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MORBIDITY AND MORTALITY WEEKLY REPORT

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Epidemiologic Notes and Reports

Group A Streptococcal Wound Infections in an Abattoir — Vermont

Nineteen instances of wound sepsis occurred among 59 employees of a Vermont abattoir from November 1976 through February 1977. Group A streptococcus was isolated from 8 of 9 wounds cultured. Contact with contaminated meat may have been the source of infection of some workers.

The abattoir began operation on October 29, 1976. It employed many inexperienced workers who consequently suffered frequent abrasions and cuts. Two weeks after the abattoir opened, 10 persons reported wounds that had become acutely inflamed; several had lymphangitis and cellulitis (Figure 1). A total of 19 such cases occurred during the next 3 months. One such infection was reported in the same time period in 2 comparable Vermont abattoirs that were surveyed.

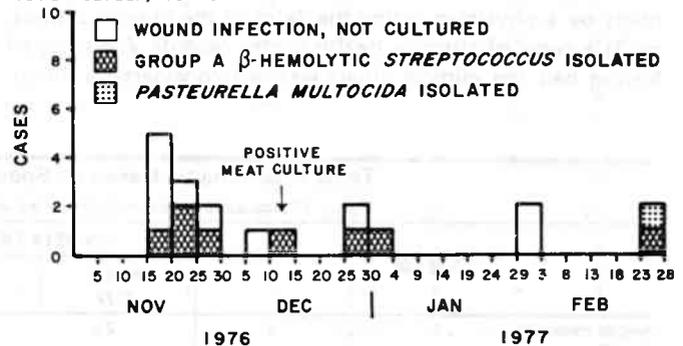
From 9 wounds, 8 of which were cultured by practitioners in the community, group A β -hemolytic streptococcus was isolated in 8; *Pasteurella multocida* was recovered from 1 atypical wound that resulted from a boar bite on the kill line. The rate of infections per man-month of employment was significantly greater in those who worked in meat-handling areas (kill floor, holding cooler, and cutting and pork rooms) (17 infections per 92 man-months) compared to other areas of the plant (2/69). The frequencies of infection in each meat-handling area were similar.

During the initial investigation on December 14, 1976, group A streptococcus M41 T3/13 SOR- was cultured from 1 of 30 meat cultures, from the healing wound of a man who worked in the cutting room distal to the holding cooler, and from the throats of 3 meat-handlers. Two other group A strains were isolated from throat cultures of 3 employees: T13 MNT SOR+ (2 isolates) and T28 MNT SOR+ (1 isolate). The frequency of positive cultures or serologic evidence of infection with any one or all of these 3 strains (using bactericidal or SOR-inhibition assays) was similar in those who worked in meat-handling and other areas and in cases and well persons. Anterior nares and anus cultures were negative for group A streptococci.

Transmission of infection to workers may have occurred by person-to-person spread or by contact with fomites. The initial 10 cases occurred shortly after a man with a chronic impetiginous infection began work on the kill floor on November 14. The earliest cases may have become infected by

contact with him or the meat he handled; however, only 2 cases had culture-proven or serologic evidence of infection with the strain isolated from meat in December.

FIGURE 1. Wound infections at a Vermont abattoir, November 1976-February 1977.



The outbreak subsided after recommendations were instituted for prompt local care of all wounds, culture of all infected wounds, and exclusion from work of persons with infected wounds until cultures became negative.

Reported by J Allen, J Froins, PhD, D Laitinen, MPH, M McBean, MD, W Watson, MD, Acting State Epidemiologist, Vermont State Dept of Health; Staphylococcus and Streptococcus Section, Clinical Bacteriology Br, Bacteriology Div, Bur of Laboratories; Special Pathogens Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: The natural reservoir of group A β -hemolytic streptococcus is man; however, rarely, animals may become infected through contact with ill persons. The mode of transmission in this outbreak is unclear; however, culture of a single streptococcal strain from both meat and a healing wound suggests that after introduction of the organism into the plant, meat may have served as a fomite in subsequent transmission to some cases.

Although this is the first reported outbreak of group A streptococcal wound infection among abattoir workers in the United States, 8 such outbreaks have occurred in Great Britain since 1974 (1). Group A streptococcal wound sepsis is an occupational hazard of abattoir workers that may be underestimated.

Reference

1. Fraser CAM, Morris CA, Ball LC, Noah ND: Serological characterization of group A streptococci associated with skin sepsis in meat handlers, J Hyg (Camb) (in press)

Follow-up on Measles and School Immunizations — Alaska

Investigation of recent outbreaks of measles in Alaska school children led to the discovery that the state's school immunization law was not being enforced (MMWR 26[11], 1977). In an effort to control a large measles outbreak in Fairbanks, all school children there were required to show proof of vaccination against measles or be excluded from school beginning January 24. During the 3-week period before the deadline, over 2,875 of 11,727 children enrolled in the Fairbanks school district were vaccinated against measles. On January 24, 1,251 children were excluded from Fairbanks schools. One week later, less than 90 children were still out of school because of failure to meet immunization requirements.

A statewide school immunization record review was initiated on January 10, and the deadline of March 1, 1977, was set for all school children throughout the state to be immunized against diphtheria, pertussis, tetanus, poliomyelitis, measles, and rubella in compliance with state law. Proof of immunization was required and defined as: 1) an international immunization certificate, 2) a signed statement by a physician listing the dates of the immunizations, or 3) a copy of clinic or health center records. A history of having had the clinical illness was not considered a substi-

tute for immunization. Primary immunization against diphtheria, tetanus, pertussis, and poliomyelitis requires multiple vaccinations; therefore, children not immunized against these diseases were required to receive at least 1 immunization before the March 1 deadline. These children have been identified and are being followed to ensure completion of the total series. Only a single immunization was required against measles and rubella.

