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Stephen A. Harriman, Commissioner

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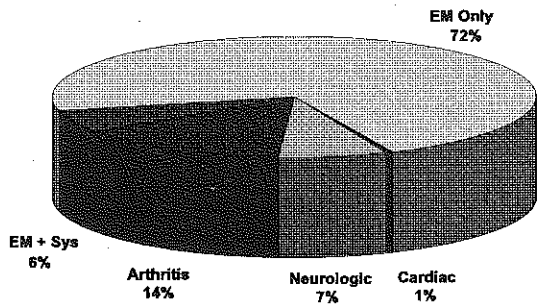
LYME DISEASE CONNECTICUT, 1996

In 1996, the Connecticut Department of Public Health (DPH) reported the highest incidence of Lyme disease (LD) of any state (94 cases per 100,000 population). More than 75% of cases involved persons with erythema migrans (EM).

Of the 5473 LD reports received in 1996, 3104 (57%) met the surveillance case definition: 2236 (72%) were reports of EM only and 189 (6%) were reports of EM and a LD systemic manifestation. Of the 189 reports of EM with a systemic manifestation, arthritic symptoms occurred in 120 (63%) cases, neurologic in 68 (36%) cases, and cardiac in 1 (1%) case. Of the 3049 non-EM reports received, 679 (22%) had one or more systemic manifestations plus a positive serologic test for antibody to *Borrelia burgdorferi* and thus met the surveillance case definition. Arthritic symptoms occurred in 438 (14%) cases, neurologic manifestations occurred in 228 (7%) cases, and cardiac complications occurred in 13 (1%) cases (Figure 1). The remaining 2369 reports contained either insufficient (78%) or no (22%) clinical information (eg: laboratory reports only).

Figure 1

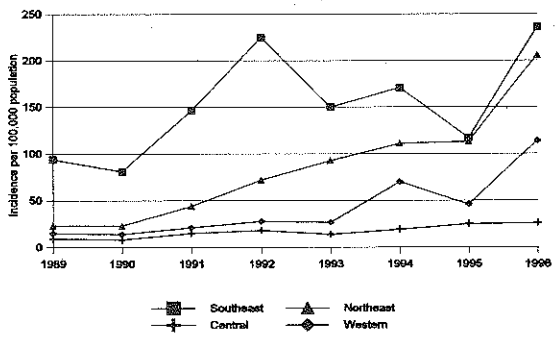
LD Cases (n=3104) by Clinical Manifestation Connecticut, 1996



In 1996, Middlesex County reported the highest incidence of LD with 284 cases per 100,000 population. In contrast, Hartford County reported 17 cases per 100,000 population, the lowest rate for any county in the state. The incidence of LD continues to be highest in the southeastern region of the state. This region includes the 12-town area around Lyme, Connecticut where active surveillance for LD is in place. Rates in the northeastern portion of the state continue to steadily increase and approach those in the southeast (Figure 2).

Figure 2

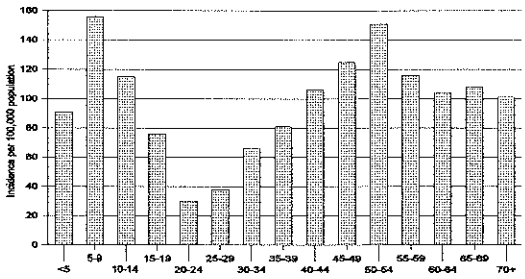
LD Rate by Region Connecticut, 1989-1996



The highest rate occurred in children aged 5 through 9 years. In 1996, the rate for this age group was 156 cases per 100,000 population. The lowest rate, 30 cases per 100,000 population, occurred in the 20 to 24 year age group. Those aged 50 to 54 had the second highest rate with 151 cases per 100,000 population (Figure 3).

Figure 3

Reported LD Incidence by Five Year Age Groups Connecticut, 1996



EDITORIAL NOTE: Lyme disease is the most commonly reported vector borne disease in the United States (1). Its occurrence is seasonal with the majority of cases with onset in the summer months. The occurrence of LD is directly correlated with summer tick activity (2). In 1996, 73% of cases with known onset dates occurred during the months of June, July, and August.

Connecticut has conducted surveillance for LD since 1984, although the disease was not officially reportable until July 1987. Only those LD reports meeting the national surveillance case definition are counted as cases (3). This case definition was developed for state and national reporting of LD and is not appropriate for clinical diagnosis.

