

MNWR

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Diarrheal Illness on a Cruise Ship Caused by Enterotoxigenic *Escherichia coli*

An outbreak of diarrheal illness occurred aboard the S/S *Emerald Seas* on 2 successive 4-day cruises from December 26, 1975, to January 2, 1976. A non-motile enterotoxigenic strain of *Escherichia coli* serotype 025 producing only heat-labile enterotoxin was isolated from passengers and crew on both cruises.

A limited survey of 156 (18%) of 863 passengers on voyage 1 and a more complete survey of 829 (92%) of 904 passengers on voyage 2 revealed that at least 64 passengers on voyage 1 and 259 (31%) passengers on voyage 2 had experienced a diarrheal illness during the voyage. Other symptoms experienced by the passengers included headache, nausea, vomiting, abdominal cramps, and fever (Table 1).

TABLE 1. Symptoms associated with diarrhea in passengers on 2 cruises, December 26, 1975-January 2, 1976

Symptoms	Cruise 1 n=64	Cruise 2 n=259
Abdominal cramps	87%	83%
Nausea	81%	55%
Headache	60%	44%
Vomiting	39%	19%
Fever (subjective)	33%	25%

The median duration of illness on both cruises was 2 days; however, many passengers were still ill at the time of the surveys. Illnesses began as early as 12 hours after boarding, and both outbreaks peaked in 36-48 hours (Figure 1).

Crew members were not surveyed on cruise 1; however, 4 members were treated for diarrhea by the ship's physician. Twenty-six (7.7%) of 339 crew members surveyed on cruise 2 reported diarrhea; 5 of the crew members handled food or beverages while ill.

Passengers on cruise 2 were asked about food and water consumption during the first 24 hours of the cruise. Analysis revealed an association between diarrhea and eating crabmeat cocktail ($p < .001$). Consumption of 1 or more glasses of water per day was also associated with illness ($p < .05$). On cruise 1, no association between ship's water or ice and illness could be demonstrated. An environmental survey revealed numerous deficiencies in food handling practices.

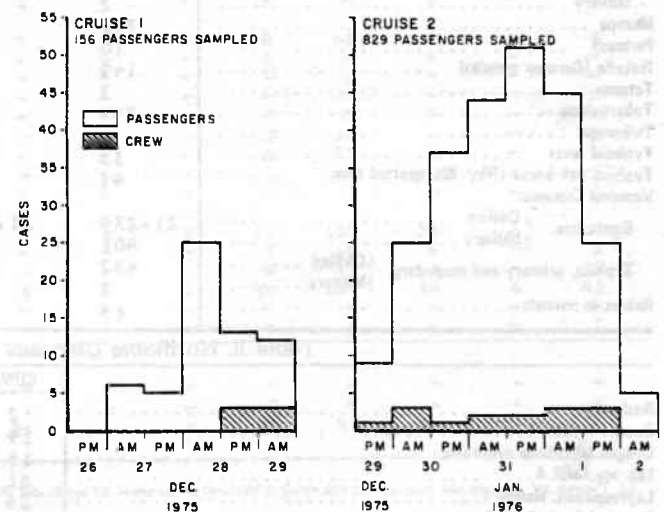
Non-motile enterotoxigenic *Escherichia coli*, serotype

025, producing heat-labile (LT) enterotoxin, was isolated from 29 (83%) of 35 ill passengers and 6 (40%) of 15 well passengers from the 2 voyages ($p < .01$). Two of 8 culture-positive passengers had a 4-fold rise in LT enterotoxin antibody titer when acute and convalescent sera were tested. Fourteen (88%) of 16 ill crew were infected with *E. coli* 025 compared to 1 (7%) of 14 well crew members ($p < .0001$).

Salmonella senftenberg was isolated from 2 passengers (who did not have *E. coli* 025) on cruise 1 and from liver paté and cooked lobster on the same cruise. Water, ice, environmental cultures, and food specimens were negative for *E. coli*.

To correct the deficiencies in food and drink handling practices, the line employed a sanitarian to institute and supervise proper food handling practices. Investigation also revealed that refrigeration on the vessel was deficient and that freshly distilled water was not being chlorinated, although the main water distribution system was adequately chlorinated. After refrigeration facilities were improved and an automatic chlorinator for the distillation system was installed, the vessel sailed on its next voyage on January

FIGURE 1. Diarrheal illness among passengers and crew,* S/S *Emerald Seas*



Diarrheal Illness — Continued

3. No outbreaks of diarrhea have been reported in subsequent cruises of the vessel.

Reported by Bacterial Zoonoses Br, Enteric Diseases Br, Bacterial Diseases Div, Field Services Div, and Quarantine Div, Bur of Epidemiology, CDC.

Editorial Note: Enterotoxigenic *Escherichia coli* is a well

documented cause of diarrheal illness; however, this is the first reported outbreak caused by *E. coli* producing only LT enterotoxin. The mode of transmission in this outbreak is unclear.

S. senftenberg possibly contributed to the outbreak on cruise 1. The most likely vehicle of transmission was contaminated food since the same organism was recovered from 2 food items that were eaten without additional cooking.

Current Trends

Influenza — Worldwide

United States: No outbreaks of influenza-like illness have been reported since early June (MMWR 25[24]), and no isolates of influenza viruses have been reported from state laboratories. Of the 311 specimens submitted for virus isolation to the National Institute of Allergy and Infectious Diseases (NIAID) Influenza Surveillance Centers since May 22, there have been 2 isolates of A/Victoria-like virus, 4 isolates of B/Hong Kong-like virus, and no isolates of A/New Jersey-like virus.

Reported by the National Institute of Allergy and Infectious Diseases, Bethesda, Maryland.

