

CONNECTICUT EPIDEMIOLOGIST

State of Connecticut Department of Public Health and Addiction Services
Epidemiology Section, Susan S. Addiss, MPH, MURs, Commissioner

July 1993

Volume 13 No. 3

LYME DISEASE UPDATE

Lyme Disease (LD) has become the most commonly reported tickborne illness in the United States (1). National surveillance for LD was established by the Centers for Disease Control in 1982. The number of reported cases has increased from 491 in 1982 to 9,677 in 1992. In 1992, 87% of cases were reported from nine states: New York, New Jersey, Wisconsin, Connecticut, Pennsylvania, Rhode Island, California, Massachusetts, and Minnesota.

In Connecticut, the Department of Public Health and Addiction Services (DPHAS) has been conducting surveillance for LD since 1984, although the disease did not become officially reportable until July 1987 (2). DPHAS began an active LD surveillance study in November 1991, under a cooperative agreement with the Centers for Disease Control. The active surveillance study, which will continue through December 1993, is focused on the 12-town area around Lyme, Connecticut (Old Lyme, Lyme, East Haddam, Old Saybrook, Essex, Deep River, Chester, Haddam, Westbrook, Clinton, Killingworth, and Madison) and on Litchfield County. Other parts of the state are covered by the regular passive, physician-based surveillance system.

In Connecticut, only LD case reports that meet the surveillance case definition for LD adopted by the Council of State and Territorial Epidemiologists in 1990 are counted as cases (3). The surveillance case definition was developed for state and national reporting of Lyme disease and is not appropriate for clinical diagnosis. Follow-up questionnaires are sent to physicians who

report a case of LD without supplying clinical information. Reports without clinical information are not counted as cases.

Of the 2,806 LD reports received by DPHAS in 1992, 1760 (63%) met the surveillance case definition. One thousand four hundred thirty-eight (51%) were reports of erythema migrans (EM). Of the 1,368 non-EM reports, 322 (24%) had one or more systemic manifestations and a positive serologic test for antibody to *Borrelia burgdorferi* and thus met the surveillance case definition. Arthritic symptoms occurred in 213 (66%), neurologic manifestations occurred in 139 (43%), and cardiac complications occurred in 5 (2%). The remaining 1,046 reports contained either insufficient (68%) or no (32%) clinical information.

In 1992, Connecticut had a rate of 54 cases per 100,000 population, the highest rate reported in the United States in 1992 (1). As in past years, the highest rates in the state were among residents of Middlesex and New London Counties (Table 1). Cases were reported among residents of 138 of the state's 169 towns and cities. Town-specific incidence ranged from zero to 1,469 per 100,000 population (Figure 1).

REFERENCES

1. CDC. Lyme disease surveillance - United States, 1990-1991. *MMWR*, 1993;42:345-8.
2. Cartter ML, Mshar P, Hadler JL. The epidemiology of Lyme disease in Connecticut. *Conn Med* 1989;53:320-3.
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Reported Lyme Disease Case Rates By Town

