

# MMWR

## MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

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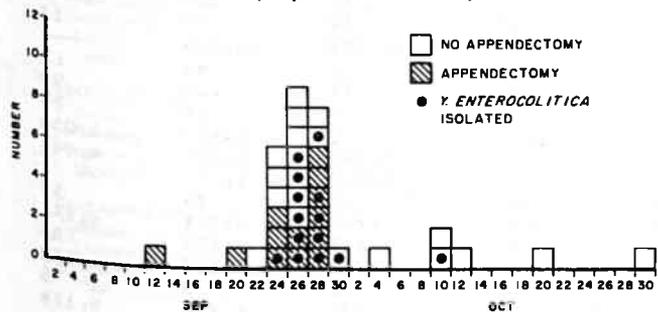
*Epidemiologic Notes and Reports*

### *Yersinia enterocolitica* Outbreak — New York

An outbreak of intestinal illness occurred in September 1976, among school children in Oneida County, New York. *Yersinia enterocolitica*, serotype 8, was isolated from ill children and from chocolate milk that had been epidemiologically incriminated as the vehicle of transmission.

The illness, characterized by abdominal pain, fever, and in some, diarrhea, affected 218 children attending 5 Oneida County schools. Thirty-three school children were hospitalized for suspected appendicitis; 13 had appendectomies (Figure 1). In each case at surgery the appendix was normal or only slightly inflamed. Mesenteric adenopathy and inflammation of the terminal ileum were frequently observed. The removed appendices were microscopically normal or had lymphoid hyperplasia.

FIGURE 1. Children from 5 schools hospitalized with abdominal pain and fever, by date of onset, September - October, 1976.



Three of the 5 schools and the central food service for all 5 schools were located in 1 village (Village A). At first, the water was suspected as the source of contamination, since in August, 1 month before the outbreak, Village A residents had been instructed to boil drinking water because of deficiencies in the treatment of village water. However, a door-to-door survey, conducted in Village A and in a nearby control village with a different water supply, demonstrated that illness — defined as abdominal pain and fever since September 1 — was not associated with consumption of Village A water. The survey did demonstrate that the illness occurred predominantly in school-age children in Village A and that their illness was associated with eating lunch at school.

A case-control study was performed in which a case was defined as a child from 1 of the 5 schools who had been

hospitalized for suspected appendicitis during September and October. Controls were matched by age, sex, and school classroom with the cases. Of 10 possible exposures, including consumption of school water, food, and white and chocolate milk, only drinking chocolate milk at school was significantly associated with illness. Twenty-six (81%) of 32 ill children drank chocolate milk compared with 19 (59%) of 32 control children ( $p < .05$ , McNemar Test). A survey of high school students also demonstrated the association of illness with consumption of chocolate milk.

Thirty-two ill school children were found to be infected with *Y. enterocolitica*; 27 of the isolates have been serotyped and all are serotype 8. One well child was infected with *Y. enterocolitica*, serotype 5. *Y. enterocolitica*, serotype 8, was isolated from 1 of 4 unopened 8-ounce cartons of chocolate milk taken from 1 of the school cafeterias during the investigation.

A local dairy was the exclusive producer of chocolate milk for the area schools. The dairy also supplied chocolate milk to 1 small grocery. In the dairy plant, chocolate syrup was manually added to a large open vat of pasteurized milk. This chocolate milk was not re-pasteurized before being placed in cardboard, half-pint cartons. Milk was distributed to the schools in an unrefrigerated truck. Several cultures of canned chocolate syrup were negative. No dairy employees were culture-positive. The dairy voluntarily ceased production of chocolate milk when informed in late October of the evidence associating its chocolate milk with illness.

Reported by A Wakelee, BS, SM, Rome Murphy Hospital; KIE MacLeod, MD, MPH, W Mellon, DVM, M Moldt, RN, L Paul, RN, Oneida County Health Dept; RW Bacorn, MD, MPH, LLB, DO Lyman, MD, DTMPH, State Epidemiologist, M Medvesky, BS, MPH; M Shayegani, PhD, MH Toly, BS, New York State Dept of Health; numerous school, local, county, and state personnel; Field Services Div; Enteric Diseases Br, Special Pathogens Br, and Special Pathogens Laboratory Section, Bacterial Diseases Div, Bur of Epidemiology, CDC.

**Editorial Note:** This is the first outbreak of illness from *Yersinia enterocolitica* in which foodborne transmission has been documented. In 2 previous outbreaks among school children the source and mode of spread of the infection were not established (1). Milk was suspected as the vehicle in a recent outbreak of *Y. enterocolitica* disease in Canada (2).

*Y. enterocolitica* - Continued

The predominant symptoms in this outbreak — abdominal pain and fever — can closely simulate appendicitis, but actually represent mesenteric adenitis and in some cases terminal ileitis. In the Scandinavian countries, where yersiniosis has been more extensively studied, infection with *Y. enterocolitica* can be demonstrated by stool/appendix culture in 3-5% of patients with symptoms of appendicitis (3,4). Other clinical syndromes, including abscesses, acute diarrhea, erythema nodosum, and arthritis

have also been reported in association with *Yersinia* infection.

## References

1. Asakawa Y, Akahane S, Kagata N, et al: Two community outbreaks of human infection with *Yersinia enterocolitica*. *J Hyg (Camb)* 71:715-723, 1973
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3. Nilehn B, Sjöström B: Studies on *Yersinia enterocolitica*. *Acta Pathol Microbiol Scand* 71:612-628, 1967
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## Immunologic Response of Immunosuppressed Children to Influenza Vaccine

To determine the response to influenza vaccine in immunosuppressed children, a study was conducted with 46 patients at the University of Texas Health Science Center at San Antonio. The patients, ranging in age from 3 to 18 years, were on standard cancer chemotherapy regimens. Patients with absolute neutrophil counts of less than 1000/mm<sup>3</sup> or absolute lymphocyte counts of less than 100/mm<sup>3</sup> were excluded from the study.