Worldwide: Widespread outbreaks of influenza have been reported from Australia, New Zealand, and South

Africa since early June with peak activities in mid-July. Many isolates of A/Victoria virus have been made.

A/Victoria isolates also have been reported from Argentina, Austria, Czechoslovakia, Denmark, the Netherlands, Portugal, Singapore, Spain, Germany, Belgium, France, Morocco, Kenya, Senegal, and Uruguay. Isolates of A/England from Greece, Germany, Belgium, France, Morocco, Sri Lanka, and India and A/Port Chalmers from Poland, Kenya, Senegal, and Sri Lanka have been reported.

Reported by the World Health Organization in The Weekly Epidemiologic Record 51(28,29): 227, 233-234, 1976.

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

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

DISEASE	29th WEEK ENDING		MEDIAN 1971-1975	CUMULATIVE, FIRST 29 WEEKS		
	July 24, 1976	July 19, 1975		July 24, 1976	July 19, 1975	MEDIAN 1971-1975
Aseptic meningitis	72	90	97	1,141	1,355	1,335
Brucellosis	9	5	5	132	120	91
Chickenpox	902	949	---	144,449	113,819	---
Diphtheria	2	4	2	117	196	107
Encephalitis	Primary	21	19	442	390	471
	Post-Infectious	5	10	163	186	177
Hepatitis, Viral	Type B	333	241	8,155	6,223	5,165
	Type A	629	646	19,421	19,537	28,285
	Type unspecified	179	163	5,014	4,503	---
Malaria	19	31	21	227	209	209
Measles (rubeola)	295	355	271	33,154	20,239	23,240
Meningococcal infections, total	32	31	26	1,032	926	926
Civilian	30	30	26	1,023	905	905
Military	2	1	---	9	21	23
Mumps	338	558	671	31,135	44,277	52,427
Pertussis	10	27	---	494	721	---
Rubella (German measles)	149	81	122	10,274	14,274	19,633
Tetanus	3	4	3	27	44	46
Tuberculosis	757	669	---	18,728	18,326	---
Tularemia	4	4	5	77	67	79
Typhoid fever	13	9	9	197	166	173
Typhus, tick-borne (Rky. Mt. spotted fever)	41	52	34	409	396	359
Venereal Diseases:						
Gonorrhea						
Civilian	21,239	21,423	---	542,424	529,560	---
Military	401	585	---	15,758	16,362	---
Syphilis, primary and secondary	487	448	---	13,531	14,074	---
Civilian	8	8	---	193	190	---
Military	8	8	---	193	190	---
Rabies in animals	63	63	63	1,439	1,384	2,068

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax	2	Poliomyelitis, total	5
Botulism: Calif. 1	19	Paralytic	5
Congenital rubella syndrome	15	Psittacosis: Texas 2	27
Leprosy: Calif. 4	81	Rabies in man	1
Leptospirosis: Hawaii 1	24	Trichinosis: NYC 1, Calif. 1	60
Plague: Ariz. 1, Calif. 1	10	Typhus, murine	20