Per 100,000 population, Connecticut 1992

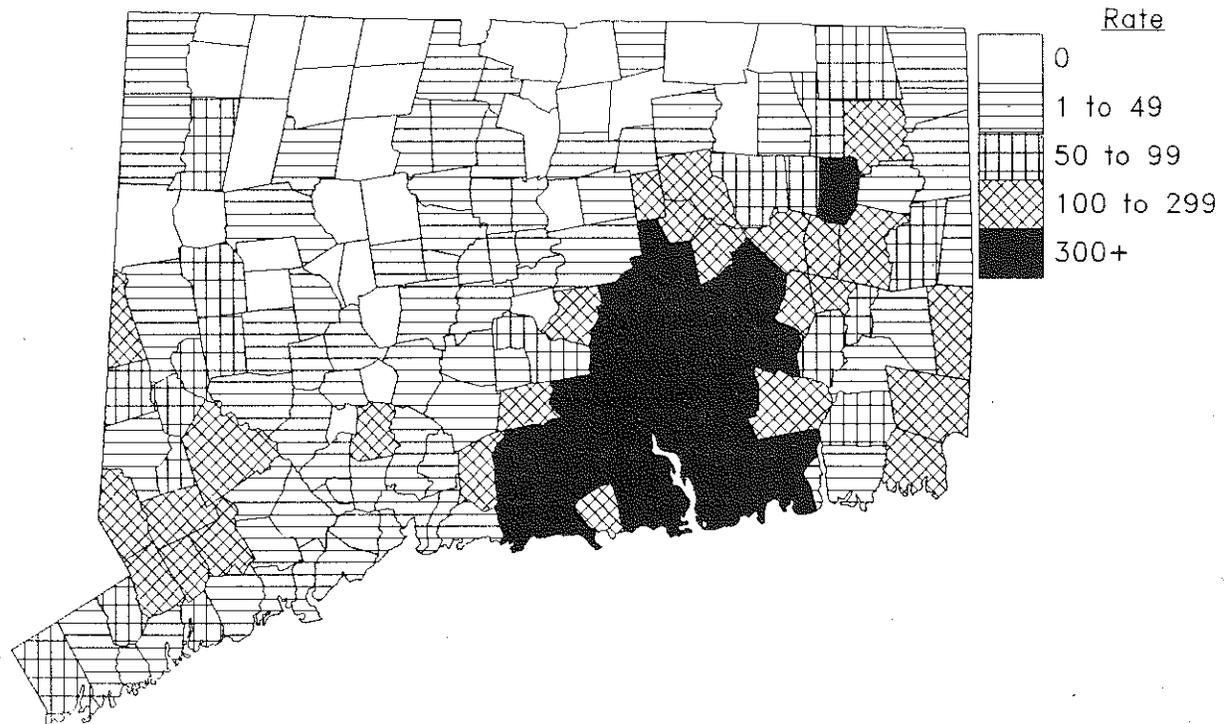


Table 1.
Reported Lyme Disease Cases by County
Connecticut, 1991-1992

County	1991		1992	
	Cases	Rate*	Cases	Rate*
Fairfield	234	28.3	346	41.8
Hartford	74	8.7	73	8.6
Litchfield	24	13.8	25	14.4
Middlesex	254	177.4	378	264.0
New Haven	169	21.0	217	27.0
New London	290	113.7	470	184.3
Tolland	56	43.5	96	74.6
Windham	44	42.9	70	68.3
Unknown	47	---	85	---
TOTAL	1192	36.3	1760	53.5

*Per 100,000 population. 1990 U.S. Census Bureau

PHYSICIAN REPORTING OF LYME DISEASE

Although disease reporting by physicians is an essential component of public health surveillance, the extent of physician participation in reporting specific diseases is not routinely assessed. As part of an evaluation of Lyme disease (LD) surveillance, the DPHAS conducted a study to determine the number and specialty of Connecticut physicians who reported LD cases in 1991 and/or 1992. This report summarizes the results of this study.

To characterize physician reporting of LD, the DPHAS expanded the LD surveillance database to include the names, towns, and license numbers of 4570 licensed physicians from four primary-care specialties: internal medicine (2520), general/family practice (1096), pediatrics (839), and dermatology (115). This primary-care physician group was a subset of the 9185 physicians

(excluding physicians in residency programs) licensed by the DPHAS as of January 30, 1992. If LD was reported by a physician not on the primary-care physician list, the name was checked against the complete list of licensed physicians.

From January 1, 1991, through December 31, 1992, 2952 cases meeting the CSTE/CDC surveillance case definition for LD (1) were reported to the DPHAS. Of these, 2432 (82%) were reported by physicians from the four primary-care specialties and 59 (2%) from physicians in other specialties (Table 2). A total of 359 (12%) cases was reported by either a group practice; a hospital, laboratory, or clinic; or another state health department. Sixty-seven (3%) were reported with no physician or practice name listed, and 35 (1%) were reported by physicians whose license numbers could not be determined.

