

Disease Fact Sheet: Malaria

Malaria, the world's most important parasitic infectious disease, is transmitted by mosquitoes that breed in fresh or occasionally brackish water.

The disease and how it affects people

The symptoms of malaria include fever, chills, headache, muscle aches, tiredness, nausea and vomiting, diarrhoea, anaemia, and jaundice (yellow colouring of the skin and eyes). Convulsions, coma, severe anaemia and kidney failure can also occur. The severity and range of symptoms depend on the specific type of malaria. In certain types, the infection can remain inactive for up to five years and then recur. In areas with intense malaria transmission, people can develop protective immunity after repeated infections. Without prompt and effective treatment, malaria can evolve into a severe cerebral form followed by death. Malaria is among the five leading causes of death in under-5-year-old children in Africa.

The cause

Malaria is caused by four species of Plasmodium parasites (*P. falciparum*, *P. vivax*, *P. ovale*, *P. malariae*). People get malaria after being bitten by a malaria-infected Anopheles mosquito. Some female mosquitoes take their blood-meal at dusk and early evening, but others bite during the night or in the early hours of the morning. When a mosquito bites an infected person, it ingests malaria parasites with the blood. During a period of 8 to 35 days (depending on the ambient temperature), the parasite develops in the mosquito. The infective form (sporozoite) ends up in the salivary glands and is injected into the new human host at subsequent blood-meals. In the human host, the sporozoites migrate to the liver, multiply inside liver cells, and spread into the bloodstream. The liver phase can last between 8 days and several months, depending on the malaria species. Their growth and multiplication takes place inside red blood cells. Clinical symptoms occur when the red blood cells break up. If this happens in large numbers, the person experiences the characteristic intermittent fevers of the disease. The released parasites invade other blood cells. Most people begin feeling sick 10 days to 4 weeks after being infected.

Distribution

Today, malaria occurs mostly in tropical and subtropical countries, particularly in Africa south of the Sahara, South-East Asia, and the forest fringe zones in South America. The ecology of the disease is closely associated with the availability of water, as the larval stage of mosquitoes develops in different kinds of water bodies. The mosquito species vary considerably in their water-ecological requirements, (sun-lit or shaded, with or without aquatic vegetation, stagnant or slowly streaming, fresh or brackish) and this affects the disease ecology. Climate change (global warming) appears to be moving the altitude limits of malaria to higher elevations, for example in the East African highlands and Madagascar. The construction of irrigation systems and reservoirs in some parts of the world can have a dramatic impact on malaria distribution and on the intensity of its transmission.

Scope of the Problem

WHO estimates 300-500 million cases of malaria, with over one million deaths each year.

The main burden of malaria (more than 90%) is in Africa south of the Sahara with an estimated annual number of deaths over 1 million. Two thirds of the remaining burden hits six countries: Brazil, Colombia, India, Solomon Islands, Sri Lanka and Viet Nam. In many parts the natural habitat sustains intense malaria transmission; in others, water resources development (irrigation, dams, urban water supply) has exacerbated the transmission intensity and caused the distribution of the disease to spread. In yet others, for example the Central Asian republics of the CIS, malaria has returned as a result of a breakdown in water management and maintenance problems of local irrigation systems.

Interventions

WHO's Strategy for Malaria Control, which forms the basis of the Roll Back Malaria initiative, identifies four main interventions:

- Reducing mortality, particularly among children, by early case-detection and prompt treatment with effective anti-malarial drugs
- Promoting the use of insecticide-treated bed nets, especially by children and pregnant women
- Prevention of malaria in pregnancy by applying intermittent preventive therapy
- Ensuring early detection and control of malaria epidemics, especially in emergency situations.
- Where appropriate, countries and communities are being encouraged to reduce mosquito breeding sites by filling in and draining water bodies and through other environmental management schemes.