



2016

WORLD MALARIA REPORT

SUMMARY



World Health
Organization

WHO/HTM/GMP/2017.4

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The *World Malaria Report 2016* summarizes progress towards the 2020 malaria goals of the *Global Technical Strategy for Malaria 2016–2030*. It presents information on 26 indicators in five WHO regions and 91 endemic countries and territories. It also analyses changes in these indicators over time.

The report reveals improved access to malaria interventions, particularly in sub-Saharan Africa, the region that carries the heaviest malaria burden. A 77% increase in diagnostic testing for children and a five-fold increase in preventive treatment for pregnant women has been reported over the past 5 years. Also, among all populations at risk of malaria, the use of insecticide-treated mosquito nets has nearly doubled.

Despite this remarkable progress, the global tally of malaria in 2015 was 212 million new cases and 429 000 deaths. Across Africa, millions of people still lack access to the tools they need to prevent and treat the disease. Funding shortfalls and fragile health systems restrict access to life-saving interventions and jeopardize the attainment of global targets. According to the report, fewer than half of the 91 malaria-affected countries and territories are on track to achieve the 2020 milestone of a 40% reduction in case incidence and mortality.

In 2015, malaria financing totalled US\$ 2.9 billion. Contributions from both domestic and international sources must increase substantially if the *Global Technical Strategy for Malaria 2016–2030* milestone of US\$ 6.4 billion is to be attained by 2020.

The complete *World Malaria Report 2016* can be found at: <http://www.who.int/malaria/publications/world-malaria-report-2016/report/en/>



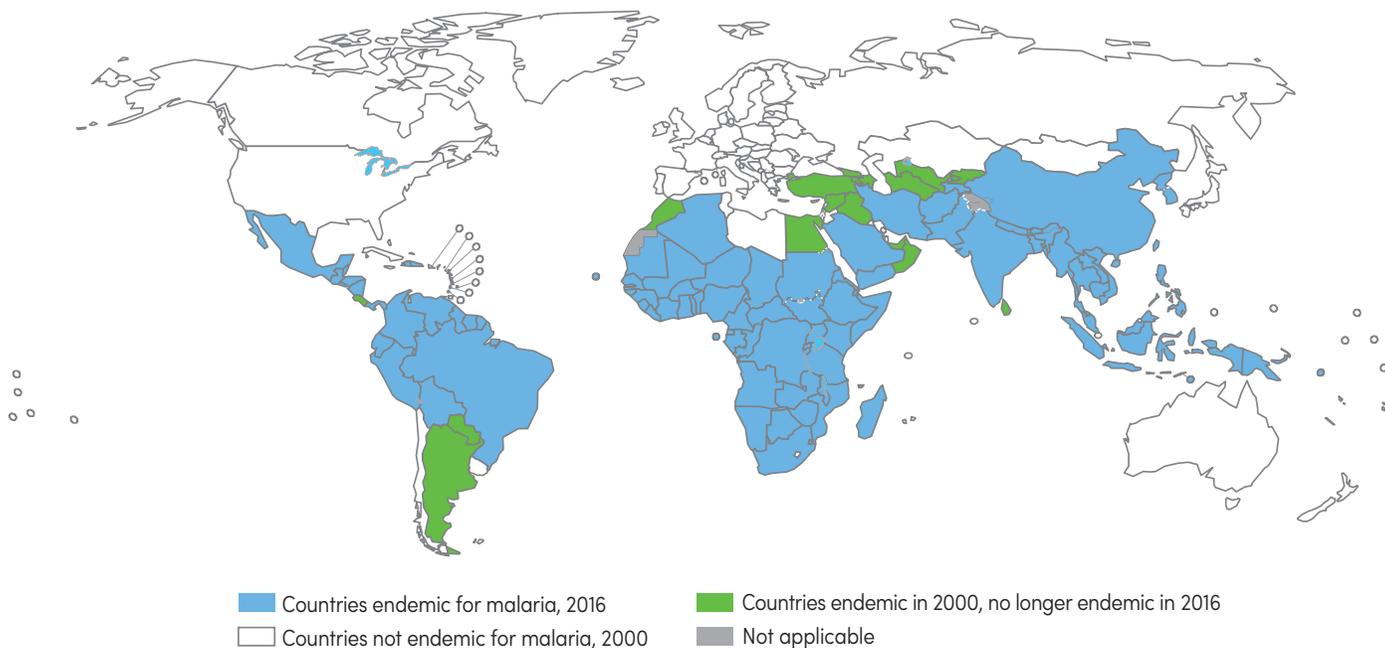
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Current distribution of malaria

At the start of 2016, nearly half of the world's population was at risk of malaria.

Malaria was considered to be endemic in 91 countries and territories in 2016, down from 108 in 2000. Most of the change can be attributed to the wide-scale deployment of malaria control interventions.

Countries endemic for malaria in 2000 and 2016



Source: WHO database

..... The Global Technical Strategy for Malaria 2016–2030

To guide the future direction of malaria control and elimination, WHO developed the *Global Technical Strategy for Malaria 2016–2030*.

The *Global Technical Strategy for Malaria 2016–2030* sets the most ambitious targets for reductions in malaria cases and deaths since the malaria eradication era. It also provides a framework for countries to develop programmes that are tailored to local circumstances, with the aim of accelerating progress towards malaria elimination.

