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MORBIDITY AND MORTALITY WEEKLY REPORT

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Epidemiologic Notes and Reports

Measles — Texas

During the first 17 weeks (through May 2) of 1981, 94 cases of measles were reported from Hidalgo (81 cases) and Cameron counties (13 cases) in south Texas. This is the second largest measles outbreak reported to CDC this year. With only 0.22% of the U.S. population, these 2 counties accounted for 8.9% of all measles cases reported in the United States during this period. The measles incidence rate for Hidalgo County during the first 17 weeks of 1981 was more than 80 times the rate for the entire United States (38.9 vs. 0.47 cases per 100,000 population). Measles transmission is widespread throughout these counties and has accelerated during the past 3 weeks.

The greatest proportion of cases has occurred in young children. Of the 94 cases reported, 42 (44.7%) are in children <15 months old, 31 (33.0%) in children 15 months to 4 years old, 11 (11.7%) in 5- to 9-year-olds, 7 (7.4%) in 10- to 14-year-olds, 2 (2.1%) in persons 15 to 19 years old, and 1 (1.1%) in a person ≥ 20 years. Thus, almost half of the patients are below the age (15 months) at which measles vaccine is routinely recommended. Almost four-fifths (77.7%) are of preschool age (<5 years old).

Hospitalizations for measles and for measles complicated by pneumonia were common among the reported cases. Of the 94 patients, 26 (27.7%) required hospitalization including 15 (16.0%) who had pneumonia. All cases of pneumonia occurred in children under 2 years of age. Of the 42 children under 15 months, 19 (45.2%) were hospitalized including 12 (28.6%) who had pneumonia.

A number of cases in the outbreak occurred in dependents of migrant workers. The initial patient was a 17-month-old child who had onset of rash on February 9. This child initiated 2 independent chains of transmission through visits to 2 different clinics for migrants. In 1 of these instances, the child transmitted measles to another child, a 16-month-old. The second child was admitted to a hospital during the prodromal stage of measles and was placed next to a 13-month-old child who was being treated for pneumonia. This third child subsequently developed measles and died on March 22 with complications of encephalitis, pneumonia, myocarditis and pancytopenia; this is the only measles death reported in the United States this year.

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Editorial Note: This outbreak has several unique features. The age distribution of cases is substantially different from that of measles cases nationwide. In 1979, the last year for which age data on measles cases are available nationwide, approximately 80% of cases occurred in children >5 years of age (1). In this outbreak, almost 80% of cases are in

Measles — Continued

children <5 years of age, and almost half are in children under 15 months, the age at which measles vaccine is routinely administered in this country. There are several probable reasons for the occurrence of measles in this young age group: transmission in medical settings, including both clinics and hospitals; transmission in day-care settings; and spread within family and extended-family groups.

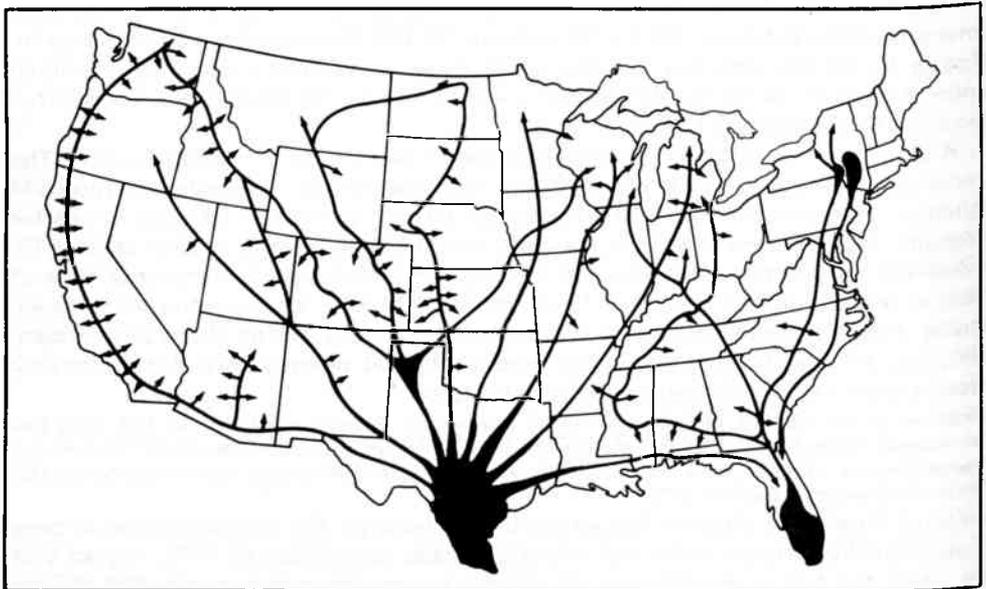
The severe morbidity associated with the outbreak is also unusual. Hospitalizations and cases of pneumonia were frequent, particularly in children under 15 months old. The age of the fatal case—13 months—is within the age range for which mortality from this disease is highest.

Many of the cases in this outbreak occurred in children of migrant workers. The largest population of migrant workers in the United States resides in south Texas during the winter months. They have now begun moving north to other areas (indicated on Figure 1). Thus, measles could potentially be introduced into many areas that are currently measles free. (Through the first 16 weeks [April 25] of 1981, 95% of the nation's 3,144 counties reported no measles activity.)

The state of Texas is following Immunization Practices Advisory Committee (ACIP) recommendations for the control of measles (2). Since exposure of infants to natural measles is likely, vaccination of infants as young as 6 months of age is underway in counties bordering Mexico and in other counties experiencing measles activity.

CDC and the Office of Migrant Health (Bureau of Community Health Services, U.S. Public Health Service) are recommending that all migrant dependents who were born since 1957—regardless of where they are now residing—should have documentation of immunity to measles (that is, documented history of vaccination with live measles vaccine after the first birthday or documented history of physician-diagnosed measles). Persons

FIGURE 1. Schematic diagram of travel patterns of migrant agricultural workers



Source: Office of Migrant Health, U.S. Public Health Service.

