

# LYME DISEASE SURVEILLANCE SUMMARY



BACTERIAL ZOOONOSES BRANCH  
DIVISION OF VECTOR-BORNE  
INFECTIOUS DISEASES  
CENTER FOR INFECTIOUS DISEASES  
CENTERS FOR DISEASE CONTROL

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## UPDATE ON REPORTED CASES OF LYME DISEASE IN 1989.

Thanks are given to all of you who reported updated 1989 Lyme disease case counts. The revised data from 1986-1989 are shown in Table 1. The total number of reported cases for 1989 increased to 8,304. Regional trends for the Northeast, mid-Atlantic, mid-West and Pacific states compared to the Central and Mountain states are shown in Figure 1.

In the course of gathering these data, a number of State Epidemiologists expressed concern about the reporting of "cases" from their states which were contracted elsewhere. We suggest the following possible solution. When presenting data on LD cases in tabular form in the Lyme Disease Surveillance Summary or in Morbidity and Mortality Weekly Report articles or other publications, we will present data as follows: the total number of cases diagnosed in the state and secondly, in parentheses, the number of cases thought to be indigenous. It does not appear to be possible to make this distinction in MMWR weekly tabular data reported through the National Electronic Telecommunication System for Surveillance (NETSS).

## NOTES ON NATIONAL REPORTING OF LYME DISEASE CASES.

Lyme disease will be nationally reportable officially through NETSS to MMWR on January 1, 1991. We are presently planning with the Center for Disease Control Epidemiology Program Office (CDC/EPO) to take advantage of a new feature called "Relational Enter" which is scheduled to be available in January. This program will allow 2 computer screens of case report data to replace the presently used handwritten forms. The data entry program currently in use for NETSS will be changed to "ADABAS" and a data analysis program called "WONDER" will become available. "WONDER" will allow each state to perform statistical analyses of its own data for diseases reported to CDC and will allow appropriate Divisions at CDC to analyze national data sets for reportable diseases.

Meanwhile, reporting of Lyme disease case numbers on NETSS has already begun in a few states. We would encourage all states to begin reporting case numbers for 1990 on NETSS as soon as possible this year. A new case report form is ready for mailing to

health agencies upon request. This form is shorter than the previous one and is adapted for computerized reporting using "Relational Enter." Case report data from states for 1990 can be sent to the CDC/BZB, Fort Collins, on EPI INFO disks or on paper forms as in 1989. Code numbers for reporting Lyme disease cases using NETSS can be obtained from Norma Gibbs at EPO, CDC Atlanta (404) 639-3761. A copy of the new case report form (Table 2) is attached.

## **LYME DISEASE IN CONNECTICUT**

The annual number of reported Lyme disease cases has increased from 460 cases in 1984 to 774 cases in 1989, since the Connecticut Department of Health Services (CDHS) began surveillance for this disease. This increase may be related, in part, to the methods by which reports were collected.

In 1989, follow-up questionnaires were sent to physicians who reported a case of Lyme disease without supplying clinical information. Of the 1269 cases that were reported to the CDHS, 774 met the surveillance case definition. Erythema migrans (EM) occurred in 540 (70%) cases and 234 (30%) cases presented with a systemic manifestation and a positive serologic test for antibody to Borrelia burgdorferi. Of the 234 cases without EM but with a systemic manifestation, arthritic symptoms occurred in 155 (67%), neurologic manifestations occurred in 102 (44%) and cardiac complications occurred in 16 (7%) of the cases. Some cases had more than one systemic manifestation. The 495 reports submitted by physicians without clinical information were not counted as cases. Onset dates were provided for 671 (87%) of the reported cases. While cases were reported throughout the year, 416 (62%) cases reported symptom onset during the summer months of June and July.

As in past years, cases for 1989 were equally distributed among males (51%) and females (49%). Age-specific incidence rates for all reported cases were calculated by 10-year age groups. The incidence ranged from 15 per 100,000 population for persons 20-29 years of age to 40 per 100,000 population for those 0-9 years of age.

