

Lyme Disease—Connecticut, 2010

Lyme disease (LD) is the most commonly reported vector-borne disease in the United States (1). Lyme disease was added to the list of reportable diseases in Connecticut in June 1987 (Figure 1). Standardized national surveillance and reporting for Lyme disease began in 1991 after the Council of State and Territorial Epidemiologists (CSTE) designated Lyme disease as a nationally notifiable disease and published a standardized surveillance case definition (Figure 2).

Surveillance includes physician-based and laboratory-based methods. Only laboratories with electronic reporting capabilities are required to report positive LD findings. Two major clinical laboratories submitted reports. Because laboratory reports do not include all the necessary information to determine case status, follow-up was conducted. Supplemental reporting forms were mailed to the ordering physician with a request to complete all missing information and return to the Connecticut Department of Public Health (DPH).

The revised 2008 national surveillance case definition (NSCD) was used to classify cases (2). Confirmed cases included those identified with erythema migrans (EM), or systemic manifestations of LD and laboratory results that indicated a positive enzyme immune assay and positive Western blot IgM or positive Western blot IgG or positive culture.

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Probable cases were those that were physician-diagnosed with LD and had positive serology, but did not have syndromes necessary for confirmed case classification. Suspect cases were those with a laboratory result that met the NSCD and no clinical information. Confirmed and probable cases were included in the national surveillance data.

In 2010, 5,994 LD reports were received by the DPH. Of these, 1,269 (21%) were initiated through physician-based surveillance and included 682 (54%) confirmed and 127 (10%) probable cases. There were 4,725 (79%) reports initiated through laboratory-based surveillance with 1,282 (27%) confirmed and 977 (21%) probable cases reported (Figure 2). The remaining 2,926 (49%) reports did not meet the NSCD for a confirmed or probable case and included 2,635 (90%) suspect cases. Of the suspect cases, 586 (22%) were received from physicians and 2049 (78%) from laboratories.

Of the 1,964 confirmed cases, 870 (44%) patients had EM only, 963 (49%) had one or more systemic manifestations only, and 131 (7%) had both EM and systemic manifestations of LD. Of the systemic LD cases not associated with EM, arthritic

Figure 1. Confirmed Lyme disease cases by surveillance method and year - Connecticut, 1987-2010.

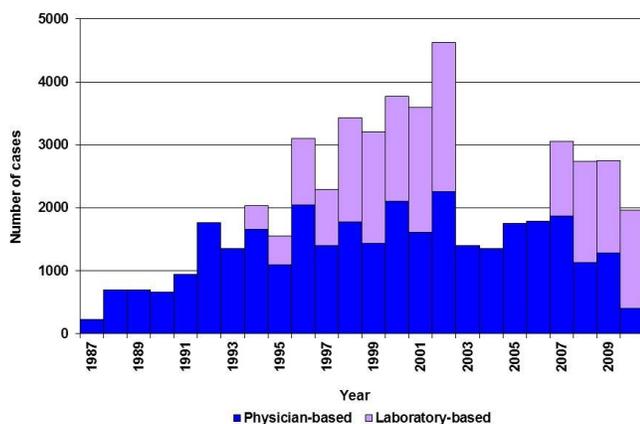
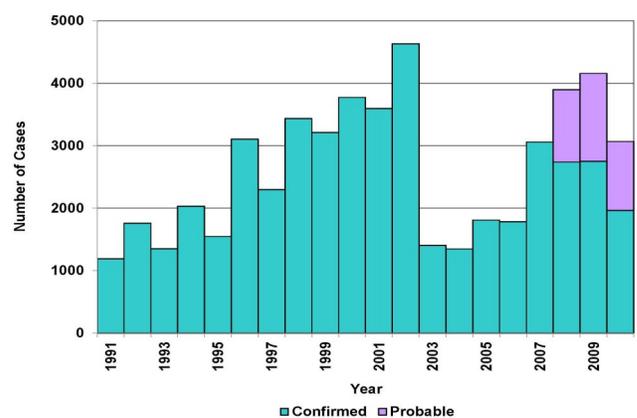


Figure 2. Lyme disease cases by case status and year - Connecticut, 1991-2010.



symptoms occurred in 782 (81%), neurologic manifestations (Bell's palsy, encephalitis, radiculoneuropathy, lymphocytic meningitis) in 240 (25%), and cardiac complications in 14 (1%). Cases may have reported multiple systemic symptoms.

