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MORBIDITY AND MORTALITY WEEKLY REPORT

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Epidemiologic Notes and Reports

Blastomycosis — North Carolina

Five culture-proven cases of pulmonary blastomycosis were reported in Enfield, North Carolina, residents from early December 1975 to January 1976, representing the third outbreak of this disease reported in the medical literature (1,2).

Three of the patients in the Enfield outbreak were children; the 2 adult cases were females (Table 1). The date of onset in each case was in November 1975.

TABLE 1. Blastomycosis patients, North Carolina, 1975

Age	Sex	Date of Onset of Illness
3 yrs	M	November 12, 1975
11 yrs	F	November 16, 1975
6 yrs	F	November *, 1975
30 yrs	F	November *, 1975
25 yrs	F	November *, 1975

* Exact date unknown

The State Department of Human Resources first learned of the outbreak in early December when it was informed that 2 children with culture-proven pulmonary blastomycosis were hospitalized at a university hospital in the state. Both of the children lived in or near Enfield, a town of 3,200 in the northeast region of the state.

When a telephone survey of all area hospitals was conducted, another child was found to be hospitalized with pulmonary blastomycosis. In December 1975 and January 1976, 2 more patients, both adult females, were hospitalized in a town near Enfield with a similar diagnosis. All three patients were from the Enfield area. Despite intensive surveillance, no more cases have been reported.

Interviews with the patients and/or their parents, as well as on-site inspection, revealed that all but one patient lived near a peanut farm; otherwise, there was no known common exposure nor were the patients acquainted. Dates of onset in all cases, however, were in November, a period approximately 6 weeks after peanuts—the main agricultural product in the community—were harvested.

On January 8, 36 of the patients' close contacts had blood samples drawn for complement fixation (CF) titers. All were negative for antibodies to blastomycin and histoplasmin. The contacts also had chest X-rays, which were negative. All contacts also were skin-tested with both histo-

plasmin and blastomycin; all were negative, except one, who was positive for both.

Soil and vegetation samples, obtained from each patient's dwelling and from neighboring peanut farms, were negative for *Blastomyces dermatitidis*. Two dogs (both belonging to relatives of 1 patient) were bled; both had CF titers of 1:8 to blastomycin. Another dog, which belonged to a patient, was found to be ill. It was bled and had a titer of 1:16. When it was sacrificed and autopsied, cultures of organs for *B. dermatitidis* were negative.

All patients have been discharged and are doing well.

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Editorial Note: Blastomycosis is a mycotic disease found most often in the central and southeastern United States and, less often, in Canada and Africa. It most commonly infects the lungs. It can be fatal if not treated, although there have been untreated individuals who recovered (2,3).

The mode of transmission is not known but it is probably from soil to man by inhalation of air-borne spores. The spores have been isolated from the soil in Lexington, Kentucky, and in the Augusta, Georgia, area (4,5). Laboratory workers also have been infected by isolates of *Blastomyces dermatitidis* (6). Dogs frequently contract this disease but canine infections are not known to be transmitted to man.

The temporal association between the peanut harvest and onset of this outbreak suggests a common source of exposure; however, the significance of this exposure is not clear, since soil cultures were negative and one patient gave no history of this kind of exposure.

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Blastomycosis — Continued

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Imported Louse-borne Relapsing Fever — Ohio

The first case of louse-borne relapsing fever documented in the United States in this century was diagnosed in Dayton, Ohio, in April 1976. *Borrelia recurrentis* was demonstrated in the patient's blood as well as in lice removed from her hair. The patient, an 18-year-old woman, had been ill since shortly after immigrating to this country from Ethiopia 3 weeks previously.

On April 13, the patient was admitted to a Dayton hospital for treatment of previously diagnosed malaria. Admission physical examination was normal except that her liver was palpable 2 cm below the costal margin and was slightly tender, and her thyroid was diffusely enlarged. Chest and abdominal radiographs, electrocardiogram, thyroid function tests, and multiphasic biochemical screening of serum were normal. Urinalysis was normal except for a trace of albumin. VDRL and febrile agglutinin tests including proteus OX 19, OX K, and OX 2 were negative. Mantoux testing resulted in a 20 mm reaction. Blood and urine cultures were negative.

Hematologic examination revealed a total red blood cell count of 3.37 million/mm³, hemoglobin of 9.3 grams/100 ml, mean corpuscular volume of 83 cubic microns, and an hematocrit of 28.4%. Her total WBC count was 4,300/mm³, and the platelet count was 93,000/mm³. Glucose 6 phosphate dehydrogenase was 1.4-2.0 IU/g of hemoglobin. (Normal is 3.1 to 7.6.)

Examination of a Wright's stained blood film revealed many *Plasmodium vivax*. Loosely coiled, thread-like organisms which were <1 micron in width and 10 to 12 microns in length and resembled *B. recurrentis* were also observed. These organisms were found to be motile when examined with darkfield microscopy. The presence of both organisms in a blood film was confirmed at CDC.