In 1989, the overall incidence for Connecticut was 23 per 100,000 population. As in past years, the highest rates were among residents of New London and Middlesex counties. Town-specific incidence ranged from zero to 815 per 100,000 population.

Lyme disease is a statewide problem. Consistent reporting by physicians over several years will be necessary for data from the current surveillance system to be useful for evaluating trends.

## Deer and Lyme Disease in Connecticut.

During the 1989 fall deer hunting season, Connecticut scientists from the Agricultural Experiment Station studied blood samples obtained from deer killed and brought by hunters to 4 of 11 deer check stations in the state. Of 108 serum specimens, 27 (25%) showed evidence of current or past infections. Infected deer were found from Windham, New London, Litchfield, and Hartford Counties. In the past, human cases have occurred infrequently in Litchfield and Windham Counties.

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Connecticut data were excerpted with permission from "Connecticut Epidemiologist" edited by Matthew L. Carter, M.D.

## LYME DISEASE - U.S. NAVY AND U.S. MARINE CORPS, 1989.

During 1989, 99 LD cases were reported by DAR (Disease Alert Report System). This is a twelve-fold increase from the 8 cases reported in 1988. Case reporting prior to 1989 is incomplete since LD only became a DAR notifiable disease in November 1988.

Ten patients (10%) had onset during previous years and 89 (90%) had onset in 1989. Peak onset of illness occurred during the late spring and summer months in 1989.

Of the 89 patients who became ill in 1989, 61 (69%) were male; 63 (71%) were white, 5 (6%) were black, 4 (4%) were another race, and 17 (19%) were of unrecorded race. Median age of patients was 28 years (range: 1-67 years). Forty-four (49%) patients were active duty members.

In 1989, 42 LD cases (5.4 cases per 100,000 population) were active duty members of the naval forces; 23 were sailors (4.0 cases per 100,000) and 19 were Marines (9.8 cases per 100,000). Active duty patients were all male with median age of 26 years (range: 17-45 years).

For 85 (96%) of 89 LD cases in 1989, the report noted a state in which the infection was presumably acquired (Figure 3). LD cases acquired in Connecticut and Rhode Island (26 and 16 cases respectively) occurred predominately among non-active duty patients. In contrast, 80% of LD cases acquired in North Carolina (12 of 15 cases) and Virginia (8 of 10 cases) were among active duty sailors or Marines. Of the 20 LD cases among active duty members in North Carolina or Virginia, 90% were Marines; 75% were linked with exposures during field operations or training, primarily at Marine Corps Base, Camp Lejeune, North Carolina or Marine Corps Combat Development Center, Quantico, Virginia.

Clinical presentations among the 89 LD cases included: erythema migrans (EM) lesion in 40% of patients; joint symptoms in 28%; and both an EM lesion and joint symptoms

in 7%. A serologic test result was reported for 83 (93%) patients; 73 patients had a positive serologic test including all patients who had joint symptoms without an EM lesion and all patients without well-described clinical presentations. The 10 patients with a negative serologic test and all 6 patients without a report of a serologic test had a reported EM lesion. Most of the LD cases were diagnosed and treated with antibiotics as outpatients.

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### **ENTOMOLOGY-ECOLOGY NOTES: MODIFICATION OF EAR PUNCH BIOPSY PROCEDURE FOR DETECTING BORRELIA BURGDORFERI IN RODENTS.**

The Medical Entomology-Ecology Branch of the Division of Vector-Borne Infectious Diseases, CDC, has modified the ear punch biopsy procedure for the detection of Borrelia burgdorferi in rodents originally described by Sinsky & Piesman 1989 (Journal of Clinical Microbiology 27:1723-27). In order to diminish problems with contamination, wedges of skin taken from the rodent's ear are rinsed in 70% ethanol and then soaked for 15 min in 10% chlorox or Wescodyne (3 oz per 5 gal distilled water) solution. The skin is then rinsed again in 70% alcohol, cut into small pieces and placed in 4 ml of modified BSK in snap cap tubes (12x75 mm roundbottom). We have been successful in recovering spirochetes from freshly collected specimens as well as those frozen at -70°C. Those interested in submitting specimens from field collected rodents should contact Dr. Joseph Piesman, (303) 221-6408, or Mrs. Christine Happ, (303) 221-6470.