The statewide incidence for confirmed LD was 58 cases per 100,000 population. Windham County reported the highest county rate (105 cases per 100,000 population) followed by Tolland County (97 cases per 100,000 population). Hartford County reported the lowest rate (16 cases per 100,000 population) followed by New Haven County (22 cases per 100,000 population).

Persons aged 60-69 years reported the highest incidence with 100.7 cases per 100,000 population. The rate for children <10 years of age was 69.5 cases per 100,000 population, and the lowest incidence occurred among those aged 30-39 (30.3 cases per 100,000 population); 56% were male. Of cases with known onset dates, 54% occurred during the summer months of June, July, and August.

Reported by

*S Ertel, J Sun, MD, PhD, R Nelson, DVM, MPH.
Epidemiology and Emerging Infections Program,
Connecticut Department of Public Health.*

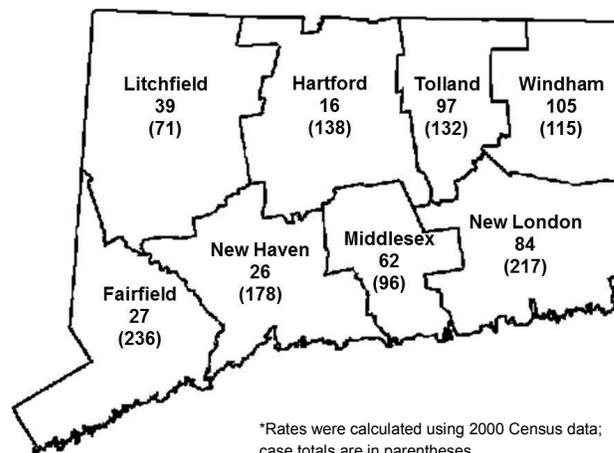
Editorial

In 2010, the DPH received 17% fewer reports of LD, 26% fewer reports that met the NSCD for confirmed or probable cases, and 29% fewer confirmed cases when compared to the previous year. The number of reports initiated through laboratory-based surveillance decreased by 6%, while a 41% decrease was seen in physician-based surveillance. When compared to 2009 data, a higher proportion of 2010 confirmed cases were characterized by systemic manifestations (49% vs. 33%), and a lower proportion occurred during the summer months (54% vs. 72%).

In the New England and mid-Atlantic states, provisional data indicate overall reduction in confirmed LD cases including a 29% decrease in New Jersey, 26% in Massachusetts and 18% in New York (upstate). The differences in Connecticut and regionally may be due to changes in the NSCD, seasonal variation, the beginning of a future trend, and/or surveillance methods.

Suspect cases represent a missed opportunity for additional confirmed and probable cases. Physicians either submitted PD-23 forms without providing information on clinical findings, or did not

Figure 3: Lyme disease rates per 100,000 population* by county—Connecticut, 2010.



return the supplemental reporting forms. Also, more specific laboratory criteria outlined in the NSCD reduced the overall number of positive laboratory reports received and therefore the number of supplemental reporting forms sent to physicians for follow-up.

Of the returned laboratory follow-up reports that met the NSCD, only 40% had address information. Because of this, the county incidence rates may be underestimated. Clinical findings are generally complete on returned forms; however, one third of cases have incomplete ethnicity information. Completion of all information on the follow-up forms is necessary to guide public health policy and action, and for trend analysis. The usefulness of data is determined by the information supplied.

