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MORBIDITY AND MORTALITY WEEKLY REPORT

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Epidemiologic Notes and Reports

MAY 21 1979

Erythema Chronicum Migrans and Lyme Disease — Nine Probable Cases Diagnosed Outside the Northeastern United States

ATLANTA, GA. 30333

Erythema chronicum migrans (ECM) is an unusual, expanding annular rash known to physicians in Europe for many years (1). At least since 1976, a clustering of cases of ECM has occurred each summer in 3 contiguous towns adjacent to the lower Connecticut River (Lyme, Old Lyme, and East Haddam, Connecticut) in conjunction with the meningoencephalitis and oligoarthritis of Lyme disease (2,3). Epidemiologic evidence for its transmission by ticks is convincing, even though no infectious agent has been isolated.

Presumptive cases of Lyme disease have also been noted in other areas in southern New England and near Long Island Sound (3,4). However, probable cases in persons residing in the United States but outside of the Northeast have only recently received attention. Below are details on 9 such cases occurring in the past decade. All 9 patients had recently traveled or spent leisure time in wooded areas, but only 3 in the places where ECM has been repeatedly observed.

Patient 1: In January 1969, a 57-year-old Wisconsin man complained of erythema on 1 side of his body, preceded by headache, malaise, and dull pain over 1 hip (5). An inflamed, punctate lesion was found above the iliac crest, an area in which he recalled having been bitten by a tick when he was hunting near Medford, in northwest Wisconsin, 3 months earlier. A welt, initially 2 cm in diameter, spread outward and cleared centrally; it then became an annular area of erythema, extending from the mid-chest to the mid-back and from the axilla to below the iliac crest. A biopsy was consistent with ECM. The patient became asymptomatic within 48 hours of receiving a single parenteral injection of penicillin; he had no sequelae in the succeeding year.

Patient 2: During the last 10 days of June 1974, a 46-year-old man traveled in rural northern Europe, hiking and picnicking (6). On July 1, he noted headache and pain over the upper spine. Two weeks later, after returning to California, he experienced right-sided tongue paresthesia and bilateral facial weakness over a 1-week period. During hospitalization an erythematous lesion, 22 cm in diameter, developed on his posterior chest wall. The typical manifestations of meningoencephalitis also appeared. Extensive microbiologic and serologic studies were unrevealing. The lesion soon expanded and cleared centrally. The patient was given oral penicillin therapy, and his symptoms subsided within a week. Recovery of neurologic function was more prolonged. There was a history of exposure to ticks but no bite.

Patient 3: A 32-year-old hiker was bitten on the thigh by a tick in Sonoma County, California, in June 1975 (7). After 1 week, the man noted a pruritic, erythematous ring at the location of the bite. Four weeks after the bite, a physician found a large, erythematous, macular, non-scaling, centrifugally spreading ring; it had a trailing bluish cast. During

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the next month the ring expanded to 35 cm in diameter and faded. A tick, removed from the area of the bite hours after it was noted, was identified as *Ixodes*, most likely *I. pacificus*. In the next 2½ years the man experienced 2 brief episodes of stiffness in the hip related to walking; he had no other inflammatory symptoms.

Patient 4: A 13-year-old boy noted a red lesion on his thigh during the week before he returned home to Florida from Mystic, Connecticut, where he had spent the summer of 1975 (8). As the lesion grew and cleared centrally, several similar ones developed on 1 arm and both legs. Shortly after he arrived in Florida, he was treated with an antibiotic, and the lesions disappeared. One month later he developed a recurrent inflammatory joint condition. A knee effusion was aspirated and injected with a corticosteroid. A rheumatologist subsequently diagnosed the illness as juvenile rheumatoid arthritis and recommended salicylate therapy. Between May 1976 and the fall of 1977, the patient had 3 more attacks of arthritis.

Patients 5-7: A 30-year-old woman, a 23-year-old man, and the man's 2½-year-old niece were 3 of 11 persons camping in June 1977 near Sarona, in northwestern Wisconsin (9). All 3 removed ticks from the neck, back, or upper extremities and recalled being bitten. Soon afterward, each patient developed a combination of fever, headache, stiff neck, myalgia, anorexia, lethargy, somnolence, confusion, and periorbital edema. One of the patients had meningitis, and another had meningoencephalitis. Within 2 to 4 days, each patient had a single skin lesion, initially called cellulitis but subsequently recognized as ECM. Over the next 6 months each patient experienced pain and swelling of the shoulders, elbows, and knees on several occasions before becoming symptom free.

Patient 8: An 18-year-old Atlanta resident camped in the Lyme area for 3 days in late July 1977. On approximately August 10, he developed fever to 39.4 C, malaise, headache, neck pain, myalgia, and mild, watery diarrhea. He consulted a physician in Maine, who noted 3 to 4 erythematous, circular skin lesions on the back and arms. Blood and cerebrospinal fluid (CSF) studies and an EEG were not diagnostic. As the systemic symptoms subsided, the skin lesions grew larger and less distinct. When the patient returned to Atlanta at the end of August, a physician recognized the fading lesions as ECM. The man had only 1 other brief episode of headache, malaise, and myalgia about 10 days later. He remembered tick exposure but no bite during his travel.

Patient 9: A 26-year-old Florida woman traveled by air to and from Nantucket Island, Massachusetts, where she spent 2 weeks backpacking in November 1978. At 1 point she removed and discarded a tick attached to her upper left arm. For the next 3 weeks, after she had returned to Florida, she noted aching and 2 papules in the region of the tick bite. In a few days a round, reddish-purple, burning lesion, 9-10 cm in diameter, developed and expanded over her left shoulder and back. A dermatologist made no diagnosis but prescribed erythromycin and a topical steroid preparation. The lesion improved slightly but then evolved into concentric rings. Meanwhile, during the next 2 weeks, the patient experienced myalgia and fatigue. Physical examination, chest X ray, and routine laboratory tests were unremarkable. During the next several weeks she had 2 episodes of fever, headache, photophobia, stiff neck, and aching, culminating in hospitalization for meningoencephalitis with facial paralysis. She was treated with corticosteroids. Symptomatic improvement has been gradual. She has had arthralgia but no discrete joint pain or swelling.