Measles — Continued

born before 1957 have probably been infected naturally. It is also now being recommended for this population that infants aged 6 months through 14 months be vaccinated; those vaccinated before their first birthday should be revaccinated when they are 15 months of age. These efforts are being coordinated by the Office of Migrant Health, CDC, and state and local health departments. The migrant worker population is highly mobile and may reside only transiently in any one location. Therefore, rapid (same-day) case-reporting systems need to be devised and implemented so that prompt follow-up and control measures can be instituted within 48 hours. Vaccination certificates should be issued at the time of vaccination to avoid repeat vaccinations at subsequent locations.

References

1. CDC. Measles—United States, 1977-1980. MMWR 1980;29:598-9.
2. Immunization Practices Advisory Committee. Measles prevention. MMWR 1978;27:427-30, 435-7.

Salmonellosis Associated with Raw Milk — Montana

From June 25-August 3, 1980, an outbreak of enteritis caused by a multiresistant *Salmonella typhimurium* occurred in 105 persons who drank raw milk from a local dairy in Montana. Isolates from 77 patients were confirmed as *Salmonella* group b; 22 were serotyped as *S. typhimurium*. All of these isolates were resistant to tetracycline, ampicillin, kanamycin, streptomycin, sulfonamides, and cephalothin.

The median age for persons with confirmed cases was 14 years (range 3 weeks-71 years). The following symptoms were noted: diarrhea (96%), fever (92%), abdominal pain (86%), headache (66%), chills (50%), nausea (49%), and vomiting (32%).

Raw milk was ingested in the 3 days before onset of illness by 59 of the 77 persons with confirmed cases. A matched-pair case-control study of 36 ill persons and age-, sex-, and neighborhood-matched controls showed a significant association ($p < 0.001$, McNemar test) between drinking raw milk and being ill. A group of 19 children and 4 adults visited the dairy on July 2; each drank 2 oz. of raw milk. One child became ill with diarrhea 72 hours later. Two weeks after the visit, 6 of 13 members of this group (including the symptomatic child) were found to be excreting *Salmonella*.

The dairy produces about 3,000 gallons of raw milk each week. It is the least expensive milk on sale in the area and is sold only at the dairy. Multiresistant *S. typhimurium* was isolated from 2 of 6 unopened milk samples obtained in the period July 8-19. Extensive environmental culturing did not show how the milk had been contaminated. No salmonellae were isolated from fecal specimens from dairy cattle, from water and feed samples, from fecal specimens from dairy employees, or from swabs from milking machinery. The cattle feed did not contain antimicrobials, and no signs of mastitis among the milk cows were reported.

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Editorial Note: The milk at this dairy caused a large outbreak of salmonellosis, although there were no obvious breaches in proper milking technique or dairy husbandry practice. Raw milk, even when strictly controlled or certified, may be contaminated with *Sal-*

Salmonellosis - Continued

monella (1). In Scotland, where 10% of the milk consumed is unpasteurized, 29 raw-milk-associated *Salmonella* outbreaks involving 2,428 persons were recognized in the period 1970-1979 (2). *S. typhimurium* was isolated in 19 (66%) of these milkborne outbreaks.

In the United States, *S. typhimurium* is the species of *Salmonella* most frequently isolated from cattle (43% of isolates), but unlike *S. dublin*, which is host specific to cattle, *S. typhimurium* has been isolated just as frequently from other domestic animals (3). In a random sample of *S. typhimurium* strains isolated in 19 states in the period 1979-1980, CDC investigators found that 52 of 308 (17%) were resistant to 1 or more antimicrobial agents. Another study showed that of the *Salmonella* species, *S. typhimurium* was the most frequently resistant to antimicrobials; it also showed that the most common antibiotic-resistance pattern for multiresistant salmonellae (20.4% of the isolates) was that seen in the outbreak reported here (4).

References

1. Werner SB, Humphrey GL, Kamei I. Association between raw milk and human *Salmonella dublin* infection. Br Med J 1979;2:238-41.
2. Sharp JCM, Paterson GM, Forbes GI. Milk-borne salmonellosis in Scotland. J Infect Dis 1980; 2:333-40.
3. CDC. *Salmonella* surveillance annual summary 1978. Issued Jan 1981.
4. Ryder RW, Blake PA, Murlin AC, et al. Increase in antibiotic resistance among isolates of *Salmonella* in the United States, 1967-1975. J Infect Dis 1980;142:485-91.

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

[Cumulative totals include revised and delayed reports through previous weeks.]

DISEASE	18th WEEK ENDING		MEDIAN 1976-1980	CUMULATIVE, FIRST 18 WEEKS		
	May 9 1981	May 3 1980		May 9 1981	May 3 1980	MEDIAN 1976-1980
Aseptic meningitis	87	61	43	1,134	1,096	659
Brucellosis	8	3	3	46	52	52
Chickenpox	6,331	6,285	6,264	113,714	102,024	106,342
Diphtheria	-	1	1	3	2	27
Encephalitis: Primary (arthropod-borne & unsp.)	17	11	13	242	209	198
Post-infectious	3	3	4	31	60	60
Hepatitis, Viral: Type B	424	334	280	6,637	5,596	5,223
Type A	493	430	546	8,663	9,308	10,148
Type unspecified	245	215	158	3,840	3,793	3,080
Malaria	53	16	14	447	512	152
Measles (rubella)	187	705	1,047	1,252	6,882	12,313
Meningococcal infections: Total	78	54	54	1,627	1,160	1,003
Civilian	78	54	52	1,624	1,151	994
Military	-	-	-	3	9	6
Mumps	89	244	488	1,876	4,758	8,141
Pertussis	19	40	24	354	366	366
Rubella (German measles)	71	140	697	1,018	1,839	6,758
Tetanus	1	1	2	15	16	15
Tuberculosis	468	515	611	8,955	8,793	9,531
Tularemia	5	4	3	43	37	37
Typhoid fever	5	5	5	155	101	122
Typhus fever, tick-borne (Rky. Mt. spotted)	30	10	11	77	35	40
Veneral diseases:						
Gonorrhea: Civilian	19,213	17,860	19,666	332,961	324,076	324,076
Military	478	551	675	9,635	9,259	9,259
Syphilis, primary & secondary: Civilian	505	442	417	10,240	9,062	8,347
Military	2	9	6	118	125	106
Rabies in animals	141	160	68	2,384	2,090	980