Two doses of bivalent A/New Jersey/76 and A/Victoria/75 or control saline were administered intramuscularly 4 weeks apart. Both split and whole antigens were used. Children received vaccine in doses ranging from 25CCA to 400CCA units.

Serum samples obtained at the time of the second injection

and again 2 weeks later were tested by standard hemagglutination inhibition against A/New Jersey/76. Systemic and local reactions were monitored over a 48-hour period.

Antibody titers and reaction indices were compared with those of normal healthy children who received similar amounts of monovalent A/New Jersey/76 vaccine. No significant differences in antibody titers were found between normal children and the immunosuppressed group. Minor local and systemic reactions were similar for both groups; neither group had serious side effects.

Reported by PA Brunell, MD, Chairman, Dept of Pediatrics, University of Texas, San Antonio.

Table I. Summary—Cases of Specified Notifiable Diseases: United States

(Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	6th WEEK ENDING		MEDIAN 1972-1976	CUMULATIVE, FIRST 6 WEEKS			
	February 12 1977	February 14 1976		February 12 1977	February 14 1976	MEDIAN 1972-1976	
Aseptic meningitis	37	50	35	219	239	226	
Brucellosis	5	—	1	19	20	13	
Chickenpox	5,770	5,296	—	30,392	27,965	—	
Diphtheria	1	—	1	2	43	12	
Encephalitis	Primary	11	16	73	100	90	
	Post-Infectious	1	4	5	7	24	
Hepatitis, Viral	Type B	283	242	1,688	1,483	1,050	
	Type A	630	611	883	3,707	4,030	
	Type unspecified	177	210	—	1,025	1,075	
Malaria	7	3	6	28	34	30	
Measles (rubeola)	1,248	656	522	5,785	2,931	2,931	
Meningococcal infections, total		41	39	229	183	183	
	Civilian	41	38	38	227	180	180
	Military	—	1	—	2	3	5
Mumps	601	1,255	1,770	3,273	6,754	9,178	
Pertussis	11	27	—	79	159	—	
Rubella (German measles)	320	219	350	1,264	1,189	1,189	
Tetanus	—	1	1	5	4	6	
Tuberculosis	549	638	—	2,960	3,371	—	
Tularemia	1	5	2	10	19	10	
Typhoid fever	5	6	6	33	52	26	
Typhus, tick-borne (Rky. Mt. spotted fever)	2	1	1	9	3	9	
Venereal Diseases:							
Gonorrhea	Civilian	16,815	18,043	—	110,470	115,887	—
	Military	534	359	—	3,453	3,433	—
Syphilis, primary and secondary	Civilian	449	491	—	2,664	3,071	—
	Military	8	13	—	42	50	—
Rabies in animals	34	27	45	248	183	283	

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax:	—	Poliomyelitis, total:	2
Botulism:	2	Paralytic: Ariz. 1:	2
Congenital rubella syndrome:	1	Psittacosis: Calif. 1:	4
Leprosy: NYC 1, N.C. 1, Tex. 1:	12	Rabies in man:	—
Leptospirosis:	5	Trichinosis: NYC 1:	14
Plague:	—	Typhus, murine: *Tex. 2:	3

\*Delayed report: Tex. 1 (1976)

**Table III**  
**Cases of Specified Notifiable Diseases: United States**  
*Weeks Ending February 12, 1977 and February 14, 1976 - 6th Week*

