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MORBIDITY AND MORTALITY WEEKLY REPORT

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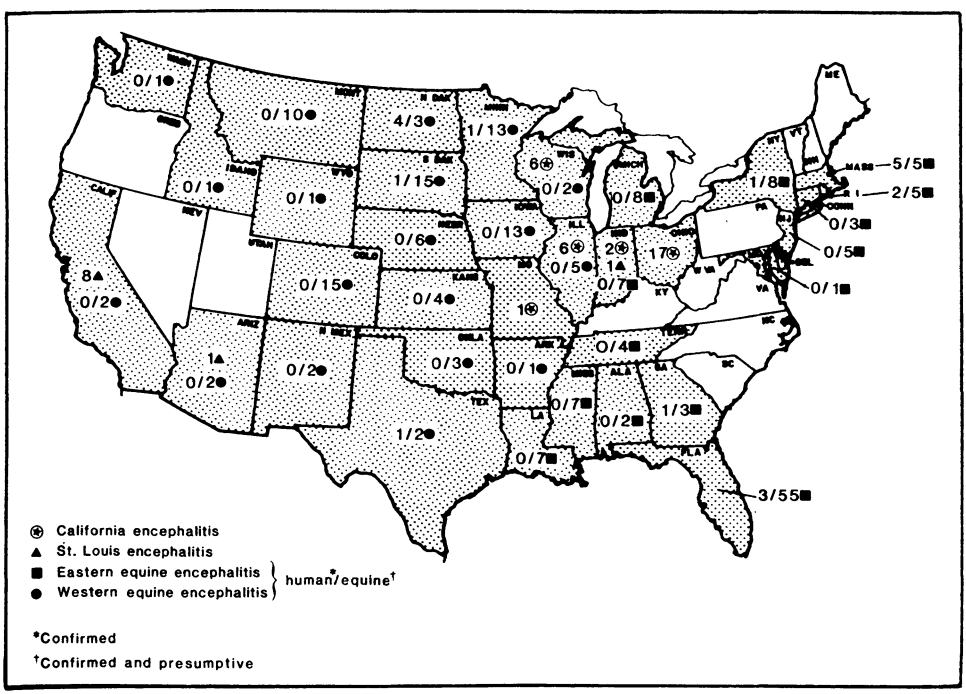
Epidemiologic Notes and Reports

Arboviral Encephalitides — United States, 1983

Epidemic, hyperendemic, and sporadic transmission of eastern equine encephalitis (EEE), western equine encephalitis (WEE), St. Louis encephalitis (SLE), and encephalitides caused by California serogroup viruses* (CE) led to 62 confirmed human cases in the United States in 1983 (Figures 1 and 2).

*Referred to as California encephalitis.

FIGURE 1. Human and equine arboviral encephalitides, by etiologic agent — United States, 1983

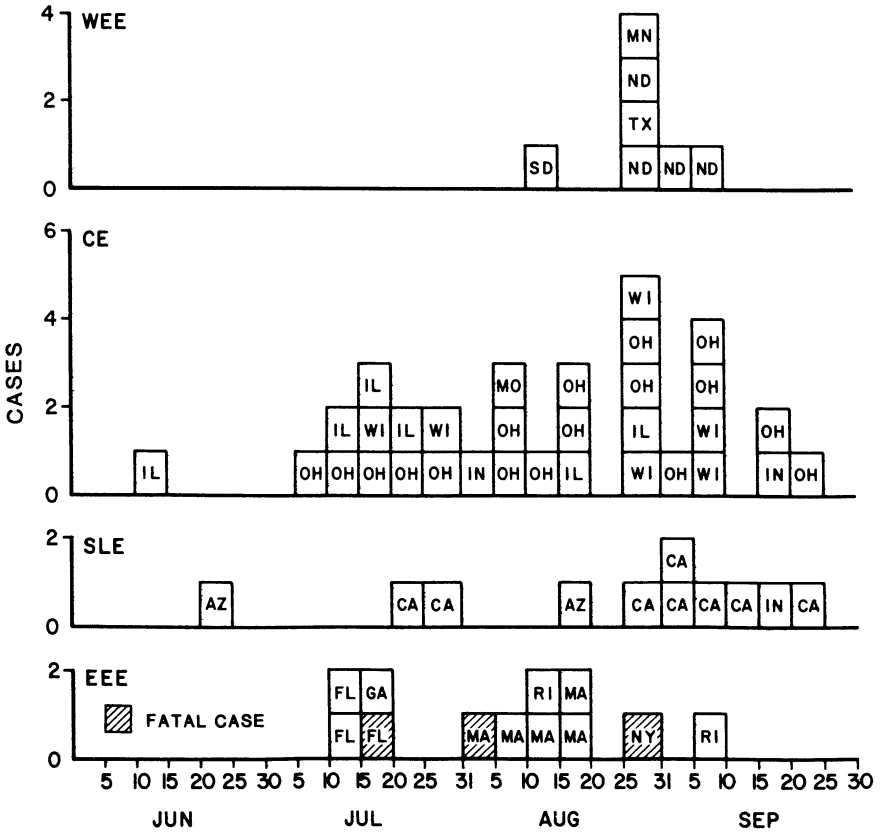


Arboviral Encephalitides — Continued

EEE: Ten of the 12 reported human cases and numerous equine and avian cases occurred in recognized endemic and enzootic areas: Massachusetts' Taunton Valley (five human and five equine cases); upstate New York counties near Syracuse (one human and eight equine cases); the Delaware-Maryland-Virginia peninsula (one equine and several hundred pheasant cases from a single premise); Lowndes County, Georgia (single human, equine, and quail cases occurring in the same week); southern Michigan and adjoining northeastern Indiana counties (15 equine cases); Florida (three human cases—one from the panhandle and two from central Florida). Transmission of EEE to horses occurs nearly year-round in Florida, and 55 cases have been reported to date. For the first time, Rhode Island reported human cases of EEE; two cases occurred in conjunction with an epizootic affecting five horses in the state and three in nearby areas of Connecticut. Sporadic and epizootic equine cases occurred elsewhere in the northeast and southeast.

Three deaths occurred (case fatality ratio, 25%)—a 7-year-old boy, a 64-year-old man, and a 66-year-old woman. A 9-month-old infant recovered with profound brain damage, and two other patients recovered with lesser neurologic sequelae.

FIGURE 2. Human arboviral encephalitides, by date of onset, etiologic agent, and state of residence — United States, 1983



Arboviral Encephalitides – Continued

WEE: In Minnesota, North Dakota, and South Dakota, large vector populations, high mosquito infection rates, and evidence of virus transmission to sentinel chickens and horses had suggested the potential for epidemic WEE this year. Six human cases have been confirmed in 3- and 7-week-old infants, 6-, 10-, and 15-year-old children, and a 22-year-old man. These patients' residences were widely dispersed in the three-state area reflecting high mosquito infection rates and occurrences of equine cases on premises in widespread areas of the states. The 3-week-old infant had significant residual neurologic sequelae; the outcomes were good in the other cases.

A single case of WEE was documented in a man from Hale County, Texas, where WEE has been prevalent in the past. Numerous presumptive and proven WEE cases in horses were reported from the midwest and west.

