Malaria in Africa; Ghana

All statistics below relate to the year 2017 (the most recent data available by the World Health Organization) unless stated otherwise

In 2017, there were an estimated 219 million cases of malaria in 87 countries and the estimated number of malaria deaths stood at 435,000.

The World Health Organization African Region carries a disproportionately high share of the global malaria burden, being home to 92% of malaria cases and 93% of malaria deaths.

Total funding for malaria control and elimination reached an estimated US$ 3.1 billion. Contributions from governments of endemic countries amounted to US$ 900 million, representing 28% of total funding.

Malaria is caused by *Plasmodium* parasites. The parasites are spread to people through the bites of infected female *Anopheles* mosquitoes, called "malaria vectors." There are 5 parasite species that cause malaria in humans, and 2 of these species – *P. falciparum and P. vivax* – pose the greatest threat.

P. falciparum accounts for 99.7% of estimated malaria cases in the WHO African Region, as well as in the majority of cases in the WHO regions of South-East Asia (62.8%), the Eastern Mediterranean (69%) and the Western Pacific (71.9%).

5 countries accounted for nearly half of all malaria cases worldwide, most of them in Africa: Nigeria (25%), the Democratic Republic of the Congo (11%), Mozambique (5%), India (4%) and Uganda (4%).

Children under 5 years of age are the most vulnerable group affected by malaria, accounting for 61% (266,000) of all malaria deaths worldwide.

Transmission

In most cases, malaria is transmitted through the bites of female *Anopheles* mosquitoes. There are more than 400 different species of *Anopheles* mosquito; around 30 are malaria vectors of major importance. All of the important vector species bite between dusk and dawn. The intensity of transmission depends on factors related to the parasite, the vector, the human host, and the environment.

Anopheles mosquitoes lay their eggs in water, which hatch into larvae, eventually emerging as adult mosquitoes. The female mosquitoes seek a blood meal to nurture their eggs. Each species of *Anopheles* mosquito has its own preferred aquatic habitat; for example, some prefer small, shallow collections of fresh water, such as puddles and hoof prints, which are abundant during the rainy season in tropical countries.

Transmission is more intense in places where the mosquito lifespan is longer (so that the parasite has time to complete its development inside the mosquito) and where it prefers to bite humans rather than other animals. *The long lifespan and strong human-biting habit of the African vector species is the main reason why approximately 90% of the world's malaria cases are in Africa.*

Transmission also depends on climatic conditions that may affect the number and survival of mosquitoes, such as rainfall patterns, temperature and humidity. In many places, transmission is seasonal, with the peak during and just after the rainy season. Malaria epidemics can occur when climate and other conditions suddenly favor transmission in areas where people have little or no immunity to malaria. They can also occur when people with low immunity move into areas with intense malaria transmission, for instance to find work, or as refugees.

Human immunity is another important factor, especially among adults in areas of moderate or intense transmission conditions. Partial immunity is developed over years of exposure, and while it never provides complete protection, it does reduce the risk that malaria infection will cause severe disease. *For this reason, most malaria deaths in Africa occur in young children*, whereas in areas with less transmission and low immunity, all age groups are at risk.

Diagnosis and treatment

Early diagnosis and treatment of malaria reduces disease and prevents deaths. It also contributes to reducing malaria transmission.

WHO recommends that all cases of suspected malaria be confirmed using parasite-based diagnostic testing (either microscopy or rapid diagnostic test) *before administering treatment.* Determining the species of parasite causing the infection is especially important when planning an appropriate treatment regiment, as infection by *P. falciparum* or *P. vivax* will be cause of greater concern than the other three species. The Co-Diagnostics malaria differentiation test currently under development has been designed to not only confirm the presence of malaria in a patient sample, but also whether the infection was caused by the *P. falciparum* or *P. vivax* parasites, and differentiate between them.

Source: *https://www.who.int/news-room/fact-sheets/detail/malaria*

High-burden countries

11 countries accounted for approximately 70% of estimated malaria cases and deaths globally: 10 in sub-Saharan Africa and India. Among these countries, only India reported progress in reducing its malaria cases in 2017 compared to 2016.

Source: *https://www.who.int/malaria/media/world-malaria-report-2018/en/*

Economic Impact of Malaria in Africa

The economic impact of malaria is estimated to cost Africa $12 billion every year. This figure factors in costs of health care, absenteeism, days lost in education, decreased productivity due to brain damage from cerebral malaria, and loss of investment and tourism.

Malaria is bad for business: the employee absenteeism, increased health care spending, and decreased productivity can all negatively impact a company's reputation.

A 2011 Roll Back Malaria report found that in sub-Saharan Africa, 72% of companies reported a negative malaria impact, with 39% perceiving these impacts to be serious.

In a 2004 survey, nearly three-quarters of companies in the Africa region reported that malaria was negatively affecting their business.

Poor children and women in rural areas are at the greatest risk of death or severe debility from malaria, which drains the resources of families.

Overall, households in Africa lose up to 25% of income to the disease.

Leading economists estimate that malaria causes an "economic growth penalty" of up to 1.3% per year in malaria endemic African countries. Malaria discourages investments and tourism, affects land use patterns and crop selection resulting in sub-optimal agricultural production, reduces labor productivity, and impairs learning.

Malaria can strain national economies, impacting some nations' gross domestic product by as much as an estimated 5–6%.

