists suggested that improved coordination of surveillance reports with the *MMWR* and the *MMWR Annual Summary* would facilitate timely publication; provide greater uniformity in the acquisition, evaluation, and reporting of surveillance data; and encourage use of these data. Several approaches to the development of a systematic process of disseminating disease-specific surveillance reports were considered. On the basis of considerations of timeliness, cost advantages, and editorial uniformity, a report published on a quarterly basis was recommended.

The *Summaries* contain information more reflective of the detailed surveillance reports of the past. CDC hopes that the *Summaries* will disseminate surveillance data on a regular schedule, improve the clarity of community public health information, and also realize a cost savings. Although the *Summaries* are published quarterly, they will not be limited to quarterly data; annual data will probably be more typical. The *MMWR Annual Summary* will complement rather than serve as the cumulative summary of the quarterly publications.

Data Sources

Data on the reported occurrence of notifiable diseases are derived from reports supplied by the state and territorial departments of health and CDC program activities, routinely published in the *MMWR*, and compiled in final form in the *MMWR Annual Summary*.

CDC also maintains national surveillance programs for selected diseases with the cooperation of state and local health departments and publishes detailed epidemiologic analyses periodically. Data appearing in the *Surveillance Summaries* or in a surveillance report may not agree exactly with reports published in the *MMWR* because of differences in timing of reports or because of refinements in case definition. It should be noted that data collected for the *MMWR* and the more detailed data published by individual CDC programs are collected independently.

These data should be interpreted with caution. Some diseases that cause severe clinical illness and are associated with serious consequences are probably reported quite accurately. However, diseases that are clinically mild and infrequently associated with serious consequences are less likely to be reported. Additionally, subclinical cases are seldom detected except in the course of epidemic investigations or special studies. The degree of completeness of reporting is also influenced by the diagnostic facilities available, the control measures in effect, and the interests and priorities of state and local officials responsible for disease control and surveillance. Finally, factors such as the introduction of new diagnostic tests and the discovery of new disease entities may cause changes in disease reporting independent of the true incidence of disease. Despite these limitations the data in these reports have proven to be useful in the analysis of trends.

Surveillance Programs
Centers for Disease Control

Surveillance program	Responsible branch	Most recent report
Abortion	Pregnancy Epidemiology Branch Division of Reproductive Health Center for Health Promotion and Education	Nov 1980 (1978 data)
Aseptic meningitis	Respiratory and Enterovirus Branch Division of Viral Diseases Center for Infectious Diseases	Jan 1979 (1976 data)
Biologics	Data Management Branch Division of Immunization Center for Prevention Services	Dec 1982 (1982 data)
Botulism	Enteric Diseases Branch Division of Bacterial Diseases Center for Infectious Diseases	May 1979 (data from 1899-1977)
Brucellosis	Bacterial Zoonoses Activity Division of Bacterial Diseases Center for Infectious Diseases	June 1979 (1978 data)
Congenital malformations	Birth Defects Branch Chronic Diseases Division Center for Environmental Health	Feb 1983 (data from 1970-1980)
Dengue	Dengue Branch Division of Vector-Borne Viral Diseases Center for Infectious Diseases	Feb 1983 (1981 data)
Diabetes	Division of Diabetes Control Center for Prevention Services	June 1979 (1978 data)
Diphtheria	Surveillance, Investigations and Research Branch Division of Immunization Center for Prevention Services	July 1978 (data from 1971-1975)
Ectopic pregnancy	Pregnancy Epidemiology Branch Division of Reproductive Health Center for Health Promotion and Education	Feb 1983 (data from 1970-1978)
Encephalitis	Arbovirus Reference Branch Division of Vector-Borne Viral Diseases Center for Infectious Diseases	May 1981 (1978 data)
Enterovirus	Respiratory and Enterovirus Branch Division of Viral Diseases Center for Infectious Diseases	Nov 1981 (data from 1970-1979)

Surveillance Programs
Centers for Disease Control

Surveillance program	Responsible branch	Most recent report
Fifteen leading causes of death in the U.S., 1978	Health Analysis and Planning for Preventive Services Center for Prevention Services	Sept 1982 (1978 data)
Food-borne disease	Enteric Diseases Branch Division of Bacterial Diseases Center for Infectious Diseases	April 1981 (1979 data)
Guillain-Barré syndrome	Respiratory and Enterovirus Branch Division of Viral Diseases Center for Infectious Diseases	Oct 1980 (data from 1978-1979)
Hepatitis	Viral Hepatitis Surveillance Activity Division of Hepatitis and Viral Enteritis Center for Infectious Diseases	June 1982 (data from 1975-1980)
Homicide	Violence Epidemiology Branch Office of the Director Center for Health Promotion and Education	No previous report
Influenza	Influenza Branch Division of Viral Diseases Center for Infectious Diseases	Jan 1983 (data from 1977-1979)
Leprosy	Respiratory and Special Pathogens Branch Division of Bacterial Diseases Center for Infectious Diseases	April 1976 (data from 1971-1973)
Leptospirosis	Bacterial Zoonoses Activity Division of Bacterial Diseases Center for Infectious Diseases	Aug 1979 (1978 data)
Malaria	Malaria Branch Division of Parasitic Diseases Center for Infectious Diseases	Nov 1982 (1981 data)
Measles	Surveillance, Investigations and Research Branch Division of Immunization Center for Prevention Services	Sept 1982 (data from 1977-1981)
Mumps	Surveillance, Investigations and Research Branch Division of Immunization Center for Prevention Services	July 1978 (data from 1974-1976)

Surveillance Programs
Centers for Disease Control

Surveillance program	Responsible branch	Most recent report
Nosocomial infections	National Nosocomial Infections Study Hospital Infections Program Center for Infectious Diseases	March 1982 (1979 data)
Nutrition	Division of Nutrition Center for Health Promotion and Education	June 1981 (1980 data)
Occupational injuries	Safety Surveillance Branch Division of Safety Research National Inst. for Occup. Safety & Hlth.	No previous report
Plague	Plague Branch Division of Vector-Borne Viral Diseases Center for Infectious Diseases	Sept 1981 (1980 data)
Pneumonconiosis in coal miners	Epidemiological Investigations Branch Division of Respiratory Disease Studies National Inst. for Occup. Safety & Hlth.	Feb 1983 (data from 1978-1980)
Poliomyelitis	Surveillance, Investigations and Research Branch Division of Immunization Center for Prevention Services	Dec. 1982 (data from 1980-1981)
Psittacosis	Bacterial Zoonoses Activity Division of Bacterial Diseases Center for Infectious Diseases	Feb 1983 (1979 data)
Rabies	Viral and Rickettsial Zoonoses Branch Division of Viral Diseases Center for Infectious Diseases	Feb 1983 (1981 data)
Rickettsial disease (RMSF, typhus murine, Q fever, endemic typhus)	Viral and Rickettsial Zoonoses Branch Division of Viral Diseases Center for Infectious Diseases	May 1981 (1979 data)
Risk factors	Field Services Branch Division of Nutrition Center for Health Promotion and Education	Feb 1983 (1981 data)
Rubella	Surveillance, Investigations and Research Branch Division of Immunization Center for Prevention Services	May 1980 (data from 1976-1978)

Surveillance Programs
Centers for Disease Control

Surveillance program	Responsible branch	Most recent report
Salmonella	Enteric Diseases Branch Division of Bacterial Diseases Center for Infectious Diseases	Dec 1982 (1980 data)
Summer mortality	Special Studies Branch Chronic Diseases Division Center for Environmental Health	Feb 1983 (data from 1979-1981)
Surgical sterilization	Epidemiologic Studies Branch Division of Reproductive Health Center for Health Promotion and Education	March 1981 (data from 1976-1978)
Trichinosis	Helminthic Diseases Branch Division of Parasitic Diseases Center for Infectious Diseases	Oct 1982 (1981 data)
Tuberculosis	Division of Tuberculosis Control Center for Prevention Services	Sept 1982 (1981 data) TB Statistics: States & Cities Nov 1981 (1979 data) TB in the United States
U.S. immunization survey	Surveillance, Investigations and Reserach Branch Division of Immunization Center for Prevention Services	April 1983
Venereal disease	Division of Venereal Disease Control Center for Prevention Services	(1980 data) Sexually Transmitted Diseases Statistical Letter-No. 130 (data from 1978-1979) STD Fact Sheet-Edition 35
Water-related disease outbreaks	Enteric Diseases Branch Division of Bacterial Diseases Center for Infectious Diseases	Sept 1982 (1981 data)

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Abortion Surveillance, 1979-1980

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Introduction

Recognizing both the importance of abortion as a public health issue and the absence of national abortion statistics, in 1969 the Division of Reproductive Health* initiated continuous epidemiologic surveillance of abortion in the United States. The objectives of this surveillance are twofold: 1) to document the numbers and characteristics of women obtaining abortion and 2) to assist in efforts to eliminate preventable mortality and morbidity associated with abortion. The following information documents the most current data available to CDC for the period 1979-1980.

Materials and Methods

CDC receives abortion statistics by state of occurrence from three sources: 1) central health agencies, 2) hospitals and/or medical facilities, and 3) the National Center for Health Statistics. Data are received from 50 states, and the District of Columbia.

Most states provide both total numbers and demographic data concerning abortion recipients. However, the number of states reporting these data has varied over time because of changes in state-specific laws and regulations on reporting. Earlier temporal trends and characteristics of women obtaining abortion were published in abortion surveillance reports and included data from the states that reported during each particular time period (*1*).

Results

In 1979, the 50 states and the District of Columbia reported 1,251,921 abortions, which represents an 8% increase over the number of abortions performed in 1978 (Table 1). In 1980, the number of abortions rose an additional 4% to 1,297,606. The national abortion rate rose from 23 abortions/1,000 women ages 15-44 in 1978 to 24 in 1979 and 25 in 1980. The national abortion ratio was 3% higher in 1979 than in 1978, i.e., rising from 347 abortions/1,000 live births to 358. The 1980 abortion ratio was 362.

As in previous years, women who obtained abortion in the period 1979-1980 were most likely to be young, white, unmarried, and of low parity. For the 2-year period, approximately

*Formerly Family Planning Evaluation Division

TABLE 1. Characteristics of women obtaining abortions, United States, 1972-1980

Characteristics	Percentage distribution*								
	1972	1973	1974	1975	1976	1977	1978	1979	1980
(Totals)	586,760	615,831	763,476	854,853	988,267	1,079,430	1,157,776	1,251,921	1,297,606
Residence									
Abortion in-state	56.2	74.8	86.6	89.2	90.0	90.0	89.3	90.0	92.6
Abortion out-of-state	43.8	25.2	13.4	10.8	10.0	10.0	10.7	10.0	7.4
Age (years)									
≤19	32.6	32.7	32.7	33.1	32.1	30.8	30.0	30.0	29.2
20-24	32.5	32.0	31.8	31.9	33.3	34.5	35.0	35.4	35.5
≥25	34.9	35.3	35.6	35.0	34.6	34.7	34.9	34.6	35.3
Race									
White	77.0	72.5	69.7	67.8	66.6	66.4	67.0	68.9	69.9
Black and other	23.0	27.5	30.3	32.2	33.4	33.6	33.0	31.1	30.1
Marital status									
Married	29.7	27.4	27.4	26.1	24.6	24.3	26.4	24.7	23.1
Unmarried	70.3	72.6	72.6	73.9	75.4	75.7	73.6	75.3	76.9
Number of live births†									
0	49.4	48.6	47.8	47.1	47.7	53.4	56.6	58.1	58.4
1	18.2	18.8	19.6	20.2	20.7	19.1	19.2	19.1	19.5
2	13.3	14.2	14.8	15.5	15.4	14.4	14.1	13.8	13.7
3	8.7	8.7	8.7	8.7	8.3	7.0	5.9	5.5	5.3
≥4	10.4	9.7	9.0	8.6	7.9	6.2	4.2	3.5	3.2
Type of procedure									
Curettage	88.6	88.4	89.7	90.9	92.8	93.8	94.6	95.0	95.5
Intrauterine instillation	10.4	10.4	7.8	6.2	6.0	5.4	3.9	3.3	3.1
Hysterotomy/ hysterectomy	0.6	0.7	0.6	0.4	0.2	0.2	0.1	0.1	0.1
Other	0.5	0.6	1.9	2.4	0.9	0.7	1.4	1.6	1.3

TABLE 1. Characteristics of women obtaining abortions, United States, 1972-1980 (Continued)

Characteristics	Percentage distribution*								
	1972	1973	1974	1975	1976	1977	1978	1979	1980
(Totals)	**586,760**	**615,831**	**763,476**	**854,853**	**988,267**	**1,079,430**	**1,157,776**	**1,251,921**	**1,297,606**
Gestation (weeks)									
≤8	34.0	36.1	42.6	44.6	47.0	51.2	52.2	52.1	51.7
9-10	30.7	29.4	28.7	28.4	28.0	27.2	26.9	27.0	26.2
11-12	17.5	17.9	15.4	14.9	14.4	13.1	12.3	12.5	12.2
13-15	8.4	6.9	5.5	5.0	4.5	3.4	4.0	4.2	5.2
16-20	8.2	8.0	6.5	6.1	5.1	4.3	3.7	3.4	3.9
≥21	1.3	1.7	1.2	1.0	0.9	0.9	0.9	0.9	0.9

*Excludes unknowns. Since the number of states reporting each characteristic varies from year to year, temporal comparisons should be made with caution.