SLE: Transmission of SLE virus by *Culex pipiens*, the major epidemic vector of SLE in the central United States, was minimal, and only one confirmed case from Indiana and two suspected cases each from Illinois and Texas were reported.

Flooding of the Colorado River this spring resulted in expansion of mosquito populations and an outbreak of *Cx. tarsalis*-borne SLE in adjacent California and Arizona counties (Riverside and Imperial Counties, California, and Mohave and Yuma Counties, Arizona). In California, six confirmed cases have been reported in four residents and two visitors of those counties. Two other confirmed cases had no history of travel to the flooded areas. Arizona reported one confirmed and three suspected flood-associated cases and a sporadic case, with onset before the period of flooding.

Using 1980 census data for counties in the flooded area, a crude estimate of the resident population at risk was obtained. For towns and county subdivisions bordering the river, the crude attack rate (counting confirmed and suspected cases) was 5.1/100,000 (8/155,928). In the greater Yuma area, including Bard-Winterhaven, where most of the cases occurred, the attack rate was estimated at 7.2/100,000 (5/70,649).

The outcome was favorable for all but one patient, a 72-year-old man who remains comatose. A dual infection with SLE and echo 11 viruses occurred in a 3-year-old California boy.

CE: Thirty-two cases were confirmed in children who resided in states bordering the Great Lakes. An additional confirmed case was reported from Missouri, and 13 suspected cases await confirmation, including 11 from New York, one from Iowa, and one in a California resident who visited Wisconsin before onset of illness.

Reported by LH Lauerman, DVM, Alabama Dept of Agriculture and Industries, WE Birch, MD, State Epidemiologist, Alabama Dept of Public Health; H Webster, MD, W Stromberg, PhD, ME Wright, RL Coppedge, MD, Acting State Epidemiologist, Arizona Dept of Health Svcs; R Emmons, MD, R Murray, MD, R Roberto, MD, J Chin, MD, State Epidemiologist, California State Dept of Health Svcs; JK Emerson, DVM, RS Hopkins, MD, State Epidemiologist, Colorado State Dept of Health; A Main, PhD, R Shope, MD, Yale Arbovirus Research Unit, New Haven, MA Markowski, VD Loverde, MD, State Epidemiologist, Connecticut State Dept of Health Svcs; PS Silverman, DrPH, State Epidemiologist, Delaware Dept of Health and Social Svcs; HL Rubin, DVM, Florida Dept of Agriculture and Consumer Svcs, W Bigler, PhD, JJ Sacks, MD, Acting State Epidemiologist, Florida State Dept of Health and Rehabilitative Svcs; J Cole, DVM, University of Georgia, Tifton, RK Sikes, DVM, State Epidemiologist, Georgia Dept of Human Resources; R Martin, DVM, C Langkop, BJ Francis, MD, State Epidemiologist, Illinois State Dept of Public Health; M Sinsko, PhD, CL Barrett, MD, State Epidemiologist, Indiana State Board of Health; DE Wilcox, MD, State Epidemiolgist, Kansas State Dept of Health and Environment; JC McCammon, Louisville and Jefferson County Dept of Health, MW Hinds, MD, State Epidemiologist, Kentucky State Cabinet for Human Resources; L McFarland, DrPH, CT Caraway, DVM, State Epidemiologist, Louisiana State Dept of

Arboviral Encephalitides — Continued

Health and Human Resources; CP Lazar, MD, E Israel, MD, State Epidemiologist, Maryland State Dept of Health and Mental Hygiene; V Berardi, H Maxfield, NJ Fiumara, MD, Massachusetts State Dept of Public Health; H McGee, MPH, KR Wilcox, MD, State Epidemiologist, Michigan State Dept of Public Health; MT Osterholm, PhD, AG Dean, MD, State Epidemiologist, Minnesota State Dept of Health; DL Sykes, QA Long, Gulf Coast Mosquito Control Commission, Gulfport, WE Riecken, MD, State Epidemiologist, Mississippi State Board of Health; HD Donnell, MD, State Epidemiologist, Missouri State Dept of Social Svcs; JK Gedrose, State Epidemiologist, Montana State Department of Health and Environmental Sciences; WJ Crans, PhD, New Jersey Agricultural Experiment Station, New Brunswick, WE Parkin, DVM, State Epidemiologist, New Jersey State Dept of Health; J Montes, HF Hull, MD, JM Mann, MD, State Epidemiologist, New Mexico Health and Environment Dept; M Grayson, PhD, R Deibel, MD, DL Morse, MD, R Rothenberg, MD, State Epidemiologist, New York State Dept of Health; JL Pearson, DrPH, Acting State Epidemiologist, North Dakota State Dept of Health; ED Peterson, M Parsons, MS, TJ Halpin, MD, State Epidemiologist, Ohio State Dept of Health; SG Morin, Rhode Island Dept of Environmental Management; R Keenlyside, MD, J Weisfeld, MD, Acting State Epidemiologist, Rhode Island State Dept of Health; KA Senger, State Epidemiologist, South Dakota Dept of Health; RH Hutcheson, Jr, MD, State Epidemiologist, Tennessee State Dept of Public Health; G Hunt, PhD, Harris County Mosquito Control District, RL Johns, PhD, C Reed, MPH, TL Gustafson, MD, Acting State Epidemiologist, Texas State Dept of Health; JM Kobayashi, MD, State Epidemiologist, Washington State Dept of Social and Health Svcs; JP Davis, MD, State Epidemiologist, Wisconsin State Dept of Health and Social Svcs; National Veterinary Svcs Laboratory, US Dept of Agriculture, Ames, Iowa; Div of Vector-Borne Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: The occurrence this year of only one confirmed SLE case in the central United States was unexpected. Similarities were noted in climatic conditions this year with those prevailing in previous years, when large *Cx. pipiens*-borne SLE outbreaks occurred. A mild, wet winter, cool spring, and hot, dry summer are thought to favor overwintering of virus and expansion of vector populations (*1*). However, this year, only minimal evidence of virus transmission to birds and sentinel chickens was found, and the number of confirmed cases reported to date is unusually low, even for a nonepidemic year.

An outbreak of *Cx. tarsalis*-borne SLE in the southwest was anticipated from entomologic surveys that disclosed large vector populations in flooded areas of Arizona and California. The attack rate in involved communities was similar to rates observed in *Cx. tarsalis*-borne outbreaks in California's central valley in the 1950s (1.0-4.7/100,000) (*2*). The lack of a concommitant WEE outbreak is unexplained.

The age distribution of WEE cases in the upper midwest this year—where infections in infants and children predominated—was typical of WEE outbreaks. Previous investigations in California had documented attack rates in infants that were ten- to twentyfold the attack rate in adults (*2*).

In the Great Lakes states, where encephalitis due to California serogroup viruses (primarily LaCrosse virus) is most prevalent, only approximately 50% of the expected number of cases occurred this year. In 1960-1981, the average number of CE cases in Ohio, Illinois, and Wisconsin was 28, 12, and 15, respectively (*3*). Although this year these states experienced unusually hot, dry weather, the Ohio Vector-Borne Disease Unit demonstrated that recovery of *Ae. triseriatus* larvae from ovitrap sites was similar to last year's rates (*4*); thus, other factors must play a role.