Reported by CW Davidson, MD, Atlanta, Georgia; JN Lewis, MD, MPH, State Epidemiologist, Connecticut State Dept of Health; and the Arthritis and Immunologic Diseases Activity, Chronic Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: The diagnosis of ECM can generally be made clinically, although there are helpful dermatopathologic changes (3). The rheumatic and neurologic illness that often

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follows ECM, known as Lyme arthritis or Lyme disease, cannot easily be distinguished from other similar inflammatory conditions in the absence of the skin lesion. Cryoglobulins are frequently present in the serum of patients who develop Lyme arthritis (3), but no laboratory test is diagnostic. The purported effectiveness of antimicrobial therapy has not been adequately evaluated.

The cases summarized here are typical of the disease as elucidated by the Yale investigators (2,3). Four of the cases emphasize the need for physicians remote from the endemic area to consider travel and recreational opportunities for exposure in their diagnostic approach.

Patient 9 is the first reported from Nantucket despite heavy infestation of that island with *I. dammini*, a newly proposed species heretofore not distinguished from *I. scapularis*. *I. dammini* is also the vector in human babesiosis on Nantucket. The case of patient 3 is the only known occurrence of ECM in California. Patients 5-7 from northwestern Wisconsin prominently displayed the major features of ECM and Lyme disease and are noteworthy for their clustering in an area where both ECM (Patient 1) and *I. dammini* (10) had apparently been observed in the past.

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*International Notes***Quarantine Measures**

The following changes should be made in the *Supplement — Health Information for International Travel*, MMWR, Vol. 27, September 1978:

CHINA, PEOPLE'S REPUBLIC OF

Cholera — Delete note. Insert: A certificate is required ALSO from travelers arriving from:

- Africa:** Angola; Burundi; Cameroon, United Republic of; Cape Verde; Ghana; Kenya; Liberia; Malawi; Mozambique; Nigeria; Rwanda; Sierra Leone; Tanzania, United Republic of; Togo; Upper Volta; Zaire
- Asia:** Bangladesh, Bahrain, Burma, Democratic Kampuchea, Indonesia, Iran, Iraq, Jordan, Malaysia, Maldives, Nepal, Philippines, Saudi Arabia, Singapore, Syrian Arab Republic, Sri Lanka, Thailand, Viet Nam, Yemen
- Oceania:** Australia, Gilbert Islands

Quarantine Measures — Continued

- Yellow fever** — Delete note. Insert: A certificate is required ALSO from travelers arriving from:
- Africa:** Angola; Benin; Burundi; Cameroon, United Republic of; Central African Empire; Chad; Congo; Equatorial Guinea; Ethiopia; Gabon; Ghana; Gambia; Guinea; Guinea-Bissau; Ivory Coast; Kenya; Liberia; Mali; Niger; Nigeria; Rwanda; Sao Tome and Principe; Senegal; Sierra Leone; Somalia; Sudan; Tanzania, United Republic of; Togo; Uganda; Upper Volta; Zaire
- Americas:** Bolivia, Brazil, Colombia, Ecuador, French Guinea, Guyana, Panama, Paraguay, Peru, Surinam, Venezuela
- Smallpox** — Change code to II. ALSO on page 11 change code to II*. Insert: A certificate is required ALSO from travelers arriving from:
- Africa:** Angola, Botswana, Djibouti, Ethiopia, Kenya, Lesotho, Madagascar, Namibia, Rhodesia, South Africa, Swaziland, United Arab Emirates
- Asia:** Bahrain; Democratic Kampuchea; Iran; Iraq; Kuwait; Lao People's Democratic Republic; Oman; Qatar; Saudi Arabia; Syrian Arab Republic; Thailand; Viet Nam; Yemen; Yemen, Democratic

TABLE I. Summary — cases of specified notifiable diseases, United States
 [Cumulative totals include revised and delayed reports through previous weeks.]

DISEASE	18th WEEK ENDING		MEDIAN 1974-1978**	CUMULATIVE, FIRST 18 WEEKS		
	May 12, 1978	May 13, 1978*		May 12, 1978	May 13, 1978*	MEDIAN 1974-1978**
Aseptic meningitis	60	42	42	903	701	684
Brucellosis	4	4	6	32	53	62
Chickenpox	7,715	5,528	5,923	125,825	83,158	83,158
Diphtheria	—	2	2	53	29	100
Encephalitis: Primary (arthropod-borne & unspec.)	9	15	13	170	206	231
Post-infectious	3	6	6	72	64	83
Hepatitis, Viral: Type B	269	345	271	5,025	5,568	5,287
Type A	585	581	620	10,652	10,419	12,993
Type unspecified	189	141	149	3,933	2,931	3,044
Malaria	12	8	6	156	173	127
Measles (rubeola)	371	975	1,250	6,983	13,288	13,288
Meningococcal infections: Total	40	46	43	1,184	1,049	728
Civilian	40	45	43	1,177	1,039	722
Military	—	1	—	7	10	10
Mumps	461	485	1,180	7,599	8,626	24,191
Pertussis	21	27	24	470	751	449
Rubella (German measles)	625	1,153	1,153	6,718	9,016	9,016
Tetanus	—	2	2	14	21	21
Tuberculosis	503	598	639	10,009	10,129	10,822
Tularemia	1	2	2	37	29	34
Typhoid fever	2	11	8	131	184	117
Typhus fever, tick-borne (Rky. Mt. spotted)	22	24	22	78	64	40
Venereal diseases:						
Gonorrhea: Civilian	17,154	18,061	18,214	345,432	335,679	338,887
Military	494	460	616	10,017	8,777	9,836
Syphilis, primary & secondary: Civilian	458	414	414	8,806	7,539	7,658
Military	2	8	8	108	112	112
Rabies in animals	117	80	71	1,611	1,060	1,032

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1978		CUM. 1978
Anthrax	—	Poliomyelitis: Total (Pa. 1, non-para.) (Pa. 2, para.)	7
Botulism	7	Paralytic	6
Congenital rubella syndrome	18	Psittacosis (Ups. N.Y. 1, Ala. 1, Calif. 1)	51
Leprosy † (Mass. 1, Tex. 1, Utah 1)	57	Rabies in man	1
Leptospirosis	21	Trichinosis (Ill. 1)	51
Plague	4	Typhus fever, flea-borne (endemic, murine)	6

* Delayed reports received for calendar year 1978 are used to update last year's weekly and cumulative totals.