Goals, milestones and targets of the *Global Technical Strategy for Malaria 2016–2030*

Vision	A world free of malaria		
Goals	Milestones		Targets
	2020	2025	2030
1. Reduce malaria mortality rates globally compared with 2015	at least 40%	at least 75%	at least 90%
2. Reduce malaria case incidence globally compared with 2015	at least 40%	at least 75%	at least 90%
3. Eliminate malaria from countries in which malaria was transmitted in 2015	At least 10 countries	At least 20 countries	At least 35 countries
4. Prevent re-establishment of malaria in all countries that are malaria free	Re-establishment prevented	Re-establishment prevented	Re-establishment prevented

The *Global Technical Strategy for Malaria 2016–2030* can be found at: http://www.who.int/malaria/areas/global_technical_strategy/en/



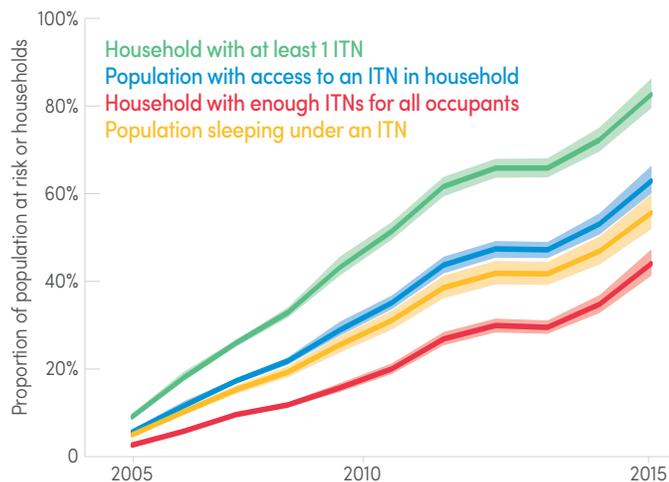
Vector control for malaria – ITN access and use

Access and use of insecticide-treated mosquito nets (ITNs) has increased substantially over the past 5 years, especially in sub-Saharan Africa.

For countries in sub-Saharan Africa, it is estimated that 53% of the population at risk slept under an ITN in 2015, an increase from 5% in 2005 and from 30% in 2010. This rise in the proportion of the population sleeping under an ITN has been driven by increases in the proportion of the population that have access to an ITN in their house (60% in 2015).

The proportion of households with at least one ITN increased to 79% in 2015. The proportion of households with sufficient ITNs for all household members also increased, reaching 42% in 2015, but it remains well below universal coverage (100%).

Proportion of population at risk with access to an ITN and sleeping under an ITN, and proportion of households with at least one ITN and enough ITNs for all occupants, sub-Saharan Africa, 2005–2015



ITN, insecticide-treated mosquito net

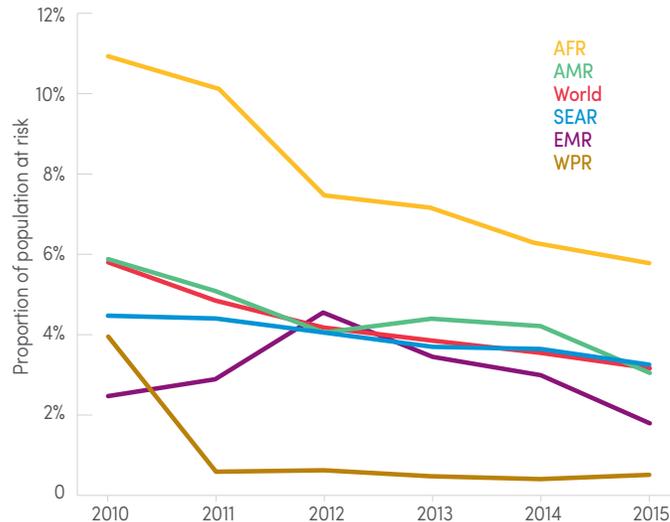
Source: ITN coverage model from Malaria Atlas project

Vector control for malaria – IRS coverage



The proportion of the population protected by indoor residual spraying (IRS) declined globally.

Proportion of the population at risk protected by IRS, by WHO region, 2010–2015



National malaria control programmes often target only selected population sub-groups for IRS; hence, the proportion of the population covered by IRS is generally lower than that for ITNs. The proportion of the population at risk protected by IRS declined globally from a peak of 5.7% in 2010 to 3.1% in 2015, with decreases seen in all WHO regions, and especially in the WHO African Region. Declining IRS coverage may be attributed to a change from pyrethroids to more expensive insecticide classes. This change was made to slow the spread of insecticide resistance, although heavy reliance on pyrethroids continues, particularly outside the WHO African Region.