Table III
Cases of Specified Notifiable Diseases: United States
Weeks Ending July 24, 1976 and July 19, 1975 - 29th 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		
						1976	1975	1976	1976	1976	1976		
UNITED STATES	72	5	902	2	117	21	19	5	333	629	179	19	227
NEW ENGLAND	-	-	96	-	-	-	-	-	4	17	8	2	11
Maine	-	-	16	-	-	-	-	-	-	2	2	-	-
New Hampshire	-	-	4	-	-	-	-	-	-	-	-	-	-
Vermont	-	-	-	-	-	-	-	-	-	-	-	-	-
Massachusetts	-	-	52	-	-	-	-	-	-	2	6	1	5
Rhode Island	-	-	17	-	-	-	-	-	-	4	-	1	3
Connecticut	-	-	7	-	-	-	-	-	4	9	-	-	3
MIDDLE ATLANTIC	11	-	326	-	-	6	3	1	83	102	36	5	40
Upstate New York	4	-	221	-	-	1	1	1	18	32	10	2	9
New York City	1	-	101	-	-	-	-	-	18	23	-	-	17
New Jersey*	4	-	NN	-	-	2	2	-	19	15	22	2	5
Pennsylvania	2	-	4	-	-	-	-	-	26	32	4	1	9
EAST NORTH CENTRAL ..	10	1	216	-	-	-	-	-	44	93	22	-	16
Ohio	2	-	17	-	-	-	-	-	7	26	-	-	7
Indiana	1	-	54	-	-	-	-	-	1	1	11	-	-
Illinois	-	-	19	-	-	-	-	-	15	23	8	-	2
Michigan	7	-	32	-	-	-	-	-	17	38	3	-	6
Wisconsin	-	1	94	-	-	-	-	-	4	5	-	-	1
WEST NORTH CENTRAL ..	1	-	9	-	4	2	7	1	21	33	13	5	14
Minnesota	-	-	-	-	-	-	1	1	10	14	-	-	3
Iowa	1	-	2	-	-	2	-	-	3	6	2	-	-
Missouri*	-	-	5	-	1	-	6	-	6	9	6	5	8
North Dakota	-	-	-	-	-	-	-	-	-	-	-	-	-
South Dakota	-	-	-	-	3	-	-	-	-	-	-	-	2
Nebraska	-	-	-	-	-	-	-	-	-	-	-	-	1
Kansas	-	-	2	-	-	-	-	-	2	4	5	-	-
SOUTH ATLANTIC	10	1	96	-	-	6	1	-	41	99	25	1	38
Delaware	-	-	2	-	-	-	-	-	1	-	-	-	-
Maryland	1	-	3	-	-	1	-	-	15	4	1	-	5
District of Columbia ..	-	-	17	-	-	-	-	-	-	-	-	-	5
Virginia*	1	1	1	-	-	2	-	-	3	6	1	-	8
West Virginia	-	-	52	-	-	-	-	-	1	7	1	-	1
North Carolina	-	-	NN	-	-	2	-	-	6	10	2	-	4
South Carolina	-	-	5	-	-	-	-	-	4	6	3	-	1
Georgia	-	-	-	-	-	-	-	-	-	24	-	-	4
Florida	8	-	16	-	-	1	1	-	11	42	17	1	10
EAST SOUTH CENTRAL ..	8	-	2	-	-	-	2	1	22	52	4	-	1
Kentucky	2	-	2	-	-	-	-	-	5	14	1	-	-
Tennessee	3	-	NN	-	-	-	1	-	11	17	2	-	-
Alabama	2	-	-	-	-	-	1	-	6	6	1	-	-
Mississippi	1	-	-	-	-	-	-	1	-	15	-	-	1
WEST SOUTH CENTRAL ..	12	4	42	-	1	3	5	-	21	36	11	-	9
Arkansas	1	-	-	-	-	-	2	-	1	16	6	-	-
Louisiana*	2	-	NN	-	-	1	-	-	1	6	3	-	1
Oklahoma	-	3	3	-	-	1	3	-	3	14	1	-	1
Texas	9	1	39	-	1	1	-	-	16	-	1	-	7
MOUNTAIN	1	-	64	-	3	-	-	-	8	62	9	-	8
Montana	-	-	2	-	-	-	-	-	1	-	-	-	-
Idaho*	-	-	-	-	-	-	-	-	-	2	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-	-
Colorado	-	-	20	-	3	-	-	-	2	5	5	-	5
New Mexico	-	-	-	-	-	-	-	-	2	23	-	-	1
Arizona	-	-	NN	-	-	-	-	-	1	25	2	-	1
Utah	-	-	42	-	-	-	-	-	2	4	2	-	-
Nevada*	1	-	-	-	-	-	-	-	-	3	-	-	1
PACIFIC	19	3	51	2	109	4	1	2	89	135	51	6	90
Washington	-	2	32	2	106	-	-	-	7	10	4	-	2
Oregon	-	-	2	-	-	-	-	-	6	17	3	-	5
California*	15	1	-	-	1	4	1	2	76	104	44	6	82
Alaska	-	-	5	-	2	-	-	-	-	-	-	-	-
Hawaii	4	-	12	-	-	-	-	-	-	4	-	-	1
Guam*	-	-	-	-	-	-	-	-	-	-	-	-	-
Puerto Rico	-	-	6	-	1	1	-	-	2	9	-	-	1
Virgin Islands	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-

NN: Not Notifiable NA: Not Available

*Delayed Reports: Asep. Meng.: N.J. add 7, Guam add 1; Chickenpox: Calif. add 1, Guam add 2; Hep. A: Mo. delete 10, Idaho add 3, Nev. add 2, Guam add 2; Hep. unsp. Mo. delete 6, Va. delete 2, La. delete 1, Guam add 1

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending July 24, 1976 and July 19, 1975 - 29th Week