Of the 4570 physicians from the four specialties, 341 (7%) reported LD in 1991 and 313 (7%) reported cases in 1992 (Table 3). Twenty-five physicians reported 43% to 62% of the cases in five counties.

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Editorial Note: The finding that only 7% of the physicians in selected primary-care specialties in Connecticut reported LD in 1991 and/or 1992 suggests that most primary-care physicians in the state have not diagnosed cases of LD and/or that underreporting of cases by physicians is common. Of the 2952 LD cases reported, 2432 (82%) were reported by primary-care physicians: general practice/family medicine (46%), internal medicine (32%), and pediatric (21%) specialties. A limited number of cases was reported by dermatologists (1%), even though the earliest and most characteristic sign of LD is a large, expanding, annular dermatitis (erythema migrans), usually arising 3-30 days following tick bite (2).

TABLE 2.
Lyme Disease Case Reporting Sources
Connecticut, 1991-1992.

Source	1991 No. (%)	1992 No. (%)	Total No. (%)
General/Family Practice	490 (41)	629 (36)	1119 (38)
Internal Medicine	340 (29)	436 (25)	776 (26)
Pediatrics	196 (16)	317 (18)	513 (17)
Dermatology	4 (0)	20 (1)	24 (1)
Other Specialty	27 (2)	32 (2)	59 (2)
Mixed Specialty Group	0 --	152 (9)	152 (5)
Hospital Laboratory Clinic	38 (3)	72 (4)	110 (4)
No Physician Practice Name	30 (3)	37 (2)	67 (3)
State Health Department	52 (4)	45 (3)	97 (3)
Unknown License Number	15 (1)	20 (1)	35 (1)
TOTAL	1192 (100)	1760 (100)	2952 (100)

TABLE 3.
Number and Percentage of Physicians Reporting at
Least One Case of Lyme Disease by Specialty
Connecticut, 1991-1992

Specialty	No. physicians	Physicians reporting	
		1991 No. (%)	1992 No. (%)
General Family Practice	1096	108 (10)	93 (8)
Internal Medicine	2520	156 (6)	126 (5)
Pediatrics	839	73 (9)	81 (20)
Dermatology	115	4 (3)	13 (11)
Total	4570	341 (7)	313 (7)

As the findings in Connecticut indicate, a physician-based passive system of LD surveillance may be sensitive to small changes in reporting practices. Many of the cases in Connecticut were reported by a small group of physicians.

The findings in this report did not directly assess underreporting. Additional studies are needed to determine the percentage of LD cases that are diagnosed by physicians but not reported to local and state health departments.

Physician participation is critical in public health surveillance efforts. Surveillance should be improved by educating physicians, especially those in primary-care specialties, about the importance of reporting cases of notifiable diseases, including LD, and other selected health events.

References

1. CDC. Case definitions for public health surveillance, MMWR 1990;39(no.RR-13):19-21.
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[Adapted from MMWR 1993;42:348-50.]

TICKS AND LYME DISEASE

Determining the rate of Borrelia burgdorferi infection among deer ticks is a measure of the public health importance of Lyme disease in a given area. In the summer and fall of 1989 through 1992, scientists from the Connecticut Agricultural Experiment Station (CAES) conducted studies of Ixodes scapularis, partially funded by DPHAS, at selected sites. Tick infection rates by site are given in Table 4.

Table 4.
Percentage of unfed I. scapularis nymphs and adults infected with B. burgdorferi by town of site surveyed, 1989 - 1992.

Towns	% Ticks Infected (# infected / # Tested)			
	1989	1990	1991	1992**
Chester	NA*	0 (0/1)	25 (7/28)	58 (30/52)
E. Haddam	9 (11/120)	3 (1/34)	13 (34/270)	21 (12/56)
Lyme	15 (77/513)	14 (29/207)	13 (118/946)	42 (49/117)
Old Lyme	13 (18/144)	13 (3/23)	11 (26/229)	42 (21/50)

* Not available
** Data for adult ticks only

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