** Medians for gonorrhea and syphilis are based on data for 1976-1978.

† Delayed report: Leprosy: Pac. Tr. Terr. +4

TABLE III. Cases of specified notifiable diseases, United States, weeks ending May 12, 1979, and May 13, 1978 (19th week)

REPORTING AREA	CHICKEN-POX			DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKEN-POX	DIPHTHERIA		Primary		Post-infectious	B	A	Unspecified	MALARIA	
	1979	1979	1979	1979	CUM. 1978	1979	1978*	1979	1979	1979	1979	1979	CUM. 1978
UNITED STATES	60	4	7,715	-	53	9	15	3	269	585	189	12	156
NEW ENGLAND	6	-	1,048	-	-	1	-	-	10	25	9	1	8
Maine	5	-	158	-	-	-	-	-	-	6	-	1	1
N.H. †	-	-	15	-	-	-	-	-	-	2	-	-	-
Vt.	-	-	6	-	-	-	-	-	1	1	-	-	-
Mass.	-	-	200	-	-	1	-	-	2	7	7	-	3
R.I.	-	-	58	-	-	-	-	-	1	-	-	-	3
Conn.	1	-	611	-	-	-	-	-	6	9	2	-	1
MID. ATLANTIC	3	-	515	-	-	-	-	1	1	60	42	26	-
Upstate N.Y.	1	-	381	-	-	-	-	1	11	12	8	-	2
N.Y. City	-	-	126	-	-	-	-	-	12	6	6	-	12
N.J. †	-	-	NN	-	-	-	-	-	16	12	9	-	1
Pa.	2	-	8	-	-	-	-	1	21	12	3	-	3
E.N. CENTRAL	6	-	3,169	-	-	-	-	4	45	55	18	1	8
Ohio †	-	-	338	-	-	-	-	1	6	18	-	-	2
Ind. †	1	-	272	-	-	-	-	2	1	2	6	-	1
Ill.	2	-	640	-	-	-	-	-	24	15	9	1	2
Mich.	3	-	1,272	-	-	-	-	1	14	19	3	-	3
Wis. †	-	-	647	-	-	-	-	-	-	1	-	-	-
W.N. CENTRAL	1	-	1,016	-	-	-	-	1	1	8	37	9	7
Minn. †	-	-	1	-	-	-	-	-	1	2	15	-	3
Iowa	-	-	303	-	-	-	-	-	1	5	2	-	-
Mo.	-	-	119	-	-	-	-	1	5	4	7	-	2
N. Dak. †	-	-	15	-	-	-	-	-	-	6	-	-	-
S. Dak.	-	-	14	-	-	-	-	-	-	6	-	-	-
Nebr.	1	-	147	-	-	-	-	-	-	1	-	-	1
Kans.	-	-	417	-	-	-	-	-	-	6	-	1	1
S. ATLANTIC	15	2	437	-	-	3	2	1	43	61	31	-	29
Del.	-	-	2	-	-	-	-	-	-	1	1	-	1
Md.	-	-	60	-	-	1	-	-	8	2	6	-	5
D.C.	2	-	1	-	-	-	-	-	-	-	-	-	4
Va. †	-	-	18	-	-	-	-	2	7	3	8	-	7
W. Va.	2	2	126	-	-	-	-	1	-	1	2	-	1
N.C.	-	-	NN	-	-	1	-	-	7	14	6	-	1
S.C.	5	-	-	-	-	1	-	-	1	1	-	-	1
Ge.	-	-	4	-	-	-	-	-	9	17	-	-	2
Fla.	6	-	226	-	-	-	-	-	11	23	8	-	7
U.S. CENTRAL	4	1	214	-	-	1	1	-	13	23	3	1	3
Ill.	1	-	155	-	-	-	1	-	4	8	-	-	-
Tenn.	2	-	NN	-	-	-	-	-	5	10	3	-	-
Ala.	1	-	50	-	-	-	-	-	4	3	-	1	2
Miss.	-	1	9	-	-	1	-	-	-	2	-	-	1
W.S. CENTRAL	11	-	246	-	-	-	1	-	18	84	22	-	13
Ark. †	-	-	7	-	-	-	1	-	2	4	6	-	1
La.	1	-	NN	-	-	-	-	-	-	-	-	-	2
Okla. †	-	-	-	-	-	-	-	-	3	9	3	-	1
Tex. †	10	-	239	-	-	-	-	-	13	71	13	-	9
MOUNTAIN	2	-	95	-	1	1	-	-	4	111	33	-	4
Mont.	-	-	26	-	-	-	-	-	-	7	-	-	-
Idaho	-	-	-	-	-	-	-	-	1	-	1	-	-
Wyo.	-	-	-	-	-	-	-	-	-	1	-	-	1
Colo.	2	-	66	-	-	1	-	-	-	12	-	-	2
N. Max. †	-	-	-	-	-	-	-	-	-	25	-	-	-
Ariz.	-	-	NN	-	1	-	-	-	-	48	16	-	1
Utah	-	-	2	-	-	-	-	-	2	11	16	-	-
Nev.	-	-	1	-	-	-	-	-	1	7	-	-	-
PACIFIC	12	1	975	-	52	3	5	-	68	147	38	8	66
Wash.	-	1	944	-	51	-	-	-	3	35	11	-	3
Oreg. †	1	-	5	-	-	2	-	-	5	21	3	-	4
Calif. †	10	-	-	-	1	5	-	-	58	89	22	8	58
Alaska	-	-	8	-	-	-	-	-	1	1	2	-	-
Hawaii	1	-	18	-	-	-	-	-	1	1	-	-	1
Guam	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
P.R.	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
V.I. †	NA	NA	16	NA	-	NA	-	-	NA	4	1	1	1
Pac. Trust Terr. †	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-