On March 1, 7,418 of 89,109 (8.3%) school children were excluded from Alaska schools for failure to meet immunization requirements. Two weeks later, 201 (0.2%) remained out of school, and on April 1, fewer than 50 were excluded. In the period from January 1 to March 1, over 35,000 children were immunized with more than 56,000 immunizations. Two hundred eighty-six children claimed a religious exemption; 178 claimed a medical exemption. No serious side effects to any of the immunizations have been reported.

Reported by B Wild, RN, Anchorage Municipal School District; A Beltz, RN, Anchorage Municipal Health Dept; L Clune, Fairbanks School District; P Rogers, RN, Fairbanks Health Center; R I Fraser, MD, P Frith, DVM, JP Middaugh, MD, Acting Assistant State Epidemiologist, LD Zyla, Alaska Dept of Health and Social Services.

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

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

DISEASE	14th WEEK ENDING		MEDIAN 1972-1976	CUMULATIVE, FIRST 14 WEEKS		
	April 9, 1977	April 10, 1976		April 9, 1977	April 10, 1976	MEDIAN 1972-1976
Aseptic meningitis	26	26	35	494	490	190
Brucellosis	1	8	4	46	68	32
Chickenpox	6,425	6,838	---	83,523	78,412	---
Diphtheria	3	3	3	21	88	62
Encephalitis	11	18	19	165	214	214
{ Primary	7	6	5	33	72	66
{ Post-Infectious	323	380	176	4,221	3,880	2,595
Hepatitis, Viral	616	692	871	8,978	9,692	11,960
{ Type B	201	143	---	2,598	2,365	---
{ Type A	10	6	4	87	85	70
{ Type unspecified	1,830	1,674	1,291	20,478	13,252	10,569
Malaria	30	36	33	608	538	477
Measles (rubella)	28	36	30	603	534	465
Meningococcal infections, total	2	---	1	5	4	13
Civilian	728	1,471	1,793	8,294	17,769	23,693
Military	11	20	---	173	301	---
Mumps	885	424	674	8,021	4,998	4,998
Pertussis	2	1	---	10	8	14
Rubella (German measles)	601	687	---	7,819	8,492	---
Tetanus	1	1	1	16	28	27
Tuberculosis	11	5	3	93	90	87
Tularemia	2	2	1	26	9	13
Venereal Diseases:						
Gonorrhea	17,030	18,426	---	247,371	259,504	---
{ Civilian	417	489	---	6,909	7,829	---
{ Military	345	429	---	5,894	6,998	---
Syphilis, primary and secondary	10	9	---	85	106	---
{ Civilian	54	69	69	642	606	761
{ Military						
Rabies in animals						

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax:	—	Poliomyelitis, total:*	2
Botulism: Calif. 9	19	Paralytic:	2
Congenital rubella syndrome:	2	Psittacosis: Calif. 3	14
Leprosy: Tex. 1, Calif. 3	32	Rabies in man:	—
Leptospirosis: La. 2	12	Trichinosis: N.J. 1	32
Plague:	1	Typhus, murine: Tex. 1	11

*Delayed reports: Cong. Rub. Syndrome: Alaska 2 (1976); Polio, unsp.: Nebr. delete 1 (1976)

