CENTERS FOR DISEASE CONTROL

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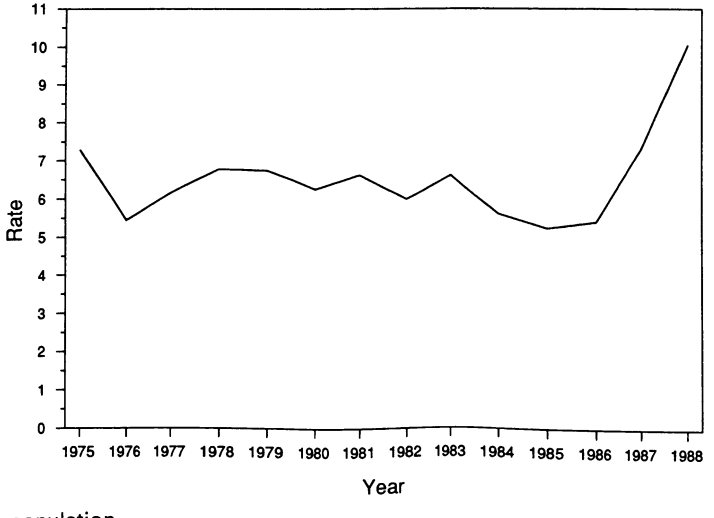
Current Trends

Community Outbreaks of Shigellosis — United States

From 1986 to 1988*, the reported isolation rate of *Shigella* in the United States increased from 5.4 to 10.1 isolates per 100,000 persons (Figure 1). In 1988, state health departments reported 22,796 isolates of *Shigella* to CDC, the highest number since national surveillance began in 1965. In addition to the recent increase in *Shigella* isolation rates, many communitywide shigellosis outbreaks that have been difficult to control have been reported. This report describes four community outbreaks of shigellosis during 1986–1989 in which innovative public health control measures were used.

*The most recent year for which national surveillance data are available.

FIGURE 1. *Shigella* isolation rates*, by year — United States, 1975–1988†



*Per 100,000 population.
†Data from the National *Shigella* Surveillance System.

Shigellosis – Continued

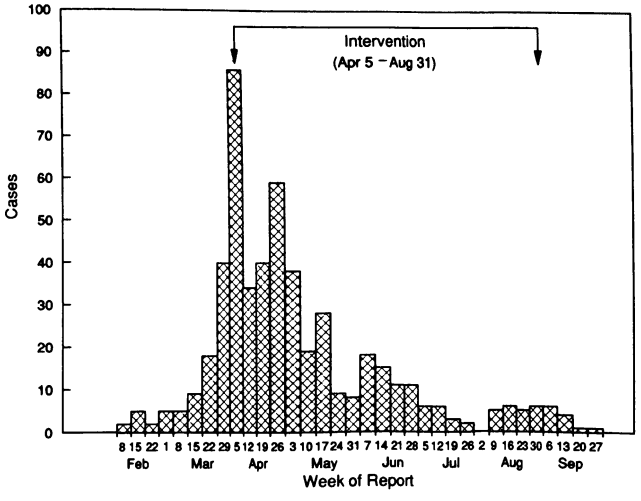
Kankakee County, Illinois. From October 1986 through February 1987, an outbreak of shigellosis caused by *S. sonnei* occurred in Kankakee County, Illinois (population: 97,800). Of 191 persons with culture-confirmed shigellosis, 70% were black and 61% were aged 1–10 years. Thirty-one percent of patients were hospitalized. Cases were clustered in low-income areas. An epidemiologic investigation did not identify common sources of exposure in the community; many patients reported having had contact with persons with culture-confirmed shigellosis or symptoms compatible with shigellosis.

To control this outbreak, from December 12 to January 10 the following measures were implemented: 1) information about shigellosis and its prevention was provided to parents of all children in the school district where most of the cases occurred, to child-care centers and preschools, and through schools, churches, and the news media; 2) teachers monitored handwashing by students before lunch; 3) parents assisted in monitoring handwashing in schools in the most severely affected areas; and 4) home-prepared foods were not permitted at any school or child-care events. Although the number of reported cases subsequently decreased, the outbreak did not end until March.

Peoria County, Illinois. From February through September 1987, a shigellosis outbreak caused by *S. sonnei* occurred in Peoria County, Illinois (Figure 2) (population: 181,500). Of the 513 culture-confirmed cases, 75% were in blacks and 69% were in children aged 1–10 years. Most patients resided in low-income areas. Seven percent of patients were hospitalized. Investigation did not identify a common source of exposure; most patients had a history of contact with a person who had culture-confirmed shigellosis or symptoms compatible with shigellosis.

During April, the following interventions were implemented: 1) child-care center and nursery school employees were informed about shigellosis prevention; 2) school officials in the affected area ensured that warm water, soap, and disposable towels for handwashing were always available for students; 3) in schools, parents and teachers

FIGURE 2. Reported cases of culture-confirmed shigellosis – Peoria County, Illinois, February–September 1987



Shigellosis — Continued

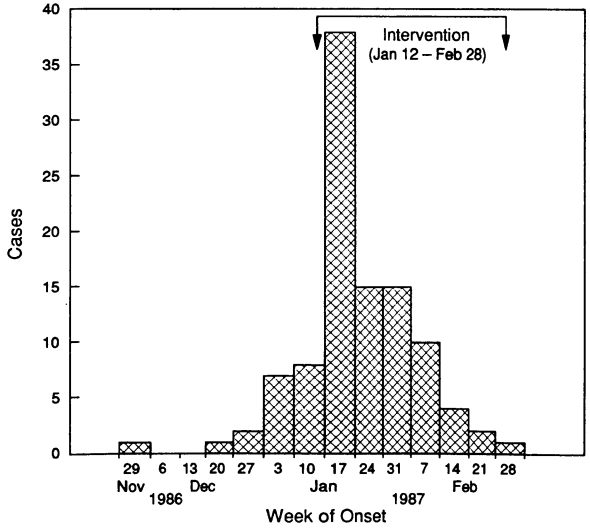
instructed students on proper handwashing and monitored children for symptoms of shigellosis; 4) printed educational material about shigellosis was provided to all persons attending Women, Infants, and Children (WIC) clinics, immunization clinics, community clinics, and hospital emergency rooms; 5) volunteers from the local Urban League and housing authority made door-to-door visits in affected neighborhoods to identify cases and provide printed educational material; 6) religious leaders discussed the *Shigella* outbreak with their congregations, and church publications included information on shigellosis prevention; and 7) parents taught neighborhood children how to wash their hands and monitored them for symptoms of shigellosis. Although the number of reported cases decreased concurrently with the intervention, the outbreak continued at a lower level until September.