AREA REPORTING	ASEPTIC MENIN- GITIS	BRUCEL- LOSIS	CHICKEN- POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS, VIRAL			MALARIA	
						Primary: Arthropod- borne and Unspecified		Post In- fectious	Type B	Type A	Type Unspecified		
						1977	1976	1977	1977	1977	1977		
UNITED STATES .....	37	5	5,770	1	2	11	16	1	283	630	177	7	28
NEW ENGLAND .....	1	-	580	-	-	1	-	-	9	14	18	1	2
Maine .....	-	-	3	-	-	-	-	-	-	-	-	-	-
New Hampshire* .....	-	-	45	-	-	-	-	-	1	1	-	-	-
Vermont .....	-	-	2	-	-	-	-	-	-	-	-	-	-
Massachusetts .....	-	-	239	-	-	-	-	-	4	6	18	1	2
Rhode Island .....	1	-	120	-	-	-	-	-	1	6	-	-	-
Connecticut .....	-	-	171	-	-	1	-	-	3	1	-	-	-
MIDDLE ATLANTIC .....	5	1	588	-	-	5	3	-	48	66	27	-	6
Upstate New York .....	2	1	449	-	-	-	-	-	-	9	2	-	3
New York City .....	-	-	102	-	-	1	-	-	17	16	6	-	3
New Jersey .....	3	-	NN	-	-	3	-	-	22	23	19	-	-
Pennsylvania* .....	-	-	37	-	-	1	3	-	9	18	-	-	-
EAST NORTH CENTRAL ..	3	1	2,328	-	-	-	8	1	53	94	13	-	-
Ohio* .....	-	-	241	-	-	-	2	-	8	39	-	-	-
Indiana .....	-	-	182	-	-	-	-	1	3	3	6	-	-
Illinois .....	-	-	140	-	-	-	-	-	25	9	4	-	-
Michigan .....	3	1	1,254	-	-	-	6	-	13	38	2	-	-
Wisconsin .....	-	-	511	-	-	-	-	-	4	5	1	-	-
WEST NORTH CENTRAL ..	4	2	783	-	-	-	-	-	18	54	13	1	2
Minnesota .....	-	-	1	-	-	-	-	-	1	8	-	-	1
Iowa .....	-	-	631	-	-	-	-	-	-	-	-	-	-
Missouri .....	4	-	9	-	-	-	-	-	6	18	11	1	1
North Dakota .....	-	-	21	-	-	-	-	-	-	8	-	-	-
South Dakota .....	-	-	40	-	-	-	-	-	1	5	-	-	-
Nebraska .....	-	-	31	-	-	-	-	-	4	1	-	-	-
Kansas .....	-	2	50	-	-	-	-	-	6	14	2	-	-
SOUTH ATLANTIC .....	6	-	513	-	-	1	1	-	33	115	19	-	4
Delaware .....	-	-	5	-	-	-	-	-	-	3	-	-	-
Maryland .....	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	2
District of Columbia ..	-	-	4	-	-	-	-	-	-	1	-	-	-
Virginia .....	-	-	31	-	-	-	-	-	9	3	1	-	2
West Virginia .....	2	-	192	-	-	-	-	-	1	12	-	-	-
North Carolina .....	2	-	NN	-	-	-	1	-	10	14	1	-	-
South Carolina .....	-	-	39	-	-	-	-	-	1	5	4	-	-
Georgia* .....	-	-	62	-	-	-	-	-	-	48	-	-	-
Florida* .....	2	-	180	-	-	1	-	-	12	29	13	-	-
EAST SOUTH CENTRAL ..	1	1	101	-	-	1	2	-	17	46	1	2	2
Kentucky .....	1	-	60	-	-	-	-	-	9	19	1	2	2
Tennessee .....	-	1	NN	-	-	1	1	-	8	22	-	-	-
Alabama .....	-	-	33	-	-	-	-	-	-	-	-	-	-
Mississippi .....	-	-	8	-	-	-	1	-	-	5	-	-	-
WEST SOUTH CENTRAL ..	2	-	379	-	-	2	-	-	28	67	24	1	2
Arkansas .....	-	-	7	-	-	-	-	-	4	7	1	-	-
Louisiana .....	-	-	NN	-	-	-	-	-	2	7	3	-	-
Oklahoma .....	-	-	46	-	-	-	-	-	2	13	4	-	-
Texas .....	2	-	326	-	-	2	-	-	20	40	16	1	2
MOUNTAIN .....	2	-	200	-	-	-	-	-	13	46	7	-	4
Montana* .....	-	-	27	-	-	-	-	-	-	3	-	-	-
Idaho .....	2	-	26	-	-	-	-	-	-	2	-	-	-
Wyoming* .....	-	-	-	-	-	-	-	-	1	-	-	-	-
Colorado* .....	-	-	80	-	-	-	-	-	8	8	3	-	3
New Mexico .....	-	-	2	-	-	-	-	-	-	12	2	-	-
Arizona .....	-	-	NN	-	-	-	-	-	-	19	-	-	1
Utah .....	-	-	49	-	-	-	-	-	4	2	2	-	-
Nevada .....	-	-	16	-	-	-	-	-	-	2	-	-	-
PACIFIC .....	13	-	298	1	2	1	2	-	64	128	55	2	6
Washington .....	-	-	258	1	1	-	-	-	9	11	6	-	-
Oregon .....	2	-	2	-	-	-	-	-	8	16	4	-	-
California* .....	11	-	-	-	-	1	2	-	47	95	45	2	4
Alaska .....	-	-	10	-	1	-	-	-	-	5	-	-	-
Hawaii .....	-	-	28	-	-	-	-	-	-	1	-	-	2
Guam .....	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
Puerto Rico .....	-	-	8	-	-	-	-	-	3	14	-	-	-
Virgin Islands .....	-	-	-	-	-	-	-	-	-	-	-	-	-

NA: Not available  
 NN: Not Notifiable

\*Delayed reports: Chickenpox: N.H. add 56, Calif. add 24 (1977); Enceph.: Pa. add 2 (1976); Hep. B: Pa. add 21, Wyo add 1, Colo. add 1 (1976), Fla. delete 1 (1977); Hep. A: Pa. add 24, Colo. add 3 (1976), Fla. delete 3, Mont. add 3 (1977); Hep. unsp: Pa. add 2 (1976), Fla. delete 1 (1977).

**Table III-Continued**  
**Cases of Specified Notifiable Diseases: United States**  
*Weeks Ending February 12, 1977 and February 14, 1976 - 6th Week*