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1981		CUM. 1981
Anthrax	-	Poliomyelitis: Total	-
Botulism (Calif. 2)	19	Paralytic	-
Cholera	-	Psittacosis (Upstate N.Y.; 4, Mich. 1)	30
Congenital rubella syndrome	5	Rabies in man	-
Leprosy (Calif. 1, Hawaii 1)	74	Trichinosis (Mass. 1, N.Y. City 4, N.J. 1, Va. 1)	72
Leptospirosis	14	Typhus fever, flea-borne (endemic, murine) (Tex. 2)	6
Plague	2		

All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending May 9, 1981 and May 3, 1980 (18th week)

REPORTING AREA	ASEPTIC MENIN- GITIS	BRU- CEL- LOSIS	CHICKEN- POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
						Primary		Post-in- fectious	B	A	Unspecified		
						1981	1980						
UNITED STATES	87	8	6,331	-	3	17	11	3	424	493	245	53	447
NEW ENGLAND	1	-	1,103	-	-	1	2	-	14	14	8	1	23
Maine	-	-	216	-	-	-	-	-	1	2	1	-	1
N.H.	-	-	83	-	-	-	-	-	-	4	-	-	3
Vt.	-	-	63	-	-	-	-	-	-	-	-	-	2
Mass.	1	-	403	-	-	-	1	-	3	6	7	-	11
R.I.	-	-	166	-	-	-	-	-	3	1	-	-	1
Conn.	-	-	172	-	-	1	1	-	7	1	-	1	5
MID. ATLANTIC	12	2	459	-	-	2	1	-	66	57	20	6	41
Upstate N.Y.	3	1	206	-	-	1	1	-	14	7	2	1	11
N.Y. City	6	-	83	-	-	-	-	-	7	6	6	1	15
N.J.	-	-	NN	-	-	-	-	-	36	34	11	2	10
Pa.	3	1	170	-	-	1	-	-	9	10	1	2	5
E.N. CENTRAL	3	-	1,689	-	-	-	2	-	48	46	11	2	14
Ohio	-	-	270	-	-	-	-	-	12	6	7	-	3
Ind.	1	-	NA	-	-	-	-	-	9	7	-	1	5
Ill.	-	-	659	-	-	-	-	-	13	19	2	1	2
Mich.	2	-	475	-	-	2	-	-	9	14	2	-	4
Wis.	-	-	285	-	-	-	-	-	5	-	-	-	-
W.N. CENTRAL	3	-	725	-	-	-	-	1	12	8	8	1	12
Minn.	-	-	-	-	-	-	-	-	1	2	1	-	3
Iowa	1	-	326	-	-	-	-	1	2	3	-	-	2
Mo.	1	-	19	-	-	-	-	-	7	1	6	-	1
N. Dak.	-	-	51	-	-	-	-	-	-	-	-	-	1
S. Dak.	-	-	60	-	-	-	-	-	-	1	-	-	1
Nabr.	1	-	4	-	-	-	-	-	1	-	1	-	-
Kans.	1	-	265	-	-	-	-	-	1	-	-	1	4
S. ATLANTIC	13	-	923	-	1	2	2	1	90	60	22	9	49
Del.	-	-	21	-	-	-	-	-	-	1	-	-	-
Md.	1	-	245	-	-	-	1	-	14	5	4	-	6
D.C.	-	-	1	-	-	-	-	-	1	1	-	-	1
Va.	1	-	25	-	-	-	-	-	16	2	1	1	10
W. Va.	-	-	211	-	-	-	-	-	2	4	-	2	2
N.C.	1	-	NN	-	-	1	-	-	9	9	2	1	3
S.C.	-	-	12	-	-	2	-	-	8	2	-	1	1
Ga.	3	-	11	-	-	-	-	-	20	17	-	1	7
Fla.	7	-	397	-	1	-	-	1	20	19	15	3	19
E.S. CENTRAL	11	1	188	-	-	1	-	-	16	12	3	-	2
Ky.	6	-	126	-	-	-	-	-	-	-	-	-	-
Tenn.	3	1	NN	-	-	-	-	-	9	7	1	-	-
Ala.	2	-	57	-	-	1	-	-	5	1	2	-	1
Miss.	-	-	5	-	-	-	-	-	2	4	-	-	1
W.S. CENTRAL	21	4	518	-	-	4	2	-	26	102	60	2	32
Ark.	1	-	2	-	-	-	-	-	2	2	-	-	1
La.	-	-	NN	-	-	-	-	-	5	27	9	-	2
Okla.	4	1	-	-	-	2	-	-	4	10	1	-	3
Tex.	16	3	516	-	-	2	2	-	15	63	50	2	26
MOUNTAIN	1	-	93	-	1	2	1	-	23	48	38	1	13
Mont.	-	-	-	-	1	-	-	-	-	3	-	-	-
Idaho	-	-	-	-	-	-	-	-	-	7	-	-	-
Wyo.	-	-	8	-	-	-	-	-	1	1	-	-	-
Colo.	-	-	-	-	-	1	1	-	11	21	5	-	4
N. Mex.	-	-	-	-	-	-	-	-	-	4	2	-	-
Ariz.	-	-	NN	-	-	-	-	-	4	10	23	1	4
Utah	1	-	8	-	-	1	-	-	-	-	5	-	2
Nev.	-	-	77	-	-	-	-	-	7	2	3	-	3
PACIFIC	22	1	633	-	1	5	1	1	129	146	75	31	261
Wash.	-	-	455	-	-	1	-	1	9	13	5	3	16
Oreg.	3	-	7	-	-	-	-	-	2	6	1	-	8
Calif.	16	1	92	-	-	4	-	-	106	127	69	28	233
Alaska	-	-	13	-	1	-	-	-	8	-	-	-	1
Hawaii	3	-	66	-	-	-	1	-	4	-	-	-	3
Guam	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
P.R.	-	-	14	-	-	-	-	-	5	-	-	-	3
V.I.	-	-	-	-	-	-	-	-	-	-	-	-	1
Pac. Trust Terr.	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-

NN: Not notifiable.

NA: Not available.

