

# Morbidity and Mortality



NOV 2 1973

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE PUBLIC HEALTH SERVICE  
DATE OF RELEASE: NOVEMBER 2, 1973 - ATLANTA, GEORGIA 30333

**EPIDEMIOLOGIC NOTES AND REPORTS  
PROBABLE CHLOROQUINE-RESISTANT**

**PLASMODIUM FALCIPARUM MALARIA - New York**

On approximately August 25, 1973, a 31-year-old anthropologist from New York had onset of fever, rigors, and night sweats. He was admitted to a local hospital; physical examination revealed a temperature of 103.6°F. but was otherwise unremarkable. Blood smears showed no malaria parasites. A tentative diagnosis of typhoid fever was made, and the patient was started on ampicillin.

Over the next 2 days, the patient made no clinical improvement, and laboratory findings were consistent with disseminated intravascular coagulation. After 8 negative peripheral blood smears, *Plasmodium falciparum* organisms were identified at a density of 15,000 per cu mm. The patient received the standard total dose of 1.5 gm chloroquine base but did not improve. Repeat smears showed a parasite count of 100,000 per cu mm, and treatment was

**CONTENTS**

Epidemiologic Notes and Reports  
 Probable Chloroquine-Resistant  
*Plasmodium Falciparum* Malaria - New York . . . . . 357  
 Rickettsial Disease - Nebraska, South Dakota . . . . . 358  
 International Notes  
 Venezuelan Equine Encephalitis - Ecuador, Peru . . . . . 363

changed to quinine, pyrimethamine, and sulfadiazine. Within 36 hours, his fever had subsided, and the parasite count had decreased dramatically.

Epidemiologic investigation revealed that on August 21, 1973, the patient had returned from a 3-week visit in Surinam restricted to an area on the Marowijne River 50 miles from the coast. He had lived with the natives who used chloroquine-containing salt supplied through the national malaria control program but had taken no other medications.

**TABLE I. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES**  
(Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	43rd WEEK ENDING		MEDIAN 1968-1972	CUMULATIVE, FIRST 43 WEEKS		
	October 27, 1973	October 28, 1972		1973	1972	MEDIAN 1968-1972
Aseptic meningitis . . . . .	92	140	136	3,872	3,437	3,707
Brucellosis . . . . .	2	3	3	158	159	172
Chickenpox . . . . .	601	895	--	147,747	117,560	--
Diphtheria . . . . .	2	6	3	153	90	150
Encephalitis, primary:						
Arthropod-borne and unspecified . . . . .	33	40	40	1,264	912	1,198
Encephalitis, post-infectious . . . . .	4	3	3	240	237	297
Hepatitis, serum (Hepatitis B) . . . . .	157	160	152	6,623	7,495	5,991
Hepatitis, infectious (Hepatitis A) . . . . .	861	925	1,049	42,352	45,320	45,320
Malaria . . . . .	3	10	49	209	751	2,553
Measles (rubeola) . . . . .	82	156	296	24,768	27,830	27,830
Meningococcal infections, total . . . . .	17	19	34	1,161	1,118	2,039
Civilian . . . . .	17	19	25	1,136	1,074	1,826
Military . . . . .	--	--	2	25	44	207
Mumps . . . . .	760	626	1,161	58,808	60,031	82,240
Rubella (German measles) . . . . .	128	184	271	26,654	22,362	45,452
Tetanus . . . . .	1	2	2	77	98	104
Tuberculosis, new active . . . . .	619	746	--	26,005	28,266	--
Tularemia . . . . .	5	1	1	139	113	128
Typhoid fever . . . . .	7	5	13	568	303	303
Typhus, tick-borne (Rky. Mt. spotted fever) . . . . .	12	8	2	613	503	387
Veneral Diseases:						
Gonorrhea . . . . .	16,773	15,124	--	681,945	620,534	--
Syphilis, primary and secondary . . . . .	493	556	--	21,274	20,777	--
Rabies in animals . . . . .	39	62	49	2,906	3,466	2,881

**TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY**

	Cum.		Cum.
Anthrax: . . . . .	1	Poliomyelitis, total: . . . . .	6
Botulism: . . . . .	16	Paralytic: . . . . .	4
Congenital rubella syndrome: * Colo.-1 . . . . .	28	Psittacosis: . . . . .	20
Leptosy: Calif.-1 . . . . .	103	Rabies in man: . . . . .	1
Leptospirosis: . . . . .	28	Trichinosis: . . . . .	72
Plague: . . . . .	2	Typhus, murine: . . . . .	29

\* Delayed reports: Congenital rubella syndrome: Ariz. delete 1

**MALARIA — Continued**

(Reported by Mohammed S. Al-Ibrahim, M.D., Robert Holzman, M.D., Division of Infectious Disease and Immunology, New York University Medical Center School of Medicine.)

**Editorial Note**

The sensitivity of this strain of *P. falciparum* to chloroquine phosphate was not tested. Nonetheless, the rising parasitemia during chloroquine therapy suggests this is a case of chloroquine-resistant falciparum malaria.