REPORTING AREA	MEASLES (Rubella)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1976	CUMULATIVE		1976	CUMULATIVE		1976	CUM. 1976	1976	1976	CUM. 1976	CUM. 1976
		1976	1975		1976	1975						
UNITED STATES	295	33,154	20,239	32	1,032	926	338	31,135	10	149	10,274	27
NEW ENGLAND	4	372	277	-	42	53	12	1,214	-	4	268	-
Maine*	-	6	11	-	-	6	-	109	-	-	3	-
New Hampshire	1	11	20	-	3	2	-	25	-	-	11	-
Vermont	2	30	49	-	3	-	-	8	-	-	1	-
Massachusetts*	-	39	103	-	12	18	-	147	-	2	134	-
Rhode Island	-	14	2	-	4	3	5	428	-	-	5	-
Connecticut	1	272	92	-	20	24	7	497	-	2	114	-
MIDDLE ATLANTIC	61	6,787	1,632	7	145	97	113	2,815	2	28	2,245	1
Upstate New York	43	2,858	499	5	57	28	16	358	2	20	593	1
New York City	12	430	121	-	35	28	83	1,477	-	3	136	-
New Jersey*	3	586	456	-	24	16	2	473	-	5	1,327	-
Pennsylvania	3	2,913	556	2	29	25	12	507	-	-	189	-
EAST NORTH CENTRAL	112	13,979	6,012	4	160	125	86	13,024	-	37	3,832	1
Ohio	-	562	103	1	84	27	6	1,867	-	-	272	1
Indiana	55	3,106	342	-	6	6	22	1,406	-	26	680	-
Illinois	10	1,456	1,639	2	15	19	5	1,723	-	2	1,144	-
Michigan	20	5,577	2,970	-	46	55	11	4,785	-	3	1,344	-
Wisconsin	27	3,278	558	1	9	18	42	3,243	-	6	392	-
WEST NORTH CENTRAL	1	1,095	4,922	-	62	52	8	3,221	3	1	376	4
Minnesota	-	388	180	-	12	14	-	543	-	1	26	1
Iowa	1	32	550	-	8	5	1	1,143	-	-	81	-
Missouri*	-	17	253	-	22	22	7	304	3	-	29	1
North Dakota*	-	3	1,044	-	3	-	-	121	-	-	1	1
South Dakota	-	4	356	-	1	1	-	6	-	-	18	-
Nebraska	-	55	394	-	3	2	-	97	-	-	3	-
Kansas	-	596	2,145	-	13	8	-	1,007	-	-	218	1
SOUTH ATLANTIC	24	2,199	268	6	189	189	17	2,354	2	4	1,254	7
Delaware	-	128	35	-	6	6	-	41	-	-	31	-
Maryland	-	829	41	-	16	21	6	632	-	-	3	2
District of Columbia	-	12	1	-	2	5	-	100	-	-	45	-
Virginia	23	722	22	-	23	17	-	188	-	-	232	1
West Virginia	1	180	127	1	5	5	7	727	-	-	277	-
North Carolina	-	9	1	2	36	34	1	368	2	-	17	-
South Carolina	-	4	-	1	34	30	-	37	-	2	590	-
Georgia	-	1	16	1	17	9	-	-	-	-	1	-
Florida	-	314	25	1	50	62	3	261	-	2	58	4
EAST SOUTH CENTRAL	16	783	262	5	87	142	26	2,632	2	11	334	4
Kentucky	14	731	81	-	14	58	1	935	-	2	150	1
Tennessee	2	37	170	2	39	45	20	1,400	1	1	172	2
Alabama	-	-	3	2	24	27	4	248	-	-	1	1
Mississippi	-	15	8	1	10	12	1	49	1	8	11	-
WEST SOUTH CENTRAL	1	659	268	4	158	146	34	2,171	-	3	484	7
Arkansas	-	-	-	-	9	8	-	71	-	-	189	-
Louisiana*	-	184	-	-	27	25	-	20	-	-	85	2
Oklahoma	1	288	123	-	18	9	5	617	-	3	58	-
Texas	-	187	145	4	104	104	29	1,463	-	-	152	5
MOUNTAIN	42	5,045	1,307	-	36	34	23	1,070	-	-	461	1
Montana	-	202	39	-	4	7	-	20	-	-	232	-
Idaho	-	2,020	7	-	4	5	7	440	-	-	18	-
Wyoming	-	3	1	-	-	-	-	1	-	-	2	-
Colorado	2	299	1,099	-	11	9	3	209	-	-	21	-
New Mexico	-	15	13	-	3	4	-	127	-	-	31	-
Arizona	-	225	64	-	8	1	-	-	-	-	-	1
Utah	40	2,218	59	-	4	7	13	159	-	-	139	-
Nevada	-	63	25	-	2	1	-	114	-	-	18	-
PACIFIC	34	2,235	5,291	6	153	88	19	2,634	1	61	1,020	2
Washington	-	329	276	2	27	15	-	842	-	3	157	-
Oregon	-	143	190	-	13	4	6	330	-	-	128	1
California	34	1,760	4,764	3	97	68	7	1,418	1	57	717	1
Alaska	-	-	-	-	13	-	1	19	-	-	1	-
Hawaii	-	3	61	1	3	1	5	25	-	1	17	-
Guam*	-	9	31	-	1	2	-	11	-	-	5	-
Puerto Rico	26	293	493	-	3	1	10	611	-	-	8	3
Virgin Islands	NA	8	8	-	-	-	NA	22	NA	NA	8	1

NA: Not Available

*Delayed Reports: Measles: Mass. delete 2, Guam add 1; Me. Inf.: N.J. delete 7; Mumps: Guam add 1; Pertussis: Mo. delete 1; Rubella: N. Dak. add 1, La. delete 1

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending July 24, 1976 and July 19, 1975 - 29th Week