Physicians should report all patients with LD by completing the most current version of the PD-23 or if received, the follow-up Supplemental Lyme Disease Laboratory Case Report form. Any information submitted by the laboratory is pre-printed on the follow-up form. It is important that all other information is completed. Timely reporting of complete case information assures the most useful data. For questions concerning LD reporting or to order the most current version of the PD-23, please contact the Epidemiology and Emerging Infections Program at (860) 509-7994. Electronic fillable PDFs are also available at www.ct.gov/dph. Select "Forms" from the top navigation bar, and Reportable Disease Forms and Instructions.

References

1. CDC. Surveillance for Lyme disease – United States, 1992-2006. MMWR 2008;57(SS10);1-9.
2. CDC. Lyme disease (*Borrelia burgdorferi*) 2008 Case Definition. http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/lyme_disease_2008.htm.

Are Connecticut Physicians Informed About Lyme Disease? A Survey of Connecticut Physicians, 2005

In October 2005, the Connecticut Department of Public Health (DPH) conducted a statewide survey of physicians to assess awareness of Lyme disease (LD) and the LD national surveillance case definition (NSCD). A standardized questionnaire was mailed to a sample of Connecticut licensed physicians chosen from the DPH physician database. Using stratified interval sampling, physicians were selected from specialties most likely to see patients with early LD including family practice, internal medicine, pediatrics, and emergency medicine. A second mailing was sent to non-respondents in early December.

The questionnaire was self-administered and contained two parts. The first part collected information regarding the physician's practice, knowledge of early LD symptoms, available laboratory tests, and surveillance for LD. The second part of the questionnaire included brief LD case scenarios to determine use of laboratory tests and antibiotic use to prevent and treat early LD among patients with syndromes that did not meet the 1996 NSCD (2).

Of the 823 physicians initially surveyed, completed surveys were received from 304 (37%) practicing in Connecticut. The response rate ranged from 32%–44% of each specialty with no statistically significant difference.

Overall, 85% indicated LD was endemic in the area where they practiced, 87% had diagnosed at least 1 case of LD in 2004, and 74% indicated LD was reportable to the DPH. The median number of LD cases physicians reportedly diagnosed in 2004 was 5 (range 1–100). Only 48% were familiar with the NSCD for LD.

In addition to the presence of EM, the majority of physicians in all specialties were aware of common signs and symptoms of LD including: facial palsy (96%), arthralgia (95%), heart block (90%), headache (87%), fever (86%), meningitis (81%), fatigue (81%), myalgia (71%), and radiculoneuropathy (60%). Pediatricians were less likely to be aware of LD associated heart block and myalgia (Table 1).

The first scenario presented a case suggestive of early onset LD (non-specific clinical symptoms and positive serology). Physicians who were very familiar or somewhat familiar with the NSCD were just as likely as physicians who were not to prescribe antibiotics (99% vs. 100% respectively,

Table 1. Lyme Disease Awareness by Specialty*

	Family Medicine (n=108)	Emergency Medicine (n=59)	Internal Medicine (n=64)	Pediatrics (n=73)	p-value
LD endemic in area	87%	83%	88%	82%	NS
Dx at least one case LD 2004	92%	81%	73%	93%	NS
LD reportable in CT	84%	51%	64%	75%	NS
Familiar with surveillance case definition	56%	32%	50%	44%	NS
Which symptoms require consideration of LD:					
Arthralgia	96%	98%	97%	90%	NS
Fever	87%	90%	88%	78%	NS
Radioculoneuropathy	64%	53%	70%	51%	NS
Conjunctivitis	10%	15%	19%	7%	NS
Facial palsy	97%	98%	97%	93%	NS
Diplopia	54%	51%	52%	48%	NS
Heart block	93%	95%	97%	79%	p < 0.05
Headache	88%	90%	86%	85%	NS
Lymphadenopathy	38%	41%	41%	36%	NS
Meningitis	78%	83%	86%	82%	NS
Myalgia	78%	71%	72%	62%	p < 0.05
Fatigue	83%	81%	84%	74%	NS

*Some physicians did not answer all questions

NS = not significant

prescribe amoxicillin (39% vs. 39%) or doxycycline (59% vs. 59%), treat for 15-28 days (89% vs. 85%), and not retest a recovering patient (81% vs. 81%).