AFR, WHO African Region; AMR, WHO Region of the Americas; EMR, WHO Eastern Mediterranean Region; IRS, indoor residual spraying; SEAR, WHO South-East Asia Region; WPR, WHO Western Pacific Region

Source: National malaria control programme reports

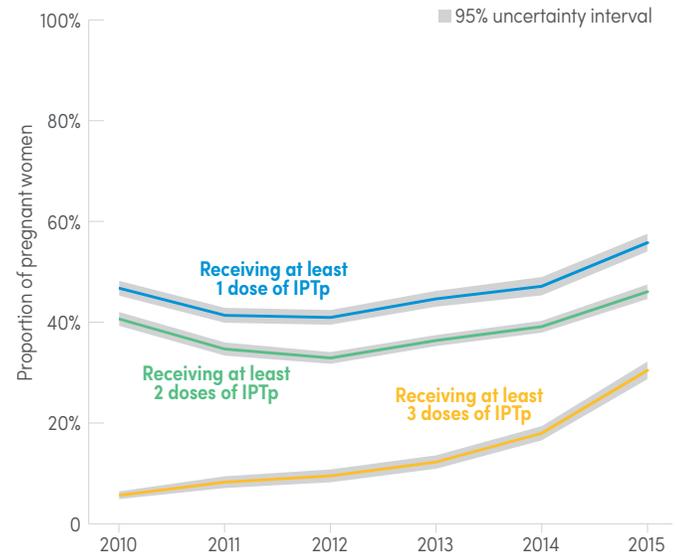


Chemoprevention for pregnant women

The proportion of pregnant women receiving three or more doses of preventive therapy for malaria has increased over the past 5 years, especially in sub-Saharan Africa.

In 2015, among 20 of the 36 African countries that have adopted the policy, 31% of eligible pregnant women received three or more doses of intermittent preventive treatment in pregnancy (IPTp). This represents a large increase from the 18% registered in 2014 and the 6% in 2010. The proportion of women receiving three or more doses of IPTp still remains below universal coverage; a significant proportion of pregnant women do not attend antenatal care (20% in 2015), and among those who do, 30% do not receive a single dose of IPTp.

Proportion of pregnant women receiving IPTp, by dose, sub-Saharan Africa, 2010-2015



IPTp, intermittent preventive treatment in pregnancy

Source: National malaria control programme reports and United Nations population estimates



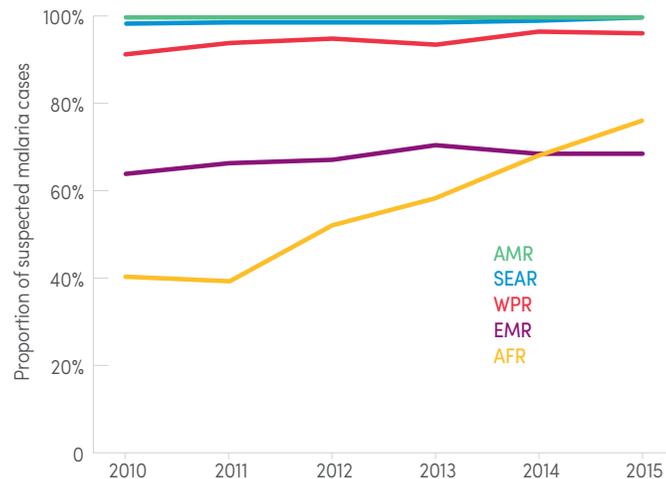


Diagnostic testing for malaria

The proportion of suspected malaria cases receiving a malaria diagnostic test has increased steadily since 2010.

In most WHO regions, the proportion of suspected malaria cases receiving a parasitological test among patients presenting for treatment in the public sector has increased since 2010. The largest increase has been in the WHO African Region, where diagnostic testing increased from 40% of suspected malaria cases in 2010 to 76% in 2015. This change was mainly due to an increase in the use of rapid diagnostic tests (RDTs), which accounted for 74% of diagnostic testing among suspected cases in 2015.

Proportion of suspected malaria cases attending public health facilities who receive a diagnostic test, by WHO region, 2010–2015



AFR, WHO African Region; AMR, WHO Region of the Americas; EMR, WHO Eastern Mediterranean Region; SEAR, WHO South-East Asia Region; WPR, WHO Western Pacific Region

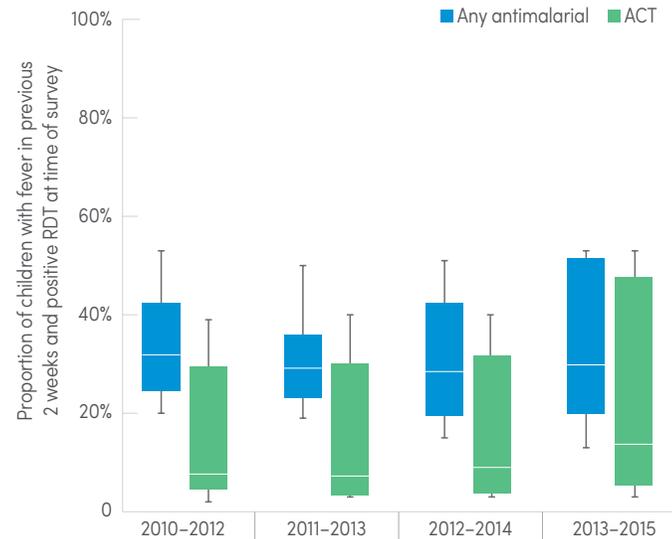
Source: National malaria control programme reports



The proportion of malaria cases in sub-Saharan Africa receiving treatment with artemisinin-based combination therapy (ACT) remains low.