The patient was started on chloroquine therapy for her malaria shortly after admission. Her temperature rose to 39.4°C that evening and dropped to 37.2°C by the morning following admission. She remained afebrile the remainder of her clinical course.

(Continued on page 211)

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

[Cumulative totals include revised and delayed reports through previous weeks]

DISEASE	26th WEEK ENDING		MEDIAN 1971-1975	CUMULATIVE, FIRST 26 WEEKS		
	July 3, 1976	June 28, 1975		July 3, 1976	June 28, 1975	MEDIAN 1971-1975
Aseptic meningitis	52	57	69	961	1,057	1,042
Brucellosis	5	10	4	115	105	78
Chickenpox	2,099	1,939	---	140,857	110,346	---
Diphtheria	4	3	2	114	192	100
Encephalitis	21	17	18	379	343	427
Primary	4	11	7	148	159	154
Post-Infectious	318	222	173	7,307	5,550	4,646
Type B	765	613	918	17,696	17,712	25,615
Hepatitis, Viral	168	156	---	4,490	4,047	---
Type A	14	19	7	187	156	156
Type unspecified	737	696	595	31,732	19,218	22,434
Malaria	19	25	27	942	842	842
Measles (rubeola)	19	25	27	935	825	825
Meningococcal infections, total	---	---	---	7	17	22
Civilian	473	563	1,040	30,117	42,431	50,090
Military	14	31	---	460	639	---
Mumps	133	257	341	9,841	13,983	19,132
Pertussis	1	4	2	21	37	39
Rubella (German measles)	707	831	---	16,668	16,326	---
Tetanus	2	6	9	62	60	60
Tuberculosis	13	9	11	157	145	157
Typhoid fever	30	37	34	280	292	292
Typhus, tick-borne (Rky. Mt. spotted fever)	---	---	---	---	---	---
Veneral Diseases:	20,477	19,141	---	483,065	469,818	---
Gonorrhea	232	610	---	14,079	14,743	---
Syphilis, primary and secondary	408	489	---	12,243	12,737	---
Civilian	2	4	---	165	176	---
Military	32	65	65	1,288	1,260	1,912
Rabies in animals	---	---	---	---	---	---

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax:	2	Poliomyelitis, total:	5
Botulism: Wash. 1	9	Paralytic:	5
Congenital rubella syndrome: Calif. 1	14	Psittacosis:	22
Leprosy: Hawaii 1	74	Rabies in man:	---
Leptospirosis: Okla. 1	22	Trichinosis: Calif. 1	58
Plague:	7	Typhus, murine:	13