†For years 1972-1977, data indicate number of living children.

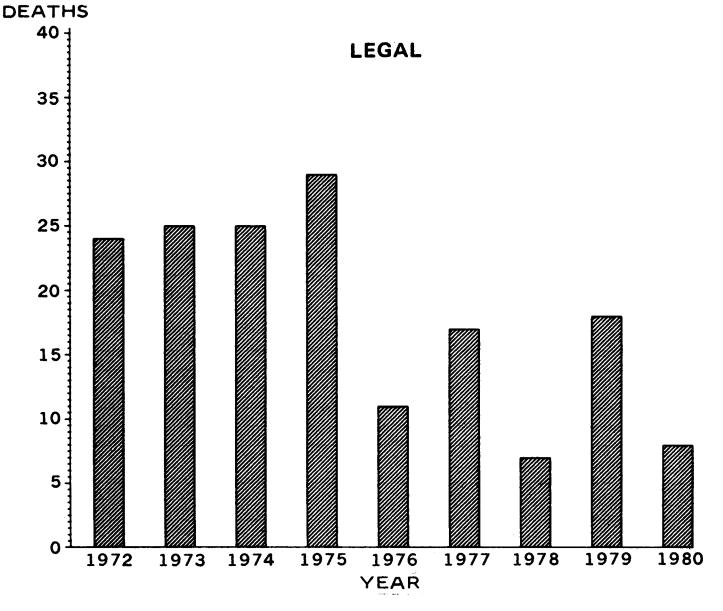
65% were <25 years of age, 70% were white, 75% were unmarried, and 58% had never given birth to a live infant. More than 90% of the reported abortions were performed in the woman's state of residence.

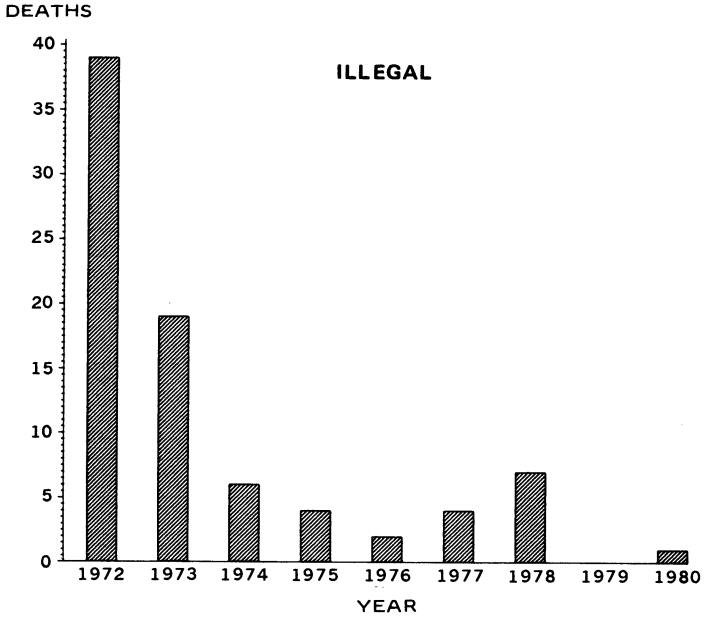
The percentage of women undergoing abortion by instrumental evacuation (curettage, dilatation and evacuation [D&E]) continued to rise, accounting for 95% of abortions in 1979 and nearly 96% in 1980. Curettage is virtually the only procedure used at ≤12 weeks' gestation. D&E has become increasingly common as a method of abortion in the second trimester. In 1979 and 1980, as in past years, D&E was the most common method for performing abortions at 13-15 weeks' gestation. In 1980, for the first time, D&E replaced saline as the most common method of abortion in the 16- to 20-week interval.

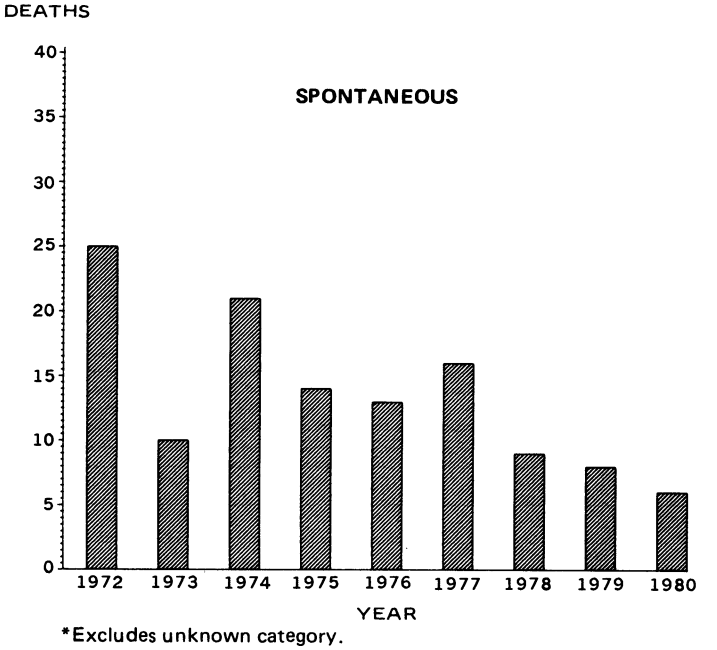
In 1979 and 1980, as in previous years, more than half of all abortions (52%) were performed at ≤8 weeks' gestation, and over 90% were performed at ≤12 weeks' gestation. Younger women continued to obtain abortions at later stages of gestation than did older women; more than 40% of all abortions at ≥16 weeks were performed on women ≤19 years of age. Race was not related to gestational age at abortion.

Twenty-six women in 1979 and 16 women in 1980 died as a result of abortion. Eighteen women died following legal abortion in 1979, as did eight women in 1980. No 1979 deaths from illegally induced abortions were reported; one was reported in 1980 (Figure 1). Eight deaths in 1979 and six in 1980 were reported in association with spontaneous abortion. None of the spontaneous abortion deaths were associated with use of intrauterine devices. The number of deaths from legal and spontaneous abortion in 1980 reflect the lowest recorded since CDC began surveillance in 1972. The numbers of deaths associated with illegal abortion in 1979 and in 1980 were lower than any previous year. The death-to-case rate for legal abortions was 1.4/100,000 abortions in 1979 and 0.6 in 1980, i.e., similar to the death-to-case rates reported in the years after 1976.

FIGURE 1. Abortion-related deaths by category* and year, United States, 1972-1980







*Excludes unknown category.

Discussion

Since 1969, when CDC began collecting information on legal abortions, the total number of reported procedures increased each year, although the annual percentage increase after 1976 declined steadily, with the lowest percentage increase being reported for 1980.

The number of abortions reported to CDC was probably lower than the number actually performed in 1979 and 1980. The number of cases identified through epidemiologic surveillance based on summary information reported by state health departments is generally lower than the number obtained through direct surveys. In both 1979 and 1980, CDC's total was 16% lower than the projected totals obtained by The Alan Guttmacher Institute nationwide survey of abortion providers (*2*).

Underreporting of abortions may produce some biases in the CDC data. Abortions performed in physicians' offices are less likely to be reported than are those performed in hospitals or other facilities (*2*). Almost 80% of all abortions were performed in facilities other than hospitals in 1980 (*2*). Since abortions performed in physicians' offices are in general probably done at earlier gestational ages of pregnancy than those done in other facilities, the underreporting of these data may bias the gestational age distributions toward the later stages of pregnancy.

Curettage was the most common method used at ≤12 weeks' gestation, and D&E was the most common method used at 13-15 weeks' gestation. D&E replaced saline-induced abortion as the most common method for women who obtained abortions at 16-20 weeks' gestation. This may be related to the relative safety, convenience, and cost-effectiveness of D&E relative to saline-induced abortions (*3*).

In the surveillance period after 1975, at least 89% of women who had abortions had the procedures done in their state of residence. The number of women who obtained abortion in other states may reflect the necessity to travel out-of-state because of lack of abortion services in the area of residence and/or the proximity of residence to a state boundary, with the nearest abortion provider being in the adjoining state.

The age distribution of women obtaining abortion has gradually shifted from the ≤19-year-old group to the 20- to 24-year-old group, largely as the result of a similar demographic shift in age distribution for women ≤24 years of age (*4*). In 1979 and 1980, as in previous years, women at each end of the reproductive-age distribution had the highest abortion-to-live-birth ratio.

Women of black and other races accounted for nearly half of the abortions obtained by the ≤14-year-old group. In part, this higher percentage distribution may reflect a younger age at first intercourse for blacks than for whites (*5*). This is consistent with an age-specific fertility rate seven times higher for blacks and others than for whites in the 10- to 14-year-old group (*6*). In the 15- to 19-year-old group, almost three-fourths of abortions were obtained by white teenagers. According to survey data, black teenagers were more likely than whites to carry a pregnancy to term and less likely to place for adoption a child born out of wedlock (*7*).

The percentage of women whose reported abortion has been preceded by at least one other abortion has continued to rise. This rise probably reflects the growing number of women who have had an abortion rather than reflecting increased reliance on abortion as a primary method of birth control (*8,9*).

The total number of deaths associated with abortions (legal, illegal, and spontaneous) has decreased steadily since 1972, reaching a low of 16 reported deaths in 1980. During this 9-year period, the number of illegal-abortion deaths decreased the most (97%), while the number of spontaneous-abortion deaths decreased 76%, and legal-abortion deaths decreased 67%.

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Homicide Surveillance, 1970-1978

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Introduction

In 1978, homicide was the twelfth leading cause of death in the United States in terms of absolute numbers (*1*) and was the fourth leading cause of potential years of life lost to people ages 1-65 years, preceded only by accidents, cancer, and heart disease (*2*). This report details the numbers and characteristics of homicide victims for the period 1970-1978.

Materials and Methods

The mortality data on which this report is based were compiled by the National Center for Health Statistics (NCHS) (*3-5*). These data reflect death-certificate information submitted to NCHS from all 50 states and the District of Columbia. Deaths of nonresident aliens and U.S. citizens living abroad are not included.

The death-certificate category "homicide" includes deaths from injuries purposely inflicted by other persons (ICDA-8, codes E960-E969), deaths from injuries resulting from legal intervention (ICDA-8, codes E970-E977), and deaths caused by legal execution (ICDA-8, code E978). A certification of homicide in a vital statistics report is not typically a legal decision, but rather represents the professional opinion of the physician or coroner certifying the cause of death.

Population data were obtained from the Bureau of the Census (*6*).

Results

In the period 1970-1978, 178,467 homicides were reported to NCHS by the 50 states and the District of Columbia. The number of homicides increased steadily from 16,848 in 1970 to a high of 21,465 in 1974 and went down to 20,432 in 1978 (Table 1). The homi-

TABLE 1. Numbers and rates of homicides, United States, 1970-1978

Year	Number	Rate/ 100,000 population	Age-adjusted rate*
1970	16,848	8.3	9.1
1971	18,787	9.1	10.0
1972	19,638	9.4	10.3
1973	20,465	9.8	10.5
1974	21,465	10.2	10.8
1975	21,310	10.0	10.5
1976	19,554	9.1	9.5
1977	19,968	9.2	9.6
1978	20,432	9.4	9.6
1970-1978	178,467	9.3	NA†

*Age-adjusted rates/100,000 population computed by the direct method of standardization using the total population for 1940 as the standard population.