In the Western Hemisphere, *P. falciparum* malaria resistant to 4-amino-quinolines has been reported in most of South America east of the Andes, in Colombia on both the Atlantic and Pacific coasts, and in Central America; however, not all *P. falciparum* strains found in these areas are resistant, nor is *P. falciparum* the most common species in South America. Chloroquine resistance has been previously demonstrated in *P. falciparum* in 1 location in Surinam in 1972. Resistant strains are widespread in southeast Asia, but none

have been documented on the Indian subcontinent or in Africa (1). Resistance to 4-amino-quinolines has not been seen in other species (1).

The World Health Organization recommends several methods for documenting 4-amino-quinoline resistance (1, 2, 3). Any case of suspected chloroquine-resistant *P. falciparum* malaria acquired in Africa or on the Indian subcontinent should be reported immediately to local or state health authorities.

**References**

1. Chemotherapy of malaria and resistance to antimalarials. WHO Technical Report Series No. 529, 1973
2. Rieckmann KH, McNamara JV, Frischer A, et al: Effects of chloroquine, quinine, and cycloquanil upon the maturation of asexual erythrocytic forms of two strains of *Plasmodium falciparum* in vitro. Amer J Trop Med Hyg 17:661, 1968
3. Rieckmann KH: Determination of the drug sensitivity of *Plasmodium falciparum*. JAMA 217(5):573-578, 1971

**RICKETTSIAL DISEASE — Nebraska, South Dakota****Rocky Mountain spotted fever**

*Case 1.* On May 31, 1973, a 9-year-old boy from Vertigre, Nebraska, became ill with rash and fever; over the next 3 days, these symptoms persisted (temperature to 102°F) and were accompanied by conjunctivitis, muscle aches, and joint pains. The rash was generalized and present on the child's palms and soles; lymph nodes were enlarged in the cervical area.

The patient gave a history of having received multiple tick bites within 2 weeks prior to onset of illness, and a presumptive diagnosis of Rocky Mountain spotted fever (RMSF) was made. The patient was started on Terramycin\*, 250 mg 3 times a day. He made a full recovery and was discharged on June 6. Paired serum specimens collected on June 3 and July 3, 1973, revealed positive complement fixation reactions for RMSF at titers of 1:8 and 1:24, respectively.

*Case 2.* A 15-year-old boy from West Point, Nebraska, (in the northeast corner of the state) had onset of fever, headache, malaise, and rash on June 10, 1973. The rash was maculopapular and appeared initially on the arms and legs and later on the trunk; by June 20, the rash was purpuric. These symptoms coupled with a history of a recent tick bite led to a presumptive diagnosis of RMSF. Tetracycline therapy was initiated, and the patient recovered completely. A series of 3 serum samples collected in late June and July 1973 were negative, 1:64, and 1:256, respectively, on complement fixation testing for RMSF.

**Typhus**

*Case 3.* An 11-year-old girl from Lincoln, Nebraska, developed an illness characterized by fever, headache, stupor, malaise, myalgia, splenomegaly, and a petechial rash on May 17, 1973. She was hospitalized on May 23, and on admission the rash was noted to involve the palms and soles. The child had received a tick bite on May 10, and a presumptive diagnosis of RMSF was made. Paired serum specimens obtained on May 23 and June 4 had proteus OX19 agglutination titers of 1:100 and 1:320, respectively. Chloramphenicol therapy was administered and was followed by complete recovery.

\*Inclusion of trade names does not imply endorsement by the Public Health Service or the U.S. Department of Health, Education, and Welfare.

Subsequent complement fixation tests on the serum specimens indicated recent infection with a member of the typhus rather than the spotted fever group. To ensure that this interpretation was not the result of cross reactions, a third serum specimen was collected from the patient while she was visiting in southern California and tested; again the results indicated recent infection with an organism of the typhus group (Table 1).

A more detailed history obtained after this discovery revealed that from April 22 to 28, 1973, the patient had accompanied her stepfather on a trip to McAllen, Texas. This area is known to be endemic for murine typhus and was the probable source of exposure (1). The intervening period of time between this trip and the onset of symptoms was longer than the usual incubation period of murine typhus (8-12 days); however, the child's dog (terrier-chihuahua cross) went along on the trip and may have picked up infected rat fleas and served as a transient carrier until sometime in early May. Cat fleas have also been implicated in the transmission of typhus (1). No case of murine typhus acquired in Nebraska has been reported.

*Case 4.* A 51-year-old man from Edgemont, South Dakota, was admitted to Chadron Community Hospital in Chadron, Nebraska, on May 30, 1973, with the chief complaints of fever and a generalized rash of 1 day's duration. History revealed that the patient had had a flu-like prodrome for the previous 10 days. On admission, he exhibited a generalized maculopapular rash, dark red in color, and a temperature of over 105°F. Febrile agglutinins revealed a proteus OX19 titer of 1:320. A presumptive diagnosis of RMSF was made, and the patient was treated with Loridine\* intramuscularly and Vibromycin\* orally. Except for weakness, his symptoms subsided within 7 days.

Two additional serum specimens were collected, and the results indicated an infection with 1 of the typhus organisms (Table 2). No recent travel from the South Dakota-Wyoming-Nebraska junction area into areas having high rates of murine typhus was noted.

