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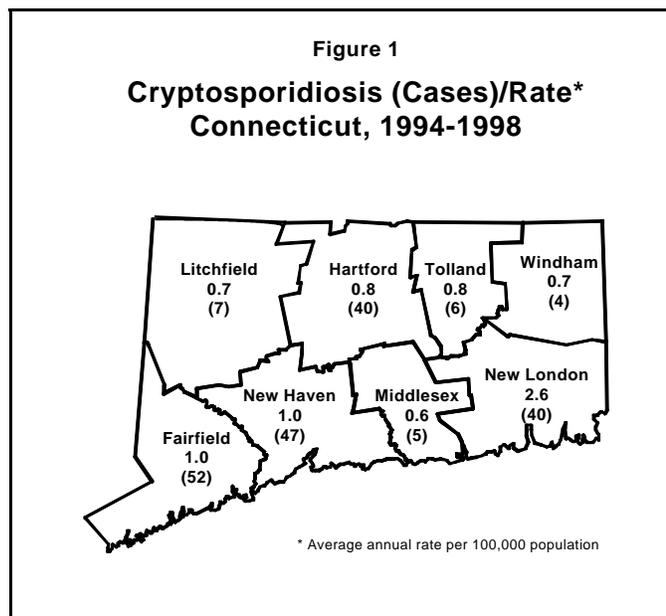
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Cryptosporidiosis – 1998

Since 1994, the Connecticut Department of Public Health (DPH) has conducted surveillance for *Cryptosporidium parvum* infection. This article describes efforts during 1998 to evaluate the cryptosporidiosis surveillance system.

Surveillance Update

From January 1994 through December 1998, 202 cases of cryptosporidiosis were reported to the DPH: 26 cases in 1994, 32 in 1995, 57 in 1996, 42 in 1997, and 45 in 1998 (1). The statewide incidence was 1.4 cases per 100,000 population. The average annual incidence rate in New London County decreased from 3.5 cases during 1994-1997, the highest county rate, to 1.2 cases per 100,000 population in 1998 (Figure 1).



In this issue

Cryptosporidiosis – 1998	17
Lyme Disease – 1998	19

The proportion of cases involving HIV-positive persons decreased from 60% during 1994-1997 (range = 32-100%) to 28% in 1998. The HIV-negative cases were more likely to be children aged ≤ 12 years (48% [15/31] vs. 8% [1/12]) and non-Hispanic whites (87% [26/30] vs. 60% [6/10]). Among HIV-negative cases, 69% (18/26) had onset of symptoms in July - September while HIV-positive cases had no clear seasonality of illness.

Laboratory Review of Records

To determine completeness of reporting during 1998, record reviews were conducted at 29 Connecticut laboratories that tested onsite for *Cryptosporidium* or sent specimens to laboratories outside of Connecticut. During the auditing process, one unreported positive stool specimen and one erroneous report were identified.

Sensitivity of Laboratory Testing

At most laboratories in Connecticut, stool specimens submitted for ova and parasite (O&P) examination are not routinely tested for *Cryptosporidium* unless specifically requested (2). Physicians may not be aware of laboratory testing practices and therefore may not request this test (3). In 1998, seven hospital laboratories participated in a study to assess the sensitivity of selective testing practices for *Cryptosporidium* in stool specimens.

Participating laboratories were asked to provide an aliquot from each stool specimen submitted for O&P examination to the DPH laboratory. At the DPH laboratory, each specimen was tested using the ProSpectT *Cryptosporidium* Microplate Assay (polyclonal), manufactured by Alexon-Trend, Inc. Test results were read on a spectrophotometer and, as indicated by the manufacturer, considered positive if the optical density (OD) was ≥ 0.05 . For confirmation, positives were retested with the polyclonal test, the monoclonal version of the test, and microscopically using the cold modified Kinyoun acid fast stain.

The participating hospital laboratories provided 695 stool samples between August 18 and November 20, 1998. The DPH laboratory tested these samples using the polyclonal EIA. Nine (1.3%) samples were positive (range = 0.062-3.131 OD). Of these, four were confirmed using monoclonal EIA, three of which were also confirmed by microscopy. One of the four confirmed positive specimens had been tested and also found positive by the submitting hospital laboratory. The hospital identified oocysts using IFA stain but the DPH laboratory, which was using acid fast stain, did not. The overall positivity rate of confirmed positive samples was 0.6% (4/695). Confirmed positive samples were from different patients.

