

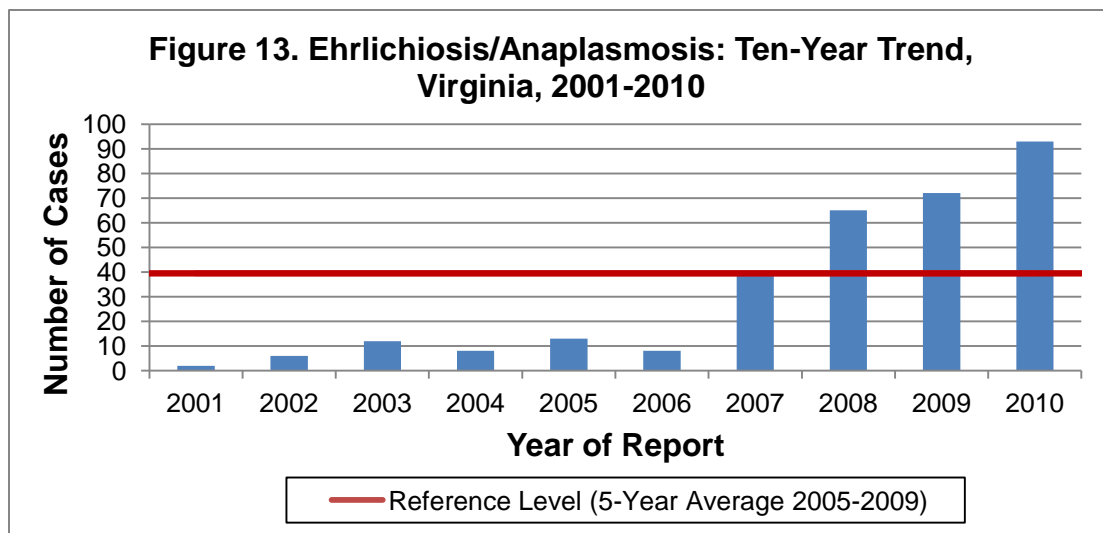
Ehrlichiosis/Anaplasmosis

Agent(s): Bacteria belonging to the family *Anaplasmataceae*. *Ehrlichia chaffeensis* infects monocytes and causes an illness called human monocytic ehrlichiosis (HME). *E. ewingii* infects granulocytes and causes a disease referred to as an *E. ewingii* infection. *Anaplasma phagocytophilum* also infects granulocytes, causing an illness called human granulocytic anaplasmosis (HGA).

Mode of Transmission: Transmitted to humans through the bite of an infected tick. *E. chaffeensis* and *E. ewingii* may infect adult or occasionally nymphal stage lone star ticks. *Anaplasma phagocytophilum* may infect nymphal stage blacklegged ticks, formerly known as deer ticks. Transmission of these pathogens occurs when an infected tick bites a person and feeds (i.e., remains attached) for a period of more than 24 hours.

Signs/Symptoms: Symptoms are usually non-specific, but commonly include fever, headache, nausea, anorexia, vomiting, and muscle pain. Severe forms of illness can result in difficulty breathing or bleeding disorders. Persons with weakened immune systems might develop more severe disease.

Prevention: Minimizing tick bites by recognizing likely tick habitats such as humid forest environments with dense undergrowth or heavy leaf litter, and tall weeds along forest margins, tree lines, forest trails and forest clearings. Repellents containing DEET, Picaridin, BioUD, IR3535, or oil of lemon eucalyptus are effective against ticks and should be applied to exposed areas of skin before entering tick habitats. When in tick-prone habitats, light-colored clothing should be worn with pants legs tucked into socks, and permethrin-based repellants should be applied to clothing, socks and shoes. After visiting tick habitats, a person should thoroughly check all body surfaces for ticks and, if found, remove attached ticks as soon as possible.



Ninety-three cases of ehrlichiosis/anaplasmosis were reported in Virginia during 2010. This is a 29% increase from the 72 cases seen in 2009 and a 136% increase from the five-year average of 39.4 cases per year (Figure 13). The considerable increase in reported cases may be due to numerous factors, including changes in diagnosis and reporting. However, an important factor appears to be growing deer populations, particularly in

recently developed suburban areas where the number of deer were previously controlled by hunting. Adult lone star ticks and blacklegged ticks both depend on deer blood for reproduction and deer serve as a reservoir for *E. chaffeensis*. Among cases reported in 2010, 78 were specified as HME, 12 were specified as HGA, and three were ehrlichiosis/anaplasmosis unspecified.

In 2010, ehrlichiosis/anaplasmosis incidence was highest in the 60 year and older age group, with 3.5 cases per 100,000. Persons in this age group accounted for 52% of all identified cases. Incidence decreased with age, ranging from 1.6 per 100,000 in the 50-59 year age group to 0.2 per 100,000 in the 1-9 year age group. No cases were reported from the less than one year age group. This is similar to the age pattern for ehrlichiosis/anaplasmosis observed in other endemic areas of the United States, where infections occur predominantly among those over the age of 50 years. Incidence in the white population was three times that in the black population (0.9 and 0.3 per 100,000, respectively). The rate in males was more than double the rate in females (1.7 and 0.7 per 100,000, respectively).

Cases were reported from all regions of the state. In 2010, the southwest region had the highest incidence of ehrlichiosis/anaplasmosis, at 2.4 cases per 100,000, followed by the northwest region at 2.3 per 100,000. Rates in the remaining regions of the state ranged from 0.4 to 1.3 per 100,000, respectively. The vast majority of cases (91.4%) had symptom onset in the second and third quarters, which represents the time of the year when ticks are most actively feeding. During 2010, one death attributed to *E. chaffeensis* infection was reported, and occurred in a child less than 10 years of age from the southwest region.