World Health Organization

Malaria

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Key facts

- Malaria is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected female Anopheles mosquitoes. It is preventable and curable.
- In 2021, there were an estimated 247 million cases of malaria worldwide.
- The estimated number of malaria deaths stood at 619 000 in 2021.
- The WHO African Region carries a disproportionately high share of the global malaria burden. In 2021, the region was home to 95% of malaria cases and 96% of malaria deaths. Children under 5 accounted for about 80% of all malaria deaths in the Region.

Overview

Malaria is an acute febrile illness caused by *Plasmodium* parasites, which are spread to people through the bites of infected female *Anopheles* mosquitoes. 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* is the deadliest malaria parasite and the most prevalent on the African continent. *P. vivax* is the dominant malaria parasite in most countries outside of sub-Saharan Africa.

The first symptoms – fever, headache and chills – usually appear 10–15 days after the infective mosquito bite and may be mild and difficult to recognize as malaria. Left untreated, *P. falciparum* malaria can progress to severe illness and death within a period of 24 hours.

In 2021, nearly half of the world's population was at risk of malaria. Some population groups are at considerably higher risk of contracting malaria and developing severe disease: infants, children under 5 years of age, pregnant women and patients with HIV/AIDS, as well as people with low immunity moving to areas with intense malaria transmission such as migrant workers, mobile populations and travellers.

Disease burden

According to the latest World malaria report, there were 247 million cases of malaria in 2021 compared to 245 million cases in 2020. The estimated number of malaria deaths stood at 619 000 in 2021 compared to 625 000 in 2020.

Over the 2 peak years of the pandemic (2020–2021), COVID-related disruptions led to about 13 million more malaria cases and 63 000 more malaria deaths. The WHO African Region continues to carry a disproportionately high share of the global malaria burden. In 2021 the Region was home to about 95% of all malaria cases and 96% of deaths. Children under 5 years of age accounted for about 80% of all malaria deaths in the Region.

Four African countries accounted for just over half of all malaria deaths worldwide: Nigeria (31.3%), the Democratic Republic of the Congo (12.6%), United Republic of Tanzania (4.1%) and Niger (3.9%).

Prevention

Over the last 2 decades, expanded access to WHO-recommended malaria prevention tools and strategies – including effective vector control and the use of preventive antimalarial drugs – has had a major impact in reducing the global burden of this disease.

Vector control

Vector control is a vital component of malaria control and elimination strategies as it is highly effective in preventing infection and reducing disease transmission. The 2 core interventions are insecticide-treated nets (ITNs) and indoor residual spraying (IRS).

Progress in global malaria control is threatened by emerging resistance to insecticides among *Anopheles* mosquitoes. As described in the latest *World malaria report*, other threats to ITNs include insufficient access, loss of nets due to the stresses of day-to-day life outpacing replacement, and changing behaviour of mosquitoes, which appear to be biting early before people go to bed and resting outdoors, thereby evading exposure to insecticides.

Preventive chemotherapies

Preventive chemotherapy is the use of medicines, either alone or in combination, to prevent malaria infections and their consequences. It requires giving a full treatment course of an antimalarial medicine to vulnerable populations (generally infants, children under 5 years of age and pregnant women) at designated time points during the period of greatest malarial risk, regardless of whether the recipients are infected with malaria. Preventive chemotherapy includes perennial malaria chemoprevention (PMC), seasonal malaria chemoprevention (SMC), intermittent preventive treatment of malaria in pregnancy (IPTp) and school-aged children (IPTsc), post-discharge malaria chemoprevention (PDMC) and mass drug administration (MDA). These safe and cost-effective strategies are intended to complement ongoing malaria control activities, including vector control measures, prompt diagnosis of suspected malaria, and treatment of confirmed cases with antimalarial medicines.

Vaccine

Since October 2021, WHO also recommends broad use of the RTS,S/AS01 malaria vaccine among children living in regions with moderate to high *P. falciparum* malaria transmission. The vaccine has been shown to significantly reduce malaria, and deadly severe malaria, among young children.

Questions and answers on the RTS,S vaccine.

Case management

Early diagnosis and treatment of malaria reduces disease, prevents deaths and contributes to reducing transmission. WHO recommends that all suspected cases of malaria be confirmed using parasite-based diagnostic testing (through either microscopy or a rapid diagnostic test). Diagnostic testing enables health providers to swiftly distinguish between malarial and non-malarial fevers, facilitating appropriate treatment.

The best available treatment, particularly for *P. falciparum* malaria, is artemisinin-based combination therapy (ACT). The primary objective of treatment is to ensure the rapid and full elimination of *Plasmodium* parasites to prevent an uncomplicated case of malaria from progressing to severe disease or death.

Antimalarial drug resistance

Over the last decade, antimalarial drug resistance has emerged as a threat to global malaria control efforts in the Greater Mekong subregion. WHO is also concerned about more recent reports of drug-resistant malaria in Africa. Regular monitoring of drug efficacy is needed to inform treatment policies in malaria-endemic countries, and to ensure early detection of, and response to, drug resistance.

For more on WHO's work on antimalarial drug resistance in the Greater Mekong subregion, visit the Mekong Malaria Elimination Programme webpage. WHO is also developing a strategy to address drug resistance in Africa.

Elimination

Malaria elimination is defined as the interruption of local transmission of a specified malaria parasite species in a defined geographical area as a result of deliberate activities. Continued measures to prevent re-establishment of transmission are required.

In 2021, 35 countries reported fewer than 1000 indigenous cases of the disease, up from 33 countries in 2020 and just 13 countries in 2000. Countries that have achieved at least 3 consecutive years of zero indigenous cases of malaria are eligible to apply for the WHO certification of malaria elimination. Since 2015, 9 countries have been certified by the WHO Director-General as malaria-free, including Maldives (2015), Sri Lanka (2016), Kyrgyzstan (2016), Paraguay (2018), Uzbekistan (2018), Argentina (2019), Algeria (2019), China (2021) and El Salvador (2021).

Countries and territories certified malaria-free by WHO.

Surveillance

Malaria surveillance is the continuous and systematic collection, analysis and interpretation of malaria-related data, and the use of that data in the planning, implementation and evaluation of public health practice. Improved surveillance of malaria cases and deaths helps ministries of health determine which areas or population groups are most affected and enables countries to monitor changing disease patterns. Strong malaria surveillance systems also help countries design effective health interventions and evaluate the impact of their malaria control programmes.

WHO response

The WHO *Global technical strategy for malaria 2016–2030*, updated in 2021, provides a technical framework for all malaria-endemic countries. It is intended to guide and support regional and country programmes as they work towards malaria control and elimination.

The strategy sets ambitious but achievable global targets, including:

- reducing malaria case incidence by at least 90% by 2030
- reducing malaria mortality rates by at least 90% by 2030
- eliminating malaria in at least 35 countries by 2030
- preventing a resurgence of malaria in all countries that are malaria-free.

Guided by this strategy, the Global Malaria Programme coordinates the WHO's global efforts to control and eliminate malaria by:

- setting, communicating and promoting the adoption of evidence-based norms, standards, policies, technical strategies and guidelines;
- keeping independent score of global progress;
- developing approaches for capacity building, systems strengthening, and surveillance; and
- identifying threats to malaria control and elimination as well as new areas for action.

- Malaria health topic page
- World Malaria Day 2022
- WHO Global Malaria Programme (GMP)
- Malaria Policy Advisory Group