This serologic picture is compatible with recrudescent epidemic typhus (Brill-Zinsser disease) since there was no history of recent travel into an area reporting epidemic

(Continued on page 363)

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
FOR WEEKS ENDING OCTOBER 27, 1973 AND OCTOBER 28, 1972 (43rd WEEK)

AREA	ASEPTIC MENIN- GITIS	BRUCEL- LOSIS	CHICKEN- POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS		
						Primary including unspec. cases		Post In- fectious	Serum (Hepatitis B)	Infectious (Hepatitis A)	
						1973	1972	1973	1973	1973	1972
UNITED STATES	92	2	601	2	153	33	40	4	157	861	925
NEW ENGLAND	6	-	67	-	3	-	-	-	2	55	56
Maine *	-	-	2	-	-	-	-	-	-	2	7
New Hampshire *	-	-	26	-	-	-	-	-	-	3	10
Vermont *	-	-	3	-	-	-	-	-	-	8	4
Massachusetts	2	-	-	-	1	-	-	-	-	26	17
Rhode Island	3	-	25	-	2	-	-	-	1	7	8
Connecticut	1	-	11	-	-	-	-	-	1	9	10
MIDDLE ATLANTIC	10	-	6	-	-	4	-	1	23	80	138
Upstate New York	4	-	-	-	-	-	-	-	2	23	26
New York City *	1	-	6	-	-	1	-	-	-	9	22
New Jersey	2	-	NN	-	-	1	-	-	11	32	44
Pennsylvania	3	-	-	-	-	2	-	1	10	16	46
EAST NORTH CENTRAL	18	-	221	-	-	16	17	-	12	127	168
Ohio	8	-	18	-	-	2	12	-	1	11	49
Indiana *	2	-	24	-	-	9	1	-	-	-	10
Illinois	-	-	-	-	-	1	1	-	5	47	36
Michigan *	6	-	56	-	-	4	2	-	3	62	66
Wisconsin	2	-	123	-	-	-	1	-	3	7	7
WEST NORTH CENTRAL	6	1	119	-	7	5	1	-	3	39	29
Minnesota	6	-	-	-	-	1	-	-	-	4	7
Iowa *	-	1	113	-	-	-	-	-	2	1	4
Missouri	-	-	1	-	-	3	1	-	-	21	11
North Dakota	-	-	4	-	-	-	-	-	-	-	1
South Dakota	-	-	-	-	7	-	-	-	-	3	2
Nebraska	-	-	1	-	-	-	-	-	-	-	-
Kansas	-	-	-	-	-	1	-	-	1	10	4
SOUTH ATLANTIC	21	-	41	-	1	3	4	-	28	208	130
Delaware	-	-	-	-	-	-	-	-	1	3	5
Maryland	4	-	1	-	-	1	-	-	3	6	7
District of Columbia	3	-	2	-	-	-	-	-	-	1	1
Virginia	2	-	1	-	-	-	2	-	3	19	17
West Virginia	-	-	35	-	-	-	-	-	-	6	4
North Carolina	4	-	NN	-	-	2	1	-	5	20	23
South Carolina	-	-	2	-	-	-	-	-	-	22	24
Georgia	-	-	-	-	-	-	-	-	-	16	14
Florida	8	-	-	-	1	-	1	-	16	115	35
EAST SOUTH CENTRAL	9	-	13	-	1	-	2	3	11	77	56
Kentucky	1	-	11	-	-	-	-	-	1	21	18
Tennessee	1	-	NN	-	-	-	1	2	2	38	26
Alabama	7	-	2	-	1	-	-	1	8	17	9
Mississippi	-	-	-	-	-	-	1	-	-	1	3
WEST SOUTH CENTRAL	4	-	20	1	15	3	2	-	9	42	84
Arkansas *	-	-	-	-	-	-	-	-	-	-	6
Louisiana	1	-	NN	-	-	2	-	-	6	24	9
Oklahoma	1	-	-	-	-	-	-	-	-	16	18
Texas	2	-	20	1	15	1	2	-	3	2	51
MOUNTAIN	-	1	11	-	42	1	4	-	3	24	53
Montana	-	1	8	-	-	1	4	-	1	2	7
Idaho	-	-	-	-	-	-	-	-	-	2	4
Wyoming	-	-	-	-	-	-	-	-	-	-	6
Colorado	-	-	1	-	-	-	-	-	2	6	14
New Mexico	-	-	2	-	25	-	-	-	-	9	4
Arizona *	-	-	-	-	17	-	-	-	-	-	15
Utah	-	-	-	-	-	-	-	-	-	5	3
Nevada *	-	-	-	-	-	-	-	-	-	-	-
PACIFIC	18	-	103	1	84	1	10	-	66	209	211
Washington	2	-	103	-	75	-	3	-	7	18	14
Oregon	-	-	-	-	3	-	2	-	8	21	26
California	16	-	-	1	4	1	5	-	51	170	158
Alaska	---	---	---	---	2	---	-	---	---	---	-
Hawaii	---	---	---	---	-	---	-	---	---	---	13
Guam *	-	-	-	-	-	-	-	-	-	-	-
Puerto Rico	-	-	-	-	-	-	-	-	-	12	18
Virgin Islands	-	-	-	-	-	-	-	-	-	-	-

\* Delayed reports: Aseptic meningitis: N.H.-2, Iowa 1  
 Chickenpox: Me. 1, Guam 8  
 Encephalitis, primary: Me. 1, Mich. 2