Table III
Cases of Specified Notifiable Diseases: United States
Weeks Ending July 3, 1976 and June 28, 1975 - 26th 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	52	5	2,099	4	114	21	17	4	318	765	168	14	127
NEW ENGLAND	1	1	235	-	-	-	-	-	5	18	10	-	8
Maine	-	-	26	-	-	-	-	-	-	-	-	-	-
New Hampshire	1	-	2	-	-	-	-	-	-	4	-	-	-
Vermont*	-	-	10	-	-	-	-	-	1	-	-	-	-
Massachusetts	-	-	102	-	-	-	-	-	2	5	9	-	4
Rhode Island	-	-	52	-	-	-	-	-	-	1	-	-	1
Connecticut	-	1	43	-	-	-	-	-	2	8	1	-	3
MIDDLE ATLANTIC	8	-	402	-	-	3	-	-	69	69	27	1	29
Upstate New York	2	-	281	-	-	-	-	-	10	16	6	-	5
New York City	3	-	105	-	-	1	-	-	21	15	-	-	15
New Jersey	2	-	NN	-	-	1	-	-	26	19	19	1	2
Pennsylvania	1	-	16	-	-	1	-	-	12	19	2	-	7
EAST NORTH CENTRAL	3	-	881	-	-	4	4	1	39	79	19	1	14
Ohio*	-	-	110	-	-	2	2	-	12	33	-	1	7
Indiana	1	-	52	-	-	-	-	-	1	6	16	-	-
Illinois	-	-	75	-	-	1	1	1	-	4	-	-	2
Michigan	2	-	385	-	-	1	1	-	17	29	3	-	5
Wisconsin	-	-	255	-	-	-	-	-	9	7	-	-	-
WEST NORTH CENTRAL	-	-	49	-	4	1	-	-	5	44	3	1	6
Minnesota	-	-	-	-	-	1	-	-	1	14	-	-	3
Iowa	-	-	20	-	-	-	-	-	1	2	-	-	-
Missouri	-	-	6	-	1	-	-	-	1	24	1	-	-
North Dakota	-	-	1	-	-	-	-	-	1	3	-	-	-
South Dakota	-	-	-	-	3	-	-	-	-	-	-	1	2
Nebraska	-	-	22	-	-	-	-	-	-	-	1	-	1
Kansas	-	-	-	-	-	-	-	-	1	1	1	-	-
SOUTH ATLANTIC	9	2	246	-	-	2	1	-	46	81	31	5	29
Delaware	-	-	11	-	-	-	-	-	-	-	2	-	-
Maryland	-	-	24	-	-	2	-	-	10	8	2	1	4
District of Columbia	-	-	12	-	-	-	-	-	1	6	-	3	5
Virginia	1	1	23	-	-	-	-	-	3	7	8	-	6
West Virginia	-	-	115	-	-	-	-	-	-	14	-	-	1
North Carolina	3	-	NN	-	-	-	1	-	5	5	3	-	3
South Carolina	-	-	7	-	-	-	-	-	4	4	4	-	1
Georgia	-	-	-	-	-	-	-	-	-	22	-	1	2
Florida	5	1	54	-	-	-	-	-	23	15	12	-	7
EAST SOUTH CENTRAL	8	-	18	-	-	3	-	1	35	46	2	-	1
Kentucky	1	-	11	-	-	-	-	-	8	3	-	-	-
Tennessee	2	-	NN	-	-	1	-	-	12	25	1	-	-
Alabama	4	-	4	-	-	-	-	1	13	10	1	-	-
Mississippi*	1	-	3	-	-	2	-	-	2	3	-	-	1
WEST SOUTH CENTRAL	4	1	98	-	1	1	9	1	16	83	33	-	10
Arkansas*	-	-	-	-	-	-	-	-	-	9	3	-	3
Louisiana	-	-	NN	-	-	1	3	1	4	8	6	-	1
Oklahoma	-	-	-	-	-	-	4	-	2	1	1	-	-
Texas*	4	1	98	-	1	-	2	-	10	65	23	-	6
MOUNTAIN	1	-	89	-	3	-	1	-	15	45	10	1	8
Montana	-	-	4	-	-	-	1	-	-	1	-	-	-
Idaho	-	-	2	-	-	-	-	-	-	-	-	-	-
Wyoming	-	-	-	-	-	-	-	-	-	-	-	-	-
Colorado	-	-	57	-	3	-	-	-	11	12	7	1	5
New Mexico	1	-	-	-	-	-	-	-	-	14	-	-	1
Arizona	-	-	-	-	-	-	-	-	3	13	1	-	1
Utah	-	-	26	-	-	-	-	-	1	5	2	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	1
PACIFIC	18	1	81	4	106	7	2	1	88	300	33	5	82
Washington	1	-	57	3	103	-	-	-	4	10	5	-	2
Oregon	2	-	1	-	-	-	-	-	5	4	1	-	5
California	15	1	-	-	1	7	2	1	73	118	27	5	74
Alaska	-	-	2	1	2	-	-	-	4	168	-	-	-
Hawaii	-	-	21	-	-	-	-	-	2	-	-	-	1
Guam	-	-	-	-	-	-	-	-	-	-	-	-	-
Puerto Rico	-	-	23	-	1	-	-	-	4	6	-	-	1
Virgin Islands	NA	NA	NA	NA	-	-	-	-	NA	NA	NA	NA	-

NA: Not Available NN: Not Notifiable

*Delayed reports: Enceph: Texas delete 1; Enceph, post-chickenpox: Miss. add 1, Tex. add 1; Enceph, post-mumps: Miss. delete 1; Hep. B: Vt. add 1, Ohio add 1; Hep. A: Ohio delete 1, Ark. add 9; Hep. Unsp. Vt. delete 1, Ark. delete 6; Malaria: Ark. delete 3

Table III-Continued
 Cases of Specified Notifiable Diseases: United States
 Weeks Ending July 3, 1976 and June 28, 1975 - 26th Week

