



# Morbidity and Mortality

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE / PUBLIC HEALTH SERVICE HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION

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EPIDEMIOLOGIC NOTES AND REPORTS

HUMAN BUBONIC PLAGUE - Cochiti, New Mexico

On May 23, 1970, bubonic plague was diagnosed in a 39-year-old American Indian, hospitalized in Albuquerque, New Mexico. The patient, a resident of the Cochiti Indian Pueblo, located 25 miles southwest of Sante Fe, had been in good health until May 16. That afternoon, he had sudden onset of severe right-sided headache, nausea, vomiting, shaking chills, and fever. Over the next several days these symptoms persisted, accompanied by generalized myalgia, arthralgia, blurred vision, lethargy, confusion, and staggering gait. He remained febrile (temperature 102-105°F.), although he had taken aspirin. On May 18, he was hospitalized.

His admission physical examination was unremarkable except for fever and mild confusion. A complete blood count and chest x-ray were within normal limits; urinalysis revealed proteinuria, pyuria, and microhematuria; stool and

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urine cultures were negative; and a lumbar puncture was normal except for mildly elevated opening pressure. He was treated with fluids, analgesics, antiemetics, a single dose of procaine penicillin, and bed rest. On May 21, he was slightly improved.

On May 22, gram-negative bipolar staining rods were identified in two blood cultures taken on May 19, and a

*(Continued on page 198)*

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

DISEASE	20th WEEK ENDED		MEDIAN 1965 - 1969	CUMULATIVE, FIRST 20 WEEKS		
	May 23, 1970	May 17, 1969		1970	1969	MEDIAN 1965 - 1969
Aseptic meningitis . . . . .	26	15	27	548	553	551
Brucellosis . . . . .	7	7	6	68	56	81
Diphtheria . . . . .	14	8	1	170	57	64
Encephalitis, primary:						
Arthropod-borne & unspecified . . . . .	23	17	22	405	388	482
Encephalitis, post-infectious . . . . .	19	6	23	178	110	325
Hepatitis, serum . . . . .	149	87	883	2,642	2,006	16,596
Hepatitis, infectious . . . . .	1,087	967		21,783	18,482	
Malaria . . . . .	67	65	39	1,340	1,003	760
Measles (rubeola) . . . . .	1,950	984	1,825	28,092	13,526	46,212
Meningococcal infections, total . . . . .	39	72	64	1,296	1,712	1,673
Civilian . . . . .	38	61	61	1,166	1,545	1,522
Military . . . . .	1	11	6	130	167	151
Mumps . . . . .	2,505	2,564	---	54,950	49,424	---
Poliomyelitis, total . . . . .	1	1	1	2	2	9
Paralytic . . . . .	1	1	1	2	2	7
Rubella (German measles) . . . . .	2,242	2,835	---	38,598	32,323	---
Tetanus . . . . .	6	1	2	37	43	44
Tularemia . . . . .	4	5	2	37	38	57
Typhoid fever . . . . .	5	7	7	85	105	113
Typhus, tick-borne (Rky. Mt. spotted fever) . . . . .	8	12	5	29	33	24
Rabies in animals . . . . .	61	59	80	1,290	1,538	1,753

TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax: . . . . .	1	Psittacosis: . . . . .	13
Botulism: . . . . .	1	Rabies in Man: . . . . .	-
Leprosy: Tex.-2 . . . . .	43	Rubella congenital syndrome: Cal.-1, Minn.-1, Tex.-1 . . . . .	32
Leptospirosis: . . . . .	11	Trichinosis: Cal.-2, N.Y.Ups.-1, Tenn.-1 . . . . .	44
Plague: N.Mex.-1 . . . . .	1	Typhus, murine: Hawaii-1 . . . . .	6

BUBONIC PLAGUE - (Continued from front page)

tentative diagnosis of bubonic plague was made. On May 23 this diagnosis was confirmed on the basis of bacterial phage typing by the state laboratory.

On reexamination of the patient, a tender lymph node 1 cm in diameter was noted in the left inguinal region, although there was no definite bubo. The patient was treated with tetracycline (500 mg orally 4 times daily) and streptomycin (1 g intramuscularly twice daily) beginning on May 22, and has continued to improve. The patient could recall no recent animal contact or insect bites.

Investigation primarily in the area of the Cochiti Pueblo is currently underway to determine the source of his

infection. In addition, his family members, including his 13-year-old daughter who experienced an illness similar to her father's several days before his onset, but who recovered spontaneously, are being serologically evaluated.

(Reported by U. Hodgins, M.D., and C. Tomlin, M.D., Physicians, Albuquerque; Bruce Storrs, M.D., Director, Medical Services Division, Eva Wallen, M.D., District Health Officer, Brian Miller, and Neil Weber, General Sanitation Section, Environmental Services Division, and Daniel Johnson, Ph.D., Director, State Laboratory, New Mexico Health and Social Services Department; and an EIS Officer.)