Table III
Cases of Specified Notifiable Diseases: United States
Weeks Ending April 9, 1977 and April 10, 1976 - 14th 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	26	1	6,425	3	21	11	18	7	323	616	201	10	87
NEW ENGLAND	-	-	662	-	-	1	1	-	11	29	17	-	4
Maine	-	-	12	-	-	-	-	-	-	2	-	-	-
New Hampshire*	-	-	1	-	-	-	-	-	-	1	-	-	-
Vermont	-	-	15	-	-	-	-	-	-	1	-	-	-
Massachusetts	-	-	262	-	-	-	-	-	3	3	17	-	2
Rhode Island	-	-	136	-	-	-	-	-	2	3	-	-	1
Connecticut	-	-	236	-	-	1	1	-	6	19	-	-	1
MIDDLE ATLANTIC	2	-	311	-	5	-	2	-	77	65	38	3	21
Upstate New York	2	-	136	-	-	-	-	-	23	15	8	1	6
New York City	-	-	94	-	5	-	-	-	14	16	9	1	11
New Jersey	-	-	NN	-	-	-	2	-	29	20	20	1	3
Pennsylvania	-	-	81	-	-	-	-	-	11	14	1	-	1
EAST NORTH CENTRAL	4	-	2,702	-	-	2	4	1	53	99	9	-	5
Ohio	1	-	138	-	-	2	3	1	21	36	-	-	3
Indiana	1	-	64	-	-	-	-	-	-	3	5	-	-
Illinois	1	-	436	-	-	-	-	-	3	9	-	-	1
Michigan	1	-	1,408	-	-	-	1	-	26	46	4	-	1
Wisconsin*	-	-	656	-	-	-	-	-	3	5	-	-	-
WEST NORTH CENTRAL	-	1	1,006	1	1	-	4	1	18	17	5	3	9
Minnesota	-	-	2	-	-	-	-	-	5	4	-	2	4
Iowa	-	-	294	-	-	-	-	-	-	-	-	-	-
Missouri	-	1	87	1	1	-	3	-	10	5	5	1	4
North Dakota	-	-	38	-	-	-	-	-	-	-	-	-	-
South Dakota	-	-	33	-	-	-	-	-	1	-	-	-	-
Nebraska*	-	-	85	-	-	-	1	-	-	2	-	-	-
Kansas	-	-	467	-	-	-	-	1	2	6	-	-	1
SOUTH ATLANTIC	3	-	344	-	-	2	-	1	39	104	21	2	16
Delaware	-	-	5	-	-	-	-	-	-	-	-	-	-
Maryland	1	-	15	-	-	-	-	-	12	13	3	-	5
District of Columbia	-	-	-	-	-	-	-	-	-	1	1	-	1
Virginia	-	-	24	-	-	1	-	1	7	8	6	-	3
West Virginia*	-	-	73	-	-	-	-	-	2	5	-	-	-
North Carolina	-	-	NN	-	-	1	-	-	6	2	1	2	4
South Carolina	-	-	20	-	-	-	-	-	3	5	-	-	-
Georgia	2	-	-	-	-	-	-	-	2	50	-	-	1
Florida	2	-	207	-	-	-	-	-	7	23	10	-	2
EAST SOUTH CENTRAL	3	-	126	-	-	2	3	3	15	40	3	-	3
Kentucky	-	-	56	-	-	2	-	-	-	-	-	-	3
Tennessee	2	-	NN	-	-	-	2	-	9	16	2	-	-
Alabama	-	-	56	-	-	-	-	2	3	10	1	-	-
Mississippi	1	-	14	-	-	-	1	1	3	14	-	-	-
WEST SOUTH CENTRAL	3	-	472	-	1	2	-	1	21	74	35	-	4
Arkansas*	-	-	1	-	-	-	-	-	-	-	2	-	-
Louisiana	-	-	NN	-	-	-	-	-	1	9	4	-	-
Oklahoma	-	-	75	-	-	-	-	1	3	8	5	-	-
Texas	3	-	396	-	1	2	-	-	17	57	24	-	4
MOUNTAIN	-	-	263	-	-	-	-	-	8	46	13	-	5
Montana*	-	-	29	-	-	-	-	-	-	5	-	-	-
Idaho	-	-	19	-	-	-	-	-	-	-	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-	-
Colorado	-	-	149	-	-	-	-	-	7	17	4	-	4
New Mexico	-	-	4	-	-	-	-	-	-	1	2	-	-
Arizona	-	-	NN	-	-	-	-	-	1	23	6	-	1
Utah	-	-	62	-	-	-	-	-	-	-	-	-	-
Nevada*	-	-	-	-	-	-	-	-	-	-	1	-	-
PACIFIC	11	-	539	2	14	2	4	-	81	142	60	2	20
Washington	2	-	462	2	13	-	3	-	7	22	7	-	-
Oregon	1	-	3	-	-	-	-	-	2	7	5	-	1
California*	8	-	-	-	-	2	1	-	70	110	48	2	15
Alaska	-	-	4	-	1	-	-	-	-	-	-	-	-
Hawaii	-	-	70	-	-	-	-	-	2	3	-	-	4
Guam	NA	NA	NA	NA	-	NA	-	-	-	NA	NA	NA	-
Puerto Rico	-	-	10	-	-	-	-	-	-	6	-	-	-
Virgin Islands	-	-	1	-	-	-	-	-	-	-	-	-	-

NN: Not notifiable
 NA: Not available

*Delayed reports: Asep. Meng.: N. Hamp delete 1 (1976); Chickenpox: N. Hamp, add 28, Mont. add 8, Nev. add 1, Calif. add 25 (1977); Hep. B: N. Hamp, add 1 (1976), N. Hamp, add 1, Wisc. add 1, Ark. add 1, Nev. add 5, Alaska delete 1 (1977); Hep. A: Wisc. delete 1, W. Va. delete 2, Ark. add 3, Nev. add 2 (1977); Hep. unsp: Neb. delete 1 (1976), Ark. add 2, Nev. add 4 (1977).

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending April 9, 1977 and April 10, 1976 - 14th Week