REPORTING AREA	MEASLES (Rubeola)			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	737	31,732	19,218	19	942	842	473	30,117	14	133	9,841	21
NEW ENGLAND	39	351	253	1	40	48	18	1,148	-	2	258	-
Maine	3	6	11	-	-	6	3	105	-	-	3	-
New Hampshire	-	7	19	-	3	2	-	24	-	-	11	-
Vermont	16	19	44	-	3	-	-	6	-	-	1	-
Massachusetts	15	39	89	-	11	15	1	147	-	1	128	-
Rhode Island	-	14	1	-	4	3	3	415	-	-	5	-
Connecticut	5	266	89	1	19	22	11	451	-	1	110	-
MIDDLE ATLANTIC	169	6,564	1,484	1	123	86	84	2,578	1	49	2,138	-
Upstate New York	111	2,731	440	-	46	27	15	331	-	42	518	-
New York City	12	393	105	1	34	22	49	1,295	1	2	128	-
New Jersey	5	575	443	-	17	12	10	466	-	4	1,304	-
Pennsylvania	41	2,665	496	-	26	25	10	486	-	1	188	-
EAST NORTH CENTRAL ..	410	13,487	5,709	5	149	119	192	12,724	4	41	3,673	1
Ohio	61	550	97	3	81	25	29	1,843	1	-	267	1
Indiana	136	2,922	331	-	5	5	28	1,347	-	13	626	-
Illinois	20	1,415	1,430	-	12	18	23	1,706	-	1	1,132	-
Michigan	160	5,406	2,912	2	43	55	62	4,723	3	16	1,270	-
Wisconsin	33	3,194	539	-	8	16	50	3,105	-	11	378	-
WEST NORTH CENTRAL ..	10	1,088	4,786	-	61	46	14	3,201	-	-	375	3
Minnesota	3	388	180	-	12	9	-	543	-	-	25	-
Iowa	-	31	445	-	8	5	1	1,136	-	-	81	-
Missouri	-	14	250	-	20	21	7	295	-	-	29	1
North Dakota	-	3	1,034	-	3	-	-	119	-	-	1	1
South Dakota	2	4	352	-	1	1	-	6	-	-	18	-
Nebraska	-	54	391	-	3	2	6	96	-	-	3	-
Kansas	5	594	2,134	-	14	8	-	1,006	-	-	218	1
SOUTH ATLANTIC	34	1,814	251	2	174	172	35	2,272	1	11	1,231	7
Delaware	2	126	32	1	3	6	-	36	-	1	30	-
Maryland	-	671	39	-	16	17	19	599	-	-	3	2
District of Columbia ..	2	9	1	-	2	5	1	96	-	-	45	-
Virginia	28	526	22	-	22	15	-	178	-	1	221	1
West Virginia	1	172	121	-	4	5	13	706	1	7	270	-
North Carolina	-	-	-	1	34	34	2	364	-	-	17	-
South Carolina	-	4	-	-	31	28	-	37	-	2	588	-
Georgia	1	1	11	-	16	9	-	-	-	-	1	-
Florida	-	305	25	-	46	53	-	256	-	-	56	4
EAST SOUTH CENTRAL ..	3	744	255	4	80	126	53	2,515	1	7	309	2
Kentucky	3	706	81	-	14	55	9	915	-	1	146	1
Tennessee	-	23	164	1	35	41	32	1,318	-	6	159	1
Alabama	-	-	3	2	22	21	6	236	-	-	1	-
Mississippi	-	15	7	1	9	9	6	46	1	-	3	-
WEST SOUTH CENTRAL ..	4	630	255	1	146	132	32	2,097	5	1	475	5
Arkansas	-	-	-	-	8	8	-	68	-	-	189	-
Louisiana	1	180	-	-	28	24	1	21	-	-	85	2
Oklahoma	1	281	116	-	18	9	2	609	4	-	52	-
Texas	2	169	139	1	92	91	29	1,399	1	1	149	3
MOUNTAIN	30	4,991	1,226	1	34	32	9	1,033	1	7	458	1
Montana	2	201	36	-	3	5	-	20	-	4	232	-
Idaho	1	2,020	5	-	3	5	-	431	-	-	18	-
Wyoming	-	3	1	-	-	-	-	1	-	-	2	-
Colorado	11	296	1,052	-	11	9	3	201	-	2	21	-
New Mexico	1	15	13	-	3	4	-	124	-	-	31	-
Arizona	1	225	56	1	8	1	-	-	-	-	-	1
Utah	14	2,168	41	-	4	7	6	142	1	1	137	-
Nevada	-	63	22	-	2	1	-	114	-	-	17	-
PACIFIC	38	2,063	4,599	4	135	81	36	2,549	1	15	924	2
Washington	4	313	246	-	20	15	3	839	-	-	152	-
Oregon	1	133	186	-	13	4	3	313	-	-	123	1
California	33	1,615	4,510	3	90	61	30	1,360	1	15	634	1
Alaska	-	-	-	1	10	-	-	17	-	-	-	-
Hawaii	-	2	55	-	2	1	-	20	-	-	15	-
Guam	-	9	21	-	1	2	-	10	-	-	5	-
Puerto Rico*	26	250	493	-	3	1	11	587	-	-	6	14
Virgin Islands	NA	7	8	-	-	-	NA	21	NA	NA	8	1