†Not applicable.

cide rate followed a similar pattern, increasing from 8.3/100,000 population in 1970 to 10.2 in 1974 and decreasing to 9.4 in 1978. Age-adjusted homicide rates are slightly higher each year than their unadjusted counterparts, although the two types of rates show a comparable pattern over time.

In both 1970 and 1978, victims of homicide were usually young and male (Table 2, Figure 1). The percentage of victims in the 15- to 34-year age group rose from 49% in 1970 to 55% in 1978, while the percentage of victims who were male remained consistently around 78% in the period 1970-1978. The racial profile of homicide victims changed during this 9-year period. In 1970, 46% of these victims were white, and 54% were of black or other races, whereas in 1978, 55% of victims were white, and 45% were of black or other races. In the period 1970-1978, the age-adjusted homicide rate for black and other races declined from 41.3/100,000 to 33.4, while the rate for whites rose from 4.7 to 6.0. Despite the decline in the rate of homicide for black and other races, these groups were still at 5.6 times higher risk than whites of death from homicide in 1978 (Table 3).

Homicides occurred more frequently in the South than in the rest of the United States. In 1978, 43% of all homicides occurred in southern states. In the same year, seven of the 10 states with the highest homicide rates were in the South, whereas all 10 of the states with the lowest homicide rates were in the Northeast and the North-Central regions (Figure 2).

In the period 1970-1978, a seasonal trend was noted in association with homicide. Homicides were slightly more likely to occur in summer and fall than in winter and spring.

Firearms and explosives were the weapons most commonly used in committing homicide in both 1970 and 1978. In 1978, 67% of homicides were committed with firearms or

TABLE 2. Numbers and rates/100,000 population of homicides, by age and sex of victim, United States, 1970 and 1978

Age (years)	Male				Female			
	1970		1978		1970		1978	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
<1	80	4.5	82	5.0	70	4.1	79	5.1
1-4	130	1.9	172	2.8	128	1.9	141	2.4
5-9	61	0.6	90	1.0	55	0.6	80	1.0
10-14	154	1.5	161	1.7	90	0.9	123	1.4
15-19	1,233	12.8	1,397	13.1	303	3.2	471	4.5
20-24	2,100	26.5	2,830	28.0	521	6.2	745	7.3
25-29	1,860	28.1	2,674	30.1	433	6.3	630	7.0
30-34	1,517	27.1	1,961	25.0	330	5.7	456	5.7
35-39	1,290	23.8	1,525	24.0	340	6.0	362	5.4
40-44	1,199	20.6	1,209	22.0	334	5.4	310	5.3
45-49	1,062	18.1	979	17.7	255	4.1	231	4.0
50-54	844	15.8	880	15.4	184	3.2	217	3.5
55-59	616	12.9	626	11.7	138	2.7	164	2.8
60-64	457	11.3	474	10.7	110	2.4	125	2.5
65-69	294	9.4	321	8.4	88	2.3	114	2.4
70-74	174	7.5	195	7.3	63	2.0	115	3.1
75-79	85	5.4	105	6.4	54	2.4	91	3.6
80-84	62	7.1	59	6.1	44	3.1	69	3.9
≥85	40	7.4	45	6.5	24	2.5	53	3.5
Age not stated	20	NA*	53	NA*	6	NA*	18	NA*
Total	13,278	13.4	15,838	14.9	3,570	3.4	4,594	4.1

*Not applicable.

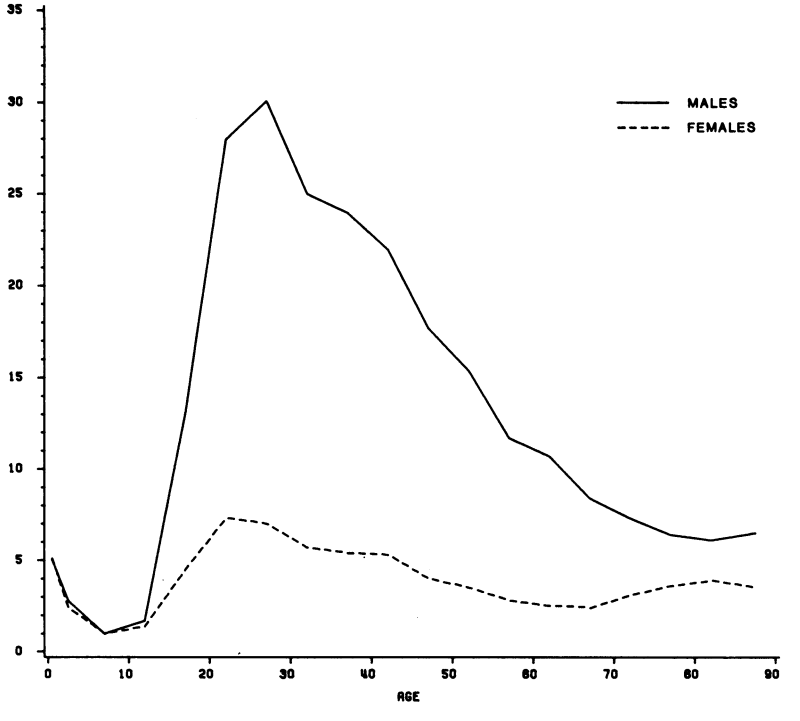
explosives, 17% were committed with cutting or piercing instruments, and 16% were committed by other or unspecified means. These proportions had not changed substantially from those in 1970, when 69% of homicides were committed with firearms or explosives. In both 1970 and 1978, males were more likely than females to be victims of homicides committed with firearms or explosives and less likely to be killed by other or unspecified means. The relative proportion of males and females killed with cutting or piercing instruments remained at 17% throughout the reporting period.

Discussion

In the period 1970-1978, homicide in the United States took its greatest toll among the young, minorities, and males. Overall, the numbers and rates of homicides rose only moderately during this period. The only significant shift in the distribution of homicide victims occurred along racial lines; the proportions and rates of homicides decreased for blacks and other races and rose for whites.

Homicides are reviewed intensively by coroners and medical examiners. In 1977, autopsies were performed on 91% of all homicide victims, whereas only 16% of persons who died from causes other than homicide had autopsies—indicating that a diagnosis of homicide is highly reliable (*7*). In fact, when the eighth revision of the *International Classification of Diseases* introduced a new classification, "death undetermined whether purposeful or accidental," a comparability study determined that only 0.4% of all deaths previously classified as homicide would have been reclassified as undetermined (*8*).

FIGURE 1. Homicide rate/100,000 population, by age and sex of victim, United States, 1978



In addition to data derived from death certificates, an alternate source of information on homicide is collected by the U.S. Department of Justice through the Federal Bureau of Investigations Uniform Crime Reporting System (*9*). The Uniform Crime Reports (UCRs) provide a nationwide view of crime based on data contributed by state and local law enforcement agencies. In addition to basic demographic information on homicide victims the UCRs provide data on the victim-offender relationship and the circumstances or motives for the homicide.

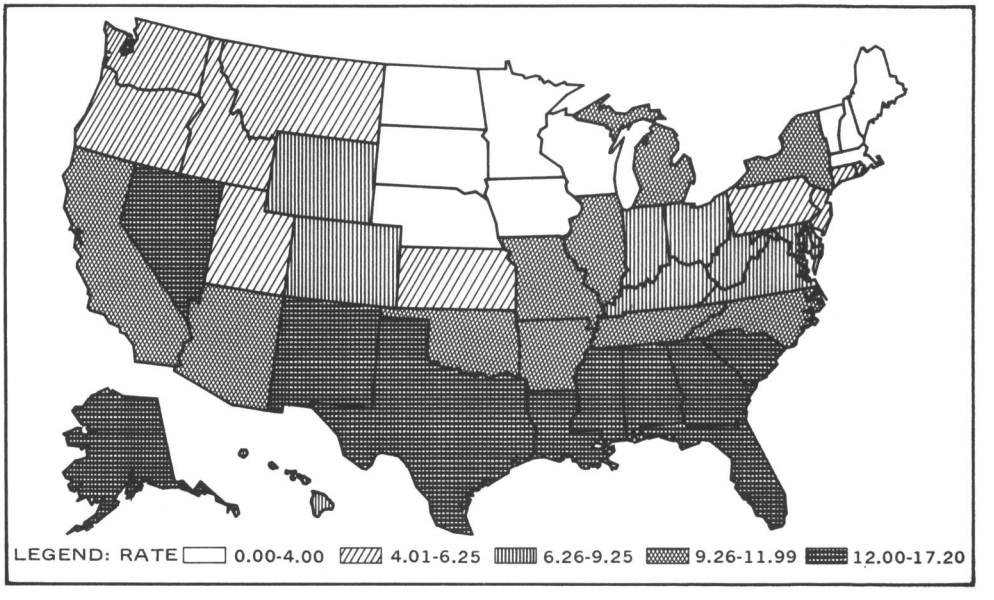
It should be noted, however, that the UCR data are deficient in several respects when compared with mortality data from NCHS. First, law enforcement agencies in some rural areas are unlikely to report homicides. Second, not all agencies report consistently. For example, in 1976, New York City did not report the offenses for the last 6 months of the year (830

TABLE 3. Homicide rates/100,000 population, by race of victim, United States, 1970-1978

Year	Age-adjusted homicide rates*	
	White	Black and other
1970	4.7	41.3
1971	5.1	46.8
1972	5.2	46.6
1973	5.7	44.4
1974	6.0	44.5
1975	6.1	41.1
1976	5.5	36.4
1977	5.9	34.5
1978	6.0	33.4

*Age-adjusted rates/100,000 population computed by the direct method of standardization using the total population for 1940 as the standard population.

FIGURE 2. Homicide rate/100,000 population, by state of occurrence, United States, 1978



homicides). Third, ages reported have not always been verified. For these reasons, it is felt that NCHS mortality data are more reliable for tracking the incidence of homicide.

Both UCR and NCHS mortality data are deficient with respect to their inclusion of socioeconomic information on the victims of homicide. Therefore, with respect to this report, differences in the proportions and rates of homicides as they pertain to different regions and racial groups should be interpreted with caution. Whether such disparities can be accounted for in terms of cultural or socioeconomic variations continues to be a question for research.

Two approaches (deterrence and gun control) have dominated current and past thinking about strategies for preventing homicide. Much less attention has been given to an orientation toward the primary prevention of homicide. Such a strategy would be indicated by programs that attempt to optimize social conditions in order to minimize the probability of violent behavior directed at any one individual. When disseminated to a broad audience, such acquired skills as the techniques of negotiation, contracting, self-control, skill training, problem solving, moral education, and self-protection are examples of such a preventive orientation (*10*). Clearer understanding of the risk factors associated with violent acts is urgently needed.

The magnitude of the public health problem homicide represents is most clearly indicated by its contribution to premature mortality in the United States. Greater awareness of and sensitivity to the issues surrounding homicide as a cause of death are required of public health professionals in order that the matrix formed by criminal justice researchers, law enforcement agencies, social services agencies, and the public health community can address this important problem intelligently. Past efforts have fallen short in preventing/controlling the morbidity and mortality caused by, or associated with, violence in this country. Clearly, the experience and knowledge acquired through efforts to address other public health problems can be applied in efforts to determine creative solutions to the problem posed by violence.