HEPATITIS ASSOCIATED WITH RENAL HEMODIALYSIS - Memphis, Tennessee

Since December 1969, three of six nurses on the renal hemodialysis unit of a hospital in Memphis, Tennessee, have developed hepatitis. All three had symptoms and liver function studies consistent with viral hepatitis. Two of them had onsets marked by urticarial rash and severe polyarthralgia; two, who had received immune serum globulin (0.06 cc per lb. of body weight) on two occasions prior to onset, remained anicteric. Hepatitis-associated antigen (HAA) was demonstrated in the serum of one sick nurse, and antibody to HAA was detected in serum from one of the three well nurses. The three sick nurses as well as two of the three well nurses recalled receiving numerous needle punctures or minor hand lacerations during the previous 6 months.

The hemodialysis unit has been in operation for approximately 1-1/2 years. Liver function studies are performed each month on sera from all patients. At the time of the outbreak, there were 12 patients undergoing chronic hemodialysis and two with recent renal transplants. Although no patient had ever been clinically jaundiced, 10 had had SGOT determinations of greater than 100 Sigma-Frankel units (normal 10-40). In May 1970, HAA was detected in

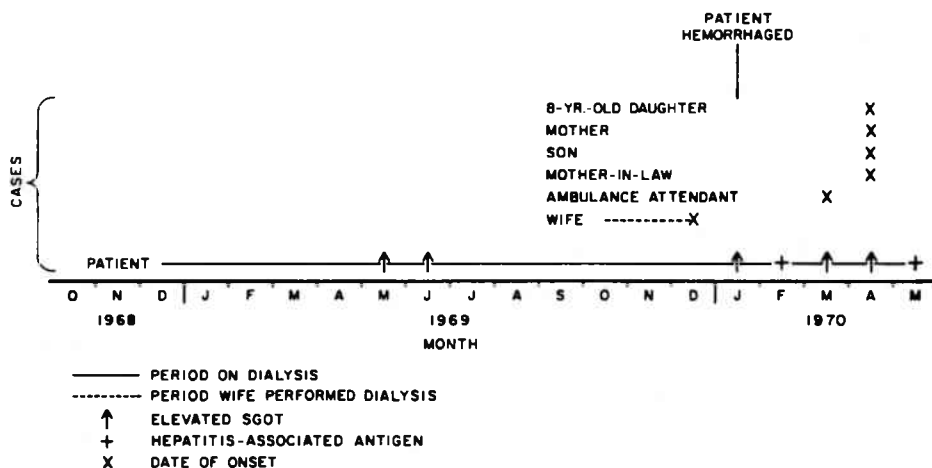
the sera of five patients who had had previous SGOT elevations; the remaining nine were negative.

In addition to the hepatitis cases among patients and staff, secondary spread occurred among the family and contacts of one of the dialysis patients. The patient had had abnormal liver function in May 1969 and HAA in February 1970 (Figure 1). His wife, who reported a needle puncture in the fall of 1969 while learning home dialysis, developed hepatitis with a prodromal urticarial rash in late December 1969.

In mid-January, while his wife was in the hospital with hepatitis, the dialysis patient hemorrhaged at home. One of the two ambulance attendants, who had administered first aid to the patient in January, subsequently developed a measles-like rash, myalgia, and polyarthralgia in mid-March; he became jaundiced and was hospitalized with hepatitis in early April. Over the same time period, the second attendant developed a pharyngitis, myalgia, and distaste for cigarettes but was never documented to have hepatitis. In April, the patient's mother and mother-in-law also became jaundiced; both had been present when the patient had hemorrhaged in January. The mother had pain-

Figure 1

OCURRENCE OF HEPATITIS IN A DIALYSIS PATIENT AND SECONDARY CASES IN FAMILY MEMBERS AND A CONTACT TENNESSEE - OCTOBER 1968-MAY 1970



less jaundice and was seropositive for HAA, and the mother-in-law had prodromal measles-like rash and polyarthralgia followed by jaundice. Also in April, the patient's 5-year-old son developed anicteric hepatitis with prodromal rash, malaise, dark urine, SGOT elevation, and detectable HAA. The patient's 8-year-old daughter, although asymptomatic, was positive for HAA in late April, and his 3-year-old daughter, who also remained well, was discovered in late April to have antibody to HAA.

(Reported by G. Doty Murphy, M.D., Acting State Epidemiologist, Division of Preventive Health Services, Tennessee Department of Public Health; George S. Lovejoy, M.D., Director, and Robert C. Rendtorff, M.D., Director, Communicable Disease Division, Memphis-Shelby County Health Department; Fred E. Hatch, M.D., Chief, Division of Nephrology, and Alan K. Bisno, M.D., Chief, Section of

Infectious Diseases, Department of Medicine, University of Tennessee; and EIS Officers.)

#### Editorial Comment:

Staff nurses on hemodialysis units are exposed daily to the blood of potentially infective patients and may become infected by accidental needle punctures, inoculation through skin lesions, or ingestion of contaminated blood from chronic dialysis patients. These patients probably contract hepatitis from multiple exposures to blood transfusions (patients in this unit averaged 1.6 transfusions per month) and usually have mild or subclinical infections. Secondary spread of hepatitis from dialysis patients to family members has been infrequently reported. In this outbreak the secondary spread to household contacts and an ambulance attendant probably represents nonparenteral transmission of long incubation, HAA-positive hepatitis.