REPORTING AREA	TUBERCULOSIS		TULA- REMIA	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (RMSF)		VENEREAL DISEASES (Civilian Cases Only)					RABIES IN ANIMALS	
	1976	CUM. 1976	CUM. 1976	1976	CUM. 1976	1976	CUM. 1976	GONORRHEA		SYPHILIS (Pri. & Sec.)			CUM. 1976	
								1976	CUMULATIVE		1976	CUMULATIVE		
									1976	1975		1976		1976
UNITED STATES	757	18,728	77	13	197	41	409	21,239	542,424	529,560	487	13,531	14,074	1,439
NEW ENGLAND	13	675	1	-	17	-	5	595	14,765	14,474	14	357	493	25
Maine	-	44	-	-	-	-	-	47	1,252	1,055	-	8	12	14
New Hampshire	-	26	-	-	2	-	-	20	404	405	-	7	11	-
Vermont	1	18	-	-	-	-	-	19	371	338	-	4	5	-
Massachusetts	9	416	1	-	13	-	4	267	7,113	6,798	9	288	316	10
Rhode Island	2	46	-	-	-	-	1	69	984	1,130	-	15	9	1
Connecticut	1	125	-	-	2	-	-	173	4,641	4,748	5	75	140	-
MIDDLE ATLANTIC	165	3,564	2	2	32	5	15	3,146	63,151	61,818	87	2,250	2,587	13
Upstate New York	10	556	2	-	5	1	4	330	9,685	10,834	5	141	240	4
New York City	87	1,481	-	2	17	2	3	1,890	28,989	26,659	52	1,389	1,474	-
New Jersey	33	668	-	-	7	1	7	149	9,525	8,433	13	333	410	3
Pennsylvania	35	859	-	-	3	1	1	777	14,952	15,892	17	387	463	6
EAST NORTH CENTRAL ..	150	2,596	1	1	16	-	7	2,650	85,748	85,664	47	1,235	1,144	80
Ohio	40	492	-	1	6	-	5	762	21,144	23,013	7	283	268	-
Indiana	15	325	-	-	-	-	-	195	8,401	8,021	-	60	75	17
Illinois	49	872	1	-	3	-	-	707	30,257	29,394	32	691	552	17
Michigan	30	756	-	-	6	-	2	715	17,885	16,860	2	138	194	2
Wisconsin	16	151	-	-	1	-	-	271	8,061	8,376	6	63	55	44
WEST NORTH CENTRAL ..	38	673	20	-	11	-	8	1,194	28,070	26,125	7	225	325	357
Minnesota	4	124	3	-	6	-	-	224	5,042	5,501	4	52	65	85
Iowa	1	53	1	-	1	-	-	130	3,511	3,600	-	23	18	78
Missouri*	20	337	15	-	3	-	8	486	11,272	9,429	1	94	173	43
North Dakota	-	15	-	-	-	-	-	10	401	403	-	-	5	77
South Dakota	2	31	-	-	-	-	-	44	790	995	-	2	4	15
Nebraska	2	35	-	-	-	-	-	124	2,446	2,313	1	16	7	11
Kansas	9	78	1	-	1	-	-	176	4,608	3,884	1	38	53	48
SOUTH ATLANTIC	151	4,121	4	1	24	21	216	5,403	131,390	131,935	140	4,010	4,381	215
Delaware	-	46	-	-	-	-	1	79	1,703	1,796	-	39	53	5
Maryland*	23	583	1	-	-	-	12	498	17,642	15,212	13	346	327	11
District of Columbia ..	8	176	-	-	-	-	-	274	7,817	7,839	7	358	374	-
Virginia*	13	684	-	-	3	2	59	473	13,648	12,974	13	372	331	35
West Virginia	5	170	-	1	3	-	2	69	1,706	1,604	-	18	13	9
North Carolina*	21	727	3	-	1	12	90	729	18,985	18,672	27	751	558	5
South Carolina	10	316	-	-	3	2	27	331	12,731	12,477	5	220	296	2
Georgia	24	510	-	-	2	5	24	888	24,524	24,313	12	431	570	114
Florida	47	909	-	-	12	-	1	2,062	32,634	37,048	63	1,475	1,859	34
EAST SOUTH CENTRAL ..	56	1,537	13	-	7	9	68	1,468	47,939	44,433	16	546	611	77
Kentucky	9	345	1	-	4	2	10	179	6,015	5,816	-	78	97	41
Tennessee	22	455	12	-	3	5	46	356	18,697	17,635	1	201	226	25
Alabama	18	460	-	-	-	2	5	589	13,862	12,181	5	111	145	11
Mississippi	7	273	-	-	-	-	7	344	9,375	8,801	10	156	143	-
WEST SOUTH CENTRAL ..	102	2,111	26	2	9	6	83	2,745	70,976	66,106	73	1,596	1,227	361
Arkansas	10	279	12	-	2	-	12	360	6,624	6,958	4	51	34	92
Louisiana*	14	306	2	-	2	-	-	314	10,432	12,271	9	341	299	2
Oklahoma	4	196	7	-	-	5	66	256	6,621	6,166	3	64	47	90
Texas	74	1,330	5	2	5	1	5	1,815	47,299	40,711	57	1,140	847	177
MOUNTAIN	9	528	2	-	18	-	2	814	20,739	20,454	28	442	335	86
Montana	1	30	2	-	2	-	-	51	1,103	1,135	-	4	4	60
Idaho	-	16	-	-	1	-	1	24	1,102	984	-	23	9	-
Wyoming	-	11	-	-	-	-	-	25	416	478	-	8	6	1
Colorado	2	97	-	-	4	-	-	205	5,371	5,074	6	102	58	4
New Mexico	-	92	-	-	1	-	1	189	4,149	3,689	19	131	94	3
Arizona	4	236	-	-	9	-	-	233	6,095	5,599	3	134	122	18
Utah	1	23	-	-	1	-	-	42	978	1,290	-	16	10	-
Nevada*	1	23	-	-	-	-	-	45	1,525	2,205	-	24	32	-
PACIFIC	73	2,923	8	7	63	-	5	3,224	79,646	78,551	75	2,830	2,971	225
Washington	6	289	2	-	3	-	4	199	6,664	7,190	-	62	94	2
Oregon	3	102	1	-	-	-	-	236	5,805	5,834	2	62	70	3
California	59	2,122	5	7	59	-	1	2,642	63,373	62,111	73	2,634	2,772	180
Alaska	-	48	-	-	-	-	-	95	2,256	1,952	-	10	3	40
Hawaii	5	362	-	-	1	-	-	52	1,548	1,464	-	62	32	-
Guam*	-	26	-	-	-	-	-	-	172	254	-	1	4	-
Puerto Rico	-	191	-	-	-	-	-	56	1,534	1,441	21	336	361	28
Virgin Islands	NA	5	-	NA	-	NA	-	NA	142	94	NA	41	20	-

NA: Not Available

*Delayed Reports: TB: Mo. delete 4, Md. delete 2, N. Car. delete 2; Tularemia: Mo. delete 1; RMSF: Mo. delete 1, Va. delete 1; GC: La. delete 1, Nev. add 35, Guam add 9; Syphilis: Mo. delete 1. La. delete 1