NA: Not Available

*Delayed reports: Tetanus: P. R. delete 11

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending July 3, 1976 and June 28, 1975 - 26th 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		
1975	1976	1975	1976	1975										
UNITED STATES	707	16,668	62	13	157	30	280	20,477	483,065	469,818	408	12,243	12,737	1,288
NEW ENGLAND	22	610	-	-	17	1	4	505	13,122	12,898	11	364	440	20
Maine	1	43	-	-	-	-	-	53	1,130	889	-	8	9	14
New Hampshire	-	24	-	-	2	-	-	17	353	357	1	6	10	-
Vermont	-	16	-	-	-	-	-	13	319	306	-	2	5	-
Massachusetts	21	372	-	-	13	1	3	301	6,300	6,065	8	266	286	5
Rhode Island	-	40	-	-	-	-	1	21	868	1,015	1	13	5	1
Connecticut	-	115	-	-	2	-	-	100	4,152	4,266	1	69	125	-
MIDDLE ATLANTIC	104	3,145	1	1	28	-	7	3,001	54,221	54,756	79	2,054	2,351	12
Upstate New York	9	497	1	-	5	-	1	467	8,495	9,791	8	128	224	4
New York City	37	1,260	-	-	15	-	1	1,521	24,399	23,619	43	1,272	1,324	-
New Jersey	17	601	-	1	6	-	5	533	8,327	7,500	16	302	376	3
Pennsylvania	41	787	-	-	2	-	-	480	13,000	13,846	12	352	427	5
EAST NORTH CENTRAL	131	2,245	-	2	14	-	6	3,157	76,912	76,928	54	1,104	1,067	69
Ohio	19	410	-	-	4	-	4	750	19,015	20,542	5	258	258	-
Indiana	7	282	-	-	-	-	-	374	7,305	7,098	-	53	66	15
Illinois	64	748	-	-	3	-	-	982	27,281	26,555	47	612	518	13
Michigan	36	681	-	2	6	-	2	708	16,026	15,179	1	126	170	2
Wisconsin	5	124	-	-	1	-	-	343	7,285	7,554	1	55	55	39
WEST NORTH CENTRAL	13	605	15	3	10	2	6	977	24,807	23,251	10	215	289	316
Minnesota	4	116	3	3	6	-	-	101	4,496	4,753	1	45	54	71
Iowa	-	48	1	-	1	-	-	68	3,106	3,198	8	29	16	72
Missouri*	6	299	10	-	3	2	6	487	9,891	8,464	1	90	162	41
North Dakota	1	15	-	-	-	-	-	14	369	362	-	-	5	68
South Dakota	-	28	-	-	-	-	-	26	687	897	-	2	4	14
Nebraska	1	31	-	-	-	-	-	128	2,159	2,075	-	14	4	9
Kansas	1	68	1	-	-	-	-	153	4,099	3,502	-	35	44	41
SOUTH ATLANTIC	157	3,646	4	1	17	12	146	5,253	116,961	116,061	135	3,610	4,013	191
Delaware	-	44	-	-	-	-	1	135	1,556	1,625	1	39	52	2
Maryland	22	525	1	-	-	3	12	542	15,986	13,158	12	310	298	11
District of Columbia	3	157	-	-	-	-	-	274	6,972	6,973	16	326	339	-
Virginia	12	578	-	-	2	-	43	523	12,234	11,306	17	330	295	32
West Virginia	8	155	-	-	2	-	2	48	1,533	1,360	-	17	12	8
North Carolina*	34	643	3	-	1	7	56	697	16,999	16,521	23	679	524	1
South Carolina	19	290	-	1	3	1	21	496	11,481	11,029	4	200	265	2
Georgia	22	456	-	-	2	-	10	1,147	21,877	21,033	15	388	531	105
Florida	37	798	-	-	7	1	1	1,391	28,323	33,056	47	1,321	1,697	30
EAST SOUTH CENTRAL	53	1,405	11	-	7	6	46	1,582	43,223	39,576	6	494	553	71
Kentucky	16	330	1	-	4	1	8	163	5,421	5,235	3	73	86	41
Tennessee	10	403	10	-	3	3	32	604	16,989	15,638	1	194	206	19
Alabama	22	421	-	-	-	1	3	432	12,324	10,757	-	95	129	11
Mississippi*	5	251	-	-	-	1	3	383	8,489	7,946	2	132	132	-
WEST SOUTH CENTRAL	97	1,909	23	1	7	6	59	2,294	64,146	59,131	40	1,426	1,095	329
Arkansas*	17	254	11	-	2	-	12	96	6,048	6,264	-	49	33	79
Louisiana	4	276	2	1	2	-	-	286	9,384	11,060	13	311	260	2
Oklahoma	8	181	6	-	-	6	43	264	5,886	5,480	2	55	43	85
Texas	68	1,198	4	-	3	-	4	1,648	42,828	36,327	25	1,011	759	163
MOUNTAIN	31	484	2	5	13	1	2	794	18,469	18,233	14	398	318	71
Montana	5	28	2	-	2	-	-	43	965	1,025	-	4	4	49
Idaho	1	16	-	-	1	-	1	45	977	881	1	23	9	-
Wyoming	-	9	-	-	-	-	-	11	384	443	-	7	6	1
Colorado*	1	92	-	3	4	-	-	257	4,803	4,638	-	89	58	4
New Mexico	12	85	-	-	1	1	1	181	3,711	3,195	6	112	92	2
Arizona*	10	215	-	2	4	-	-	231	5,385	4,950	7	125	108	15
Utah	2	22	-	-	1	-	-	26	930	1,136	-	16	10	-
Nevada	-	17	-	-	-	-	-	-	1,314	1,965	-	22	31	-
PACIFIC	99	2,619	6	-	44	2	4	2,914	71,204	68,984	59	2,578	2,611	209
Washington	10	256	2	-	2	2	4	270	6,087	6,266	-	62	85	1
Oregon	3	92	1	-	-	-	-	208	5,313	5,207	-	59	62	-
California	77	1,926	3	-	41	-	-	2,264	56,461	54,654	58	2,390	2,434	169
Alaska*	-	25	-	-	-	-	-	108	1,982	1,732	-	11	2	39
Hawaii	9	320	-	-	1	-	-	64	1,361	1,125	1	56	28	-
Guam	-	24	-	-	-	-	-	-	159	217	-	1	3	-
Puerto Rico*	12	168	-	-	-	-	-	40	1,321	1,441	14	293	361	27
Virgin Islands	NA	2	-	NA	-	NA	-	NA	130	83	NA	35	19	-