Another high priority effort of the DVVID is to detect Lyme disease spirochetes in pools of ticks submitted from areas where the tick infection rate is low. We are currently developing a polymerase chain reaction test that will be sensitive and specific for the detection of B. burgdorferi in ticks. This test is still in the development phase.

### **NEW STAFF MEDICAL OFFICERS AT BZB**

During July and August, we are welcoming two new medical officers to the Epidemiology Section of BZB--Dr. Roy Campbell and Dr. Bill Paul. Dr. Campbell joins our career medical staff after completing work for his Ph.D. in Epidemiology from Berkeley, where his research focused on vector-borne infectious diseases. Dr. Paul, who has an MPH from the University of Illinois, has completed residency training in Internal Medicine and has accepted a two-year assignment here as an Epidemic Intelligence Service Officer. Both Drs. Campbell and Paul will be involved primarily with the epidemiology of Lyme disease.

## INAUGURATION OF THE CALLER-INTERACTIVE LYME DISEASE HOTLINE

The Lyme disease public information phone line went into service on July 27. The system must be accessed from a touch-tone phone to allow selection of a topic from the menu provided. There are six tapes available for selection with the following topics:

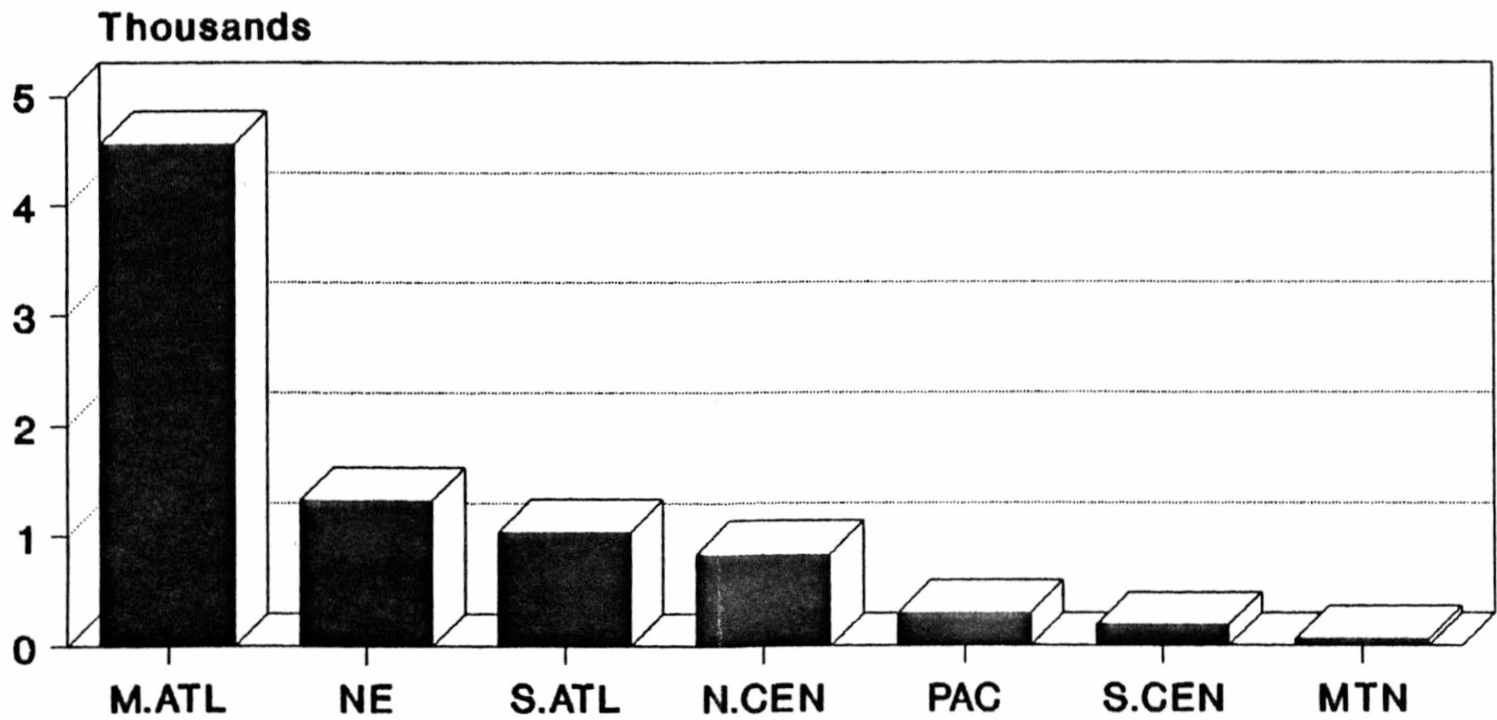
1. General facts about Lyme disease and how it is transmitted.
2. A description of acute Lyme disease symptoms and diagnosis.
3. A description of chronic Lyme disease problems such as arthritis and nervous system disorders.
4. Treatment information.
5. Prevention of Lyme disease.
6. Lyme disease in pregnancy and in nursing mothers.

