

## Lyme Disease

*Lyme disease is a Class C Disease and must be reported to the state within five business days.*

Lyme disease is the most common tick-borne illness in the United States. More than 15,000 cases are reported annually. The disease is caused by a bacterial spirochete, *Borrelia burgdorferi*. In the northern and central U.S., the primary vector is *Ixodes scapularis*, the deer tick, while on the Pacific coast, the most common vector is *Ixodes pacificus*, the western black-legged tick. Other species of ixodid ticks have also been implicated in transmission.

Symptoms include fever, headache, fatigue, and an expanding skin rash called erythema migrans. Infections that are not treated can spread to joints, the heart and the nervous system; however, most cases can be successfully treated with a few weeks of antibiotics.

The geographic distribution of Lyme disease is highly focused with most cases occurring in the northeastern and north central states. The risk of infection in endemic areas is dramatically greater than the risk in non-endemic areas. For the period of 1992 to 2006, state rates varied widely from a low of 0.01 per 100,000 population in Montana and Colorado to 73.6 per 100,000 population in Connecticut. The small number of cases reported from Louisiana suggests that Louisiana is not an area of intense transmission.

Persons exposed to wooded areas, overgrown brush, or residential areas adjacent to the like are at the highest risk in endemic areas. Although Louisiana is not considered an area of high risk, avoidance of tick infested areas and use of personal protective measures are recommended for the prevention of Lyme disease and other tick-borne diseases. Most cases of Lyme disease result when the tick is attached for over 24 hours. Therefore, skin examination and prompt removal of ticks is another possible means of prevention.

The case definition of Lyme disease relies on isolation of *Borrelia burgdorferi* (rarely done), or on a combination of clinical and serologic tests. Serology is widely available but must be interpreted with caution. An early IgM response develops and peaks at three to six weeks. Very rare cases (1% or 2%) have had IgM persisting for over two to three years. An IgG response starts after several weeks and may persist for years, even after successful treatment. A two-test approach, sensitive EIA or IFA followed by Western Blot confirmation, is the preferred approach. EIA, IFA alone or ImmunoBlot alone (particularly IgM) do produce false positives. A combination of both is the best solution to reduce false positives. A positive IgM with negative EIA is more than likely a false positive result.

### False Positive Results From Rheumatoid Arthritis, Systemic Lupus Erythematosus And Treponemal Infections

False-positive results of serological tests for Lyme disease have been reported in cases of recent primary infection with varicella-zoster virus, Epstein-Barr virus and cytomegalovirus and herpes simplex virus (HSV) type 2. **About 5% of a normal population has false positive IgM Western Blots.**

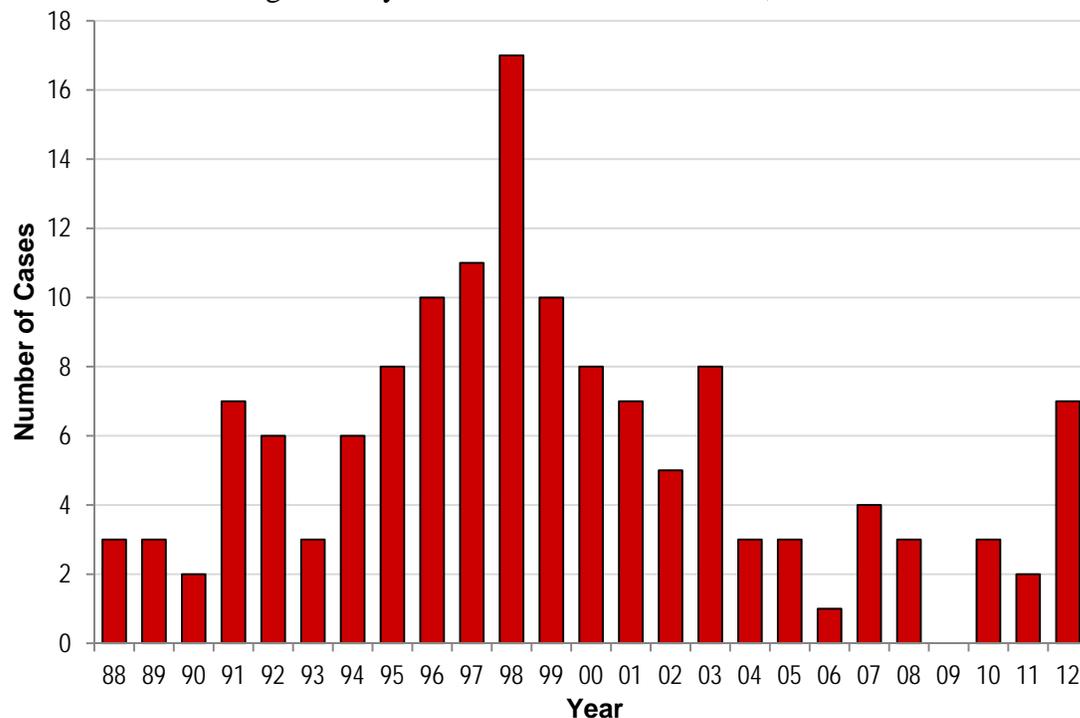
## Overdiagnosis Of Lyme Disease Is A Major Problem

