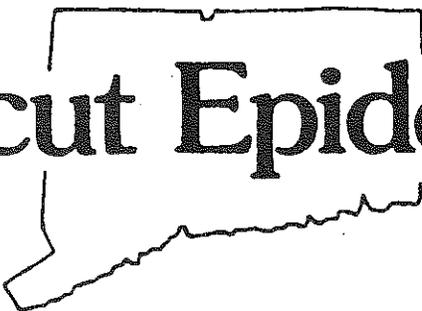


# Connecticut Epidemiologist



STATE OF CONNECTICUT DEPARTMENT OF HEALTH SERVICES

1984

Douglas S. Lloyd, M.D., M.P.H., Commissioner

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## UPDATE - LYME DISEASE

Lyme Disease is a systemic, tick-borne illness that usually occurs during the summer. First recognized in Lyme, Connecticut, it is endemic in the southeastern part of the state. With the advent of the tick season, public health officials and practitioners should be aware of the recent advances in the epidemiology, microbiology and treatment of this disease (1).

The characteristic skin lesion, erythema chronicum migrans (ECM), is frequently accompanied by non-specific constitutional symptoms. Some patients subsequently develop arthritis, neurologic or cardiac complications weeks to months after the initial lesion. The arthritis is intermittent and usually affects large joints. Neurologic manifestations include Bell's palsy, meningoencephalitis and peripheral neuritis; cardiac manifestations include myocarditis and atrioventricular conduction defects.

Early treatment with tetracycline, penicillin, or erythromycin has been shown to shorten the duration of ECM and to prevent or ameliorate late complications of the disease. Currently, oral tetracycline, 250 mg. four times a day for 10 days, is considered the preferred treatment (2). Longer or higher dose therapy or parenteral penicillin may be necessary for patients with more severe disease. The role of antibiotic therapy for the late arthritis phase of the disease is still being studied.

## SURVEILLANCE ACTIVITIES

Data from the Centers for Disease Control collected in cooperation with state health departments indicates that Lyme Disease is increasing in frequency. In 1980 and 1982, 226 and 487 cases respectively were reported through this voluntary surveillance system. Among cases occurring in individuals from Connecticut, 52 were reported in 1980 (23%) and 134 in 1982 (27.5%) (3). These numbers include only those individuals seen by Dr. Allen Steere through the Lyme Disease Clinic, Department of Rheumatology, Yale-New Haven Hospital since the Connecticut Department of Health Services was not conducting surveillance at that time.

This summer, the State of Connecticut Department of Health Services is establishing surveillance of Lyme Disease in order to establish population-based estimates of its occurrence in both endemic areas of the state and areas which have not previously reported activity. We are asking physicians who diagnose cases to report them either by telephone to the Epidemiology Program (566-5058) or through the mail using the communicable disease report form. This is the first time that attempts will be made to determine the true incidence of Lyme Disease in

Connecticut. Early studies suggested that the incidence was 2.8/1,000 residents on the east side of the Connecticut River (4). Prevalence studies from 1972-1975 provided a point prevalence rate of 4.3 cases/1,000 residents in Old Lyme, Lyme, and East Haddam (4). These figures may underestimate the actual occurrence of disease. These studies were done prior to our understanding of the variety of clinical presentations of Lyme Disease or of the geographic distribution and infection rates of the disease vector, *Ixodes dammini*.

Through our surveillance program, we hope to acquire a better understanding of this disease, its incidence and cause. In addition, the sensitivity and specificity of present serologic methods will be evaluated. At the end of one year, we will reassess the need for some form of continuing surveillance.

## DIAGNOSIS

Diagnosis is primarily based on clinical criteria. In endemic areas, the diagnosis can usually be made on the basis of the characteristic ECM lesion and associated symptoms. However, atypical cases, cases presenting with only late manifestations, or cases occurring outside previously recognized endemic areas may be difficult to diagnose. Several laboratories have developed serologic tests that can aid in confirming the diagnosis. It must be emphasized, however, that all of these tests are experimental and none have been standardized to date. For the past few years, the Connecticut Agricultural Experiment Station has provided testing of specimens submitted to them through the state laboratory. They have agreed to continue to provide this test in conjunction with surveillance activities of the Epidemiology Section. During 1982-1983, they tested samples from 513 individuals and detected antibodies in sera of 147 (28.6%). It is difficult to interpret this data because clinical information was lacking in most cases. This year, however, each specimen will be followed up by the Epidemiology Program personnel to obtain specific clinical information on the case. Specimens will be tested once a week and reports will be telephoned to the requesting physician by an Epidemiology staff member on Monday of the following week. All reporting will be done through the Epidemiology Program.