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Trichinosis Surveillance, 1981

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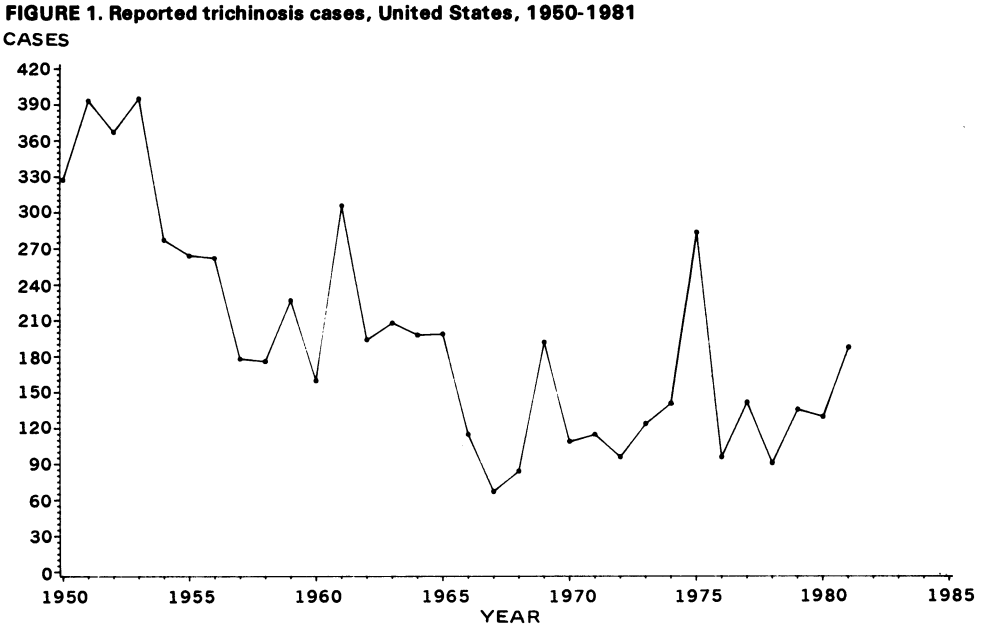
Introduction

Human trichinosis is a disease of varying severity caused by ingesting of meat containing encysted larvae of *Trichinella spiralis*. For the period 1947-1981, 7,532 cases of trichinosis were reported in the United States. In the same period, 132 deaths were reported, for a case-fatality ratio of 17.5/1,000 cases. Deaths attributed to trichinosis have declined both in terms of total numbers and as a proportion of total cases. For the period 1947-1961, the case-fatality ratio was 22.7/1,000, cases, and for the period 1962-1976, it was 10.4/1,000.

The number of cases reported each year continued to decline throughout the period 1950-1967, after which the number of cases reported appears to have plateaued (Figure 1). The rise in incidence in 1969 and again in 1975 was associated with the occurrence of an unusually large number of common-source outbreaks. During the last decade, an annual mean of <150 cases has been reported.

The general decline in the incidence of human trichinosis is also reflected in a declining prevalence of infection with *T. spiralis*. A comparison of the results of two surveys in which human diaphragm samples obtained at autopsy (*1*) were examined showed that in 1940 (*2,3*) an estimated 12% of the American population were infected with trichinae, as were

FIGURE 1. Reported trichinosis cases, United States, 1950-1981



only 2.2% in 1970 (*4,5*). Similarly obtained estimates of the prevalence of live *T. spiralis* indicated that 7.3% of Americans had these organisms in their diaphragms in 1940, as did only 0.7% in 1970.

The decline in the prevalence of human trichinosis paralleled a similar decrease in prevalence among swine. The prevalence of *T. spiralis* infection among farm-raised hogs, which currently comprise more than 95% of all hogs marketed, declined from 9.5 infected animals/1,000 in the 1930s (*6*) to 1.3/1,000 in the period 1966-1970 (*7*). The rate for garbage-fed swine similarly decreased from 110/1,000 in 1950 to 5.1/1,000 in 1966-1970.

Trichinosis became a reportable disease in some states in the late 19th century, and in 1947 the Public Health Service began collecting statistics on a national level. In 1965, trichinosis was included among the notifiable diseases that physicians report weekly to state health departments and to CDC through the National Morbidity Reporting System. A standardized surveillance form was developed to collect detailed information for each case; since 1967, the findings have been summarized in an annual report.

Materials and Methods

Detailed epidemiologic information obtained from state health departments was supplemented by records of the National Morbidity Reporting Service (as reported in the *MMWR*), results of serologic evaluation of specimens submitted to CDC for trichinosis testing, and epidemiologic investigations. Trichinosis cases are reported by state in which the infection was acquired (i.e., in which the implicated meat item was ingested); if the meat item was not identified, the case is listed by the patient's place of residence. Population estimates for 1981 were obtained from the Bureau of the Census.

Diagnosis of cases reported in 1981 was based on the following factors: a) patient history, symptoms, and signs; b) clinical pathology; c) muscle biopsy; and d) serologic test results. The bentonite flocculation (BF) test, the most frequently used serodiagnostic test, was performed on 124 patients. Criteria for inclusion as a trichinosis case included a) *Trichinella*-positive muscle biopsy, b) compatible clinical and serologic findings, or c) a patient with compatible symptoms and a history of ingesting meat known to contain *Trichinella* larvae.

Results

Epidemiology. In 1981, 188 cases of trichinosis were reported to CDC for the United States. One patient, a 55-year-old female from New York City, died. In 1981 there were 21 common-source outbreaks, which accounted for 124 (66%) of all cases reported. In the period 1977-1981, the case-fatality ratio was 5.8/1,000 cases. Fourteen states reported at least one case in 1981; however, 82% (153) of the cases were concentrated in six states (Alaska, Connecticut, New Jersey, New York, Pennsylvania, and Rhode Island) (Table 1). The incidence of reported cases was 0.8/1,000,000 population for the entire United States. The largest number of cases (45) was reported from Connecticut, but the states with the highest annual incidence were Rhode Island and Alaska, with 36.7 and 33.9 cases/1,000,000 population, respectively.

The mean annual trichinosis incidence for the 5-year period 1977-1981 was highest in Alaska (38.9 cases/1,000,000), Rhode Island (10.1), Connecticut (4.0), New Jersey (3.5), and Louisiana (2.4) (Figure 2). Moderately high mean incidence was observed in Massachusetts (1.3) and Pennsylvania (1.2). In 17 states (Arkansas, Delaware, Georgia, Idaho, Indiana, Kentucky, Minnesota, Montana, Nevada, North Carolina, North Dakota, Oklahoma, Oregon,

South Dakota, Tennessee, Utah, and Wyoming), no cases were reported throughout the 5-year period.

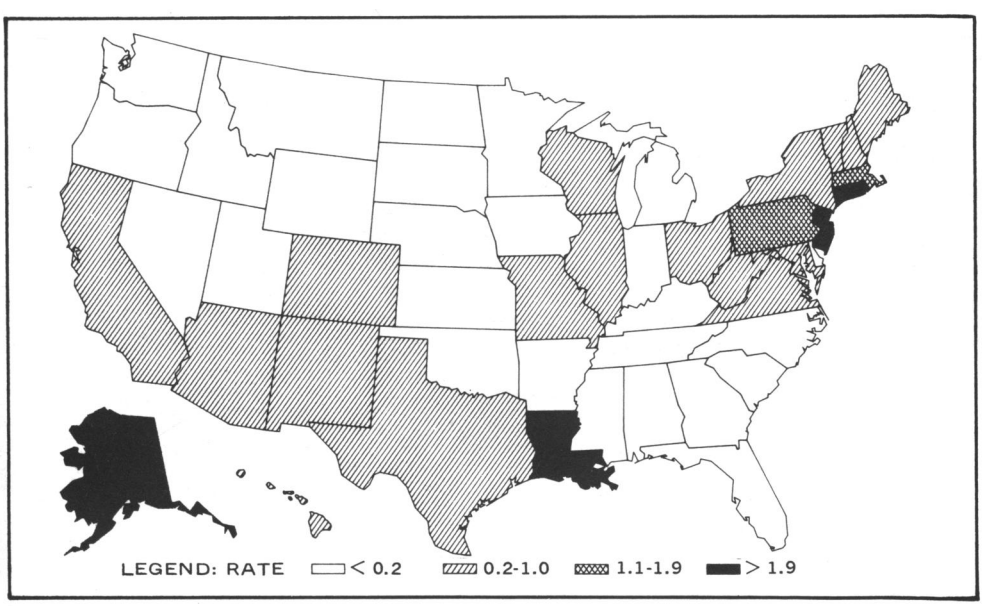
In 1981, 102 of the persons with trichinosis were female, and 86 were male. As in previous years, the age distribution was similar for both sexes (Figure 3), i.e., a range of 3-86 years, with a mean of 38 years. The mean age of male patients was 37 years and that of

TABLE 1. Trichinosis cases, by state, United States, 1981

State	Cases	Rate per million population*
Connecticut	45	14.4
Rhode Island	35	36.7
New Jersey	25	3.4
New York	19	1.1
Pennsylvania	15	1.3
Alaska	14	33.9
Massachusetts	13	2.3
Illinois	7	0.6
California	5	0.2
Maryland	3	0.7
Virginia	3	0.6
Vermont	2	3.9
New Hampshire	1	1.1
Washington	1	0.2
Total	188	0.8

*Estimates of state populations on July 1, 1981.

FIGURE 2. Trichinosis mean annual incidence rate/1,000,000 population, by state, United States, 1977-1981



female patients, 38 years. In 1981, the monthly incidence peaked in November-December (Figure 4), coincident with three common-source outbreaks in Rhode Island and New York comprising 42 cases.

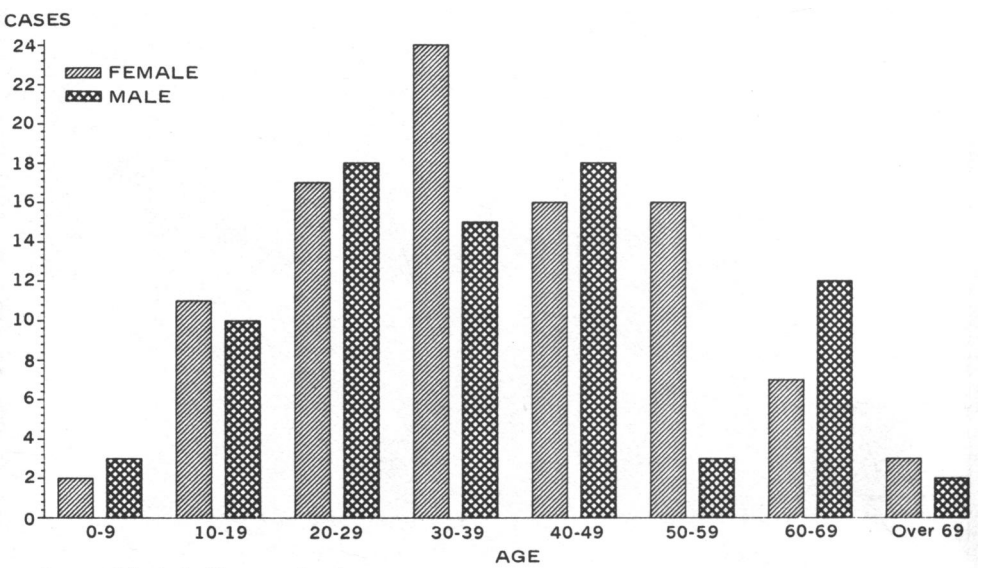
The probable source of infection was identified for 181 patients; pork products were incriminated in 146 (82%) instances (Table 2). Of 137 instances in which the type of domestic pork product was specified, 93 (68%) involved sausage. Meat products other than pork were implicated in 35 (19%) patients. Ground beef was identified as the probable source of infection for 18 patients, infected bear meat was the source of infection for 10 patients in Alaska and California, and infected walrus meat was responsible for seven cases of trichinosis in Alaska.

In 174 instances, the source of the incriminated meat was reported. The source for 101 cases (58%) was a supermarket, butcher shop, or other commercial outlet. Nine (5%) patients had eaten the incriminated meat items at a restaurant or other public eating place. The walrus and bears that accounted for 17 cases were obtained by hunting. Forty-seven cases were caused by pork from swine obtained directly from farms. For 168 instances in which information on whether the incriminated meat product received further processing after it was obtained, 126 reports were negative. Processing methods for meat incriminated in the remaining cases included grinding (37), marinating (three), and smoking (two).

Of 170 instances in which "method of cooking" the incriminated meat was reported, 121 (71%) reports stated that the meat was not cooked. Reports on the 49 other cases indicated that the meat was inadequately cooked.