Hepatitis B: Me. 1, N.Y.C.-2, Ariz. 1, Guam 1  
 Hepatitis A: Me. 7, Va. delete 1, N.Y.C. 14, Ind. delete 1,  
 Mich. delete 2, Ark. 2, Ariz. 3, Nev. 29, Guam 1

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
FOR WEEKS ENDING OCTOBER 27, 1973 AND OCTOBER 28, 1972 (43rd WEEK) - Continued

AREA	MALARIA		MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS, TOTAL			MUMPS		RUBELLA	
	1973	Cum. 1973	1973	Cumulative		1973	Cumulative		1973	Cum. 1973	1973	Cum. 1973
				1973	1972		1973	1972				
UNITED STATES	3	209	82	24,768	27,830	17	1,161	1,118	760	58,808	128	26,654
NEW ENGLAND	1	17	9	7,468	3,318	-	48	47	85	3,208	1	3,662
Maine *	-	-	-	67	247	-	1	4	10	361	-	70
New Hampshire *	-	-	1	892	356	-	7	3	-	197	-	377
Vermont	-	2	-	119	128	-	3	-	-	273	-	47
Massachusetts	-	7	2	3,961	761	-	13	21	17	930	-	2,055
Rhode Island	-	1	4	619	524	-	3	12	34	434	-	219
Connecticut	1	7	2	1,810	1,302	-	21	7	24	1,013	1	894
MIDDLE ATLANTIC	-	31	8	2,539	1,060	-	161	135	33	7,471	7	4,221
Upstate New York	-	17	-	811	129	-	58	32	NN	NN	-	433
New York City	-	2	1	922	371	-	31	40	10	4,622	2	476
New Jersey	-	5	7	442	497	-	39	26	3	1,527	3	3,014
Pennsylvania	-	7	-	364	63	-	33	37	20	1,322	2	298
EAST NORTH CENTRAL	2	29	40	8,689	11,281	3	156	163	213	14,982	49	6,158
Ohio	-	4	-	290	257	2	67	63	10	2,745	1	694
Indiana	-	3	4	661	1,277	-	4	12	103	1,383	1	958
Illinois	1	16	9	2,095	4,167	-	25	36	16	2,514	29	1,009
Michigan	1	6	11	4,413	2,038	1	44	44	46	4,107	10	1,879
Wisconsin	-	-	16	1,230	3,542	-	16	8	38	4,233	8	1,618
WEST NORTH CENTRAL	-	8	3	450	985	4	89	78	82	4,944	5	1,229
Minnesota	-	2	-	21	22	-	8	24	5	88	-	221
Iowa	-	1	1	279	689	2	21	5	48	3,020	4	203
Missouri	-	1	-	53	164	2	34	22	5	726	1	270
North Dakota	-	1	2	64	53	-	3	-	-	69	-	276
South Dakota	-	-	-	-	7	-	4	2	-	19	-	23
Nebraska	-	1	-	6	23	-	10	9	6	161	-	141
Kansas	-	2	-	27	27	-	9	16	18	861	-	95
SOUTH ATLANTIC	-	33	5	1,258	2,227	3	197	251	82	6,869	8	2,201
Delaware	-	-	-	9	51	-	1	1	2	274	-	14
Maryland	-	5	-	13	15	1	27	37	3	642	-	10
District of Columbia	-	1	-	8	2	-	4	11	2	137	-	3
Virginia	-	8	-	421	66	-	38	56	1	715	-	627
West Virginia	-	-	-	218	285	-	5	8	55	2,356	1	330
North Carolina	-	7	-	4	37	-	42	30	NN	NN	-	202
South Carolina	-	1	-	64	216	1	13	20	1	357	-	86
Georgia	-	3	-	152	182	-	22	18	-	32	-	12
Florida	-	8	5	369	1,373	1	45	70	18	2,356	7	917
EAST SOUTH CENTRAL	-	13	1	615	1,066	2	106	87	77	4,904	12	1,367
Kentucky	-	8	1	380	535	1	37	28	23	1,474	-	401
Tennessee	-	-	-	165	193	-	42	28	38	2,281	3	558
Alabama	-	5	-	12	153	-	15	17	9	680	8	196
Mississippi	-	-	-	58	185	1	12	14	7	469	1	212
WEST SOUTH CENTRAL	-	12	2	707	1,566	2	177	135	64	4,062	7	1,484
Arkansas *	-	-	-	70	13	-	13	10	-	387	-	112
Louisiana	-	2	-	87	94	-	42	41	-	85	-	99
Oklahoma	-	2	-	55	10	-	31	8	6	452	-	179
Texas	-	8	2	495	1,449	2	91	76	58	3,138	7	1,094
MOUNTAIN	-	10	3	736	1,914	-	33	29	17	2,544	5	2,412
Montana	-	1	-	17	16	-	7	5	5	248	-	507
Idaho	-	-	-	256	148	-	4	8	4	114	-	42
Wyoming	-	-	-	81	51	-	-	1	3	427	-	7
Colorado	-	2	1	106	532	-	11	5	-	490	1	1,551
New Mexico	-	2	2	126	126	-	3	3	2	982	2	203
Arizona	-	4	-	21	885	-	4	1	-	140	-	19
Utah	-	1	-	128	155	-	2	5	3	134	2	79
Nevada	-	-	-	1	1	-	2	1	-	9	-	4
PACIFIC	-	56	11	2,306	4,413	3	194	193	107	9,824	34	3,920
Washington	-	3	4	1,027	982	-	20	17	26	1,578	10	700
Oregon	-	4	-	461	133	-	16	14	22	1,849	4	794
California	-	46	7	734	3,187	3	151	151	59	5,349	20	2,391
Alaska	---	2	---	65	13	---	7	8	---	772	---	9
Hawaii	---	1	---	19	98	---	-	3	---	276	---	26
Guam *	-	-	-	50	16	-	-	13	-	25	-	13
Puerto Rico	-	-	29	1,909	785	-	8	4	10	783	-	33
Virgin Islands	-	-	-	7	3	-	-	2	-	24	-	2