The research test developed by the Connecticut Agricultural Experiment Station is an indirect immunofluorescence assay (IFA) which measures IgG class antibodies against the spirochete isolated from an *Ixodes dammini* tick. A titer of  $\geq 128$  is considered diagnostic. (Tests developed in other laboratories may use different criteria.) Attempts will be made this summer to determine the sensitivity and specificity of this test. Serologic response may be aborted by early antibiotic treatment or absent for pat-

ients with ECM alone. Therefore, a negative result cannot exclude the diagnosis of Lyme Disease.

The State Department of Health Services will also collaborate with the Centers for Disease Control in studies to determine the proportion of aseptic meningitis which may be attributable to Lyme Disease. Paired serum specimens submitted to the virology laboratory for routine testing will be submitted to the CDC for further testing if 1) the individual has a diagnosis or symptoms compatible with aseptic meningitis and 2) no etiologic agent is identified.

#### CASE CRITERIA

The following criteria have been adopted to classify cases of Lyme Disease for epidemiologic purposes.

##### Definite Case

1. ECM with or without tick exposure occurring no more than 30 days prior to onset of ECM.

ECM: A red macule or papule, usually in summer, that expands to form a large annular lesion as much as 50 cm in diameter; usually accompanied by headache, stiff neck, fever, or malaise. Subsequent multiple lesions may occur.

2. If ECM is absent, characteristic involvement of one of the three other systems (i.e., nervous system, cardiovascular system, or joint involvement) in a patient recently exposed to a known geographic area of disease and a significant serologic response ( $\geq 1:128$ ) in a single or paired sera or a history of ECM in the past.

Nervous System: Fluctuating degrees of meningoencephalitis often accompanied by cranial or peripheral neuritis, almost always in summer or early fall.

Heart: High degree of atrioventricular block, sometimes accompanied by evidence of myocarditis, almost always in summer or early fall.

Joint: Short but recurrent attacks of migratory polyarthritis or oligoarticular arthritis.

##### Probable Case

In absence of ECM, involvement of at least two of three organ systems or involvement of one organ system and history of a tick bite.

##### Possible Case

Any other case reported as Lyme Disease.

#### ENTOMOLOGIC STUDIES

The Connecticut Agricultural Experiment Station has conducted research on the *Ixodes* tick since 1976. Although *I. dammini* is widely distributed throughout southern Connecticut, populations are most abundant east of the Connecticut River. Infected ticks were found in the following communities: Chester, East Haddam, East Lyme, Haddam, Hamden, Lyme, Marlborough, North Guilford, North Madison, Northford, Voluntown, Waterford, and Westbrook (Figure 1) (5). Approximately 30-40% of ticks tested were infected with the spirochete. In high prevalence areas, the probability of a tick being infected is 1:2 (6).

Research is currently directed at evaluating the role of various mammalian and avian hosts as reservoirs for spirochetes and identifying insecticides that will control this tick.

#### PUBLIC INFORMATION

The State Department of Health Services WILL provide information to the public and the medical community regarding Lyme Disease. All requests for

information should be made to the Epidemiology Program, 566-5058.

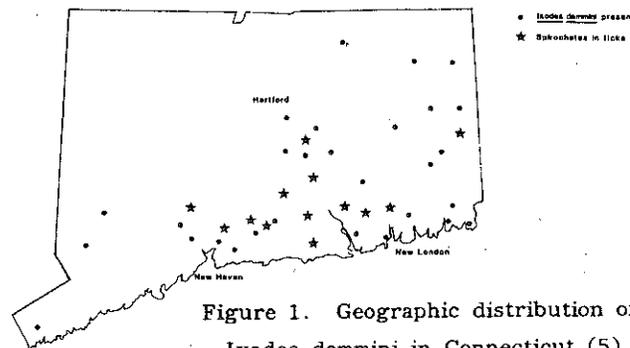


Figure 1. Geographic distribution of *Ixodes dammini* in Connecticut (5).