NN: Not notifiable. NA: Not available.
 *Delayed reports received for 1978 are not shown below but are used to update last year's weekly and cumulative totals.
 †The following delayed reports will be reflected in next week's cumulative totals: Asep. meng.: Ohio +1, Ind. +1, N. Mex. +1, Pac. Tr. Terr. +4; Chickenpox: N.H. +2, Ohio -107, Ark. +46, Tex. +1, Oreg. -2, Calif. +104, Pac. Tr. Terr. +45; Enceph.: Ohio -2, Ind. +2, Ark. -1; Enceph., post: Ohio -2; Hep. B: N.J. -6, Ohio -19, Minn. -1, Ark. +2; Hep. A: N.J. -8, Ohio -39, Wis. +1, N. Dak. +1, Ark. +37, Okla. -1, Oreg. -3; Hep. unsp.: N.J. -7, Va. -1, Ark. -33, Okla. -1, Tex. -1, V.I. +1, Pac. Tr. Terr. +6; Malaria: Ark. -1

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending May 12, 1979, and May 13, 1978 (19th week)

REPORTING AREA	MEASLES (RUBELLA)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1978	CUM. 1978	CUM. 1978*	1978	CUM. 1978	CUM. 1978*	1978	CUM. 1978	1978	1978	CUM. 1978	CUM. 1978
UNITED STATES	371	6,983	13,288	40	1,184	1,049	461	7,599	21	625	6,718	14
NEW ENGLAND	8	201	1,487	3	45	58	24	311	1	89	970	-
Maine	-	4	1,000	-	1	3	3	112	1	2	54	-
N.H. †	3	16	24	-	5	6	-	3	-	3	74	-
Vt.	4	71	22	-	3	2	-	4	-	18	327	-
Mass. †	1	10	135	-	9	22	2	25	-	37	310	-
R.I.	-	100	4	-	3	10	1	18	-	6	36	-
Conn.	-	-	302	3	24	15	18	149	-	23	169	-
MID. ATLANTIC	51	743	1,078	6	176	150	54	676	1	116	1,042	3
Upstate N.Y.	7	398	726	4	64	48	5	83	-	70	478	1
N.Y. City	38	298	126	-	46	35	1	355	-	16	131	1
N.J.	1	29	19	1	45	32	37	35	-	24	240	-
Pa.	5	18	207	1	21	35	11	172	1	6	193	1
E.N. CENTRAL	62	1,731	5,206	-	112	99	258	3,178	4	103	1,544	1
Ohio †	9	47	259	-	36	21	178	1,178	-	21	50	-
Ind. †	15	127	78	-	27	17	8	182	3	11	594	-
Ill.	4	828	622	-	3	19	10	443	1	1	78	-
Mich.	8	445	3,396	-	34	33	19	644	-	58	676	1
Wis. †	26	284	851	-	12	9	43	731	-	12	146	-
W.N. CENTRAL	84	881	228	-	36	38	24	527	1	19	240	-
Minn.	69	515	20	-	7	5	-	5	-	4	26	-
Iowa	-	7	45	-	5	7	12	199	-	-	43	-
Mo.	15	341	6	-	17	18	5	143	-	1	24	-
N. Dak.	-	6	113	-	1	-	1	-	-	-	8	-
S. Dak.	-	1	-	-	2	2	-	3	-	-	-	-
Nebr.	-	-	4	-	-	-	-	4	-	-	79	-
Kans.	-	11	40	-	5	5	7	172	1	2	60	-
S. ATLANTIC	66	905	3,135	13	275	276	13	272	3	104	735	3
Del.	-	-	5	-	3	1	1	12	-	-	2	-
Md.	-	6	3	-	21	13	2	35	-	-	20	-
D.C.	-	-	47	-	1	1	-	1	-	1	1	-
Va. †	6	113	2,001	2	43	39	2	61	-	12	83	1
W. Va. †	1	48	626	-	3	5	2	67	-	3	80	-
N.C.	-	96	79	1	46	53	3	42	-	75	327	2
S.C.	8	47	157	1	40	17	-	2	-	2	50	-
Ga.	29	173	10	5	51	36	-	3	2	3	5	-
Fla.	22	422	207	4	67	111	3	49	1	8	167	-
E.S. CENTRAL	5	95	827	8	98	86	39	797	1	58	209	3
Ky.	3	18	80	5	18	16	35	694	-	2	44	-
Tenn.	1	20	604	3	31	24	-	68	1	1	72	-
Ala.	1	42	31	-	23	24	1	11	-	7	28	3
Miss.	-	15	112	-	26	22	3	24	-	48	65	-
W.S. CENTRAL	23	753	740	3	212	159	24	1,195	3	9	156	4
Ark. †	-	7	13	1	16	14	1	576	-	4	4	2
La.	11	197	285	-	95	57	-	34	-	2	24	-
Okla.	-	21	9	-	17	14	-	-	-	1	22	-
Tex. †	12	528	433	2	84	74	23	585	2	3	106	2
MOUNTAIN	12	148	139	4	57	26	11	195	5	22	299	-
Mont. †	-	47	85	-	4	2	-	5	1	3	45	-
Idaho	-	2	1	-	4	2	-	3	-	4	143	-
Wyo.	-	-	-	-	-	-	-	-	-	-	-	-
Colo.	11	23	13	1	3	2	2	57	-	1	21	-
N. Mex.	-	27	-	1	4	4	-	7	-	-	4	-
Ariz.	1	30	8	1	31	9	8	33	4	4	69	-
Utah	-	15	24	1	6	4	1	80	-	10	17	-
Nev. †	-	4	8	-	5	3	-	10	-	-	-	-
PACIFIC	60	1,526	448	3	173	157	14	448	2	105	1,523	-
Wash.	35	701	40	-	25	26	2	150	-	7	129	-
Oreg.	-	52	123	-	10	4	-	41	-	8	59	-
Calif.	20	698	282	3	128	121	11	199	2	90	1,325	-
Alaska	-	15	-	-	3	5	-	8	-	-	1	-
Hawaii	5	60	3	-	7	1	1	50	-	-	9	-
Guam	NA	-	25	-	-	-	NA	-	NA	NA	3	-
P.R.	8	178	100	-	-	1	8	345	-	-	23	3
V.I. †	-	2	6	-	1	-	-	2	-	-	-	-
Pac. Trust Terr. †	NA	5	388	-	1	2	NA	11	NA	NA	-	-

NA: Not available.