### TRICHINOSIS – California

An outbreak of trichinosis with nine cases (one fatal) has been reported from Humboldt County, California. The vehicle of infection was homemade sausage. The first reported case had onset of symptoms on Apr. 13, 1970, and the diagnosis of trichinosis was confirmed on April 28. This patient, a 61-year-old man with a past history of hypertension, diabetes, and chronic obstructive lung disease, was hospitalized because of trichinosis and his complicating lung disease. In spite of therapy with ACTH, corticosteroids, and thiabendazole, he died on May 12. At autopsy, pertinent findings included pulmonary embolism, myocarditis, and degenerative trichina larvae in the diaphragm. The eight other patients, including three children, recovered without requiring hospitalization.

All nine patients had assisted in either the slaughter of a semi-wild sow or preparation of sausage from the carcass. The hog had been purchased at an auction in February by one of the patients. After 6 weeks of grain feedings, the hog was slaughtered on April 6. Approximately 400 lbs. of link sausage consisting of the pork and beef and spices was prepared. Eight of the nine patients had tasted the raw sausage during its preparation. Subsequently, the sausage was distributed to approximately 100 individuals.

Following notification of state and local authorities, newspaper, radio, and individual notices were made warning the community of the hazards of this sausage. The remaining sausage was impounded and destroyed.

Pepsin-hydrochloric acid digestion of samples of the sausage were positive for *Trichinella spiralis* cysts.

All exposed individuals are currently being skin and serologically tested for trichinosis. Further investigation of possible trichinosis reservoirs and meat processing practices in the area is in progress.

(Reported by Philip Condit, M.D., Chief, and Richard W. Emmons, Epidemiologist, Bureau of Communicable Disease Control, Edward Bayer, D.V.M., and George Humphrey, D.V.M., Veterinary Public Health Section, and Ronald Wood, Ph.D., Chief, Microbial Disease Laboratory, California Department of Public Health; Mr. George Agee, Jr., California Department of Agriculture; Monna Sheller, M.D., Health Officer, Humboldt-Del Norte County Health Department; and Clarence Crane, Jr., M.D., Physician, Ferndale, California.)

### CRYPTIC\* MALARIA – Tennessee

In October 1967, a 56-year-old registered nurse had a radical mastectomy performed in Gainesboro, Tennessee, and received two units of blood during the procedure. The other breast was removed in July 1969, and a single unit of blood was given. On Oct. 13, 1969, the woman developed a temperature of 104°F., shaking chills, and vomiting. At the hospital laboratory, unusual intra-erythrocytic structures were noticed in peripheral blood smears; the smears were then forwarded to the state health department where

the diagnosis of malaria was confirmed. The original slides were later reviewed at NCDC and were identified as rare *Plasmodium* ring forms of indeterminable species. Malarial parasites could not be identified on subsequent peripheral blood smears.

Chloroquine therapy was started on November 8, 3 weeks after the onset of symptoms, and continued for 20 days without a clinical response. Quinine therapy was then substituted for 11 days, and the patient became afebrile. The patient has been rehospitalized for evaluation of her primary disease, but the fever has not returned.

(Continued on page 204)

\*Cryptic – an isolated case of malaria not associated with secondary cases as determined by appropriate epidemiologic investigation (1).

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TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES

FOR WEEKS ENDED

MAY 23, 1970 and MAY 17, 1969 (20th WEEK)