The Hotline Number is **404-332-4555**. There is a toll charge by the caller's telephone company, but no **user** charge. Please feel free to publicize this number in your area.

## FIRST NATIONAL CONFERENCE ON LABORATORY TESTING FOR LYME DISEASE.

As noted in the first issue of LDSS, four state Public Health Laboratories and the Lyme Disease Reference Diagnostic Laboratory are performing a comparative study to evaluate commercially available Lyme disease test kits. A conference to present and discuss the results of this study as well as other issues related to Lyme disease testing is being co-sponsored by CDC, the Food and Drug Administration (FDA) and the Association of State and Territorial Public Health Laboratory Directors (ASTPHLD). The meeting will be held November 1 and 2, 1990, at the Hyatt Regency Hotel in Dearborn, Michigan. Details on program and registration will be available soon.

# REPORTED ETIOLIC DISEASE CASES 1989 CASES BY FEDERAL REGIONS



REPORTED CASES OF LYME DISEASE - UNITED STATES - 1986-1989

STATE	1986	1987	1988	1989	TOTAL	INCID_89
ALABAMA	1	1	1	25	28	0.61
ALASKA	0	0	0	0	0	0.00
ARIZONA	0	0	0	0	0	0.00
ARKANSAS	1	2	12	7	22	0.29
CALIFORNIA	107	182	NR	254	543	0.92
COLORADO	0	0	2	1	3	0.03
CONNECTICUT	NS	215	362	774	1351	24.10
DELAWARE	0	6	4	25	35	3.88
DIST. OF COLUMBIA	0	0	0	1	1	0.16
FLORIDA	0	1	0	6	7	0.05
GEORGIA	2	4	53	715	774	11.49
HAWAII	0	0	0	1	1	0.09
IDAHO	0	0	1	42	43	4.21
ILLINOIS	0	6	5	79	90	0.68
INDIANA	1	3	0	6	10	0.11
IOWA	1	4	15	3	23	0.11
KANSAS	0	1	0	15	16	0.61
KENTUCKY	0	3	5	21	29	0.56
LOUISIANA	0	0	2	2	4	0.04
MAINE	4	0	1	3	8	0.25
MARYLAND	15	27	66	138	246	3.04
MASSACHUSETTS	163	95	80	129	467	2.20
MICHIGAN	0	4	21	141	166	1.53
MINNESOTA	94	94	67	92	347	2.17
MISSISSIPPI	0	0	6	7	13	0.27
MISSOURI	1	4	0	107	112	2.10
MONTANA	0	0	0	0	0	0.00
NEBRASKA	0	0	0	0	0	0.00
NEVADA	0	0	0	7	7	0.70
NEW HAMPSHIRE	7	0	8	3	18	0.28
NEW JERSEY	219	257	500	680	1656	8.86
NEW MEXICO	0	0	0	5	5	0.33
NEW YORK	482	877	2637	3224	7220	18.09
NORTH CAROLINA	6	2	19	61	88	0.95
NORTH DAKOTA	0	0	1	13	14	1.93
OHIO	2	14	39	99	154	0.95
OKLAHOMA	2	2	4	16	24	0.49
OREGON	10	19	4	5	38	0.18
PENNSYLVANIA	31	65	306	654	1056	5.48
RHODE ISLAND	57	74	121	415	667	42.09
SOUTH CAROLINA	3	3	10	18	34	0.53
SOUTH DAKOTA	0	2	2	3	7	0.42
TENNESSEE	1	1	13	30	45	0.62
TEXAS	8	33	18	82	141	0.49
UTAH	1	0	2	3	6	0.18
VERMONT	0	0	1	1	2	0.18
VIRGINIA	7	27	25	54	113	0.91
WASHINGTON	0	8	9	38	55	0.84
WEST VIRGINIA	0	0	5	15	20	1.05
WISCONSIN	162	358	246	278	1044	5.78
WYOMING	0	0	0	6	6	1.22
TOTAL	1388	2394	4673	8304	16757	0.00