REPORTING AREA	MEASLES (Rubella)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1977	CUMULATIVE		1977	CUMULATIVE		1977	CUM. 1977	1977	1977	CUM. 1977	CUM. 1977
		1977	1976		1977	1976						
UNITED STATES .....	1,248	5,785	2,931	41	229	183	601	3,273	11	320	1,264	5
NEW ENGLAND .....	96	202	13	1	10	9	37	159	-	6	62	-
Maine .....	-	-	-	-	1	-	1	2	-	-	1	-
New Hampshire* .....	59	112	-	-	1	-	1	12	-	-	1	-
Vermont .....	5	39	-	-	-	-	-	2	-	-	-	-
Massachusetts .....	10	22	2	1	3	3	19	29	-	3	36	-
Rhode Island .....	-	-	7	-	-	2	1	11	-	2	12	-
Connecticut .....	22	29	4	-	5	4	15	103	-	1	12	-
MIDDLE ATLANTIC .....	118	726	375	4	37	18	33	196	3	34	158	-
Upstate New York .....	37	105	210	1	11	6	5	35	1	25	59	-
New York City .....	9	35	17	-	8	6	13	86	1	9	30	-
New Jersey* .....	-	11	27	-	12	2	14	59	-	-	47	-
Pennsylvania .....	72	575	121	3	6	4	1	16	1	-	22	-
EAST NORTH CENTRAL .....	340	1,745	990	7	27	20	238	1,124	-	134	486	-
Ohio .....	1	56	2	4	16	7	37	161	-	53	134	-
Indiana .....	236	936	152	-	-	1	20	62	-	43	161	-
Illinois .....	4	136	88	1	3	1	9	103	-	5	36	-
Michigan .....	31	132	192	2	6	7	88	372	-	25	99	-
Wisconsin .....	68	485	556	-	2	4	84	426	-	8	56	-
WEST NORTH CENTRAL .....	174	1,307	40	1	8	19	137	848	-	12	80	1
Minnesota .....	7	159	1	-	-	2	-	3	-	-	2	-
Iowa .....	114	776	8	1	1	5	118	501	-	11	49	-
Missouri* .....	15	94	1	-	6	4	6	117	-	1	7	1
North Dakota .....	-	2	1	-	-	-	2	4	-	-	-	-
South Dakota .....	-	4	-	-	-	1	8	9	-	-	-	-
Nebraska .....	-	3	24	-	-	-	-	1	-	-	1	-
Kansas .....	38	269	5	-	1	7	3	213	-	-	21	-
SOUTH ATLANTIC .....	76	144	421	8	48	40	14	120	5	16	28	1
Delaware .....	-	-	17	-	1	-	3	25	-	-	-	-
Maryland .....	NA	10	224	-	4	1	NA	8	NA	NA	-	-
District of Columbia* .....	-	-	1	-	-	-	-	2	-	-	-	-
Virginia .....	62	86	3	-	3	1	5	26	-	7	8	1
West Virginia .....	7	23	45	-	4	2	3	29	4	1	5	-
North Carolina .....	1	1	-	1	11	12	-	3	-	7	10	-
South Carolina .....	1	1	-	-	4	6	-	2	-	1	3	-
Georgia* .....	5	23	-	3	10	-	-	2	-	-	-	-
Florida .....	-	-	131	4	11	18	3	23	1	-	2	-
EAST SOUTH CENTRAL .....	11	108	122	1	22	11	18	219	2	33	147	1
Kentucky .....	-	53	117	-	10	2	1	20	1	-	6	1
Tennessee .....	11	55	1	-	8	5	13	141	1	32	138	-
Alabama .....	-	-	-	-	3	3	4	58	-	1	3	-
Mississippi .....	-	-	4	1	1	1	-	-	-	-	-	-
WEST SOUTH CENTRAL .....	42	198	196	7	37	33	66	300	-	12	40	1
Arkansas .....	-	1	-	-	1	1	-	-	-	-	-	-
Louisiana .....	2	7	5	2	16	2	-	12	-	-	1	-
Oklahoma .....	3	16	173	-	-	10	19	133	-	-	7	-
Texas* .....	37	174	18	5	20	20	47	155	-	12	32	1
MOUNTAIN .....	72	279	600	1	4	6	21	102	-	8	38	-
Montana* .....	45	175	19	-	-	1	1	1	-	-	3	-
Idaho .....	5	20	175	-	1	-	2	44	-	-	-	-
Wyoming .....	-	-	-	-	-	-	-	-	-	-	1	-
Colorado* .....	21	53	9	-	1	-	9	22	-	-	5	-
New Mexico .....	-	-	3	-	1	1	2	5	-	-	1	-
Arizona* .....	1	24	16	-	1	3	-	-	-	-	-	-
Utah .....	-	2	377	-	-	1	7	29	-	7	27	-
Nevada .....	-	5	1	1	1	-	-	1	-	1	1	-
PACIFIC .....	319	1,076	174	11	36	27	37	205	1	65	225	1
Washington* .....	3	89	2	-	5	5	5	45	-	18	69	-
Oregon .....	5	12	2	1	2	2	6	32	-	9	16	-
California .....	311	927	168	9	23	19	25	113	1	37	137	1
Alaska .....	-	48	-	1	5	-	1	11	-	-	-	-
Hawaii .....	-	-	2	-	1	1	-	4	-	1	3	-
Guam .....	NA	-	4	-	-	1	NA	-	NA	NA	-	-
Puerto Rico .....	18	60	9	-	-	1	6	57	-	-	2	-
Virgin Islands .....	5	5	-	-	-	-	8	26	-	-	-	-

NA: Not available

\*Delayed report: Measles: Mo. add 15, Mont. add 28, Colo. add 9 (1976), N.H. add 2, N.J. add 2, Wash. delete 1 (1977); Mumps: N.H. add 6, (1977); Rubella: N.J. add 12 (1977); Tetanus: Tex. add 1 (1976).

Table III-Continued  
 Cases of Specified Notifiable Diseases: United States  
 Weeks Ending February 12, 1977 and February 14, 1976 - 6th Week