REPORTING AREA	MEASLES (Rubeola)			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	1,830	20,478	13,252	30	608	538	728	8,294	11	885	8,021	10
NEW ENGLAND	82	954	128	1	33	25	24	406	-	32	328	-
Maine	-	3	3	-	2	-	8	29	-	-	13	-
New Hampshire*	7	228	3	-	4	2	2	65	-	12	61	-
Vermont	14	221	-	1	3	1	-	5	-	1	36	-
Massachusetts*	47	242	2	-	8	7	6	68	-	8	140	-
Rhode Island	-	6	14	-	-	4	2	33	-	-	13	-
Connecticut	14	254	106	-	16	11	6	206	-	11	65	-
MIDDLE ATLANTIC	380	2,599	2,833	5	89	64	23	518	3	272	2,209	-
Upstate New York	149	752	1,003	1	26	25	9	86	2	201	1,217	-
New York City	11	109	111	1	16	17	9	208	-	5	111	-
New Jersey*	17	72	278	1	23	10	3	133	-	56	763	-
Pennsylvania	203	1,666	1,441	2	24	12	2	91	1	10	118	-
EAST NORTH CENTRAL	249	4,860	5,242	3	55	64	225	2,890	5	145	1,902	-
Ohio	5	278	160	1	25	19	29	437	-	33	499	-
Indiana	59	2,386	1,033	-	3	4	2	160	-	39	594	-
Illinois	24	486	440	1	7	7	27	325	3	6	126	-
Michigan*	50	486	1,831	1	14	28	116	992	2	48	480	-
Wisconsin*	111	1,224	1,778	-	6	6	51	976	-	19	203	-
WEST NORTH CENTRAL	343	3,872	270	-	37	42	247	2,038	-	39	235	1
Minnesota	47	577	87	-	15	8	-	3	-	3	8	-
Iowa	167	2,285	8	-	2	7	44	997	-	5	96	-
Missouri	90	365	6	-	14	11	131	431	-	2	16	1
North Dakota	-	4	1	-	1	1	2	7	-	-	-	-
South Dakota	-	10	1	-	4	2	10	25	-	-	-	-
Nebraska*	-	85	36	-	-	2	2	17	-	-	1	-
Kansas	39	546	131	-	1	11	58	558	-	29	114	-
SOUTH ATLANTIC	137	1,188	947	8	133	115	18	320	2	39	670	4
Delaware	-	18	102	-	1	1	5	61	-	5	13	-
Maryland	1	122	412	-	9	8	1	21	-	-	-	-
District of Columbia	-	1	2	-	-	2	-	2	-	-	-	-
Virginia	86	676	127	1	7	12	2	41	-	24	138	1
West Virginia	5	49	97	1	8	3	5	80	-	1	44	-
North Carolina	1	18	-	1	35	20	-	14	-	4	265	-
South Carolina	18	93	1	2	12	18	1	9	2	4	152	-
Georgia	26	204	-	1	25	10	1	8	-	1	31	-
Florida	-	7	206	2	36	41	3	84	-	-	27	3
EAST SOUTH CENTRAL	91	439	328	2	65	37	26	436	1	219	1,206	1
Kentucky	13	111	317	-	17	5	2	58	-	4	28	1
Tennessee	41	276	5	1	18	16	12	246	1	199	1,158	-
Alabama	36	40	-	1	21	11	11	123	-	15	18	-
Mississippi	1	12	6	-	9	5	1	9	-	1	2	-
WEST SOUTH CENTRAL	108	1,101	337	9	113	88	48	712	-	64	407	3
Arkansas	-	1	-	1	6	3	-	5	-	1	1	-
Louisiana	-	55	22	-	42	14	-	26	-	-	8	1
Oklahoma	-	41	204	1	3	15	19	283	-	1	20	-
Texas	108	1,004	111	7	62	56	29	398	-	62	378	2
MOUNTAIN	31	1,174	2,530	-	15	21	68	350	-	4	236	-
Montana*	24	697	82	-	2	2	-	2	-	-	6	-
Idaho	1	28	1,010	-	1	1	2	65	-	-	-	-
Wyoming	-	1	-	-	-	-	-	-	-	-	1	-
Colorado	4	318	39	-	1	8	55	156	-	4	185	-
New Mexico	-	5	8	-	5	1	4	74	-	-	1	-
Arizona	-	87	194	-	5	5	-	-	-	-	-	-
Utah	2	5	1,180	-	-	4	7	52	-	-	40	-
Nevada*	-	33	17	-	1	-	-	1	-	-	3	-
PACIFIC	409	4,291	637	2	68	82	49	624	-	71	828	1
Washington	17	245	64	-	11	15	10	134	-	11	227	-
Oregon	4	79	12	1	6	5	1	128	-	2	48	-
California*	383	3,913	559	1	41	56	38	337	-	58	548	1
Alaska*	-	48	-	-	9	4	-	17	-	-	-	-
Hawaii	5	6	2	-	1	2	-	8	-	-	5	-
Guam	NA	3	6	-	-	1	NA	-	NA	NA	3	-
Puerto Rico	21	270	64	-	-	2	11	215	-	3	11	3
Virgin Islands	-	6	2	-	-	-	14	132	-	-	-	-

NA: Not available

*Delayed reports: Measles: Alaska delete 1 (1976), N. Hamp. add 3, Mass. delete 3, Mich. add 53, Wisc. add 1, Nev. add 10 (1977); Men. Inf.: N. Hamp. add 1, Neb. add 1 (1976), N. Hamp. delete 1 (1977); Mumps: Neb. add 2 (1976); Rubella: N.J. delete 4, Mont. add 1 (1977).

