

Lyme Disease

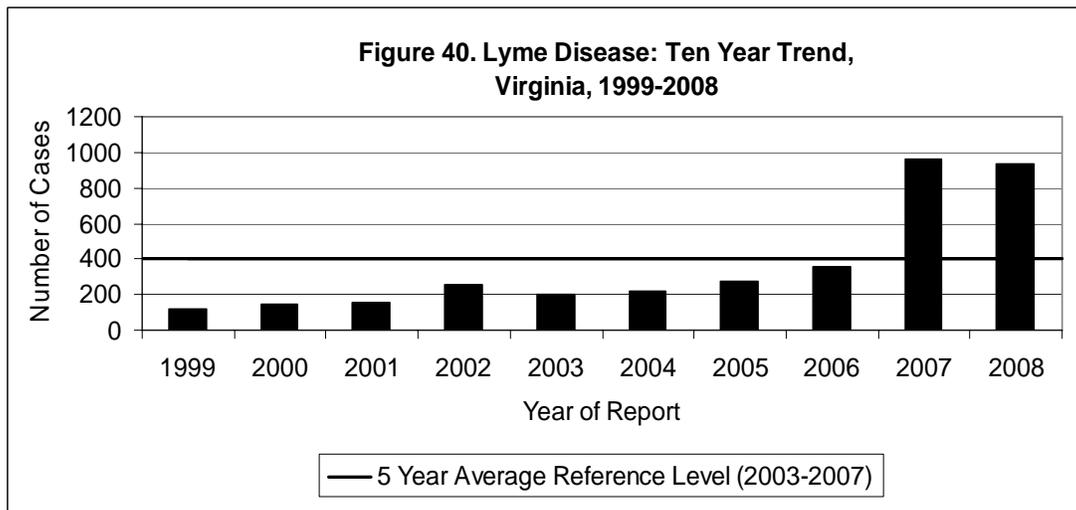
Agent: *Borrelia burgdorferi* (spirochete bacteria)

Mode of Transmission: Transmitted to humans through the bite of infected nymphal or adult blacklegged ticks (formerly known as deer ticks). No other tick species plays a role in Lyme disease transmission. Infected ticks must bite a human and remain attached while feeding for a minimum of 36 hours to be able to transmit the Lyme disease pathogen.

Signs/Symptoms: Initial symptoms include fever, headache, fatigue, joint pains, chills and a characteristic “bulls-eye” skin rash called erythema migrans, or EM rash. If untreated, infection can affect joints, heart, and nervous system.

Prevention: Avoid being bitten by ticks. Avoid likely tick habitats such as humid forest environments with dense undergrowth and/or heavy leaf litter, and tall weeds along forest margins, tree lines, forest trails and forest clearings. When in tick-prone habitats, wear light-colored clothing with pants legs tucked into socks. Apply permethrin-based repellents to clothing (shoes, pants, and socks). Apply DEET, Picaridin, or Oil of Lemon Eucalyptus-based repellents to exposed areas of skin (legs and arms) prior to entering tick habitats. Thoroughly check your body for ticks after visiting tick-prone habitats and remove attached ticks as soon as possible.

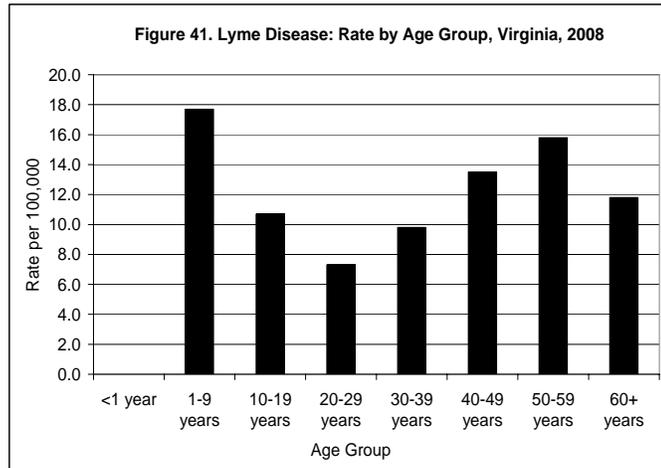
Other Important Information: Lyme disease is diagnosed based on symptoms, physical findings (e.g., rash), and the possibility of prolonged exposure to feeding by an infected blacklegged tick. The EM rash is the only physical manifestation that is distinctive enough to allow a definitive diagnosis without laboratory testing. The EM rash causes little or no sensation, and may be overlooked or absent in up to 30% of persons with Lyme disease.



The 933 cases reported in 2008 were similar to the 959 cases reported in 2007, but represent a 133% increase from the five year average of 401.6 cases per year (Figure 40). The dramatic increase in the number of reported cases of Lyme disease is likely due to a large increase in Lyme disease occurrence, but may also have resulted from increased case follow-up by local health departments and the introduction of electronic laboratory

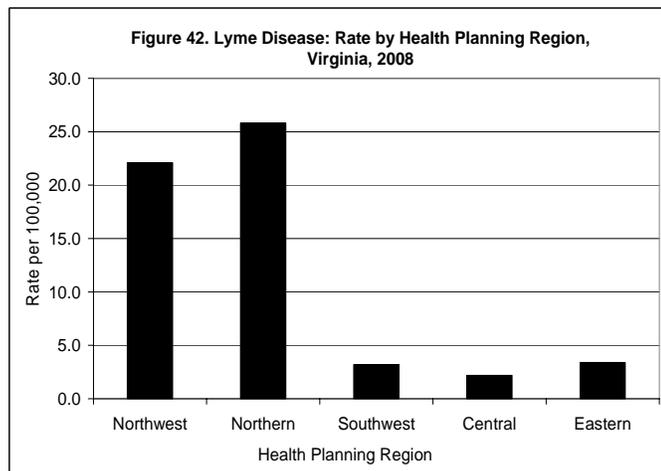
reporting of Lyme-related findings. The increased disease incidence occurred primarily in suburbanized areas of Virginia. Suburbanization may enhance the environment for white-tailed deer (which are crucial for tick reproduction) and white-footed mice (which play an important role in transmission of the Lyme disease agent to ticks). Deer hunting activity is minimal in suburbanized forest areas, bringing the resident human population into greater contact with the tick vector's natural habitat.

There was a bimodal peak in cases by age group, with the highest incidence in children aged 1 to 9 years (17.7 cases per 100,000 population), followed by adults aged 50 to 59 years (15.8 cases per 100,000) (Figure 41). This bimodal age distribution for Lyme disease is very typical of what is observed in Lyme-endemic regions of the United States.



Among cases for which race was recorded, the white population had the highest incidence (9.0 cases per 100,000), followed by the “other” population (3.8 per 100,000), and the black population (0.7 per 100,000). Racial differences may in part be related to differences in access to healthcare for diagnosis, in exposure to suburban and rural tick habitats, and in possibly easier detection of the EM rash in individuals with lighter skin pigmentation. The incidence rate was almost identical in females and males (11.9 and 12.0 per 100,000, respectively).

Cases were reported from all regions of the state; however, the incidence of Lyme disease was highest in the northern region (25.8 cases per 100,000) and northwest region (22.1 per 100,000). Rates in other regions ranged from 2.2 to 3.4 per 100,000 (Figure 42). Although Lyme disease cases were reported in every quarter during 2008, there was a seasonal pattern, with the majority of cases (75%) reported from April to September and a peak occurrence in June and July.



The seasonality of Lyme disease is strongly correlated to the period when nymphal black-legged ticks, the primary vectors of Lyme disease, are active. This period usually occurs from April through mid-July.