* Delayed reports received for 1978 are not shown below but are used to update last year's weekly and cumulative totals.

† The following delayed reports will be reflected in next week's cumulative totals: Measles: N.H. +6, Mass. -4, Ohio -1, Wis. -1, Va. -2, W.Va. -4, Ark. -1, Tex. -2, Nev. +1; Men. inf.: Ohio -8, Ind. +1, V.I. +1; Mumps: Ohio -16, Ark. +167, V.I. +2, Pac. Tr. Terr. +5; Pertussis: Ohio -8, Mont. +1; Tetanus: Ark. -1.

TABLE III (Cont'd). Cases of specified notifiable diseases, United States, weeks ending May 12, 1979, and May 13, 1978 (19th week)

REPORTING AREA	TUBERCULOSIS		TULA-REMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		VENEREAL DISEASES (Civilian)						RABIES (in Animals)
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1978	CUM. 1978	CUM. 1978	1978	CUM. 1978	1978	CUM. 1978	1978	CUM. 1978	CUM. 1978*	1978	CUM. 1978	CUM. 1978*	
UNITED STATES	503	10,009	37	2	131	22	78	17,154	345,432	335,679	458	8,806	7,539	1,611
NEW ENGLAND	16	292	1	-	10	-	-	435	9,059	8,562	4	152	232	17
Maine	1	22	-	-	1	-	-	33	622	662	-	3	4	14
N.H.	4	8	-	-	-	-	-	13	304	385	-	2	1	1
Vt.	4	13	-	-	-	-	-	8	169	227	-	-	1	-
Mass.	2	168	1	-	4	-	-	133	3,734	3,728	3	99	154	2
R.I.	2	23	-	-	1	-	-	40	736	612	1	5	8	-
Conn.†	3	58	-	-	2	-	-	208	3,494	2,948	-	43	64	-
MID. ATLANTIC	88	1,626	1	1	23	-	7	1,541	38,011	37,188	76	1,371	1,031	10
Upstate N.Y.†	15	284	1	1	6	-	6	223	6,756	5,840	-	107	74	9
N.Y. City	22	599	-	-	9	-	1	777	14,354	14,629	54	919	729	-
N.J.	15	286	-	-	6	-	-	101	7,033	6,809	9	186	111	1
Pa.	36	457	-	-	2	-	-	440	9,868	9,910	13	159	117	-
E.N. CENTRAL	75	1,383	-	-	10	-	2	2,761	53,093	48,502	66	1,235	809	130
Ohio†	19	268	-	-	1	-	2	1,170	14,606	13,023	11	226	168	9
Ind.	10	198	-	-	-	-	-	128	4,412	4,896	2	70	46	37
Ill.	27	511	-	-	4	-	-	651	17,023	14,716	39	757	498	63
Mich.†	19	349	-	-	5	-	-	551	12,338	11,334	6	138	69	-
Wis.	-	57	-	-	-	-	-	261	4,714	4,533	8	44	28	21
W.N. CENTRAL	15	326	9	1	4	-	1	612	16,490	16,313	5	126	178	333
Minn.	4	46	-	-	2	-	-	39	2,737	3,001	2	38	84	76
Iowa†	2	33	-	-	1	-	-	63	2,094	1,953	1	19	18	68
Mo.	3	167	7	-	1	-	-	301	7,084	6,562	2	51	39	102
N. Dak.	-	11	-	-	-	-	-	18	288	345	-	-	2	14
S. Dak.	-	18	1	-	-	-	-	49	565	617	-	-	1	24
Nebr.	-	3	1	-	-	-	-	33	1,054	1,231	-	1	5	-
Kans.†	6	48	-	-	-	-	1	109	2,668	2,604	-	17	29	49
S. ATLANTIC	116	2,307	2	-	17	15	39	4,073	81,094	80,989	91	2,117	2,009	185
Dal.	2	25	-	-	-	-	-	58	1,302	1,193	-	12	3	-
Md.†	23	313	-	-	6	2	7	383	9,769	10,650	3	150	162	6
D.C.	-	101	-	-	1	-	-	273	4,927	5,445	3	153	152	-
Va.	10	266	-	-	2	5	13	392	7,089	7,514	7	210	184	3
W. Va.	4	90	-	-	1	-	-	60	1,184	1,245	2	30	6	-
N.C.†	21	374	-	-	4	12	616	12,268	11,579	8	184	177	1	
S.C.	8	118	1	-	2	4	6	285	7,224	7,601	4	104	91	60
Ga.	17	346	1	-	-	-	1	950	15,482	15,014	24	555	498	113
Fla.†	31	674	-	-	5	-	-	1,056	21,129	20,748	40	719	736	2
E.S. CENTRAL	55	929	5	-	6	2	11	1,884	29,635	28,861	39	572	360	95
Ky.	21	231	2	-	2	-	-	221	3,899	3,269	4	61	43	41
Tenn.†	10	256	3	-	1	1	6	631	10,235	10,683	21	240	131	32
Ala.	18	211	-	-	3	-	4	652	9,128	8,549	8	114	51	22
Miss.	6	231	-	-	1	1	380	6,373	6,373	6,373	6	157	135	-
W.S. CENTRAL	41	1,204	9	-	10	4	16	2,371	45,411	46,853	106	1,502	1,112	693
Ark.†	-	79	7	-	-	2	13	192	3,739	3,641	3	46	35	166
La.	6	270	1	-	-	-	-	464	8,056	7,773	29	357	213	6
Okla.	2	142	-	-	-	1	1	225	4,040	4,208	4	30	37	100
Tex.	33	713	1	-	10	1	2	1,490	29,576	31,231	70	1,069	827	421
MOUNTAIN	2	281	7	-	8	1	2	539	13,267	12,346	7	156	145	23
Mont.	-	10	1	-	-	1	1	31	638	799	-	6	6	-
Idaho	-	4	-	-	1	-	-	16	558	436	1	12	1	-
Wyo.	-	3	-	-	-	-	-	-	303	279	-	3	3	-
Colo.	-	39	1	-	2	-	-	175	3,638	3,473	-	39	45	-
N. Mex.	-	51	1	-	1	-	-	61	1,703	1,735	6	27	43	18
Ariz.	-	137	-	-	3	-	-	129	3,704	3,040	-	42	25	5
Utah	-	9	4	-	-	-	-	34	687	727	-	3	6	-
Nev.†	2	28	-	-	1	-	1	93	2,036	1,857	-	24	16	-
PACIFIC	95	1,661	3	-	43	-	-	2,938	59,372	56,065	64	1,575	1,663	125
Wash.†	6	77	2	-	1	-	-	322	5,328	4,221	NA	86	67	-
Oreg.†	6	80	-	-	-	-	-	139	3,717	3,920	1	71	59	-
Calif.	77	1,364	1	-	35	-	-	2,331	47,426	44,955	61	1,371	1,516	123
Alaska	-	34	-	-	-	-	-	104	1,922	1,857	2	9	5	2
Hawaii	6	106	-	-	7	-	-	42	979	1,112	-	38	16	-
Guam	NA	14	-	NA	-	NA	-	NA	20	48	NA	-	-	-
P.R.	-	98	-	1	3	-	-	31	754	932	9	187	163	7
V.I.†	-	2	-	-	1	-	-	1	63	73	2	2	6	-
Pac. Trust Terr.†	NA	8	-	NA	-	NA	-	NA	47	179	NA	-	-	-