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending April 9, 1977 and April 10, 1976 - 14th 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	1977	GONORRHEA		SYPHILIS (Pri. & Sec.)		CUM. 1977	
									1977	CUMULATIVE		1977		CUMULATIVE
1976	1977	1976	1977	1976	1977									
UNITED STATES	601	7,819	16	11	93	2	26	17,030	247,371	259,504	345	5,894	6,998	642
NEW ENGLAND	31	285	1	2	5	-	-	564	6,541	7,197	11	205	204	8
Maine	4	22	-	-	-	-	-	42	552	608	-	7	7	8
New Hampshire*	-	8	-	-	-	-	-	11	238	176	-	-	3	-
Vermont	2	12	-	-	-	-	-	7	161	144	-	3	2	-
Massachusetts	17	153	1	1	3	-	-	273	2,854	3,372	8	151	147	-
Rhode Island	-	15	-	1	1	-	-	20	464	507	-	2	0	-
Connecticut	8	75	-	-	1	-	-	211	2,272	2,390	3	42	36	-
MIDDLE ATLANTIC	105	1,212	-	3	20	-	2	1,624	27,602	27,738	43	839	1,208	7
Upstate New York	26	176	-	1	3	-	2	266	4,004	4,429	6	71	76	6
New York City	36	410	-	-	8	-	-	552	12,416	11,835	29	525	781	-
New Jersey	18	307	-	2	7	-	-	446	4,224	4,563	2	113	168	1
Pennsylvania	25	319	-	-	2	-	-	360	6,958	6,911	6	130	183	-
EAST NORTH CENTRAL ..	70	1,278	2	1	10	-	-	3,025	36,795	42,058	74	687	650	19
Ohio	15	217	1	-	2	-	-	402	9,028	10,856	15	175	151	-
Indiana	12	144	-	-	-	-	-	505	3,291	3,945	2	40	36	1
Illinois	32	476	-	-	1	-	-	1,257	12,620	14,780	42	371	347	3
Michigan	11	387	-	1	7	-	-	596	8,329	8,553	7	69	83	2
Wisconsin	-	54	1	-	-	-	-	265	3,527	3,924	8	32	33	13
WEST NORTH CENTRAL ..	17	245	3	1	6	-	4	888	13,001	13,202	7	132	129	141
Minnesota	8	51	-	-	1	-	-	148	2,266	2,475	2	42	30	53
Iowa	-	25	-	-	-	-	-	84	1,567	1,746	1	10	17	15
Missouri*	-	94	2	1	3	-	3	482	5,507	5,175	4	46	49	14
North Dakota	1	8	-	-	-	-	-	21	214	207	-	-	-	17
South Dakota	2	13	1	-	-	-	-	23	341	378	-	1	2	32
Nebraska	-	10	-	-	-	-	-	30	1,049	1,099	-	15	10	-
Kansas	6	44	-	-	2	-	1	100	2,057	2,122	-	18	21	10
SOUTH ATLANTIC	147	1,825	5	1	15	-	10	3,650	58,783	62,142	110	1,668	2,058	75
Delaware	-	15	-	-	-	-	-	34	715	927	-	12	17	-
Maryland*	23	270	-	-	-	-	-	545	7,441	8,641	9	113	178	-
District of Columbia* ..	7	87	-	-	-	-	-	326	3,339	3,923	10	174	176	-
Virginia	27	193	-	-	5	-	2	420	6,209	6,568	12	163	187	2
West Virginia	4	78	-	-	2	-	-	44	802	783	-	1	13	3
North Carolina*	25	328	-	-	1	-	6	370	8,964	9,323	19	237	409	2
South Carolina	11	171	2	-	-	-	-	427	5,505	5,949	2	78	116	-
Georgia	10	209	3	-	-	-	2	472	11,186	11,537	21	305	243	56
Florida	40	474	-	1	7	-	-	1,012	14,622	14,491	37	585	719	12
EAST SOUTH CENTRAL ..	62	689	-	-	1	-	5	1,520	21,182	23,309	7	195	294	22
Kentucky	15	157	-	-	-	-	1	223	2,976	2,949	1	20	48	10
Tennessee	22	230	-	-	-	-	3	579	8,357	9,042	1	55	121	8
Alabama	24	192	-	-	1	-	1	448	5,931	6,652	1	38	54	4
Mississippi	1	110	-	-	-	-	-	270	3,918	4,666	4	82	71	-
WEST SOUTH CENTRAL ..	72	870	2	1	1	2	5	2,322	32,057	35,851	24	783	788	266
Arkansas	14	92	-	-	-	-	-	240	2,561	3,318	-	18	25	24
Louisiana	11	171	-	-	-	-	-	162	4,203	5,217	-	147	171	1
Oklahoma	4	85	1	-	-	-	1	211	2,906	3,347	1	19	37	105
Texas	43	522	1	1	1	2	4	1,709	22,387	23,969	23	599	555	136
MOUNTAIN	16	206	3	-	8	-	-	764	10,284	10,153	3	128	195	10
Montana	2	7	1	-	-	-	-	36	524	521	-	-	3	10
Idaho	-	13	-	-	-	-	-	23	497	525	1	3	8	-
Wyoming	1	5	-	-	-	-	-	22	300	220	2	9	5	-
Colorado	-	33	2	-	6	-	-	179	2,614	2,500	-	34	50	-
New Mexico*	3	35	-	-	-	-	-	91	1,518	2,075	-	24	58	-
Arizona*	10	98	-	-	1	-	-	244	2,946	2,899	-	52	56	-
Utah	-	6	-	-	1	-	-	45	584	604	-	4	2	-
Nevada	-	9	-	-	-	-	-	124	1,301	809	-	2	13	-
PACIFIC	81	1,209	-	2	27	-	-	2,673	41,126	37,854	66	1,257	1,472	94
Washington*	NA	60	-	-	-	-	-	243	3,057	3,196	NA	49	41	-
Oregon	2	51	-	-	2	-	-	243	3,009	2,817	-	43	47	-
California	65	917	-	2	24	-	-	2,014	32,865	30,033	66	1,149	1,358	85
Alaska*	-	8	-	-	-	-	-	118	1,341	1,046	-	5	2	9
Hawaii	14	173	-	-	1	-	-	55	854	762	-	11	24	-
Guam	NA	16	-	NA	1	NA	-	NA	67	124	NA	1	1	-
Puerto Rico	13	91	-	-	2	-	-	79	841	698	23	169	152	10
Virgin Islands	-	1	-	-	-	-	-	4	39	72	-	1	25	-

NA: Not available

*Delayed reports: TB: Md. delete 9 (1976), Mo. delete 2, Md. delete 3, N.C. delete 2, Alaska add 8 (1977); RMSF: Mo. delete 1 (1977); GC: D.C. add 3241 (1976), N. Hamp. add 2, N. Mex. delete 1 civ. add 1 mil., Wash add 83 mil. (1977); Syphilis: D.C. delete 28 (1976), Alaska add 1 (1977); An. rabies: Ariz. add 5.