Since 1987, the number of LD reports received by the DPH has increased dramatically. The percentage of reports that do not meet the national surveillance case definition ranges from 37% to 63%. Approximately 75% of these reports are reports of persons with some symptoms. Many of these persons may have been treated with antibiotics for LD. Thus, LD reports that do not meet the surveillance case definition are also a measure of the burden of LD at the community level.

Lyme disease surveillance data are best used for the analysis of trends. Reported case rates for LD underestimate the true incidence of the disease. In 1992, a survey of Connecticut physicians most likely to evaluate potential LD patients determined that only 11% of LD cases were reported to the DPH (4).

The best approach to LD is to prevent its occurrence. Methods to reduce the rate of LD have been limited primarily to personal protection measures and the use of acaricides. At least three candidate Lyme vaccines based on recombinant outer surface protein (OspA) are under development (5). Two recombinant OspA preparations, one manufactured by Connaught laboratories (Swiftwater, PA) and the other by SmithKline Beecham Biologicals (King of Prussia, PA) have completed phase 3 testing for efficacy and safety and are under review by the Food and Drug Administration (6). At least one of these preparations may be licensed and available for use by the summer of 1998.

To monitor the public health importance of LD in Connecticut, the DPH needs to maintain accurate case records with clinical and demographic information. If a physician does not supply this information on a report received by the DPH, a supplemental LD report form will be forwarded. Physicians are urged to complete any necessary LD report forms or PD23 reportable disease forms *entirely* and mail them promptly to the DPH.

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BABESIOSIS CONNECTICUT, 1990-1996

From 1990 through 1996, 135 cases of babesiosis were reported to the State Department of Public Health (DPH) (Figure 1). New London County had the highest reported average annual rate with 5 cases per 100,000 population, representing 66% of all reported cases. No cases were reported in residents from Windham or Litchfield counties (Figure 2). The majority of cases occurred among individuals $\geq$ 70 years of age (Figure 3) and males represented 57% of all cases. Infection appears to correlate with summer tick activity with 74% of cases reported in July and August (Figure 4).

In 1996, 50 cases of babesiosis were reported to the DPH, accounting for 37% of all cases reported

from 1990-1996. The 58 cases reported in 1996 represent a 117% increase over the reported cases in 1995, the largest increase in reported cases of any year. This increase corresponds with an increase in the rate of reported Lyme disease cases in 1996.

EDITORIAL NOTE: Babesiosis is an emerging zoonotic disease caused by infection of red blood cells with a protozoan parasite, *Babesia microti*. The parasite's natural host in this area is the white-footed mouse, but may include other rodents, such as the meadow vole.

B. microti is normally transmitted by the bite of *Ixodes scapularis* and other ticks of the *Ixodes* genera including *Boophilus, Dermacentor, Haemaphysalis* and *Rhipicephalus*. Occasionally, cases have been reported to have been transmitted by blood transfusion. The incubation period, appears to be 1-4 weeks in cases acquired from tick bites and 6-9 weeks in cases acquired from blood transfusion.

Babesiosis is most commonly identified in elderly, immunocompromised, or functionally asplenic patients. The clinical presentation is nonspecific and may include fatigue, anorexia, myalgia, nausea, headache, sweating, rigors, depression, and dark urine. Physical and laboratory findings may include fever (sustained or intermittent), mild hepatomegaly, petechiae, ecchymoses, decreased hematocrit, microscopic or gross hematuria, and proteinuria. A subclinical presentation occurs in the majority of infections (1).

The level of parasitemia does not correlate with severity of illness and is usually less than 5% although rates as high as 35% have been identified. Parasitemia may persist for weeks, months, or perhaps even years. Infection with *B. microti* can be severe, causing respiratory compromise, and may rarely lead to pulmonary edema. This usually occurs in patients who also have Lyme exposure (2).

The first human case of babesiosis was documented in 1957 in a splenectomized patient. In 1969, the first case in a patient with an intact spleen was reported from Nantucket, Massachusetts (3). The earliest documented case in Connecticut was reported from Stonington in 1988 (4). Babesiosis became a reportable disease in Connecticut in October 1989.