Clinical Characteristics. Clinical information reported for 145 patients included eosinophilia for 139 (96%), myalgia for 136 (94%), fever for 132 (91%), and periorbital edema for 119 (82%). For 103 patients whose reports indicated when the incriminated meat was eaten,

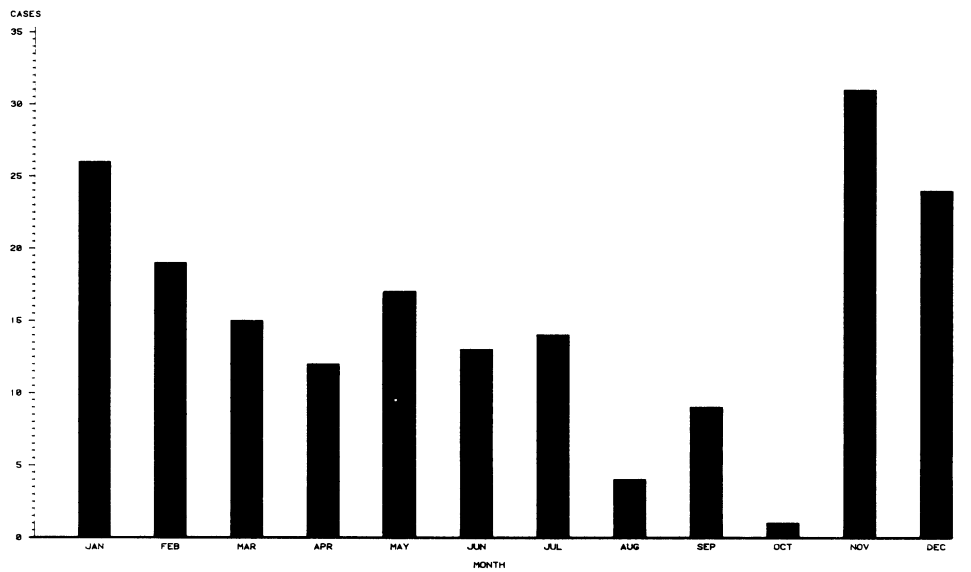
FIGURE 3. Trichinosis cases, by age and sex, United States, 1981



Does not include 11 cases of unknown age.

the mean incubation period was 18 days (range, 1-48 days). Muscle biopsies were performed on 38 patients; results for 35 were positive. Of 136 patients for whom serologic test results were reported, 125 (91%) were positive. Neither muscle biopsy nor serologic tests were done for 12 patients reported as having trichinosis.

FIGURE 4. Trichinosis cases, by month of onset, United States, 1981



Does not include 3 cases of unknown month of onset.

TABLE 2. Trichinosis cases, by source of infection, United States, 1981

Food		Cases
Pork products		
Domestic swine		
Sausage		93
Other products		44
Unspecified		9
	Subtotal	146
Meat products other than pork		
Hamburger		18
Bear meat		10
Other wild animals		7
	Subtotal	35
Unknown		7
	Subtotal	7
	Total	188

Common-Source Outbreaks. Four common-source outbreaks were reported to CDC in 1981; three were associated with pork sausage and one with grizzly bear meat. The first outbreak involved eight cases of trichinosis in Barrow, Alaska. Five men and three women, ages 32-76 years, became ill 2-16 days after sharing a particular meal (mean 9 days). All eight reported having eaten "quaq" (raw frozen meat), while four persons who ate the dinner in question but denied having eaten quaq remained well (attack rate 100%). Thirty other family members who were not present at the dinner also remained well. A bear meat sample provided by one of the patients contained 70 *Trichinella* larvae/gram of meat. Acute- and early convalescent-phase serum specimens from four of the ill persons showed rising *Trichinella* antibody titers. The quaq was thought by the participants to be caribou but was later discovered to be grizzly bear. The persons involved in this outbreak knew the risk of acquiring trichinosis from eating bear or walrus meat, and they did not intentionally serve or eat uncooked bear meat. It was eaten after being dipped in seal oil, which may have disguised its usually distinctive taste.

In the second outbreak, eight cases of trichinosis in three related families of Italian ancestry were reported to the New York City Department of Health on November 16, 1981. A ninth case was diagnosed in the course of the investigation. The index patient was a 55-year-old woman who had onset of symptoms on November 4, 10 days after eating some homemade, dried pork sausage. The patient died on the nineteenth day of hospitalization with bronchopneumonia, pulmonary edema, motor paralysis, chronic myocarditis, hepatomegaly, and renal vein thrombosis. The other eight patients had onset of symptoms 2-13 days after the first of two occasions on which they ate dried, uncooked, or slightly fried sausage. The seven of these eight patients tested all showed antibody titers compatible with recent infection ($\geq$10), and sera from three patients who were retested approximately 7 weeks after they became ill showed a fourfold or greater rise in antibody titer. The sausage was prepared from a pig that had been purchased and slaughtered at a farm. Samples of sausage as well as sausage prepared by the farmer from meat from two other pigs were positive for *Trichinella*. Although the pigs apparently were deliberately fed only grain, they might have eaten parts of wild animals killed by the farmer while hunting.

The third outbreak was reported to the Rhode Island Department of Health on November 23, 1981, and involved a group of 63 Kampuchean refugees who had shared a meal in the home of one family on or about October 15. The main dish consisted of spiced boiled meat and viscera of a pig that had been purchased the same day from a local farm. Twenty (59%) of 34 persons who reported having eaten the pork at that meal—or who had later eaten leftovers from the meal—had symptoms compatible with trichinosis between November 11 and 28. Five of the most severely ill were hospitalized. Ill persons included 11 males and nine females who ranged in age from 3 to 66 years (median, 31 years). Serologic test results were positive for all 20 symptomatic but none of 28 asymptomatic persons tested. All symptomatic patients recovered without specific therapy. No adequate samples of the leftover pork were available for testing. No other infected animals were identified at the farm that was the source of the implicated pig.

The fourth outbreak occurred on November 24, 1981; it involved 31 persons in four extended families in Rhode Island who shared a meal that included raw pork from a pig purchased at the same farm implicated in the earlier outbreak in that state. In the period December 10-29, 13 persons became ill; four were hospitalized. *T. spiralis* larvae were demonstrated in a muscle biopsy of a 33-year-old woman. Of the 13 patients, seven were male and six were female; their ages ranged from 14 to 66 years (median, 33 years). All recovered. A

low concentration of *T. spiralis* larvae was noted in a sample of pork from the November 24 meal that was examined at CDC using an artificial digestion technique.

Discussion

Because severity of illness—up to and including death—closely correlates with numbers of larvae ingested, the most likely explanation for the decrease in mortality associated with trichinosis is that the concentration of larvae in infected meat has declined. The factors accounting for the decline in the prevalence of *T. spiralis* among swine and the number of humans who become infected are multiple, and most are unrelated to planned trichinosis control measures. For example, state laws prohibiting the feeding of raw garbage to hogs were enacted to prevent the spread of highly contagious and economically devastating swine viral diseases, but they concurrently reduced trichinosis among swine. Widespread commercial and home freezing of pork (a process that kills trichinae), as well as consumer awareness concerning the need to cook pork products adequately, has also contributed to the decline in human trichinosis.

Still, the problem of clinical trichinosis has not been eradicated despite the availability of appropriate technology. Although adequately cooking, freezing, or curing pork sausage destroys *Trichinella* larvae, small processors and householders who prepare their own sausage are not always aware of established standards for the proper curing and cooking of pork products. Furthermore, consumers are not aware that the stamp "U.S. Inspected and Passed" on a raw pork product does not guarantee that the product is free of infective *Trichinella* larvae, only that it was processed in accordance with U.S. Department of Agriculture (USDA) specifications, which do not require pork products to be inspected for *Trichinella* larvae. USDA specifications, however, do require that "ready-to-eat" pork products be heated to an internal temperature of at least 137°F (58.3°C), frozen, or otherwise processed in a manner certified as being sufficient to kill *Trichinella* larvae. The National Pork Producers Council recommends that pork roasts (loin, shoulder, and leg) be cooked to an internal temperature of 170°F (77°C) for maximum tenderness, juiciness, and flavor. Because cattle are herbivorous, they are not considered a natural reservoir of *T. spiralis*, although beef products may be adulterated with pork when both are processed in the same meat grinder or when beef and pork are intentionally mixed.

Freezing infected meat is also generally believed to kill *T. spiralis*. According to USDA regulations, *T. spiralis* in pork held at 5°F (-15°C) for 20 days is rendered nonviable. This appears to be generally true for strains of *T. spiralis* recovered from domestic swine; however, there is increasing evidence that trichinae found in Arctic sylvatic animals are resistant to greater extremes of cold. For example, portions of infected Alaskan bear meat were held at 5°F (-15°C) for up to 35 days, and the larvae showed no loss of infectivity for laboratory animals compared with larvae in samples of the same bear meat refrigerated (at 10°C) for the same lengths of time (*8*). Persons who consume meat from wild animals should be aware that freezing the meat may not eliminate the potential of trichinosis transmission.

Americans, through long custom, generally tend to cook pork well done, thereby rendering it safe. Thus, trichinosis has occurred most frequently among ethnic groups whose culinary preferences include raw pork. For example, in a 1940 autopsy survey, deceased persons of German or Italian descent were infected at a rate of approximately 29%, compared with a 2% rate for Jews, whose religious laws proscribe eating pork (*3*). The higher risk of infection for certain ethnic groups still exists. Examination of the surnames of persons involved in recent outbreaks associated with consuming pork products reveals that the incidence of affected persons of German, Italian, Polish, or Portuguese ancestry is disproportionately higher than

their overall representation in the U.S. population (*9*). It has also been observed that some of these outbreaks have occurred among recent immigrants who apparently have not been informed of the need to thoroughly cook, freeze, or otherwise treat pork in the United States to kill *Trichinella* larvae. As evidenced by the two outbreaks in Rhode Island reported in 1981, certain groups among the culturally diverse refugees from Southeast Asia must be included with those at high risk for trichinosis.

Most (approximately two-thirds) reported cases of pork-associated trichinosis are associated with a USDA-inspected pork product purchased at a local supermarket or butcher shop (*9,10*). The outbreaks reported in 1981 were unusual in that the pork was acquired directly from a farm. The most recent records of trichinosis prevalence among commercially slaughtered swine indicate that approximately 1/1,000 carcasses is infected (*7*). However, feeding raw garbage to swine—a practice that is prohibited by law in most states but difficult to enforce—and certain other swine management practices may result in higher infection rates. Therefore, the rate of infection among hogs purchased directly from farms may be considerably higher than among the 70-80 million hogs that pass through commercial channels each year.

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National Surveillance of Viral Hepatitis, 1981

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Introduction

Viral hepatitis is the second most frequently reported infectious disease in the United States (*1*). Nationwide surveillance of viral hepatitis provides serologic, demographic, and epidemiologic information to aid in formulating policies for preventing and controlling hepatitis (*2*). In this report, the epidemiology of viral hepatitis in the United States is described as it was reported to CDC in 1981 from state and local health departments.

Materials and Methods

Information on hepatitis is obtained through two surveillance systems. The states and territories report to CDC numbers of cases of each type of hepatitis classified by age of patient and date reported; these data appear in the weekly *MMWR* and the *MMWR Annual Summary*. More complete epidemiologic data pertaining to risk factors of disease acquisition are obtained from the Viral Hepatitis Surveillance Program (VHSP), a totally separate voluntary state reporting system operated by the Division of Hepatitis and Viral Enteritis, Center for Infectious Diseases, CDC. In 1981, VHSP instituted reporting of serologic test results for both hepatitis A and hepatitis B, allowing non-A, non-B hepatitis to be diagnosed by exclusion. In 1981, the VHSP received reports on 47% of the cases reported to the National Morbidity Reporting System (as reported in the *MMWR*).

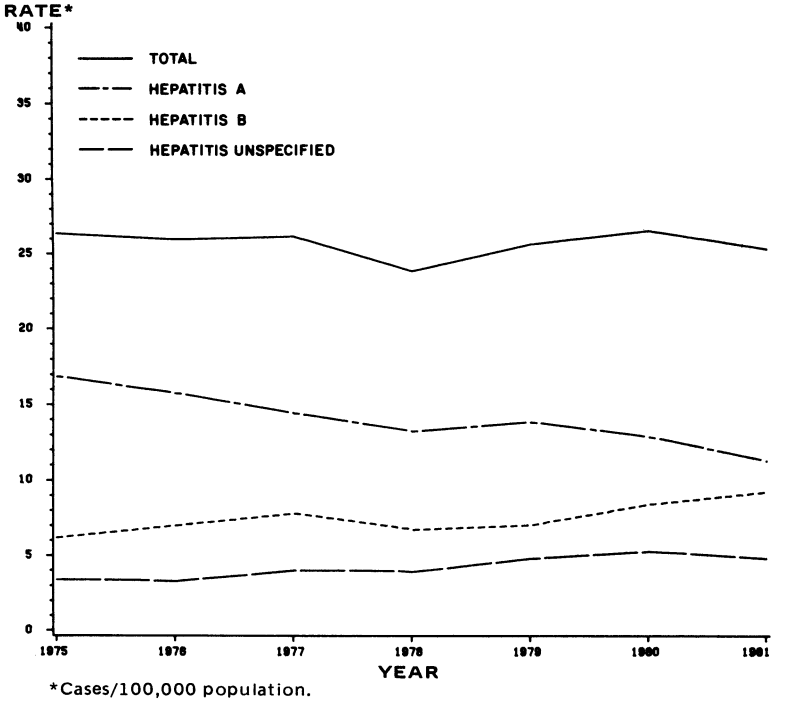
Results

Reported Occurrence of Hepatitis in the United States. The total number of cases of all types of viral hepatitis reported to the National Morbidity Reporting System in 1981 was 57,929, for a rate of 25.3 cases/100,000 population; this represents a 5% decrease from the 1980 rate. Of these cases, 45% were reported as hepatitis A; 36%, as hepatitis B; and 19%, as hepatitis, type unspecified. Although only a 4% change occurred in the overall rate in the period 1975-1981, hepatitis A decreased by 33%, hepatitis B increased by 50%, and hepatitis unspecified increased by 43% (Figure 1).