NA: Not Available

* Delayed reports: TB: Mo. add 3, N. Car. delete 4, Miss. delete 1, Ark. delete 2, Col. delete 1, Alaska add 9, P.R. add 11; Typhoid fever: Ariz. add 3; Syphilis: Ark. delete 5 civ., add 5 mil.; Animal rabies: Ariz. delete 1

Table IV
Deaths in 121 United States Cities*
Week Ending July 3, 1976 - 26th 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	610	375	165	30	20	43	SOUTH ATLANTIC	1,105	617	312	71	56	50
Boston, Mass.	184	106	56	13	3	14	Atlanta, Ga.	111	58	31	13	6	3
Bridgeport, Conn.	40	22	14	4	-	4	Baltimore, Md.	226	128	72	10	8	6
Cambridge, Mass.	24	17	6	1	-	5	Charlotte, N. C.	53	25	17	4	2	3
Fall River, Mass.	20	17	2	-	-	-	Jacksonville, Fla.	109	55	29	7	10	5
Hartford, Conn.	52	32	12	1	6	2	Miami, Fla.	102	57	29	6	8	3
Lowell, Mass.	20	13	5	1	-	2	Norfolk, Va.	57	29	20	3	2	3
Lynn, Mass.	22	14	8	-	-	-	Richmond, Va.	75	41	23	3	3	9
New Bedford, Mass.	23	17	6	-	-	1	Savannah, Ga.	32	18	8	3	2	5
New Haven, Conn.	46	28	10	3	-	1	St. Petersburg, Fla.	57	44	11	1	1	1
Providence, R.I.	67	40	16	4	5	9	Tampa, Fla.	82	44	25	6	4	8
Somerville, Mass.	8	4	3	1	-	1	Washington, D. C.	154	96	34	12	8	4
Springfield, Mass.	41	24	12	-	3	1	Wilmington, Del.	47	22	13	3	2	-
Waterbury, Conn.	23	12	8	2	1	2	EAST SOUTH CENTRAL	632	354	177	40	34	31
Worcester, Mass.	40	29	7	-	2	3	Birmingham, Ala.	108	54	35	9	6	4
MIDDLE ATLANTIC	2,807	1,752	725	173	88	111	Chattanooga, Tenn.	49	29	11	2	5	5
Albany, N. Y.	48	30	11	2	4	2	Knoxville, Tenn.	22	15	5	1	-	-
Allentown, Pa.	22	11	9	2	-	2	Louisville, Ky.	111	58	25	7	13	9
Buffalo, N. Y.	110	67	32	5	2	4	Memphis, Tenn.	144	79	48	7	6	3
Camden, N. J.	38	20	14	2	-	3	Mobile, Ala.	57	31	19	6	-	4
Elizabeth, N. J.	26	15	8	2	-	-	Montgomery, Ala.	49	30	13	2	1	2
Erie, Pa.	31	16	10	2	2	2	Nashville, Tenn.	92	58	21	6	3	4
Jersey City, N. J.	58	41	14	1	2	3	WEST SOUTH CENTRAL	1,180	672	306	94	48	18
Newark, N. J.	70	32	25	6	2	3	Austin, Tex.	35	21	6	1	3	-
New York City, N. Y.†	1,378	890	320	96	45	51	Baton Rouge, La.	48	30	12	5	-	1
Paterson, N. J.	46	24	13	4	4	2	Corpus Christi, Tex.	47	21	11	10	1	-
Philadelphia, Pa.	491	304	136	29	9	17	Dallas, Tex.	182	98	57	15	8	2
Pittsburgh, Pa.	130	74	40	7	7	7	El Paso, Tex.	39	17	16	2	3	-
Reading, Pa.	33	19	11	3	-	5	Fort Worth, Tex.	71	35	20	4	3	1
Rochester, N. Y.	123	76	30	6	6	4	Houston, Tex.	219	123	63	17	6	3
Schenectady, N. Y.	14	7	6	1	-	1	Little Rock, Ark.	66	36	19	6	2	5
Scranton, Pa.	27	19	6	2	-	1	New Orleans, La.	165	95	42	15	7	-
Syracuse, N. Y.	91	53	25	2	5	-	San Antonio, Tex.	165	100	33	11	9	1
Trenton, N. J.	21	15	6	-	-	-	Shreveport, La.	65	44	12	4	3	1
Utica, N. Y.	20	20	-	-	-	1	Tulsa, Okla.	78	52	15	4	3	4
Yonkers, N. Y.	30	19	9	1	-	3	MOUNTAIN	484	269	126	41	23	19
EAST NORTH CENTRAL	2,156	1,264	550	128	104	65	Albuquerque, N. Mex.	58	27	12	8	3	2
Akron, Ohio	60	36	13	5	3	-	Colorado Springs, Colo.	33	23	5	-	2	4
Canton, Ohio	28	19	7	2	-	3	Denver, Colo.	118	55	41	13	3	4
Chicago, Ill.	525	292	133	35	35	11	Las Vegas, Nev.	28	15	9	1	2	1
Cincinnati, Ohio	175	106	46	8	12	2	Ogden, Utah	16	11	2	1	2	1
Cleveland, Ohio	155	91	40	13	6	7	Phoenix, Ariz.	102	56	32	6	4	-
Columbus, Ohio	138	77	43	7	6	4	Pueblo, Colo.	12	9	3	-	-	2
Dayton, Ohio	90	52	32	1	1	-	Salt Lake City, Utah	52	36	8	4	2	3
Detroit, Mich.	281	153	78	23	11	7	Tucson, Ariz.	65	37	14	8	5	2
Evansville, Ind.	46	33	9	2	-	7	PACIFIC	1,504	937	347	102	47	38
Fort Wayne, Ind.	57	33	17	2	2	2	Berkeley, Calif.	23	15	5	2	-	1
Gary, Ind.	22	8	8	-	2	2	Fresno, Calif.	45	29	9	1	1	5
Grand Rapids, Mich.	36	20	7	4	4	6	Glendale, Calif.	14	9	3	1	-	-
Indianapolis, Ind.	141	87	33	3	10	-	Honolulu, Hawaii	61	32	20	4	2	1
Madison, Wis.	31	19	8	1	1	3	Long Beach, Calif.	116	75	32	4	3	-
Milwaukee, Wis.	98	62	22	8	1	2	Los Angeles, Calif.	416	271	86	33	6	10
Peoria, Ill.	34	23	5	3	2	2	Oakland, Calif.	80	52	18	4	4	-
Rockford, Ill.	33	25	6	1	1	3	Pasadena, Calif.	23	17	4	1	1	1
South Bend, Ind.	38	28	6	-	2	6	Portland, Oreg.	127	82	25	7	6	2
Toledo, Ohio	106	62	23	7	4	1	Sacramento, Calif.	41	23	11	5	2	2
Youngstown, Ohio	62	38	14	3	1	1	San Diego, Calif.	135	68	38	14	5	4
WEST NORTH CENTRAL	718	461	171	25	33	19	San Francisco, Calif.	158	89	41	15	5	3
Des Moines, Iowa	48	39	6	-	2	-	San Jose, Calif.	52	38	5	4	3	-
Duluth, Minn.	16	13	1	-	1	2	Seattle, Wash.	136	88	29	3	7	5
Kansas City, Kans.	43	27	10	1	2	1	Spokane, Wash.	36	25	8	2	-	2
Kansas City, Mo.	98	64	19	4	7	2	Tacoma, Wash.	41	24	13	2	2	2
Lincoln, Nebr.	28	20	6	1	1	3	TOTAL	11,196	6,701	2,879	704	453	394
Minneapolis, Minn.	90	56	20	4	6	3	Expected Number	11,604	6,919	3,051	771	371	345
Omaha, Nebr.	88	49	25	4	6	1							
St. Louis, Mo.	176	101	56	9	3	3							
St. Paul, Minn.	67	49	13	1	3	-							
Wichita, Kans.	64	43	15	1	2	4							