NA: Not available.
 *Delayed reports received for 1978 are not shown below but are used to update last year's weekly and cumulative totals.
 †The following delayed reports will be reflected in next week's cumulative totals: TB: Ohio -1, Mich. -2, Kans. -1, Fla. -9, Ark. -1, Wash. -1, Oreg. -1, V.I. +1, Pac. Tr. Terr. +2; Tularemia: Ark. -1, T. Fever: Iowa +1, RMSF: Ups. N.Y. -2, Ohio -2, Md. -4, N.C. -1; GC: Conn. +5 mil., Ups. N.Y. +110 civ., Ga. +579 civ. +77 mil., Tenn. +1 civ., Nev. +101 civ., Wash. -200 civ., Oreg. -4 mil., Pac. Tr. Terr. +65 civ.; Syphilis: Oreg. +5; An. rabies: Md. +3.

TABLE IV. Deaths in 121 U.S. cities,* week ending
May 12, 1979 (19th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P & I** TOTAL	REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P & I** TOTAL
	ALL AGES	>85	45-64	25-44	<1			ALL AGES	>85	45-64	25-44	<1	
NEW ENGLAND	667	437	158	31	24	38	S. ATLANTIC	1,238	674	353	105	40	31
Boston, Mass.	180	107	45	14	7	12	Atlanta, Ga.	140	70	37	14	13	3
Bridgport, Conn.	43	28	11	1	2	4	Baltimore, Md.	291	152	91	25	13	3
Cambridge, Mass.	23	18	5	-	-	4	Charlotte, N.C.	58	27	17	6	3	-
Fall River, Mass.	37	20	9	4	1	-	Jacksonville, Fla.	90	45	21	8	6	2
Hartford, Conn.	47	28	13	2	2	1	Miami, Fla.	135	66	45	9	5	5
Lowell, Mass.	34	22	8	2	-	-	Norfolk, Va.	36	19	13	2	2	1
Lynn, Mass.	14	12	2	-	-	1	Richmond, Va.	60	34	20	2	4	6
New Bedford, Mass.	29	21	6	1	-	1	Savannah, Ga.	40	18	13	5	-	-
New Haven, Conn.	42	28	11	1	2	-	St. Petersburg, Fla.	89	74	12	2	-	4
Providence, R.I.	79	53	18	3	5	6	Tampa, Fla.	65	44	16	1	2	1
Somerville, Mass.	7	3	3	-	-	-	Washington, D.C.	204	106	60	29	1	3
Springfield, Mass.	49	34	13	-	2	2	Wilmington, Del.	30	19	8	2	-	2
Waterbury, Conn.	35	24	7	1	3	4							
Worcester, Mass.	48	39	7	2	-	3							
							E.S. CENTRAL	698	384	201	53	27	27
MID. ATLANTIC	2,115	1,402	492	118	52	76	Birmingham, Ala.	101	59	24	10	4	1
Albany, N.Y.	66	42	11	4	6	-	Chattanooga, Tenn.	71	39	19	6	2	2
Allentown, Pa.	19	10	9	-	-	-	Knoxville, Tenn.	40	27	10	1	1	2
Buffalo, N.Y.	135	79	32	9	11	12	Louisville, Ky.	126	74	34	8	6	9
Camden, N.J.	40	27	8	2	3	-	Memphis, Tenn.	136	81	32	13	7	2
Elizabeth, N.J.	36	25	9	1	-	2	Mobile, Ala.	86	42	27	6	4	2
Erie, Pa.†	44	28	12	3	1	1	Montgomery, Ala.	40	24	11	3	-	2
Jersey City, N.J.	35	23	8	2	2	1	Nashville, Tenn.	98	38	44	6	3	7
Newark, N.J.	42	20	11	5	5	2							
N.Y. City, N.Y.	1,384	915	334	83	19	37	W.S. CENTRAL	1,074	619	267	87	44	34
Paterson, N.J.	24	14	5	1	4	1	Austin, Tex.	44	29	6	5	-	2
Philadelphia, Pa.†	297	168	86	17	14	17	Baton Rouge, La.	40	23	6	6	2	1
Pittsburgh, Pa.†	39	25	9	2	1	1	Corpus Christi, Tex.	29	14	8	2	1	5
Reading, Pa.	37	30	6	1	-	2	Dallas, Tex.	192	119	45	16	5	5
Rochester, N.Y.	118	86	22	3	1	8	El Paso, Tex.	48	22	16	1	4	4
Schenectady, N.Y.	30	15	8	1	-	-	Fort Worth, Tex.	99	61	20	6	10	1
Scranton, Pa.†	27	16	10	-	-	1	Houston, Tex.	143	71	40	18	5	6
Syracuse, N.Y.	84	61	17	5	1	3	Little Rock, Ark.	69	40	16	7	2	1
Trenton, N.J.	22	15	5	1	-	2	New Orleans, La.	142	84	38	6	6	4
Utica, N.Y.	19	15	4	-	-	4	San Antonio, Tex.	163	89	42	17	7	2
Yonkers, N.Y.	24	21	3	-	-	1	Shreveport, La.	40	26	12	-	1	4
							Tulsa, Okla.	65	41	18	3	1	4
E.N. CENTRAL	2,282	1,343	604	145	100	69	MOUNTAIN	614	370	141	45	36	27
Akron, Ohio	69	40	21	2	3	-	Albuquerque, N. Mex.	98	62	23	5	4	9
Canton, Ohio	20	13	4	2	-	8	Colorado Springs, Colo.	30	18	7	1	2	4
Chicago, Ill.	608	335	152	49	43	13	Denver, Colo.	114	64	25	8	14	2
