KEY POINTS

The World malaria report 2014 summarizes information received from 97 malaria-endemic countries and other sources, and updates the analyses presented in 2013. It assesses global and regional malaria trends, highlights progress made towards global targets, and describes opportunities and challenges in controlling and eliminating the disease. Most of the data presented in this report are for 2013.

The public health challenge posed by malaria

Malaria transmission occurs in all six WHO regions. Globally, an estimated 3.3 billion people are at risk of being infected with malaria and developing disease, and 1.2 billion are at high risk (>1 in 1000 chance of getting malaria in a year). According to the latest estimates, 198 million cases of malaria occurred globally in 2013 (uncertainty range 124–283 million) and the disease led to 584 000 deaths (uncertainty range 367 000–755 000). The burden is heaviest in the WHO African Region, where an estimated 90% of all malaria deaths occur, and in children aged under 5 years, who account for 78% of all deaths.

Expansion of malaria funding

International and domestic funding for malaria control and elimination totalled US$ 2.7 billion in 2013. Although this represented a threefold increase since 2005, it is still significantly below the estimated US$ 5.1 billion that is required to achieve global targets for malaria control and elimination. Total malaria funding will only match resource needs if international and domestic funders prioritize further investments for malaria control.

Overall, funding for countries in the WHO African Region accounted for 72% of the global total. Between 2005 and 2013, international disbursements for malaria for this region increased at an annual rate of 22%. During the same period, the average annual rate of increase for domestic funding in the region was 4%.

Globally, domestic funding for malaria was estimated to be US$ 527 million in 2013. This represents 18% of the total malaria funding in 2013. In regions outside Africa, the annual rate of domestic funding has not increased in recent years.

Progress in vector control

During the past 10 years, coverage with vector control interventions increased substantially in sub-Saharan Africa. In 2013, almost half of the population at risk (49%, range 44–54%) had access to an insecticide-treated mosquito net (ITN) in their household, compared to 3% in 2004. An estimated 44% (range 39–48%) of the population at risk were sleeping under an ITN in 2013, compared to 2% in 2004. Pregnant women and children were more likely than the general population to sleep under an ITN.

In terms of long-lasting insecticidal net (LLIN) delivery, 2014 has been the strongest year so far. A total of 214 million nets are projected to be delivered to countries in sub-Saharan Africa by the end of 2014, bringing the total number of LLINs delivered to that region since 2012 to 427 million.

Globally, 124 million people were protected from malaria through the use of indoor residual spraying. This represents 4% of the global population at risk. In the WHO African Region, 55 million people, or 7% of the population at risk, were protected. This has decreased from 11% in 2010; the decline is due to a withdrawal or downsizing of spraying programmes in some countries.

In sub-Saharan Africa, the proportion of the population protected by at least one vector control method has increased in recent years, and it reached 48% in 2013 (range 44–51%). Globally, 38 countries reported the use of larval control to complement core vector control methods.

Insecticide resistance in malaria vectors has been reported in 53 of 65 reporting countries around the world since 2010. Of these, 41 have reported resistance to two or more insecticide classes. The most commonly reported resistance is to pyrethroids, the most frequently used insecticide in malaria vector control.

WHO has established a system to track insecticide resistance globally, and recommends annual monitoring. In 2013, some 86 countries report undertaking insecticide resistance monitoring. However, only 42 of these countries provided WHO with resistance data for 2013, suggesting that many countries do not monitor insecticide resistance annually.

Trends in the administration of preventive therapies

The proportion of women who receive intermittent preventive treatment in pregnancy (IPTp) for malaria has been increasing over time, although the levels remain below programme targets. IPTp has been adopted in 35 countries and 57% of pregnant women in those countries received at least one dose of IPTp in 2013. However, only nine of those countries have reported to WHO on the recommended number of three or more doses of IPTp, and within those countries, only 17% of pregnant women received three or more doses.

In most countries, attendance rates at antenatal care services are much higher than current levels of IPTp administration. This suggests that there are missed opportunities to expand access to this life-saving intervention.
The adoption and implementation of preventive therapies for children aged under 5 years and for infants has been slower than expected. As of 2013, six of the 16 countries recommended by WHO to adopt seasonal malaria chemoprevention for children aged under 5 years have done so. Only one country has adopted intermittent preventive treatment for infants, but has not yet implemented the treatment.

**Scaling up diagnostic testing**

The proportion of patients suspected of having malaria who receive a malaria diagnostic test has increased substantially since 2010, when WHO recommended testing of all suspected malaria cases. In 2013, 62% of patients with suspected malaria in public health facilities in the WHO African Region received a diagnostic test, compared to 40% in 2010.

The total number of rapid diagnostic tests (RDTs) distributed by national malaria control programmes increased from fewer than 200,000 in 2005 to more than 160 million in 2013. Of these, 83% were delivered to countries in the WHO African Region. The quality of RDTs has improved substantially since the start of the RDT product testing programme in 2008. In the latest round of product testing, nearly all tested products met WHO standard of detection at parasite levels commonly seen in endemic areas.

In 2013, the number of patients tested by microscopic examination remained unchanged from the previous year, at 197 million. The global total of microscopic examinations is dominated by India, which accounted for over 120 million slide examinations in 2013.