†Delayed report for Week Ending of filing June 26, 1976

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

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

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(Relapsing Fever — Continued)

Following discovery of the borrelia organisms on her peripheral smear, the patient's body and hair were closely re-examined. She was found to have a light infestation of lice (*Pediculus humanus*) in her hair. Hemolymph expressed from these lice contained borrelia organisms.

To minimize the possibility of a Jarisch-Herxheimer reaction, the patient was initially treated with penicillin followed by tetracycline. She was given a 1% gamma benzene hexachloride shampoo for her louse infestation. After primaquine therapy was initiated for treatment of the malaria, she was discharged April 21 with instructions to continue primaquine therapy on an outpatient basis. Because of her positive tuberculin reaction, plans were also made for isoniazid chemoprophylaxis at a later date.

The woman had spent most of her life in Addis Ababa, Ethiopia. For 6 months before October 1973 she had lived in a rural area of that country teaching local residents to read and write. She had received an unknown medication once weekly for malaria prophylaxis during this period, except for the last 2 to 3 weeks before she returned to Addis Ababa.

Following her return to Addis Ababa, the patient had suffered frequent generalized headaches lasting approximately half a day; otherwise she felt well. She came to the United States 18 days before she was hospitalized. Beginning 2 days after her arrival she developed fever and myalgia, followed by chills and diaphoresis. Bouts of fever and chills subsequently recurred 1 to 2 times a day. Between these episodes she felt well except for an occasional headache.

Family members, relatives, and hospital contacts of the patient were given 1% gamma benzene hexachloride shampoo. In addition, an insecticide was sprayed in the home of relatives with whom the patient was staying. None of these people reported febrile illness, and lice were not found in their hair.