NS = NO SURVEILLANCE

NR = NO REPORT

LYME DISEASE CASE REPORT FORM

Patient's last name \_\_\_\_\_ First name \_\_\_\_\_ Tele.No. (\_\_\_\_) \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

Detach before sending to CDC

State \_\_\_\_\_ County \_\_\_\_\_ Zip \_\_\_\_\_

Age (yrs.) \_\_\_\_\_ Sex  M  F  Unspec. Race  Amer. Indian/Eskimo  Asian/Pacific Isl.  Black  White  Unknown Ethnicity  Hispanic  Non Hisp.  Unknown

SYMPTOMS AND SIGNS OF CURRENT EPISODE (PLEASE MARK EACH QUESTION):

**DERMATOLOGIC:**  
Erythema migrans (physician diagnosed EM at least 5 cm in diameter)? \_\_\_\_\_ [Y] [N] [?]

**RHEUMATOLOGIC:**  
Arthritis characterized by brief attacks of swelling in one or a few joints? \_\_\_\_\_ [Y] [N] [?]

**NEUROLOGIC:**  
Bell's palsy or other cranial neuritis? \_\_\_\_\_ [Y] [N] [?]  
Radiculoneuropathy? \_\_\_\_\_ [Y] [N] [?]  
Lymphocytic meningitis? \_\_\_\_\_ [Y] [N] [?]  
Encephalitis/Encephalomyelitis? \_\_\_\_\_ [Y] [N] [?]  
Antibody to B. burgdorferi higher in CSF than serum? \_\_\_\_\_ [Y] [N] [?] or not tested [ ]

**CARDIOLOGIC:**  
2nd or 3rd degree atrioventricular block? \_\_\_\_\_ [Y] [N] [?]

Other clinical: \_\_\_\_\_

Date of onset of first symptoms:   /  /   mo dy yr Date of diagnosis:   /  /   mo dy yr Date of report to health agency   /  /   mo dy yr

OTHER HISTORY

Was the patient hospitalized for the current episode? \_\_\_\_\_ [Y] [N] [?]

Name of antibiotic(s) used this episode? \_\_\_\_\_ Use in days \_\_\_\_\_

Was the patient pregnant at the time of illness? \_\_\_\_\_ [Y] [N] [?]

Where was the patient most likely exposed? County \_\_\_\_\_ State \_\_\_\_\_

LABORATORY RESULTS

	Positive	Negative	Equivocal	Not done/Unknown
Serologic test results:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Culture results:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Physician's name \_\_\_\_\_ Person completing form \_\_\_\_\_  
(if not the same)

Address \_\_\_\_\_ Address \_\_\_\_\_

Telephone Number (\_\_\_\_) \_\_\_\_\_ Telephone Number (\_\_\_\_) \_\_\_\_\_

FOR INTERNAL USE ONLY

State ID No.

CDC ID No.

Date Reported to CDC   /  /   mo dy yr