Orange County, New York. From November 29, 1986, to February 28, 1987, 110 culture-confirmed cases of *S. sonnei* gastroenteritis were reported in residents of a religious community (population: 5200) in Orange County, New York (Figure 3). Cases occurred primarily among school children 2½–9 years of age; cases were evenly distributed by sex. An epidemiologic investigation did not identify a point source of exposure; spread of disease was consistent with person-to-person transmission.

Control measures were focused in schools and implemented from January 12 through February 28. The measures included 1) widespread dissemination of information about shigellosis and its prevention (e.g., proper handwashing and diaper changing) in schools and the community child-care center, 2) a program in which older children monitored handwashing by young children in the schools, and 3) periodic health department sanitation inspections of the schools. The number of reported cases of shigellosis declined concurrently with the intervention efforts.

Caddo County, Oklahoma. From August through October 1989, 34 persons with gastroenteritis caused by *S. sonnei* were identified in Caddo County, Oklahoma

FIGURE 3. Reported cases of culture-confirmed shigellosis* — Orange County, New York, November 1986–February 1987



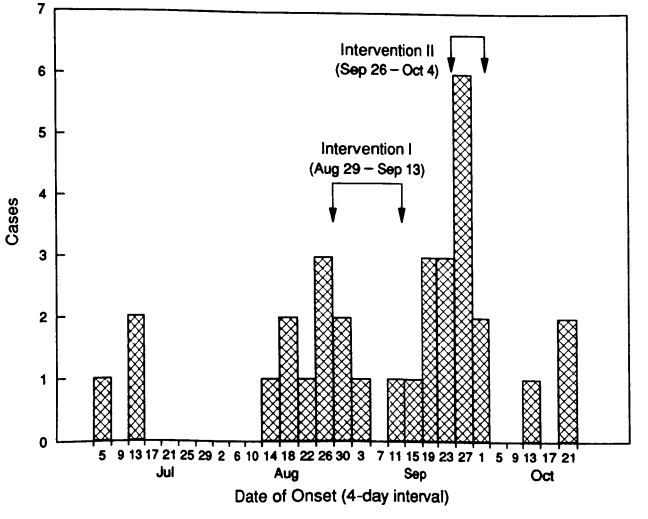
*Six reports did not specify date of onset and are not included here.

Shigellosis — Continued

(Figure 4) (population: approximately 32,100, including 18% Native Americans). Ninety-one percent of cases were in Native Americans. Seventy-one percent were in children and teenagers. An epidemiologic investigation did not identify a common source of infection but did suggest person-to-person transmission: 37 persons with symptoms compatible with shigellosis became ill after being exposed to a person (usually in their household) with a culture-confirmed *Shigella* infection. Clusters of cases occurred in persons residing in two Native American housing developments where children regularly played and ate snacks together.

Initial interventions implemented from August 29 to September 13 included 1) efforts to contact families of patients to identify potential exposures and secondary cases and to provide information on hygiene and handwashing, 2) education at child-care centers and other institutions on the importance of hygiene and sanitation in preventing transmission, and 3) encouragement of physicians, hospitals, and clinical laboratories in the area to assist in identifying and reporting new cases. The number of new cases reported initially declined; however, when new cases began to increase again, additional measures were implemented from September 26 to October 4, including dissemination of information on shigellosis and its prevention through 1) assistance of tribal leaders in providing information in tribal newsletters and at informal gatherings, 2) presentations at tribal senior citizen lunches, 3) house-to-house visits by public health officials and other persons in areas where clusters of cases were identified, 4) distribution of take-home handouts to students in child-care centers and schools, 5) press releases to local newspapers and radio stations, 6) puppet shows on handwashing performed at all child-care centers, where informational posters were distributed to attendees, and 7) notification to restaurants and churches of the importance of excluding symptomatic persons from food handling duties. The last confirmed case occurred on October 21.

FIGURE 4. Reported cases of culture-confirmed shigellosis* — Caddo County, Oklahoma, July–October 1989



*Five reports did not specify date of onset and are not included here.

Shigellosis — Continued

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Editorial Note: Since 1986, the incidence of shigellosis in the United States has increased in all regions of the country. The highest isolation rates were reported among residents of counties with large proportions of low-income minority residents, among young children, and among women of childbearing age.

Communitywide outbreaks of shigellosis can be difficult to control because of the ease of person-to-person transmission among young children, high secondary attack rates, the frequently extended duration of these outbreaks, and multiple points of exposure. The impact of community interventions can be difficult to measure; however, the outbreaks described in this report suggest that effective control efforts should include the following: 1) communitywide recognition of the problem and participation in the intervention, 2) diversified and culture-specific educational efforts to promote handwashing and hygiene, and 3) supervised handwashing for children. Because community leaders can play a key role in developing interventions and ensuring that these interventions are accepted in the community, they should be actively involved in all control efforts.

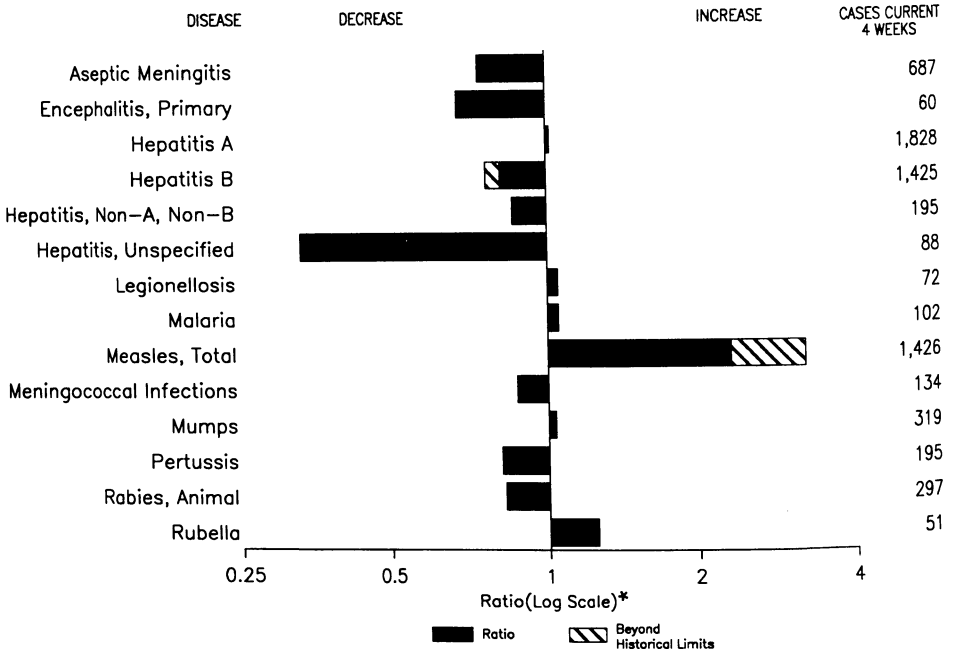
Handwashing with soap and running water may be the single most important preventive measure to interrupt transmission of shigellosis (*1*). Soap and running water should be readily accessible to all persons during community outbreaks of shigellosis. Because young children are most likely to be infected with *Shigella* and are also most likely to infect others (*2*), a strict policy of supervised handwashing for young children after they have defecated and before they eat is crucial. Institutions where hygiene may be suboptimal (e.g., schools, child-care centers, and homeless shelters) can amplify transmission of shigellosis into the community and should be targeted for intensive control efforts. Excluding persons with diarrhea from handling food and limiting use of home-prepared foods at large gatherings will reduce the risk of large outbreaks caused by foodborne transmission.