In one study at a university-based referral clinic, only 339 (43%) of 788 patients were found to have - or have had - Lyme disease. False-positive test results are a major problem; they are more common than false-negative results in late disease. Excessive reliance on serologic tests, as well as failure to consider alternative diagnoses, contributes to overdiagnosis. A recent position paper by the American College of Physicians urges clinicians to determine the pretest probability of Lyme disease before ordering serologies; to perform Western blotting in the case of indeterminate serologic results; also to not regard a positive result as an indication for automatic antibiotic therapy if the pretest probability of disease is low. In fact, if the pretest probability of Lyme disease is low, a positive test result is more likely a false-positive than a true-positive.

## Cases and Trends

During the period of 1988 to 2012, the number of cases per year reported in Louisiana increased to a high of only 18 cases in 1998, but since, has declined to zero to seven cases per year confirmed in recent years (Figure 1). These numbers are extremely low in comparison to endemic areas of the United States.

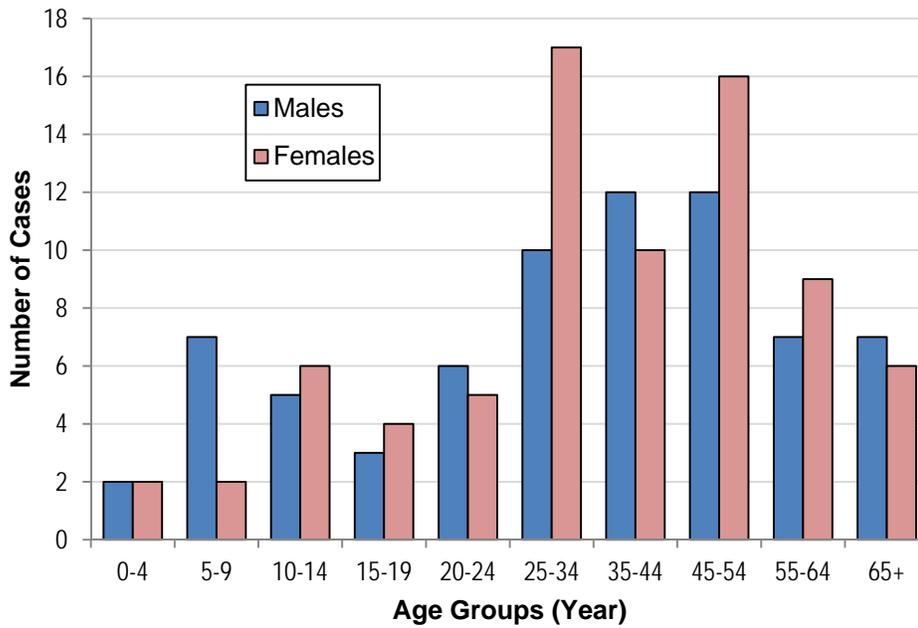
Figure 1: Lyme disease cases - Louisiana, 1988-2012



## Age, Sex and Race Distribution

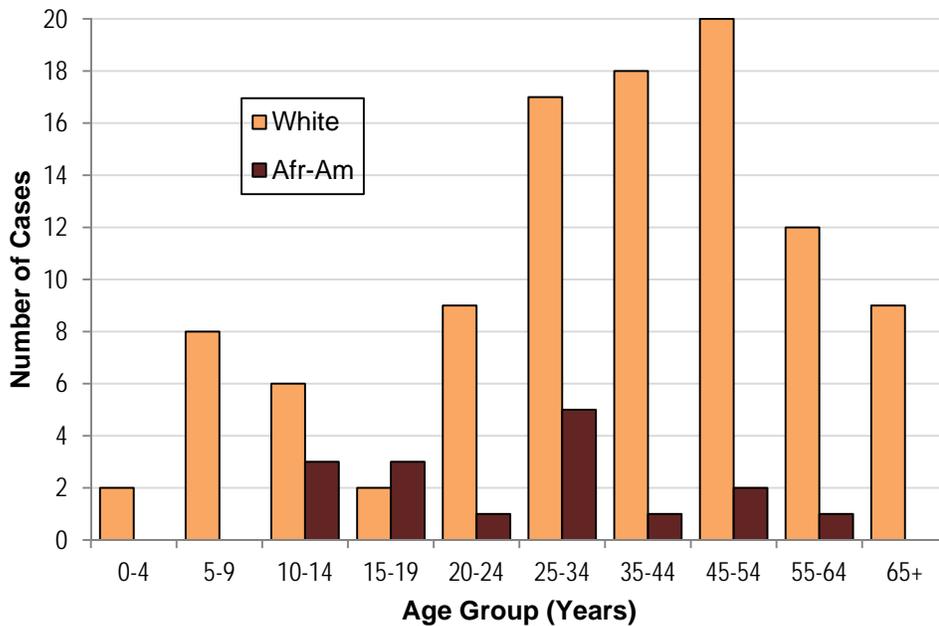
In Louisiana from 1988 to 2012, 52.1% of the cases were reported in females and 47.9% were reported in males (Figure 2). For both males and females, more cases occurred among people ages 25 years to 64 years, most likely due to increased exposure to ticks in these age groups.