\*Delayed Reports: Measles: N.H. 6  
Mumps: Me. 3, Ark. 2, Guam 1

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
FOR WEEKS ENDING OCTOBER 27, 1973 AND OCTOBER 28, 1972 (43rd WEEK) - Continued

AREA	TETANUS Cumulative 1973	TUBERCULOSIS (New Active)		TULA- REMIA Cumulative 1973	TYPHOID FEVER		TYPHUS FEVER TICK-BORNE (Rky. Mt. spotted fever)		VENEREAL DISEASES		RABIES IN ANIMALS		
		1973	Cum. 1973		1973	1973	Cum. 1973	1973	Cum. 1973	GONOR- RHEA	SYPHILIS (Pri. & Sec.)	1973	Cum. 1973
										1973	1973		
UNITED STATES	77	619	26,005	139	7	568	12	613	16,773	493	39	2,906	
NEW ENGLAND	2	23	954	-	-	16	-	3	302	18	2	110	
Maine	-	1	88	-	-	-	-	-	41	-	1	58	
New Hampshire	-	2	47	-	-	-	-	-	15	-	-	36	
Vermont	-	-	27	-	-	-	-	-	-	3	-	3	
Massachusetts	-	18	504	-	-	14	-	2	-	11	-	6	
Rhode Island	1	2	81	-	-	-	-	-	27	-	1	1	
Connecticut *	1	-	207	-	-	2	-	1	219	4	-	6	
MIDDLE ATLANTIC	7	106	5,108	-	-	56	1	34	2,236	118	1	47	
Upstate New York	1	4	899	-	-	10	-	13	386	17	1	23	
New York City	3	53	1,896	-	-	21	-	4	783	55	-	-	
New Jersey	2	18	904	-	-	15	-	5	289	30	-	-	
Pennsylvania	1	31	1,409	-	-	10	1	12	778	16	-	24	
EAST NORTH CENTRAL	13	84	3,844	3	-	44	-	19	2,316	16	7	276	
Ohio	3	40	1,151	-	-	18	-	14	688	6	-	32	
Indiana	4	10	492	-	-	-	-	-	234	7	1	52	
Illinois	3	10	1,153	1	-	10	-	5	419	-	-	69	
Michigan	1	24	970	2	-	13	-	-	726	1	-	7	
Wisconsin	2	-	78	-	-	3	-	-	249	2	6	116	
WEST NORTH CENTRAL	6	34	1,096	16	-	24	3	24	907	23	16	915	
Minnesota	-	8	135	-	-	4	1	2	205	5	4	337	
Iowa	-	1	109	-	-	-	-	7	192	4	5	188	
Missouri	5	20	520	15	-	12	1	8	239	11	-	89	
North Dakota	1	-	36	-	-	-	-	-	18	-	1	137	
South Dakota	-	1	77	-	-	1	1	1	47	-	-	81	
Nebraska	-	1	71	-	-	1	-	2	107	2	-	3	
Kansas	-	3	148	1	-	6	-	4	99	1	6	80	
SOUTH ATLANTIC	17	124	5,164	17	2	248	4	304	4,228	161	1	260	
Delaware	-	-	82	-	-	-	-	8	38	-	-	3	
Maryland	-	9	566	6	1	9	-	14	431	10	-	14	
District of Columbia	-	13	248	-	-	-	-	-	356	7	-	-	
Virginia	2	8	688	4	-	3	1	61	363	20	1	79	
West Virginia	1	6	247	-	1	10	-	4	47	-	-	22	
North Carolina	-	18	839	2	-	5	3	138	617	25	-	13	
South Carolina	2	16	409	-	-	6	-	32	352	19	-	5	
Georgia	2	19	844	3	-	3	-	46	1,046	22	-	85	
Florida	10	35	1,241	2	-	212	-	1	978	58	-	39	
EAST SOUTH CENTRAL	8	79	2,341	10	2	41	1	110	1,149	23	2	374	
Kentucky	1	6	520	1	-	10	-	-	210	12	-	198	
Tennessee	5	23	733	7	2	14	-	52	470	9	2	133	
Alabama	2	36	653	-	-	10	1	25	173	-	-	42	
Mississippi	-	14	435	2	-	7	-	33	296	2	-	1	
WEST SOUTH CENTRAL	13	58	2,673	88	-	26	3	103	2,672	40	4	510	
Arkansas	1	7	330	60	-	5	-	20	131	1	1	108	
Louisiana	4	-	380	1	-	6	-	-	512	4	1	42	
Oklahoma	4	5	226	20	-	2	3	74	203	3	1	146	
Texas	4	46	1,737	7	-	13	-	9	1,826	32	1	214	
MOUNTAIN	-	19	878	4	2	14	-	8	651	28	-	50	
Montana	-	1	42	-	-	-	-	1	20	-	-	10	
Idaho	-	-	30	-	-	1	-	2	32	-	-	-	
Wyoming	-	-	24	-	-	1	-	1	5	-	-	-	
Colorado	-	5	171	-	-	2	-	1	215	1	-	-	
New Mexico	-	10	183	1	2	4	-	3	86	26	-	7	
Arizona *	-	3	340	-	-	6	-	-	183	1	-	29	
Utah	-	-	38	2	-	-	-	-	79	-	-	4	
Nevada	-	-	50	1	-	-	-	-	31	-	-	-	
PACIFIC	11	92	3,947	1	1	99	-	8	2,312	66	6	364	
Washington *	3	10	307	-	-	7	-	5	330	3	-	9	
Oregon	-	3	209	-	-	2	-	2	101	1	-	8	
California	8	79	3,109	1	1	85	-	1	1,881	62	6	339	
Alaska	-	---	44	-	---	4	---	-	---	---	---	8	
Hawaii *	-	---	278	-	---	1	---	-	---	---	---	-	
Guam *	-	-	35	-	-	-	-	-	-	-	-	-	
Puerto Rico	4	9	417	-	1	9	-	-	37	1	-	46	
Virgin Islands	-	-	2	-	-	-	-	-	2	3	-	-	

