

Malaria

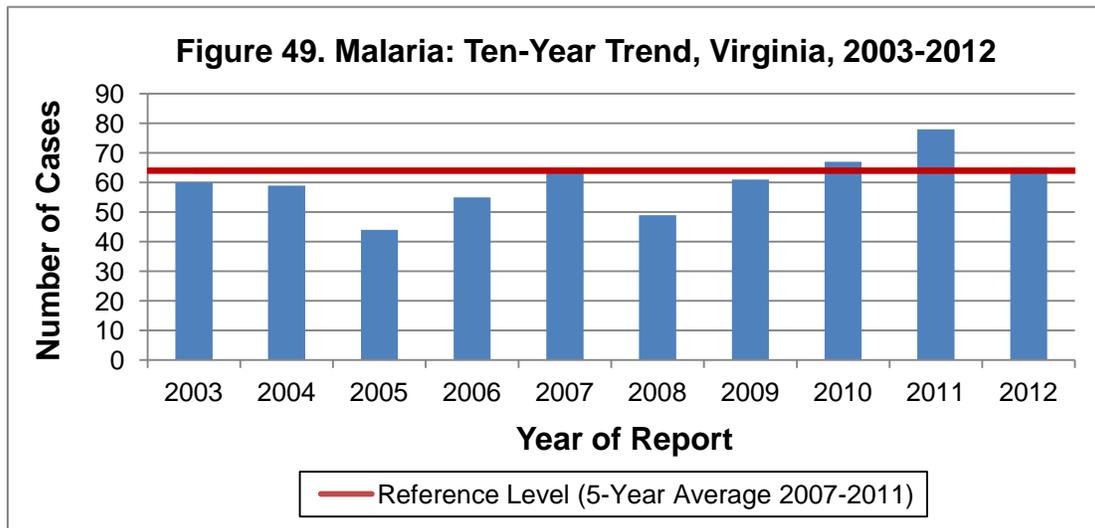
Agent(s): Four different species of protozoan parasites: *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium ovale*, and *Plasmodium malariae*

Mode of Transmission: Transmission through the bite of an infected female *Anopheles* mosquito. Transmission might also occur from infected mother to child during pregnancy or delivery, by blood product transfusion or through transplanted organs from infected donors. Humans and certain *Anopheles* mosquito species are the only natural reservoirs for malaria.

Signs/Symptoms: Typically, high fevers, chills, sweats, severe headache, muscle and joint pain, anorexia, nausea, flu-like illness, anemia and an enlarged spleen. *P. falciparum* infections may progress to severe malaria if not treated promptly; symptoms include acute alteration of brain structure and function (i.e., cerebral malaria), severe anemia, jaundice, renal failure and coma.

Prevention: Appropriate medication for malaria prophylaxis should be taken by travelers when traveling to malaria-endemic countries. Anopheline mosquitoes bite only at dusk, dawn or during night-time hours and tend to enter buildings. Control measures include staying in structures with adequate screening and bed nets, and when outdoors, wearing long-sleeved, loose-fitting, light-colored clothing and mosquito repellents.

Other Important Information: Almost all infections reported in Virginia occur in persons who were infected in other countries. Although malaria is not endemic to Virginia, it may be brought to this region by travelers or immigrants with dormant or inapparent infections. Malaria might also arrive in Virginia with infected mosquitoes transported in aircraft or ships arriving from foreign destinations. Two potential mosquito vectors for malaria are present in Virginia: *Anopheles quadrimaculatus* and *An. punctipennis*.



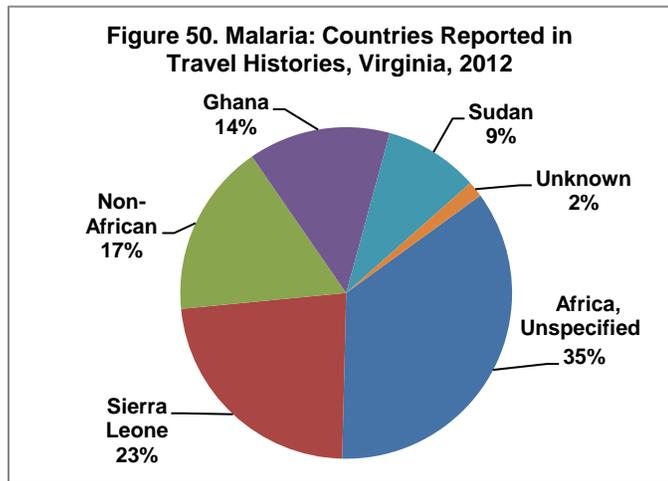
During 2012, 65 cases of malaria were reported in Virginia. This is a 17% decrease from the 78 cases reported in 2011, and similar to the five-year average of 64.0 cases per year (Figure 49).

Incidence rates were highest in the 50-59 and 40-49 year age groups (1.3 and 1.2 per 100,000, respectively). Race was not reported for 37% of cases. Where race was reported, incidence in the black population (1.9 per 100,000) was substantially higher than rates for the “other” race category (0.5 per 100,000) and the white population (0.1 per 100,000). Incidence was higher among males than among females (1.0 and 0.6 per 100,000, respectively). The majority of cases (69%) were reported from the northern region.

Cases occurred throughout the year. Because malaria is almost always acquired outside the United States, observed temporal patterns are related to patterns of travel to endemic countries.

Travel history was not available for one case, but the other cases all reported a history of travel outside of the United States within the two years prior to disease onset. The majority (81%) of those with travel outside the U.S. had visited countries on the African continent.

The African countries most frequently referenced in the travel histories of 2012 cases included Sierra Leone (15 cases), Ghana (9 cases) and Sudan (6 cases) (Figure 50). Non-African countries mentioned in travel histories included India (3 cases), Pakistan, (2 cases) Afghanistan (2 cases), and Sri Lanka, Suriname, El Salvador, and Colombia (1 case each).



The parasitic species of *Plasmodium* were identified in 52 individuals diagnosed with malaria in 2012. Specifically, 71% were infected with *P. falciparum*, 17% were infected with *P. vivax*, 8% were infected with *P. ovale*, and 4% were infected with *P. malariae*. Three individuals were infected with multiple species of *Plasmodium*.

Information on malaria prophylaxis usage was obtained for 54 of the reported cases. Of these, only 25% (16 individuals) reported receiving prophylaxis for malaria, and 7 of the 16 individuals reported missing at least one dose. No deaths were known to be due to malaria in Virginia in 2012.