References

1. Monath TP. Epidemiology. In: TP Monath, ed. St. Louis Encephalitis. Washington, D.C.: APHA 1980;289-93.
2. Reeves WC, Hammon WM, Longshore WA Jr, McClure HE, Geib AF. Epidemiology of the arthropod-borne viral encephalitides in Kern County, California, 1943-1952. Univ Calif Publ Public Health 1962;4:1-257.
3. Monath TP. Ecology and control of mosquito-borne arbovirus diseases. In E Kurstak, ed. Control of virus diseases. New York: Marcel Dekker (in press).
4. Ohio Vector News, Ohio Dept of Health, Vol. 2, No. 7/8, 1983.

Measles among Members of a Drum and Bugle Corps — Arkansas, California, Kansas

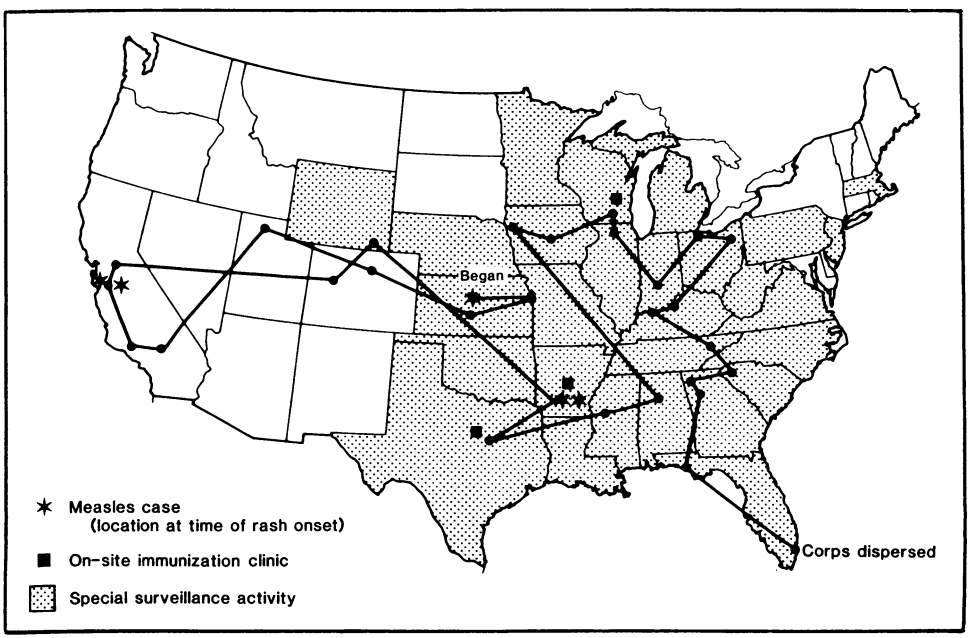
Five cases of measles were reported among 150 members of a drum and bugle corps on summer performance tour of the United States. Rash onsets ranged from June 19, to July 17, 1983. Four cases were confirmed serologically.

The corps members were students from 16 states and England, who ranged in age from 14 to approximately 26 years. All were participating in local, regional, and national performance competitions with more than 100 other drum and bugle corps (with approximately 13,000 members) from the United States, Canada, and England.

The chain of transmission began with an international importation in a 17-year-old English citizen who arrived in the United States on June 17 and joined the drum and bugle corps in Hutchinson, Kansas. Although he gave a history of having received measles vaccine in England, no documentation was available. He had temporary lodging at the home of an American corps member in Kansas and had rash onset June 19. On June 22, he left Hutchinson with the corps as it began its 10,339-mile tour through 24 states (Figure 3). On June 30 and July 2, two additional cases occurred while the corps was in California; one of these patients was the American corps member with whom the English corps member had lodged. On July 17, two additional cases occurred while the corps was in Arkansas. The tour ended on August 19 in Miami, Florida, and the corps dispersed. No additional cases were reported among the other 100 drum and bugle corps.

When the first cases were reported, it was recognized that extensive transmission might occur among members of different corps throughout the country. To interrupt transmission,

FIGURE 3. Itinerary of drum and bugle corps and states in which special surveillance programs were established — United States, June 22-August 19, 1983



Measles — Continued

state immunization programs provided emergency immunization clinics at three competition sites: Arkadelphia, Arkansas, July 19; Cleburne, Texas, July 20; and Whitewater, Wisconsin, July 30 (Figure 3). Vaccine was offered to corps members at the competition as each corps completed its performance; these clinics lasted until 1-2 a.m. Approximately 1,000 corps members received either measles or combined measles-rubella (MR) vaccine, and over 500 additional members showed proof of immunity to measles.* In addition, 28 states established special surveillance for suspected measles cases at the sites of scheduled competitions.

Reported by C Beets, J Miller, JP Lofgren, MD, State Epidemiologist, Arkansas Dept of Health; LG Dales, MD, J Chin, MD, State Epidemiologist, California Dept of Health Svcs; DE Wilcox, MD, State Epidemiologist, Kansas Dept of Health and Environment; Immunization Programs of the following states: Alabama, Arkansas, California, Colorado, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Jersey, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Virginia, West Virginia, Wisconsin, Wyoming; Div of Immunization, Center for Prevention Svcs, CDC.

*For persons born after 1956, written documentation showing date of vaccination with live measles vaccine on or after the first birthday, or a history of physician-diagnosed measles illness.

(Continued on page 567)

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

Disease	43rd Week Ending			Cumulative, 43rd Week Ending		
	October 29, 1983	October 30, 1982	Median 1978-1982	October 29, 1983	October 30, 1982	Median 1978-1982
Aseptic meningitis	303	322	260	9,941	7,776	6,857
Encephalitis: Primary (arthropod-borne & unspec.)	40	48	30	1,449	1,314	1,009
Post-infectious	1	1	1	64	65	181
Gonorrhea: Civilian	17,586	16,596	21,991	740,884	793,712	829,232
Military	491	298	453	20,108	21,984	22,824
Hepatitis: Type A	691	470	551	18,009	18,823	23,198
Type B	430	440	346	18,751	17,843	14,695
Non A, Non B	38	44	N	2,740	1,975	N
Unspecified	162	152	207	6,530	7,164	8,516
Legionellosis	19	6	N	581	500	N
Leprosy	-	3	3	198	171	171
Malaria	11	18	18	671	907	907
Measles: Total*	11	42	42	1,350	1,479	12,496
Indigenous	7	N	N	1,092	N	N
Imported	4	N	N	258	N	N
Meningococcal infections: Total	41	50	35	2,294	2,517	2,234
Civilian	41	50	35	2,279	2,503	2,218
Military	-	-	-	15	14	16
Mumps	65	49	93	2,759	4,564	7,554
Pertussis	28	141	24	1,944	1,423	1,422
Rubella (German measles)	38	15	18	866	2,110	3,435
Syphilis (Primary & Secondary): Civilian	677	675	611	26,737	27,300	22,272
Military	11	13	9	334	365	262
Toxic-shock syndrome	8	N	N	327	N	N
Tuberculosis	496	492	557	19,335	20,981	22,410
Tularemia	8	12	3	264	226	185
Typhoid fever	10	7	9	383	334	432
Typhus fever, tick-borne (RMSF)	18	3	12	1,121	922	1,002
Rabies, animal	83	121	108	5,055	5,291	5,291