\* Delayed reports: Tetanus: Wash. delete 1  
TB: Hawaii delete 40  
Typhoid: Ariz. 2

Gonorrhea: Guam 11  
Rabies: Conn. 4, Ariz. 1

TABLE IV. DEATHS IN 122 UNITED STATES CITIES FOR WEEK ENDING OCTOBER 27, 1973

Week No.

43

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

Area	All Causes			Pneumonia and Influenza All Ages	Area	All Causes			Pneumonia and Influenza All Ages
	All Ages	65 years and over	Under 1 year			All Ages	65 years and over	Under 1 year	
<b>NEW ENGLAND</b>	751	475	22	49	<b>SOUTH ATLANTIC</b>	1,141	583	45	41
Boston, Mass.	235	135	9	14	Atlanta, Ga.	110	55	4	1
Bridgeport, Conn.	44	25	1	2	Baltimore, Md.	169	100	5	3
Cambridge, Mass.	39	31	1	6	Charlotte, N. C.	63	36	1	—
Fall River, Mass.	34	25	1	1	Jacksonville, Fla.	124	62	5	1
Hartford, Conn.	69	40	2	4	Miami, Fla.	125	60	4	1
Lowell, Mass.	22	14	—	2	Norfolk, Va.	69	28	6	6
Lynn, Mass.	22	19	—	4	Richmond, Va.	93	45	1	10
New Bedford, Mass.	32	22	—	1	Savannah, Ga.	30	14	3	2
New Haven, Conn.	58	38	1	2	St. Petersburg, Fla.	79	57	2	3
Providence, R. I.	57	34	5	6	Tampa, Fla.	65	32	6	5
Somerville, Mass.	9	7	—	1	Washington, D. C.	133	49	4	6
Springfield, Mass.	41	23	1	4	Wilmington, Del.	81	45	4	3
Waterbury, Conn.	34	22	—	1	<b>EAST SOUTH CENTRAL</b>	575	302	35	30
Worcester, Mass.	55	40	1	1	Birmingham, Ala.	108	46	8	2
<b>MIDDLE ATLANTIC</b>	2,916	1,796	76	137	Chattanooga, Tenn.	37	19	2	6
Albany, N. Y.	58	33	1	—	Knoxville, Tenn.	37	22	—	1
Allentown, Pa.	22	9	—	2	Louisville, Ky.	79	40	9	5
Buffalo, N. Y.	143	86	6	4	Memphis, Tenn.	141	77	11	—
Camden, N. J.	41	25	—	1	Mobile, Ala.	50	32	—	3
Elizabeth, N. J.	26	21	—	—	Montgomery, Ala.	28	16	3	5
Erie, Pa.	28	20	1	1	Nashville, Tenn.	95	50	2	8
Jersey City, N. J.	51	33	3	3	<b>WEST SOUTH CENTRAL</b>	1,203	634	72	30
Newark, N. J.	72	34	8	2	Austin, Tex.	34	21	4	—
New York City, N. Y.†	1,562	963	35	66	Baton Rouge, La.	51	33	3	4
Paterson, N. J.	27	17	—	—	Corpus Christi, Tex.	15	3	2	—
Philadelphia, Pa.	304	177	10	27	Dallas, Tex.	161	79	12	4
Pittsburgh, Pa.	172	96	4	15	El Paso, Tex.	39	16	3	3
Reading, Pa.	31	26	—	—	Fort Worth, Tex.	92	54	3	—
Rochester, N. Y.	104	70	5	6	Houston, Tex.	228	109	9	5
Schenectady, N. Y.	27	19	—	—	Little Rock, Ark.	62	32	7	—
Scranton, Pa.	51	30	2	—	New Orleans, La.	174	91	11	4
Syracuse, N. Y.	92	59	1	6	Oklahoma City, Okla.*	84	48	5	1
Trenton, N. J.	47	36	—	2	San Antonio, Tex.	138	80	9	2
Utica, N. Y.	31	22	—	—	Shreveport, La.	63	34	3	3
Yonkers, N. Y.	27	20	—	2	Tulsa, Okla.	62	34	1	4
<b>EAST NORTH CENTRAL</b>	2,478	1,438	99	84	<b>MOUNTAIN</b>	558	322	25	29
Akron, Ohio	58	38	4	—	Albuquerque, N. Mex.	69	43	4	6
Canton, Ohio	44	33	1	3	Colorado Springs, Colo.	25	12	1	3
Chicago, Ill.	641	345	26	19	Denver, Colo.	138	89	3	11
Cincinnati, Ohio	165	98	7	5	Las Vegas, Nev.	32	10	1	—
Cleveland, Ohio	181	98	6	5	Ogden, Utah	23	12	—	1
Columbus, Ohio	139	77	7	5	Phoenix, Ariz.	152	79	9	6
Dayton, Ohio	99	62	4	1	Pueblo, Colo.	16	14	—	—
Detroit, Mich.	363	185	12	7	Salt Lake City, Utah	39	25	4	1
Evansville, Ind.	47	36	1	3	Tucson, Ariz.	64	38	3	1
Fort Wayne, Ind.	55	26	2	5	<b>PACIFIC</b>	1,534	915	43	31
Gary, Ind.	31	14	—	—	Berkeley, Calif.	15	9	—	—