From 1990-1996, the majority of reported babesiosis cases in Connecticut occurred in adults, although there was one reported case of babesiosis in an asplenic child. A serosurvey in 1992 determined that 16% of Connecticut children were seropositive for babesiosis (5). The question arises whether babesiosis in children is being missed due to subclinical presentation or because it is not considered in the differential diagnosis.

Babesiosis must be considered as part of the differential diagnosis in any patient with fatigue, fever, and hemolytic anemia especially in the setting of immunocompromise or immunodeficiency. The definitive diagnosis is made by identification of *B. microti* within red blood cells on smear, but may also be made by IgM serology. All suspected cases should be reported to both the local and state health departments. Serologic testing and peripheral smear examination may be obtained through the State Bureau of Laboratory Services.

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Acknowledgement:

The editors would like to thank Dr. Ishrat Quadri for her contribution to this article.

STAFF ASSIGNMENTS

In June 1997, Elizabeth D. Hilborn, RN, DVM, MPH returned with her family to Chapel Hill, North Carolina. Dr. Hilborn made significant contributions to the Epidemiology Program during her 2-year assignment here with the Centers for Disease Control and Prevention's (CDC) Epidemic Intelligence Service (EIS). We wish her well.

In July 1997, Andrea Winquist, MD, began her 2-year assignment as the EIS Officer in Connecticut. The EIS is a training program in field epidemiology run by the CDC. Dr. Winquist received her MD degree from Northwestern University in 1993, and completed a pathology residency at the same institution in 1997. We welcome her to Connecticut.

Figure 1

Reported Babesiosis Cases

Connecticut, 1990-1996

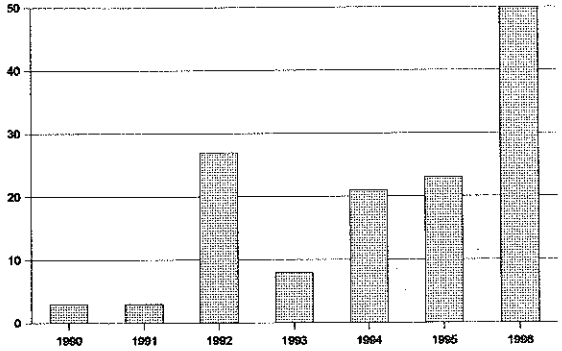


Figure 2

Average Annual Babesiosis Rates*(Cases)
Connecticut, 1990-1996

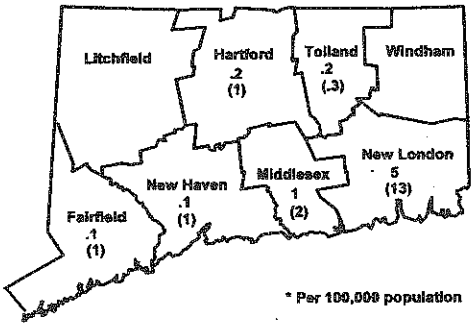


Figure 3

Average Annual Babesiosis Rate by Age Group
Connecticut, 1990-1996

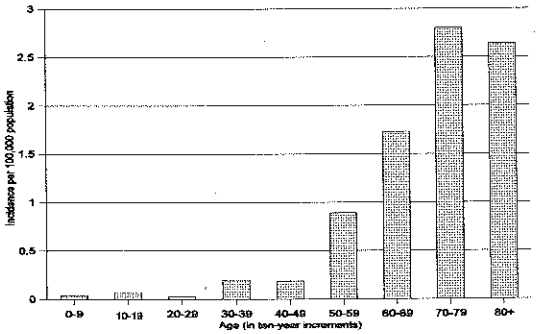
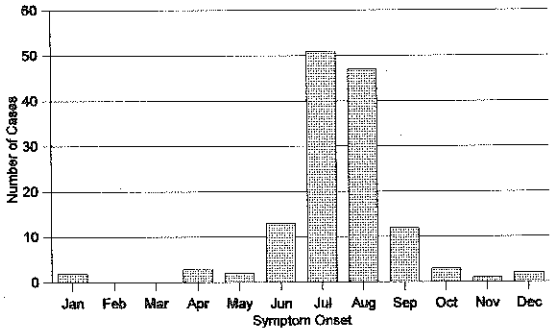


Figure 4

Babesiosis Cases by Month

Connecticut, 1990-1996



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