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1983		Cum. 1983
Anthrax	-	Plague	36
Botulism: Foodborne (Alaska 1)	14	Poliomyelitis: Total	5
Infant (Wash. 1)	48	Paralytic	5
Other	-	Psittacosis	102
Brucellosis (Ohio 1, Tex. 4)	158	Rabies, human	2
Cholera	1	Tetanus (Ohio 1)	64
Congenital rubella syndrome (S.Dak. 1)	20	Trichinosis (Ohio 2)	30
Diphtheria	3	Typhus fever, flea-borne (endemic, murine)	42
Leptospirosis (Hawaii 1)	40		

*One of the 11 reported cases for this week was imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending October 29, 1983 and October 30, 1982 (43rd week)

Reporting Area	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy	Malaria
		Primary	Post-infectious			A	B	NA,NB	Unspecified			
	1983	Cum. 1983	Cum. 1983	Cum. 1983	Cum. 1982	1983	1983	1983	1983	1983	Cum. 1983	Cum. 1983
UNITED STATES	303	1,449	64	740,884	793,712	691	430	38	162	19	198	671
NEW ENGLAND	17	59	-	19,364	19,131	9	23	-	7	-	3	32
Maine	-	-	-	935	992	-	-	-	-	-	-	1
N.H.	-	5	-	615	651	-	-	-	-	-	2	2
Vt.	-	1	-	373	361	-	1	-	-	-	-	1
Mass.	4	29	-	8,027	8,602	2	8	-	6	-	-	14
R.I.	3	1	-	1,063	1,276	2	1	-	-	-	-	4
Conn.	10	23	-	8,351	7,249	5	13	-	1	-	1	10
MID ATLANTIC	43	112	5	93,814	100,108	53	68	2	30	-	25	91
Upstate N.Y.	32	30	-	15,248	16,541	5	15	1	4	-	-	28
N.Y. City	1	10	-	36,768	41,165	23	5	-	5	-	24	21
N.J.	-	17	-	17,588	18,061	9	28	-	20	-	-	24
Pa.	10	55	5	24,210	24,341	16	20	1	1	-	1	18
E.N. CENTRAL	49	522	20	104,266	113,862	29	43	6	11	15	6	51
Ohio	19	175	9	28,220	30,434	10	20	3	3	14	1	8
Ind.	3	174	1	10,685	13,723	5	11	-	4	-	-	7
Ill.	-	17	7	26,925	32,396	4	-	2	-	1	2	16
Mich.	27	105	-	28,822	27,218	10	12	1	4	-	3	15
Wis.	-	51	3	9,614	10,091	-	-	-	-	-	-	5
W.N. CENTRAL	26	134	9	34,622	37,454	8	19	2	-	1	6	25
Minn.	9	42	1	4,906	5,404	5	5	-	-	-	4	7
Iowa	2	54	-	3,894	3,950	-	4	2	-	-	-	3
Mo.	6	29	-	16,561	17,926	2	10	-	-	-	1	5
N. Dak.	-	2	-	380	493	-	-	-	-	-	-	2
S. Dak.	-	1	2	889	993	1	-	-	-	-	-	1
Nebr.	-	4	-	2,243	2,220	-	-	-	-	-	-	1
Kans.	9	2	6	5,749	6,468	-	-	-	-	1	1	6
S. ATLANTIC	67	200	15	192,315	208,304	45	86	8	10	3	12	111
Del.	-	1	-	3,553	3,459	1	-	-	-	-	-	1
Md.	18	21	-	24,745	25,946	5	16	-	2	1	1	23
D.C.	-	-	-	13,207	12,463	1	1	-	-	-	-	15
Va.	17	48	2	17,737	16,656	1	8	2	2	-	1	26
W. Va.	-	39	-	2,111	2,340	-	-	-	-	-	-	2
N.C.	14	43	-	29,989	32,999	1	8	-	1	-	2	3
S.C.	5	5	-	17,944	20,081	6	15	-	2	-	-	5
Ga.	-	7	1	38,039	41,131	6	8	-	1	-	1	9
Fla.	13	36	12	44,990	53,229	24	30	6	2	2	7	27
E.S. CENTRAL	2	63	1	62,247	68,531	24	18	-	3	-	-	14
Ky.	1	15	-	7,374	9,308	13	2	-	1	-	-	2
Tenn.	-	17	-	25,405	27,171	9	11	-	-	-	-	-
Ala.	1	23	-	19,284	19,921	-	3	-	2	-	-	7
Miss.	-	8	1	10,184	12,131	2	2	-	-	-	-	5
W.S. CENTRAL	25	144	2	105,802	108,454	377	36	3	66	-	28	59
Ark.	1	8	-	8,195	8,913	2	4	-	3	-	-	1
La.	4	17	-	21,034	19,842	5	2	2	1	-	1	8
Okla.	7	29	1	12,159	12,014	171	4	1	2	-	-	10
Tex.	13	90	1	64,414	67,685	199	26	-	60	-	27	40
MOUNTAIN	12	65	4	23,845	26,900	28	19	2	6	-	12	25
Mont.	2	2	-	982	1,103	-	-	-	-	-	-	-
Idaho	-	1	-	1,043	1,292	3	1	-	-	-	-	2
Wyo.	-	2	-	626	780	-	1	-	-	-	-	1
Colo.	8	38	-	6,707	7,217	10	4	-	1	-	2	9
N. Mex.	-	2	-	2,961	3,669	2	2	-	-	-	-	5
Ariz.	-	10	4	6,769	7,075	8	8	1	4	-	9	5
Utah	-	10	-	1,136	1,315	3	3	1	1	-	1	3
Nev.	2	-	-	3,621	4,449	2	-	-	-	-	-	-
PACIFIC	62	150	8	104,609	110,968	118	118	15	29	-	106	263
Wash.	1	13	1	8,011	9,493	4	4	1	-	-	15	13
Oreg.	-	-	4	5,610	6,599	9	3	-	-	-	1	11
Calif.	55	129	3	86,245	89,886	105	105	13	28	-	60	238
Alaska	4	-	-	2,751	2,850	-	3	1	-	-	-	-
Hawaii	2	8	-	1,992	2,140	-	3	-	1	-	30	1
Guam	U	-	-	103	118	U	U	U	U	U	-	2
P.R.	1	1	1	1,893	2,268	5	15	-	8	-	-	2
V.I.	U	-	-	212	237	U	U	U	U	U	-	-
Pac. Trust Terr.	U	-	-	-	388	U	U	U	U	U	-	-

U: Unavailable

TABLE III. (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending October 29, 1983 and October 30, 1982 (43rd week)