Cincinnati, Ohio	140	78	44	9	3	1	Las Vegas, Nev.	59	33	17	7	-	1
Cleveland, Ohio	165	90	49	15	7	5	Ogden, Utah	23	16	5	2	-	6
Columbus, Ohio	132	75	39	6	2	2	Phoenix, Ariz.	129	79	31	11	5	2
Dayton, Ohio	114	63	38	4	5	4	Pueblo, Colo.	22	14	5	-	-	2
Detroit, Mich.	269	153	78	20	11	7	Salt Lake City, Utah	38	21	6	3	7	-
Evansville, Ind.	37	20	10	3	3	1	Tucson, Ariz.	101	63	22	8	4	-
Fort Wayne, Ind.	56	32	14	4	2	2							
Gary, Ind.	57	41	9	1	2	13							
Grand Rapids, Mich.	127	76	31	10	4	3	PACIFIC	1,739	1,104	405	115	63	50
Indianapolis, Ind.	22	10	9	-	4	3	Berkeley, Calif.	26	21	5	-	-	6
Madison, Wis.	133	104	22	3	3	-	Fraser, Calif.	55	38	10	2	3	1
Milwaukee, Wis.	64	38	17	3	5	2	Glendale, Calif.	26	17	6	2	-	4
Peoria, Ill.	29	19	8	1	1	-	Honolulu, Hawaii	56	29	14	10	1	8
Rockford, Ill.	45	33	6	2	1	6	Long Beach, Calif.	100	60	32	2	4	6
South Bend, Ind.	112	73	24	10	1	1	Los Angeles, Calif.	489	296	113	51	14	2
Toledo, Ohio	68	42	23	1	1	1	Oakland, Calif.	67	35	20	5	4	1
Youngstown, Ohio							Pasadena, Calif.	33	28	2	-	3	1
							Portland, Oreg.	113	76	27	4	1	1
W.N. CENTRAL	662	443	131	38	25	25	Sacramento, Calif.	71	45	16	6	2	1
Des Moines, Iowa	28	25	1	1	1	3	San Diego, Calif.	143	99	27	7	4	5
Duluth, Minn.	20	13	6	-	-	5	San Francisco, Calif.	156	97	42	5	10	5
Kansas City, Kans.	24	17	3	3	1	2	San Jose, Calif.	157	104	26	11	10	5
Kansas City, Mo.	103	71	21	3	6	-	Seattle, Wash.	154	94	48	6	2	4
Lincoln, Nebr.	38	26	7	3	-	2	Spokane, Wash.	50	36	5	3	5	4
Minneapolis, Minn.	94	69	10	7	5	2	Tacoma, Wash.	43	29	12	1	-	-
Omaha, Nebr.	75	41	20	8	3	-							
St. Louis, Mo.	142	84	34	7	8	6	TOTAL	11,089	6,776	2,752	737	420	377
St. Paul, Minn.	64	44	15	3	-	2	Expected Number	10,404	6,433	2,625	648	395	357
Wichita, Kans.	74	53	14	3	1	3							

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza

†Because of changes in reporting methods in these 4 Pennsylvania cities, there will now be 117 cities involved in the generation of the expected values listed to monitor pneumonia and influenza activity in the United States. Data from these 4 cities will appear in the tables but will not be included in the totals for the United States and the Middle Atlantic Region.

Epidemiologic Notes and Reports**Isolation of Drug-Resistant Pneumococci — New York**

Streptococcus pneumoniae type 6B, partially resistant to penicillin, was recently isolated from the tracheobronchial tree of a 15-month-old female with a persistent pulmonary infiltrate, pancytopenia, and hepatosplenomegaly.

The patient was admitted to Downstate Medical Center in Brooklyn, New York, on October 22, 1978, for the therapy of a right upper lobe infiltrate that had been present for at least 45 days. During a previous admission the child had been treated for the same pulmonary infiltrate with ampicillin and nafcillin. Upon readmission she was treated with cephalothin and gentamicin for 10 days. When she responded poorly, she was given penicillin, 200,000 units/kg. She also failed to respond to this therapy. A culture of a bronchoscopy specimen, taken on November 8, grew 2 strains of *S. pneumoniae* type 6B, partially resistant to penicillin. One strain was optochin sensitive, and the other was optochin resistant. After erythromycin and high-dose penicillin therapy was initiated, the infiltrate partially cleared, and her condition improved. No other drug-resistant organisms were isolated. *Mycoplasma* complement-fixation titers were less than 1:4.