The rates for types A and B differed by state and by region. The highest rates of hepatitis A, which in 1980 were reported from the western and southwestern states, were from the western states in 1981 (Figure 2). The highest rates of hepatitis B continued to be associated with the East and West coast states (Figure 3). The upward trends in the total rate of hepatitis previously observed in the Pacific, South Atlantic, and West South-Central regions reversed in 1981 (Figures 4-e, 4-g, 4-i). In the South Atlantic Region, the 32% decline in the rate of hepatitis A from 1980 was far greater than the rise in the rate of hepatitis B (8%). The overall rate for the Mountain Region continued to decline as a result of decreasing hepatitis A. Of particular interest is that the rate of hepatitis B nearly equaled or surpassed that of hepatitis A in the other five regions of the country (in addition to the South Atlantic).

Analysis of VHSP Surveillance Data. Of the 27,438 cases reported to VHSP in 1981, 14,872 (54%) had sufficient serologic information to be classified as hepatitis A (IgM anti-HAV positive), hepatitis B (HBsAg positive), or hepatitis non-A, non-B (IgM anti-HAV and HBsAg negative). Only serologically confirmed cases are included in this analysis.

FIGURE 1. Reported incidence of viral hepatitis, by type and year, United States, 1975-1981



*Cases/100,000 population.

FIGURE 2. Reported hepatitis A cases/100,000 population, by state, United States, 1981

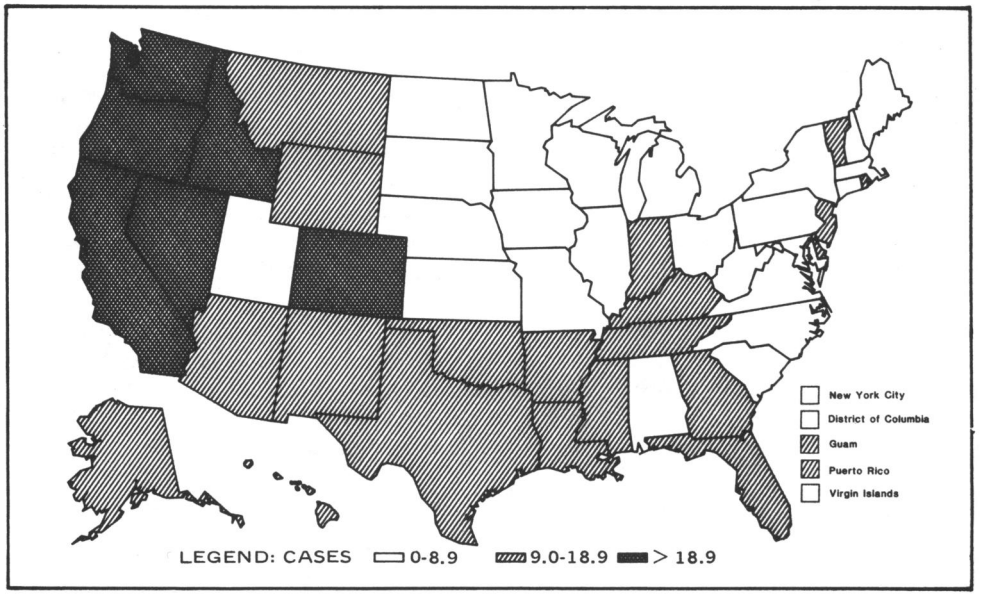
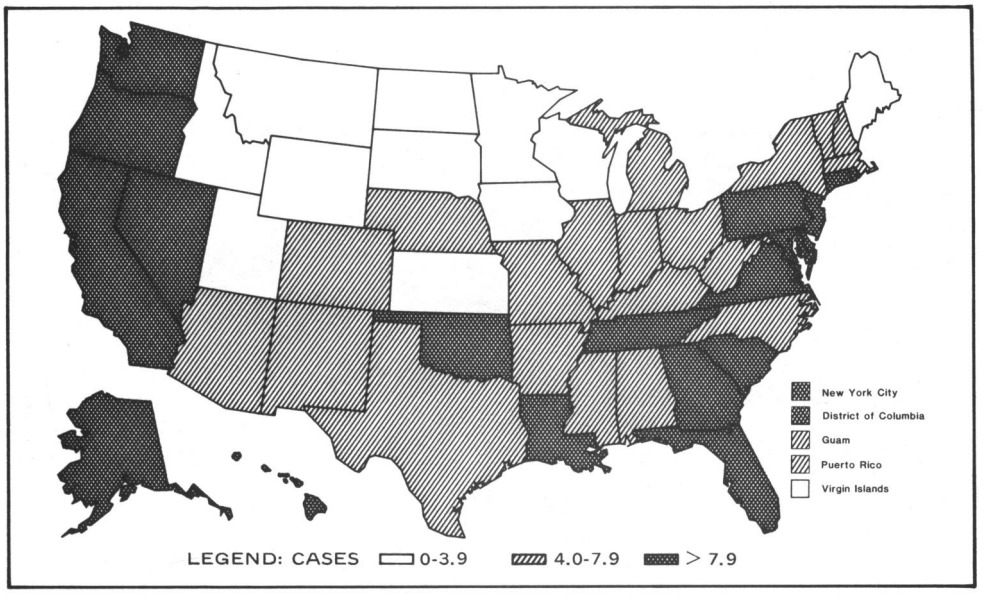


FIGURE 3. Reported hepatitis B cases/100,000 population, by state, United States, 1981