Reporting Area	Measles (Rubeola)					Menin-gococcal Infections	Mumps			Pertussis			Rubella		
	Indigenous		Imported*		Total										
	1983	Cum. 1983	1983	Cum. 1983	Cum. 1982	Cum. 1983	1983	Cum. 1983	Cum. 1982	1983	Cum. 1983	Cum. 1982	1983	Cum. 1983	Cum. 1982
UNITED STATES	7	1,092	4	258	1,479	2,294	65	2,759	4,564	28	1,944	1,423	38	866	2,110
NEW ENGLAND	-	3	-	14	14	118	4	123	173	5	66	49	-	15	17
Maine	-	-	-	-	-	9	1	20	41	1	5	4	-	-	-
N.H.	-	-	-	3	3	4	-	22	17	-	9	4	-	4	10
Vt.	-	-	-	-	2	9	-	15	7	-	8	2	-	5	-
Mass.	-	3	-	3	3	39	3	36	72	-	34	23	-	6	2
R.I.	-	-	-	-	-	9	-	14	16	-	5	11	-	-	1
Conn.	-	-	-	8	6	48	-	16	20	4	5	5	-	-	4
MID ATLANTIC	2	74	1	41	162	383	10	231	292	1	340	374	4	142	102
Upstate N.Y.	2	5	-	10	112	119	3	88	74	-	110	201	1	30	49
N.Y. City	-	43	1†	27	42	68	-	33	47	-	52	39	-	86	34
N.J.	-	26	-	1	4	64	6	44	43	-	19	21	-	3	18
Pa.	-	-	-	3	4	132	1	66	128	1	159	113	3	23	1
E.N. CENTRAL	4	639	-	58	77	414	12	1,256	2,353	5	407	295	-	114	188
Ohio	-	72	-	15	1	124	3	545	1,594	2	138	83	-	2	-
Ind.	-	402	-	4	2	48	-	38	37	1	54	20	-	23	29
Ill.	4	163	-	33	24	124	4	146	273	-	113	131	-	49	69
Mich.	-	2	-	5	50	74	5	450	330	2	39	23	-	16	49
Wis.	-	-	-	1	-	44	-	77	119	-	63	38	-	24	41
W.N. CENTRAL	-	1	-	7	49	136	3	153	578	2	118	65	1	40	59
Minn.	-	1	-	-	-	22	1	28	442	2	43	25	-	8	5
Iowa	-	-	-	-	-	16	1	40	34	-	6	8	-	-	-
Mo.	-	-	-	1	2	64	-	21	11	-	15	14	-	-	38
N. Dak.	-	-	-	-	-	4	-	1	-	-	2	-	-	-	-
S. Dak.	-	-	-	-	-	4	-	-	1	-	8	5	-	-	1
Nebr.	-	-	-	-	3	4	1	3	-	-	2	1	-	-	-
Kans.	-	-	-	6	44	22	-	60	90	-	42	12	1	32	15
S. ATLANTIC	-	173	-	31	110	474	6	196	280	1	223	245	1	97	85
Del.	-	-	-	-	-	11	-	8	12	-	5	6	-	-	1
Md.	-	6	-	4	3	48	4	38	30	-	17	63	-	3	34
D.C.	-	-	-	-	1	5	-	-	-	-	-	1	-	-	-
Va.	-	10	-	13	14	71	1	32	38	-	50	27	-	3	12
W. Va.	-	-	-	-	3	2	-	47	97	-	9	9	-	-	2
N.C.	-	-	-	1	1	95	-	12	19	-	27	43	-	10	1
S.C.	-	-	-	4	-	47	1	11	17	-	13	16	-	1	1
Ga.	-	8	-	-	-	75	-	48	21	-	61	38	-	13	15
Fla.	-	149	-	9	88	120	-	-	46	1	41	42	1	67	19
E.S. CENTRAL	-	1	-	5	9	137	2	54	55	2	34	49	1	17	46
Ky.	-	-	-	1	1	29	-	21	18	1	14	5	1	16	28
Tenn.	-	-	-	-	6	47	2	27	22	1	9	26	-	-	2
Ala.	-	1	-	4	2	39	-	2	9	-	5	5	-	1	-
Miss.	-	-	-	-	-	22	-	4	6	-	6	13	-	-	16
W.S. CENTRAL	-	39	-	35	151	242	8	233	211	8	421	92	6	121	115
Ark.	-	5	-	8	-	19	-	2	7	1	20	3	-	-	1
La.	-	-	-	25	2	45	-	45	6	2	12	21	3	13	1
Okla.	-	1	-	-	30	30	-	-	-	5	302	5	-	-	3
Tex.	-	33	-	2	119	148	8	186	198	-	87	63	3	108	110
MOUNTAIN	1	1	-	16	29	98	9	148	101	3	215	64	-	33	78
Mont.	-	-	-	3	-	21	-	5	4	-	1	1	-	6	5
Idaho	1	1	-	10	-	6	-	8	4	-	15	11	-	8	6
Wyo.	-	-	-	-	1	2	1	3	2	-	6	3	-	4	7
Colo.	-	-	-	2	8	34	1	37	17	1	133	17	-	1	6
N. Mex.	-	-	-	-	-	7	-	-	-	-	14	7	-	-	6
Ariz.	-	-	-	1	17	17	5	82	47	2	24	21	-	6	14
Utah	-	-	-	-	3	10	2	8	20	-	22	4	-	7	22
Nev.	-	-	-	-	-	1	-	5	7	-	-	-	-	1	12
PACIFIC	-	161	3	51	878	292	11	365	521	1	120	190	25	287	1,420
Wash.	-	1	3§	20	42	43	-	43	68	-	16	28	-	12	38
Oreg.	-	8	-	2	16	47	-	-	-	-	8	27	1	14	6
Calif.	-	151	-	27	814	193	11	290	427	1	89	107	24	259	1,363
Alaska	-	-	-	2	1	2	-	14	10	-	4	-	-	1	5
Hawaii	-	1	-	-	5	7	-	18	16	-	3	28	-	1	8
Guam	U	1	U	1	6	1	U	1	5	U	-	-	U	-	2
P.R.	-	94	-	-	133	11	-	121	88	-	13	21	1	6	11
V.I.	U	-	U	5	-	-	U	-	4	U	-	-	U	2	1
Pac. Trust Terr.	U	-	U	-	1	-	U	-	6	U	-	-	U	-	-