REPORTING AREA	TUBERCULOSIS		TULA-REMA	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (RMSF)		VENEREAL DISEASES (Civilian Cases Only)						RABIES IN ANIMALS
	1977	CUM. 1977	CUM. 1977	1977	CUM. 1977	1977	CUM. 1977	GONORRHEA			SYPHILIS (Pri. & Sec.)			CUM. 1977
								CUMULATIVE		1977	CUMULATIVE			
								1977	1976		1977	1976		
UNITED STATES .....	549	2,960	10	5	33	2	9	16,815	110,470	115,887	449	2,664	3,071	248
NEW ENGLAND .....	20	100	-	-	2	-	-	403	2,779	3,275	15	87	80	2
Maine .....	4	10	-	-	-	-	-	53	231	305	-	2	5	2
New Hampshire* .....	2	6	-	-	-	-	-	18	104	64	-	-	-	-
Vermont .....	-	3	-	-	-	-	-	9	65	69	1	2	1	-
Massachusetts .....	5	44	-	-	1	-	-	137	1,169	1,545	11	63	52	-
Rhode Island .....	-	8	-	-	-	-	-	42	183	210	-	-	4	-
Connecticut .....	9	29	-	-	1	-	-	144	1,027	1,082	3	20	18	-
MIDDLE ATLANTIC .....	78	387	-	1	8	-	-	1,860	13,381	11,125	76	392	518	4
Upstate New York .....	11	48	-	1	1	-	-	293	1,285	1,612	6	30	28	4
New York City .....	16	120	-	-	6	-	-	888	7,296	4,608	50	251	350	-
New Jersey .....	26	124	-	-	1	-	-	188	1,728	1,942	13	56	70	-
Pennsylvania .....	25	95	-	-	-	-	-	491	3,072	2,963	7	55	70	-
EAST NORTH CENTRAL .....	81	442	2	1	5	-	-	3,388	16,709	19,303	91	331	295	12
Ohio* .....	18	99	1	-	1	-	-	592	4,432	4,997	24	85	68	-
Indiana .....	2	37	-	-	-	-	-	652	1,357	1,504	7	12	15	1
Illinois .....	14	146	-	-	1	-	-	1,282	5,909	7,462	50	192	163	-
Michigan* .....	38	131	-	1	3	-	-	627	3,614	3,590	9	32	37	1
Wisconsin .....	9	29	1	-	-	-	-	235	1,397	1,750	1	10	12	10
WEST NORTH CENTRAL .....	18	101	1	-	2	-	2	887	6,036	5,842	14	57	62	51
Minnesota .....	3	19	-	-	1	-	-	104	957	1,213	4	19	17	24
Iowa .....	2	13	-	-	-	-	-	153	742	841	1	5	7	10
Missouri* .....	4	45	1	-	1	-	2	307	2,629	2,175	2	18	29	3
North Dakota .....	-	1	-	-	-	-	-	16	87	82	-	-	-	8
South Dakota .....	-	2	-	-	-	-	-	35	178	182	1	1	-	-
Nebraska .....	2	3	-	-	-	-	-	83	491	418	5	6	4	-
Kansas .....	7	18	-	-	-	-	-	189	952	931	1	8	5	6
SOUTH ATLANTIC .....	110	748	5	2	6	2	2	3,766	25,037	26,986	121	753	907	31
Delaware .....	-	5	-	-	-	-	-	21	354	386	1	7	10	-
Maryland .....	NA	92	-	NA	-	NA	-	NA	2,452	3,839	NA	47	76	-
District of Columbia .....	6	30	-	-	-	-	-	229	1,447	1,554	14	89	81	-
Virginia .....	13	96	-	1	2	-	-	476	2,835	3,015	15	69	85	1
West Virginia .....	3	26	-	-	-	-	-	41	357	343	-	-	4	1
North Carolina* .....	26	136	-	-	-	2	2	536	3,659	4,182	19	114	149	-
South Carolina .....	9	70	2	-	-	-	-	349	2,513	2,263	3	35	50	-
Georgia* .....	13	85	3	-	-	-	-	942	4,983	5,053	19	115	110	25
Florida .....	40	208	-	1	4	-	-	1,172	6,437	6,351	50	277	342	4
EAST SOUTH CENTRAL .....	45	258	-	-	-	-	3	1,602	9,328	10,325	8	96	124	2
Kentucky .....	9	50	-	-	-	-	1	189	1,286	1,354	2	11	21	-
Tennessee .....	12	95	-	-	-	-	2	576	3,882	4,075	4	34	54	2
Alabama .....	12	74	-	-	-	-	-	515	2,418	2,688	2	17	22	-
Mississippi .....	12	39	-	-	-	-	-	322	1,742	2,208	-	34	27	-
WEST SOUTH CENTRAL .....	81	317	1	-	-	-	2	2,116	15,044	17,805	49	342	350	101
Arkansas .....	7	25	-	-	-	-	-	96	1,148	1,702	-	7	11	6
Louisiana* .....	4	70	-	-	-	-	-	393	2,060	2,436	13	72	78	-
Oklahoma .....	9	36	-	-	-	-	1	221	1,252	1,578	-	10	17	30
Texas* .....	61	186	1	-	-	-	1	1,406	10,584	12,089	36	253	244	65
MOUNTAIN .....	17	68	1	-	2	-	-	653	4,417	4,653	8	56	86	3
Montana* .....	2	3	1	-	-	-	-	26	253	223	-	-	1	3
Idaho .....	2	8	-	-	-	-	-	21	221	228	3	5	1	-
Wyoming .....	-	3	-	-	-	-	-	15	134	103	-	5	4	-
Colorado .....	-	9	-	-	1	-	-	205	1,157	1,121	-	18	32	-
New Mexico .....	1	5	-	-	-	-	-	103	591	1,073	2	10	18	-
Arizona .....	7	34	-	-	-	-	-	184	1,251	1,278	3	15	23	-
Utah .....	2	2	-	-	1	-	-	50	239	263	-	2	1	-
Nevada .....	3	4	-	-	-	-	-	49	571	364	-	1	6	-
PACIFIC .....	99	539	-	1	8	-	-	2,140	17,739	16,573	67	550	649	42
Washington .....	NA	9	-	-	-	-	-	NA	1,214	1,510	NA	10	15	-
Oregon .....	4	20	-	1	1	-	-	178	1,319	1,282	3	20	20	-
California .....	79	413	-	-	7	-	-	1,874	14,383	12,952	64	511	605	36
Alaska .....	-	8	-	-	-	-	-	45	470	476	-	1	-	6
Hawaii .....	16	89	-	-	-	-	-	43	353	353	-	8	9	-
Guam .....	NA	5	-	NA	-	NA	-	NA	21	57	NA	-	-	-
Puerto Rico .....	10	54	-	-	-	-	-	69	360	289	9	75	53	1
Virgin Islands .....	-	-	-	-	-	-	-	3	20	41	-	-	14	-

NA: Not available

\*Delayed reports: TB: Mo. delete 1, N.C. delete 7 (1976), Mich. delete 1, La. delete 1 (1977); RMSF: Tex. add 1 (1976); GC: Ga. delete 10 (civ.), La. delete 10 (Civ.); N.H. add 2 (mil.), (1977); Syphilis: Ga. add 16 (civ.), Mont. delete 2 (civ.), N.H. delete 2 (mil.) (1977).