All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III (Cont. d). Cases of specified notifiable diseases, United States, weeks ending May 9, 1981 and May 3, 1980 (18th week)

REPORTING AREA	MEASLES (RUBELLA)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	1981	1981	CUM. 1981	CUM. 1981
UNITED STATES	187	1,252	6,882	78	1,627	1,160	89	1,876	19	71	1,018	15
NEW ENGLAND	9	38	490	4	112	72	5	93	7	5	75	1
Maine	1	3	21	-	18	2	1	17	-	-	31	-
N.H.	-	4	227	1	11	5	-	9	6	1	17	-
Vt.	-	1	203	-	5	8	-	4	-	-	-	-
Mass.	8	24	27	1	26	24	3	26	1	4	22	-
R.I.	-	-	2	-	9	6	-	17	-	-	-	-
Conn.	-	6	10	2	43	27	1	20	-	-	5	1
MID. ATLANTIC	42	371	2,025	12	199	187	15	235	-	9	126	1
Upstate N.Y.	4	180	391	7	75	66	1	52	-	2	54	-
N.Y. City	2	30	517	4	29	53	3	33	-	5	29	1
N.J.	4	38	407	-	46	38	-	63	-	2	39	-
Pa.	32	123	710	1	49	30	11	87	-	-	4	-
E.N. CENTRAL	1	59	986	10	180	135	28	563	2	5	219	1
Ohio	-	15	148	3	62	51	6	84	-	-	-	-
Ind.	-	3	50	5	27	24	-	70	1	-	61	-
Ill.	1	15	189	-	45	17	-	94	-	-	58	-
Mich.	-	25	172	2	42	35	12	228	1	-	29	1
Wis.	-	1	427	-	4	8	10	87	-	5	71	-
W.N. CENTRAL	1	5	843	3	68	46	3	142	1	2	55	2
Minn.	1	2	656	-	27	12	1	5	-	-	6	1
Iowa	-	1	19	1	13	5	1	36	-	-	-	-
Mo.	-	-	59	2	18	19	-	22	-	-	3	1
N. Dak.	-	-	-	-	1	-	-	-	-	-	-	-
S. Dak.	-	-	-	-	2	4	-	-	-	-	-	-
Nebr.	-	1	59	-	-	-	-	3	-	-	1	-
Kans.	-	1	50	-	7	5	1	75	1	2	45	-
S. ATLANTIC	15	268	1,314	15	407	283	9	250	2	4	95	2
Del.	-	-	1	-	4	2	-	3	-	-	-	-
Md.	-	1	32	2	24	26	1	48	1	-	1	-
D.C.	-	-	-	-	1	1	-	-	-	-	-	-
Va.	-	3	210	3	47	22	1	60	-	-	4	-
W. Va.	-	7	6	-	17	8	2	49	-	-	16	-
N.C.	-	4	93	4	63	56	1	5	-	-	4	-
S.C.	-	-	120	1	53	36	-	6	-	-	6	1
Ga.	4	84	599	3	67	58	2	25	1	-	26	-
Fla.	11	169	253	2	131	74	2	54	-	4	38	1
E.S. CENTRAL	-	-	130	7	129	110	1	54	-	1	21	1
Ky.	-	-	34	4	41	33	1	23	-	1	12	-
Tenn.	-	-	18	2	38	25	-	18	-	-	9	-
Ala.	-	-	17	1	37	32	-	12	-	-	-	1
Miss.	-	-	61	-	13	20	-	1	-	-	-	-
W.S. CENTRAL	109	310	539	14	287	126	8	115	2	9	75	3
Ark.	-	-	10	-	20	8	-	-	-	-	-	1
La.	-	-	7	-	66	46	-	3	1	1	8	-
Okla.	-	6	421	-	24	11	-	-	-	-	-	1
Tex.	109	304	101	14	177	61	8	112	1	8	67	1
MOUNTAIN	2	19	128	3	56	42	3	77	2	1	49	1
Mont.	-	-	1	1	4	1	1	4	1	-	1	-
Idaho	-	-	-	-	3	3	-	4	-	-	2	-
Wyo.	-	-	-	-	-	2	1	1	-	-	1	-
Colo.	1	5	6	2	27	12	-	36	-	1	24	-
N. Mex.	1	3	7	-	4	6	-	-	-	-	2	-
Ariz.	-	2	72	-	12	7	1	12	-	-	11	1
Utah	-	-	39	-	4	1	-	9	1	-	3	-
Nev.	-	9	3	-	2	10	-	11	-	-	5	-
PACIFIC	8	182	427	10	189	159	17	347	3	35	303	3
Wash.	-	1	127	3	37	24	5	103	3	6	51	-
Oreg.	1	1	-	3	25	33	2	43	-	4	19	-
Calif.	7	178	291	4	119	100	10	188	-	25	229	3
Alaska	-	-	5	-	4	2	-	4	-	-	-	-
Hawaii	-	2	4	-	4	-	-	9	-	-	4	-
Guam	NA	1	3	-	-	1	NA	1	NA	NA	-	-
P.R.	10	143	51	-	3	7	1	56	-	-	3	-
V.I.	-	4	5	-	-	1	-	4	-	-	-	-
Pac. Trust Terr.	NA	-	4	-	-	-	NA	4	NA	NA	1	-

NA: Not available.