Grand Rapids, Mich.	51	40	3	5	Fresno, Calif.	65	29	4	—
Indianapolis, Ind.	147	94	13	4	Glendale, Calif.	24	19	—	2
Madison, Wis.	25	14	4	3	Honolulu, Hawaii	65	28	2	3
Milwaukee, Wis.	116	71	1	—	Long Beach, Calif.	71	38	—	1
Peoria, Ill.	48	34	4	—	Los Angeles, Calif.	468	282	8	8
Rockford, Ill.	51	33	1	12	Oakland, Calif.	81	52	3	—
South Bend, Ind.	46	21	—	4	Pasadena, Calif.	26	18	1	2
Toledo, Ohio	105	79	1	1	Portland, Oreg.	127	84	1	—
Youngstown, Ohio	66	40	2	2	Sacramento, Calif.	51	25	—	1
<b>WEST NORTH CENTRAL</b>	795	485	29	21	San Diego, Calif.	110	73	2	—
Des Moines, Iowa	56	36	1	—	San Francisco, Calif.	166	93	7	4
Duluth, Minn.	31	21	1	4	San Jose, Calif.	52	37	—	2
Kansas City, Kans.	27	10	6	1	Seattle, Wash.	126	70	13	2
Kansas City, Mo.	125	76	5	1	Spokane, Wash.	54	35	2	3
Lincoln, Nebr.	41	36	1	3	Tacoma, Wash.	33	23	—	3
Minneapolis, Minn.	90	54	—	1	<b>Total</b>	11,951	6,950	446	452
Omaha, Nebr.	80	54	4	1	<b>Expected Number</b>	12,379	7,079	542	407
St. Louis, Mo.	216	126	8	7	<b>Cumulative Total (includes reported corrections for previous weeks)</b>	551,241	323,977	20,693	22,181
St. Paul, Minn.	66	45	1	1					
Wichita, Kans.	63	27	2	2					

† Delayed report for week ending October 20, 1973.

\* Estimate based on average percent of divisional total.

## RICKETTSIAL DISEASE — Continued

typhus nor presence of body lice on the patient. The patient reported having had a febrile illness compatible with epidemic typhus in Liège, Belgium, during his military service with the U.S. Army in 1944.

(Reported by Robert Scherer, M.D., John Thomas, M.D., Eugene R. Schwenke, M.D., Allen Alderman, M.D., attending physicians, West Point, Omaha, Lincoln, and Chadron, Nebraska; George Underwood, M.D., Health Officer, Lincoln-Lancaster County Health Department; Paul A. Stoesz, M.D., State Epidemiologist, Nebraska Department of Health; W.F. Stanage, M.D., C.B. McVay, M.D., attending physicians, Yankton, South Dakota; Robert S. Westaby, M.D., State Epidemiologist, South Dakota State Department of Health; James Chin, M.D., State Epidemiologist, California State Department of Health; and 2 EIS Officers.)

## Editorial Note

Rocky Mountain spotted fever occurs in the United States in a broad arc extending from the Rocky Mountains to the South Atlantic seaboard. The incidence of the disease is greater than 0.5 per 100,000 population in Montana, Wyoming, Oklahoma, Tennessee, North Carolina, and Virginia but over 95% of reported cases now occur east of the Mississippi. The case-fatality ratio in the United States remains at about 5%, and fatalities appear to be associated with delay in initiation of appropriate treatment (1). Treatment should be started presumptively as in the cases reported here and the diagnosis subsequently confirmed by the clinical course and laboratory tests. Confusion with other rickettsial diseases is possible and as seen here may only be recognized if the laboratory tests point to the correct diagnosis. Case 3 and 4 show that murine typhus and recrudescent epidemic typhus (Brill-Zinsser disease) may occur in any part of the United States even though the exposure occurred elsewhere (2,3).