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

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

TABLE III. (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending October 29, 1983 and October 30, 1982 (43rd week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1983	Cum. 1982	1983	1983	Cum. 1983	Cum. 1983	Cum. 1983	Cum. 1983	Cum. 1983
UNITED STATES	26,737	27,300	8	496	19,335	264	383	1,121	5,055
NEW ENGLAND	574	494	-	20	579	4	16	6	33
Maine	19	7	-	-	32	-	-	-	8
N.H.	19	5	-	-	31	-	-	1	4
Vt.	3	2	-	-	10	-	-	-	2
Mass.	360	330	-	11	305	3	13	2	13
R.I.	19	21	-	1	46	1	-	-	-
Conn.	154	129	-	8	155	-	3	3	6
MID ATLANTIC	3,483	3,696	1	106	3,504	1	68	26	218
Upstate N.Y.	258	391	-	10	583	1	9	6	70
N.Y. City	2,068	2,185	-	25	1,357	-	25	2	-
N.J.	681	530	-	12	733	-	28	8	24
Pa.	476	590	1	59	831	-	6	10	124
E.N. CENTRAL	1,342	1,608	1	73	2,617	4	57	80	434
Ohio	372	259	-	13	410	-	18	43	58
Ind.	102	173	-	11	293	-	3	14	29
Ill.	595	852	-	17	1,127	1	25	14	223
Mich.	199	241	1	23	647	1	10	7	19
Wis.	74	83	-	9	140	2	1	2	105
W.N. CENTRAL	327	459	1	10	594	80	10	59	710
Minn.	125	105	-	3	134	-	2	-	126
Iowa	20	27	-	1	53	-	-	-	174
Mo.	118	257	-	6	290	56	7	32	94
N. Dak.	2	7	-	-	6	-	-	1	75
S. Dak.	11	2	1	-	34	8	-	5	107
Nebr.	15	14	-	-	20	8	-	3	62
Kans.	36	47	-	-	57	8	1	18	72
S. ATLANTIC	7,293	7,502	2	105	3,927	13	55	468	1,822
Del.	31	20	-	1	55	-	-	4	5
Md.	492	409	1	8	308	5	8	39	675
D.C.	317	401	-	2	160	-	3	-	133
Va.	496	509	-	19	415	1	15	63	564
W. Va.	22	26	-	5	119	-	2	12	109
N.C.	712	609	-	12	587	6	4	201	26
S.C.	469	467	-	16	369	-	2	80	30
Ga.	1,279	1,557	-	9	715	1	2	65	185
Fla.	3,475	3,504	1	33	1,199	-	19	4	95
E.S. CENTRAL	1,821	1,895	-	38	1,721	17	10	105	329
Ky.	149	114	-	16	453	1	3	22	73
Tenn.	495	540	-	5	503	11	2	49	177
Ala.	713	704	-	9	446	-	2	24	79
Miss.	464	537	-	8	319	5	3	10	-
W.S. CENTRAL	6,899	7,088	1	61	2,297	107	53	362	915
Ark.	162	177	-	5	277	66	2	42	151
La.	1,432	1,599	-	18	316	3	3	1	27
Okla.	170	154	1	3	212	30	2	226	95
Tex.	5,135	5,158	-	35	1,492	8	46	93	642
MOUNTAIN	573	708	1	12	513	32	18	13	218
Mont.	7	5	-	-	42	5	1	6	66
Idaho	7	25	-	-	23	2	-	2	16
Wyo.	10	16	-	-	11	5	-	2	11
Colo.	138	185	1	-	68	10	1	-	23
N. Mex.	158	167	-	-	95	3	1	-	13
Ariz.	147	191	-	7	211	1	13	1	36
Utah	20	20	-	-	33	5	1	1	10
Nev.	86	99	-	5	30	1	1	1	43
PACIFIC	4,425	3,850	1	71	3,583	6	96	2	376
Wash.	143	142	-	7	204	2	3	-	2
Oreg.	122	93	-	3	153	2	3	-	1
Calif.	4,081	3,507	1	59	2,976	2	87	2	358
Alaska	12	14	-	-	56	-	-	-	15
Hawaii	67	94	-	2	194	-	3	-	-
Guam	-	1	U	U	5	-	-	-	-
P.R.	660	672	-	8	393	-	-	-	47
V.I.	17	26	U	U	2	-	-	-	-
Pac. Trust Terr.	-	-	U	U	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending October 29, 1983 (43rd week)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	698	470	160	29	18	21	52
Boston, Mass.	181	115	42	10	6	8	22
Bridgeport, Conn.	56	39	15	-	1	1	2
Cambridge, Mass.	22	18	4	-	-	-	2
Fall River, Mass.	25	17	7	-	1	-	-
Hartford, Conn.	62	41	13	5	1	2	2
Lowell, Mass.	24	16	7	1	-	-	3
Lynn, Mass.	19	16	2	1	-	-	-
New Bedford, Mass.	29	23	4	-	-	2	2
New Haven, Conn.	67	45	8	7	4	3	2
Providence, R.I.	74	35	29	4	1	5	7
Somerville, Mass.	10	10	-	-	-	-	-
Springfield, Mass.	42	30	12	-	-	-	1
Waterbury, Conn.	22	17	5	-	-	-	2
Worcester, Mass.	65	48	12	1	4	-	7
MID. ATLANTIC	2,521	1,648	564	155	61	92	101
Albany, N.Y.	49	30	9	1	4	5	-
Allentown, Pa.	22	16	4	2	-	-	-
Buffalo, N.Y.	132	83	36	8	1	4	16
Camden, N.J.	41	28	9	1	2	1	1
Elizabeth, N.J.	33	24	7	2	-	-	-
Erie, Pa.†	43	32	7	2	1	1	2
Jersey City, N.J.	53	30	17	3	2	1	1
N.Y. City, N.Y.	1,432	927	321	100	34	50	44
Newark, N.J.	63	39	15	4	2	3	5
Paterson, N.J.	23	11	4	2	1	4	-
Philadelphia, Pa.†	154	86	46	3	5	14	5
Pittsburgh, Pa.†	77	56	15	3	1	2	2
Reading, Pa.	28	23	3	2	-	-	1
Rochester, N.Y.	107	83	12	7	2	3	9
Schenectady, N.Y.	32	27	5	-	-	-	3
Scranton, Pa.†	25	11	11	1	1	1	1
Syracuse, N.Y.	113	74	22	11	4	2	3
Trenton, N.J.	34	24	8	1	1	-	2
Utica, N.Y.	22	15	6	-	-	1	2
Yonkers, N.Y.	38	29	7	2	-	-	4
E.N. CENTRAL	2,204	1,421	531	126	52	74	72
Akron, Ohio	59	44	7	1	3	4	-
Canton, Ohio	49	40	6	1	2	-	-
Chicago, Ill	517	326	135	39	8	9	8
Cincinnati, Ohio	147	98	40	5	-	4	13
Cleveland, Ohio	145	74	46	11	6	8	3
Columbus, Ohio	134	78	37	8	3	8	3
Dayton, Ohio	97	59	27	2	4	5	3
Detroit, Mich.	256	152	65	17	13	9	6
Evansville, Ind.	39	27	5	5	-	2	1
Fort Wayne, Ind.	58	42	12	2	1	1	-
Gary, Ind.	12	1	6	5	-	-	-
Grand Rapids, Mich.	40	31	4	1	2	2	2
Indianapolis, Ind.	162	106	39	6	5	6	4
Madison, Wis.	38	25	5	3	1	4	5
Milwaukee, Wis.	130	89	30	7	-	4	4
Peoria, Ill.	29	20	8	1	-	-	3
Rockford, Ill.	51	31	17	1	1	1	5
South Bend, Ind.	52	41	7	2	1	1	3
Toledo, Ohio	116	87	20	3	2	4	5
Youngstown, Ohio	73	50	15	6	-	2	4
W.N. CENTRAL	676	463	130	32	16	31	24
Des Moines, Iowa	45	32	6	4	2	1	3
Duluth, Minn.	29	22	6	-	-	1	1
Kansas City, Kans.	32	21	4	3	1	3	1
Kansas City, Mo.	108	71	21	5	2	5	1
Lincoln, Nebr.	28	19	5	2	1	1	2
Minneapolis, Minn.	79	54	13	6	1	5	-
Omaha, Nebr.	68	48	14	1	2	3	4
St. Louis, Mo.	173	123	37	5	1	7	6
St. Paul, Minn.	59	42	10	2	1	4	2
Wichita, Kans.	55	31	14	4	5	1	4
S. ATLANTIC	1,197	727	307	83	32	48	37
Atlanta, Ga.	134	74	36	17	3	4	3
Baltimore, Md.	284	173	85	12	7	7	6
Charlotte, N.C.	67	44	13	6	2	2	2
Jacksonville, Fla.	110	62	30	8	4	6	8
Miami, Fla.	103	63	26	10	1	3	2
Norfolk, Va.	39	20	11	1	-	7	2
Richmond, Va.	84	46	23	4	3	8	6
Savannah, Ga.	21	14	7	-	-	-	-
St. Petersburg, Fla.	108	86	19	1	1	1	3
Tampa, Fla.	58	33	11	6	1	7	3
Washington, D.C.	135	76	32	16	10	1	2
Wilmington, Del.	54	36	14	2	-	2	-
E.S. CENTRAL	765	469	190	39	28	38	38
Birmingham, Ala.	112	74	28	3	2	5	4
Chattanooga, Tenn.	66	46	10	8	-	2	4
Knoxville, Tenn.	49	33	12	-	3	1	2
Louisville, Ky.	131	78	38	3	4	7	13
Memphis, Tenn.	192	121	36	10	8	17	9
Mobile, Ala.	62	32	20	7	3	-	4
Montgomery, Ala.	35	21	11	2	1	-	1
Nashville, Tenn.	118	64	35	6	7	6	1
W.S. CENTRAL	1,530	904	347	135	80	64	45
Austin, Tex.	51	35	9	6	1	-	1
Baton Rouge, La.	64	41	14	3	5	1	3
Corpus Christi, Tex.	24	14	5	4	1	-	-
Dallas, Tex.	196	119	43	13	14	7	2
El Paso, Tex.	54	39	6	4	3	2	4
Fort Worth, Tex.	100	69	18	9	3	1	3
Houston, Tex.	554	297	125	64	37	31	17
Little Rock, Ark.	49	31	12	1	1	4	1
New Orleans, La.	128	80	30	12	3	3	-
San Antonio, Tex.	175	101	51	10	6	7	8
Shreveport, La.	57	34	13	4	4	2	2
Tulsa, Okla.	78	44	21	5	2	6	4
MOUNTAIN	638	426	114	48	25	25	28
Albuquerque, N.Mex.	86	60	13	6	6	1	4
Colo. Springs, Colo.	38	25	8	3	1	1	3
Denver, Colo.	132	79	32	9	6	6	3
Las Vegas, Nev.	66	45	17	3	1	-	4
Ogden, Utah	29	21	-	4	3	1	6
Phoenix, Ariz.	131	85	21	12	4	9	2
Pueblo, Colo.	22	17	3	2	-	-	2
Salt Lake City, Utah	43	24	6	3	4	6	-
Tucson, Ariz.	91	70	14	6	-	1	4
PACIFIC	1,750	1,126	376	130	41	77	88
Berkeley, Calif.	18	9	4	2	-	3	1
Fresno, Calif.	79	43	21	6	7	2	5
Glendale, Calif.	29	18	6	3	1	1	-
Honolulu, Hawaii	67	40	14	5	4	4	7
Long Beach, Calif.	95	62	15	9	2	7	6
Los Angeles, Calif.	425	275	96	39	5	10	11
Oakland, Calif.	72	47	14	8	2	1	2
Pasadena, Calif.	30	24	3	-	-	3	-
Portland, Oreg.	106	72	21	4	2	7	5
Sacramento, Calif.	76	44	24	3	-	5	7
San Diego, Calif.	133	89	26	8	5	5	12
San Francisco, Calif.	148	96	26	18	2	6	3
San Jose, Calif.	188	122	43	10	4	9	17
Seattle, Wash.	150	101	32	8	3	6	1
Spokane, Wash.	47	35	6	1	2	3	7
Tacoma, Wash.	87	49	25	6	2	5	4
TOTAL	11,979††	7,654	2,719	777	353	470	485