In some areas, malaria accounts for 15% of health-related absenteeism from school. It is estimated that in endemic areas, malaria may impair as much as 60% of the schoolchildren's learning ability.

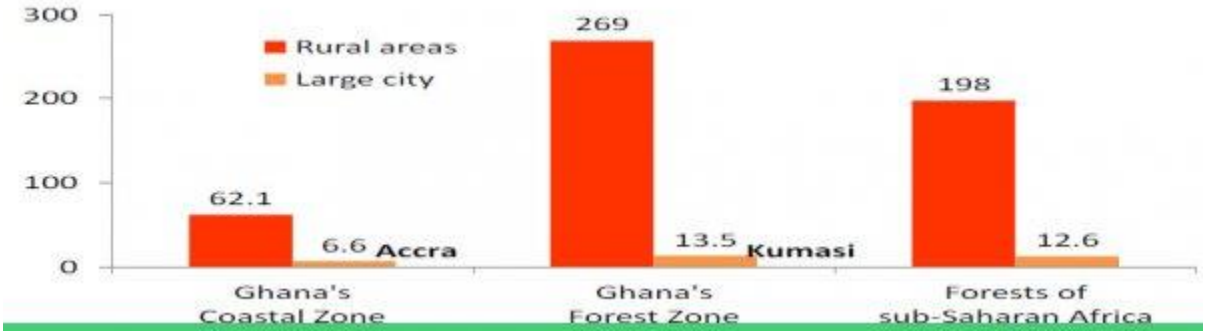
Access to malaria control interventions—including more appropriate, effective treatment options—can increase productivity, encourage market expansion, and boost household spending.

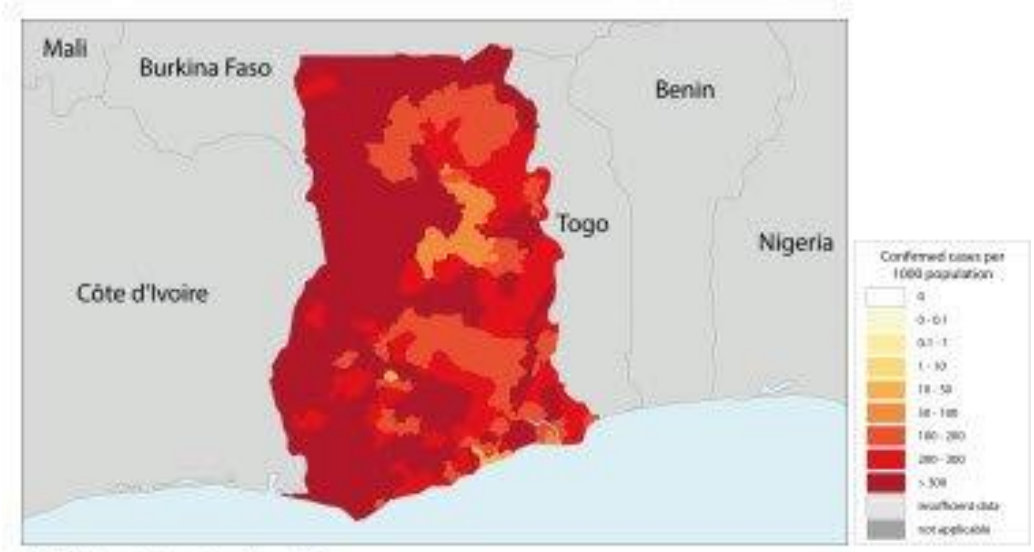
Source: *https://www.malariafreefuture.org/malaria#economic_impact*

Malaria in Ghana

- 100% of Ghana is at risk of malaria.
- Malaria in Ghana accounts for 4% of the global burden and 7% of the malaria burden in West Africa, and the country is a participant in the WHO's "High Burden to high impact" approach to combat the disease. The initiative is built on the principle that no one should die from a disease that can be prevented, diagnosed, and treated. Ghana's participation in the approach illustrates its commitment to reducing the burden placed on the country by malaria, also making the country an ideal entry point to the African continent for Co-Diagnostics' malaria differentiation test.
- Malaria was responsible for 19% of *all* recorded deaths in Ghana in 2015.
- Malaria-attributable mortality has declined significantly from 19% (2010) to 4.2% (2016) but it remains the number one cause of death in 2018 according to the Centers for Disease Control and Prevention.
- Malaria under 5 years' case fatality rate declined from 15% to 11% from 2010 to 2016.
- The health facility case fatality rate among children under five years of age declined from 14 percent in 2000 to less than half a percent in 2016.
- Malaria admissions increased from 280,000 to 340,000 persons between 2000 and 2017.
- Higher rate in poorest households (52%) than the richest households (3%)
- Higher rate in non-literate mothers (43%) than secondary education or higher (5%)

- Highly seasonal malaria transmission in northern regions. 50-59% of clinical malaria cases occur during 4 months (July-October) in the Savannah regions: Northern, Upper East, Upper West regions





I. Epidemiological profile

Population (UN Population Division)	2017	%
High transmission (>1 case per 1000 population)	28.8M	100
Low transmission (0-1 case per 1000 population)	0	-
Malaria free (0 cases)	0	-
Total	28.8M	

Source: *https://www.severemalaria.org/countries/ghana*