Antimicrobials have a limited role in the control of epidemic shigellosis and are not a substitute for hygienic measures in reducing the secondary spread of shigellosis. Antimicrobials should be reserved for treatment of patients only when clinically indicated, and the decision to use antimicrobials to treat patients with mild, self-limiting illness should be weighed against the risk of producing resistant strains of *Shigella* (*3*). Prophylactic use of antimicrobials cannot be recommended to prevent illness in persons who are exposed but not ill. In addition, using antimicrobials to treat patients with mild shigellosis to reduce the spread of secondary infections is not known to be any more effective in preventing *Shigella* infections than handwashing with soap and water; moreover, this practice can lead to the development of resistant strains that complicate therapy (*4,5*). Because resistance patterns may change, antimicrobial selection should be based on ongoing monitoring of local antimicrobial resistance of *Shigella* strains.

Shigellosis outbreaks can occur at any time of the year but are most common in the summertime (*6*). *Shigella* infections should be suspected in communitywide

(Continued on page 519)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending July 28, 1990, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from comparable, previous, and subsequent 4-week periods for past 5 years).

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending July 28, 1990 (30th Week)

	Cum. 1990		Cum. 1990
AIDS	24,710	Plague	1
Anthrax	-	Poliomyelitis, Paralytic*	-
Botulism: Foodborne	3	Psittacosis	73
Infant	34	Rabies, human	1
Other	2	Syphilis: civilian	27,588
Brucellosis	37	military	148
Cholera	2	Syphilis, congenital, age < 1 year	45
Congenital rubella syndrome	2	Tetanus	29
Diphtheria	1	Toxic shock syndrome	193
Encephalitis, post-infectious	60	Trichinosis	15
Gonorrhea: civilian	374,615	Tuberculosis	12,080
military	5,173	Tularemia	57
Leprosy	106	Typhoid fever	220
Leptospirosis	27	Typhus fever, tickborne (RMSF)	269
Measles: imported	778		
indigenous	15,443		

*Three cases of suspected poliomyelitis have been reported in 1990; five of 13 suspected cases in 1989 were confirmed and all were vaccine-associated.

TABLE II. Cases of specified notifiable diseases, United States, weeks ending July 28, 1990, and July 29, 1989 (30th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990
UNITED STATES	24,710	3,423	382	60	374,615	385,429	16,581	11,599	1,200	966	611	106
NEW ENGLAND	910	136	13	-	10,575	10,918	342	614	38	41	30	7
Maine	36	6	1	-	118	163	5	24	4	1	3	-
N.H.	41	12	-	-	119	106	5	27	3	2	3	-
Vt.	8	16	2	-	34	40	4	32	3	-	5	-
Mass.	503	41	4	-	4,334	4,261	243	388	19	36	14	6
R.I.	53	43	1	-	660	788	35	29	-	2	5	1
Conn.	269	18	5	-	5,310	5,560	50	114	9	-	-	-
MID. ATLANTIC	7,449	342	32	4	51,509	57,058	2,349	1,632	135	67	181	17
Upstate N.Y.	970	168	27	1	7,873	8,852	616	413	33	20	75	1
N.Y. City	4,334	69	2	1	21,042	22,593	277	459	22	31	28	12
N.J.	1,422	-	1	-	8,831	7,893	239	365	29	-	29	3
Pa.	723	105	2	2	13,763	17,720	1,217	395	51	16	49	1
E.N. CENTRAL	1,693	501	82	11	71,234	68,221	1,260	1,416	90	58	139	1
Ohio	409	117	19	3	21,752	17,363	122	259	29	9	49	-
Ind.	154	97	2	6	6,377	5,129	73	277	5	14	29	-
Ill.	673	86	26	2	22,327	21,629	608	256	26	15	8	1
Mich.	322	175	33	-	16,567	18,215	229	396	22	20	38	-
Wis.	135	26	2	-	4,211	5,885	228	228	8	-	15	-
W.N. CENTRAL	559	147	35	1	19,795	17,698	963	556	83	24	35	-
Minn.	94	11	11	1	2,365	1,826	152	75	21	-	-	-
Iowa	25	17	4	-	1,439	1,500	192	41	7	2	3	-
Mo.	329	78	3	-	12,007	10,686	303	338	32	18	21	-
N. Dak.	2	7	-	-	55	80	10	4	2	1	-	-
S. Dak.	1	4	2	-	125	147	115	5	3	-	-	-
Nebr.	27	13	7	-	969	873	57	23	4	-	6	-
Kans.	81	17	8	-	2,835	2,586	134	70	14	3	5	-
S. ATLANTIC	5,298	758	92	18	107,891	105,286	2,007	2,210	189	137	85	4
Del.	58	25	3	-	1,816	1,741	83	58	6	2	5	-
Md.	581	89	13	1	12,347	11,405	719	310	26	8	23	2
D.C.	414	2	-	-	7,446	7,067	12	28	4	-	-	-
Va.	497	104	34	2	9,274	8,851	166	126	26	94	7	-
W. Va.	38	23	9	-	691	803	13	53	3	1	3	-
N.C.	372	72	23	-	17,121	15,885	444	629	77	-	15	1
S.C.	234	10	1	-	8,573	9,682	26	354	12	8	14	-
Ga.	700	144	4	1	23,976	20,343	212	261	5	7	12	-
Fla.	2,404	289	5	14	26,647	29,509	332	391	30	17	6	1
E.S. CENTRAL	657	345	32	1	30,940	29,962	233	878	81	5	43	-
Ky.	108	82	10	-	3,356	2,946	58	304	29	4	18	-
Tenn.	188	55	16	1	9,658	9,996	110	472	37	-	14	-
Ala.	138	146	6	-	10,124	9,386	64	98	13	-	11	-
Miss.	223	62	-	-	7,802	7,634	1	4	2	1	-	-
W.S. CENTRAL	2,724	360	16	6	37,769	39,947	1,679	1,119	54	160	33	24
Ark.	106	6	1	-	4,919	4,517	297	51	6	12	7	-
La.	399	56	4	-	7,624	8,389	111	185	2	5	11	-
Okla.	122	29	2	5	3,486	3,443	333	82	18	13	11	-
Tex.	2,097	269	9	1	21,740	23,598	938	801	28	130	4	24
MOUNTAIN	651	160	14	-	7,242	8,242	2,647	892	103	76	27	-
Mont.	8	3	-	-	105	114	70	44	4	4	2	-
Idaho	16	-	-	-	79	112	49	54	8	-	3	-
Wyo.	1	1	1	-	94	56	24	9	5	1	-	-
Colo.	191	34	3	-	1,408	1,793	168	100	27	26	3	-
N. Mex.	55	9	-	-	730	803	487	104	7	2	2	-
Ariz.	214	77	4	-	3,132	3,099	1,402	320	32	29	9	-
Utah	61	20	2	-	237	250	236	58	12	5	3	-
Nev.	105	16	4	-	1,457	2,015	211	203	8	9	5	-
PACIFIC	4,769	674	66	19	37,660	48,097	5,101	2,282	427	398	38	53
Wash.	384	-	4	1	3,091	3,824	868	358	76	16	9	3
Oreg.	180	-	-	-	1,481	1,701	517	254	30	7	-	-
Calif.	4,108	572	57	17	32,176	41,778	3,542	1,594	309	369	28	42
Alaska	22	46	4	-	617	516	117	37	3	1	-	-
Hawaii	75	56	1	1	295	278	57	39	9	5	1	8
Guam	1	2	-	-	133	81	7	1	-	7	-	-
P.R.	893	43	6	-	460	636	107	176	2	19	-	-
V.I.	8	-	-	-	249	390	1	8	-	-	-	-
Amer. Samoa	-	1	-	-	44	14	19	-	-	-	-	10
C.N.M.I.	-	-	-	-	106	57	9	6	-	15	-	3

