



Infectious Disease Epidemiology Report

Lyme Disease Surveillance Report – Maine, 2008



Introduction

Lyme disease is a tickborne disease with variable dermatologic, rheumatologic, neurologic, and cardiac manifestations. It is caused by a type of bacteria, *Borrelia burgdorferi*, that is carried by infected deer ticks. Transmission occurs when an individual is bitten by an infected deer tick (*Ixodes scapularis*). Early clinical indication for the disease is an initial skin lesion commonly referred to as the “bull’s-eye” rash or erythema migrans (EM), which occurs in 70-80% of cases 3-30 days after a tick bite. Untreated infections can lead to late manifestations in joints, heart, and nervous system. Late manifestations include: arthritis characterized by recurrent, brief attacks of joint swelling; lymphocytic meningitis; cranial neuritis (such as Bell’s palsy); encephalitis; and second or third degree atrioventricular block.

Methods

Lyme disease is reportable in Maine. For surveillance purposes, reported cases are classified as confirmed, probable and suspect based on clinical symptoms and laboratory testing. Confirmed cases must meet the following criteria:

- 1) A person with erythema migrans; or
- 2) A person with at least one late manifestation and laboratory confirmation of one of the following:
 - Positive culture for *B. burgdorferi*;
 - IgG positive Western blot (must have a positive 30 days after symptom onset to be included);
 - Positive ELISA test and an IgM positive Western blot

Probable cases must meet:

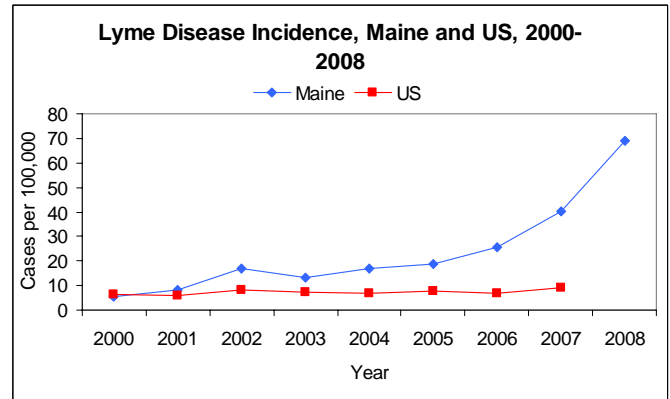
- 1) One of the laboratory criteria mentioned above and be physician diagnosed

The Maine CDC investigates all laboratory reports and EM reports by sending out a case report form to the physician. Cases are classified based on the information received from the physician. Data presented in this report reflect only those cases meeting the probable or confirmed case definition.

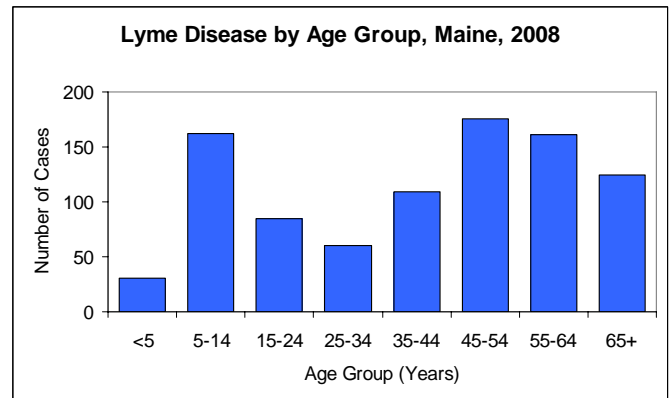
Results

During 2008, a total of 908 probable and confirmed cases of Lyme disease were reported to the Maine CDC. This represents a state case rate of 69.0 cases per

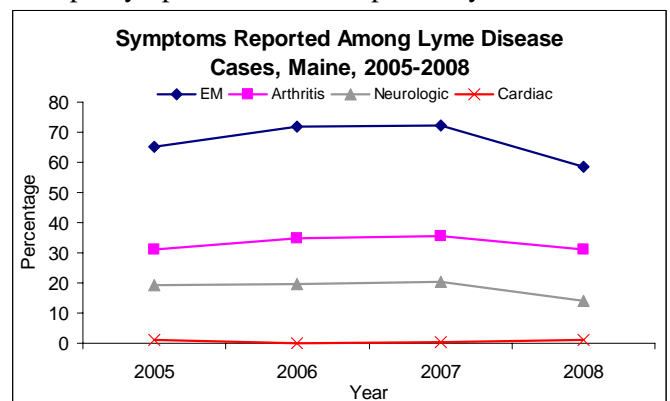
100,000 residents. The case total increased by 72% compared to 2007.



