

Tick-Associated Diseases

There are at least eleven recognized human diseases associated with ticks in the United States, seven or eight of which occur in the mid-Atlantic or northeastern states. Each of the diseases is highlighted in this section of the handbook. The greatest attention is given to Lyme disease, anaplasmosis (ehrlichiosis), and babesiosis. Although each is a zoonotic vector-associated disease, not all are caused by an infectious agent or are exclusively tick transmitted. A toxin causes tick paralysis, tularemia can be transmitted through contaminated animal tissue or other materials, and babesiosis and anaplasmosis can be transmitted perinatally and through blood transfusion. Tick associations with other pathogens like *Bartonella* or *Mycoplasma* are not yet clearly defined. The causative agents transmitted to humans by the tick are maintained in a reservoir host. *Ixodes* ticks can be infected with more than one agent and co-transmission and infection can occur. Alternatively, multiple infections can occur from multiple tick bites. In a Connecticut and Minnesota study, 20% of Lyme disease patients also had serological evidence of exposure to another tick-borne agent.