Testing all stool samples submitted for O&P examination identified three persons with *Cryptosporidium* who were not identified by the participating laboratories using selective testing criteria. Selective testing criteria failed to detect 75% of persons with stool specimens positive for *Cryptosporidium*. All had diarrhea when their specimens were collected.

Five of the nine specimens with positive polyclonal EIA test results were negative using the additional testing methods. The unconfirmed positive specimens had spectrophotometric values less than 0.2 OD, considered a "low-positive" range. These samples may indicate false positives or samples with few oocysts.

Editorial Note: Laboratories in Connecticut have provided near complete reporting of positive *Cryptosporidium* findings. Since 1995, a high level of awareness of this parasitic disease among

laboratories has resulted from repeated contacts with DPH staff and published articles. Each laboratory was contacted numerous times annually as part of enhanced surveillance efforts for *Cryptosporidium*-related studies.

Due to the lack of routine testing, patients with diarrhea caused by *Cryptosporidium* may go undiagnosed. To maximize the likelihood of identifying cases of cryptosporidiosis, the DPH encourages physicians to order specific testing when cryptosporidiosis is suspected. In addition, laboratories should consider specific examination for *Cryptosporidium* of all stool specimens submitted for O&P from persons with diarrhea. Enzyme immunosorbant assays, considered relatively quick and simple to perform, may be useful for screening samples. Positive results, however, should be confirmed using an acid fast or IFA stain.

In 1999, Connecticut is part of a year long multistate case-control study to further assess risk factors for acquiring cryptosporidiosis. The study began in February and is limited to immunocompetent patients. Persons enrolled in the study are asked questions concerning possible exposures to infected people or animals and contaminated water and food. Also, a survey of Connecticut physicians will be conducted by mail. The survey will be aimed at assessing awareness of cryptosporidiosis including symptoms, risk factors, and laboratory testing practices.

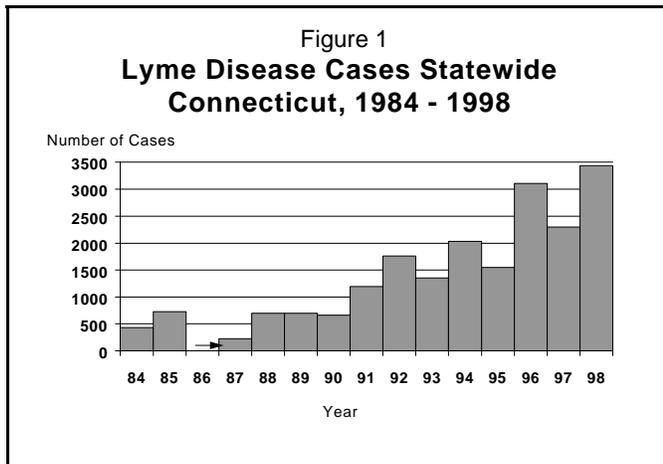
A cryptosporidiosis fact sheet is available at the DPH Web site (<http://www.state.ct.us/dph>). For additional information, contact the Epidemiology Program at (860) 509-7994.

References

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Lyme Disease – 1998

The Connecticut Department of Public Health (DPH) has conducted surveillance for Lyme disease (LD) since 1984, although the disease did not become officially reportable until July 1987 (Figure 1).



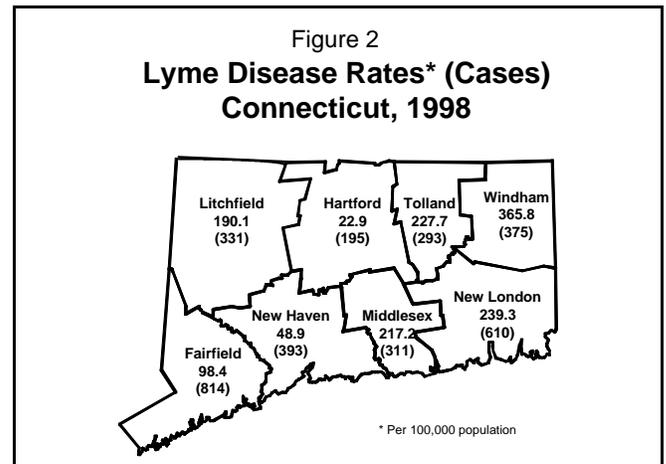
In 1998, the DPH added LD to the list of laboratory reportable diseases. Follow-up consisted of sending supplemental LD report forms to the attending physician listed on the laboratory report form (OL15C) with a letter requesting additional clinical information. Only LD reports that meet the national LD surveillance case definition are counted as cases (1).

