

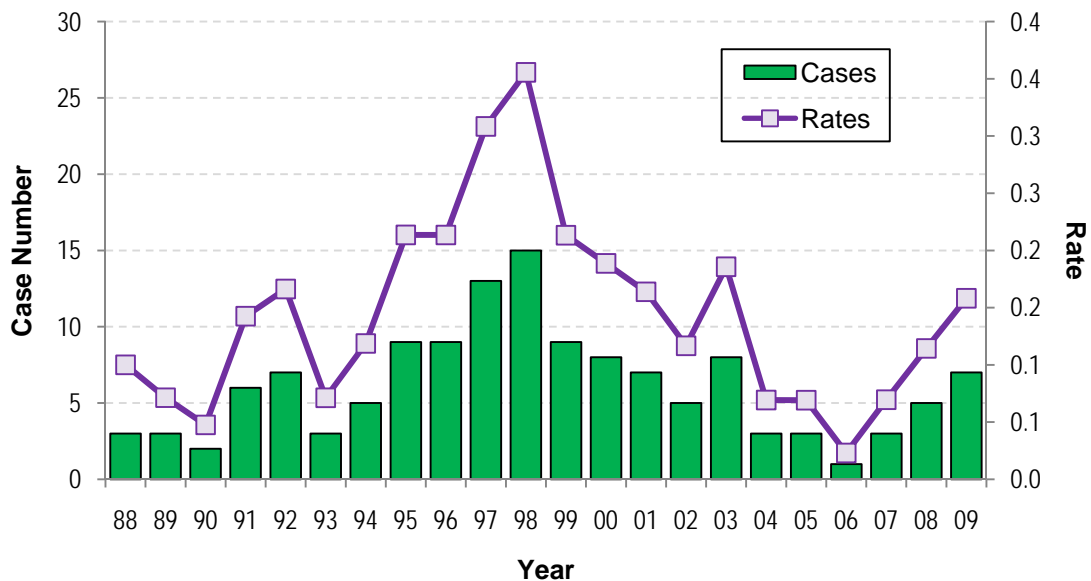
## Lyme Disease

*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.

Significant risk of Lyme disease occurs in only one hundred counties in ten states that lie in the northeastern, north-central and Atlantic seaboard areas and a few counties in northern California. The risk of infection in endemic areas is dramatically greater than the risk in non-endemic areas. Overall annual incidence of Lyme disease in the U.S. is about six cases per 100,000 population. In hyperendemic areas, however, the incidence rate is often greater than 1,000 per 100,000 population. The small number of cases reported from Louisiana, one to fifteen cases per year, seems to confirm that Louisiana is not an area of intense transmission. (Figure 1)

Figure 1: Lyme disease cases - Louisiana, 1988-2009



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 (one or two percent) 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 result 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 five percent 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.

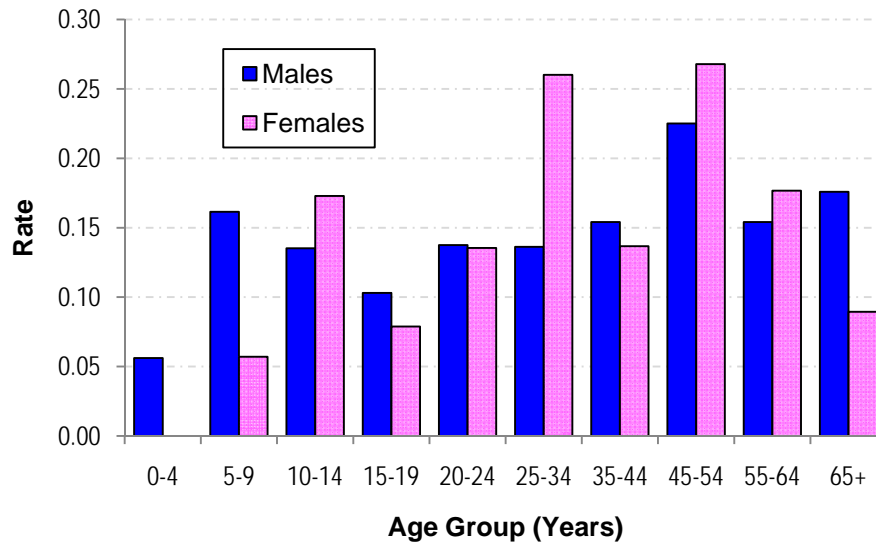
### **Cases, Rates and Trends**

The numbers of cases per year reported in Louisiana increased up to 1998 to a high of only fifteen cases, but appear to be leveling off or declining in recent years with a small increase in 2003, a decline until 2006, but a steady increase until 2009. The numbers are extremely low in comparison to the endemic areas of the United States. The reporting rates range from 0.2 to 0.4 per 100,000 population.