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

TABLE II. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending July 28, 1990, and July 29, 1989 (30th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1990	1990	Cum. 1990	1990	Cum. 1990	Cum. 1989	Cum. 1990	1990	Cum. 1990	1990	Cum. 1990	Cum. 1989	1990	Cum. 1990	Cum. 1989
UNITED STATES	633	67	15,443	1	778	9,744	1,579	74	3,528	65	1,724	1,581	7	669	270
NEW ENGLAND	54	2	176	-	20	303	119	3	34	8	218	229	-	7	6
Maine	1	-	27	-	2	-	10	-	-	-	6	4	-	-	-
N.H.	4	-	-	-	8	8	5	-	7	-	12	5	-	1	4
Vt.	4	-	-	-	1	3	10	-	1	-	6	6	-	-	1
Mass.	30	2	17	-	4	41	57	2	10	8	180	193	-	2	1
R.I.	4	-	27	-	3	41	10	-	5	-	2	11	-	1	-
Conn.	11	-	105	-	2	210	27	1	11	-	12	10	-	3	-
MID. ATLANTIC	134	2	907	-	149	860	230	2	220	2	323	94	-	4	26
Upstate N.Y.	26	-	194	-	109	137	87	2	93	1	254	42	-	3	9
N.Y. City	47	-	201	-	21	73	30	-	-	-	-	3	-	-	15
N.J.	45	1	151	-	10	414	50	-	54	-	13	23	-	-	2
Pa.	16	1	361	-	9	236	63	-	73	1	56	26	-	1	-
E.N. CENTRAL	27	5	3,004	-	141	2,785	209	1	361	16	351	225	-	30	23
Ohio	5	-	452	-	3	661	67	-	75	-	86	33	-	1	3
Ind.	1	-	316	-	1	51	21	-	13	15	74	13	-	-	-
Ill.	9	-	1,159	-	10	1,792	53	-	114	-	87	83	-	17	18
Mich.	9	5	343	-	125	99	47	1	121	1	41	26	-	9	1
Wis.	3	-	734	-	2	182	21	-	38	-	63	70	-	3	1
W.N. CENTRAL	10	-	750	-	13	588	54	1	93	5	71	94	-	6	6
Minn.	1	-	314	-	3	15	11	-	-	-	6	15	-	1	-
Iowa	2	-	23	-	1	5	1	-	15	1	8	11	-	4	1
Mo.	6	-	78	-	-	323	21	1	46	4	47	62	-	-	4
N. Dak.	-	-	-	-	-	-	1	-	-	-	1	-	-	1	-
S. Dak.	-	-	15	-	8	-	2	-	-	-	1	1	-	-	-
Nebr.	-	-	97	-	1	112	5	-	3	-	2	3	-	-	-
Kans.	1	-	223	-	-	133	13	-	29	-	6	2	-	-	1
S. ATLANTIC	139	7	805	-	129	470	288	44	1,479	3	145	121	-	15	8
Del.	2	-	8	-	3	38	2	-	3	1	3	1	-	-	-
Md.	38	2	186	-	18	51	32	25	879	-	38	12	-	2	2
D.C.	10	5	15	-	7	23	11	3	28	-	14	-	-	1	-
Va.	35	-	68	-	2	21	36	3	85	-	14	9	-	1	-
W. Va.	2	-	6	-	-	51	12	-	41	-	10	17	-	-	-
N.C.	10	-	9	-	15	167	42	9	213	2	37	23	-	-	1
S.C.	-	-	4	-	-	-	21	3	24	-	5	-	-	-	-
Ga.	11	-	80	-	26	2	53	-	56	-	14	16	-	-	-
Fla.	31	-	429	-	58	117	79	1	150	-	10	43	-	11	5
E.S. CENTRAL	14	25	139	-	2	174	92	6	76	8	101	67	-	2	2
Ky.	2	5	29	-	-	20	29	-	-	-	-	1	-	-	-
Tenn.	7	20	62	-	-	109	34	5	41	7	42	23	-	1	2
Ala.	5	-	19	-	2	45	27	1	11	1	54	34	-	1	-
Miss.	-	-	29	-	-	-	2	-	24	-	5	9	-	-	-
W.S. CENTRAL	29	-	3,802	-	87	3,003	108	7	563	5	45	123	2	4	36
Ark.	1	-	12	-	29	2	16	-	128	-	2	16	2	3	-
La.	1	-	10	-	-	9	26	2	92	1	14	6	-	-	5
Okla.	8	-	172	-	-	105	13	-	103	4	29	20	-	1	1
Tex.	19	-	3,608	-	58	2,887	53	5	240	-	-	81	-	-	30
MOUNTAIN	15	26	713	-	88	321	50	1	277	2	169	431	1	101	35
Mont.	1	-	-	-	1	13	10	1	1	2	26	21	-	13	1
Idaho	3	-	15	-	10	2	5	-	141	-	35	57	1	49	32
Wyo.	-	-	-	-	11	-	-	-	2	-	-	-	-	-	1
Colo.	2	13	95	-	41	61	15	-	19	-	57	33	-	4	-
N. Mex.	1	-	80	-	10	31	6	N	N	-	9	7	-	-	-
Ariz.	7	-	260	-	12	112	4	-	91	-	28	300	-	30	-
Utah	-	13	71	-	-	100	5	-	8	-	10	12	-	1	-
Nev.	1	-	192	-	3	2	5	-	15	-	4	1	-	4	1
PACIFIC	211	-	5,147	1	149	1,240	429	9	425	16	301	197	4	500	128
Wash.	16	-	202	-	69	37	53	1	39	4	72	73	-	-	-
Oreg.	12	-	154	-	44	16	47	N	N	-	20	7	-	9	2
Calif.	178	-	4,705	-	30	1,162	318	7	374	8	179	113	4	481	105
Alaska	2	-	78	-	2	-	7	-	-	-	4	-	-	-	-
Hawaii	3	-	8	1†	4	28	4	1	12	4	26	4	-	10	21
Guam	2	U	-	U	1	2	-	U	2	U	-	1	U	-	-
P.R.	2	-	808	-	-	437	9	-	7	-	5	4	-	-	6
V.I.	-	-	21	-	3	4	-	-	7	-	-	-	-	-	-
Amer. Samoa	35	U	132	U	-	-	-	U	15	U	-	-	U	-	-
C.N.M.I.	-	U	-	U	-	-	-	U	7	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 II. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending July 28, 1990, and July 29, 1989 (30th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990