All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending May 9, 1981 and May 3, 1980 (18th week)

REPORTING AREA	TUBERCULOSIS		TULA- REMIA	TYPHOID FEVER		TYPHUS FEVER (Tick borne) (RMSF)		VENEREAL DISEASES (Civilian)						RABIES (In Animals)	
								GONORRHEA			SYPHILIS (Pri. & Sec.)				
	1981	CUM. 1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981
UNITED STATES	468	8,955	43	5	155	30	77	19,213	332,961	324,076	505	10,240	9,062	2,384	
NEW ENGLAND	13	246	-	1	8	1	1	352	8,071	8,390	18	228	199	9	
Maine	-	20	-	-	-	-	-	14	409	514	-	1	3	6	
N.H.	-	2	-	-	-	-	-	15	295	289	-	7	1	1	
Vt.	1	8	-	-	-	-	-	7	138	215	2	13	3	-	
Mass.	8	135	-	-	6	1	1	115	3,291	3,365	10	140	107	-	
R.I.	2	16	-	-	-	-	-	39	410	497	2	16	13	-	
Conn.	2	65	-	1	2	-	-	162	3,528	3,510	4	51	72	2	
MID. ATLANTIC	97	1,556	9	-	27	-	3	2,428	39,375	35,109	77	1,598	1,288	8	
Upstate N.Y.	19	249	9	-	4	-	1	444	6,353	6,269	5	145	101	7	
N.Y. City	43	662	-	-	17	-	2	700	16,102	14,137	42	991	840	-	
N.J.	11	303	-	-	2	-	-	865	7,933	6,079	14	197	172	-	
Pa.	24	342	-	-	4	-	-	415	8,987	8,624	16	265	175	1	
E.N. CENTRAL	69	1,155	1	2	10	-	1	2,446	49,993	51,445	51	622	858	298	
Ohio	10	217	-	-	-	-	1	888	18,469	13,688	4	90	138	22	
Ind.	-	67	-	-	-	-	-	656	4,549	5,117	21	65	78	16	
Ill.	36	480	-	-	4	-	-	386	11,848	16,440	-	298	476	234	
Mich.	18	332	1	1	4	-	-	516	10,792	11,120	22	133	130	1	
Wis.	5	59	-	1	2	-	-	NA	4,335	5,080	4	36	36	25	
W.N. CENTRAL	13	312	3	-	4	3	5	957	15,793	14,038	11	181	101	1,016	
Minn.	-	44	-	-	1	-	-	177	2,494	2,429	6	69	35	193	
Iowa	1	38	-	-	1	-	-	97	1,635	1,590	-	9	8	342	
Mo.	10	137	3	-	-	-	2	413	7,222	5,858	4	86	54	88	
N. Dak.	-	16	-	-	-	-	-	17	213	211	1	3	-	160	
S. Dak.	-	24	-	-	1	-	-	33	446	430	-	2	1	96	
Nebr.	-	8	-	-	-	-	-	107	1,230	1,141	-	3	1	64	
Kans.	2	45	-	-	-	3	3	113	2,553	2,379	-	9	2	73	
S. ATLANTIC	107	1,977	6	-	23	13	28	5,422	82,871	78,060	139	2,725	2,177	129	
Del.	2	23	1	-	-	-	-	122	1,206	1,065	-	7	5	-	
Md.	11	190	-	-	7	4	5	486	9,050	8,257	9	214	152	1	
D.C.	6	121	-	-	-	-	-	326	5,320	5,645	9	241	153	-	
Va.	-	203	-	-	-	-	1	370	7,890	6,712	17	265	188	19	
W. Va.	-	68	-	-	3	-	1	77	1,257	1,054	-	7	8	4	
N.C.	14	354	1	-	1	1	5	727	12,814	11,659	10	205	159	-	
S.C.	15	176	2	-	-	4	12	766	7,972	7,529	10	191	107	9	
Ga.	20	323	2	-	1	4	4	1,124	16,465	14,658	28	688	658	66	
Fla.	38	519	-	-	9	-	-	1,424	21,197	21,981	56	907	747	30	
E.S. CENTRAL	54	785	2	-	4	4	12	1,814	27,799	26,903	34	682	727	165	
Ky.	17	208	2	-	-	1	2	205	3,588	3,836	5	29	55	49	
Tenn.	16	257	-	-	1	3	5	523	10,159	9,577	19	274	285	96	
Ala.	15	220	-	-	2	-	1	801	8,909	7,804	7	180	149	20	
Miss.	6	100	-	-	1	-	4	285	5,143	5,686	3	199	238	-	
W.S. CENTRAL	40	885	12	-	14	9	25	2,023	44,889	41,756	137	2,476	1,708	464	
Ark.	5	88	6	-	-	3	6	144	3,082	3,055	6	50	61	73	
La.	7	182	2	-	-	-	-	370	7,116	7,281	36	553	398	14	
Okl.	-	103	3	-	3	4	13	321	4,602	4,087	-	66	28	76	
Tex.	28	512	1	-	11	2	6	1,188	30,089	27,333	95	1,807	1,221	301	
MOUNTAIN	13	240	8	1	9	-	2	511	13,314	12,461	14	254	199	50	
Mont.	-	20	2	-	4	-	-	28	495	464	-	8	1	40	
Idaho	-	5	2	-	-	-	1	13	534	612	-	2	6	-	
Wyo.	-	2	1	-	-	-	1	20	293	363	-	3	7	2	
Colo.	2	19	2	1	3	-	-	122	3,504	3,292	1	79	55	1	
N. Mex.	3	48	-	-	-	-	-	67	1,449	1,588	-	53	38	5	
Ariz.	5	108	-	-	2	-	-	68	4,216	3,401	-	49	62	2	
Utah	-	14	1	-	-	-	-	36	623	601	2	7	5	-	
Nev.	3	24	-	-	-	-	-	157	2,200	2,140	11	55	25	-	
PACIFIC	62	1,799	2	1	56	-	-	3,260	50,856	55,914	24	1,472	1,805	245	
Wash.	11	154	1	-	3	-	-	185	4,182	4,512	-	37	94	-	
Oreg.	1	64	-	-	3	-	-	216	3,498	3,924	-	35	40	2	
Calif.	45	1,508	1	1	50	-	-	2,709	40,813	44,957	24	1,365	1,608	230	
Alaska	-	15	-	-	-	-	-	72	1,393	1,295	-	4	2	13	
Hawaii	5	58	-	-	-	-	-	78	1,030	1,226	-	31	61	-	
Guam	NA	-	-	NA	-	NA	-	NA	14	43	NA	-	-	-	
P.R.	-	96	-	-	3	-	-	61	1,116	911	10	255	192	25	
V.I.	-	1	-	-	1	-	-	8	45	59	1	3	7	-	
Pac. Trust Terr.	NA	21	-	NA	-	NA	-	NA	113	156	NA	-	-	-	

NA: Not available.