AREA	ASEPTIC MENIN- GITIS	BRUCEL- LOSIS	DIPH- THERIA	ENCEPHALITIS			HEPATITIS			MALARIA	
				Primary including unsp. cases		Post In- fectious	Serum	Infectious		1970	Cum. 1970
				1970	1969	1970	1970	1970	1969		
UNITED STATES.....	26	7	14	23	17	19	149	1,087	967	67	1,340
NEW ENGLAND.....	1	-	-	1	5	-	5	105	74	2	40
Maine.....	-	-	-	-	-	-	-	4	2	-	3
New Hampshire.....	-	-	-	-	-	-	-	5	1	-	-
Vermont.....	-	-	-	-	-	-	-	21	3	-	3
Massachusetts.....	1	-	-	1	4	-	2	54	36	2	22
Rhode Island*.....	-	-	-	-	-	-	-	8	18	-	5
Connecticut.....	-	-	-	-	1	-	3	13	14	-	7
MIDDLE ATLANTIC.....	7	-	-	3	1	1	57	230	174	21	159
New York City.....	1	-	-	1	-	-	30	63	60	-	25
New York, Up-State...	2	-	-	-	-	-	2	48	31	1	42
New Jersey.....	3	-	-	-	-	-	13	44	37	3	40
Pennsylvania*.....	1	-	-	2	1	1	12	75	46	17	52
EAST NORTH CENTRAL.....	6	-	-	6	4	4	29	169	167	5	66
Ohio.....	1	-	-	3	-	3	4	45	33	1	18
Indiana.....	2	-	-	-	-	-	-	15	13	-	5
Illinois.....	2	-	-	-	-	1	12	29	42	4	12
Michigan.....	1	-	-	3	4	-	13	72	68	-	31
Wisconsin.....	-	-	-	-	-	-	-	8	11	-	-
WEST NORTH CENTRAL.....	-	3	-	1	1	-	1	54	48	9	98
Minnesota.....	-	-	-	-	-	-	-	16	10	-	1
Iowa.....	-	3	-	-	-	-	-	9	8	-	7
Missouri.....	-	-	-	-	-	-	-	20	21	3	17
North Dakota.....	-	-	-	-	-	-	-	-	1	-	1
South Dakota.....	-	-	-	-	-	-	-	-	2	-	2
Nebraska*.....	-	-	-	-	-	-	-	1	-	-	1
Kansas.....	-	-	-	1	1	-	1	8	6	6	69
SOUTH ATLANTIC.....	-	4	-	7	2	10	9	145	110	17	234
Delaware.....	-	-	-	-	-	-	-	5	1	-	1
Maryland.....	-	-	-	-	-	3	3	12	20	1	25
Dist. of Columbia...	-	-	-	-	-	-	-	-	3	-	2
Virginia.....	-	-	-	3	1	-	-	33	9	4	23
West Virginia.....	-	-	-	-	-	-	-	7	10	-	3
North Carolina*.....	-	-	-	1	1	-	3	34	10	6	99
South Carolina.....	-	-	-	-	-	-	-	5	3	3	21
Georgia.....	-	4	-	-	-	-	-	26	19	2	41
Florida.....	-	-	-	3	-	7	3	23	35	1	19
EAST SOUTH CENTRAL.....	1	-	-	2	1	1	2	53	62	2	103
Kentucky.....	-	-	-	-	1	-	-	14	40	1	86
Tennessee.....	1	-	-	1	-	-	-	32	18	-	-
Alabama*.....	-	-	-	1	-	1	2	2	4	-	11
Mississippi.....	-	-	-	-	-	-	-	5	-	1	6
WEST SOUTH CENTRAL.....	7	-	9	1	1	-	1	73	64	1	258
Arkansas.....	-	-	-	-	-	-	-	2	2	-	4
Louisiana.....	1	-	2	1	1	-	1	9	14	1	18
Oklahoma.....	2	-	-	-	-	-	-	8	6	-	34
Texas.....	4	-	7	-	-	-	-	54	42	-	202
MOUNTAIN.....	1	-	-	1	1	1	3	48	30	1	108
Montana.....	-	-	-	-	-	-	-	9	2	-	4
Idaho.....	-	-	-	-	-	-	-	1	5	1	3
Wyoming.....	-	-	-	-	-	-	-	2	2	-	-
Colorado.....	-	-	-	1	1	-	-	12	1	-	93
New Mexico.....	-	-	-	-	-	1	1	7	2	-	3
Arizona.....	1	-	-	-	-	-	-	9	14	-	3
Utah.....	-	-	-	-	-	-	2	5	4	-	2
Nevada.....	-	-	-	-	-	-	-	3	-	-	-
PACIFIC.....	3	-	5	1	1	2	42	210	238	9	274
Washington*.....	-	-	4	-	-	1	-	20	25	-	12
Oregon.....	-	-	1	-	-	-	3	18	19	-	12
California.....	3	-	-	1	1	1	39	171	189	9	182
Alaska.....	-	-	-	-	-	-	-	-	1	-	-
Hawaii.....	-	-	-	-	-	-	-	1	4	-	68
Puerto Rico.*.....	-	-	-	-	-	-	5	33	29	1	1
Virgin Islands.....	-	-	-	-	-	-	-	-	-	-	-

\*Delayed Reports: Aseptic Meningitis: Wash. 1  
 Brucellosis: Ala. Delete 1  
 Encephalitis, Primary: Pa. 1  
 Encephalitis, Post: Pa. 2

Hepatitis, Serum: N.C. 1, Pa. 1, P.R. 2  
 Hepatitis, Infectious: Neb. 2, N.C. Delete 1, Pa. 25,  
 R.I. Delete 7, P.R. 2

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
FOR WEEKS ENDED  
MAY 23, 1970 and MAY 17, 1969 (20th WEEK) CONTINUED