UNITED STATES	27,588	24,579	193	12,080	11,976	57	220	269	2,353
NEW ENGLAND	1,044	962	15	364	331	2	15	9	4
Maine	5	5	4	-	12	-	-	-	-
N.H.	40	9	1	3	16	-	-	-	2
Vt.	1	-	-	7	5	-	-	-	-
Mass.	406	299	8	158	171	2	14	8	-
R.I.	9	17	1	117	37	-	-	-	-
Conn.	583	632	1	79	90	-	1	1	2
MID. ATLANTIC	5,850	5,059	18	2,961	2,286	1	55	11	531
Upstate N.Y.	507	501	6	253	188	-	11	6	51
N.Y. City	2,617	2,209	5	1,763	1,287	-	29	-	-
N.J.	963	791	-	523	392	1	13	3	160
Pa.	1,763	1,558	7	422	419	-	2	2	320
E.N. CENTRAL	1,882	1,016	46	1,256	1,258	1	21	25	89
Ohio	294	73	16	213	230	1	4	20	3
Ind.	45	40	1	101	120	-	1	-	4
Ill.	730	445	7	620	571	-	11	-	19
Mich.	617	375	22	269	262	-	4	5	21
Wis.	196	83	-	53	75	-	1	-	42
W.N. CENTRAL	245	187	20	328	294	21	1	26	381
Minn.	51	24	1	61	62	-	-	-	152
Iowa	38	21	4	34	28	-	-	-	17
Mo.	130	94	8	159	124	17	1	20	15
N. Dak.	1	3	-	12	11	-	-	-	49
S. Dak.	1	-	-	9	15	3	-	2	113
Nebr.	8	17	3	14	14	1	-	-	4
Kans.	16	28	4	39	40	-	-	4	31
S. ATLANTIC	8,800	8,983	19	2,392	2,500	3	23	105	673
Del.	104	96	1	23	25	-	-	1	11
Md.	690	447	1	194	205	-	8	10	247
D.C.	585	529	1	88	111	-	-	-	-
Va.	469	319	2	203	206	1	2	8	121
W. Va.	33	10	-	41	43	-	-	-	24
N.C.	1,028	557	10	309	303	1	2	54	4
S.C.	558	460	2	282	287	1	-	29	82
Ga.	2,264	2,260	-	376	381	-	1	3	133
Fla.	3,069	4,305	2	876	939	-	10	-	51
E.S. CENTRAL	2,513	1,608	9	913	985	5	1	38	111
Ky.	46	35	2	225	232	1	1	5	29
Tenn.	1,071	715	4	235	281	4	-	28	27
Ala.	739	488	3	299	278	-	-	5	55
Miss.	657	370	-	154	194	-	-	-	-
W.S. CENTRAL	4,278	3,234	8	1,559	1,447	17	8	46	270
Ark.	284	208	-	198	153	12	-	8	24
La.	1,150	739	1	150	196	-	-	1	-
Okla.	130	57	7	114	122	5	2	34	81
Tex.	2,714	2,230	-	1,097	976	-	6	3	165
MOUNTAIN	521	461	24	290	268	6	18	6	115
Mont.	-	1	-	10	11	-	-	4	33
Idaho	6	1	2	9	14	-	-	-	1
Wyo.	-	3	2	3	-	1	-	-	33
Colo.	22	53	7	14	20	2	-	-	4
N. Mex.	29	20	3	56	48	3	-	1	6
Ariz.	387	139	7	142	125	-	16	1	25
Utah	5	12	3	18	24	-	-	-	5
Nev.	72	232	-	38	26	-	2	-	8
PACIFIC	2,455	3,069	34	2,017	2,607	1	78	3	179
Wash.	218	252	4	162	144	1	2	-	-
Oreg.	91	147	-	74	88	-	3	1	1
Calif.	2,128	2,660	29	1,666	2,237	-	69	2	156
Alaska	10	2	-	23	42	-	-	-	22
Hawaii	8	8	1	92	96	-	4	-	-
Guam	2	4	-	22	44	-	-	-	-
P.R.	204	324	-	66	189	-	-	-	30
V.I.	3	5	-	4	4	-	-	-	-
Amer. Samoa	-	-	-	8	2	-	1	-	-
C.N.M.I.	1	7	-	29	12	-	4	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending July 28, 1990 (30th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	654	472	100	42	20	20	68
Boston, Mass.	187	116	36	16	10	9	25
Bridgeport, Conn.	46	31	9	5	-	1	6
Cambridge, Mass.	14	13	1	-	-	-	4
Fall River, Mass.	26	22	4	-	-	-	-
Hartford, Conn.	48	30	10	4	3	1	3
Lowell, Mass.	15	13	2	-	-	-	1
Lynn, Mass.	9	8	-	-	1	-	1
New Bedford, Mass.	26	23	2	-	1	-	1
New Haven, Conn.	42	25	7	5	2	3	4
Providence, R.I.	68	59	6	2	-	1	7
Somerville, Mass.	11	6	2	3	-	-	-
Springfield, Mass.	48	36	5	2	1	4	4
Waterbury, Conn.	36	26	8	1	1	-	5
Worcester, Mass.	78	64	8	4	1	1	7
MID. ATLANTIC	2,606	1,637	486	321	74	87	112
Albany, N.Y.	45	30	6	6	1	2	1
Allentown, Pa.	26	19	5	2	-	-	-
Buffalo, N.Y.	102	71	22	5	3	1	3
Camden, N.J.	41	27	8	4	2	-	-
Elizabeth, N.J.	29	17	8	1	-	3	1
Erie, Pa.†	47	36	8	1	-	2	5
Jersey City, N.J.	39	26	7	4	-	2	1
N.Y. City, N.Y.	1,464	869	272	224	51	48	51
Newark, N.J.	82	31	25	17	2	6	8
Paterson, N.J.	35	21	5	5	-	4	4
Philadelphia, Pa.	297	187	62	29	6	13	5
Pittsburgh, Pa.†	73	51	13	7	1	1	1
Reading, Pa.	41	28	6	2	3	2	5
Rochester, N.Y.	122	98	12	7	3	2	18