The median proportion of children aged under 5 years with evidence of recent or current *Plasmodium falciparum* infection and a history of fever who received any antimalarial drug was 30%, based on 11 household surveys conducted in sub-Saharan Africa in 2013–2015. The median proportion receiving an ACT was 14%. The low values can be attributed to two factors: first, many febrile children are not taken for care to a qualified provider and second, in cases when children are taken for care, a significant proportion of the antimalarial treatments dispensed are not ACTs.

Proportion of febrile children with a positive RDT at time of survey who received antimalarial medicines, sub-Saharan Africa, 2010–2015



ACT, artemisinin-based combination therapy; RDT, rapid diagnostic test

Sources: Nationally representative household survey data from demographic and health surveys, and malaria indicator surveys

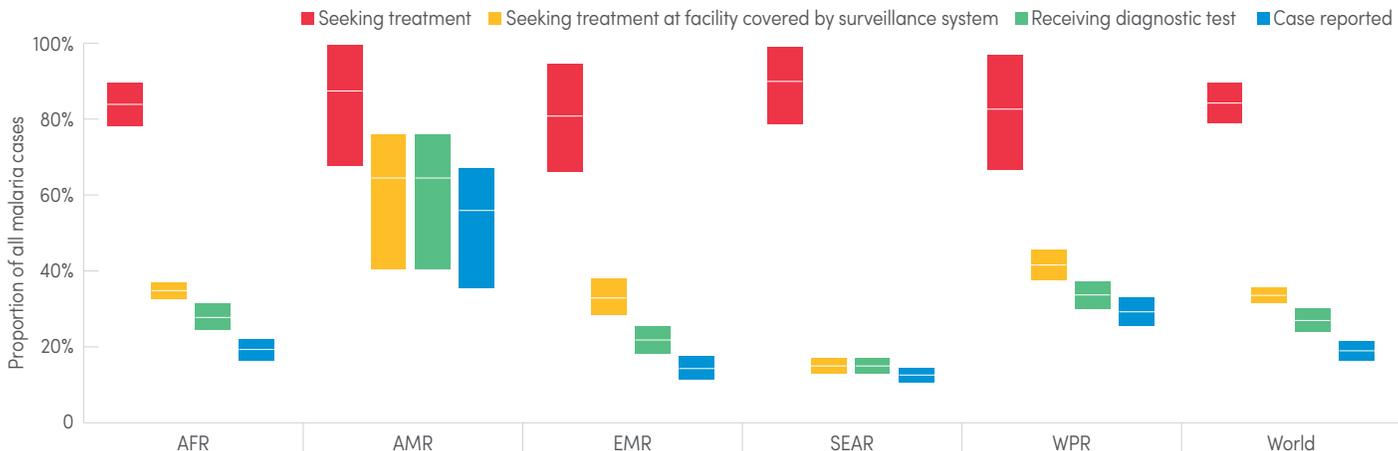


Malaria surveillance systems

In 2015, it is estimated that malaria surveillance systems reported only 19% of the cases that occur globally.

Surveillance systems do not detect all malaria cases for several reasons. First, not all malaria patients seek care, or, if they do, they may not seek care at health facilities that are covered by a country's surveillance system (e.g. health facilities in the private sector). Second, not all patients seeking care receive a diagnostic test. Finally, recording and reporting within a surveillance system is not always complete. The bottlenecks in case detection vary by WHO region.

Bottlenecks in case detection 2015, by WHO region, 2015



AFR, WHO African Region; AMR, WHO Region of the Americas; EMR, WHO Eastern Mediterranean Region; SEAR, WHO South-East Asia Region; WPR, WHO Western Pacific Region

Sources: Nationally representative household survey data and national malaria control programme reports

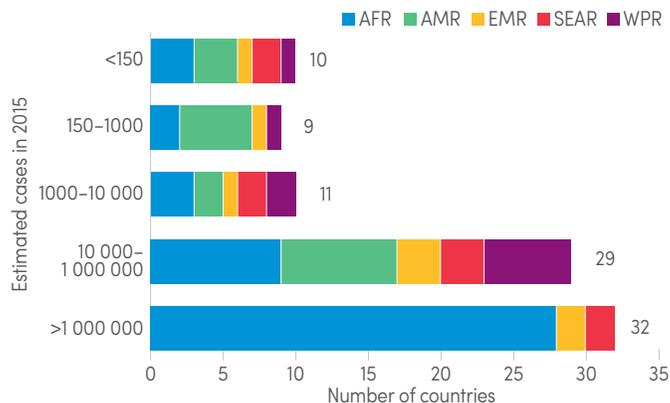
Progress towards malaria elimination



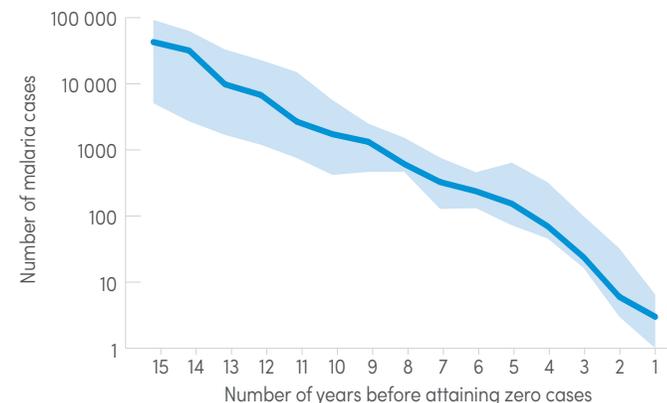
The 2020 milestone of eliminating malaria from 10 or more countries looks attainable.