Figure 2: Lyme disease cases by gender and age - Louisiana, 1988-2012



From 1988 to 2012 in Louisiana, among cases where race was documented, more cases occurred among Whites (87%) than Blacks (13%) (Figure 3).

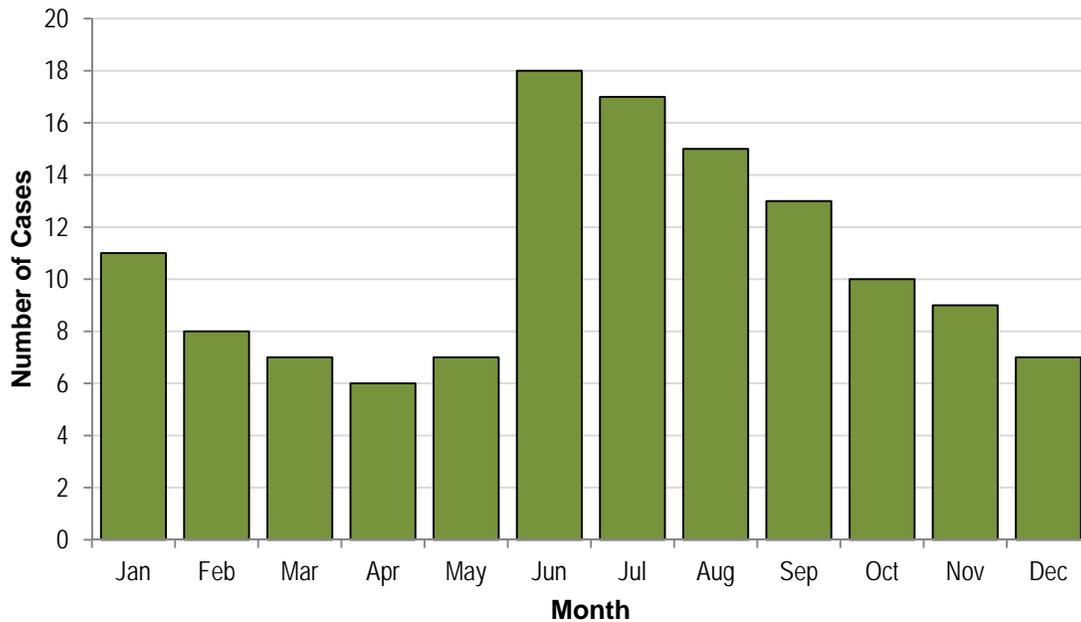
Figure 3: Lyme disease cases by race and age - Louisiana, 1988-2012



## Seasonality

The seasonal distribution shows a peak in cases occurring in June; then case numbers slowly decrease into the winter months (Figure 4).

Figure 4: Lyme disease number of cases by month - Louisiana, 1988-2012



## Geographical Distribution

The geographical distribution does not show large numbers of cases in the rural parishes (Table).

Table: Cases of Lyme disease by Parish - Louisiana, 1988-2012

Region	Parish	Cases 1998-2012	Region	Parish	Cases 1998-2012
1	Jefferson	11	6	Concordia	1
	Orleans	8		Grant	1
	Plaquemines	0		La Salle	0
	St. Bernard	1		Rapides	3
2	Ascension	4		Vernon	4
	E. Baton Rouge	7		Winn	1
	E. Feliciana	0	7	Bienville	1
	Iberville	2		Bossier	3
	Pointe Coupee	1		Caddo	13
	W. Baton Rouge	0		Claiborne	0
	W. Feliciana	1		De Soto	1
3	Assumption	0		Natchitoches	0
	Lafourche	3		Red River	0
	St. Charles	2		Sabine	1
	St. James	0		Webster	4
	St. John	2		8	Caldwell
	St. Mary	0	E. Carroll		0
	Terrebonne	3	Franklin		1
4	Acadia	1	Jackson		0
	Evangeline	2	Lincoln		1
	Iberia	1	Madison		2
	Lafayette	5	Morehouse		1
	St. Landry	2	Ouachita		5
	St. Martin	3	Richland		1
	Vermilion	2	Tensas		0
5	Allen	2	Union	1	
	Beauregard	1	W. Carroll	0	
	Calcasieu	5	9	Livingston	4
	Cameron	0		St. Helena	1
	Jefferson Davis	0		St. Tammany	9
6	Avoyelles	2		Tangipahoa	2
	Catahoula	0		Washington	8