Table IV
Deaths in 121 United States Cities*
Week Ending April 9, 1977 - 14th 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	
NEW ENGLAND	620	399	162	25	18	44	SOUTH ATLANTIC	1,220	695	357	90	31	55
Boston, Mass.	198	116	59	10	11	13	Atlanta, Ga.	141	73	50	10	1	5
Bridgeport, Conn.	38	27	8	2	-	5	Baltimore, Md.	237	142	61	19	7	12
Cambridge, Mass.	34	21	10	1	-	2	Charlotte, N. C.	64	38	17	6	2	-
Fall River, Mass.	24	20	4	-	-	-	Jacksonville, Fla.	99	52	27	10	4	6
Hartford, Conn.	52	29	16	5	-	4	Miami, Fla.	118	58	42	7	4	3
Lowell, Mass.	18	10	7	1	-	2	Norfolk, Va.	42	27	11	3	-	4
Lynn, Mass.	19	14	5	-	-	-	Richmond, Va.	85	42	32	5	3	4
New Bedford, Mass.	15	11	4	-	-	2	Savannah, Ga.	30	16	8	4	1	5
New Haven, Conn.	28	14	8	-	3	-	St. Petersburg, Fla.	88	74	10	2	-	3
Providence, R.I.	62	45	9	4	1	4	Tampa, Fla.	77	40	27	7	1	5
Somerville, Mass.	7	4	2	1	-	-	Washington, D. C.	193	106	59	13	7	6
Springfield, Mass.	60	42	16	-	-	3	Wilmington, Del.	46	27	13	4	1	2
Waterbury, Conn.	20	14	6	-	-	3	EAST SOUTH CENTRAL	642	377	174	26	38	39
Worcester, Mass.	45	32	8	1	3	6	Birmingham, Ala.	85	58	17	4	5	3
MIDDLE ATLANTIC	2,707	1,757	671	141	67	131	Chattanooga, Tenn.	44	26	9	4	1	6
Albany, N. Y.	46	30	11	2	2	3	Knoxville, Tenn.	30	18	12	-	-	-
Allentown, Pa.	25	21	3	-	1	1	Louisville, Ky.	109	63	32	4	4	11
Buffalo, N. Y.	120	74	32	4	6	8	Memphis, Tenn.	124	71	37	6	7	1
Camden, N. J.	38	27	2	6	3	1	Mobile, Ala.	82	44	26	2	7	1
Elizabeth, N. J.	26	18	5	2	1	2	Montgomery, Ala.	55	32	17	-	5	11
Erie, Pa.	34	28	3	-	3	3	Nashville, Tenn.	113	65	24	6	9	6
Jersey City, N. J.	44	28	13	-	2	1	WEST SOUTH CENTRAL	1,099	615	299	86	58	40
Newark, N. J.	28	13	7	2	2	2	Austin, Tex.	40	26	10	4	-	8
New York City, N. Y.	1,425	923	358	77	28	44	Baton Rouge, La.	52	37	11	2	1	1
Peterson, N. J.	21	15	2	2	1	3	Corpus Christi, Tex.	40	17	17	-	2	1
Philadelphia, Pa.	397	249	110	25	7	24	Dallas, Tex.	195	103	51	23	7	6
Pittsburgh, Pa.	130	72	46	7	3	10	El Paso, Tex.	35	25	7	3	-	3
Reading, Pa.	45	32	12	1	-	3	Fort Worth, Tex.	76	47	16	3	7	-
Rochester, N. Y.	121	86	24	5	5	13	Houston, Tex.	223	100	79	17	12	4
Schenectady, N. Y.	15	9	4	-	-	1	Little Rock, Ark.	42	24	13	1	3	1
Scranton, Pa.	36	28	6	1	-	2	New Orleans, La.	146	69	43	13	21	-
Syracuse, N. Y.	73	48	14	3	2	4	San Antonio, Tex.	148	96	31	14	2	5
Trenton, N. J.	28	17	6	3	-	1	Shreveport, La.	56	36	15	2	2	4
Utica, N. Y.	27	19	8	-	-	4	Tulsa, Okla.	46	35	6	4	1	7
Yonkers, N. Y.	28	20	5	1	1	1	MOUNTAIN	537	311	144	38	24	17
EAST NORTH CENTRAL	2,317	1,390	600	158	94	55	Albuquerque, N. Mex.	47	25	19	2	-	3
Akron, Ohio	87	57	14	4	9	-	Colorado Springs, Colo.	36	24	8	1	-	3
Canton, Ohio	32	19	8	2	-	-	Denver, Colo.	112	64	31	9	5	7
Chicago, Ill.	594	329	163	56	31	15	Las Vegas, Nev.	32	20	12	-	-	1
Cincinnati, Ohio	134	83	38	7	3	5	Ogden, Utah	21	10	9	1	-	1
Cleveland, Ohio	178	108	47	11	8	3	Phoenix, Ariz.	108	62	31	8	4	1
Columbus, Ohio	135	91	28	7	6	3	Pueblo, Colo.	24	14	7	3	-	2
Dayton, Ohio	83	45	27	9	1	4	Salt Lake City, Utah	72	41	11	5	13	2
Detroit, Mich.	276	151	80	20	9	3	Tucson, Ariz.	85	51	16	9	2	-
Evansville, Ind.	58	42	10	5	-	2	PACIFIC	1,615	1,052	368	82	54	46
Fort Wayne, Ind.	40	23	9	5	2	4	Berkeley, Calif.	15	11	4	-	-	-
Gary, Ind.	22	14	6	1	1	4	Fresno, Calif.	59	39	14	1	4	3
Grand Rapids, Mich.	54	35	15	2	1	1	Glendale, Calif.	30	23	3	2	2	1
Indianapolis, Ind.	162	90	45	14	5	2	Honolulu, Hawaii	43	23	12	4	1	4
Madison, Wis.	46	28	7	2	4	5	Long Beach, Calif.	93	61	22	5	2	4
Milwaukee, Wis.	131	86	34	3	2	1	Los Angeles, Calif.	493	316	127	18	10	13
Peoria, Ill.	29	13	8	1	6	-	Oakland, Calif.	71	47	12	8	1	2
Rockford, Ill.	32	20	9	3	-	-	Pasadena, Calif.	32	24	5	1	1	2
South Bend, Ind.	42	33	8	-	1	1	Portland, Oreg.	126	82	29	6	8	-
Toledo, Ohio	104	70	25	3	2	1	Sacramento, Calif.	93	51	28	4	5	2
Youngstown, Ohio	78	53	19	3	3	1	San Diego, Calif.	126	86	23	9	2	2
WEST NORTH CENTRAL	730	464	167	42	30	37	San Francisco, Calif.	167	103	37	14	7	2
Des Moines, Iowa	55	33	12	4	3	3	San Jose, Calif.	41	28	7	3	-	1
Duluth, Minn.	24	19	3	2	-	1	Seattle, Wash.	139	94	27	6	7	4
Kansas City, Kans.	27	19	5	1	1	1	Spokane, Wash.	50	36	10	1	3	4
Kansas City, Mo.	135	90	30	6	6	7	Tacoma, Wash.	37	28	8	-	1	2
Lincoln, Nebr.	36	22	8	4	-	3	TOTAL	11,487	7,060	2,942	688	414	464
Minneapolis, Minn.	92	58	18	6	6	5	Expected Number	11,986	7,360	3,095	743	378	496
Omaha, Nebr.	80	38	34	3	3	3							
St. Louis, Mo.	150	101	28	9	7	6							
St. Paul, Minn.	68	50	13	3	1	3							
Wichita, Kans.	63	34	16	4	3	5							