Schenectady, N.Y.	15	11	2	1	1	-	-
Scranton, Pa.†	25	19	3	1	1	1	3
Syracuse, N.Y.	51	38	10	3	-	-	3
Trenton, N.J.	39	29	10	-	-	-	-
Utica, N.Y.	15	13	1	1	-	-	-
Yonkers, N.Y.	18	16	1	1	-	-	3
E.N. CENTRAL	2,208	1,399	485	176	69	79	86
Akron, Ohio	62	43	12	3	2	2	5
Canton, Ohio	33	28	5	-	-	-	4
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	102	66	20	8	4	4	9
Cleveland, Ohio	186	102	50	18	7	9	2
Columbus, Ohio	179	111	44	14	7	3	3
Dayton, Ohio	108	65	26	11	3	3	6
Detroit, Mich.	197	111	46	20	13	7	5
Evansville, Ind.	51	28	19	1	2	1	2
Fort Wayne, Ind.	61	45	9	5	-	2	4
Gary, Ind.	31	13	12	3	2	1	2
Grand Rapids, Mich.	51	35	4	6	5	1	3
Indianapolis, Ind.	181	117	31	13	7	13	1
Madison, Wis.§	35	23	8	4	-	-	3
Milwaukee, Wis.	114	79	20	10	3	2	2
Peoria, Ill.	51	30	12	3	1	5	8
Rockford, Ill.	30	20	8	1	1	-	1
South Bend, Ind.	41	33	5	3	-	-	3
Toledo, Ohio	77	51	19	5	1	1	4
Youngstown, Ohio	54	37	10	3	1	3	3
W.N. CENTRAL	839	589	143	57	30	20	33
Des Moines, Iowa	51	41	7	2	1	-	1
Duluth, Minn.	26	22	3	1	-	-	4
Kansas City, Kans.	29	14	9	2	3	1	-
Kansas City, Mo.	115	73	21	11	5	5	6
Lincoln, Nebr.	32	26	5	1	-	-	4
Minneapolis, Minn.	227	162	38	14	8	5	10
Omaha, Nebr.	83	52	18	7	1	5	4
St. Louis, Mo.	142	98	22	13	5	4	-
St. Paul, Minn.	79	59	12	5	3	-	3
Wichita, Kans.	55	42	8	1	4	-	1
S. ATLANTIC	1,363	753	307	161	61	78	70
Atlanta, Ga.	177	102	42	20	3	10	3
Baltimore, Md.	168	97	39	21	7	4	10
Charlotte, N.C.	86	49	22	10	5	-	2
Jacksonville, Fla.	116	71	25	12	4	4	14
Miami, Fla.	110	48	26	17	9	10	1
Norfolk, Va.	52	30	14	3	2	3	6
Richmond, Va.	100	58	19	10	2	9	5
Savannah, Ga.	53	37	10	4	2	-	5
St. Petersburg, Fla.	67	46	10	1	3	7	6
Tampa, Fla.	81	51	19	5	3	2	7
Washington, D.C.	327	142	79	56	21	29	11
Wilmington, Del.	26	22	2	2	-	-	-
E.S. CENTRAL	762	471	168	76	18	29	44
Birmingham, Ala.	127	70	22	15	4	16	-
Chattanooga, Tenn.	70	54	11	2	-	3	7
Knoxville, Tenn.	101	59	27	9	5	1	8
Louisville, Ky.	64	38	18	8	-	-	3
Memphis, Tenn.	157	93	41	16	5	2	12
Mobile, Ala.	84	54	16	11	2	1	1
Montgomery, Ala.	37	21	11	4	-	1	2
Nashville, Tenn.	122	82	22	11	2	5	11
W.S. CENTRAL	1,708	1,025	359	188	76	60	74
Austin, Tex.	66	42	11	10	1	2	8
Baton Rouge, La.	21	10	3	1	3	4	3
Corpus Christi, Tex.	52	29	12	6	2	3	4
Dallas, Tex.	206	110	49	23	11	13	5
El Paso, Tex.	59	37	12	7	2	1	5
Fort Worth, Tex	83	57	10	9	5	2	2
Houston, Tex.§	734	436	169	89	24	16	18
Little Rock, Ark.	60	48	5	4	1	2	5
New Orleans, La.	102	51	26	12	3	10	-
San Antonio, Tex.	208	127	45	19	12	5	10
Shreveport, La.	33	19	7	1	4	2	3
Tulsa, Okla.	84	59	10	7	8	-	11
MOUNTAIN	658	418	133	54	35	18	32
Albuquerque, N. Mex.	75	46	12	9	7	1	4
Colo. Springs, Colo.	34	25	3	4	1	1	3
Denver, Colo.	83	53	14	9	7	-	1
Las Vegas, Nev.	153	95	39	11	4	4	12
Ogden, Utah	25	18	4	2	1	-	2
Phoenix, Ariz.	152	88	41	9	5	9	6
Pueblo, Colo.	17	11	3	1	1	1	1
Salt Lake City, Utah	19	11	4	2	1	1	2
Tucson, Ariz.	100	71	13	7	8	1	1
PACIFIC	1,857	1,170	335	222	73	51	104
Berkeley, Calif.	20	15	2	3	-	-	1
Fresno, Calif.	56	36	9	5	3	3	8
Glendale, Calif.	21	17	1	1	1	1	1
Honolulu, Hawaii	95	55	19	13	3	5	10
Long Beach, Calif.	72	39	17	11	4	1	11
Los Angeles Calif.	470	286	77	68	27	8	12
Oakland, Calif.	86	59	11	12	1	3	5
Pasadena, Calif.	29	17	7	2	1	2	1
Portland, Oreg.	119	86	18	5	6	4	7
Sacramento, Calif.	157	103	29	14	7	4	13
San Diego, Calif.	151	84	34	20	4	8	9
San Francisco, Calif.	165	84	44	28	3	5	3
San Jose, Calif.	155	97	31	17	9	1	10
Seattle, Wash.§	149	99	27	18	3	2	2
Spokane, Wash.	57	46	4	4	1	2	7
Tacoma, Wash.	55	47	5	1	-	2	4
TOTAL	12,655††	7,934	2,516	1,297	456	442	623