All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE IV. Deaths in 121 U.S. cities,* week ending
May 9, 1981 (18th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)						P&I** TOTAL	REPORTING AREA	ALL CAUSES, BY AGE (YEARS)						P&I** TOTAL
	ALL AGES	>65	45-64	25-44	1-24	<1			ALL AGES	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	612	384	158	34	13	23	37	S. ATLANTIC	1,257	720	348	81	39	68	34
Boston, Mass.	176	97	50	14	4	11	17	Atlanta, Ga.	144	87	39	10	4	4	2
Bridgport, Conn.	57	39	15	3	—	—	4	Baltimore, Md.	311	177	91	21	13	8	9
Cambridge, Mass.	23	16	7	—	—	—	2	Charlotte, N.C.	64	32	22	2	3	4	1
Fall River, Mass.	20	16	3	1	—	—	1	Jacksonville, Fla.	87	53	26	3	1	5	—
Hartford, Conn.	48	28	12	4	4	—	—	Miami, Fla.	95	47	27	12	4	3	1
Lowell, Mass.	16	12	4	—	—	—	2	Norfolk, Va.	70	35	23	2	3	7	4
Lynn, Mass.	17	12	5	—	—	—	—	Richmond, Va.	82	44	28	3	1	6	2
New Bedford, Mass.	22	16	5	1	—	—	—	Savannah, Ga.	39	22	9	3	4	1	4
New Haven, Conn.	41	25	8	3	2	3	3	St. Petersburg, Fla.	99	86	7	3	2	1	2
Providence, R.I.	66	39	17	3	1	6	3	Tampa, Fla.	60	39	14	5	—	2	2
Somerville, Mass.	3	3	—	—	—	—	—	Washington, D.C.	167	78	53	13	4	19	4
Springfield, Mass.	43	25	16	—	—	2	1	Wilmington, Del.	39	20	9	4	—	6	—
Waterbury, Conn.	29	23	4	1	1	—	1								
Worcester, Mass.	51	33	12	4	1	1	3								
MID. ATLANTIC	2,662	1,698	618	192	73	80	92	E.S. CENTRAL	688	412	161	50	34	31	33
Albany, N.Y.	66	51	10	2	—	3	3	Birmingham, Ala.	99	60	28	5	2	4	4
Allentown, Pa.	19	16	3	—	—	—	—	Chattanooga, Tenn.	36	21	8	5	—	2	—
Buffalo, N.Y.	100	69	22	5	3	1	5	Knoxville, Tenn.	52	37	12	2	1	—	—
Camden, N.J.	32	18	9	3	2	—	2	Louisville, Ky.	89	58	19	7	2	3	8
Elizabeth, N.J.	20	17	3	—	—	—	1	Memphis, Tenn.	168	101	36	9	16	6	4
Erie, Pa.	36	21	7	—	—	2	—	Mobile, Ala.	79	46	13	12	6	2	2
Jersey City, N.J.	46	32	10	4	—	—	—	Montgomery, Ala.	48	27	10	3	3	5	5
N.Y. City, N.Y.	1,415	901	318	108	46	42	39	Nashville, Tenn.	117	62	35	7	4	9	—
Newark, N.J.	59	30	12	8	3	6	3								
Paterson, N.J.	32	19	6	5	—	2	—	W.S. CENTRAL	1,284	701	341	120	60	62	17
Philadelphia, Pa.	402	242	108	20	12	20	15	Austin, Tex.	62	44	12	1	3	2	—
Pittsburgh, Pa.	62	32	22	8	—	—	2	Baton Rouge, La.	36	29	5	1	—	1	—
Reading, Pa.	26	20	5	1	—	—	3	Corpus Christi, Tex.	43	23	10	5	3	2	—
Rochester, N.Y.	123	82	31	5	4	1	8	Dallas, Tex.	174	88	47	17	15	7	3
Schenectady, N.Y.	23	18	4	1	—	—	1	El Paso, Tex.	63	38	13	7	1	4	6
Scranton, Pa.	17	11	4	2	—	—	1	Fort Worth, Tex.	69	38	22	6	3	—	2
Syracuse, N.Y.	93	61	20	9	2	1	2	Houston, Tex.	336	144	115	42	21	14	3
Trenton, N.J.	39	25	12	1	—	1	1	Little Rock, Ark.	64	35	19	1	1	8	—
Utica, N.Y.	23	15	6	1	—	1	5	New Orleans, La.	141	70	47	17	5	2	6
Yonkers, N.Y.	29	18	6	3	1	—	1	New Antonio, Tex.	147	95	30	12	4	6	5
								Shreveport, La.	75	51	11	4	2	7	7
								Tulsa, Okla.	74	46	10	7	2	9	—
E.N. CENTRAL	2,180	1,322	564	139	66	89	65	MOUNTAIN	618	368	157	53	27	13	26
Akron, Ohio	55	37	12	2	1	3	1	Albuquerque, N. Mex.	85	37	29	13	6	—	2
Canton, Ohio	31	16	12	2	—	1	—	Colo. Springs, Colo.	32	15	12	3	1	1	3
Chicago, Ill.	538	319	136	35	22	26	9	Denver, Colo.	128	81	34	8	4	1	1
Cincinnati, Ohio	120	77	31	8	2	2	19	Las Vegas, Nev.	80	44	21	9	3	3	2
Cleveland, Ohio	180	101	47	17	7	8	3	Ogden, Utah	16	8	4	3	—	—	—
Columbus, Ohio	132	71	39	8	6	8	3	Phoenix, Ariz.	131	91	23	7	10	—	3
Dayton, Ohio	100	65	25	4	2	4	1	Pueblo, Colo.	24	20	2	2	—	—	—
Detroit, Mich.	279	168	74	20	4	13	9	Salt Lake City, Utah	44	23	10	4	2	5	8
Evansville, Ind.	47	33	8	3	3	—	4	Tucson, Ariz.	78	49	22	4	1	2	—
Fort Wayne, Ind.	51	38	8	4	1	—	1								
Gary, Ind.	22	11	6	1	3	—	—	PACIFIC	1,699	1,127	360	118	46	47	73
Grand Rapids, Mich.	51	33	13	3	—	2	2	Berkeley, Calif.	16	11	4	—	—	1	5
Indianapolis, Ind.	147	87	43	8	3	6	2	Fresno, Calif.	68	43	16	5	4	—	3
Madison, Wis.	41	29	7	2	2	1	4	Glendale, Calif.	26	20	6	—	—	2	—
Milwaukee, Wis.	121	80	30	7	—	4	—	Honolulu, Hawaii	42	26	9	—	—	2	3
Peoria, Ill.	48	27	12	3	3	3	—	Long Beach, Calif.	89	64	20	3	2	—	—
Rockford, Ill.	38	25	8	3	—	2	1	Los Angeles, Calif.	467	306	116	26	13	6	15
South Bend, Ind.	30	16	10	2	1	1	1	Oakland, Calif.	78	46	17	10	1	4	—
Toledo, Ohio	96	50	30	6	6	4	3	Pasadena, Calif.	30	24	4	1	—	—	—
Youngstown, Ohio	53	39	13	1	—	—	2	Portland, Ore.	133	84	23	12	2	12	5
								Sacramento, Calif.	86	58	18	6	3	—	4
W.N. CENTRAL	653	415	160	36	21	21	25	San Diego, Calif.	135	83	32	14	3	3	3
Des Moines, Iowa	40	37	11	—	1	—	—	San Francisco, Calif.	147	109	20	12	—	6	14
Duluth, Minn.	30	23	5	2	—	—	3	San Jose, Calif.	146	98	30	7	5	6	7
Kansas City, Kans.	32	17	5	2	—	—	3	Seattle, Wash.	151	97	33	13	5	3	5
Kansas City, Mo.	106	60	33	5	3	5	3	Spokane, Wash.	55	36	8	3	5	3	3
Lincoln, Nebr.	19	13	4	2	—	—	—	Tacoma, Wash.	30	22	4	3	1	—	—
Minneapolis, Minn.	74	52	16	2	—	—	4								
Omaha, Nebr.	82	56	19	4	1	2	2	TOTAL	11,653	7,147	2,867	823	379	434	422
St. Louis, Mo.	147	87	39	15	4	2	12								
St. Paul, Minn.	58	43	10	1	2	2	—								
Wichita, Kans.	56	27	18	3	5	3	5								