Of the 7256 LD reports received by the DPH in 1998, 3434 (47%) met the surveillance case definition. Of these, 2224 (65%) were reports of erythema migrans (EM) only, 218 (6%) were reports of EM and a systemic manifestation of LD, and 992 (29%) had one or more systemic manifestations and a positive serologic test for antibody to *Borrelia burgdorferi*.

Of the 992 systemic LD cases: arthritic symptoms occurred in 698, neurologic manifestations occurred in 338, and cardiac complications occurred in 14. Cases may have had more than one of these manifestations of LD.

The remaining 3822 reports either did not meet the surveillance case definition (57%) or had no clinical information (43%).

In 1998, Connecticut had the highest reported rate of LD of any state (104.5 cases per 100,000 population). Windham County reported the highest rate of LD with 365.8 cases per 100,000 population. In contrast, Hartford County reported 22.9 cases per 100,000 population, the lowest county rate in the state (Figure 2).



In 1998, 69% of cases with known onset dates occurred during the months of June, July and August. Children aged 5 through 9 had the highest incidence (190 cases per 100,000 population). The lowest rate occurred in those aged 20 through 24 (38 cases per 100,000 population).

Physicians are urged to complete report forms on any suspect cases of LD. It is also requested that any supplemental LD report form received be completed and returned to: CT Dept. of Public Health, 410 Capitol Ave., MS#11EPI, P.O. Box 340308, Hartford, CT 06134-0308.

If you have questions concerning LD reporting or incidence, please contact Starr-Hope Ertel at 860-509-7994 or visit the DPH Web site (<http://www.state.ct.us/dph>) and follow the LD links.

Tick Abundance and LD Incidence

In the region around Lyme, Connecticut, tick populations on lawns and wood plots at several residences have been monitored by staff from the Connecticut Agricultural Experiment Station (CAES) since 1989. A correlation has been found between the number of infected deer

In This Issue...

Cryptosporidiosis, Lyme Disease

ticks, *I. Scapularis* in this area, and incidence of human LD cases in Connecticut (2).

From 1989-1998, the correlation between the risk index (RI) and the number of LD cases was highly significant ($r = 0.815$, $P \leq 0.004$). The highest RI was obtained in 1996 (76.9 with a 24.4% rate of infection), when reported cases of LD increased 50% over the previous year. Similarly, a record total of 5,563 *I. scapularis* were submitted to the CAES for identification and testing in 1996.

Although the overall abundance of *I. scapularis* nymphs in the wood plots in 1998 was lower than in 1997, the rate of infection by *B. burgdorferi* in the nymphal ticks was higher in 1998 (12.7%) than for 1997 (9.8%). This resulted in a increase in the RI from 39.9 for 1997 to 46.1 for 1998. Tick abundance on the lawn was also especially high in 1998.

For the late spring and summer of 1999, the abundance of *I. scapularis* nymphs in the woodlands at the monitored homes decreased 17% compared to 1998. The number of ticks

recovered from the lawn decreased 47%. The preliminary RI for 1999 is up (59.5), based on the spirochetal infection rate in the nymphs (19.0%). Similarly, the number of ticks received at the CAES for identification and testing in 1999 is higher than the 4,479 received in 1998.

The number of LD cases in Connecticut continues to be influenced, in part, by changes in population densities of infected *I. scapularis* and, presumably, a corresponding change in the risk of contact with infected ticks. The activity of larval blacklegged ticks at coastal sites appears also to have been diminished by this summer's drought, which may impact nymphal abundance and the incidence of LD in the summer of the year 2000.

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<p>Division of Infectious Diseases</p> <p>James L. Hadler, MD, MPH State Epidemiologist</p>	<table border="0"> <tr> <td>AIDS Epidemiology</td> <td>(860) 509-7900</td> </tr> <tr> <td>Epidemiology</td> <td>(860) 509-7994</td> </tr> <tr> <td>Immunizations</td> <td>(860) 509-7929</td> </tr> <tr> <td>Pulmonary Diseases</td> <td>(860) 509-7722</td> </tr> <tr> <td>Sexually Transmitted Diseases (STD)</td> <td>(860) 509-7920</td> </tr> </table>	AIDS Epidemiology	(860) 509-7900	Epidemiology	(860) 509-7994	Immunizations	(860) 509-7929	Pulmonary Diseases	(860) 509-7722	Sexually Transmitted Diseases (STD)	(860) 509-7920	<p>Connecticut Epidemiologist</p> <p>Editor: Matthew L. Cartter, MD, MPH</p> <p>Assistant Editor: Starr-Hope Ertel</p>
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