* 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 4 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.

Measles – Continued

Editorial Note: Although only four secondary measles cases occurred, this outbreak illustrates the potential for more extensive transmission across state lines when measles occurs in a highly mobile population, as has been reported previously (*1*). In this instance, although the originally affected group traveled over 10,000 miles in 8 weeks, extensive transmission did not occur. Most of the states they visited continued to be free of measles transmission.

At the competition sites, it was difficult to assess the immunity status of these teenagers and young adults; most could not show documentation of immunity to measles. Considering the high communicability of measles and the frequent face-to-face contact of corps members who traveled together, the limited extent of the outbreak probably resulted from preexisting high immunity levels among the corps members, rather than from the vaccination clinics. However, this was only known in retrospect. It is estimated that, nationally, 5%-15% of young adults may be susceptible to measles (*2*)—sufficient to sustain transmission for several generations, given adequate exposure. Since many of the corps members were in this age group, it was important to provide immunizations to members who might have been exposed to measles. The emergency immunization clinics were held until after midnight—when the corps members were returning to their buses—to maximize participation and minimize interference with the competitions. If documentation of measles immunity had been required of members before participation, such clinics would have been unnecessary.

Outbreaks from measles importations have been described previously (*3*), and imported measles cases continue to cause limited transmission in the United States. Communities can protect themselves from importations by achieving and maintaining high immunization levels. Investigations of imported cases should include a search for susceptible contacts at all points of the traveler's itinerary, as well as in the local community. Rapid, effective communication between many states and a highly motivated and responsive staff played a major role in the containment of this outbreak.

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Current Trends

Infant Mortality in a Rural Health District — Georgia

In 1979, the infant mortality rate (IMR) in a south Georgia health district, a rural, 16-county area covering 5,943 square miles with a population of 249,000, dropped and remained relatively low in 1980, compared with rates during the preceding 5 years (Figure 4). The number of births and deaths for infants born 1974-1978 and 1979-1980 were calculated for three birthweight categories: less than 1,500g, 1,500-2,499g, and 2,500g or greater (Table 1). Although infants with birth weights greater than 2,500g had the lowest mortality rates, they represented 45% of deaths in 1974-1978 and 38% in 1979-1980.

To determine the components of the decline in IMR, a computerized registry of linked birth and infant-death certificates, maintained by the Georgia Department of Human Resources, was used (*1*). The greatest relative decline in mortality occurred among infants with birth weights 1,500-2,499g and 2,500g or greater. If birthweight-specific neonatal and post-

Infant Mortality — Continued

neonatal mortality rates* for 1974-1978 had remained unchanged, 69 additional deaths would have been expected in 1979-1980 among infants with known birth weights (Table 2). Nearly two-thirds (43/69) of the difference between observed and expected deaths occurred in the 2,500g or greater birthweight category. For infants 1,500-2,499g and 2,500g or greater, improvements during the neonatal and postneonatal periods were approximately equal, while for smaller infants, improvement was limited to the neonatal period. When specific causes of death were examined for infants 2,500g or greater (Table 3), decreases in deaths due to infections and birth trauma/asphyxia/hypoxia contributed the most to the decline in neonatal deaths, and a decrease in deaths due to infections was the greatest contributor to the decrease in postneonatal deaths.