*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.

Tick Paralysis — Wisconsin

A 3-year-old boy from Oxford, Wisconsin, was admitted to a hospital on May 17, 1980. He had been in excellent health until the morning of admission, when he tried to get out of bed and fell to the floor. He remained unable to walk because he was unsteady and weak.

On initial examination, the patient was alert and cooperative. He was afebrile but had mild bilateral otitis media. There was slight truncal titubation while sitting and moderate flaccid weakness of the lower extremities, more of distal than proximal muscles. He could stand with support, but could not walk or rise from sitting. Sensation was normal to pinprick and vibration. Deep tendon reflexes could not be detected in the legs, and only trace reflexes were present in the arms. He had mild dysmetria while reaching for objects. Cranial nerve function was intact. Examination of the scalp revealed a large, firmly adherent, engorged tick. This was removed and subsequently identified as a female *Dermacentor variabilis*. Within 12 hours after the tick was removed, the patient could walk with only mild ataxia; at 24 hours, he had no demonstrable weakness or abnormality on examination.

Following identification of the tick, the boy's mother disclosed that she had been removing ticks almost daily from the boy in the past several weeks. The child had been exposed on trips with his father into the woods near his rural, south-central Wisconsin home.

Reported by JF Mantovani, MD, RW Graebner, MD, CE Miley, MD, CH Geppert, MD, Dean Clinic, Madison, Wisconsin; J Davis, MD, State Epidemiologist, Wisconsin State Dept of Health and Social Services; Respiratory and Special Pathogens Br, Viral Diseases Div, Center for Infectious Diseases, CDC.

Editorial Note: Tick paralysis (tick toxicosis), first described in 1912, presents as an ascending flaccid paralysis, acute ataxia, or a combination of the 2. Children with this problem may be restless or irritable, but fever, other systemic symptoms, and sensory signs or symptoms are unusual. Results of routine laboratory tests, including electroencephalogram and cerebrospinal fluid examination, are normal. Further neurologic testing may reveal decreased nerve-conduction velocity and decreased compound-action potentials of nerves and their corresponding muscles (1). The diagnosis depends on careful search of the scalp and body for the attached tick. Untreated, tick paralysis may progress to bulbar involvement, respiratory paralysis, and death within hours or days. Treatment consists simply of removing the tick; improvement is seen in a few hours and complete recovery, within 48 hours.

Most cases of tick paralysis occur in the spring and summer months and affect persons <16 years old (2). Girls account for most of the cases in children, but men account for most of the cases in adults. The mortality rate is 10%; nearly all those who die are children.

Tick paralysis is thought to be caused by a toxin secreted in the saliva of the tick that affects central as well as peripheral nerves, and possibly the myoneural junction as well. Typically, the tick is attached from 4 to 7 days before the onset of symptoms.

Forty-three species of ticks have been found to cause tick paralysis in humans, other mammals, or birds, but most human U.S. cases are caused by *Dermacentor* species, whose range includes the entire contiguous United States. In North America, the Pacific Northwest and Rocky Mountain areas account for most of the cases, although cases have been reported from Florida, Georgia, Mississippi, North Carolina, Oklahoma, Texas, and Virginia (3-9).

Tick Paralysis — Continued

Because this potentially fatal disease is rapidly reversible, it is imperative to consider it in the differential diagnosis of any person thought to have Guillain-Barré syndrome, Eaton-Lambert syndrome, myasthenia gravis, poliomyelitis, botulism, diphtheritic polyneuropathy, or any disease with an ascending flaccid paralysis or acute ataxia.

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Outbreak of *Campylobacter* Enteritis Associated with Raw Milk — Kansas

The week of March 23, 1981, the Wichita-Sedgwick County Department of Community Health (WSDCH) was notified that a patient who had been admitted to a local hospital with gastrointestinal illness had had *Campylobacter jejuni* (formerly *C. fetus* ssp. *jejuni* [7]) isolated from his stool. The hospital's clinical laboratory, which routinely reports isolations of communicable agents, noted that the patient regularly drank raw milk from a commercial dairy. *C. jejuni* was isolated from rectal swabs from 2 of 3 other members of the patient's family, all of whom also drank raw milk from the same dairy. The dairy voluntarily stopped selling raw milk on April 1 and cooperated in an investigation of the problem.