FIGURES 4 a-i. Reported viral hepatitis, by region, United States, 1975-1981

FIGURE 4-a. New England

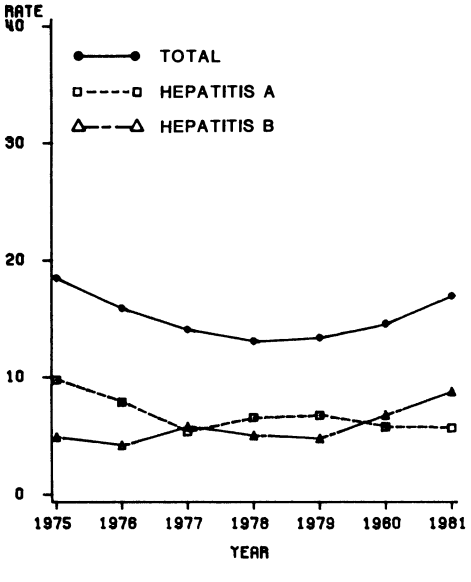


FIGURE 4-b. Middle Atlantic

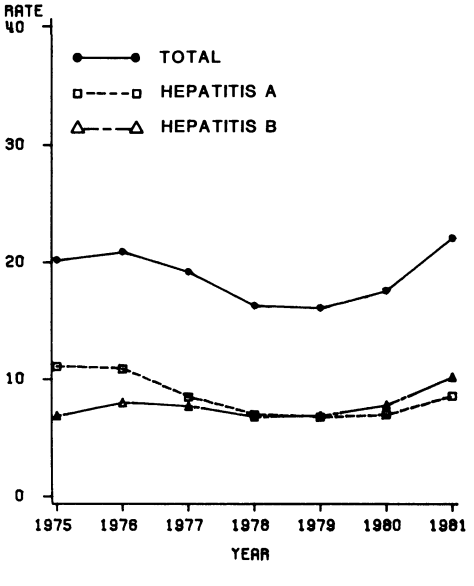


FIGURE 4-c. East North Central

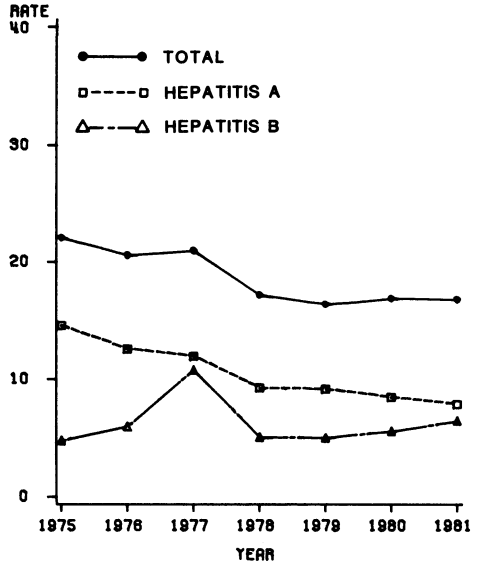


FIGURE 4-d. West North Central

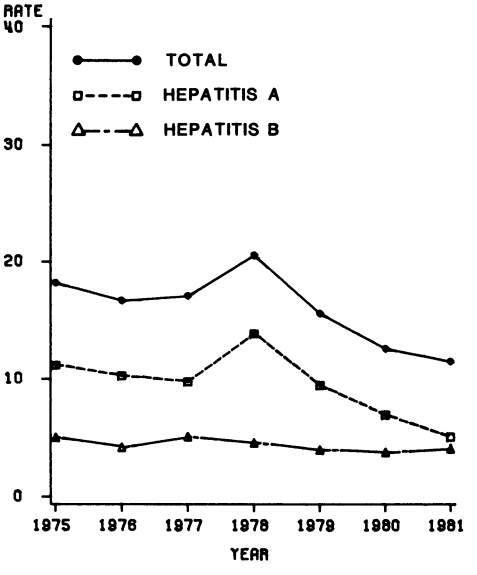


FIGURE 4-e. South Atlantic

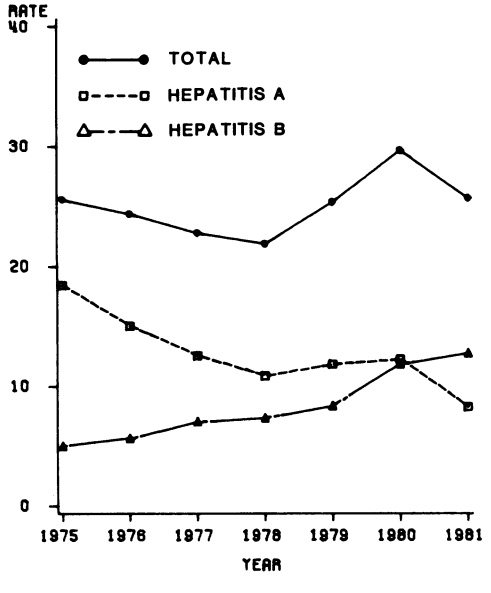


FIGURE 4-f. East South Central

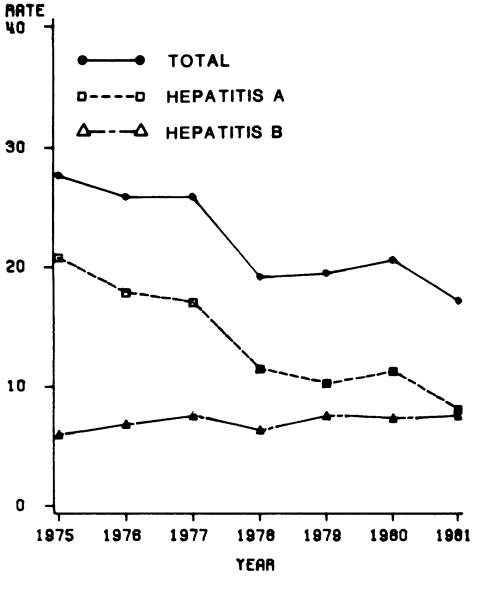


FIGURE 4-g. West South Central

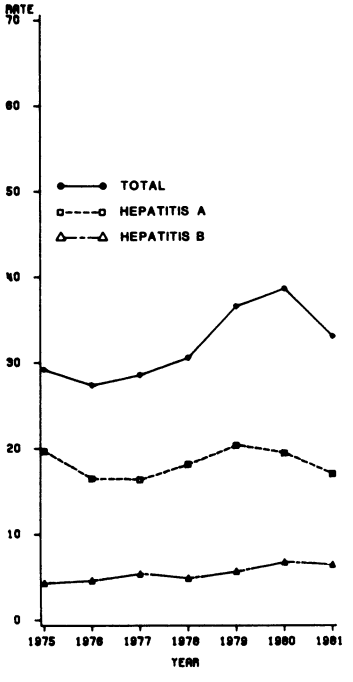


FIGURE 4-h. Mountain

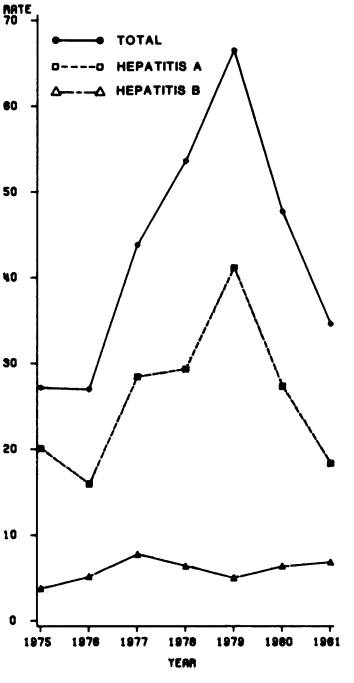
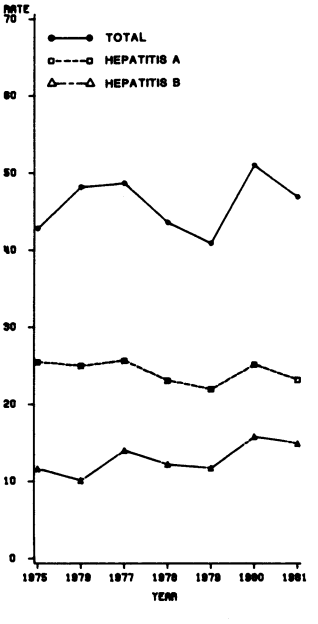


FIGURE 4-i. Pacific



Hepatitis A was the predominant type of hepatitis occurring among persons <15 years of age (Table 1). All three types of hepatitis were seen most frequently among persons 20-29 years of age, but a sharp rise in the frequency of hepatitis non-A, non-B was also observed among persons ≥60 years of age. Relatively more patients with hepatitis B were male and black than proportions associated with other types of hepatitis.

Individual cases cannot be diagnosed as to type of hepatitis on the basis of epidemiologic and clinical characteristics; however, when large groups of patients are analyzed, certain factors predominate (Table 2). For hepatitis A, contact with a person infected with hepatitis A and association with a day-care center were the factors reported with the highest frequencies. For hepatitis B, contact with a person infected with hepatitis B, parenteral drug abuse, and a variety of other potential percutaneous exposures were among the factors most frequently reported. Although only 8% of all patients with hepatitis B reported that they were employed in a medical or dental field, this occupational factor accounted for as many as 18% of all cases of hepatitis B in some states. In addition, although only 6% of all patients with hepatitis B reported homosexual activity, the proportions in some states were as high as 21%. Potential percutaneous exposures (particularly blood transfusions) were also the most frequently reported factors for patients infected with hepatitis non-A, non-B. Again, the proportion of cases for which these factors were reported varied widely among states. In some states, as many as 20% of patients with hepatitis non-A, non-B reported using illicit drugs, compared with the overall proporation of 8%, and as many as 16% of patients reported they were employed in a medical or dental field, compared with the overall proportion of 7%.

Discussion

Surveillance data reflect several important trends in the occurrence of hepatitis, including the increasing recognition of hepatitis non-A, non-B, the important role of day-care centers in the transmission of hepatitis A, and the role of both employment in health-related fields and

TABLE 1. Distribution of viral hepatitis types A, B, and non-A, non-B, by age, sex, and race, United States, 1981

	Percentage of cases		
Age (years)	Hepatitis A N=4,151	Hepatitis B N=9,130	Hepatitis non-A,non-B N=1,591
<5	4.4	0.6	1.5
5-9	8.0	0.7	2.6
10-14	6.7	0.7	3.2
15-19	9.3	11.1	7.4
20-29	33.7	47.9	34.8
30-39	17.1	18.6	17.1
40-49	7.2	8.1	9.4
50-59	6.0	5.8	7.0
≥60	7.7	6.3	17.0
Sex			
Male	57.2	62.7	53.2
Female	42.8	37.3	46.8
Race			
White	87.6	71.2	83.3
Black	6.0	20.5	11.5
Other	6.4	8.3	5.2

homosexual lifestyle in the transmission of hepatitis B (*2-8*). Although the rate of hepatitis A has declined, concurrent increases in hepatitis B and hepatitis, type unspecified, have resulted in a fairly constant overall rate of viral hepatitis (*1,8*). These trends may be artifactual—as a result of more widespread testing for hepatitis B and an increasing tendency to diagnose hepatitis, type unspecified, when hepatitis B testing is not done or when hepatitis non-A, non-B is suspected. For hepatitis B, however, part of the increase may reflect real changes in behavioral risk factors, such as parenteral drug abuse and homosexual activity (*7*).

In the Pacific and West South-Central regions, the decline in 1981 may reflect a combination of decreasing rates of hepatitis A and stabilizing rates of hepatitis B and hepatitis, type unspecified. In the Mountain Region, much of the decrease may be accounted for by the decline in hepatitis A associated with day-care centers, particularly in Arizona, as a result of prevention programs involving immune globulin (*4,5*). The sharp increase in hepatitis non-A, non-B observed in the group ≥60 years of age is probably transfusion associated.

CDC's ability to analyze and interpret nationwide trends and patterns accurately, identify

TABLE 2. Epidemiologic and clinical characteristics of reported cases of viral hepatitis by serologic type, 1981

Epidemiologic characteristics	Hepatitis A N=4,151		Hepatitis B N=9,130		Hepatitis non-A,non-B N=1,591	
	No.	(%)	No.	(%)	No.	(%)
Child/employee in day-care center	247	(6)	57	(*)	41	(3)
Household contact of child/ employee in day-care center	381	(9)	161	(2)	71	(4)
Personal contact with hepatitis A	1,054	(25)	189	(2)	85	(5)
Employed as a food handler	274	(7)	476	(5)	71	(4)
Assoc. with food-borne or water-borne outbreak	164	(4)	87	(1)	19	(1)
International travel	207	(5)	126	(1)	35	(2)
Personal contact with hepatitis B	77	(2)	1,323	(14)	80	(5)
Employed in medical/dental field	103	(3)	683	(8)	113	(7)
Assoc. with dialysis/ transplant unit	12	(*)	202	(2)	29	(2)
Patient	7		92		12	
Employee	2		44		7	
Contact of patient/employee	2		49		7	
Blood transfusion	45	(1)	370	(4)	170	(11)
Hospitalized prior to illness	189	(5)	1,295	(14)	344	(22)
Surgery	81	(2)	617	(7)	180	(11)
Dental work	206	(5)	1,287	(14)	216	(14)
Drug abuse	79	(2)	1,133	(12)	131	(8)
Homosexual activity	93	(2)	512	(6)	32	(2)
Other percutaneous exposures	166	(4)	1,333	(15)	202	(13)
Clinical characteristics						
Jaundice	3,161	(76)	6,262	(69)	1,025	(64)
Hospitalized for hepatitis	1,703	(41)	4,259	(47)	852	(54)
Death as a result of hepatitis	27	(*)	113	(1)	41	(3)

*<1%.

high-risk groups, and determine mechanisms of transmission for each type of hepatitis depends on the local medical community's using the appropriate serologic tests to identify the different types of hepatitis and on the cooperation of state and local health departments in completing and submitting the VHSP forms. With hepatitis non-A, non-B now designated by the Conference of State and Territorial Epidemiologists as a separate reportable disease category, serotesting assumes even greater importance than in the past. Basing a diagnosis of viral hepatitis on epidemiologic characteristics alone is no longer valid because the different types of hepatitis share similar clinical and epidemiologic characteristics.

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Surveillance of Occupational Injuries Treated in Hospital Emergency Rooms—United States, 1982

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Introduction

The U.S. Bureau of Labor Statistics states that occupational injuries directly affected >5.4 million workers in 1980 (*1*). Although the severity of such reported injuries varies from minor external tissue damage to traumatic death, the estimated costs associated with work accidents in 1981 were substantial at $32.5 billion (*2*). As a public health problem, in 1981 occupational injuries caused >12% of all deaths reported in the United States and represented approximately 310,000 potential years of life lost before age 65 (*2*).

Apart from these estimates of numbers and significance of occupational injuries, incidence data by age, sex, or month for this category of injury have been sparse. Such data and the results of an analysis of occupational-risk data based on cases treated in hospital emergency rooms are presented below.

Materials and Methods

The National Institute for Occupational Safety and Health (NIOSH), in conjunction with the Consumer Product Safety Commission (CPSC), produces periodic estimates of numbers of occupational injuries* that are based on surveillance data collected in 66 representative hospital emergency rooms (ERs) in the United States (*3*); these facilities are part of the National Electronic Injury Surveillance System (NEISS) conducted by CPSC. The relationship between work and injury is ascertained from the patient. The sex- and age-specific estimates are combined with estimated numbers of employees and estimated hours worked/week to calculate estimated incidence (*4*). These rates are stated as injuries/200,000 hours worked, i.e., the equivalent of 100 workers/year. A typical full-time worker is estimated to work 2,000 hours/year. These estimates pertain only to work-related injuries treated in hospital ERs and do not indicate the overall incidence of occupational injuries. Data for the period January 1-December 31, 1982, were used to calculate estimated annual incidence (injuries/100 full-time workers/year) for selected sex and age groups.

Results

During calendar year 1982, of approximately 100 million workers, an estimated 3.2 million persons >15 years of age were treated for occupational injuries in ERs in the continental United States (Table 1). Of these, 2.42 million (76%) were male and >762,000 (24%) were female; ages ranged from 16 to >65 years. On the basis of these estimates, male workers ages 18-19 years appeared at highest risk of having a job-related injury requiring treatment, with an average rate of 12.0 annual ER visits for occupationally related injuries/100 full-time workers in this group.

*Acute damage resulting from exposure to physical energy (thermal, mechanical, electrical, chemical, or radiational) in the workplace. The workplace is defined as any location where people work for compensation.

The peak rate for females was also for workers 18-19 years old, but the rate (4.2 injuries/100 female workers/year) was lower than that for any male age group 16-34 years old. For both sexes, rates of injury decreased with age; rates for workers ≥65 were nearly identical for males and females.

For workers ≥20 years of age, estimated monthly injury incidence by sex and age appeared highest in summer and fall and lowest in winter, whereas rates for older workers show little seasonality (Table 2). In summer and fall, male workers ages 18-19 were 5 times more likely to be injured than male workers ≥55 years of age. Differences by sex in estimated monthly incidence were also pronounced. The largest monthly male-to-female risk ratio was for 16- to 17-year-olds in February, when the incidence for males was >4 times that for females (Figure 1). The lowest ratio was for workers >65 years of age in December, when the risk for males was 61% that for females. For nearly all months, differences in risk for males and females diminished as age rose. The seasonal variation of incidence was also reflected in the male-to-female ratios.

Discussion

The estimated incidences reported here are for injuries treated in ERs and reported as being job-related by patients. Although the numerators and denominators are derived from samples, the rates appear similar to others reported for work-related injuries in the United States by month (*3*) and by sex (*4*). Estimates of job-related injuries treated in ERs should be clearly distinguished from other estimates of total injuries based on workers' compensation data (*5*) or other surveys (*6, 7*).

Data from the National Health Interview Survey suggest that job-related injuries treated in hospital ERs represent about 36% of all job-related injuries; the remainder are treated in physicians' offices, industrial medical facilities, and elsewhere (*8*). Other data from this survey indi-

TABLE 1. Estimated incidence of occupational injuries treated in 66 hospital emergency rooms, by sex and age, United States, January 1-December 31, 1982.