**Table IV**  
**Deaths in 121 United States Cities\***  
*Week Ending February 12, 1977 - 6th Week*

REPORTING AREA	ALL CAUSES					Pneumonia and Influenza ALL AGES	REPORTING AREA	ALL CAUSES					Pneumonia and Influenza ALL AGES
	ALL AGES	65 Years and Over	45-64 Years	25-44 Years	Under 1 Year			ALL AGES	65 Years and Over	45-64 Years	25-44 Years	Under 1 Year	
<b>NEW ENGLAND</b> .....	668	434	170	29	17	55	<b>SOUTH ATLANTIC</b> .....	1,337	755	385	94	60	52
Boston, Mass. ....	191	103	61	9	9	14	Atlanta, Ga. ....	171	95	53	8	12	6
Bridgeport, Conn. ....	48	32	14	2	-	5	Baltimore, Md. ....	232	133	67	17	6	6
Cambridge, Mass. ....	30	23	7	-	-	1	Charlotte, N. C. ....	59	35	14	7	1	3
Fall River, Mass. ....	30	20	9	1	-	1	Jacksonville, Fla. ....	114	63	37	6	7	3
Hartford, Conn. ....	36	19	9	4	3	1	Miami, Fla. ....	111	46	42	8	5	4
Lowell, Mass. ....	21	15	6	-	-	4	Norfolk, Va. ....	61	35	17	4	3	8
Lynn, Mass. ....	23	19	2	2	-	5	Richmond, Va. ....	99	54	26	8	6	8
New Bedford, Mass. ....	21	18	3	-	-	-	Savannah, Ga. ....	58	33	16	7	1	2
New Haven, Conn. ....	36	28	5	1	2	-	St. Petersburg, Fla. ....	81	67	11	1	1	4
Providence, R.I. ....	82	50	19	6	2	6	Tampa, Fla. ....	72	43	19	4	1	4
Somerville, Mass. ....	13	8	4	-	-	1	Washington, D. C. ....	218	115	66	19	16	3
Springfield, Mass. ....	47	36	8	3	-	4	Wilmington, Del. ....	61	36	17	5	1	1
Waterbury, Conn. ....	31	21	9	1	-	7	<b>EAST SOUTH CENTRAL</b> .....	765	457	208	46	33	34
Worcester, Mass. ....	59	42	14	-	1	6	Birmingham, Ala. ....	152	86	46	11	7	1
<b>MIDDLE ATLANTIC</b> .....	2,996	1,902	742	185	97	156	Chattanooga, Tenn. ....	59	36	14	1	4	1
Albany, N. Y. ....	40	21	11	5	2	2	Knoxville, Tenn. ....	45	31	7	4	-	-
Allentown, Pa. ....	17	11	6	-	-	1	Louisville, Ky. ....	126	72	33	14	5	15
Buffalo, N. Y. ....	151	93	40	10	6	11	Memphis, Tenn. ....	194	111	57	10	9	6
Camden, N. J. ....	32	18	11	1	2	-	Mobile, Ala. ....	47	37	8	-	1	1
Elizabeth, N. J. ....	33	24	5	4	-	1	Montgomery, Ala. ....	37	25	9	2	1	5
Erie, Pa. ....	40	25	12	2	-	3	Nashville, Tenn. ....	105	59	34	4	6	5
Jersey City, N. J. ....	55	32	17	1	5	1	<b>WEST SOUTH CENTRAL</b> .....	1,314	748	375	93	52	45
Newark, N. J. ....	53	29	15	8	-	4	Austin, Tex. ....	34	24	8	1	1	1
New York City, N. Y. ....	1,593	1,021	380	99	50	73	Baton Rouge, La. ....	66	40	12	5	8	7
Paterson, N. J. ....	37	22	13	1	-	3	Corpus Christi, Tex. ....	29	15	9	1	3	-
Philadelphia, Pa. ....	368	225	95	22	17	22	Dallas, Tex. ....	206	117	67	9	5	7
Pittsburgh, Pa. ....	166	98	48	11	3	8	El Paso, Tex. ....	41	22	7	6	4	3
Reading, Pa. ....	45	37	7	1	-	4	Fort Worth, Tex. ....	78	46	27	2	3	-
Rochester, N. Y. ....	139	101	25	3	7	14	Houston, Tex. ....	341	187	90	43	11	6
Schenectady, N. Y. ....	20	11	8	1	-	-	Little Rock, Ark. ....	63	37	18	2	3	2
Scranton, Pa. ....	31	20	9	2	-	1	New Orleans, La. ....	150	82	50	8	3	1
Syracuse, N. Y. ....	98	62	23	8	4	1	San Antonio, Tex. ....	156	86	51	8	6	11
Trenton, N. J. ....	27	19	4	4	-	1	Shreveport, La. ....	72	40	21	6	2	2
Utica, N. Y. ....	28	17	8	1	1	3	Tulsa, Okla. ....	78	52	15	2	3	5
Yonkers, N. Y. ....	23	16	5	1	-	3	<b>MOUNTAIN</b> .....	520	299	138	44	18	12
<b>EAST NORTH CENTRAL</b> .....	2,439	1,546	621	119	77	87	Albuquerque, N. Mex. ....	60	25	20	8	4	3
Akron, Ohio ....	58	40	12	3	2	-	Colorado Springs, Colo. ....	22	15	6	1	-	-
Canton, Ohio ....	63	44	13	3	3	3	Denver, Colo. ....	120	74	28	9	2	2
Chicago, Ill. ....	595	367	157	32	17	20	Las Vegas, Nev. ....	30	15	9	5	1	1
Cincinnati, Ohio ....	175	108	44	6	6	3	Ogden, Utah ....	7	4	2	-	-	-
Cleveland, Ohio ....	199	114	59	14	6	4	Phoenix, Ariz. ....	130	67	36	12	8	2
Columbus, Ohio ....	133	80	38	8	5	8	Pueblo, Colo. ....	14	10	3	-	-	2
Dayton, Ohio ....	103	65	26	5	2	5	Salt Lake City, Utah ....	42	28	10	2	2	-
Detroit, Mich. ....	322	195	89	21	6	6	Tucson, Ariz. ....	95	61	24	7	1	2
Evansville, Ind. ....	55	43	10	1	1	5	<b>PACIFIC</b> .....	1,521	972	347	83	65	44
Fort Wayne, Ind. ....	43	32	4	-	5	6	Berkeley, Calif. ....	13	11	-	2	-	1
Gary, Ind. ....	22	12	6	3	-	2	Fresno, Calif. ....	55	37	11	5	1	-
Grand Rapids, Mich. ....	59	42	15	2	-	6	Glendale, Calif. ....	21	16	4	1	-	-
Indianapolis, Ind. ....	162	99	43	7	7	3	Honolulu, Hawaii ....	51	20	24	3	3	3
Madison, Wis. ....	29	20	5	1	1	6	Long Beach, Calif. ....	101	69	27	2	3	1
Milwaukee, Wis. ....	126	87	31	4	3	1	Los Angeles, Calif. ....	464	313	93	19	21	12
Peoria, Ill. ....	36	19	11	1	5	4	Oakland, Calif. ....	83	48	19	8	6	1
Rockford, Ill. ....	34	23	8	1	1	2	Pasadena, Calif. ....	22	18	2	1	-	-
South Bend, Ind. ....	39	24	11	1	1	1	Portland, Oreg. ....	113	69	28	4	8	3
Toledo, Ohio ....	108	79	21	3	3	1	Sacramento, Calif. ....	70	43	17	3	2	2
Youngstown, Ohio ....	78	53	18	3	3	1	San Diego, Calif. ....	117	71	30	6	5	2
<b>WEST NORTH CENTRAL</b> .....	724	465	160	40	35	26	San Francisco, Calif. ....	152	89	35	13	6	3
Des Moines, Iowa ....	41	27	8	3	1	2	San Jose, Calif. ....	60	40	15	2	2	4
Duluth, Minn. ....	25	17	6	2	-	2	Seattle, Wash. ....	131	82	28	11	6	6
Kansas City, Kans. ....	27	19	7	-	1	-	Spokane, Wash. ....	43	30	8	2	2	4
Kansas City, Mo. ....	124	81	31	3	6	6	Tacoma, Wash. ....	25	16	6	1	-	2
Lincoln, Nebr. ....	19	12	4	2	1	1	<b>TOTAL</b> .....	12,284	7,578	3,146	733	454	511
Minneapolis, Minn. ....	119	76	21	6	10	4	Expected Number .....	12,765	7,881	3,279	779	408	552
Omaha, Nebr. ....	78	50	19	6	1	1							
St. Louis, Mo. ....	159	91	40	11	9	2							
St. Paul, Minn. ....	64	48	12	2	2	2							
Wichita, Kans. ....	68	44	12	5	4	6							

