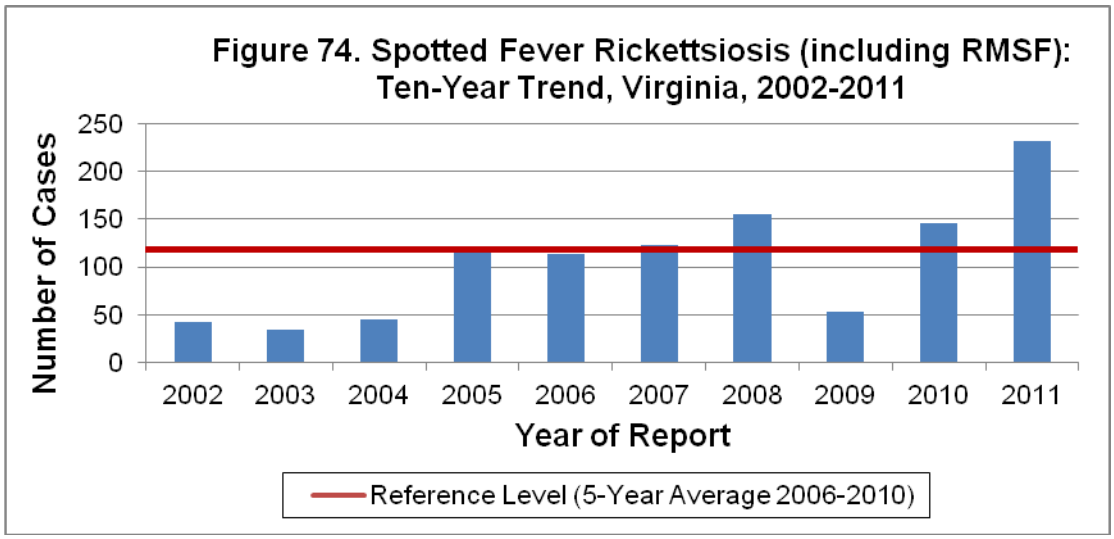
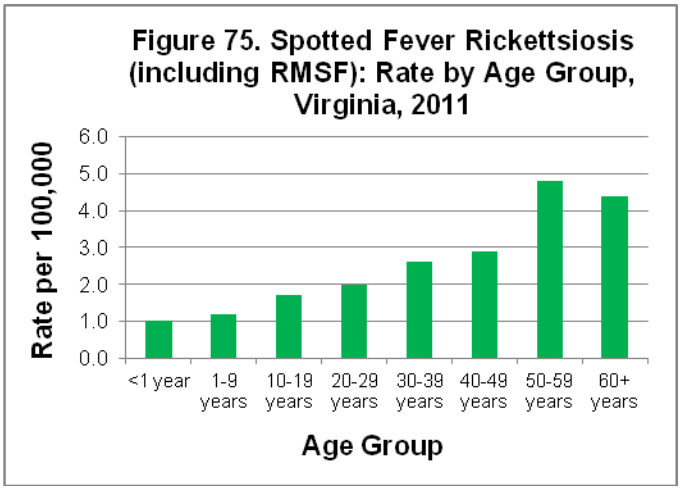
Spotted Fever Rickettsiosis (including Rocky Mountain Spotted Fever)