In 2015, 10 countries and territories reported fewer than 150 indigenous cases, and a further nine countries reported between 150 and 1000 indigenous cases. These countries should be well placed to eliminate malaria in the foreseeable future, because the 17 countries that had eliminated malaria between 2010 and 2015 reported a median of 184 indigenous cases 5 years before attaining zero cases, and a median of 1748 cases 10 years before attaining zero cases.

Number of indigenous malaria cases for countries endemic for malaria in 2015, by WHO region



Indigenous malaria cases in the years before attaining zero indigenous cases for the 17 countries that eliminated malaria, 2000–2015



Median number of cases is shown as a blue line. Interquartile range is shaded in light blue.

Source: Country reports

AFR, WHO African Region; AMR, WHO Region of the Americas; EMR, WHO Eastern Mediterranean Region; SEAR, WHO South-East Asia Region; WPR, WHO Western Pacific Region

Source: WHO estimates

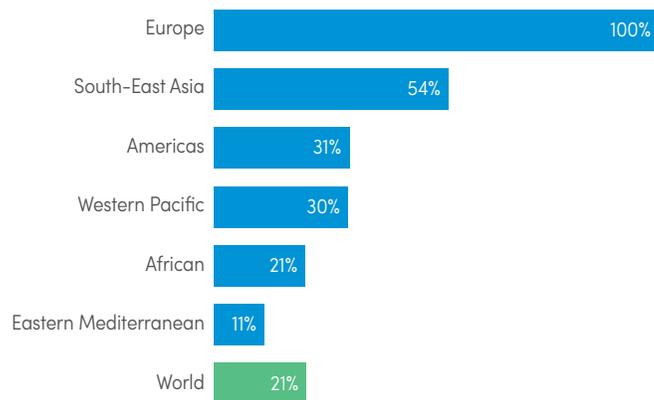


Progress in incidence and mortality reduction

The milestone of reducing case incidence and mortality rates by 40% by 2020 does not look attainable.

The incidence rate of malaria is estimated to have decreased by 21% globally between 2010 and 2015. Decreases in incidence rates have been greatest in the WHO European Region (100%) and the WHO South-East Asia Region (54%). However, progress has been slow in the WHO African Region, which is the region that carries the heaviest malaria burden.

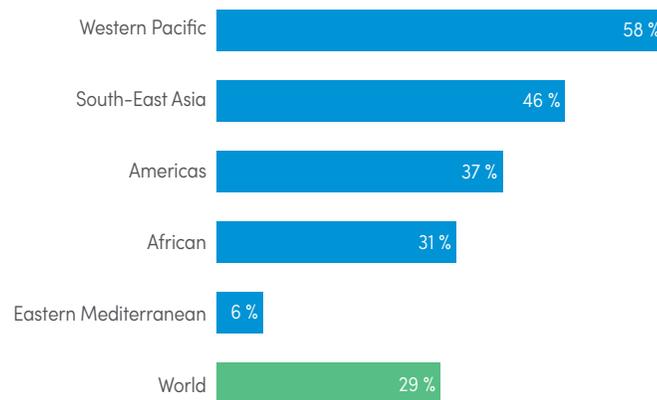
Reduction in malaria case incidence rate by WHO region, 2010–2015



Source: WHO estimates

Malaria mortality rates are estimated to have declined by 29% globally between 2010 and 2015. The rate of decline over the period 2010–2015 has been fastest in the WHO Western Pacific Region (58%) and the WHO South-East Asia Region (46%). For more information on estimated changes in malaria incidence and mortality rates by country, see Annex on pages 18–19.

Reduction in malaria mortality rate, by WHO region, 2010–2015



No deaths from indigenous malaria were recorded in the WHO European Region from 2010 to 2015.

Source: WHO estimates

Impact of reducing malaria mortality



Reduction in malaria mortality rates – particularly among children aged under 5 years – has led to significant gains in life expectancy across the WHO African Region.

In the WHO African Region, reduced malaria mortality rates, particularly among children aged under 5 years, have led to a rise in life expectancy at birth of 1.2 years. This rise accounts for 12% of the total increase in life expectancy of 9.4 years, from 50.6 years in 2000 to 60 years in 2015. Across all malaria endemic countries, the contribution of malaria mortality reduction was 0.26 years, or 5% of the total increase in life expectancy, which rose from 66.4 years in 2000 to 71.4 years in 2015.

The value of the decline in malaria mortality is estimated at US\$ 1810 billion in sub-Saharan Africa between 2000 and 2015, and US\$ 2040 billion globally. This is equivalent to nearly half the economic output of sub-Saharan Africa in 2015 (44%), and 3.6% of the economic output of affected countries globally.