Table 1

Complement Fixation Titers in 3 Serum Specimens from Case #3  
Lincoln, Nebraska — May-July, 1973

	S1 (May 23)	S2 (June 4)	S3 (July ?10)
Rocky Mountain spotted fever	<1:8 <1:8	1:8 1:256	N.P.* 1:8
Murine typhus	<1:8 <1:8	1:256 1:256	N.P. 1:128

\*not performed

Table 2

Complement Fixation Titers in 3 Serum Specimens from Case #4  
Chadron, Nebraska — May-July, 1973

	S1 (May 30)	S2 (June 21)	S3 (July 7)
Epidemic typhus	1:128	1:1024	1:512
Murine typhus	1:48	1:1024	1:256
Rocky Mountain spotted fever	1:12	1:32	1:16

## References

- Hattwick MAW, Peters AH, Gregg MB, Hanson B: Surveillance of Rocky Mountain spotted fever. JAMA 225:1338-1343, 1973
- Murray ES, Snyder JC: Brill-Zinsser disease: The interepidemic reservoir of epidemic louse-borne typhus fever. Presented at the Sixth International Congress of Microbiology in Rome, September 1953
- Older JJ: The epidemiology of murine typhus in Texas, 1969. JAMA 214:2011-2017, 1970

## INTERNATIONAL NOTES

## VENEZUELAN EQUINE ENCEPHALITIS — Ecuador, Peru

In March 1973, an outbreak of Venezuelan equine encephalitis (VEE) occurred south of Guayaquil, Ecuador. VEE virus subtype I was isolated from the blood of a young adult and a child. Of 125 serum samples collected in the area, 7 had titers  $\geq$ 1:320 by hemagglutination-inhibition tests. This is the third year since 1969 that VEE has been found in southern Ecuador.

In Peru, equine cases of VEE were reported in early January 1973, from Lambayeque, Chiclayo Province. Apparently, the disease spread from there both to the north and south; La Libertad, Pacasmayo Province, was the most affected. In that Province a reported 2,144 of an estimated 7,800 equines died. At the same time 3,814 humans received medical treatment for a clinical illness consistent with VEE virus infection. According to the 1972 census, the rural population of this Province was 19,975. Field surveillance indicated an infection rate of 30-40% for this population. In this Province, the epidemic was first reported in late January and the last cases in late March. Sporadic cases were still being reported from the department of Piura in early May.

From febrile humans and equines, 14 viruses were iso-

lated in suckling mice and identified by complement fixation tests. Three isolates from humans and 3 from equines have been confirmed as VEE virus strains at CDC. Preliminary results indicate that these and the isolates from Ecuador are all subtype I. This subtype has been isolated in VEE epizootics and epidemics which have occurred in Ecuador, Central America, Mexico, and the United States between 1969 and 1971.

According to Peruvian authorities, outbreaks of equine encephalitis were observed in the northernmost region of Peru, near Piura, in the late 1920s and early 1930s. Whether or not these were due to VEE is unknown, but the continual recurrence of VEE in the southern Ecuadorian-northern Peruvian border area suggests that this is an area for further studies.

(Reported by Dr. Ernesto Gutierrez V., Chief, Department of Virology, National Institute of Hygiene, Guayaquil, Ecuador; Dr. Jose Madalengoitia, Chief, Division of Viruses, Ministry of Health and the University of San Marcos, Lima, Peru; the Arbovirus Reference Section, Vectorborne Diseases Branch, Bureau of Laboratories, CDC.)

**Errata**

Vol. 22, No. 39, p. 329

In "Table III. Cases of Notifiable Diseases: United States," column 3, "Tuberculosis (New Active), 1973," change the number of cases reported by Hawaii from 44 to 4.

Vol. 22, No. 41, p. 343

In the article "Diphtheria on a Navajo Indian Reserva-

tion - Arizona, New Mexico," the following persons were inadvertently omitted from the credits: Charlotte Lambert, Gallup Indian Health Service Hospital; H. Gilbert Crecelius, Ph.D., Director of Laboratories, Arizona State Department of Health; the Special Bacteriology Unit, Clinical Bacteriology Section, Bacteriology Branch, Bureau of Laboratories, and an Immunization Branch Public Health Advisor, CDC.

The Morbidity and Mortality Weekly Report, circulation 36,000, is published by the Center for Disease Control, Atlanta, Ga.

Director, Center for Disease Control  
Director, Bureau of Epidemiology, CDC  
Editor, MMWR  
Managing Editor, MMWR

David J. Sencer, M.D.  
Philip S. Brachman, M.D.  
Michael B. Gregg, M.D.  
Deborah L. Jones, B.S.

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.

In addition to the established procedures for reporting morbidity and mortality, the editor welcomes accounts of interesting outbreaks or case investigations of current interest to health officials.

Address all correspondence to: Center for Disease Control  
Attn: Editor  
Morbidity and Mortality Weekly Report  
Atlanta, Georgia 30333

DHEW Publication No. (CDC) 74-8017

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

OFFICIAL BUSINESS

POSTAGE AND FEES PAID  
U.S. DEPARTMENT OF HEW  
HEW 396



3-G-19-08

Mrs Mary F Jackson, Library  
Center for Disease Control