Both organisms had similar sensitivity patterns. The minimal inhibitory concentration (MIC) levels of the pneumococci to penicillin were 0.25 µg/ml; to ampicillin, <0.125 µg/ml; and to methicillin, 2-4 µg/ml (Table 1). The organisms were resistant to amikacin, kanamycin, and tetracycline. They were sensitive to erythromycin, clindamycin, chloramphenicol, cephalothin, rifampin, and vancomycin. Both organisms were beta-lactamase negative when tested by the chromogenic cephalosporin method.

Nasopharyngeal cultures were taken from the patients and staff of the ward where the patient resided. Although several pneumococci were isolated, none was found to be penicillin-resistant. Repeat cultures are being taken on staff and patients.

Reported by S Landesman, MD, V Ahonkahai, MD, M Sierra, PhD, H Bernheimer, PhD, R Goetz, A Josephson, G Pringle, G Schiffman, PhD, P Steiner, MD, Downstate Medical Center, Brooklyn; JS Marr, MD, New York City Epidemiologist, Bur of Preventable Diseases, New York City Dept of Health; Special Pathogens Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

TABLE 1. Minimal inhibitory concentrations (µg/ml) of partially resistant pneumococci in New York patient, 1978

	Optochin-sensitive strain	Optochin-resistant strain
Penicillin	.25	.25
Ampicillin	≤.125	.125
Kanamycin	32	32
Gentamicin	4	4
Tetracycline	64	16
Cephalothin	.5	.5
Chloramphenicol	1	2
Erythromycin	.06	≤.06
Methicillin	4	2
Clindamycin	.06	≤.06
Tobramycin	8	16
Nalidixic acid	>128	64
Colistin	>128	>64
Carbenicillin	2	4
Oxacillin	2	2
Sulfa-Trimethoprim	4.8/.25	4.8/.25
Amikacin	16	32
Vancomycin	.25	.25
Cefamandole	.5	.5

Drug-Resistant Pneumococci — Continued

Editorial Note: Reports of pneumococci with intermediate or partial resistance to penicillin (MIC=0.1 to 0.9 $\mu\text{g/ml}$) have appeared with increasing frequency in this country. A study of the penicillin susceptibility of 6,000 pneumococcal isolates submitted to a laboratory in Alberta, Canada, suggested that 2.4% may demonstrate these levels of resistance (1). The response to therapy in infections with partially resistant organisms is incompletely characterized, although the MICs are considerably less than serum levels obtainable during penicillin therapy. Peak cerebrospinal fluid levels, however, may reach only 1 $\mu\text{g/ml}$ (2), which could possibly result in difficulty treating meningitis caused by these organisms. To date, pneumococci more highly resistant to penicillin (MIC >1 $\mu\text{g/ml}$)—such as those reported from South Africa (3)—have been documented in the United States only in 1 case from Minnesota (4). CDC is coordinating a national study of susceptibility to penicillin in pneumococci isolated from selected hospitals, including those participating in the National Nosocomial Infections Study.

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Intestinal Parasites — New York City

In the fall of 1977, a pilot screening program for intestinal parasites was initiated by the New York City Department of Health's Upper West Side Tropical Disease Clinic. The object of the study was to determine the prevalence of intestinal parasites in asymptomatic immigrant children referred from the Health Department's Child Health Station.

In the 1-year period November 1, 1977—October 31, 1978, the stools of 37 asymptomatic children, 1 year or older, who had lived in the Caribbean or in Central or South America within the past 3 years and had not been tested or treated for intestinal parasites since arrival in the United States, were examined. Single stool specimens were examined by the formalin-ether concentration technique. Nineteen (51%) of the 37 specimens contained at least 1 intestinal pathogen. Seventeen of these patients were treated. (The relative frequency of each species is shown in Table 2). The overall rate of 51% for intestinal

TABLE 2. Pathogenic parasites in single, fresh stool specimen from each of 37 children, New York City, November 1, 1977—October 31, 1978

Pathogen	Number	Positive specimens	
			Percentage ^a
<i>Giardia lamblia</i>	10		27.0
<i>Dientamoeba fragilis</i>	5		13.5
<i>Entamoeba histolytica</i>	3		8.1
<i>Ascaris lumbricoides</i>	3		8.1
Hookworm	1		2.7
<i>Trichuris trichiura</i>	3		8.1
Total	25		67.5

Intestinal Parasites – Continued

pathogens among this pilot study exceeded the rate for the general clientele of the tropical disease clinic (38.2%). Family members of the infected children in the pilot study were invited to have stools examined, and all the infected persons were appropriately treated.

Reported by SN Rosenberg, MD, MPH, CC Wang, MD, RR Pflug, RN, New York City Dept of Health; Parasitic Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: Intestinal parasitic infections are frequently seen throughout the United States and in most foreign countries (1,2). Immigration of persons from countries where intestinal parasites are more prevalent than in the United States often raises concern about the potential for the transmission of these organisms at both the personal and community level (3). Although the infection rates reported here are higher than those found in most U.S. communities, infections with helminths such as *Ascaris*, hookworm, and *Trichuris* do not pose a significant public health hazard under most conditions. Eggs of these parasites require a 1- to 2-week incubation period in the soil before becoming infective. Since most immigrants in this country live and work in areas where adequate sewage disposal is available, the community is not exposed to infective eggs.

Cysts of protozoa (such as *Giardia* and *Entamoeba histolytica*) require no incubation period outside the host to develop into an infective stage. Therefore, they are directly transmissible by the fecal-oral route and do represent a potential health hazard. However, the risk of transmission is small among persons who practice good personal hygiene. Of the protozoa found in this study, *E. histolytica* has the potential for causing the greatest morbidity and should be treated promptly when detected.

References

1. Arnold K: Trends in the development of chemotherapy for parasitic diseases. Southeast Asian J Trop Med Public Health 9:177-185, 1978
2. CDC: Intestinal Parasite Surveillance Annual Summary 1977. Atlanta, CDC, 1978
3. MMWR 24:398, 1975

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