Gains in life expectancy in malaria endemic countries, 2000–2015

	Life expectancy at birth		Gain in life expectancy due to reductions in mortality from		% gain due to malaria
	2000	2015	Malaria	Other causes	
AFR	50.6	60.0	1.159	8.2	12.3
AMR	73.7	76.9	0.003	3.2	0.1
EMR	65.4	68.8	0.045	3.4	1.3
EUR	72.3	76.8	0.000	4.5	0.0
SEAR	63.5	69.0	0.034	5.4	0.6
WPR	72.5	76.6	0.018	4.0	0.4
World	66.4	71.4	0.255	4.8	5.0

AFR, WHO African Region; AMR, WHO Region of the Americas; EMR, WHO Eastern Mediterranean Region; EUR, WHO European Region; SEAR, WHO South-East Asia Region; WPR, WHO Western Pacific Region

Source: WHO estimates



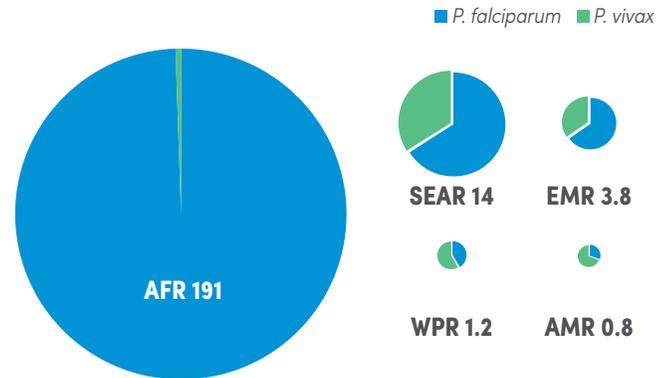
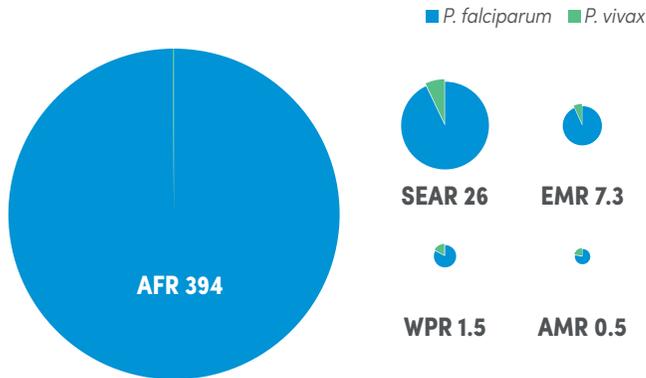
A massive unfinished agenda

Despite remarkable progress, malaria continues to have a devastating impact.

In 2015 alone, there were an estimated 212 million new cases of malaria and 429 000 deaths. The WHO African Region continues to shoulder the heaviest malaria burden, accounting for an estimated 90% of malaria cases and 92% of malaria deaths in 2015. The WHO South-East Asia Region accounted for 7% of global malaria cases and 6% of malaria deaths. Three quarters of these cases and deaths are estimated to have occurred in fewer than 15 countries, with Nigeria and Democratic Republic of the Congo accounting for more than a third.

Estimated malaria cases (millions) by WHO region, 2015

Estimated malaria deaths (thousands) by WHO region, 2015



AFR, WHO African Region; AMR, WHO Region of the Americas; EMR, WHO Eastern Mediterranean Region; SEAR, WHO South-East Asia Region; WPR, WHO Western Pacific Region

Source: WHO estimates

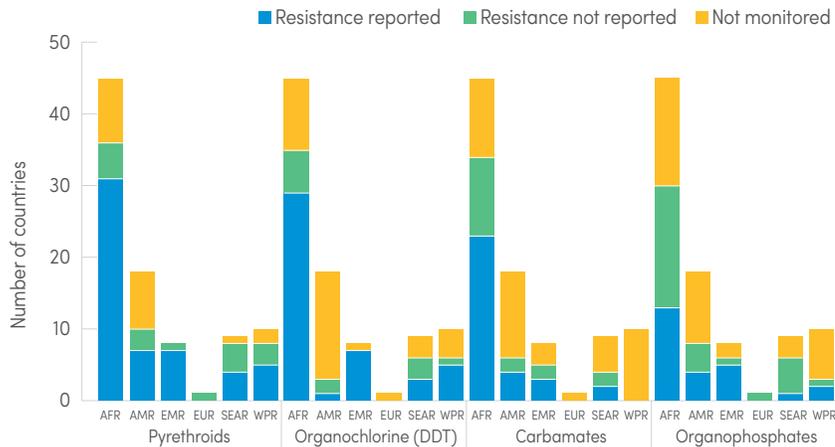
Emergence of insecticide and drug resistance



Recent gains in malaria control could be jeopardized by insecticide and drug resistance.

Of the 73 malaria endemic countries that provided monitoring data to WHO from 2010 onwards, 60 countries have reported mosquito resistance to at least one insecticide class used in IRS and ITNs; 50 countries reported resistance to two or more insecticide classes.