*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.

Shigellosis – Continued

epidemics of diarrheal illness that disproportionately affect young children. Stool specimens should be obtained and state and local health departments informed promptly of culture-confirmed cases so that outbreaks of shigellosis can be recognized and appropriate control measures instituted.

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Characteristics of Clients in Alcohol- and Drug-Treatment Centers – South Carolina, 1989

The South Carolina Department of Health and Environmental Control (SCDHEC) recently evaluated characteristics of clients in detoxification programs of selected alcohol- and drug-treatment centers to determine 1) the human immunodeficiency virus (HIV), hepatitis B, and syphilis seropositivity of clients; 2) the proportion of clients with histories of intravenous (IV)-drug use; and 3) clients' drug-use and risk behaviors and attitudes. This report presents findings of the SCDHEC evaluation.

In 1989, the 37 public, community-based alcohol- and drug-treatment centers in South Carolina served 32,323 clients who had a primary diagnosis of alcohol or other drug use. In South Carolina, clients who are admitted to alcohol- and drug-treatment centers are charged for services on a sliding scale based on their ability to pay; no one is refused service. Clients are referred for treatment by themselves, state and local agencies, hospitals, and emergency rooms. Inpatient services are offered for a maximum of 28 days; outpatient services may continue indefinitely. In 1989, 86% of clients were treated on an outpatient basis.

From April 25 through June 23, 1989, the SCDHEC surveyed and tested all clients entering detoxification services at alcohol- and drug-treatment centers in three urban counties (approximate population of each county: 300,000). During this period, 632 clients entered the centers and were tested for HIV, hepatitis B surface antigen (HBsAg), and syphilis (rapid plasma reagin [RPR]); nine (1%) were HIV-antibody positive, 21 (3%) were HBsAg positive, and 22 (3%) had a reactive RPR.

Of the 632 clients, 478 (76%) completed an anonymous, self-administered questionnaire concerning drug use, HIV-transmission risk behaviors, and attitudes regarding HIV prevention. Of the clients who completed the questionnaire, 442 (92%) provided drug-use information. Of these, 182 (41%) indicated they had used IV drugs at some time in the past, and 129 (29%) indicated they had used IV drugs in the past year. The median age of the IV-drug users (IVDUs) was 31 years (range: 12–72 years), and their median education level was 12th grade (range: 4–16 years of school). Of the

Alcohol- and Drug-Treatment Centers — Continued

174 for whom gender was known, 131 (75%) were male. Of the 169 for whom race was known, 103 (61%) were white, 63 (37%) were black, and three (2%) were other races. Sexual preference was known for 163 IVDUs: 150 (92%) were heterosexual and 13 (8%; nine males and four females) were homosexual/bisexual. Drug use was reported by the nine HIV-positive persons: seven indicated IV-drug use as their only risk behavior, one indicated a history of IV-drug use and bisexuality, and one indicated a history of non-IV cocaine use.

Of the 182 clients who had used IV drugs, 80 (44%) reported sharing needles or other drug-injection equipment. One hundred six (58%) indicated that they always rinsed their drug-injection equipment after use; however, only 16 (15%) of these used bleach when cleaning their drug-injection equipment. Of the 182 IVDUs, 28 (15%; 16 males, 10 females, two unknown) indicated that in the past year they had exchanged sex for money, drugs, or other gifts. The drugs most frequently injected were cocaine (62%), heroin (30%), and combinations of cocaine and heroin (22%).

Of 114 persons indicating how frequently they injected drugs, 43 (38%) reported injecting daily; 34 (30%), weekly; and 37 (32%), monthly. Of the 173 persons who answered questions on condom use, 88 (51%) reported never using condoms; 72 (42%), sometimes using condoms; and 13 (8%), always using condoms.

In regard to attitudes about HIV testing, 85% of the IVDUs indicated that all persons in a drug-treatment program should be offered testing and counseling at the site where drug treatment is received.

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Editorial Note: The findings of this evaluation by the SCDHEC have played an important role in the development of new disease-prevention programs in South Carolina alcohol- and drug-treatment centers. These programs include client education on the prevention of HIV infection, hepatitis B, and sexually transmitted diseases; specific HIV-training sessions for substance-abuse counselors; training plans for the implementation of outreach programs; specific risk-reduction programs for female IVDUs; condom distribution programs; and a program for counselors to demonstrate one-on-one to clients how to clean drug-injection equipment with bleach.

This survey (which involved 76% of clients) found that 41% of the clients of these centers reported IV-drug use. Clients who attend alcohol- and drug-treatment centers may not be representative of the IV-drug–using population in a locality (*1*); however, they do represent a population that is accessible through public health programs that offer counseling and testing for HIV and other sexually transmitted diseases, partner notification, and other HIV-related services (e.g., free and confidential CD4 lymphocyte testing with referral to other health-care providers). These services can provide incentives for clients to return for follow-up counseling, which is important for behavioral change among IVDUs (*2*). Results of this evaluation also indicate that greater efforts in preventive education are needed to reduce risk factors associated with HIV transmission among IVDUs.

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Infant Mortality by Marital Status of Mother — United States, 1983

From 1950 to 1987, the proportion of out-of-wedlock births in the United States increased sixfold, from 4% (*1*) to 24% of all births, respectively. In 1987, 17% of live births among whites and 62% of live births among blacks were out of wedlock (*2*). Because out-of-wedlock childbearing is associated with adverse pregnancy and infant health outcomes, increasing attention has been focused on out-of-wedlock childbearing as a maternal and child-health policy issue in the United States.

In 1960, the infant mortality rates for out-of-wedlock births for whites and for all other races were 33.0 and 51.2 deaths per 1000 live births, respectively. Rates for all live births for whites and for all other races were 22.2 and 41.4 per 1000, respectively (*3*). To update these data, the 1983 national linked birth-death file (*4*) (the latest data available at the time of analysis) was analyzed; the analysis was restricted to singleton live births to U.S. resident white (n=2,875,283) and black (n=546,949) mothers.

In 1983, 13% of singleton live births among whites and 59% of singleton live births among blacks were to unmarried women. Twenty percent of infant deaths among whites and 66% of infant deaths among blacks were among infants born to unmarried mothers.