The second scenario presented a case suggestive of late stage LD characterized by arthritis (objective joint swelling and no available test results). Physicians who were very familiar or somewhat familiar with the NSCD were just as likely as physicians who were not familiar with it to order a laboratory test for LD (99% vs. 99%) and prescribe antibiotics while waiting for test results (68% vs. 72%). However, physicians who were very familiar with the NSCD were more likely to prescribe antibiotics while waiting for test results than physicians who were only somewhat familiar and physicians who were unfamiliar with the NSCD (82% vs. 63% and 32% respectively, $p < 0.05$).

Reported by

J Krasnitski, MPH, B L Esponda, BS, R Nelson, DVM, MPH, Epidemiology and Emerging Infections Program, Connecticut Department of Public Health

Editorial

The 2005 survey indicated a high level of LD awareness among Connecticut physicians in medical specialties likely to see patients with LD. The majority of those surveyed reported that LD is endemic in the state, is a reportable disease and they are aware of common signs and symptoms. Based on answers to 2 clinical scenarios, Connecticut physicians' knowledge of the NSCD for LD did not have a significant effect on clinical decisions regarding testing and treatment of patients.

In response to both scenarios, physicians prescribed antibiotics for treatment of LD when clinical information did not satisfy NSCD criteria. In the first scenario, the patient did not have a clinical presentation consistent with the NSCD (e.g. EM, or specified skeletal, cardiac or neurologic illness). In the second scenario, the LD test results were not yet available for case classification. In each scenario the physician did not use the NSCD to make a clinical diagnosis.

The findings in this report are subject to at least two limitations. First, responses were self-reported and for the two scenarios may not accurately reflect real world clinical decisions. Second, because the survey response rate was low, respondents may have differed from non-respondents, which may limit the generalizability of the study findings.

References

1. CDC. Lyme disease (*Borrelia burgdorferi*) 1996 Case Definition. http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/lyme_disease_1996.htm.

Prevention of Tick-borne Diseases

Personal Protection:

- Use insect repellent containing 20-30% DEET. Follow package instructions. Do not apply under clothing or to children under 2 months.
- Do thorough tick checks of yourself, your children and pets. Completely remove any ticks found.
- Bathe or shower as soon as possible after coming indoors (preferably within two hours) to wash off and more easily find ticks that are crawling on you.

Removing a Tick:

- Using tweezers, grasp the tick mouthparts as close to the skin as possible, and pull the tick out with steady pressure. Do not yank the tick out.
- Wash the area with soap and water, then dry and apply a topical antiseptic.
- Do not use a hot match, nail polish remover, petroleum jelly or other substances.

Landscape Management:

- Keep grass mowed.
- Remove leaf litter, brush, and tall weeds from around the home and at the lawn's edge.
- Use plantings that do not attract deer, or exclude deer through various types of fencing.
- Move firewood, birdhouses and feeders away from the home.
- Create a 3-foot or wider wood chip, mulch, or gravel barrier between your lawn and woods.

<p>Jewel Mullen, MD, MPH, MPA Commissioner of Public Health</p> <p>Matthew L. Cartter, MD, MPH State Epidemiologist</p> <p>Lynn Sosa, MD Deputy State Epidemiologist</p>	<table border="0"> <tr> <td>HIV/AIDS Surveillance</td> <td>860-509-7900</td> </tr> <tr> <td>Epidemiology and Emerging Infections</td> <td>860-509-7994</td> </tr> <tr> <td>Immunizations</td> <td>860-509-7929</td> </tr> <tr> <td>Tuberculosis Control</td> <td>860-509-7722</td> </tr> <tr> <td>Sexually Transmitted Diseases (STD)</td> <td>860-509-7920</td> </tr> </table>	HIV/AIDS Surveillance	860-509-7900	Epidemiology and Emerging Infections	860-509-7994	Immunizations	860-509-7929	Tuberculosis Control	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 & Producer: Starr-Hope Ertel</p>
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