AREA	MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS, TOTAL			MUMPS		POLIOMYELITIS		
	1970	Cumulative		1970	Cumulative		1970	Cum. 1970	Total	Paralytic	
		1970	1969		1970	1969			1970	1970	1970
UNITED STATES.....	1,950	28,092	13,526	39	1,296	1,712	2,505	54,950	1	1	2
NEW ENGLAND.....	102	620	673	-	57	56	278	6,838	-	-	-
Maine.....	41	59	4	-	1	5	2	582	-	-	-
New Hampshire.....	2	19	208	-	5	1	1	220	-	-	-
Vermont.....	-	2	2	-	5	-	4	527	-	-	-
Massachusetts*.....	32	434	100	-	26	26	63	2,196	-	-	-
Rhode Island*.....	24	48	17	-	3	4	66	924	-	-	-
Connecticut.....	3	58	342	-	17	20	142	2,389	-	-	-
MIDDLE ATLANTIC.....	162	3,432	4,828	6	227	257	144	5,422	-	-	-
New York City.....	37	603	3,364	1	56	46	-	1,689	-	-	-
New York, Up-State... New Jersey.....	25 43	151 1,363	427 533	2 1	45 84	45 108	NN 26	NN 1,569	-	-	-
Pennsylvania*.....	57	1,315	504	2	42	58	118	2,164	-	-	-
EAST NORTH CENTRAL.....	640	6,663	1,355	7	151	217	710	14,058	-	-	-
Ohio.....	211	2,624	217	1	66	76	92	2,249	-	-	-
Indiana*.....	24	216	399	2	18	26	77	1,353	-	-	-
Illinois.....	289	2,418	224	1	32	37	62	1,265	-	-	-
Michigan.....	67	818	126	2	30	64	198	3,411	-	-	-
Wisconsin.....	49	587	389	1	5	14	281	5,780	-	-	-
WEST NORTH CENTRAL.....	247	2,490	397	4	66	92	93	3,102	1	1	1
Minnesota.....	4	34	2	-	7	16	7	297	-	-	-
Iowa.....	5	106	257	1	9	10	59	2,028	-	-	-
Missouri.....	190	1,042	15	2	44	43	4	96	1	1	1
North Dakota.....	11	260	6	-	2	-	2	230	-	-	-
South Dakota.....	-	76	-	-	-	-	-	10	-	-	-
Nebraska.....	33	918	113	1	3	9	4	339	-	-	-
Kansas.....	4	54	4	-	1	14	17	102	-	-	-
SOUTH ATLANTIC.....	335	5,343	1,915	11	281	304	338	5,778	-	-	-
Delaware.....	17	225	227	-	3	4	14	151	-	-	-
Maryland.....	27	1,073	30	4	31	29	44	490	-	-	-
Dist. of Columbia.....	4	319	-	-	1	8	1	144	-	-	-
Virginia.....	95	1,439	805	1	24	35	103	1,396	-	-	-
West Virginia.....	28	210	150	-	5	13	69	1,500	-	-	-
North Carolina.....	59	579	154	4	57	50	NN	NN	-	-	-
South Carolina.....	27	404	93	2	31	43	34	568	-	-	-
Georgia.....	1	6	1	-	28	52	-	-	-	-	-
Florida.....	77	1,088	455	-	101	70	73	1,529	-	-	-
EAST SOUTH CENTRAL.....	50	679	69	2	97	102	122	3,248	-	-	-
Kentucky.....	5	344	36	-	34	36	24	1,236	-	-	-
Tennessee.....	22	239	15	-	39	39	89	1,814	-	-	-
Alabama.....	17	57	1	2	20	17	3	172	-	-	-
Mississippi.....	6	39	17	-	4	10	6	26	-	-	-
WEST SOUTH CENTRAL.....	285	6,332	3,110	3	183	243	262	5,578	-	-	1
Arkansas.....	1	28	16	1	16	27	3	81	-	-	-
Louisiana.....	1	60	74	2	48	68	2	16	-	-	-
Oklahoma.....	28	333	111	-	11	23	71	2,067	-	-	-
Texas.....	255	5,911	2,909	-	108	125	186	3,414	-	-	1
MOUNTAIN.....	50	1,115	450	2	19	34	115	2,465	-	-	-
Montana.....	1	15	8	-	-	4	20	470	-	-	-
Idaho.....	-	19	42	1	4	6	3	77	-	-	-
Wyoming.....	-	8	-	-	1	-	-	30	-	-	-
Colorado.....	6	110	99	-	5	6	49	797	-	-	-
New Mexico.....	6	135	161	-	-	6	26	505	-	-	-
Arizona.....	36	793	136	1	7	8	17	486	-	-	-
Utah.....	-	19	3	-	2	2	-	100	-	-	-
Nevada.....	1	16	1	-	-	2	-	-	-	-	-
PACIFIC.....	79	1,418	729	4	215	407	443	8,461	-	-	-
Washington*.....	-	172	49	-	32	50	181	3,573	-	-	-
Oregon.....	1	144	153	-	17	9	57	663	-	-	-
California.....	63	992	511	4	165	329	205	3,335	-	-	-
Alaska.....	---	44	4	---	-	11	---	303	-	-	-
Hawaii.....	15	66	12	-	1	8	-	587	-	-	-
Puerto Rico.....	18	740	600	-	3	12	24	508	-	-	-
Virgin Islands.....	1	6	9	-	1	-	-	1	-	-	-

Delayed Reports: Measles: Mass. Delete 24, Pa. 94, R.I. 1  
Meningococcal Infection: Ind. Delete 1, Pa. 1  
Mumps: Pa. 112, R.I. 57, Wash. 13

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TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES  
FOR WEEKS ENDED  
MAY 23, 1970 and MAY 17, 1969 (20th WEEK) CONTINUED