News coverage of the preliminary investigation prompted telephone calls from persons in 104 families (representing 264 individuals), who reported that members of their families had recently had a gastrointestinal illness and that the families purchased raw milk from the same dairy. *C. jejuni* was isolated from the stools of 60 of 116 (52%) persons in households that had 1 or more ill family members.

A cohort study was conducted of families who belonged to a local food cooperative that purchased raw milk from the dairy in question the week of April 6. Seventeen of 24 member families completed a questionnaire about exposure to pets, live poultry or cattle, and persons outside the household who had diarrhea, about recent travel, and about food-intake patterns including consumption of chicken, rare meat, uncooked eggs, cheese, raw milk, and water.

No significant association was found between illness and any risk factor except raw milk. Gastrointestinal illness had affected members in all 11 families that purchased raw milk from the dairy and 0 of 6 families that did not ($p < 0.001$, Fisher exact test, one-tail). Thirty-nine of 55 (71%) persons who drank raw milk were ill, as were 4 of 36 (11%) persons who did not drink raw milk ($p < 0.01$, t-test, accounting for clustering). These 43 persons had all become ill in the period March 1-April 4 (Figure 2). Predominant symptoms included diarrhea, abdominal cramps, and headache. Duration of illness

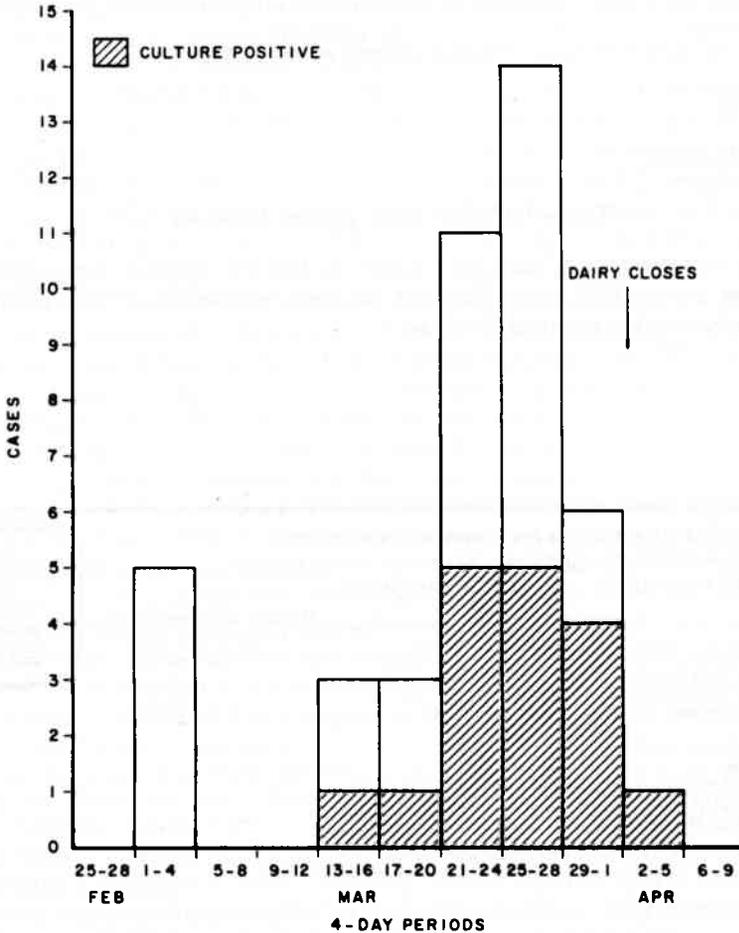
Campylobacter Enteritis — Continued

ranged from 1 to 9 days; few people sought medical advice. *C. jejuni* was isolated from 17 of 29 (59%) ill and 4 of 8 (50%) well persons; all 21 isolates were from persons who drank raw milk.

Rectal swabs collected on April 8 from well cows and those with mastitis at the implicated dairy and from well cows (none with mastitis were seen) from 2 other local dairies that also sell raw milk were positive for *C. jejuni*. Cultures of milk samples obtained at all 3 of these dairies were negative for *C. jejuni*. In the period March 31 to April 7, bulk-tank milk samples from the implicated dairy but not samples from the other 2 dairies exceeded the generally recommended standard plate count (SPC)* level of 100,000 organisms/ml. The count fell below this level on April 8 and 9.

*The SPC is a gross indicator of mastitis and does not necessarily imply infection or fecal contamination with *C. jejuni*.

FIGURE 2. Enteritis caused by *Campylobacter jejuni* among cohort study participants, by date of onset, Wichita, Kansas, 1981*



*4 culture-positive well persons not included.

Campylobacter Enteritis – Continued

The dairy implemented hygienic measures during the investigation: not using milk from cows suspected of having mastitis, using a disinfectant solution to wash teats, and immersing milking claws in a disinfectant solution before putting them on each cow. The dairy began selling milk again on April 10. No new cases of raw-milk-associated gastrointestinal illness had been reported to the WSDCH as of May 6.

Reported by FE Tosh, MD, Wichita-Sedgwick County Dept of Community Health; GA Mullen, DVM, DE Wilcox, MD, State Epidemiologist, Kansas State Dept of Health and Environment; Bacterial Zoonoses Br, Enteric Diseases Br, Bacterial Diseases Div, Center for Infectious Diseases, CDC.

Editorial Note: Earlier reports of investigations of raw-milk-associated *Campylobacter* enteritis did not show that *C. jejuni* was present in any of the milk samples tested (2). Low concentrations of the organism in the milk samples, insensitive testing methods, or the time lag in collecting samples after the illness was reported may account for these negative results. The only known way to eliminate the risk of *Campylobacter* infection from milk is to pasteurize all milk sold for human consumption.

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Notice to Readers**Table IV (Mortality Table) Revised**

Beginning with this issue, Table IV, "Deaths in 121 U.S. Cities," (see p. 216) has an additional age group: 1-24 years. Also, for the first time, deaths in the unknown age group will be included in the total for all ages.

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