Reported by BH Bolton, MD, H Anderson, BS, MT, R Krafka, BS, Miami Valley Hospital, Dayton; R Vogel, MD, Montgomery County Health Dept; TJ Halpin, MD, State Epidemiologist, Ohio State Dept of Health; and Parasitology Div, Bur of Laboratories, the Bacterial Zoonoses Br, and Epidemiologic Investigations Laboratory Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: The clinical presentation of this patient was not typical for louse-borne relapsing fever, and the concurrent presence of malaria makes it difficult to ascribe

specific manifestations to the borrelia infection. More typically, the disease is characterized by periods of fever lasting 2 to 9 days, terminating by crisis, with alternating afebrile periods of 2 to 4 days. The number of relapses is typically 1 to 3.

The form of relapsing fever usually diagnosed in the United States is the tick-borne, endemic type. Several epidemics of louse-borne relapsing fever probably occurred in this country between 1844 and 1874, although these were never laboratory confirmed (7). Isolated cases of suspect louse-borne relapsing fever reported after that time either were not laboratory confirmed or were not convincingly differentiated from tick-borne relapsing fever.

Louse-borne relapsing fever is strictly a human disease transmitted by either the head or body louse (2). The lice become infected by feeding on a patient with circulating *B. recurrentis*. The borreliae pass from the intestinal tract of the louse into the hemocele or celomic cavity, where they multiply. Normally a 5 to 8 day period elapses between an infective blood meal and the appearance of the organisms in the hemocele. The louse is infective from the time the borrelia are detectable in its hemocele until the end of its life span, which is 3 weeks or, occasionally, longer. It does not pass on the infection to its offspring.

The infection is not transmitted directly by the bite of the louse because the borreliae are tightly enclosed in the celomic cavity. However, lice are easily injured. The breaking off of their limbs or antennae by scratching allows celomic fluid to escape and contaminate areas of broken skin.

Formerly a quarantinable disease under the International Health Regulations, this disease has been the cause of 7 major epidemics in this century; these resulted in more than 16 million cases and 5 million deaths (3). All of these epidemics were associated with periods of war or famine. The disease is now restricted to certain remote regions of the world, including parts of Ethiopia.

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Current Trends**Zoster Immune Globulin**

Zoster Immune Globulin (ZIG), prepared from patients convalescing from Herpes zoster, has been distributed by the CDC since 1972 for the prophylaxis of chickenpox in immunosuppressed children (Table 2).

TABLE 2. Number of patients treated with Zoster Immune Globulin by year, United States, 1972-1976 *

Year	No. of Patients Treated with ZIG
1972	56
1973	92
1974	104
1975	257
1976*	222

*through June 28, 1976

In the period January 1, 1972-June 28, 1976, 731 patients were treated. The number of people using ZIG continues to increase yearly. The 222 patients treated with ZIG in the first 6 months of 1976, for example, represent 30% of all patients treated during the 4½ year period and almost equal the number of patients treated during the entire year of 1975 (257).

Patient exposures are categorized as follows:

1. **Household contact** — exposure to another full-time member of the household
2. **Playmate contact** — indoor exposure, more than 1 hour in duration, to an infectious playmate

(ZIG - Continued)

3. **School contact** — exposure to an infectious classmate at an adjacent desk or in the same carpool
4. **Hospital contact** — exposure to an infectious patient in an adjacent bed or in the same 2-4 bed room
5. **Maternal varicella contact** — infant born to a mother who developed varicella within 4 days before delivery.

In the period November 1, 1974-June 28, 1976, 490 patients were treated, including 184 (38%) who were exposed in the household, and 149 (30%) who were exposed to playmates (Table 3). Fewer patients were treated in other exposure categories.

TABLE 3. Number of patients treated with Zoster Immune Globulin by exposure status, United States, November 1974-June 1976

Type of Exposure		Percent of Total
Household	184	38
Playmate	149	30
Hospital	84	17
School	39	8
Maternal varicella	32	7
Unknown	2	<1
Total	490	100

Thus far, clinical follow-up data have been obtained on 358 (73%) of the 490 patients. Seventy-eight developed illness for an overall clinical attack rate of 22% (Table 4). The highest attack rates, 39% and 25%, occurred in household and maternal varicella exposure settings, respectively.

TABLE 4. Clinical attack rate of varicella in patients treated with Zoster Immune Globulin by exposure status, United States, November 1974-June 1976

Type of Exposure	No. Patients with Clinical Follow-up	No. Ill	Attack Rate (%)
Household	146	57	39
Playmate	98	10	10
Hospital	63	5	8
School	30	1	3
Maternal varicella	20	5	25
Unknown	1	0	0
Total	358	78	22

The increasing demand for ZIG has led to supply shortages. The current stock will soon be exhausted. At the present time, CDC lacks the Zoster Immune Plasma to begin a new lot. All those interested in supplying convalescent plasma from patients with Herpes zoster should contact:

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

Plasma donation should be made between 7 and 28 days following onset of the Herpes zoster rash.

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

Erratum, Vol. 25, No. 22

p 180 In the article, "Tuberculosis — Canada, 1975," credits should read: Reported by AG Jessamine, MD, and F White, MD, Bureau of Epidemiology,

Laboratory Center for Disease Control, Ottawa, in *Canada Diseases Weekly Report* 2(16): 62, April 17, 1976.

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