Table IV
Deaths in 121 United States Cities*
Week Ending July 24, 1976 - 29th 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	619	380	161	32	27	26	SOUTH ATLANTIC	1,049	570	304	85	50	40
Boston, Mass.	179	107	42	12	10	6	Atlanta, Ga.	137	62	42	15	12	1
Bridgeport, Conn.	40	22	15	2	-	2	Baltimore, Md.	192	103	66	11	4	4
Cambridge, Mass.	14	8	5	-	1	3	Charlotte, N. C.	42	25	12	2	3	2
Fall River, Mass.	34	26	7	1	-	-	Jacksonville, Fla.	83	48	24	7	1	3
Hartford, Conn.	60	33	16	7	4	1	Miami, Fla.	118	71	29	8	6	2
Lowell, Mass.	27	17	9	-	-	2	Norfolk, Va.	56	27	22	3	2	2
Lynn, Mass.	18	11	6	-	-	-	Richmond, Va.	64	36	16	7	3	4
New Bedford, Mass.	33	27	6	-	-	2	Savannah, Ga.	49	23	21	2	3	4
New Haven, Conn.	42	26	12	3	-	-	St. Petersburg, Fla.	64	57	6	-	-	4
Providence, R.I.	52	16	23	3	7	3	Tampa, Fla.	69	37	19	9	2	8
Somerville, Mass.	5	5	-	-	-	1	Washington, D. C.	133	64	36	11	13	3
Springfield, Mass.	55	43	8	1	3	4	Wilmington, Del.	42	17	11	10	1	3
Waterbury, Conn.	23	15	4	1	1	2							
Worcester, Mass.	37	24	8	2	1	-							
MIDDLE ATLANTIC	2,971	1,800	788	200	82	109	EAST SOUTH CENTRAL	667	382	173	45	34	34
Albany, N. Y.	57	30	15	5	4	1	Birmingham, Ala.	129	62	39	6	14	1
Allentown, Pa.	24	15	7	1	-	1	Chattanooga, Tenn.	57	41	9	5	1	5
Buffalo, N. Y.	124	75	34	5	3	6	Knoxville, Tenn.	39	28	6	2	1	-
Camden, N. J.	22	12	8	2	-	1	Louisville, Ky.	121	58	41	7	10	10
Elizabeth, N. J.	34	22	8	4	-	-	Memphis, Tenn.	131	80	34	12	1	5
Eric, Pa.	27	18	5	3	-	1	Mobile, Ala.	72	42	16	2	5	4
Jersey City, N. J.	65	44	15	3	-	3	Montgomery, Ala.	32	25	3	2	1	2
Newark, N. J.	70	27	27	10	2	1	Nashville, Tenn.	86	46	25	9	1	7
New York City, N. Y.†	1,311	804	328	94	36	41	WEST SOUTH CENTRAL	1,211	631	348	93	65	27
Paterson, N. J.	46	29	7	4	4	2	Austin, Tex.	38	17	16	2	1	1
Philadelphia, Pa.	605	348	184	35	21	22	Baton Rouge, La.	63	40	20	2	-	2
Pittsburgh, Pa.	214	120	68	13	4	16	Corpus Christi, Tex.	36	24	4	2	4	2
Reading, Pa.	33	24	8	1	-	3	Dallas, Tex.	164	85	48	14	6	3
Rochester, N. Y.	87	56	18	5	5	-	El Paso, Tex.	51	23	15	5	2	-
Schenectady, N. Y.	29	21	6	1	-	1	Fort Worth, Tex.	73	40	14	10	2	1
Scranton, Pa.	43	27	11	2	3	2	Houston, Tex.	356	173	114	29	21	6
Syracuse, N. Y.	78	54	15	8	-	2	Little Rock, Ark.	58	34	15	5	2	4
Tranton, N. J.	37	27	9	1	-	1	New Orleans, La.	87	42	27	4	9	-
Utica, N. Y.	32	26	6	-	-	1	San Antonio, Tex.	148	70	42	15	10	1
Yonkers, N. Y.	33	21	9	3	-	4	Shreveport, La.	59	36	15	2	3	1
							Tulsa, Okla.	78	47	18	3	5	6
EAST NORTH CENTRAL	2,271	1,300	615	140	83	54	MOUNTAIN	473	278	106	37	33	7
Akron, Ohio	53	35	11	2	1	-	Albuquerque, N. Mex.	60	29	16	8	2	2
Canton, Ohio	30	19	10	-	1	3	Colorado Springs, Colo.	30	12	11	4	2	-
Chicago, Ill.	553	304	154	37	23	10	Denver, Colo.	123	78	24	7	9	3
Cincinnati, Ohio	145	88	37	6	8	2	Las Vegas, Nev.	25	12	9	4	-	1
Cleveland, Ohio	172	101	45	11	8	4	Ogden, Utah	20	13	3	1	1	-
Columbus, Ohio	135	75	39	10	7	5	Phoenix, Ariz.	92	52	18	10	10	-
Dayton, Ohio	108	68	26	5	5	-	Pueblo, Colo.	17	12	5	-	-	-
Detroit, Mich.	303	157	90	28	5	5	Salt Lake City, Utah	38	23	8	1	6	1
Evansville, Ind.	55	38	13	3	1	5	Tucson, Ariz.	68	47	12	2	3	-
Fort Wayne, Ind.	58	31	14	3	2	6							
Gary, Ind.	20	11	5	1	-	-	PACIFIC	1,642	1,002	403	100	49	32
Grand Rapids, Mich.	51	26	16	-	5	3	Berkeley, Calif.	25	16	7	1	-	-
Indianapolis, Ind.	123	67	37	9	3	-	Fresno, Calif.	45	22	11	1	6	-
Madison, Wis.	37	24	11	1	-	6	Glendale, Calif.	32	26	5	1	-	-
Milwaukee, Wis.	140	81	44	8	5	3	Honolulu, Hawaii	62	34	16	8	2	2
Peoria, Ill.	42	28	5	3	1	-	Long Beach, Calif.	107	60	32	9	3	1
Rockford, Ill.	43	18	11	5	1	1	Los Angeles, Calif.	523	308	129	33	22	7
South Bend, Ind.	37	25	7	2	2	1	Oakland, Calif.	67	43	17	4	2	1
Toledo, Ohio	114	71	25	5	4	-	Pasadena, Calif.	28	23	3	1	-	-
Youngstown, Ohio	52	33	15	1	1	-	Portland, Oreg.	153	88	44	4	5	1
							Sacramento, Calif.	59	36	14	4	1	-
WEST NORTH CENTRAL	765	442	206	42	34	28	San Diego, Calif.	123	88	24	3	1	1
Des Moines, Iowa	61	44	11	3	2	11	San Francisco, Calif.	144	88	35	15	2	3
Duluth, Minn.	16	11	5	-	-	-	San Jose, Calif.	47	30	13	1	-	1
Kansas City, Kans.	31	17	8	2	-	-	Seattle, Wash.	138	89	31	9	3	7
Kansas City, Mo.	131	71	38	7	10	1	Spokane, Wash.	53	30	16	4	1	5
Lincoln, Nebr.	31	19	6	2	-	1	Tacoma, Wash.	36	21	6	2	1	3
Minneapolis, Minn.	96	60	27	2	3	2							
Omaha, Nebr.	78	48	24	1	2	1							
St. Louis, Mo.	173	98	43	15	7	8							
St. Paul, Minn.	76	42	20	3	3	1	TOTAL	11,668	6,785	3,104	774	457	357
Wichita, Kans.	72	32	24	7	7	3	Expected Number	11,583	6,890	3,039	779	377	346