#### REFERENCES

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2. Steere, AC, Hutchinson GJ, Rahn DW et al. Treatment of the early manifestations of Lyme Disease. Ann Intern Med 1983; 99:22-6.
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4. Steere AC, Malawista SE, Snyderman DR, et al. Lyme arthritis: an epidemic of oligoarticular arthritis in children and adults in three Connecticut communities. Arthritis and Rheumatism 1977; 20: 7-17.
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#### CHEST X-RAY CRITERIA STATEMENT\*

Five chest x-ray referral criteria statements have been developed and unanimously endorsed by a panel of physicians convened as part of a cooperative effort with FDA's National Center for Devices and Radiological Health (NCDRH) (1).

A panel, consisting of physicians representing the specialties of radiology, thoracic medicine, family practice, epidemiology, occupational medicine, and internal medicine, was formed to review data on chest x-ray examinations. Approximately 45% of all x-ray examinations involve the chest, at an annual cost of approximately \$2 billion. Many of these examinations are likely to be performed on asymptomatic subjects and are usually the most common studies mandated by government, industry, and hospital policy.

#### CRITERIA STATEMENTS

After an extensive assessment of the efficacy of chest x-ray screening programs, the Chest X-ray Panel concluded that "the yield of unsuspected disease (e.g., lung cancer, heart disease, and tuberculosis) found by routine screening chest x-ray examinations of unselected populations, not based on history, physical examination, or specific diagnostic testing, has been shown to be of insufficient clinical value to justify the monetary cost, added radiation exposure, and subject inconvenience of the examination."

\*Reproduced from FDA Drug Bulletin, August, 1983, Vol. 13, No. 2.

The following excerpts from the panel's referral criteria statements are presented as recommendations to assist health practitioners and other providers in making decisions about the use of chest x-rays for the screening of asymptomatic disease:

1. All mandated routine screening examinations of unselected populations should be discontinued unless a significant yield can be shown.
2. All routine prenatal chest x-ray screening examinations for the detection of unsuspected disease should be discontinued.
3. Routine chest radiographs should not be required solely because of hospital admission.
4. Mandated chest x-ray examinations for employment, repeated chest x-ray examinations upon long-term facility admission, repeated chest x-ray examinations of tuberculosis reactors, repeated chest x-ray examination of asymptomatic tuberculosis patients who have completed therapy, and routine periodic chest x-ray examinations during tuberculosis treatment have all been shown to be of insufficient clinical value to justify continued use.
5. Routine non-selective preplacement chest x-ray examinations and periodic examinations unrelated to job exposure should be discontinued.

It should be emphasized that these statements do not preclude chest x-ray examinations based upon individual history, physical examination, or specific diagnostic testing, or in selected populations shown to have significant yields of previously undiagnosed disease.

#### OTHER EFFORTS TO REDUCE UNPRODUCTIVE CHEST X-RAY SCREENING

In 1980, the Surgeon General announced that he was recommending the discontinuation of routine chest x-ray examinations for Public Health Service (PHS) employees. The American Cancer Society recently discontinued its recommendation for annual chest x-ray examinations of asymptomatic subjects because no improvement in cancer mortality resulted from this practice (2). The Blue Cross and Blue Shield Association has eliminated payments for hospital admission chest x-ray examinations when not specifically requested by a physician.

#### ORGANIZATIONAL REVIEW

The chest x-ray screening referral criteria statements have been reviewed by 19 medical organizations. The following organizations are among the many that have endorsed the Chest X-ray Panel statements: The American Academy of Family Physicians, The American College of Radiology, the American College of Obstetricians and Gynecologists, the American Occupational Medical Association, and the American Thoracic Society.

A report titled "The Selection of Patients for X-ray Examinations: Chest X-ray Screening Examinations" is available. Requests for copies should be directed to the Pulmonary Disease Control Program, 566-3099.

#### REFERENCES

1. Department of Health, Education, and Welfare. Bureau of Radiological Health. National Conference on referral criteria for x-ray examinations. HEW Publication (FDA) 79-8083, April 1979.
2. American Cancer Society. ACS report on the cancer-related health checkup: cancer of the lung. CA-A Cancer J Clinicians July/ August 1980; 30: 199-207.

## PROTECTING THE HEALTH OF INTERNATIONAL TRAVELERS

Physicians can protect the health of their patients who travel abroad. They should plan with them, well ahead of departure, to provide the appropriate required and recommended immunizations, and malaria chemoprophylaxis, if indicated.