Age (years)	Males		Females	
	Incidence	Rate/100 workers/year	Incidence	Rate/100 workers/year
16-17	58,100	8.2	16,900	3.0
18-19	201,500	12.0	55,500	4.2
20-24	585,900	8.1	165,000	2.8
25-34	840,400	4.7	240,600	2.1
35-44	378,600	2.9	126,700	1.5
45-54	209,400	2.1	94,200	1.6
55-59	82,100	1.8	37,300	1.5
60-64	49,200	1.7	19,400	1.2
≥65	14,800	1.0	6,900	0.9
Total	2,420,000	4.0	762,500	2.0

cate that 47% of males and 35% of females initially seek ER treatment for medically treated injuries. Persons 17-44 years of age account for 42% of medically treated injuries initially seen in ERs, and persons >45 years of age account for 36% of such injuries.

Although these data clarify the role of the ER in treating job-related injuries, they do not explain the observed differences in the risk of injury between male and female workers, younger and older workers, or by season of the year. Differences in types of jobs and exposures specific to male and female workers probably account for the observed differences in risk, although there may be a difference in the likelihood that a male or a female will seek medical treatment for a job-related injury. The inexperience of younger workers may be a major factor in this group's higher incidence of injury. One hypothesis to explain the marked seasonal variation in rates for males is that certain male-dominated industries that are generally associated with a relatively high risk of injury (e.g., construction) often employ their largest numbers of workers—including new workers—during the summer. In an attempt to characterize the risks of occupational injury in more detail, further analysis is under way to explore these and other factors.

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TABLE 2. Estimated male-to-female relative risk* of occupational injuries treated in hospital emergency rooms, by month and age, United States, January-December 1982.

Age (years)	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
16-17	3.5	4.2†	3.7	3.3	2.4	2.2	2.8	2.9	2.6	3.3	2.4	2.2	2.7
18-19	2.7	3.1	2.8	3.3	3.0	4.0	3.3	3.3	NA§	3.3	3.0	4.0	2.9
20-24	2.3	2.5	3.0	2.6	3.0	3.2	3.1	3.3	2.7	2.9	2.8	2.8	2.9
25-34	2.7	2.1	2.4	2.2	2.3	2.1	2.3	2.3	2.3	2.0	2.1	2.1	2.2
35-44	1.7	2.0	1.9	1.7	1.9	1.8	2.1	1.7	1.7	1.9	1.7	1.8	1.8
45-54	1.5	1.4	1.2	1.3	1.5	1.5	1.5	1.1	1.5	1.3	1.3	1.0	1.3
55-59	1.3	1.3	1.3	1.6	1.1	1.1	1.3	1.0	1.4	1.5	1.0	1.2	1.2
60-64	1.2	1.1	1.1	1.2	1.7	2.1	2.5	1.0	1.6	1.4	1.6	1.0	1.4
≥65	1.0	0.7	1.3	0.8	3.1	0.8	1.1	1.6	1.2	1.2	1.4	0.6¶	1.1
Total	2.0	2.0	2.1	2.0	2.1	2.1	2.2	2.1	2.0	2.0	1.9	1.9	

*Incidence for males divided by incidence for females of comparable ages for comparable months.
†Highest ratio.
§Not applicable.
¶Lowest ratio.

FIGURES 1 a-h. Occupational injuries treated in emergency rooms: estimated age- and sex-specific incidence, by month, United States, 1982

FIGURE 1-a. Ages 16-17

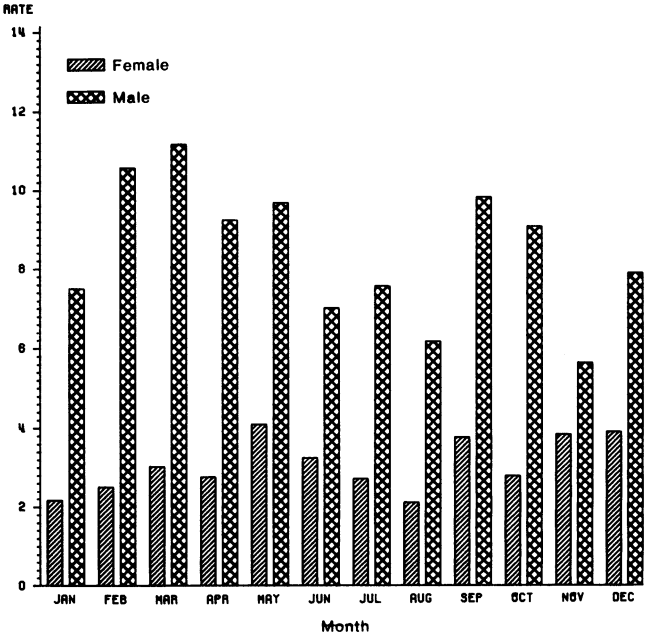


FIGURE 1-b. Ages 18-19

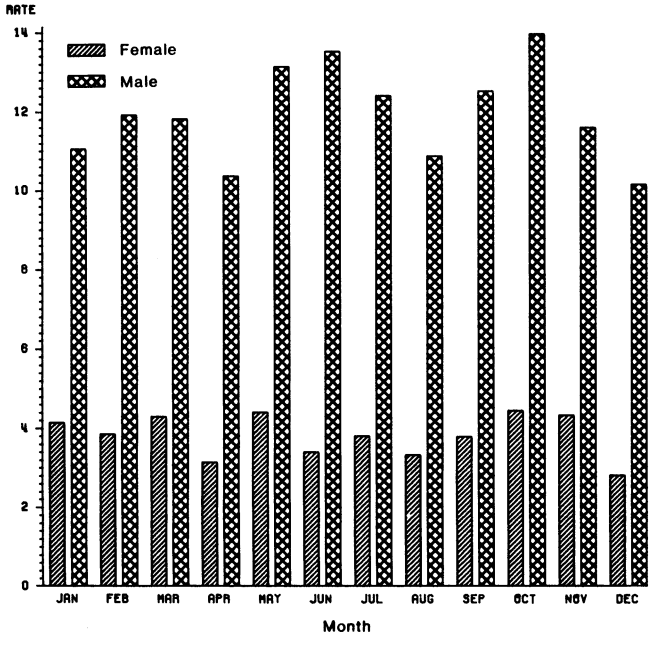


FIGURE 1-c. Ages 20-24

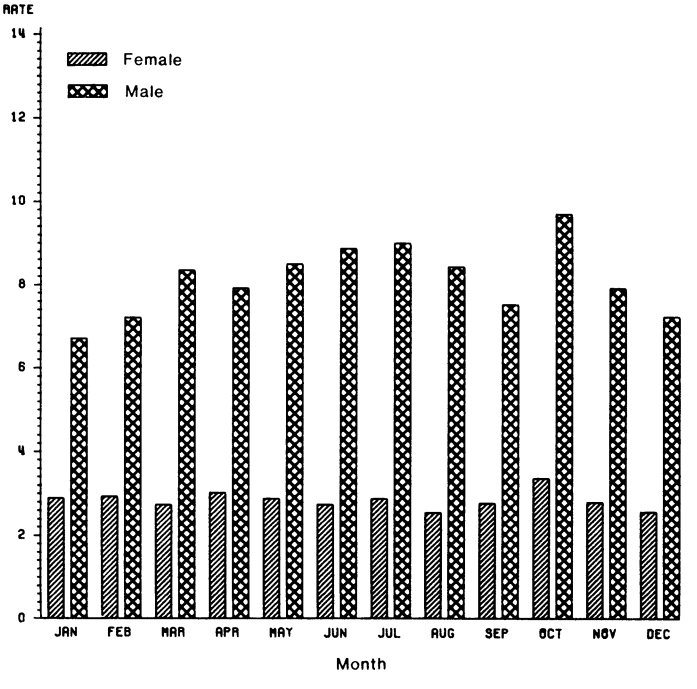


FIGURE 1-d. Ages 25-34

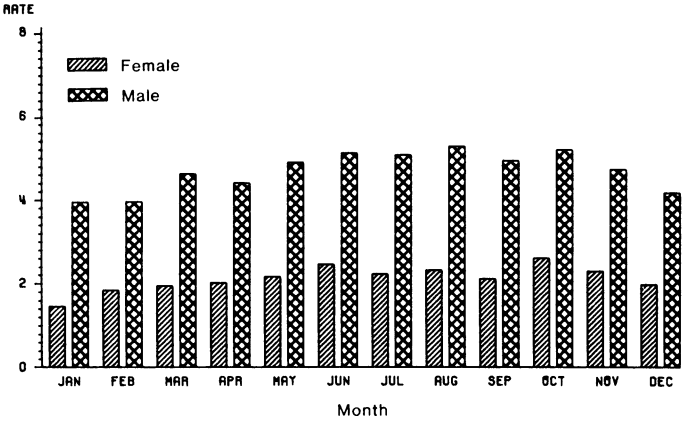


FIGURE 1-e. Ages 35-44

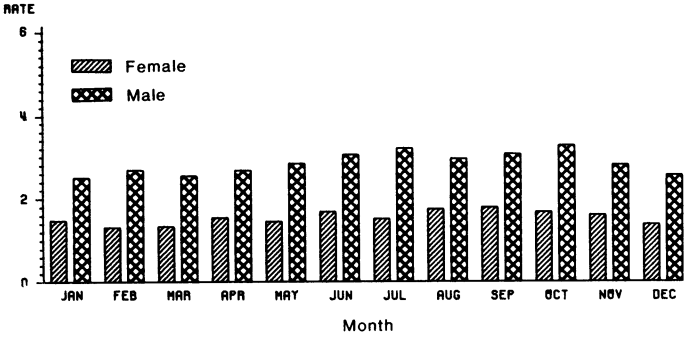


FIGURE 1-f. Ages 45-54

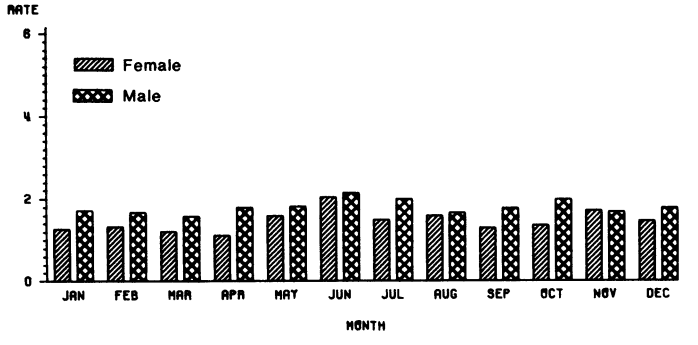


FIGURE 1-g. Ages 55-59

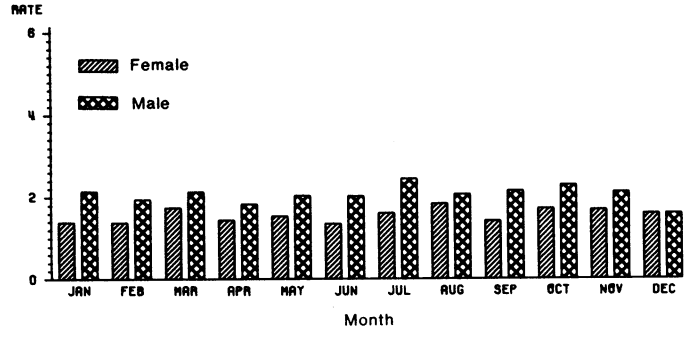
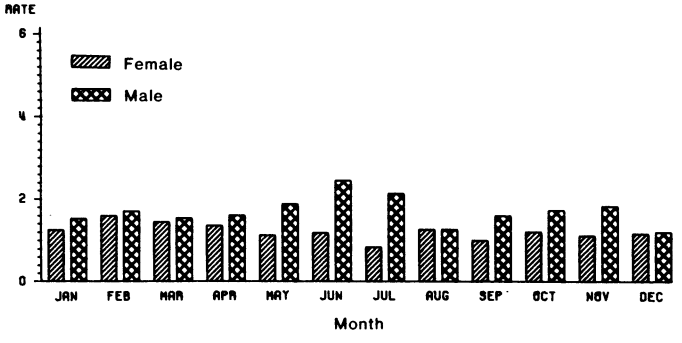


FIGURE 1-h. Ages 60-64



State and Territorial Epidemiologists and State Laboratory Directors

The contributions of the State and Territorial Epidemiologists and the State Laboratory Directors to this report are gratefully acknowledged. The persons listed were in the positions shown as of May 1, 1983.

	Epidemiologists	Laboratory Directors
Alabama	Wallace E. Birch, DVM	James L. Holston, Jr., DrPH
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