For both whites and blacks, unmarried motherhood was associated with an elevated overall infant mortality rate, but the association was greater for whites (rate ratio [RR]=1.7) than for blacks (RR=1.3) (Table 1). The overall infant mortality rate was higher for infants born to unmarried mothers (13.1 and 19.6 per 1000 live births for whites and blacks, respectively) than for infants born to married mothers (7.8 and 14.6 per 1000 live births for whites and blacks, respectively). However, infants born to unmarried mothers <18 years of age had slightly lower infant mortality rates (14.3 and 20.7 per 1000 for whites and blacks, respectively) than infants born to married mothers in this age group (15.4 per 1000 for whites and 23.4 per 1000 for blacks). For mothers ≥18 years of age, the out-of-wedlock/in-wedlock mortality rate ratios were >1 and generally increased with increasing maternal age.

The effect of marital status on infant mortality rates was greatest in the postneonatal period (28–364 days), where the variations in mortality by maternal age were larger. Postneonatal mortality for infants born to unmarried mothers was higher than for infants born to married women except for white mothers <18 years of age and black mothers <20 years of age.

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Editorial Note: Adverse pregnancy outcomes are correlated with poverty conditions. In 1988, 36% of black families and 12% of white families with children <18 years of age were classified as living in poverty. Families with unmarried mothers are even more likely to be living in poverty. In 1988, 56% of black families and 38% of white families with children <18 years of age and no male head of household were classified as living below the poverty level (*5*).

The finding in the 1983 birth cohort that infant mortality was lower in infants born to unmarried teenage mothers than in infants born to married teenagers is consistent with findings for earlier periods (*6,7*). This finding is not unexpected, since the marital

TABLE 1. Infant, neonatal, and postneonatal mortality rates per 1000 singleton live births, by mother's race, age, and marital status — United States, 1983

	Infant mortality* rate				Neonatal mortality† rate				Postneonatal mortality§ rate			
Race/Age	Married	Unmarried	Ratio	(95% CI¶)	Married	Unmarried	Ratio	(95% CI)	Married	Unmarried	Ratio	(95% CI)
White												
All ages	7.8	13.1	1.7	(1.6–1.7)	5.0	7.8	1.6	(1.5–1.6)	2.8	5.3	1.9	(1.8–2.0)
<18	15.4	14.3	0.9	(0.9–1.0)	8.4	9.0	1.1	(0.9–1.2)	7.0	5.3	0.8	(0.7–0.9)
18–19	11.2	13.5	1.2	(1.1–1.3)	6.5	7.8	1.2	(1.1–1.3)	4.7	5.7	1.2	(1.1–1.4)
20–24	8.3	13.0	1.6	(1.5–1.7)	4.9	7.3	1.5	(1.4–1.6)	3.4	5.7	1.7	(1.6–1.8)
25–29	6.8	11.6	1.7	(1.6–1.9)	4.6	7.2	1.6	(1.4–1.8)	2.2	4.4	2.0	(1.7–2.2)
30–34	7.0	12.5	1.8	(1.6–2.0)	4.9	8.5	1.7	(1.5–2.0)	2.1	4.0	1.9	(1.6–2.4)
≥35	8.5	13.8	1.6	(1.4–1.9)	6.0	8.9	1.5	(1.2–1.8)	2.4	4.9	2.0	(1.5–2.7)
Black												
All ages	14.6	19.6	1.3	(1.3–1.4)	9.7	12.1	1.3	(1.2–1.3)	4.9	7.6	1.5	(1.4–1.6)
<18	23.4	20.7	0.9	(0.7–1.1)	11.0	12.5	1.1	(0.8–1.6)	12.4	8.2	0.7	(0.5–0.9)
18–19	16.7	18.5	1.1	(0.9–1.3)	9.1	11.3	1.2	(1.0–1.5)	7.6	7.2	1.0	(0.8–1.2)
20–24	14.9	19.4	1.3	(1.2–1.4)	9.1	11.4	1.3	(1.2–1.4)	5.8	8.0	1.4	(1.2–1.6)
25–29	14.1	19.5	1.4	(1.3–1.5)	9.5	12.8	1.4	(1.2–1.5)	4.5	6.6	1.5	(1.3–1.7)
30–34	14.6	20.2	1.4	(1.2–1.7)	10.8	13.7	1.3	(1.1–1.5)	3.8	6.5	1.7	(1.4–2.2)
≥35	13.5	24.0	1.8	(1.5–2.2)	10.6	16.7	1.6	(1.3–2.0)	2.9	7.2	2.5	(1.7–3.7)

*Death at ≤364 days of age.
†Death at <28 days of age.
§Death from 28 days to 364 days of age.
¶Confidence interval.

Infant Mortality — Continued

status of the mother confers neither risk nor protection to the infant; rather, the principal benefits of marriage to infant survival are economic and social support.

The lack of economic and social support for married teenage mothers is a consequence of several factors. According to the 1980 U.S. Census, 39% of black married women aged 15–19 years were living separately from their husbands (*8*). Moreover, married teenagers are more likely to have unstable marriages than are older married persons (*9*) and are more likely to have repeated teenage childbearing than are unmarried teenagers (*10*). Married teenagers are also more likely to establish independent households, thereby estranging themselves from financial and child-care support from relatives (*11*).

The association between marital status and infant mortality rates is stronger in the postneonatal period than in the neonatal period. This association suggests that marital status is an important proxy measure of factors traditionally related to postneonatal mortality, such as socioeconomic status, social support, and other circumstances not reflected by education and other commonly used measures.

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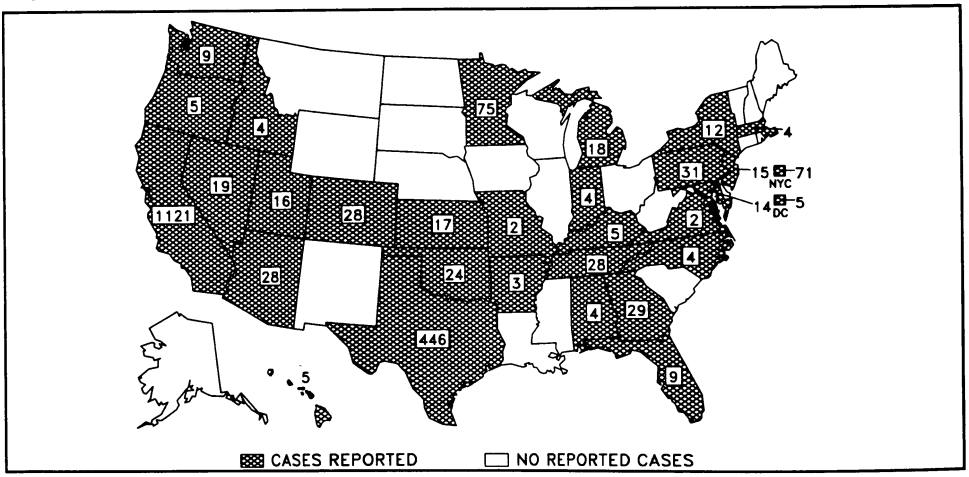
Reported cases of measles, by state — United States, weeks 27–30, 1990



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