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

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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. Send reports to: Center for Disease Control, Attn.: Editor, Morbidity and Mortality Weekly Report, Atlanta, Georgia 30333.

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International Notes**Outbreak of Milk-borne *Salmonella* Gastroenteritis — South Australia**

An outbreak of gastroenteritis occurred in February 1976 at Whyalla, a city with a population of 33,000, situated 250 miles north of Adelaide, the capital of South Australia.

The outbreak was sudden. Forty patients, mainly infants and children, were seen at the hospital on the first day of the outbreak with symptoms of vomiting, abdominal pain, and diarrhea. Many other patients with similar symptoms were treated by private medical practitioners in the city. More than 500 cases of gastroenteritis were recorded during the outbreak, most occurring during the first 3 days.

Although the age range of affected persons was from 1 month to 70 years, 90% of patients were under 15 years of age, and two-thirds were under 10. *Salmonella typhimurium* phage type 9 was isolated from 78 of the 273 persons investigated. The characteristics of the outbreak suggested a common source, probably milk, and 95% of the patients gave a history of consumption of raw milk. The rest of the cases were in family contacts.

At the time of the outbreak, Whyalla had 2 milk suppliers — 1 providing pasteurized, homogenized milk sold in cartons, the other a local dairy selling bottled, unpasteurized milk. *S. typhimurium* phage type 9 was isolated from 10 samples of unpasteurized milk, both bulk and bottled, col-

lected early in the outbreak. Investigation of the dairy herd of 193 cows showed that 2 of the animals were excreting *S. typhimurium* phage type 9. One of the employees also was found to be excreting the same organism.

Distribution of the unpasteurized milk was stopped, and the outbreak quickly abated. The raw milk supply has since been discontinued in the city.

Reported by Z Seglenieks, MD, Principal Medical Officer, Epidemiology, South Australian Health Services, and S Dixon, Microbiologist, Salmonella Reference Laboratory, Adelaide, South Australia.

Editorial Note: Pasteurization has essentially eliminated milk-borne enteric diseases in the United States. Since 1966, pasteurized milk has been suspected as the vehicle of transmission in only 2 outbreaks in the United States: 1 caused by *Shigella flexneri* (1) and the other caused by *S. newport* (2). Several *Salmonella* outbreaks have been traced to certified raw milk (3), and, in 1976, an outbreak of yersiniosis was caused by milk to which chocolate syrup had been added after pasteurization (4).

References

1. MMWR 15 (51):442, 1966
2. MMWR 24 (49):413, 1975
3. MMWR 23 (19):175, 1974
4. MMWR 26 (7):53-54, 1977

Epidemic Poliomyelitis — Honduras

One hundred nine cases of paralytic poliomyelitis have been reported from December 28, 1976 through April 5, 1977, to the Ministry of Health, Tegucigalpa, Honduras. Of the cases, 31.5% were in children less than 1 year of age, 41.7% in children from 1 to 2 years old, and 25.0% in children aged 3 to 6. Only 2 cases occurred in persons older than 7. Fifty-six percent of the patients were male, and 44% were female. Five deaths were reported. Persons who had never received any polio vaccination accounted for 72% of the cases, and only 8.6% of the patients had received more than 1 dose of polio vaccine (oral live Sabin vaccine manufactured by Connaught [Canada]).

The epidemic began in the San Pedro Sula region in the northern part of the country, where 29 cases were reported during the last 3 months of 1976 after more than a year without a case being reported. The endemic level of polio for the entire country has been reported as being 20 to 66 cases per year from 1969 through 1973. The peak number of cases admitted to hospitals occurred during the week ending March 5; hospital admissions with the diagnosis of poliomyelitis have continued at a slightly lower rate since that time.