Insecticide resistance and monitoring status for malaria endemic countries (2015), by insecticide class and WHO region, 2010–2015

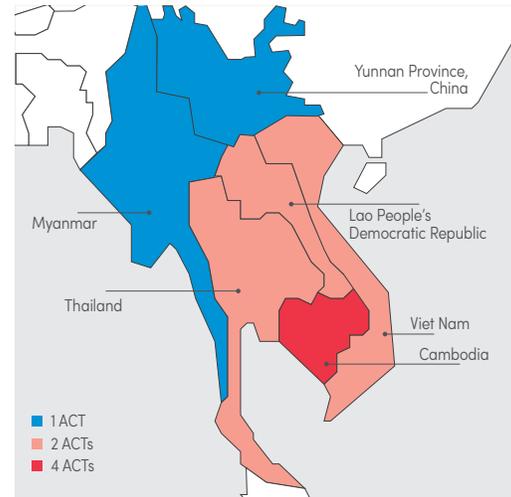


DDT, dichloro-diphenyl-trichloroethane

Sources: National malaria control programme reports, African Network for Vector Resistance, Malaria Atlas Project, President's Malaria Initiative (United States), scientific publications

Parasite resistance to artemisinin – the core compound of the best available antimalarial medicines – has been detected in five countries of the Greater Mekong subregion.

Distribution of malarial multidrug resistance, 2016



ACT, artemisinin-based combination therapy

Source: WHO database

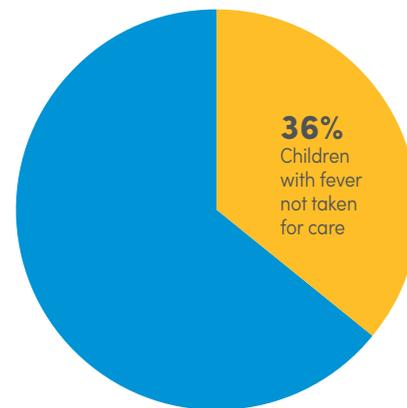
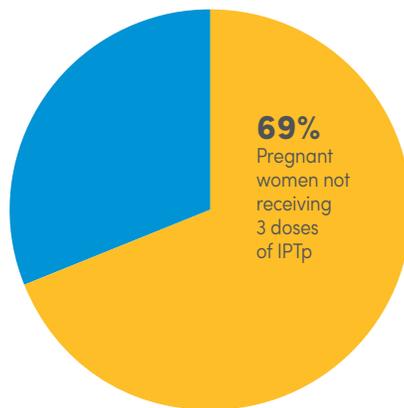
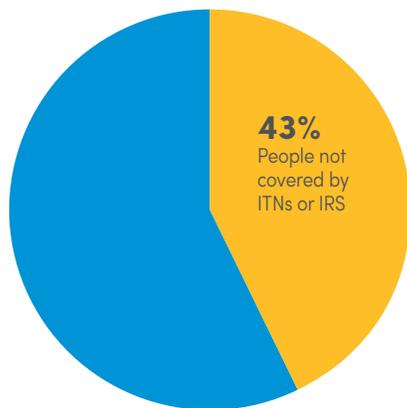


Substantial gaps remain in malaria intervention coverage

Despite improvements in access to core malaria control tools, substantial gaps remain.

In 2015, 43% of the population of sub-Saharan Africa were not covered by ITNs or IRS, 69% of pregnant women did not receive three doses of IPTp and 36% of children with fever were not taken for care. In many countries with a high malaria burden, health systems remain under-resourced and poorly accessible to those most at risk of malaria.

Proportion of population not covered by ITNs or IRS, proportion of pregnant women not receiving three doses of IPTp and proportion of children with fever not taken for care, sub-Saharan Africa, 2015



IPTp, intermittent preventive treatment in pregnancy; IRS, indoor residual spraying; ITN, insecticide-treated mosquito net

Sources: Nationally representative household survey data from demographic and health surveys, and malaria indicator surveys

Financing of malaria control programmes

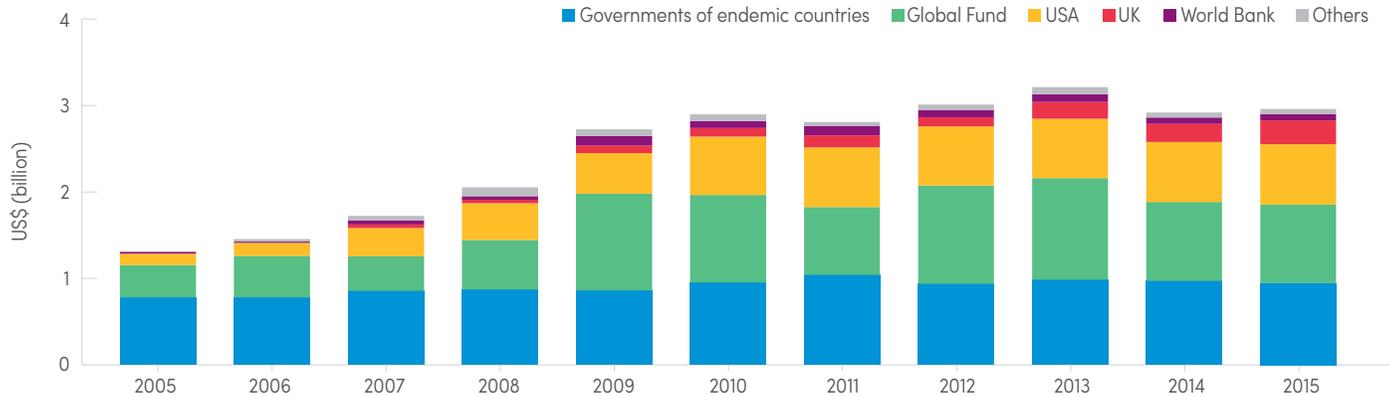


Funding from domestic and international sources must increase substantially if global targets are to be met.

