



# Infectious Disease Epidemiology Report

## Lyme Disease Surveillance Report – Maine, 2009 - Update



### 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 has an infected deer tick (*Ixodes scapularis*) attached for 24 - 48 hours. 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. The surveillance case definition of Lyme disease is used for national reporting and is not intended to be used in clinical diagnosis. For surveillance purposes, reported cases are classified as confirmed, probable and suspect based on clinical symptoms and laboratory testing interpreted using criteria established by the federal CDC.

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;
  - Positive ELISA test and an IgM positive Western blot. This should be confirmed by IgG Western blot.

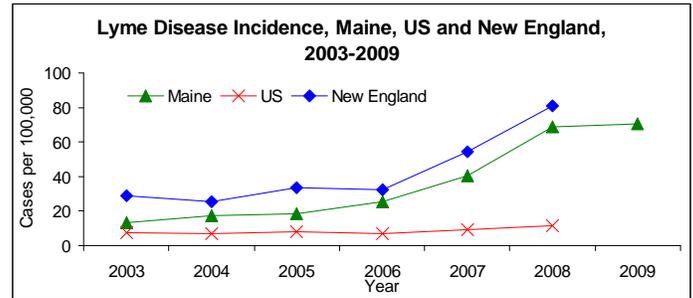
Probable cases must meet:

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

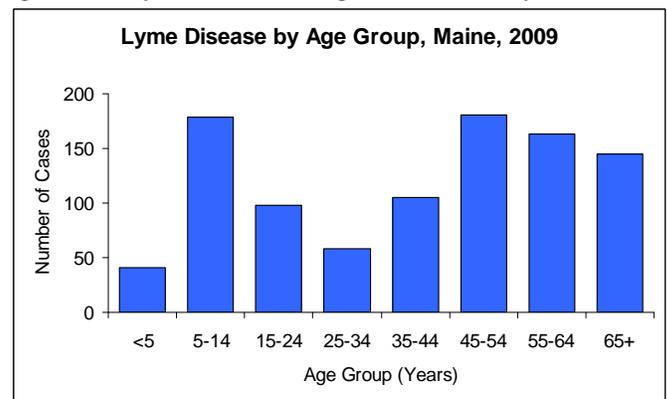
Maine CDC investigates all reports of positive laboratory tests or clinical diagnosis of EM by requesting standard information included in a case report form from physicians. Cases are classified based on the information received on the case report form. Data presented in this report reflect only those cases meeting the probable or confirmed case definition.

### Results

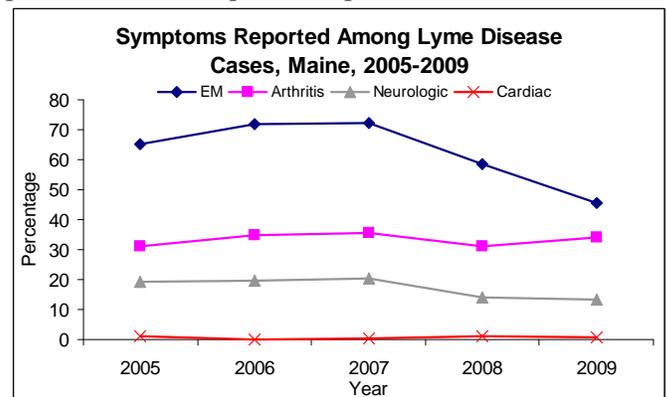
During 2009, a total of 970 probable and confirmed cases were reported to Maine CDC. This represents a state case rate of 73.7 cases per 100,000 persons.



Fifty-five percent of the cases were male. The median age was 45 years, with a range from 1 to 94 years.



Physician diagnosed erythema migrans was reported in 45.7% of cases. Arthritis characterized by brief attacks of joint swelling was reported in 34.2% of cases. Neurologic symptoms were reported in 13.5% of cases. Cardiac symptoms were reported in 1% of cases. Multiple symptoms could be reported by each case. Five percent of cases required hospitalization.



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The majority (50%) of cases reported a symptom onset date during the summer months of June, July, and August. Onset date information was missing for 273 (28.1%) cases.

In 2009, Lyme disease was reported for residents in all counties of Maine. Over half of the cases in the state (55.7%) occurred among York and Cumberland residents.

### Lyme Disease by County, Maine 2009

County	Cases	Rate	Percentage
Androscoggin	56	52.4	5.8
Aroostook	7	9.8	0.7
Cumberland	276	100.0	28.5
Franklin	15	50.2	1.5
Hancock	34	64.0	3.5
Kennebec	99	81.8	10.2
Knox	69	169.6	7.1
Lincoln	45	130.0	4.6
Oxford	15	26.4	1.5
Penobscot	8	5.4	0.8
Piscataquis	2	11.8	0.2
Sagadahoc	51	140.4	5.3
Somerset	6	11.7	0.6
Waldo	19	49.6	2.0
Washington	4	12.3	0.4
York	264	130.9	27.2
Total	970	73.7	100

### Discussion

The incidence of Lyme disease in Maine continues to increase each year, though less in 2009 compared to other years. 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 the western, central and the midcoast regions of Maine.

Some inland areas of Maine have also experienced an upsurge in reported cases in the past few years, 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 2009 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 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 month of May in Maine is Lyme Disease Awareness month. 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
- Applying permethrin (an insect repellent) to clothing
- Wearing long sleeve shirts and long pants
- Checking for ticks after being outside
- Remove ticks with tweezers immediately to avoid them attaching and becoming engorged
- 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

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/vectorborne/lyme/index.shtml> and at the federal CDC website <http://www.cdc.gov/ncidod/dvbid/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.mmcri.org/lyme/submit.html>.

Lyme disease cases can be reported to Maine CDC by calling 1-800-821-5821 or faxing the Lyme disease report form available online to 1-800-293-7534. <http://www.maine.gov/dhhs/boh/ddc/epi/vectorborne/lyme/index.shtml#resourcephysicians>