AREA	RUBELLA		TETANUS		TULAREMIA		TYPHOID FEVER		TYPHUS FEVER TICK-BORNE (Rky. Mt. Spotted)		RABIES IN ANIMALS	
	1970	Cum. 1970	1970	Cum. 1970	1970	Cum. 1970	1970	Cum. 1970	1970	Cum. 1970	1970	Cum. 1970
UNITED STATES.....	2,242	38,598	6	37	4	37	5	85	8	29	61	1,290
NEW ENGLAND.....	119	1,786	-	3	-	-	1	4	-	-	-	47
Maine.....	8	294	-	-	-	-	-	-	-	-	-	11
New Hampshire.....	8	138	-	-	-	-	-	-	-	-	-	-
Vermont.....	10	41	-	-	-	-	-	-	-	-	-	34
Massachusetts.....	70	832	-	2	-	-	1	3	-	-	-	1
Rhode Island.*.....	2	51	-	-	-	-	-	-	-	-	-	1
Connecticut.....	21	430	-	1	-	-	-	1	-	-	-	-
MIDDLE ATLANTIC.....	283	3,059	2	5	1	1	1	20	2	2	7	117
New York City.....	36	406	1	2	-	-	-	7	-	-	-	-
New York, Up-State..	22	283	-	-	1	1	-	5	-	-	7	112
New Jersey.....	31	697	1	2	-	-	-	2	1	1	-	-
Pennsylvania.*.....	194	1,673	-	1	-	-	1	6	1	1	-	5
EAST NORTH CENTRAL....	412	7,984	-	8	1	16	-	12	-	-	5	86
Ohio.....	74	1,560	-	-	-	2	-	5	-	-	4	31
Indiana.....	56	1,527	-	1	1	13	-	1	-	-	-	3
Illinois.....	162	1,278	-	3	-	1	-	1	-	-	-	24
Michigan.....	60	1,947	-	4	-	-	-	5	-	-	-	9
Wisconsin.....	60	1,672	-	-	-	-	-	-	-	-	1	19
WEST NORTH CENTRAL....	144	2,949	-	1	-	4	1	2	-	-	15	191
Minnesota.....	5	89	-	-	-	-	-	1	-	-	1	39
Iowa.....	80	1,900	-	-	-	-	1	1	-	-	3	32
Missouri.....	27	296	-	-	-	3	-	-	-	-	3	43
North Dakota.....	5	103	-	-	-	1	-	-	-	-	2	20
South Dakota.....	-	1	-	1	-	-	-	-	-	-	-	17
Nebraska.....	21	513	-	-	-	-	-	-	-	-	2	4
Kansas.....	6	47	-	-	-	-	-	-	-	-	4	36
SOUTH ATLANTIC.....	187	4,961	-	8	2	6	-	11	4	18	7	296
Delaware.....	2	37	-	-	-	-	-	-	-	2	-	1
Maryland.....	9	267	-	-	-	-	-	3	-	-	-	-
Dist. of Columbia..	-	15	-	1	-	-	-	-	-	-	-	-
Virginia.....	23	584	-	-	-	-	-	1	-	5	3	143
West Virginia.....	34	994	-	-	-	-	-	-	-	-	2	68
North Carolina.....	9	28	-	-	-	3	-	1	3	4	-	1
South Carolina.....	19	519	-	-	-	-	-	-	-	6	-	44
Georgia.....	-	-	-	1	2	2	-	4	1	1	1	39
Florida.....	91	2,517	-	6	-	1	-	2	-	-	1	-
EAST SOUTH CENTRAL....	87	1,852	2	3	-	2	-	4	2	4	3	110
Kentucky.....	19	626	-	-	-	1	-	1	-	-	2	64
Tennessee.....	44	936	-	-	-	1	-	-	2	3	1	30
Alabama.....	14	231	2	3	-	-	-	3	-	1	-	16
Mississippi.....	10	59	-	-	-	-	-	-	-	-	-	-
WEST SOUTH CENTRAL....	456	7,215	-	4	-	7	1	7	-	3	14	241
Arkansas.....	1	31	-	3	-	2	-	3	-	1	1	31
Louisiana.....	3	128	-	1	-	-	-	1	-	-	-	40
Oklahoma.....	23	741	-	-	-	4	-	-	-	2	5	50
Texas.....	429	6,315	-	-	-	1	1	3	-	-	8	120
MOUNTAIN.....	98	1,500	-	-	-	1	-	6	-	2	1	51
Montana.....	1	272	-	-	-	-	-	1	-	-	-	-
Idaho.....	26	130	-	-	-	-	-	-	-	-	-	-
Wyoming.....	2	133	-	-	-	-	-	-	-	1	-	30
Colorado.....	29	272	-	-	-	-	-	1	-	1	-	9
New Mexico.....	8	144	-	-	-	-	-	3	-	-	-	11
Arizona.....	31	410	-	-	-	-	-	1	-	-	-	-
Utah.....	1	139	-	-	-	1	-	-	-	-	-	1
Nevada.....	-	-	-	-	-	-	-	-	-	-	1	-
PACIFIC.....	456	7,292	2	5	-	-	1	19	-	-	9	151
Washington.*.....	240	3,792	1	1	-	-	-	1	-	-	-	1
Oregon.....	19	479	1	2	-	-	-	-	-	-	-	150
California.....	197	2,792	-	2	-	-	1	16	-	-	9	-
Alaska.....	-	76	-	-	-	-	-	1	-	-	-	-
Hawaii.....	-	153	-	-	-	-	-	1	-	-	-	-
Puerto Rico.....	2	20	-	4	-	-	-	2	-	-	-	20
Virgin Islands.....	-	-	-	-	-	-	-	-	-	-	-	-