Agent: Tick-borne species of *Rickettsia* (bacteria). Spotted fever rickettsiosis includes a number of different diseases including Rocky Mountain spotted fever (RMSF), caused by *Rickettsia rickettsii*, and Tidewater spotted fever, caused by *Rickettsia parkeri*.
Mode of Transmission: Transmitted to humans by the bite of an infected tick. Ticks must be attached for at least 10 to 20 hours to transmit the bacterium.
Signs/Symptoms: Persons with spotted fever rickettsiosis may have a sudden onset of fever, severe headache, muscle pain, nausea and vomiting. Three to five days after onset of illness, a rash may develop that starts on the wrists and ankles, and spreads to the rest of the body. The rash is seen in about 60% of cases.
Prevention: Tick bites can be minimized by avoiding likely tick-prone habitats such as open fields with tall brush and weeds, old fields with early succession forest growth, or brushy vegetation along trails. Repellents containing DEET, Picaridin, BioUD, IR3535, or oil of lemon eucalyptus as active ingredients 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 shirts tucked into pants. 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, attached ticks should be removed as soon as possible.
Other Important Information: Although the severity of infections attributable to spotted fever rickettsiosis varies greatly depending on the causative species, all suspect patients should be treated as if they have RMSF. Rocky Mountain spotted fever can be serious, or even fatal in up to 30% of untreated patients. Early intervention is recommended. Therefore, if tick exposure is noted or suspected, treatment should be started based on suspicion of infection and not delayed pending the outcome of diagnostic tests. Case-fatality rates have declined greatly in recent years to <1% of cases reported from 2001 to 2012. One possible explanation for this decrease is prompt disease recognition and increased availability and appropriate use of effective antibiotics. Another possible explanation for decreased fatality rates is the increasing prevalence of other spotted fever group *Rickettsiae* (SFGR) species in ticks. These other SFGR species may not cause illness in people, or may cause only a mild illness. However, exposure to these other SFGR causes cross-reactive positive results on blood tests for RMSF. Therefore, it is possible that some RMSF cases counted in recent years are due to positive laboratory reports resulting from infection with non-pathogenic or mildly pathogenic SFGR.

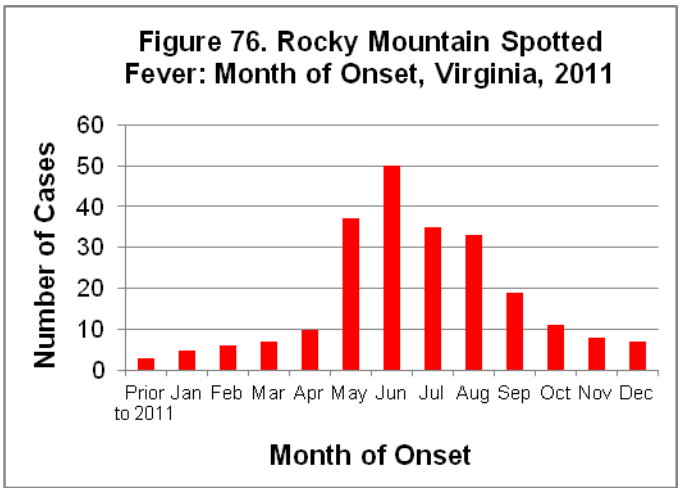
In 2011, 231 cases of spotted fever rickettsiosis were reported in Virginia. This number represents a 59% increase from the 145 cases reported in 2010, and is twice the five-year average of 118 cases per year (Figure 74). This is consistent with the 41% increase in total cases reported nationally from 2010 to 2011.



In 2011, spotted fever rickettsiosis incidence rates were highest in persons aged 50 to 59 years (4.8 per 100,000) and 60 years and older (4.4 per 100,000) (Figure 75). Rates in the remaining age groups increased with age and ranged from 1.0 to 2.9 per 100,000. Although previous national studies have shown a higher incidence for RMSF in children aged less than 10 years, more recent national data indicate a shift in age distribution, with the highest rates among adults aged greater than 40 years.



Information on race was missing for 57% of reported cases. Among cases for which race information was reported, the rate for the white population (1.6 cases per 100,000) was higher than that of the black population (0.5 cases per 100,000), and the "other" race population (0.1 per 100,000). Incidence among males (3.7 per 100,000) was higher than the rate for females (2.1 per 100,000).



The northwest and central regions of Virginia had the highest incidence (6.1 and 5.3 per 100,000, respectively). These two

regions have had the highest rates since 2009. Rates in other regions ranged from 1.3 to 1.9 per 100,000. For 75% of all cases, symptoms began during the months of May through September, peaking in the month of June (Figure 76). This is consistent with peak activity periods for the most common human-biting tick species in Virginia. Among cases reported in 2011, no deaths were attributed to spotted fever rickettsiosis.