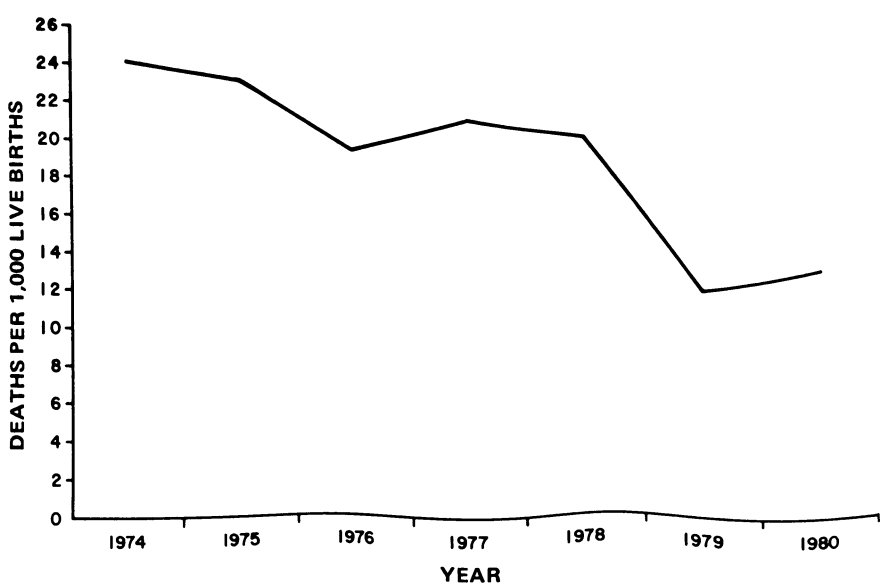
The IMR declined from 16.0 to 9.1 for white infants and from 30.4 to 19.1 for infants of other races, while the racial composition of births remained constant. The percentage of women delivering infants at high risk for neonatal death did not decrease (*2*). Ninety-four percent of the decline in mortality was attributable to improved survival within birthweight categories, and 6% to a shift in the birthweight distribution (*3*). The decrease in IMR was not associated with a parallel increase in admissions to intensive care units for newborns.

Reported by JT Holloway, Southeast Health Unit, Waycross, S Zaro, MPH, Family Health Svcs, RK Sikes, DVM, State Epidemiologist, Georgia Dept of Human Resources; Div of Field Services, Epidemiology Program Office, Div of Reproductive Health, Center for Health Promotion and Education, Birth Defects Br, Center for Environmental Health, CDC.

Editorial Note: Most of the recent decline in U.S. neonatal mortality has been attributed to improved survival of infants with birth weights lower than 2,500g (*4,5*). In this rural health district, where the IMR had been substantially higher than rates in the remainder of Georgia and the nation, most of the decline in infant mortality was due to improved neonatal and post-

*Neonatal mortality rate = deaths in infants < 28 days of age per 1,000 live births. Postneonatal mortality rate = deaths in infants 28 days to 1 year of age per 1,000 neonatal survivors.

FIGURE 4. Infant mortality rate — rural Georgia health district, 1974-1980



Infant Mortality — Continued

neonatal survival for infants 2,500g or greater at birth. Within this group, decreases in neonatal mortality due to birth trauma/asphyxia/hypoxia may reflect improved intrapartum care, and decreases in neonatal and postneonatal deaths due to infections may reflect improved obstetric and infant care. Changes in IMR accompanied efforts to enhance basic prenatal, intrapartum, and postnatal services for women and infants. In 1975, this health district began a program providing routine prenatal and infant care as a precondition for receiving benefits from a nutrition program for mothers and infants. By 1979, the program was in effect in all 16 counties and enrolled approximately 30% of the district's pregnant women. Additionally, physicians in each county were identified who would offer low-cost obstetric care for high-risk, medically indigent women. However, it is not clear why the sharp drop occurred in 1979. Local and state health officials are conducting further studies to assess the contribution of participation in the supplemental nutrition program and other factors to the decline in infant deaths.

Linking birth and death certificates permits the use of maternal and infant characteristics at birth, particularly birth weight, in describing infant mortality. Analysis of birth weight, period-of-death, and cause-specific mortality rates forms a basis for implementing more appropriate strategies for preventing infant deaths and enhancing the evaluation of these programs.

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TABLE 1. Births and infant deaths — rural Georgia health district, 1974-1978 and 1979-1980

Birth weight	Births	%*	Deaths	%†	IMR§	RR (95% CI)¶
< 1,500g						
1974-1978	240	1.2	145	32.6	604.2	
1979-1980	93	1.1	50	47.2	537.6	0.9 (0.7-1.1)
1,500-2,499g						
1974-1978	1,449	7.0	87	19.6	60.0	
1979-1980	558	6.6	15	14.2	26.9	0.4 (0.3-0.8)
≥ 2,500g						
1974-1978	18,832	91.6	202	45.4	10.7	
1979-1980	7,761	92.2	40	37.7	5.2	0.5 (0.3-0.7)
Total**						
1974-1978	20,568	100.0	445	100.0	21.6	
1979-1980	8,415	100.0	106	100.0	12.6	0.6 (0.5-0.7)

*Percentage of total births.

†Percentage of total deaths.

§Infant mortality rate.

¶Relative risk of death in 1979-1980 compared with that in 1974-1978.

**Includes infants with unknown birth weights.

Infant Mortality — Continued

TABLE 2. Expected* minus observed deaths — rural Georgia health district, 1979-1980

Birth weight	Neonatal	Postneonatal	Total†
< 1,500g	8	-1	7
1,500-2,499g	9	10	19
> 2,500g	23	21	43
Total†	39	30	69

*Expected deaths in 1979-1980 = (mortality rate in 1974-1978) x (births in 1979-1980).
†Totals may not equal sums of values in table due to rounding.

TABLE 3. Expected minus observed deaths for infants with birth weights 2,500g or greater, by cause of death — rural Georgia health district, 1979-1980

Cause of death*	Neonatal	Postneonatal	Total†
Birth trauma/hypoxia/asphyxia	6	0	6
Respiratory distress syndrome/ bronchopulmonary dysplasia	4	0	4
Other perinatal causes	0	0	0
Birth defects	1	4	6
Infections	8	13	21
Sudden infant death syndrome	2	3	5
External causes	0	1	1
Other/unknown causes	1	0	0
Total†	23	21	43

*Causes of death based on the International Classification of Diseases, Eighth Revision, for deaths in 1974-1978 and Ninth Revision for deaths in 1979-1981.
†Totals may not equal sums of values in table due to rounding.

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The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: ATTN: Editor, *Morbidity and Mortality Weekly Report,* Centers for Disease Control, Atlanta, Georgia 30333.

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