\*By place of occurrence and week of filing certificate. Excludes fetal deaths.

The Morbidity and Mortality Weekly Report, circulation 52,000, is published by the Center for Disease Control, Atlanta, Georgia. The data in this report are provisional, based on weekly telegraphs to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Send reports to: Center for Disease Control, Attn.: Editor, Morbidity and Mortality Weekly Report, Atlanta, Georgia 30333.

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## Current Trends

## Follow-up on Canine Rabies — Laredo, Texas, Nuevo Laredo, Mexico

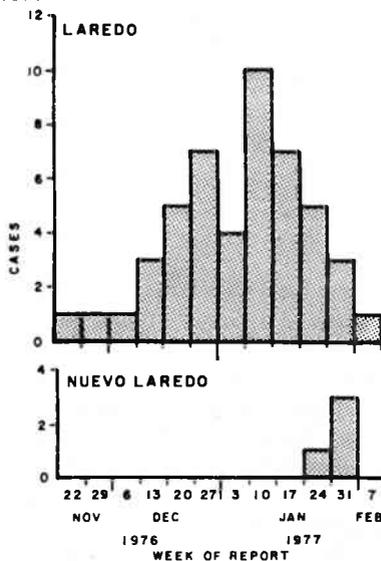
A total of 48 cases of canine rabies have been reported in the city of Laredo, Texas, from the week beginning November 22, 1976, through the week beginning February 7, 1977 (Figure 2). As previously described (MMWR 26[1], 1977) these are the first cases of dog rabies reported in Laredo in 29 years. Intensive dog control and vaccination programs are continuing. Approximately 11,000 dogs have been vaccinated in special clinics since December 4; an additional 6,000-7,000 dogs were estimated to have been vaccinated at private veterinary clinics and special clinics January 1 through December 4, 1976.

Animal control personnel have captured over 1,000 loose dogs since the beginning of the outbreak. At least 43 persons have received antirabies treatment following known or possible exposure to rabid dogs.

Nuevo Laredo, the bordering city in Mexico that previously had not reported any rabies problem, now has 4 laboratory confirmed cases (3 dogs, 1 opossum) (Figure 2). The last canine rabies case reported from Nuevo Laredo was in 1974. An intensified program of vaccination and capture of strays was initiated on January 24, 1977, in Nuevo Laredo.

Reported by AB Rich, DVM, Bur of Veterinary Public Health, CR Webb Jr, MD, Acting State Epidemiologist, Texas State Dept of

FIGURE 2. Animal rabies reports, Laredo, Texas, and Nuevo Laredo, Mexico, by weeks beginning November 22, 1976, through February 7, 1977



Health Resources; B Velimirovic, MD, El Paso Field Office, Pan American Health Organization; Viral Zoonoses Section, Viral Diseases Div, Bur of Epidemiology, CDC.

## Zoster Immune Globulin — An Assessment

Zoster immune globulin (ZIG), prepared from convalescent plasma of patients with herpes zoster, has been distributed by CDC since 1972 for use as prophylaxis in immunosuppressed children exposed to varicella or herpes zoster. During the period November 6, 1974, to November 1, 1976, 533 persons were treated with ZIG from 1 of 7 lots of ZIG which were prepared and distributed 1 lot at a time. The complement fixation (CF) titer to varicella zoster virus of these lots ranged from 1:1280 to 1:5120, and the fluorescent antibody to membrane antigen (FAMA) titer ranged from 1:512 to 1:2048. Clinical varicella developed in 88 (20%) of the 441 patients who were followed up. The highest attack rate occurred among those with household contacts (36% ill), followed by newborn (23%), playmate (9%), hospital (7%), and school (5%) contacts.