In 2013, for the first time, the total number of diagnostic tests provided in the WHO African Region in the public health sector exceeded the number of artemisinin-based combination therapies (ACTs) distributed. This is an encouraging sign and, given that fewer than half of patients tested will require treatment, the ratio of diagnostic tests to ACTs should eventually reach two to one.

**Expanding access to treatment**

By the end of 2013, ACTs had been adopted as national policy for first-line treatment in 79 of 88 countries where *Plasmodium* (*P.*) *falciparum* is endemic. Chloroquine was being used in 10 Central American and Caribbean countries where it remains efficacious.

The number of ACT courses procured from manufacturers – for both the public and private sectors – rose from 11 million in 2005 to 392 million in 2013. This increase has been largely driven by procurements for the public sector.

Public health facilities had enough ACT in 2013 to treat more than 70% of patients with malaria who presented for care. However, the estimated proportion of all children with malaria who received ACTs was estimated at between 9–26%. This is because a substantial proportion of these patients do not seek care, and not all those who seek care receive antimalarial treatment.

**Antimalarial drug resistance**

*P. falciparum* resistance to artemisinin has been detected in five countries of the Greater Mekong subregion: Cambodia, the Lao People’s Democratic Republic, Myanmar, Thailand and Viet Nam. In many areas along the Cambodia–Thailand border, *P. falciparum* has become resistant to most available antimalarial medicines.

The number of countries that allow marketing of oral artemisinin-based monotherapies has declined rapidly. As of November 2014, only eight countries allow the marketing of oral monotherapies. However, 24 pharmaceutical companies, mostly in India, continue to market oral monotherapies.

Therapeutic efficacy studies remain the gold standard for guiding drug policy, and should be undertaken every 2 years. Studies of first- or second-line antimalarial treatments were completed in 66% of countries where *P. falciparum* efficacy studies were feasible.

**Gaps in intervention coverage**

Despite impressive increases in malaria intervention coverage, it is estimated that, in 2013, 278 million of the 840 million people at risk of malaria in sub-Saharan Africa lived in households without even a single ITN, 15 million of the 35 million pregnant women did not receive even a single dose of IPTp, and between 56 and 69 million children with malaria did not receive an ACT. Poverty and low levels of education are significant determinants of lack of access to these essential services. More can be done to ensure all those at risk receive appropriate preventive measures, diagnostic testing and treatment.

**Changes in malaria incidence and mortality**

Reported malaria cases

Of the 106 countries that had ongoing malaria transmission in 2000, reported data in 66 were found to be sufficiently complete and consistent to reliably assess trends between 2000 and 2013.

Based on an assessment of trends in reported malaria cases, a total of 64 countries are on track to meet the Millennium Development Goal target of reversing the incidence of malaria.
Of these, 55 are on track to meet Roll Back Malaria and World Health Assembly targets of reducing malaria case incidence rates by 75% by 2015.

In 2013, two countries reported zero indigenous cases for the first time (Azerbaijan and Sri Lanka), and ten others succeeded in maintaining zero cases (Argentina, Armenia, Iraq, Georgia, Kyrgyzstan, Morocco, Oman, Paraguay, Turkmenistan and Uzbekistan). Another four countries reported fewer than 10 local cases annually (Algeria, Cabo Verde, Costa Rica and El Salvador).

The 55 countries that recorded decreases of >75% in case incidence accounted for only 13 million (6%) of the total estimated cases of 227 million in 2000. Only five countries with more than 1 million estimated cases in 2000 (Afghanistan, Bangladesh, Brazil, Cambodia, and Papua New Guinea) are projected to achieve a reduction of 75% or more in malaria case incidence. This is partly because progress has been faster in countries with lower numbers of cases, but also because of poorer quality surveillance data being submitted by countries with larger estimated numbers of cases, particularly in sub-Saharan Africa.

Malaria infections
A new analysis of data reveals that the prevalence of malaria parasite infection, including both symptomatic and asymptomatic infections, has decreased significantly across sub-Saharan Africa since 2000. In sub-Saharan Africa, average infection prevalence in children aged 2–10 years fell from 26% in 2000 to 14% in 2013 – a relative decline of 46%.

Although declines in malaria parasite infection were seen across the African continent, they were particularly pronounced in Central Africa. Even with a large growth of populations in stable transmission areas, the number of infections at any one time across Africa fell from 173 million in 2000 to 128 million in 2013 – a reduction of 26% in the number of people infected.

Estimated malaria cases and deaths averted
It is estimated that, globally, 670 million fewer cases and 4.3 million fewer malaria deaths occurred between 2001 and 2013 than would have occurred had incidence and mortality rates remained unchanged since 2000. Of the estimated 4.3 million deaths averted between 2001 and 2013, 3.9 million (92%) were in children aged under 5 years in sub-Saharan Africa. These 3.9 million averted deaths accounted for 20% of the 20 million fewer under 5 deaths that would have occurred between 2001 and 2013 had under-5 mortality rates for 2000 applied for each year between 2001 and 2013. Thus, reductions in malaria deaths have contributed substantially to progress towards achieving the target for MDG 4, which is to reduce, by two thirds, the under-5 mortality rate between 1990 and 2015.