A vaccination campaign to immunize all children less than 7 years of age was begun in mid-January in San Pedro Sula and in mid-February in all other areas of Honduras.

Door-to-door vaccination techniques primarily using a magnesium chloride stabilized trivalent oral vaccine have been employed.

Type 1 poliovirus has been isolated from 3 unvaccinated poliomyelitis cases by CDC. Twelve convalescent sera have been tested at CDC; 8 of these show evidence of type 1 poliovirus infection. Preliminary testing of vaccine after use in the field indicates full potency of the vaccine under field conditions.

Reported by E Aguilar Paz, MD, Minister of Health, Honduras; A Guzman, MD, Chief of Epidemiology, Honduras; N Gunera, MD, Epidemiologist of Tegucigalpa metropolitan area; L Sarmiento, MD, Epidemiologist of San Pedro Sula; A Rueda, MD, and P Isaza, MD, Pan American Health Organization, Honduras; the Bur of Laboratories, and Viral Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: This outbreak appears to be limited primarily to the unvaccinated population, although, as is commonly seen in outbreaks of poliomyelitis in Latin America, a small percentage of cases had received 2 or more doses of polio vaccine. When compared with temperate climates, a lower degree of protection with 2 doses of vaccine has been repeatedly documented in the Tropics, despite optimal handling of vaccine.

Nicaragua, contiguous with the southern border of Honduras, has also been experiencing an outbreak of poliomyelitis (MMWR 26 [12], 1977).

Current Trends**Typhoid Vaccination Following Natural Disasters**

Recent floods in the eastern United States have prompted many enquiries to CDC regarding the role of typhoid vaccine in natural disasters. Although there may be a theoretical risk of enhanced transmission of enteric infections fol-

lowing floods and other natural disasters, the world's literature reveals little evidence to support the concept of enhanced risk of typhoid fever in such disasters. This fact and the extremely low levels of typhoid prevalent in the

United States make it unnecessary to vaccinate against typhoid in such disasters.

The most practical preventive strategy in a natural disaster is to advise the population to boil water before drinking it or to take other appropriate measures to insure a safe supply of drinking water. This approach provides immediate protection against typhoid and other waterborne diseases. A massive vaccination campaign would not provide protection at the time of greatest risk or add to the protection already achieved by water purification measures. It

Epidemiologic Notes and Reports

Schistosomiasis in Saudi Arabian Trainees — Texas

Twenty cases of schistosomiasis caused by *Schistosoma mansoni* were detected in Saudi Arabian recruits being trained at Lackland Air Force Base in San Antonio, Texas, during the 15-month period July 1975-September 1976. Schistosomiasis is an endemic disease in Saudi Arabia.

Presenting symptoms of the ill recruits included abdominal pain (in 4 patients), dysuria (2), diarrhea (2), rectal bleeding (2), constipation (1), and malaise (1). Eggs of the parasite were discovered in stool specimens during routine evaluation for another medical problem in 8 cases. No liver or splenic enlargement was detected in the patients. Abdominal tenderness was discovered in 1 case, and inflammatory rectal polyps were found in 1 case. Therapy consisted of niridazole in 3 cases and stibophen in 1 case. Sixteen patients received no therapy. *S. mansoni* eggs from infected patients were found to be viable in 17 of 20 patients tested.

In September 1976, a survey of 288 Saudi Arabian trainees was conducted to determine prevalence rates of schistosomiasis and to correlate laboratory and clinical findings. Sixty-six (26.9%) of 245 stool specimens surveyed were positive for *S. mansoni* eggs. Egg counts ranged from <1 to 6320 per gram of feces. Eighteen of 66 positive specimens had egg counts ≥ 400 /gm, indicating clinically

would also be an unnecessary expenditure of sometimes scarce emergency health resources, and it would not be likely to affect transmission, particularly in areas of low endemicity. Regardless of what other measures are taken to prevent an outbreak of typhoid following natural disasters, however, it is very important to maintain disease surveillance.

Reported by Enteric Diseases Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

significant infections. Viable eggs were found in all 56 instances in which a hatching was performed.

In order to establish the potential for developing an endemic focus of *S. mansoni* in South Texas, the susceptibility of snails of the genus *Tropicorbis*, collected locally, were compared with that of known susceptible snails. These results demonstrated that local snails are not suitable intermediate hosts for *S. mansoni* (Table 1). Snails from Puerto Rico and St. Lucia were found to be quite susceptible, as were snails collected in Brazil and Kenya.

TABLE 1. Results of snail infectivity studies, Texas

	Local* Snails	St. Lucia**	Brazil**	Puerto Rico**	Kenya***
Snails exposed	158	68	75	73	53
Snails infected	0	42 (61.7%)	10 (13.3%)	26 (35.6%)	29 (54.7%)

**Tropicorbis* sp.

***Biomphalaria glabrata*

****Biomphalaria sudanica*

Reported by D Gremillion, MD, RD Geckler, MD, RE Kuntz, PhD, and RJ Marraro, PhD, Lackland Air Force Base, Texas.

Erratum, Vol. 26, No. 14

p 119 In the article, "Mortality from Carbon Monoxide—Georgia," the number of accidental cases involving blacks (paragraph 2) should read "183 (39.4%)," not "279 (39.4%)," as written. In the sixth and

seventh lines of the same paragraph, delete the phrase "Within the races," and insert "For the accidental exposures," in its place.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE / CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333

Director, Center for Disease Control, David J. Sencer, M.D.
Director, Bureau of Epidemiology, Philip S. Brachman, M.D.
Editor, Michael B. Gregg, M.D.
Managing Editor, Anne D. Mather, M.A.

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