Of the 198 treated for household exposure, 136 were selected for intensive analysis based on the following criteria:

- 1) pretreatment CF titer of  $\leq 4$
- 2) incubation period of illness (if ill) of 10-35 days
- 3) ZIG therapy within 3 days after the known exposure
- 4) full clinical follow-up data submitted

Forty-nine of these 136 (36%) became ill, but symptoms were generally mild. Twelve patients had fewer than 11 lesions, 28 had between 11 and 100, and 9 had more than 100 pox. No differences were observed by lot of ZIG. Six patients developed complications of the disease: 4 had

pneumonia, 5 had central nervous system complications, and 2 died. All disease complications occurred in patients treated with ZIG from lots with low FAMA titers, 1:512 and 1:1024. Both deaths occurred in patients treated from the lowest titer lot. These 2 low titer lots were the first 2 issued in 1974 and early 1975. Following this all lots were prepared to give higher titers.

Convalescent serum specimens were submitted from 117 patients. Nine of the 74 (12.2%) that did not have clinical varicella had significant CF titer rises, indicative of subclinical illness.

The increasing demand for ZIG has led to shortages, and the current stock will soon be exhausted. At the present time, CDC has no zoster immune plasma with which to begin a new lot. All those interested in supplying convalescent plasma from patients with herpes zoster should contact

Center for Disease Control  
Bureau of Laboratories  
Attention: Dr. Robert Ellis  
Biological Products Division  
Atlanta, Georgia 30333  
Phone: (404) 633-3311, Ext. 3356

Plasma donation should be made between 7 and 28 days after onset of herpes zoster.

Reported by the Biological Products Div, Bur of Laboratories, and the Immunization Div, Bur of State Services.

## Influenza — Worldwide

**United States:** Influenza B has been isolated from outbreaks of influenza-like illness among children in schools or youth groups in California, Delaware, and New Mexico. Isolates of influenza B have been made from sporadic cases

in Illinois, Maryland, Minnesota, Oklahoma, and Missouri. Isolates of influenza A/Victoria/75 have been reported this week from sporadic cases in Georgia, Illinois, North Carolina, and South Carolina. No outbreaks of A/Victoria/75

*Influenza — Continued*

influenza have been reported since the January outbreak in Florida (MMWR 26[6], 1977).

Reported by the state epidemiologists from California, Delaware, Georgia, Illinois, Maryland, Minnesota, Missouri, New Mexico, North Carolina, Oklahoma, and South Carolina, and the National Influenza Immunization Program, CDC.

Worldwide: Isolates of A/Victoria/3/75-like virus have been reported from sporadic cases in Greece, the United Kingdom, and Canada since December 1976. A single iso-

late of A/England/864/75, a strain found in England and several other countries last year, was reported from the United Kingdom. A single isolate of influenza B was reported from Quebec. Two isolates of influenza A have been made in hospitalized children in Edinburgh.

Reported by the World Health Organization in the *Weekly Epidemiological Record* 52:42, 1977; the *Canada Influenza Surveillance Report*, Numbers 4 and 5, January 28 and February 4, 1977; and the *Communicable Diseases Scotland Weekly Report*, January 77(3):12, January 22, 1977.

Epidemiologic Notes and Reports**Giardiasis — California, Colorado**

The report by a local California physician of laboratory-confirmed giardiasis in a family in July led to an investigation which uncovered an outbreak of giardiasis traced to exposure in Estes Park, Colorado.

On July 23, 1976, the Los Angeles County Health Department notified the state health department that a local physician had reported laboratory-confirmed giardiasis in a patient; 2 other family members had also been ill. Illness was also suspected in relatives from 4 other states who, along with this family, attended a reunion near Estes Park in the Rocky Mountain National Park in late June. The Colorado Department of Health was alerted, and it initiated an investigation.

Altogether, 9 of 17 reunion members were subsequently found to have become ill. The group had stayed at summer cabins supplied by water from a small reservoir on the Fall River; that water was chlorinated but not filtered.

Colorado officials studied 2 additional groups: 48 other persons who had stayed at the same cabins in the period June 1-July 28, and a control group of 42 who had stayed for about 4 days during this same period, but at a nearby lodge which received filtered, chlorinated city water. Symptoms of giardiasis (diarrhea plus any 2 of the following: foul-smelling stools, bloating, abdominal cramps, loss of appetite, or weight loss) were reported in 37% of those in the first group but in none of the controls.

Filtrates of reservoir water were found positive for cysts. However, 100 non-human, mammalian fecal specimens collected upstream from the reservoir revealed no *Giardia* organisms on microscopic examination. Eleven water samples collected from sources upstream revealed no fecal coli-

form counts above .5/100 ml.

**Editorial Note:** The carrier rate of *Giardia lamblia* in the United States ranges between 1.5% and 20%, depending on the community and age group surveyed. An ongoing CDC intestinal parasite survey shows *G. lamblia* to be the most frequently diagnosed intestinal parasitic pathogen in public health laboratories. Reports of epidemics are increasing: at Aspen during the 1965-1966 winter season, at Boulder, Colorado, in 1972, at Rome, New York, in 1975, in Utah in 1975, at a Colorado resort lodge in 1976, and in Camas, Washington, in March 1976 (1,2,3). A survey taken during the Rome outbreak indicated that more than 4,800 of the city's 46,000 residents became ill (4).

Campers ingesting untreated water from mountain streams are at increased risk of acquiring giardiasis. At least 1 non-human species (beaver) has been implicated in *Giardia* cyst contamination of community water supplies — at Camas Washington. *Giardia* cysts are not destroyed by chlorination at dosages and contact times commonly used in water treatment. Negative coliform counts, therefore, do not assure safety from *G. lamblia*; filtration is needed.

Reported by *Colorado Disease Bulletin*, No. 42, 1976, and *California Morbidity*, No. 46, 1976.

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