Global investment for malaria increased between 2000 and 2010, but funding has since levelled, totalling US\$ 2.9 billion in 2015. To reach the 2020 milestone of US\$ 6.4 billion, contributions from both domestic and international sources must increase substantially.

Governments of endemic countries provided 32% of total malaria funding in 2015, followed by international funds channelled through the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund). The United States of America is the largest single international malaria funder, accounting for an estimated 35% of global funding in 2015, followed by the United Kingdom (16%).

Investments in malaria control activities by funding source, 2005–2015



Global Fund, Global Fund to Fight AIDS, Tuberculosis and Malaria; UK, United Kingdom of Great Britain and Northern Ireland; USA, United States of America
Annual values have been converted to constant 2015 US\$ using the gross domestic product implicit price deflator from the USA in order to measure funding trends in real terms.

Sources: *ForeignAssistance.gov, Global Fund to Fight AIDS, Tuberculosis and Malaria, national malaria control programme reports, Organisation for Economic Co-operation and Development (OECD) creditor reporting system, the World Bank Data Bank, WHO estimates of malaria cases and treatment seeking at public facilities, and WHO CHOICE unit cost estimates of outpatient visit and inpatient admission*

Annex: Estimated change in malaria incidence and mortality rates, by country, 2010–2015

WHO region Country/area	Decrease		Change <±20%	Increase >20%	Zero indigenous deaths in 2015
	>40%	20–40%			
African					
Algeria	●				●
Angola			● ●		
Benin		●	●		
Botswana	● ●				
Burkina Faso	●	●			
Burundi		●	●		
Cameroon		●	●		
Cabo Verde	● ●				
Central African Republic		● ●			
Chad			● ●		
Comoros	● ●				
Congo		●	●		
Côte d'Ivoire	●	●			
Democratic Republic of the Congo	● ●				
Equatorial Guinea			● ●		
Eritrea		● ●			
Ethiopia	● ●				
Gabon			●	●	
Gambia			● ●		
Ghana		● ●			
Guinea		●	●		
Guinea-Bissau			● ●		
Kenya			●	●	
Liberia		● ●			

WHO region Country/area	Decrease		Change <±20%	Increase >20%	Zero indigenous deaths in 2015
	>40%	20–40%			
African					
Madagascar				● ●	
Malawi	●	●			
Mali			●	●	
Mauritania			● ●		
Mayotte	●				●
Mozambique		● ●			
Namibia				● ●	
Niger		● ●			
Nigeria		●	●		
Rwanda			●	●	
Sao Tome and Principe		●	●		
Senegal		●	●		
Sierra Leone	●	●			
South Africa		●		●	
South Sudan		●	●		
Swaziland	● ●				
Togo	●	●			
Uganda	● ●				
United Republic of Tanzania		●	●		
Zambia			● ●		
Zimbabwe			● ●		
Americas					
Belize	●				●
Bolivia (Plurinational State of)	● ●				
Brazil	● ●				
Colombia	●	●			

WHO region Country/area	Decrease		Change <±20%	Increase >20%	Zero indigenous deaths in 2015
	>40%	20–40%			
Dominican Republic	●●				
Ecuador	●				●
El Salvador	●				●
French Guiana	●●				
Guatemala			●●		
Guyana	●●				
Haiti	●●				
Honduras	●●				
Mexico	●●				
Nicaragua				●●	
Panama				●	●
Peru				●●	
Suriname	●●				
Venezuela (Bolivarian Republic of)				●●	
Eastern mediterranean					
Afghanistan			●●		
Djibouti				●●	
Iran (Islamic Republic of)	●●				
Pakistan	●	●			
Saudi Arabia				●	●
Somalia				●●	
Sudan			●●		
Yemen	●●				
European					
Tajikistan	●				●

WHO region Country/area	Decrease		Change <±20%	Increase >20%	Zero indigenous deaths in 2015
	>40%	20–40%			
South-east Asia					
Bangladesh	●●				
Bhutan	●●				
Democratic People's Republic of Korea	●				●
India	●	●			
Indonesia	●●				
Myanmar	●●				
Nepal	●●	●			
Thailand	●●				
Timor-Leste	●●				
Western Pacific					
Cambodia	●	●			
China	●				●
Lao People's Democratic Republic	●		●		
Malaysia	●●				
Papua New Guinea	●	●			
Philippines	●●				
Republic of Korea			●		●
Solomon Islands	●●				
Vanuatu	●●				
Viet Nam	●●				

● Change in estimated incidence rate ● Change in estimated mortality rate

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"The challenges we face are sizeable but not insurmountable. [...] with robust funding, effective programmes and country leadership, progress in combatting malaria can be sustained and accelerated."

Dr Margaret Chan
Director-General,
World Health Organization



map 
malaria atlas project

 Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

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