Infectious Disease Epidemiology Report

Lyme Disease Surveillance Report – Maine, 2011

Introduction

Lyme disease is a tickborne illness 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 (*Ixodes scapularis*). Transmission occurs when individuals have an infected deer tick attached to their bodies for at least 24 hours. The first clinical sign of the disease is a skin lesion referred to as the "bull's-eye" rash or erythema migrans (EM), which occurs in 70-80% of cases nationally 3-30 days after a tick bite. Untreated infections can lead to late clinical findings in skeletal, cardiac, and nervous systems. Late manifestations of disease 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 a reportable condition 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 or 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 within 30 days of onset. This should be confirmed by IgG Western blot;
- CSF antibody positive by EIA or IFA, where the titer is higher than it was in serum.

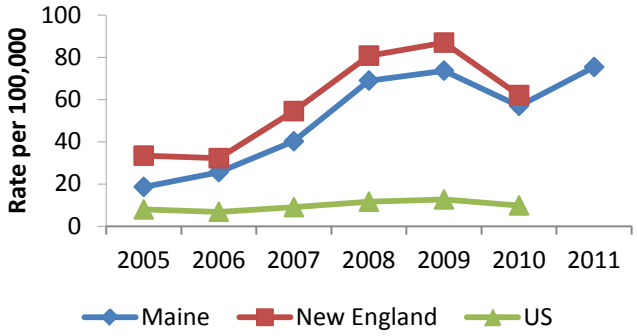
Probable cases must meet one of the laboratory criteria mentioned above and be physician diagnosed.

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

Results

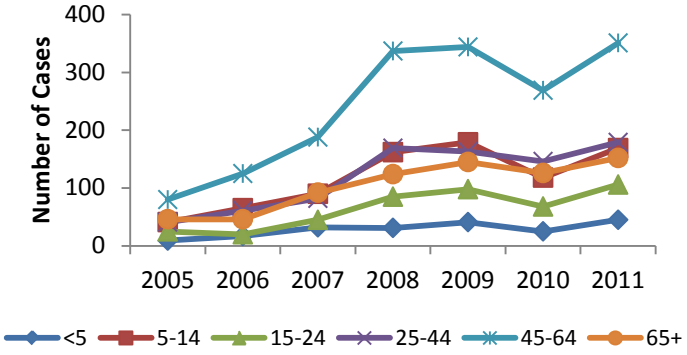
During 2011, a total of 1,002 probable and confirmed cases were reported to Maine CDC. This represents a state case rate of 75.4 cases per 100,000 persons (Figure 1).

Figure 1: Lyme Disease Incidence - Maine and US, 2005 - 2011



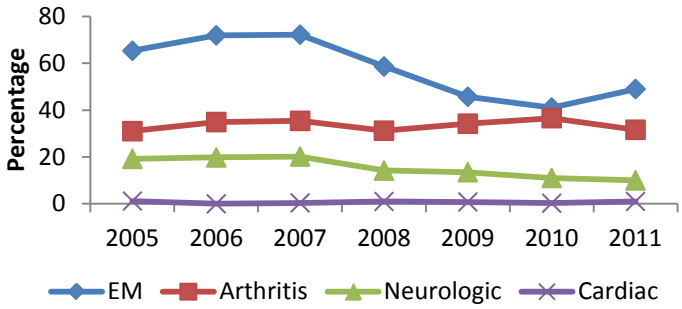
Fifty-seven percent of the cases were male. The median age was 45 years, with a range from 1 to 93 years. The 45-64 year old age group had the highest number of cases in 2011 (Figure 2).

Figure 2: Number of Reported Lyme Disease Cases by Age Group - Maine, 2005-2010



Physician diagnosed EM was reported in 49.0% of cases. Arthritis characterized by brief attacks of joint swelling was reported in 31.6% of cases. Neurologic symptoms were reported in 10.0% of cases. Cardiac symptoms were reported in 1.0% of cases (Figure 3). Multiple symptoms could be reported by each case. Five percent of cases were reported to have been hospitalized at the time of the report.

Figure 3: Percentage of Symptoms Reported Among Lyme Disease Cases - Maine, 2005-2011



The majority (52.4%) of cases reported a symptom onset date during the summer months of June, July and August. Onset date information was missing for 218 cases (21.8%).

In 2011, Lyme disease was reported for residents in all counties of Maine. Almost half of the cases in the state (47.0%) occurred among York and Cumberland residents (Table 1).

Table 1: Lyme Disease by County, Maine 2011

County	Cases	Rate	Percentage
Androscoggin	58	53.9	5.8
Aroostook	3	4.2	0.3
Cumberland	274	97.3	27.3
Franklin	5	16.3	0.5
Hancock	43	79.0	4.3
Kennebec	128	104.8	12.8
Knox	103	259.2	10.3
Lincoln	53	153.8	5.3
Oxford	28	48.4	2.8
Penobscot	11	7.1	1.1
Piscataquis	6	34.2	0.6
Sagadahoc	47	133.2	4.7
Somerset	9	17.2	0.9
Waldo	25	64.5	2.4
Washington	12	36.5	1.2
York	197	99.9	19.7
Maine	**1002**	**75.4**	**100.0**

Discussion

The incidence of Lyme disease in Maine reached a record high in 2011. Rates of Lyme disease increased in all but 4 counties (Aroostook, Franklin, Penobscot, and Waldo).

Maine Medical Center Research Institute (MMCRI) Vectorborne Laboratory provides a service where ticks can be submitted to MMCRI for identification. In 2011 the identification service showed continued expansion of deer tick distribution occurring, both eastward and northward throughout the entire 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.

May is Lyme Disease Awareness month in Maine. Lyme disease can be prevented by:

- Using caution in tick-infested areas
- Using EPA approved repellents containing DEET, picaridin, IR3535 or oil of lemon eucalyptus - always follow the instructions on the product's label
- Applying permethrin (an EPA approved repellent) to clothing
- Wearing long sleeve shirts and long pants
- Checking for ticks after being outside
- Removing ticks with tweezers or a tick spoon 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/mecdc/infectious-disease/epi/vector-borne/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/Lyme/ .

Ticks may be submitted for identification free of charge to the Maine Medical Center 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/mecdc/infectious-disease/epi/vector-borne/lyme/index.shtml#resourcephysicians

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