†Delayed Report for Week Ending 7/17/76

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 telegrams 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.

Send mailing list additions, deletions, and address changes to: Center for Disease Control, Attn.: Distribution Services, GSO, 1-SB-36, Atlanta, Georgia 30333. When requesting changes be sure to give your former address, including zip code and mailing list code number, or send an old address label.

Current Trends

Primary and Secondary Syphilis — United States, May 1976

In May 1976, 1,820 primary and secondary syphilis cases were reported, representing a decline of 10.4% from the 2,031 such cases reported in May 1975. Cumulatively, for the 5-month period January-May 1976 such cases numbered 10,164, representing a decline of 579 cases or 5.4% from

the 10,743 such cases reported in the same time period of 1975.

Reported by Venereal Disease Control Div, Bur of State Services, CDC.

Summary of Reported Primary and Secondary Syphilis Cases by Reporting Area
May 1976 and May 1975 — Provisional Data

Reporting Area by HEW Regions	May		Calendar Year Cumulative January - May		Reporting Area by HEW Regions	May		Calendar Year Cumulative January - May		Reporting Area by HEW Regions	May		Calendar Year Cumulative January - May	
	1976	1975	1976	1975		1976	1975	1976	1975		1976	1975	1976	1975
Connecticut	11	13	62	92	Illinois (Excl. Chicago)	24	30	70	114	Arizona	17	22	107	114
Maine	0	5	9	15	Chicago	76	67	367	340	California (Excl. LA & SF)	135	152	883	726
Massachusetts	44	44	214	254	Indiana (Excl. Indianapolis)	6	5	36	46	Los Angeles*	137	151	776	802
New Hampshire	1	0	4	10	Indianapolis*	2	0	18	9	San Francisco*	55	70	330	417
Rhode Island	1	1	11	4	Michigan	20	22	113	142	Hawaii	5	9	39	30
Vermont	0	0	2	4	Minnesota	6	22	44	49	Nevada	3	3	19	24
REGION I TOTAL	67	83	302	379	Ohio	36	50	220	199	REGION IX TOTAL	352	407	2,164	2,113
New Jersey	49	55	234	344	Wisconsin	3	11	47	44	Alaska	3	0	11	1
New York (Excl. NYC)	16	38	108	189	REGION V TOTAL	173	207	916	943	Idaho	1	3	14	9
New York City	162	221	1,071	1,211	Arkansas	11	4	40	26	Oregon	3	13	53	51
REGION II TOTAL	227	314	1,413	1,744	Louisiana	52	31	241	212	Washington	17	21	62	98
Delaware	12	2	32	36	New Mexico	14	11	81	77	REGION X TOTAL	24	37	140	169
District of Columbia	55	58	269	261	Oklahoma	7	1	46	37	UNITED STATES TOTAL	1,820	2,031	10,164	10,743
Maryland (Excl. Baltimore)	10	18	72	94	Texas	139	102	776	618	Puerto Rico	58	74	245	346
Baltimore	28	27	180	163	REGION VI TOTAL	223	149	1,184	970	Virgin Islands	5	2	18	13
Pennsylvania (Excl. Phila.)	25	22	110	160	Iowa	1	1	19	12	United States, Including Outlying Areas	1,883	2,107	10,427	11,102
Philadelphia	46	32	171	192	Kansas	6	8	37	47					
Virginia	55	36	273	247	Missouri	19	23	79	132					
West Virginia	2	4	16	14	Nebraska	0	0	13	4					
REGION III TOTAL	233	199	1,123	1,167	REGION VII TOTAL	28	32	148	196					
Alabama	15	15	79	112	Colorado	10	5	63	52					
Florida	228	304	1,108	1,418	Montana	0	1	4	4					
Georgia (Excl. Atlanta)	35	57	216	266	North Dakota	0	0	1	2					
Atlanta*	33	28	209	166	South Dakota	0	0	2	2					
Kentucky	10	16	62	76	Utah	7	5	15	8					
Mississippi	17	24	104	110	Wyoming	0	2	4	3					
North Carolina	88	109	580	457	REGION VIII TOTAL	17	13	89	71					
South Carolina	25	26	163	226										
Tennessee	37	31	164	171										
REGION IV TOTAL	488	610	2,896	3,002										

*County Data
Note: Cumulative totals include revised and delayed reports through previous months.
Source: CDC 9.98 CDC, VD Control Division, Atlanta, Ga. 30333.