\*Delayed Reports: Rubella: Pa. 199, R.I. Delete 52, Wash. 62

Week No. 20 TABLE IV. DEATHS IN 122 UNITED STATES CITIES FOR WEEK ENDED MAY 23, 1970

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

Area	All Causes		Pneumonia and Influenza All Ages	Under 1 year All Causes	Area	All Causes		Pneumonia and Influenza All Ages	Under 1 year All Causes
	All Ages	65 years and over				All Ages	65 years and over		
<b>NEW ENGLAND:</b>	658	393	29	32	<b>SOUTH ATLANTIC:</b>	1,281	641	56	60
Boston, Mass.-----	193	100	9	6	Atlanta, Ga.-----	150	62	4	9
Bridgeport, Conn.-----	49	35	4	1	Baltimore, Md.-----	223	118	7	4
Cambridge, Mass.-----	19	13	2	1	Charlotte, N. C.-----	46	12	-	4
Fall River, Mass.-----	31	19	1	2	Jacksonville, Fla.-----	73	39	3	6
Hartford, Conn.-----	54	28	2	4	Miami, Fla.-----	121	65	-	5
Lowell, Mass.-----	20	17	1	1	Norfolk, Va.-----	49	21	3	6
Lynn, Mass.-----	22	13	-	1	Richmond, Va.-----	85	42	9	2
New Bedford, Mass.-----	29	17	1	2	Savannah, Ga.-----	31	9	2	3
New Haven, Conn.-----	41	20	-	9	St. Petersburg, Fla.---	102	83	4	3
Providence, R. I.-----	60	34	2	3	Tampa, Fla.-----	67	36	3	4
Somerville, Mass.-----	13	9	-	-	Washington, D. C.-----	287	133	16	10
Springfield, Mass.-----	48	35	3	1	Wilmington, Del.-----	47	21	5	4
Waterbury, Conn.-----	22	13	-	1					
Worcester, Mass.-----	57	40	4	-	<b>EAST SOUTH CENTRAL:</b>	653	338	32	35
<b>MIDDLE ATLANTIC:</b>	3,225	1,893	132	135	Birmingham, Ala.-----	109	49	4	7
Albany, N. Y.-----	43	26	1	1	Chattanooga, Tenn.-----	54	33	7	2
Allentown, Pa.-----	35	22	2	-	Knoxville, Tenn.-----	41	27	3	1
Buffalo, N. Y.-----	149	86	2	10	Louisville, Ky.-----	132	76	11	10
Camden, N. J.-----	46	27	1	2	Memphis, Tenn.-----	132	64	2	7
Elizabeth, N. J.-----	25	13	2	1	Mobile, Ala.-----	48	15	-	3
Erie, Pa.-----	49	30	1	3	Montgomery, Ala.-----	31	21	4	2
Jersey City, N. J.-----	56	26	4	2	Nashville, Tenn.-----	106	53	1	3
Newark, N. J.-----	61	23	3	7	<b>WEST SOUTH CENTRAL:</b>	1,219	650	55	84
New York City, N. Y.†	1,740	1,036	78	64	Austin, Tex.-----	37	24	4	1
Paterson, N. J.-----	42	24	4	1	Baton Rouge, La.-----	43	21	2	2
Philadelphia, Pa.-----	433	247	6	23	Corpus Christi, Tex.---	34	19	1	4
Pittsburgh, Pa.-----	152	81	8	9	Dallas, Tex.-----	161	71	5	12
Reading, Pa.-----	54	33	2	-	El Paso, Tex.-----	56	30	8	12
Rochester, N. Y.-----	105	64	9	2	Fort Worth, Tex.-----	79	44	6	7
Schenectady, N. Y.-----	23	15	3	1	Houston, Tex.-----	257	125	8	16
Scranton, Pa.-----	31	23	-	-	Little Rock, Ark.-----	56	38	3	1
Syracuse, N. Y.-----	83	50	-	4	New Orleans, La.-----	159	89	6	8
Trenton, N. J.-----	41	21	2	4	Oklahoma City, Okla.---	80	46	2	4
Utica, N. Y.-----	25	21	3	-	San Antonio, Tex.-----	134	72	4	9
Yonkers, N. Y.-----	32	25	1	1	Shreveport, La.-----	48	22	1	4
					Tulsa, Okla.-----	75	49	5	4
<b>EAST NORTH CENTRAL:</b>	2,588	1,417	78	125	<b>MOUNTAIN:</b>	452	253	18	21
Akron, Ohio-----	72	40	-	3	Albuquerque, N. Mex.---	42	26	6	2
Canton, Ohio-----	43	23	3	1	Colorado Springs, Colo.	24	14	-	1
Chicago, Ill.-----	661	338	16	30	Denver, Colo.-----	127	63	2	5
Cincinnati, Ohio-----	190	103	11	12	Ogden, Utah-----	21	11	3	-
Cleveland, Ohio-----	203	103	6	13	Phoenix, Ariz.-----	124	67	1	8
Columbus, Ohio-----	140	72	-	3	Pueblo, Colo.-----	16	10	2	1
Dayton, Ohio-----	78	46	3	6	Salt Lake City, Utah---	43	27	1	2
Detroit, Mich.-----	357	203	5	15	Tucson, Ariz.-----	55	35	3	2
Evansville, Ind.-----	29	20	2	1	<b>PACIFIC:</b>	1,613	981	35	78
Flint, Mich.-----	49	31	1	-	Berkeley, Calif.-----	16	12	1	-
Fort Wayne, Ind.-----	64	38	3	6	Fresno, Calif.-----	53	30	3	6
Gary, Ind.-----	34	14	5	3	Glendale, Calif.-----	34	22	-	1
Grand Rapids, Mich.---	60	38	7	5	Honolulu, Hawaii-----	50	27	1	4
Indianapolis, Ind.-----	153	90	2	8	Long Beach, Calif.---	85	58	5	1
Madison, Wis.-----	37	21	3	2	Los Angeles, Calif.---	460	288	8	22
Milwaukee, Wis.-----	145	88	1	6	Oakland, Calif.-----	108	63	-	13
Peoria, Ill.-----	43	23	1	2	Pasadena, Calif.-----	33	25	-	3
Rockford, Ill.-----	27	14	4	1	Portland, Ore.-----	127	70	6	5
South Bend, Ind.-----	41	22	-	2	Sacramento, Calif.---	66	42	1	-
Toledo, Ohio-----	97	50	4	4	San Diego, Calif.-----	111	63	2	7
Youngstown, Ohio-††	65	40	1	2	San Francisco, Calif.--	190	107	3	8
<b>WEST NORTH CENTRAL:</b>	805	502	15	41	San Jose, Calif.-----	52	35	-	1
Des Moines, Iowa-----	46	28	2	4	Seattle, Wash.-----	144	83	5	3
Duluth, Minn.-----	25	19	-	-	Spokane, Wash.-----	48	36	-	3
Kansas City, Kans.---	40	21	4	2	Tacoma, Wash.-----	36	20	-	1
Kansas City, Mo.-----	132	87	-	10					
Lincoln, Nebr.-----	23	19	-	-	<b>Total</b>	<b>12,494</b>	<b>7,068</b>	<b>450</b>	<b>611</b>
Minneapolis, Minn.---	109	74	1	3	<b>Expected Number</b>	<b>12,475</b>	<b>7,236</b>	<b>391</b>	<b>484</b>
Omaha, Nebr.-----	78	52	-	6	<b>Cumulative Total</b>	<b>271,636</b>	<b>156,444</b>	<b>12,106</b>	<b>2,335</b>
St. Louis, Mo.-----	218	129	4	11	(includes reported corrections for previous weeks)				
St. Paul, Minn.-----	68	39	-	4					
Wichita, Kans.-----	66	34	4	1					
Las Vegas, Nev.*	21	7	1	2					