### REQUIRED IMMUNIZATION

Yellow fever immunization is required by some tropical countries as a prerequisite for entry for certain travelers. It is required by some West African countries for all arriving travelers, and by many other countries for travelers arriving from a yellow fever endemic zone (tropical Africa and tropical South America).

Cholera immunization is no longer required by International Health Regulations, nevertheless, some countries (mainly in Africa and Asia) still require cholera immunization as a prerequisite for entry for travelers arriving from a cholera infected area.

Smallpox has been eradicated from the world, thus, small pox immunization is no longer required for international travel.

No immunizations are required for return to the United States.

### RECOMMENDED IMMUNIZATIONS

Immunizations that are commonly recommended (but not required) for international travelers, particularly travelers to areas of the world where sanitation is doubtful or poor, include typhoid, poliomyelitis, and immune globulin (to prevent hepatitis A). Measles immunization is generally recommended for all travelers who were born after 1956 who have no evidence of immunity. Rubella immunization is recommended particularly for female travelers of childbearing age who lack evidence of rubella immunity. Note that pregnancy is a contraindication to receiving measles and rubella vaccines. Tetanus-diphtheria booster immunizations are recommended for adults every ten years (whether they travel or not).

Other immunizations may be recommended for international travelers, depending on the countries visited, the mode of travel and lifestyle, and the length of stay. They include rabies, plague, Japanese encephalitis, hepatitis B, and meningococcal polysaccharide vaccines.

Appropriate warnings and contraindications should be observed for all immunizations.

### MALARIA CHEMOPROPHYLAXIS

Malaria is known to exist in parts of Mexico, Haiti, Central and South America, Africa, and the Middle East, Turkey, the Indian subcontinent, Southeast Asia, the People Republic of China, the Malay Archipelago, and Oceania. The risk of acquiring malaria is not uniform from country to country, or even within countries, and depends on local conditions. Travelers to malarious areas can greatly reduce their risk by taking appropriate antimalarial drugs.

### FURTHER INFORMATION

Further information may be obtained from the Department of Health Services, Immunization Program at 566-4141 and from HHS Publications No. (CDC) 83-8280, "Health Information for International Travel" which is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

REPORTED MORBIDITY - May, 1984

	AMEBIASIS	BOTULISM	BRUCELLOSIS	ENCEPHALITIS (TOTAL)	Primary	Post	FOODBORNE OUTBREAKS	GONORRHEA	HEPATITIS A	HEPATITIS B	HEPATITIS NON A NON B	HEPATITIS UNSPECIFIED	LEGIONELLOSIS	LEPROSY	MALARIA	MEASLES	MENINGITIS (All Types)	Aseptic	Hemophilus influenzae	Meningococcal	Other	MUMPS	PERTUSSIS	PSITTACOSIS	RABIES IN ANIMALS	REYE'S SYNDROME	ROCKY MT. SPOTTED FEVER	RUBELLA	SALMONELLA	SHIGELLA	SYPHILIS	TUBERCULOSIS (TOTAL)	Pulmonary	Other	TYPHOID FEVER
Total for May	8	0	0	2	2	0	2	810	9	34	4	0	2	0	1	7	11	1	3	2	5	0	0	0	1	0	0	0	71	8	17	19	12	7	0
Cumulative 1984	21	0	0	6	6	0	4	4506	19	140	10	9	7	0	6	9	64	6	15	24	19	8	0	1	1	0	0	243	42	85	63	46	17	1	
Cumulative 1983	6	0	0	6	6	0	3	3456	22	165	23	4	21	1	4	2	82	10	22	28	22	11	0	0	0	0	0	290	104	80	55	42	13	0	

AIDS Cases Per Million Population, by Standard Metropolitan Statistical Area (SMSA) of Residence, Reported from June 1, 1981 to June 18, 1984  
United States

SMSA of Residence	Cases	Percentage of Total	Cases per Million Population
New York, NY	1881	38.7	206.2
San Francisco, CA	561	11.5	172.6
Miami, FL	193	4.0	118.7
Newark, NJ	140	2.9	71.2
Los Angeles, CA	401	8.2	53.6
Elsewhere, USA	1685	34.7	8.3
Connecticut	57	1.2	17.9
Total - United States	4861	100.0	21.5

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