Epidemiologic Notes and Reports

Human Rabies — Maryland

A 55-year-old Maryland woman was bitten by a rabid bat in May, 1976. In June, while being treated with the currently recommended regimen of rabies post-exposure prophylaxis, the patient developed rabies and died.

While outdoors, the patient, a resident of Northeast, Maryland, was bitten by a bat on the fourth finger of her left hand on the evening of May 10. She washed the wound, described as quite small and superficial, with soap and water shortly afterwards. The bat was captured and on May 12 the Maryland State Department of Health and Mental Hygiene laboratory reported the bat brain to be positive for rabies antigen by the fluorescent antibody (FA) staining technique. The patient was given the currently recommended dose of human rabies immune globulin and started on duck embryo vaccine (DEV) approximately 44 hours after the biting incident.

The twenty-one daily doses of DEV were well tolerated without complications and were concluded on June 2. However, on June 4 the patient experienced tingling and numbness in the left hand and arm. On June 6, she had slight weakness of the left arm and abdominal pain and vomiting. Diagnoses of a possible vaccine reaction or serum sickness were considered, and she was begun on oral prednisone, 30 mg per day.

By June 8, she had increased weakness and decreased sensation in her left hand and arm and bilateral Babinski signs. After referral to a Delaware neurologist, she was admitted to the Wilmington Medical Center on June 8 with

the diagnoses of transverse myelitis secondary to DEV. Therapy with dexamethasone was begun.

On June 10, the patient was agitated and complained of tightness around her chest. Neurologic examination revealed nystagmus, left facial weakness, and a flaccid left arm with decreased sensation. Her vital capacity fell markedly, and she was intubated and placed on a respirator. The following day she had increasing weakness in her right arm. On the evening of June 11, she developed a fever of 101.6°F, had myoclonus of all extremities, and had grand mal seizures. With these developments in her clinical course, the diagnosis of possible human rabies was made.

Her subsequent hospital course was marked by further neurologic deterioration and by multiple physiologic dysfunctions. By June 14, she was flaccid and comatose, without reflexes, response to pain, or cranial nerve function. She experienced hypotension, at times refractory to multiple pressor agents, bradycardia, inappropriate secretion of antidiuretic hormone, and then *diabetes insipidus*, and hypothermia and hyperthermia. On June 27, the patient expired after a cardiac arrest, 23 days after her initial paresthesias.

A corneal impression and a nuchal skin biopsy, both obtained June 15, were FA positive for rabies antigen. Serum neutralizing antibodies, performed by the rapid fluorescent focus-inhibition technique, were 1:54 on 6/14 and 6/16 and had risen to 1:280 on 6/22. Postmortem brain

Human Rabies — Continued

specimens were FA positive for rabies antigen, and rabies virus was isolated from the patient's brain tissue by suckling mouse inoculation.

Numerous bat colonies have been found in Cecil County, Maryland, where the patient lived, and several other rabid bats have been recovered from this area.

Reported by B Barnhart, MD, J Barnhart, MD, Northeast; J Byers, MD, Cecil County (MD) Health Dept; D Nelson, MD, W Holloway, MD, Wilmington Medical Center, Wilmington, Delaware; J Joseph, PhD, K Crawford, DVM, K Acree, MDCM, State Epidemiologist, Maryland State Dept of Health and Mental Hygiene; E Tierkel, VMD, State Epidemiologist, Delaware Dept of Health and Social Services; Virology Div, Bur of Laboratories, Viral Diseases Div, Field Services Div, Bur of Epidemiology, CDC.

International Notes

The following changes should be made in the *Supplement — Health Information for International Travel*, MMWR, Vol. 24, December 1975:

AFGHANISTAN

Cholera — Insert code II.

COSTA RICA

Smallpox — Delete code I. Insert code II.

CZECHOSLOVAKIA

Smallpox — Americas: Delete note and insert: All North and South American countries.

GUAM

Yellow Fever — Insert: Guam recommends vaccination for travel to infected areas.

GUINEA

Cholera — Delete all information.

GUINEA-BISSAU

Cholera — Delete none. Insert code II.

ISRAEL

Smallpox — Insert: A Certificate is ALSO required from travelers arriving from:

Africa: Ethiopia

Asia: Bangladesh, India, Nepal, Pakistan

PAKISTAN

Cholera — Delete all information. Insert code II.

Smallpox — Delete all information. Insert code II.

NEW HEBRIDES

Smallpox — Delete all information. Insert code II. Insert: A Certificate is ALSO required from travelers arriving from all countries any part of which is infected.

Quarantine Measures**SAUDI ARABIA**

Cholera — Delete all information and insert: During the period from 2 January to 25 September 1976, a Certificate is required ONLY from travelers arriving from all countries any part of which is infected.

During the period from 26 September to 23 December 1976 (season of periodic mass congregation), a Certificate showing a single dose of vaccine administered not less than 1 week and not more than 6 months before arriving in Saudi Arabia is required from ALL travelers. In addition, travelers arriving from countries any parts of which are infected are required to possess: (i) a certificate showing that before arriving in Saudi Arabia they have spent 5 days in a cholera-free area in their countries which should be designated by health authorities and notified in advance to Saudi Arabia Health Authorities (time spent on board a safe vessel is considered as a period spent in a cholera-free area provided no case appears on board); (ii) a certificate from local health authorities showing that arrivals have taken adequate doses of tetracycline or any substitute antibiotic for 4 subsequent days immediately before leaving the local infected area or during their stay in the cholera-free area.

Erratum, Vol. 25, No. 28

p 226 In Table IV, "Deaths in 121 United States Cities," figures were from Week Ending July 17, 1976 — 28th Week, not from Week Ending July 24, 1976 — 29th Week, as stated.

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