\*Mortality data are being collected from Las Vegas, Nev., for possible inclusion in this table, however, for statistical reasons, these data will be listed only and not included in the total, expected number, or cumulative total, until 5 years of data are collected.

†Delayed report for week ended May 16, 1970  
 ††Estimate-based on average per cent of divisional total

**MALARIA** - (Continued from page 199)

Malaria transmission was common in Gainesboro prior to World War II. The patient, who had lived her entire life in the area and had never traveled outside the United States, reported having malaria in 1934 for which she had received quinine. In 1948, malaria had also been diagnosed in her son. Neither of them gave a history of illicit parenteral use of drugs.

The three persons who had donated the blood given to the patient were all 32 years of age or younger and were natives of Tennessee. None had served in the military or traveled overseas prior to the time they donated blood. Peripheral blood smears and indirect fluorescent antibody determinations on the patient and two donors were negative for malaria in December 1969. Specimens obtained in March from the third donor, who served in the military in Vietnam subsequent to the time of donating blood were also negative.

A canvas of physicians in the Gainesboro area, inspection of the community hospital's admission records, and review of the hospital's hematology laboratory log book indicated no other cases of malaria in 1969. In addition, the patient denied both caring for a person with known malaria and inoculation of herself accidentally while drawing blood or giving injections. The state health department plans to conduct an entomological survey for the presence of anopheline mosquitoes and will keep this area of the state under close surveillance during the current malaria transmission season.

(Reported by E. M. Dudney, M.D., Gainesboro, Tennessee; J. Howard Barrick, Ph.D., Director, Division of Laboratories, W. H. Arnes, Jr., M.D., Deputy Commissioner, and Eugene Fowinkle, M.D., Commissioner, Tennessee Department of Public Health; and an EIS Officer.)

**Editorial Note:**

This complicated case has been tentatively classified as cryptic malaria pending further investigation. The three blood donors are extremely unlikely sources of the infection. The possibility that this patient had a relapse of a *P. malariae* infection from 1934 has not been excluded.

**Reference:**

(1) WHO Expert Committee on Malaria - Tenth Report. WHO Technical Report Series No. 272, p. 34.

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