Fifty-four percent of the cases were male. The median age was 45 years, with a range from 1 to 92 years. Four percent of cases were hospitalized.



Physician diagnosed erythema migrans was reported in 58.6% of cases. Arthritis characterized by brief attacks of joint swelling was reported in 31.2% of cases. Neurologic symptoms were reported in 14.2% of cases. Cardiac symptoms were reported in 1% of cases. Multiple symptoms could be reported by each case.



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The majority (55%) of cases reported a symptom onset date during the summer months of June, July, and August. Onset date information was missing for 215 (23.7%) cases.

In 2008, Lyme disease was reported for residents in all counties of Maine. Over half of the cases in the state (57.1%) were in York and Cumberland counties. Counties that reported 20 or more cases in 2008 and had the highest increase in cases from 2007 to 2008 included Kennebec (148%), Knox (243%) and Androscoggin (72%).

Lyme Disease by County, Maine 2008

County	Cases	Rate	Percentage
Androscoggin	36	33.7	4.0
Aroostook	4	5.6	0.4
Cumberland	228	82.6	25.1
Franklin	4	13.4	0.4
Hancock	13	24.5	1.4
Kennebec	114	94.2	12.6
Knox	72	177.0	7.9
Lincoln	40	115.5	4.4
Oxford	21	37.0	2.3
Penobscot	13	8.7	1.4
Piscataquis	1	5.9	0.1
Sagadahoc	40	110.1	4.4
Somerset	9	17.5	1.0
Waldo	19	49.6	2.0
Washington	3	9.2	0.3
York	291	144.3	32.0
Total	908	69.0	100

Discussion

The incidence of Lyme disease in Maine continues to increase each year. This increase can be explained by a growing awareness of the signs and symptoms of early Lyme disease among healthcare providers and the public; a true increase of new infections; and a surveillance case definition change starting January 1, 2008 to a more general definition which included a probable case definition. Most of the increases in reported incidence have occurred in southern Maine and the midcoast region.

Recommended testing for Lyme disease includes a screen for Lyme IgG and IgM antibodies, and a Western blot for both IgG and IgM.

Some inland areas, including Kennebec County, have also experienced an upsurge in reported cases, a

phenomenon that is consistent with ecological studies tracking changes in deer tick populations. Maine Medical Center Research Institute (MMCRI) Vectorborne Laboratory operates a tick identification service where specimens found on people and pets can be submitted to MMCRI to identify the type of tick.

In 2008 the data showed a slow but persistent expansion of disease risk continuing to occur, both eastward and northward throughout the entire state. The spread of cases to all counties in 2008 demonstrated the need for all state residents to learn about preventing tick bites. Deer tick populations are concentrated on the Maine coast and in the river valleys, but there are scattered populations of deer ticks in other parts of the state. Potential deer tick habitat includes deciduous forest, overgrown fields, shrub layer, leaf litter, brushy and grassy places, and the edge areas between lawns and woods.

The risk of Lyme disease can be reduced by avoiding tick-infested areas, using insect repellents containing 20%-30% DEET on uncovered skin and clothing for older children and adults and use of 10% DEET for children greater than 2 months of age. Wearing long sleeve shirts and long pants, and avoiding tick infested areas will prevent a bite from occurring. Permethrin is an insect repellent that can be used on clothing. Checking for ticks after being outside is important. Ticks should be removed with tweezers during the first 24 hours to prevent Lyme disease. Using “tick-safe” landscaping such as removing leaf litter, tall grass and brush, creating borders between woods and lawn and discouraging deer with physical barriers may be useful to prevent tick bites.

Provider information about testing and additional information about Lyme disease is available at the Maine CDC website: <http://www.maine.gov/dhhs/boh/ddc/epi/vector-borne/lyme/index.shtml> and at the federal CDC website <http://www.cdc.gov/ncidod/dybid/lyme/index.htm>. Clinical guidelines are available at the Infectious Disease Society of America website: <http://www.idsociety.org/content.aspx?id=4432#ld>. Ticks may be submitted for identification free of charge to the Maine Medical Research Institute. Information may be found at: <http://www.mmcricri.org/lyme/submit.html>.