### **Age, Sex and Race Distribution**

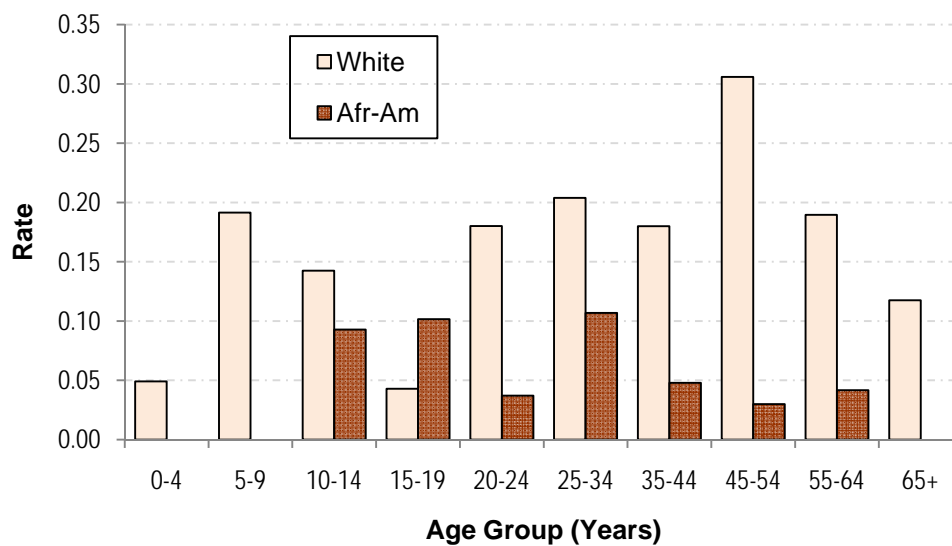
Persons of all races, sexes and age groups are equally susceptible. In Louisiana from 1988 to 2009, 48.8% of the cases were reported in females and 51.2% were reported in males. (Figure 2)

Figure 2: Lyme disease average annual incidence rates by gender and age  
Louisiana, 1988-2009



In the same time period Louisiana was characterized by a higher reported incidence rate in Whites. (Figure 3)

Figure 3: Lyme disease mean annual incidence rates (cases per 100,000) by race and age  
Louisiana, 1988-2009

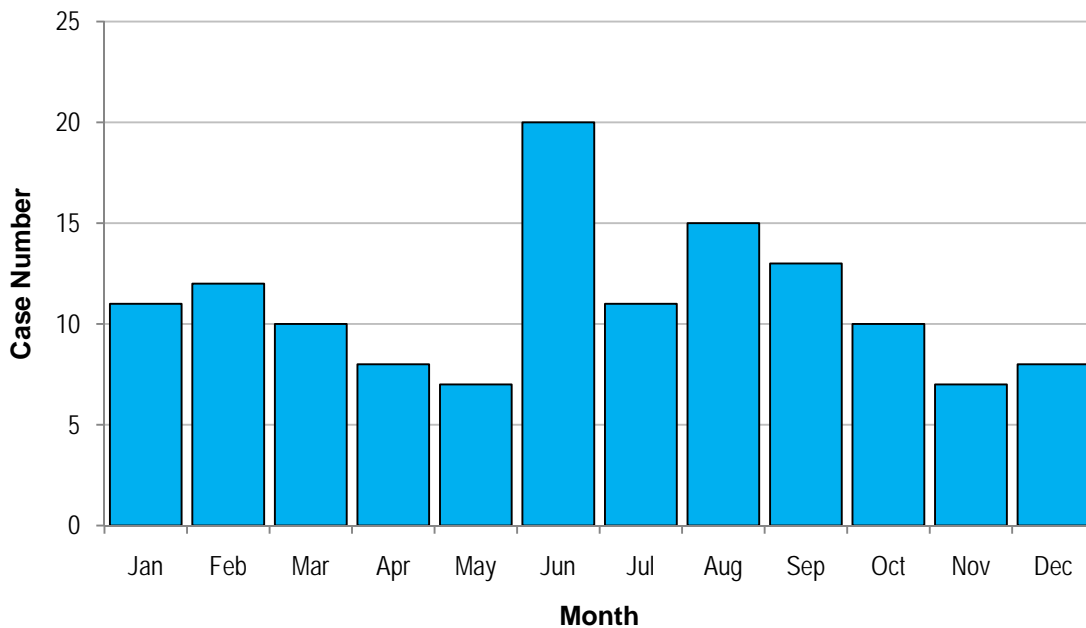


Persons exposed to wooded areas, overgrown brush, or residential areas adjacent to the like are at the highest risk in endemic areas. Although Louisiana is not considered an area of high risk, avoidance of tick infested areas and use of personal protective measures are recommended for the prevention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

### Seasonality

The seasonal distribution shows an increase primarily in the month of June (Figure 4).

Figure 4: Lyme disease number of cases by month - Louisiana, 1988-2009



### Geographical Distribution

The geographical distribution does not show large numbers of cases in the rural parishes. (Figure 5)

